Mexicans’ Consumption of Taxed Sugar-Sweetened Beverages and the Psychosocial Determinants of Consumption in the Context of the 2014 Sugar-Sweetened Beverage Tax - A Mixed Methods Study

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ABSTRACT

Mexicans’ Consumption of Taxed Sugar-Sweetened Beverages (SSBs) and Psychosocial determinants of Consumption in the context of the 2014 SSB Tax - A Mixed Methods Study

Cristina Álvarez Sánchez

In Mexico about 73 percent adults and 33 percent children have overweight or obesity; and nearly 14 percent adults are estimated to have Type 2 diabetes, being the principal cause of mortality. Obesity and diabetes rates rose sharply starting in the 1980’s and 1990’s, coinciding with the globalization processes that Mexico underwent resulting in a higher availability and consumption of energy-dense and nutrient-poor ultra-processed foods. Sugar-sweetened beverages (SSBs), carbonated cola beverages such as Coca-Cola in particular, are widely consumed and well integrated into Mexico’s cultural fabric and constitute the major source of added sugars in the Mexican diet. High intake of SSBs is associated with weight gain, type 2 diabetes, coronary heart disease, and metabolic syndrome,

In 2014, the Mexican government introduced a 1-peso-per-liter (approx. US 8 cents; about 10 percent of the pre-tax price) on industrialized SSBs along with many other public health measures in an attempt to curb rising obesity rates. Two years into the SSB tax, purchases of sugary beverages in stores decreased by 7.6 percent on average. This decrease in purchases is remarkable, nevertheless, based on the existing cross-sectional data, the change cannot be attributable solely to the effect of the taxation. Moreover, there are many other concurrent factors that might have affected demand and
purchases of SSBs: like an 8 percent ad valorem tax imposed on discretionary energy-dense food in 2014, the regulation of foods and beverages in schools, and the regulation of food and beverage marketing on TV targeted to children.

Further, it may be plausible for the SSB tax to have exerted effect via other mechanisms, such as increasing awareness of negative health outcomes. There is evidence from other countries that junk food and SSB taxes imposed with public health goals contribute to enhancing people’s awareness about the negative health consequences of unhealthy foods.

The purpose of this study was to explore what are Mexicans’ beliefs, attitudes, social norms, and behaviors in relation to SSBs in the context of the SSB tax, and why and how behaviors have been modified. This purpose was addressed using a sequential explanatory mixed methods design, starting with a quantitative survey with a nationally representative sample, followed by a qualitative study with parents and construction workers.

Quantitative study. The first phase of the study consisted of closed-ended questions (designed to ask about awareness of and opinion about the effectiveness of the tax, psychosocial determinants of SSB consumption, and perception of change in SSB consumption since the year the tax was implemented) that were developed and inserted into a new questionnaire of the 2016 National Health and Nutrition Survey (ENSANUT) carried out by the Mexican INSP. The questionnaire was administered face-to-face to 6,650 Mexican adults 20-59 years old, providing a representative sample at the national, urban and rural, and regional levels. The two principal statistical analysis conducted were: (a) Logistic regression, used to evaluate the probability of a person reporting a
decrease in SSB consumption, given their awareness of the tax, opinion about its effectiveness, psychosocial (SSB health-related beliefs, self-efficacy, and liking of SSBs) and environmental (availability of potable water) determinants, after controlling for covariates; (b) Multiple linear regression analysis, utilized to examine the association between the same factors and current consumption of taxed SSBs. Results showed that compared with adults not aware, adults who were aware of the SSB tax were more likely (OR=1.30) to report a decrease in SSB consumption ($p=.012$). In urban areas, adults aware of the tax drank a significantly lower amount of taxed SSBs (-15.7%; $p=.023$) than those not aware. Self-efficacy and liking of SSBs were significantly associated with a reported decrease in consumption and with current consumption ($p<.001$), while health beliefs and availability of potable water were not significantly associated with either reported change in SSB consumption or current consumption of taxed SSBs. We conclude that implementation of an SSB tax accompanied by highly visible campaigns may further influence the impact of taxes on SSBs consumption.

*Qualitative study.* The second phase consisted of a qualitative multi-case study involving interviews and focus groups with parents of children 9 years old or younger and construction workers that assisted in interpreting the findings of the quantitative study. This study also expanded upon the quantitative findings particularly in relation to the ways people modified (or not) their purchasing and consumption behaviors after the imposition of the SSB tax and the reasons why. The analysis was informed by the Reasoned Action Approach and the hyperbolic (future) discounting concept from behavioral economics theory. The main findings of the study with parents are that most reported drinking less soda than in the two-four years prior and that they largely are
trying to reduce their children’s consumption of SSBs and encourage water consumption. Changes in parents’ behaviors and practices were precipitated by health concerns and not necessarily by price increases (although these were of concern). Half of the participants knew about the tax and its purpose; and it seems like the debate around the tax might have contributed to increasing awareness about the detrimental health consequences of taxed beverages. We conclude that for many of these parents the current taxation of SSBs may have had a mild effect on SSB consumption; a higher level of the tax (20 percent) may impose an additional constraint. The main findings of the study with construction workers are that they consume a high amount of both soda and water during their work days (approx. 1.25. liters and 4 liters, respectively). They associate consumption of soda to pause and meal breaks, and consumption of water to the times when they are working. Nevertheless, their identity as construction workers is constructed in relation to their soda consumption. While they are aware of the health consequences that a high soda consumption can entail, it seems like they had never contemplated the need and/or possibility of changing their practices. Construction workers have not (permanently) altered their patterns of soda consumption in the context of the tax. Presence of an illness (i.e., kidney problems) triggered changes in some, but they were only temporary. We conclude that a 1 peso-per-liter (10 percent) tax is not enough to trigger changes in practices in this group, and that the government should consider a higher level of the tax to have an effect on these consumers.

In this dissertation, the interpretation of the quantitative and the qualitative results in combination yields a better understanding about the potential influence of the SSB tax on Mexicans SSB-related behaviors and psychosocial factors. The key conclusions of this
work are that: 1) A considerable number of the Mexican adult population is aware of the tax on SSBs, but that awareness differs by socio-demographic characteristics; 2) A large majority of the population believes that the tax is not reducing consumption of taxed SSBs meaningfully; 3) having been exposed to debates/campaigns in relation the tax, combined with the price increase, may have contributed to increasing health awareness and/or rethinking beverage choices in some population groups that are more sensitive to diet/nutrition and health (e.g., parents in their role as caregivers) but not of others (e.g., construction workers); 4) the most salient determinants of SSB consumption are: social norms, liking for SSBs, perceived behavioral control, and the beverage environment; 5) Mexican adults are knowledgeable about the health consequences of a high consumption of industrialized SSBs, however, while knowledge is necessary, it might not be sufficient to result in large behavioral changes.

This study contributes to the fields of public health and food and nutrition policy by suggesting an alternative pathway through which health taxes may exert an impact on people’s behavior. It also highlights the complexity of food choice and behavior change and the need for comprehensive approaches, grounded in research of psychosocial determinants, to have a meaningful impact on changing consumers’ behaviors.

The findings of this dissertation suggest that in the future, governments could consider accompanying public health taxes with comprehensive and targeted education campaigns in an attempt to create synergy between both approaches. In addition, future nutrition education and public health campaigns might focus more on teaching self-regulation skills, after motivation has been established, and on shifting social norms around SSB drinking.
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<td>ANSA</td>
<td>National Strategy for the Prevention and Control of Overweight, Obesity, and Diabetes</td>
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<td>BMI</td>
<td>Body Mass Index</td>
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<td>CWs</td>
<td>Construction Workers</td>
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<td>ENSANUT</td>
<td>(Mexican) National Health and Nutrition Survey</td>
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<td>INSP</td>
<td>(Mexican) National Institute of Public Health</td>
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<tr>
<td>NAFTA</td>
<td>North American Free Trade Agreement</td>
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<td>NYC</td>
<td>New York City</td>
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<td>OR</td>
<td>Odds Ratio</td>
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<td>SEM</td>
<td>Standard Error of the Mean</td>
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<td>SES</td>
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Dedication

To Alex, my loyal companion.
Chapter 1: Introduction

“It’s easier to find Coca Cola [in Mexico] than it is to find medical services, clean water or good health.” - Oliver de Schutter, United Nations’ envoy on the Right to Food (UN, 2011)

1.1. Overview

In Mexico, about 73 percent adults and 33 percent children are overweight or obese (Shamah-Levy et al., 2017); and nearly 14 percent adults are estimated to have Type 2 diabetes, being the principal cause of mortality (Barquera et al., 2013). Both obesity and diabetes rates rose sharply beginning in the 1980s and 1990s, coinciding with the globalization processes which led to a higher availability and consumption of energy-dense and nutrient-poor ultra-processed foods in Mexico.

Sugar-sweetened beverages\(^1\) (SSBs) in particular are widely consumed and well integrated into Mexico’s cultural fabric: they are the major source of added sugars in the Mexican diet (Stern et al., 2014a). High intake of SSBs is associated with weight gain, type 2 diabetes, coronary heart disease, and metabolic syndrome (de Koning et al., 2012; Fung et al., 2009; Greenwood et al., 2014; Huang et al., 2014; Imamura et al., 2015; Malik et al., 2013; Malik et al., 2010; Malik et al., 2009; Te Morenga et al., 2013; Wang et al., 2015)

\(^1\) While the Mexican SSB tax applies to all industrialized SSBs (except flavored milk) and in this dissertation, I will mostly use the term SSBs, Mexicans for the most part drink carbonated SSBs (soda), Coca-Cola in particular.
In 2014, the Mexican government introduced a 1-peso-per-liter (approx. US 8 cents or about 10% of the pre-tax price) on industrialized SSBs along with many other public health measures in an attempt to curb rising obesity rates. Two years into the SSB tax, purchases of sugary beverages in stores decreased by 7.6 percent on average (Colchero et al., 2017).

This decrease in purchases is remarkable. Nevertheless, based on the existing cross-sectional data, the change cannot be attributed solely to taxation. There are many other concurrent factors that might have affected demand and purchases of SSBs, for example, an 8 percent ad valorem tax imposed on discretionary energy-dense food in 2014 (Secretaría de Gobernación, 2013), the regulation of foods and beverages in schools (Secretaría de Educación Pública & Secretaría de Salud, 2010, 2014), and the regulation of food and beverage marketing on TV targeted to children (Secretaría de Salud, 2014).

Further, it may be plausible for the SSB tax to have created other (unforeseen) effects or mechanisms, such as increasing awareness of negative health outcomes. There is evidence from other country examples that junk food and SSB taxes imposed with public health goals have contributed to enhancing people’s awareness about the negative health consequences of unhealthy foods (WHO, 2016). However, these studies do not capture purchases of taxed beverages outside of stores, and they do not use actual data on dietary intake. Therefore, they cannot explain if people have shifted to purchasing beverages sold outside of stores, or consuming sweetened or unsweetened beverages prepared at home. On the other hand, changes in marketing strategies of SSBs in the period after the tax might have attenuated the effect of the price increase.
The purpose of this study was to explore Mexicans’ beliefs, attitudes, social norms, and behaviors in relation to SSBs in the context of the SSB tax, and why and how behaviors have been modified. This purpose was addressed using a sequential explanatory mixed methods design, starting with a quantitative survey with a nationally representative sample, followed by a qualitative study with parents and construction workers to enrich this quantitative data with a qualitative context.

The first phase of the study consisted of closed-ended questions (designed to ask about awareness and opinion about the effectiveness of the tax and psychosocial determinants of SSB consumption) that were developed then inserted into a new questionnaire as part of the 2016 National Health and Nutrition Survey (ENSANUT) carried out by the Mexican National Institute of Public Health (INSP). The questionnaire was administered face-to-face to 6,650 Mexican adults 20-59 years old, providing a representative sample at the national, urban/rural, and regional levels.

The second phase consisted of a qualitative multi-case study involving interviews and focus groups with first parents of children 9 years old or younger, and subsequently construction workers. These two groups were chosen for their gatekeeping role regarding SSB consumption for the next generation and their high intake, respectively. These data assisted in interpreting the findings of the quantitative study. This study also expanded

2 As part of the multi-case study data was collected for a third group: indigenous peoples in Chiapas who are believed to have one of the highest soda consumption in the world. Due to time constraints the analysis of the data pertaining of this group will not be included in this dissertation, and will be published separately.
upon the quantitative findings particularly in relation to the ways in which people modified (or did not modify) their purchasing and consumption behaviors after the imposition of the SSB tax and the reasons why. The analysis was informed by the Reasoned Action Approach and the hyperbolic (future) discounting concept from Behavioral Economics Theory.

1.2. Background

Sugar-sweetened beverage consumption in Mexico.

Mexico is the largest consumer of industrialized SSBs in the world, with a per capita consumption of 163 liters per year in 2011 (Euromonitor, 2011), which translates to a little less than half a liter (about 15 ounces) per person per day. Consumption of industrialized SSBs increased greatly in the past decades in Mexico, particularly among children and adult females (Barquera et al., 2008; Stern et al., 2014a). However, mean SSB consumption is still high across age, gender, and income groups.

SSBs are a significant source of added sugars and energy in the Mexican diet: they contribute about 69 percent of added sugars, 45 percent of total sugar intake, and 10 percent of total energy intake (Rivera et al., 2016; Sanchez-Pimienta et al., 2016).

Adolescents 12-19 years and adults get an average of 183 and 181 Kcal/day, respectively, from added sugars in SSBs, while children 1-4 and 5-11 years get 85.2 and

3 The term SSBs broadly includes two categories of beverages: (a) industrialized beverages like carbonated flavored drinks (termed “soda” in this dissertation), juice, energy and sports drinks, and (b) home-made sweetened beverages (most commonly aguas frescas, and coffee).
126 Kcal/day, respectively (Sanchez-Pimienta et al., 2016). Total added sugar intake from SSBs is significantly higher in people in the highest income group (173 Kcal/day) compared to the lowest (150 Kcal/day), and higher in urban areas (173 Kcal/day) compared to rural areas (143 Kcal/day) (Sanchez-Pimienta et al., 2016). Consequently, over 65 percent of the population exceeds the WHO recommendation by consuming more than 10 percent of their calories from added sugars (WHO, 2016; WHO, 2015).

Among all SSBs, soda is the third most consumed (by volume) by Mexican children and adults, and the principal caloric contributor of all (Stern et al., 2014b). While SSB consumption is high, plain water is obviously recommended as the main source of hydration (Rivera et al., 2008), yet, adults only consume about 626 ml/day and children about 438 ml/day (Stern et al., 2014a).

**Population groups of importance in relation to SSB consumption.**

**Parents of children.**

SSB consumption in young Mexican children is a common practice. The ENSANUT 2012 found that SSBs are fed to children with an increasing prevalence from 6 to 42 percent in infancy, up to 63 percent by age 12 months and 78 percent by age 24 months (Deming et al., 2015). Carbonated soft drinks are consumed by 16 percent of infants 12 months old, and 35 percent of infants 24 months old. This is worrying because of the implications that high SSB consumption from an early age may have in the development of childhood obesity. An added concern is the fact that eating behaviors are formed during the first years of life; frequent exposure to sugary beverages from infancy may favor their consumption later in life.
Qualitative studies conducted in Mexico have found that mothers acknowledge that SSBs, particularly carbonated cola drinks, are not good for children. Leatherman and Goodman studied consumption of highly processed foods and beverages in the Yucatan region and found that their informants considered Coca-Cola and other sodas too strong and inappropriate for babies and young children (2005). However, the authors reported that it was not uncommon to see young infants with a Coca-Cola or another SSB (Leatherman & Goodman, 2005). Older Mexican children seem to be aware of the harm of SSB consumption, but only for beverages that appear artificial and industrially produced such those with “chemicals”, “gas”, and “sugar” are fed to children (Théodore et al., 2011). In the context of the SSB tax, and the many other governmental initiatives aimed at curbing SSB consumption, there is anecdotal information about Mexican parents reporting not offering SSBs to children while at the same time not changing their own consumption.

**Construction workers.**

It is believed, although it’s not been formally documented, that one of the professions most associated with SSB drinking in Mexico is construction. This would make sense given that construction workers spend long hours under the sun and might probably look for hydrating, and tasty beverages that boost their energy levels. Anecdotal information published in online newspapers provides evidence of this understudied phenomenon. For example, a journalistic report on sugary beverage consumption in Mexico published in The Guardian opened with the lines “Mexicans love their soda. Construction workers go to their jobs in the early morning clutching giant two-liter or even three-liter bottles.” (Rosenberg, 2015). Some of the reasons that may explain the
high intake of SSBs among this group include convenience, and source of cheap, quick energy. Another plausible explanation is the lack of free or low cost potable water in the places where they work. My personal observations from the times I have visited Mexico and the observations from staff members at the INSP permit attesting that, indeed, construction workers walk to their jobs early in the morning with large bottles of carbonated cola beverages and that they also accompany their meals with these types of beverages.

1.3. Explanatory Factors of the High SSB Consumption in Mexico

The primary reasons why Mexicans consume an excess of SSBs, soda in particular, could be summarized as a combination of factors, including a historical lack of potable water, an unprecedented availability of energy-dense nutrient poor ultra-processed foods and beverages starting in the 1980s, and aggressive marketing campaigns of unhealthy foods and beverages. The gradually increasing presence of sodas in Mexicans’ diets has garnered different meanings, from a rarity only attainable by the rich, to a necessity widely consumed by the poor. The biological predisposition of humans to sweet tastes (Ventura & Mennella, 2011) and the (potential) “addictive” effect of a high sugar consumption (Avena et al., 2012) make these beverages highly liked and “craved.” Thus consumption is both individually valued and contextually reinforced.

Nevertheless, it was not always like this in Mexico.

During the first half of the XIX century, traditional Mexican diets where still intact. People mostly drank water or aguas frescas, a homemade traditional beverage with roots reaching back to the Aztecs, made with ripe fruit, sugar, and water. Coca-Cola
entered the Mexican market in the 1920s; its consumption started to generalize in the 1950s propelled by marketing campaigns. A few decades later, it had become a component of daily cultural life (Blanding, 2010; 156).

One factor that made it very easy for Mexicans to adopt a culture of soda drinking was that there was a generalized access to potable water in many parts of the country. Drinkable water was often costly, and supply was often insufficient, irregular, and of poor quality. This opened a window of opportunity for beverage industries, providing Mexican consumers with a wide range of safe sweetened and unsweetened beverage options (García-Urigüen, 2012). Nowadays, public mistrust of tap water is still widespread and water supply is still often insufficient and irregular.

Soda consumption, Coca-Cola in particular, was further consolidated in the 1980s and 1990s, when these beverages become cheaper and ubiquitously available as a result of the North American Free Trade Agreement (NAFTA) (Clark et al., 2012) as well as comprehensive and targeted marketing campaigns (Hawkes, 2002) portraying Coke as a

4 It is estimated that about 92.5 percent of the population at national level have access to potable water (CONAGUA, 2016). However, in some states such as Guerrero, Oaxaca, Chiapas and Veracruz, up to 25-25 percent of households lack access to piped water (CONAGUA, 2016). A 2010 survey found that 81 percent of those interviewed reported not drinking tap water, both for a lack of access and a lack of trust in its quality (IADB, 2011).

5 The four leading multinational companies in the bottled water market in Mexico, and the world, are Coca-Cola, PepsiCo, Danone and Nestlé.

6 Many houses receive water only intermittently, such as a couple of times a week and only for a few hours. To deal with this issue, most buildings and single houses have water storage containers. Typically, in a given building water empties into a huge cistern underneath the patio. The water is then lifted up with an electric pump from the cistern and into a large plastic water tank located on the roof, which in turn channels water back down into the bathroom, shower and kitchen. If water in the plastic water tank runs out too soon, then families have to buy bottled water.
Mexican product of which consumers should be proud (Blanding, 2010; 156). As a result, between 1999 and 2006, the caloric contribution from beverages in all age groups doubled; this was an unprecedented increase worldwide (Rivera et al., 2008).

There is evidence that globalization — in particular free trade agreements and foreign direct investment — is significantly associated with the worsening of diets of and health of low- and middle-income economies, as well as a significant predictor of obesity in those countries. A study that looked at the particular role of NAFTA in Mexico's food environment found that over the years 1994-2008 the United States exported (directly and indirectly) increasing amounts of corn, soybeans, sugar, snack foods, and meat products (Clark et al., 2012). Hawkes (2005) argues that foreign direct investment (i.e., high penetration of multinational food companies) has been a key driver in this nutrition transition because it has made more ultra-processed foods available to more people. Further, it has lowered prices and opened up new purchasing channels. Using data from 80 countries over the 1997- 2010 period, Stuckler and colleagues (2012) found that low- and middle-income countries that entered free trade agreements with the United States of America had a 63.4 percent higher level of soda consumption per capita than countries that did not. A cross-country analysis using a dataset with information from 79 countries over the 1986-2008 period indicated that the impact of free trade and foreign direct investment is positive and significant in low and middle-income countries (Miljkovic et al., 2015). Yet another econometric study concluded that globalization was substantially and significantly associated with an increase in the individual propensity to be overweight among women (Goryakin et al., 2015).
Thus, these macro-structural processes have made industrialized SSBs a convenient and cheap option. Soda transitioned from a drink that only the privileged could afford, to a sign of conviviality and hospitality that permeates all social strata. Even though humans are predisposed to liking sweet flavors — and sugar may cause this dependence — the high SSB consumption in Mexico can only be explained from the external factors that fabricated a culture of soda drinking that was quickly internalized by the majority of Mexicans, into which the new generations are born and socialized into.

1.4. Health Impact of a High Sugar-Sweetened Beverage Intake

Longitudinal and randomized controlled studies have found significant associations between SSBs and weight gain in adults and children (Malik et al., 2013; Malik et al., 2009; Te Morenga et al., 2013). In a 20-year study involving 120,000 participants, those who increased their SSB consumption by one 12-ounce serving per day gained on average an extra pound or more every 4 years compared with those who did not change their SSB consumption. A follow-up study concluded that children aged 1 ½ years who consumed an additional 12-ounce serving increased their odds of becoming obese by 60 percent (Ludwig et al., 2001). SSB have also been associated with diabetes, metabolic syndrome and heart disease (de Koning et al., 2012; Fung et al., 2009; Malik et al., 2013).

Consumption of sugar, and particularly of SSBs as an important source of fermentable sugars, have been positively associated with an increase in dental caries in children and adults (Moynihan & Kelly, 2014). In a four-year longitudinal study conducted in Finland, adults who drank 1-2 and 3 or more SSBs every day had 31 percent (Incidence Rate Ratio: 1.31; 95%CI: 1.02–1.67) and 33 percent (IRR: 1.33;
95%CI; 1.03–1.72) greater net increments of decayed, missing and filled teeth than those not drinking any SSB (Bernabe et al., 2014). This suggests a dose-response relationship between frequency of SSB intake and dental caries increments in adults.

The prevalence of overweight and obesity in Mexico stands at about 73 percent in adults and 36 percent in children (Shamah-Ley et al., 2017). In 2006, the type 2 diabetes prevalence reached 14 percent of the adult population — the highest among the Organization for Economic Co-operation and Development (OECD) member countries (OECD, 2015) — again, this is the number one general cause of mortality in Mexico with 14 percent of total deaths (Barquera et al., 2013).

1.5. Reactions to the Obesity and Type 2 Diabetes Epidemic in Mexico

In response to the alarming obesity epidemic, in 2010 the Mexican Public Health Secretariat, with support from the INSP and other scholars developed the National Agreement for Healthy Nutrition: A Strategy to Address Overweight and Obesity7 (in Spanish: Acuerdo Nacional para la Salud Alimentaria: Estrategia contra el Sobrepeso y la Obesidad) (Secretaría de Salud, 2010). Some objectives introduced in this report required regulation of the food industry to achieve healthy food alternatives, others required the government to develop nutrition education programs to promote behavioral changes (Barquera et al., 2010). The National Agreement incorporated a multi-sector

7 Developed under Felipe Calderón’s government.
approach and promoted a private-sector involvement by means of self-regulation. Nevertheless, self-regulation of food companies did not produce the expected results.

In 2013, with a change in government, the National Strategy for the Prevention and Control of Overweight, Obesity, and Diabetes (In Spanish: Estrategia Nacional para la Prevención y el Control del Sobrepeso, Obesidad y Diabetes) was created. The third major area of the National Strategy concerns regulatory standards and fiscal policy. The regulatory measures passed to date include: the regulation of food and beverages in the school system (Secretaría de Educación Pública & Secretaría de Salud, 2010, 2014), the implementation of user-friendly front-of-package labeling system, 2014 (Secretaría de Gobernación, 2014), the regulation of advertisement of foods and non-alcoholic beverages during children’s television viewing time (Secretaría de Salud, 2014), and taxation of energy-dense nutrient-poor foods and of SSBs (Secretaría de Gobernación, 2013); all effective 2014.

1.6. The Mexican Sugar-Sweetened Beverage Tax

The proposal of a special excise to be levied on industrialized SSBs emerged from the joint effort of national institutions, academia, civil society, the federal government, Congress, and international organizations. The purpose of the tax was framed in order to reduce soda consumption in the poorest socio-economic quintile of the population (Pan American Health Organization, 2015). Econometric studies in Mexico

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8 Including carbonated SSBs, juice, energy drinks, sports drinks, powered sachets to prepare beverages with the addition of water, etc. and excluding sugar-sweetened milk.
have shown that demand for industrialized SSBs in Mexico was elastic (Colchero et al., 2015). The public health community advocated for a proposed 20 percent tax (2-peso-per-liter), estimated to reduce about 2 pounds (of weight) per capita and avert 800-1,275 cases of type 2 diabetes by 2030 (Barrientos-Gutierrez et al., 2017). A 10 percent tax (2-peso-per-liter) was estimated to produce half that reduction (Barrientos-Gutierrez et al., 2017).

The tax proposal was accompanied by a major mass communication strategy carried out by civil society organizations. Members of civil society organizations and national research institutes alike took part through radio spots, television appearances, and print media (PAHO, 2015). All of these attracted a considerable amount of media attention, creating a national conversation on SSBs thereby increasing support for the tax.

A nationwide 1-peso-per-liter\(^9\) (equivalent to a 10 percent increase\(^{10}\)) excise tax on industrialized SSBs — caloric carbonated SSBs, juices, energy and sports beverages, as well as concentrates and powder (except flavored-milk) — was levied on manufacturers and effective from January 1, 2014 (Secretaría de Gobernación, 2013).

**Evaluations of the SSB tax.**

Two years after implementation of the tax, purchases decreased 9.7 on average, yielding an average reduction of 7.6 percent over the first two years (Colchero et al.,

\(^9\) When implemented (January 2014) the value of the tax (MXN 1, per liter) was about 8 USD cents per 33.8 fluid ounces of industrialized SSBs.

\(^{10}\) The proposed 20 percent rate was not achieved.
During the first year, purchases of untaxed beverages (including bottled water) had increased by 4 percent (Colchero et al., 2016). The results suggest that a reduction in purchases of SSBs may have translated in a reduction of SSB consumption and therefore of caloric intake, but this has not yet been proven.

Nevertheless, these quantitative evaluations of the SSB tax are limited in their ability to draw conclusions about the working of the tax for several reasons.

First, researchers used cross-sectional data. Thus, causality, among other aspects, cannot not be established because there were many other concurrent regulatory measures that might have affected demand and purchases of SSBs.

Second, the decrease in purchases and consumption may not be fully explained by the (economic) elastic nature of SSBs (Colchero et al., 2016), but may be the result of an increased awareness of their detrimental health effects. One study conducted prior to the implementation of the tax had already found declines in sales of SSBs in Mexico which, the authors hypothesize, may have been due to “[a very] visible and well-funded media campaign linking [SSBs] with diabetes” (Popkin & Hawkes, 2016). There exists evidence from other countries that junk food and SSB taxes contribute to enhancing people’s awareness about the negative health consequences of unhealthy foods (WHO, 2016). In Hungary, a high percentage of consumers (22–38 percent, depending on food categories) reported having reduced their intake of unhealthy foods due to an increased health consciousness after the introduction of a junk food tax in 2011 (WHO, 2016). In the city of Berkeley (United States of America), decreases in SSB consumption have been registered. However, researchers believe that the pro-tax media campaign and increased health awareness could party explain behavioral changes (Falbe et al., 2016).
And third, there were other measures implemented around the same time by the Mexican government that may have had an effect on SSB consumption, including the regulation of unhealthy food and beverages in schools (Secretaría de Educación Pública & Secretaría de Salud, 2010, 2014), and the regulation of advertisement of foods and non-alcoholic beverages during children’s television viewing time (Secretaría de Salud, 2014). On the other hand, an increase in marketing efforts by the carbonated soft drink industry in the period after the tax (Velasco et al., 2015) might have attenuated its effect. Lastly, these studies use data of store purchases, but do not capture purchases of taxed beverages out of stores, and they do not use actual data on dietary intake. Therefore, they cannot explain if people shifted to beverages sold out of stores or sweetened or unsweetened beverages prepared at home such as aguas frescas.

**Potential awareness raising effect of the SSB tax.**

There is emerging evidence that junk food taxes and the discussions and debates that surround them may contribute to enhancing people’s awareness about the negative health consequences of unhealthy foods and beverages, thereby triggering them to choose healthier options (WHO, 2016). In economic theory, this is known as the “signaling effect” of tax policy, which poses that in addition to the tasks of raising public funds and correcting external effects, tax policies signal missing information to individuals about the effect of their consumption of the taxed product (Barigozzi & Villeneuve, 2006).

In the Mexican case, Donaldson (2015) noted that one of the effects of the SSB tax discussion in Mexico was “increasing awareness of the harms of SSBs among the Mexican population (Alianza por la Salud Alimentaria, 2014), which was a beneficial
effect of the advocacy campaigns and political debate surrounding the tax.” For example, by mid-2014, 98% of respondents in a national poll believed that SSB consumption increases obesity risk compared to 90% of respondents in mid-2013 (Alianza por la Salud Alimentaria, 2014).

Likewise, there is evidence from other countries. For example, in Hungary, a high percentage of consumers (22–38 percent, depending on food categories) reported having reduced their intake of unhealthy foods due to an increased health consciousness after the introduction of a junk food tax in 2011 (WHO, 2016). In the city of Berkeley (United States of America), decreases in consumption have been registered. However, they are being attributed to the pro-tax media campaign and not necessarily to the price increase (Falbe et al., 2016).

In addition to “signaling missing information” to consumers, SSB taxes may nudge people towards healthier choices by “countering the immediate benefits of enjoying a [SSB] with the immediate costs of the [SSB] tax.” (Abdukadirov, 2016). (This is further discussed in the Behavioral economics section below).

1.7. **Rationale**

The current evaluations of the Mexican SSB tax do not explain if this fiscal policy potentially exerted its intended effect via other mechanisms — e.g. increasing awareness of negative health outcomes—, and how people reacted and adapted to the price increase. As stated above, there is evidence from other countries that food taxes contribute to enhancing people’s awareness about the health effects of unhealthy foods. Nevertheless, this phenomenon has not been formally studied to date.
In the case of Mexico, changes in consumer behavior might not be totally explained by the price increase resulting from the SSB tax, but be also mediated by changes in psychosocial determinants of SSB consumption.

Quantitative evaluations of the SSB tax using purchase and dietary intake data are extremely important to document the extent to which the tax is having an effect on the goal behavior. Nevertheless, the use of a sole quantitative approach that only looks at behavioral outcomes is reductionist as it ignores the reality of the abstract system from which the elements to consider arise (Morin, 2009). The object under study can be considered a complex phenomenon, because perception and consumption of SSBs are closely linked to the contexts and social structures that circumscribe it. In general, we cannot fully comprehend dietary practices, which have very strong socio-cultural ties, without studying the context in which they take place and their historical dimension. In the words of Edgar Morin, a French sociologist and philosopher, “we cannot isolate an object of study from its context, its background, and its evolution” (Morin, 2009).

In order to have a deeper understanding of the workings of the tax, it was important to understand Mexicans’ experience of it and their “relationship” with SSBs before and after its implementation. Giving a voice to the people that might be the most affected by this measure — through the use of qualitative techniques — allowed us to approximate their subjectivity, which serves as a reference point for the decisions they make. This in turn provides the research team an understanding of their behavior, crucial to evaluating the effectiveness of the SSB tax in this context.

In short, there was a lack of knowledge about Mexicans’ beliefs, attitudes, and social norms in relation to SSBs in the context of the SSB tax, and the many other
interventions aimed at curbing SSB intake. Furthermore, not much was known about the ways people changed their purchasing and consumption behaviors in this context and what motivated them to do so. The complexity of this object of inquiry calls for a combination of methods of study and a multidimensional intellectual approach to understand it.

1.8. Purpose

The purpose of this study was to explore-via a nationally representative sample of the adult Mexican population and two population groups (construction workers and parents of children 9 years or younger)- the beliefs, attitudes, and behaviors regarding SSBs in the context of the SSB tax. A secondary purpose was to explore, with the latter two groups, why and how behaviors have been modified.

The study employed a sequential explanatory mixed methods design, characterized by the collection and analysis of quantitative data followed by the collection and analysis of qualitative data. The theoretical framework explored how personal preferences, attitudes, cultural contexts, and symbolic meanings intertwine with health beliefs and economic policy to shape SSB practices.

1.9. Research Questions

To carry out this purpose, the following research questions were addressed:

Quantitative study.
1. Are Mexican adults aware of the SSB tax? What is their opinion about the effectiveness of the SSB tax in decreasing purchases of taxed SSB? Do awareness of and opinion about the SSB tax differ by socio-demographic characteristics?

2. Are awareness and opinion about the effectiveness of the SSB tax, and psychosocial and environmental factors of SSB consumption associated with a reported decrease in SSB consumption?

3. Are awareness and opinion about the effectiveness of the SSB tax and psychosocial and environmental factors of SSB consumption, associated with current consumption of taxed SSB?

**Qualitative study.**

1. What has been the participants’ consumption of taxed SSBs patterns from the time before the SSB tax to the present?
   a. What are/were the most commonly consumed taxed SSBs? How frequently are/were they consumed?
   b. What are/were the occasions (celebrations, work break, etc.) locations (home, work, bar, etc.) and time (breakfast, lunch, etc.) of consumption?
   c. What foods and meals are/were associated with consumption of taxed SSBs?
   d. Who buys/bought taxed SSBs (at work or at home)?
   e. How much money do/did they usually spend/spent on taxed SSBs?

2. How do participants describe their motivation (or lack thereof) for consuming taxed SSBs?
   a. What are their beliefs, attitudes, self-identity, perceived behavioral control (and barriers) in relation to different taxed SSBs (e.g., soda, fruit juice)?
b. What are the social norms in relation to taxed SSBs derived from social and family situations and cultural traditions?

c. How do they report their reasons for continuing drinking SSBs even when they believe taxed SSBs are not good for their health?

3. In what ways, if any, do participants intend to modify their consumption of taxed SSBs? What elements facilitate or impede their ability to change?

   a. Have participants considered modifying their consumption of taxed SSBs? How?

   b. How do they describe the factors that would motivate and enable them to drink fewer taxed SSBs?

   c. How do participants describe the factors that impede them to drink fewer taxed SSBs?

4. What has been the participants’ experience of the SSB tax and of other concurrent initiatives aimed at decreasing SSB consumption?

   a. What have they heard about the SSB tax? What do they understand as its main purpose? What important do they attach to the purpose behind the tax?

   b. Have they noticed a price increase? On which products?

   c. What educational campaigns regarding SSBs have they heard about/been exposed to in the past three years? What’s their opinion about them?

5. In what ways, if any, have participants’ consumption of SSBs reportedly changed in the context of the SSB tax and why?

   a. In what ways, if any, have participants modified their consumption of SSBs since the implementation of the tax?
b. How do participants describe the most important reasons, if any, for having modified consumption of SSBs since the implementation of the tax? What made it easy or difficult to do so?

6. How do participants describe the elements that may have influenced their beliefs and attitudes toward SSBs since the implementation of the tax?

a. In what ways, if any, did the debate about the tax and the price increase influence their beliefs and attitudes about SSBs?

b. How do they report the effect that other measures aimed at decreasing SSBs may have had on their views about SSBs?

c. Where do they get information about the effects of SSBs on health? Do they pay attention/act upon to this information?

Questions only for parents

7. What are the beverages children consume most frequently? Why?

a. What are the parental practices to either encourage or restrict children’s consumption of taxed SSBs? What are other people’s practices toward their children?

b. How do parents/caretakers describe the difference between their own consumption of taxed SSBs and their children’s consumption of the same beverages? OR Is there a difference? What are the reasons?

8. Has the children’s beverage consumption changed since the application of the tax? And Why?

a. In what ways, if any, has the consumption of SSBs at home changed differentially between adults and children?
Appendix II shows the link of the research questions with the theoretical framework.

1.10. Significance

It is critical to examine the role of socially significant elements in dietary practices and to understand their implications for the development of programs that promote healthy eating. Developing programs of this nature must be firmly grounded in empirical research.

To my knowledge, this was the first study of its kind. Thus, it was hoped that the development of an innovative study would result in a meaningful piece of research that would contribute to the existing literature, and inform those involved in promoting healthy eating habits, particularly in countries undergoing a nutrition transition.

The possibility that a SSB tax would influence behavior through increasing awareness, rather than only through its direct impacts on price, was thereby considered a particularly important finding and an excellent contribution to the literature.

1.11. The Researcher’s Positioning and Reflexivity in the Qualitative Study

It is critical to pay attention to positionality, reflexivity, the production of knowledge and the power relations that are inherent in research processes in order to undertake ethical research [...] (Sultana, 2007)

My background, particularly my culinary culture, training, and past and current jobs, influences my perception of what “good food” and healthy eating are and how
dietary practices are modified. These perceptions affect my view of other people’s dietary practices, and they have affected the way in which I use language, posed questions, and construct the world of the groups I have studied. At the same time, my background has guided my research interests as well as my choice of methodology.

**The Self.**

I am a Spanish woman in my early thirties. I come from a middle-class family. I am white, but some of my physical features can be mistaken for South American. Simultaneously, I have a strong Spanish accent that people can pick up quickly, and I can come across as a highly educated European woman. Spaniards are very well regarded in most Latin American countries, including Mexico; thus, before starting data collection, I believed that this would put me in a position of unequal (higher) power while conducting research in Mexico among low-income groups.

The Mediterranean diet and eating in company are essential pieces of my culinary culture. From early on, I learned to respect family culinary traditions, to minimize intake of unhealthy foods, and to shop and cook quality foods. I have never consumed sugary beverages frequently, nor has anybody in my family or circle of close friends. Moreover, I have lived in Italy — a country that keeps ultra-processed foods at bay and takes her culinary culture more seriously than any other I have experienced firsthand. There, I developed a deeper appreciation of the paramount importance of local food and culture for health and general well-being.
Self in relation to others and the system.

The science of nutrition thrills me, particularly the intersection among food, family and culture. I am a public health nutritionist and I have worked for the United Nations in food education and consumer awareness projects since 2011. I believe that parents are responsible for helping children develop a love for fresh and nutritious food, and for developing skills and habits that ensure they feed themselves properly throughout life. I believe that it is possible for people to feed themselves adequately if they possess those skills, and if they have the economic and physical access to healthy foods. However, the responsibility does not solely lie on individuals. I am acutely aware of the tactics used by the food industry to lure people into consuming high-profit products of low nutritional quality (like soda), and, in particular, the advertising strategies used to sell these products to vulnerable groups such as children and low-income groups. Thus, I believe that governments have the responsibility of ensuring their citizens’ Right to Adequate Food by making nutritious, safe food available through the regulation of the food system, including taxes on junk foods and beverages to discourage consumption.

This Study.

The object of the qualitative study was to understand the experience of the tax from the point of view Mexicans belonging to three distinct groups broadly defined as construction workers, parents of children 9 years old (or younger) and indigenous peoples from Chiapas. I wanted to know what had been their experience of the SSB tax and their “relationship” with sugary-beverages before and after the tax. Part of the challenge was to set aside my critical views and judgments and to listen in an unbiased way.
Another general challenge for me in undertaking research in Mexico was that very often I found myself as a “stranger” and an “outsider” in those contexts. I had never lived there before and I was not that familiar with Mexican culture and subcultures. Also, I did not have personal familiarity or experience with the topic under study, besides that acquired during the review of the literature and discussions with Mexican researchers. Thus, I lacked direct experience with the issue and I understood it might be challenging for me to fully comprehend what it is like to be in certain situations. This initially affected my ability to conceptualize the research and interview questions that were relevant to participants’ experiences. Nevertheless, I have lived, worked and conducted research in several middle and low-income countries, and I had developed an ability to listen and work with people from varying socioeconomic levels. I believed this ultimately worked to my advantage.

Furthermore, being cognizant of these challenges and to compensate for my shortcomings, the INSP hired a local male researcher — with a PhD in Anthropology and extensive experience in conducting interviews — to help me with data collection and analysis. I consulted this co-researcher and compared my analyses to his to ensure that they were a trustworthy representation of themes in their narratives rather than a reflection of my biases. In addition, the study was closely developed and supervised by a seasoned researcher from the Mexican INSP, who helped me become more aware of some of my biases and to address them whenever possible.
1.12. Terminology Note and Terms

Terminology note.

This study concerns the consumption and perceptions of “beverages with sugar added,” which includes industrialized beverages (such as soda). The aforementioned are subject to the Mexican SSB tax, while home-made beverages (e.g., aguas frescas) not. While the main interest of this study is to explore if the consumption of taxed beverages has decreased and why, we also sought to understand if they had been replaced with other beverages such as plain water or aguas frescas. Therefore, the universe of beverages contemplated in this study included:

1. Water (plain): tap, or bottled
2. Home-made aguas frescas,
3. Home-made (sweetened and unsweetened) coffee and tea,
4. (Taxed) industrialized carbonated SSBs (soda),
5. Other (taxed) industrialized beverages: juice, flavored water, sports and energy drinks, and powered sachets,
6. Other beverages such as natural juice, milk, flavored milk, and atoles with added sugar.

It is important to remember that of all beverages mentioned here, soda is consumed in higher quantities and contributes the highest amount of calories to Mexicans’ diets (Stern et al., 2014a). Coca-Cola in particular is the favorite and the most frequently consumed. Therefore, in this study and in this dissertation, when the term SSBs is used, it often refers to carbonated industrialized SSBs, and to Coca-Cola in
particular. Where it was necessary to make the distinction between the different types of beverages (e.g., *aguas frescas*, juice), I referred to those beverages by their name. Moreover, the perceptions about the negative health impact of SSBs change depending on the beverage, thus, perceptions (and behaviors, social norms, etc.) where explored separately for the different types of beverages.

In addition, it should be noted that the term “sugar-sweetened beverages” (*bebidas endulzadas con azúcar*) is of a technical/scientific nature and not of everyday use in Mexico. Thus, in the survey questions and the qualitative study the study we used common expressions such as “sweet beverages” (*bebidas dulces*) or “sweetened beverages” (*bebidas endulzadas*) to refer to these types of beverages. We used the expression “soda” (refresco) to refer to carbonated industrialized SSBs.

**List of important terms used in this dissertation.**

**Sugar-sweetened beverages** (SSBs): also known as sugary beverages or sweet drinks, are beverages (carbonated or non-carbonated) with sugar or high-fructose corn syrup added. The kinds of beverages included in the definition vary across the literature, but the way the term will be defined in this dissertation includes sodas, sweetened juices, fruit drinks, fruit ades, teas and coffees, sports drinks, energy drinks, flavored waters, vitamin waters and tonic water. The term does typically not include milk and flavored milk.

**Carbonated SSBs:** are industrialized beverages consisting of carbonated water, a sweetener (typically sugar or high-fructose corn syrup, or a sugar substitute in the case of non-caloric options) and natural or artificial flavoring. They may also contain caffeine,
colorings, preservatives and other ingredients. This is the most consumed type of beverage in Mexico. All caloric carbonated SSBs are subject to the Mexican tax (the artificially sweetened versions like Light Coke are not). Carbonated SSBs are also referred to as soft drinks, fizzy drinks, seltzer, soda, or pop. In this dissertation I will most use the term soda to refer to this types of beverages and as an equivalent of the Mexican word “refresco.”

**Aguas frescas**: are popular Mexican drinks made with fruits, flowers, cereals, or seeds blended with sugar and water. Many families make them at home and they are also sold in street food stands, and in some bodegas and restaurants. They are also referred to as *aguas de sabor* (“flavored waters”).

**Water**: plain tap or bottled water. In Mexico people refer to this type of water as “natural” or “pure” to distinguish it from the commonly consumed *aguas frescas*.

**Ultra-processed food products and beverages**: are industrially produced food and beverage products of low nutritional value. They are made entirely or mostly from substances extracted from foods (oils, fats, sugar, starch, and proteins), and include food substances not used in culinary preparations, such as flavors, colors, sweeteners, and other additives used to imitate sensorial qualities of raw or minimally processed foods and their culinary preparations or to disguise undesirable qualities of the final product (Ministry of Health of Brazil, 2014). Ultra-processed foods/beverages are also known as highly-processed products, unhealthy foods or junk food. Other names used include discretionary non-essential foods/beverages and energy-dense and nutrient-poor products. Examples of these products include packaged snacks, industrialized SSBs, and instant noodles.
Sales taxes: apply to a large variety of items and services, typically based on the price of the item sold (Institute of Taxation and Economic Policy, 2011). In most cases, they are taken at the register (point of purchase); therefore, they are less “salient” (notable to consumers). Both excise and sales taxes are known as “consumption taxes.”

Excise taxes: are sales taxes that apply to particular products, such as tobacco, alcohol, and gas. They are usually levied at the moment of manufacture, rather than at sale. They are imposed on all products in a similar industry based on special regulation imposed by the state to raise revenue for a related purpose (to the industry taxes). Unlike general sales taxes, excise taxes are usually applied on a per-unit basis instead of as a percentage of the purchase price (Institute of Taxation and Economic Policy, 2011). For instance, the Mexican SSB tax is calculated in cents per liter. Excise taxes are included in the posted price: thus they are considered to be more “salient” (notable to consumers). The Mexican SSB tax is an example of an excise tax, as are most other SSB taxes imposed with a public health aim (e.g., the Berkeley tax).

Elasticity: in economic terms, elasticity refers to the responsiveness of one economic variable, such as quantity demanded, to a change in another variable, such as price.

Price elasticity of demand or “own-price” elasticity: measures the responsiveness of the quantity demanded to a change in price. “It is the ratio of the percentage change in quantity demanded to the percentage change in price. This should be negative, because the demand for certain products normally decreases as its price increases. If the own-price elasticity is greater than the absolute value of 1, the demand is called “elastic.” If it is less than 1, demand is “inelastic.” (Cabrera Escobar et al., 2013).
Cross elasticity of demand or “cross-price” elasticity: measures the change in the quantity demanded of one good in response to a change in the price of another good. “It can be either positive or negative. Positive cross-price elasticity indicates that an increase in the price of X causes the demand for Y to rise. This implies that the goods are substitutes. A negative cross-price elasticity indicates that an increase in the price of X causes a decrease in the demand for Y, which implies that the goods are complements” (Cabrera Escobé et al., 2013).

1.13. References


Guidelines in nutritional labeling and nutrimental distinctive [ACUERDO por el que se emiten los Lineamientos a que se refiere el artículo 25 del Reglamento de Control Sanitario de Productos y Servicios que deberán observar los productores de alimentos y bebidas no alcohólicas preenvasadas para efectos de la información que deberán ostentar en el área frontal de exhibición, así como los criterios y las características para la obtención y uso del distintivo nutrimental a que se refiere el artículo 25 Bis del Reglamento de Control Sanitario de Productos y Servicios.], (2014).


Secretaría de Salud. (2014). *Guidelines presenting the nutritional and advertising criteria to be observed by food and non-alcoholic beverage advertisers to advertise their products on open and restricted television, and movie theaters, in accordance with the provisions in articles 22 Bis, 79, section X and 86, section VI, of the Regulation of the General Health Law in relation*


Chapter 2: Literature Review

This chapter presents an analytic summary of the literature reviewed to inform this study. The chapter is divided into two topics: (a) SSBs and taxes and (b) theoretical frameworks.

Topic One discusses the history of SSB beverage consumption in Mexico — including the recent globalization processes that contributed to making Mexico one of the highest consumers of carbonated SSBs (soda) in the world – this includes the evidence in regard SSB consumption and chronic disease, and the Mexican government’s response to the nation’s obesity and diabetes epidemics. It also examines the processes that lead to the proposal and approval of the SSB tax and its subsequent evaluations, as well as the potential awareness raising effect that the tax (and debates that surrounded it) may have had. Last, I review some lessons drawn from multifaceted tobacco control initiatives as comparison that could be useful for public health advocates and policy makers considering passing SSB taxes.

Topic Two offers a review of different theories used for the framing the quantitative and qualitative studies and for data analysis and interpretation. These include the Reasoned Action Approach (an extension of the Theory of Planned Behavior), and the Hyperbolic Discounting concept from Behavioral Economics Theory.
Topic One: Sugar-sweetened beverages and taxes

2.1. Brief History of SSB Consumption in Mexico

The main three beverages (by volume) consumed by Mexican children and adults are water, *aguas frescas*, and caloric soda; and the three beverages that provide the highest caloric contribution are caloric soda, *aguas frescas*, and sweetened coffee (Stern et al., 2014b). Experts recommend that plain water should be the main source of hydration for the Mexican population (Rivera et al., 2008), yet, consumption of water is a merely $626 \pm 17$ ml/day for adults and $438 \pm 10$ ml/day for children (Stern et al., 2014b). Between 1999 and 2006 the caloric contribution from beverages in all age groups doubled, this was an unprecedented increase worldwide (Rivera et al., 2008).

*Aguas frescas.*

*Aguas frescas* (“cool waters”), also known as *aguas de sabor* (“flavored waters”) are a Mexican traditional drink. They are made with water, sugar, ripe fruit, and/or seeds and flowers. Some trace their history all the way back to pre-Hispanic times (Gerson, 2011; Scattergood, 2008). For example, it has been said when Aztec farmers paddled their canoes into Tenochtitlán (now Mexico City), they would mash ripe fruit and mix it with water to stay refreshed.

*Aguas frescas* typically do not have a lot of sugar because they are meant to be refreshing thirst-quenchers and not sweet drinks. To keep the drinks cool, they were...
traditionally stored in clay pots and placed in crates of damp earth. Nowadays, it is common to store them in vitroleros\textsuperscript{11} and to add some ice. At lunchtime, it is common to find aguas frescas in most Mexican homes, as well as in fondas\textsuperscript{12}, taquerías, street food stands, and restaurants. Nevertheless, they have been replaced to a certain extent by bottled beverages, such as soda.

**Water consumption.**

The low consumption of plain water in the Mexican population may be partly explained by the historical lack of access to potable water in many parts of the country. The country’s population more than doubled, from 28 million to over 70 million, between the 1950s and 1980s, but water infrastructure in cities could not keep up with demand. Moreover, there was not adequate regulation of industry waste into freshwater basins; many old pipes and water tanks\textsuperscript{13} were made from materials that made could add harmful substances to the water. Further, maintenance of water infrastructure was often deficient. This lead public health authorities to stress people to boil/purify water used for human consumption in order to avoid water-borne diseases, which resulted in a generalized mistrust of tap water.

\textsuperscript{11} A *vitrolero* is a large, cylindrical shaped, clear container to store beverages (typically *aguas frescas*). It is made of plastic or glass, and they can be of different sizes.

\textsuperscript{12} A *fonda* is a small family-own restaurant serving *comidas corridas* (set daily menu).

\textsuperscript{13} Some low-income building still use water tanks made of asbestos that was prohibited since the 1970s.
These multiple issues in relation to Mexico’s water situation opened a window of opportunity for beverage industries\textsuperscript{14} which started to boom in the 1950s (García-Urigüen, 2012), providing Mexican consumers with a wide range of safe sweetened and unsweetened beverage options.

The past few decades have seen a rapid increase in access to the piped water supply. According to the \textit{Water Statistics in Mexico} report, in 2015, 92.5 percent of the population at national level had access to potable water (CONAGUA, 2016); although in some states, such as Guerrero, Oaxaca, Chiapas and Veracruz, a considerable number of households (between 25-35 percent) lack access to piped water. Nevertheless, between five (4 percent) and nine million (7.5 percent) Mexicans still lack access to potable water (estimates from the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation and the National Water Commission [CONAGUA], respectively) (Agua.org.mx, 2017).

In spite of this progress, public mistrust of tap water is still widespread and even nowadays water supply is often insufficient and irregular\textsuperscript{15}. In a 2010 survey conducted by the Inter-American Development Bank in nine large cities ($n = 1,300$ low income

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\textsuperscript{14} The four leading multinational companies in the bottled water market in Mexico, and the world, are Coca-Cola, PepsiCo, Danone and Nestlé.

\textsuperscript{15} Many houses receive water only intermittently, such as a couple of times a week and only for a few hours. To deal with this issue, most buildings and single houses have water storage containers. Typically, in a given building water empties into a huge cistern underneath the patio. The water is then lifted up with an electric pump from the cistern and into a large plastic water tank located on the roof, which in turn channels water back down into the bathroom, shower and kitchen. If water in the plastic water tank runs out too soon, then families have to buy bottled water.
households, all with in-home piped water), 81 percent of those interviewed reported that they do not drink tap water, both for a lack of access and a lack of trust in its quality (IADB, 2011). Therefore, a considerable part of the population, especially the medium and high-income classes, only drink bottled water. Thus, the business of bottled water in Mexico is one of the largest in the world (only second after the United States of America) (IADB, 2011).

**Early presence of Coca-Cola in the Mexican Market and development of a culture of Coca-Cola drinking.**

Sodas (Coca-Cola in particular) appeared in the Mexican market in 1926, first a rarity only attainable by high classes. Coca-Cola become relatively regularly consumed in Mexico in the 1950s, driven by marketing and promotional campaigns (Blanding, 2010). Yet, only a few decades later, Coca-Cola had become ubiquitously available. Thus soda (and its associated meanings) percolated downward through Mexican society reaching the lower classes, establishing itself as a component of daily cultural life. A study in the 1970s found that white bread and soda (Coca-Cola) were the food items Mexican peasants bought “as soon as they could afford them—and sometimes even when they couldn’t.” (Blanding, 2010). “It’s not uncommon, doctors who work in rural villages report, for a family to sell the few eggs and chickens it raises to buy Coke for the father while the children waste away for protein” wrote Richard Barnet and Ronald Muller in a 1974 book looking critically at the growing power of multinational corporations (Global Reach: The Power of the Multinational Corporations by R.J. Barnet, R.E. Müller, reported in Blanding, 2010, page 156).
Consumption of carbonated SSBs, in particular Coca-Cola, was further consolidated in the 1980s and 1990s, when these beverages were made more available and accessible (further described in the following section), to the point of flooding the whole country. This phenomenon is what Oliver de Schutter, the United Nations’ envoy on the Right to Food, referred to as the “Cocacola-nization” of Mexicans’ diets, as he noted that “[In Mexico] it’s easier to find Coca-Cola than it is to find medical services, clean water or good health” (UN, 2011). In addition, Coca-Cola consumption became entrenched in Mexican culture as a result of a wider availability and aggressive marketing campaigns portraying Coke as a Mexican product of which consumers should be proud (Blanding, 2010).

Coca-Cola has long been, and still is, one of the leading carbonated SSB companies in Mexico. Coca-Cola FEMSA, the local Coca-Cola bottler, doubled its revenue between 2008 and 2013 (Business Monitor International Research, 2014b); together with PepsiCo, and Cadbury Schweppes, Coca-Cola accounts for 90 percent of the Mexican market (Business Monitor International Research, 2014a).

2.2. Globalization Processes and the Nutrition Transition in Mexico

Starting in the 1980s, Mexican ways of life were deeply transformed by globalization processes that engulfed most of the developing world (Popkin et al., 2012). Mexico experienced a dramatic modification of its traditional food culture\(^\text{16}\), as it was

\(^{16}\) The traditional Mexican cuisine was inscribed in 2010 in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity.
affected by the so-called *nutrition transition*, a scourge to many lower and middle-income economies.

This nutrition transition is characterized by a profound and relatively fast change in diets and physical activity patterns in a relatively short period of time. It is driven by industrialization, population growth, rising income, urbanization and globalization processes that have taken place in the last two centuries, but most markedly in the past decades (GLOPAN2016). These phenomena have profoundly transformed ways of living, working and eating. To illustrate, people migrated in mass from rural to urban settings, and shifted to jobs that are more sedentary. Technological innovations allowed for a tremendous increase in agricultural output and the production of increasingly sophisticated ultra-processed food products at lower prices. According to Stuckler and colleagues (2012), ultra-processed products:

“are highly profitable because of their low production cost, long shelf-life, and high retail value. These market characteristics create perverse incentives for industries to market and sell more of these commodities. For example, Coca-Cola’s net profit margins, for example, are about one-quarter of the retail price, making soft drink production, alongside tobacco production, among the most profitable industrial activities in the world”.

Further, demand for ultra-processed products has been spurred by well-funded, aggressive, comprehensive marketing. Worldwide, the marketing techniques employed by multinational food corporations are tailored to local communities, tend to target young people, and aim to create demand by changing traditional drinking and eating habits (Hawkes, 2002). In Mexico, a large number of advertisements target children and youth, in order to “attempt to create brand familiarity and loyalty from early on, to later in life
appeal to nostalgia for happy times” (García-Calderón, 2011). Marketing expenditure of ultra-processed foods in Mexico is the highest in the country (García-Calderón, 2011).

Modern food distribution networks (supermarkets, convenience stores) (Popkin et al., 2012) and the increased purchasing power of the growing populations (Hawkes, 2005), have also contributed to increasing people’s access to a vast array of products.

The result has been that traditional diets, based on seasonal, fresh and whole foods, were gradually replaced by convenient, ready-to-eat, ultra-processed foods17 and beverages that are high in fat, sugar and/or salt. At the early stages of the nutrition transition, only people with a high socioeconomic status can afford ultra-processed products. However, as prices become cheaper, ultra-processed foods become a substantial contributor to the diets of low-income groups. Mexico is thus in an intermediate stage in the nutrition transition.

Using data from the late 1980s and 1990s, experts noted that the dietary intake in Mexico was shifting towards higher fat and refined carbohydrate intake, including soda (Rivera et al., 2002). According to the 2006 National Health and Nutrition Survey (ENSANUT), SSBs were consumed more frequently than milk, eggs, meat, fruits, and

17 Ultra-processed foods are industrially produced food and beverage products—such as packaged snacks, SSBs, and instant noodles—of low nutritional value. They are made entirely or mostly from substances extracted from foods (oils, fats, sugar, starch, and proteins), and include food substances not used in culinary preparations, such as flavors, colors, sweeteners, and other additives used to imitate sensorial qualities of raw or minimally processed foods and their culinary preparations or to disguise undesirable qualities of the final product (Ministry of Health of Brazil, 2014).
vegetables. As reported in the ENSANUT 2012, ultra-processed foods\textsuperscript{18} provided about 26 percent of the daily caloric intake (Rivera et al., 2016).

Concomitantly with the introduction of more ultra-processed foods and beverages into the Mexican food market, the prevalence of obesity, type 2 diabetes, and cardiometabolic diseases soared between the late 1980s and 2000s\textsuperscript{19} (Barquera et al., 2007; Rivera et al., 2002; Rivera et al., 2004). The application of the NAFTA (signed on January 1st, 1994), which brought about deep tariffs cuts resulting in large imports of ultra-processed foods, has been credited as being partly responsible for this rise in the rates of obesity and type 2 diabetes.

A growing number of studies are finding that the diets (and health) of low- and middle-income economies are damaged as a result of free-trade agreements and direct foreign investment. A study that examined the particular role of NAFTA in Mexico's food environment found that over the years 1994-2008, the United States exported (directly and indirectly) increasing amounts of corn, soybeans, sugar, snack foods, and meat products (Clark et al., 2012). Thus the aforementioned attribution is, to a certain degree, correlated with the effects of such agreements.

Hawkes (2005) argues that foreign direct investment (i.e., high penetration of multinational food companies) has been a key driver in the nutrition transition because it

\textsuperscript{18} In the cited study, these types of products are called “discretionary foods” and they are defined as non-essential high-energy dense and low nutritional value food products.

\textsuperscript{19} It is worth noting that between 2000 and 2016 the prevalence of overweight increased 1.1\% and obesity increased 42.8\% (Shamah-Levy et al., 2017).
has made more ultra-processed foods more available to more people. Further, it has lowered prices and opened up new purchasing channels. Using EuroMonitor data from 80 countries over the 1997-2010 period, Stuckler and colleagues (2012) found that foreign direct investment, and not economic growth, was a risk for an increase in ultra-processed food consumption. They also found that low- and middle-income countries that have entered free trade agreements with the United States of America had a 63.4 percent higher level of soda consumption per capita than countries that did not (controlling for GDP per capita and urbanization levels). There is therefore reason to connect these agreements to soda consumption specifically.

A cross-country analysis using a dataset with information from 79 countries over the 1986-2008 period indicate that the impact of free trade and foreign direct investment is positive and significant in low and middle-income countries (Miljkovic et al., 2015). Yet, another econometric study — which relied on several data sets which contained information about BMI of 887,000 women aged 15–49 living in 56 countries between 1991 and 2009, and different proxies for different dimensions of globalization — concluded that globalization was substantially and significantly associated with an increase in the individual propensity to be overweight among women (Goryakin et al., 2015).

2.3. Caloric Contribution of SSBs to Mexicans’ Diets

Mexico is the largest consumer of industrialized SSBs in the world, with a per capita consumption of 163 liters per year in 2011 (Euromonitor, 2011) — this translates to a little less than half a liter (15 ounces) per person per day. Sales and consumption of industrialized SSBs increased particularly among children and adult females in the past
few decades (Barquera et al., 2008; Stern et al., 2014a). Nonetheless, mean SSB consumption is high across age, gender, and income groups.

For instance, Mexican children are exposed to SSBs from a very young age. A study using data from the ENSANUT 2012 survey ($n = 2,057$) found that SSBs were consumed by 63 percent of infants 12 months old and 78 percent of infants 24 months old; carbonated SSBs were consumed by 16 percent of infants 12 months old, and by 35 percent of infants 24 months old (Deming et al., 2015).

Differences in SSB consumption across the Northern, Central and Southern regions are small and only significantly different between the North and Centre (Sanchez-Pimienta et al., 2016). However, smaller studies have found that consumption of carbonated SSBs is highest in regions that comprise the largest indigenous populations in the country, such as Chiapas (Page-Pliego, 2013) and Sonora (Yáñez-Moreno, 2012).

SSBs represent a significant source of sugars and energy in the Mexican diet. A study based on data form the 2012 ENSANUT found that SSBs contribute about 69.4 percent of added sugars, 45.0 percent of total sugar intake, and 9.8 percent of total energy intake (Rivera et al., 2016; Sanchez-Pimienta et al., 2016). Adolescents 12-19 years and adults get an average of $183 \pm 6.0$ and $181 \pm 5.0$ Kcal/day, respectively, from added sugars in SSBs, while children 1-4 and 5-11 years get $85.2 \pm 3.5$ and $126 \pm 3.7$ Kcal/day, respectively (Sanchez-Pimienta et al., 2016).

Total added sugar intake from SSBs is significantly higher in people in the highest income tercile ($173 \pm 6.7$ Kcal/day) compared to the lowest ($150 \pm 4.4$ Kcal/day), higher in urban areas ($173 \pm 4.2$ Kcal/day) compared to rural areas ($143 \pm 4.3$ Kcal/day), and higher in males ($189 \pm 5.4$ Kcal/day) compared to females ($142 \pm 3.7$ Kcal/day).
(Sanchez-Pimienta et al., 2016). Consequently, over 65 percent of the population exceeds the WHO recommendation by consuming more than 10 percent of their calories from added sugars (WHO, 2016; WHO, 2015).

2.4. **Characteristics of Importance in Relation to SSB Consumption**

*Socio-economic status.* Low-income groups bear the brunt of the health consequences of obesity and diabetes. They also have fewer resources to access adequate food and medical assistance. Therefore, they are the focus of public health efforts. Low-income people exhibit greater price sensitivity; it was thus expected that the SSB tax would exert a higher effect in this group.

*Age and sex.* Age and sex are two demographic variables that modulate SSB consumption and the socio-cultural construction of SSB consumption. Thus, the experience of the SSB tax may have been influenced by these characteristics.

*Geographic region and urban-rural location.* There are three broad cultural areas in Mexico: Northern, Central, and Southern. In addition, urban and rural settings have different cultural traits, in addition to diverse values, habits, and behaviors. It was hypothesized that people’s experience and reaction to the SSB tax may have been different depending on the area where they are from and/or live.

*Season* (warm versus cold seasons). It was hypothesized that during the summer months/warm seasons people might drink more SSBs as a result of an increased overall beverage intake.
2.5. Groups of Importance in Relation to SSB consumption

Parents of children.

SSB consumption in young Mexican children is a common practice. As previously stated, Mexican children are exposed to SSBs from a very young age (Deming et al., 2015). This is worrisome because of the implication that a high SSB consumption has in the development of childhood obesity (Ludwig et al., 2001; Malik et al., 2013; Malik et al., 2009a), cavities (Moynihan & Kelly, 2014), type 2 diabetes (Greenwood et al., 2014; Imamura et al., 2015; Malik et al., 2010; Wang et al., 2015), and coronary heart disease (Huang et al., 2014). An added concern about frequent exposure to SSBs from infancy is that this may favor consumption later in life (Park, Pan, et al., 2014; Ventura & Mennella, 2011).

Parental influence on children’s SSB consumption.

Children’s dietary habits are influenced and developed based on familial beliefs, attitudes, and practices. Parents exert an influence in their children’s diet in a multiplicity of ways: they are the providers of food in the household, they model what to eat, and they employ a variety of feeding practices to foster habits they deem appropriate for their children to develop. Therefore, it could be inferred that children may develop a preference and habit of drinking sugary beverages when these types of beverages are available in the household, when they are offered to them by their parents (and/or used as a reward), and when they see their parents drink them. These assumptions are supported (although not significantly in all cases) by various research studies.
A study of family and home-related factors in relation to children’s SSB consumption (using self-reported data from 644 parents of different ethnic backgrounds living in the Netherlands) found that the child’s age, parents’ subjective norms, parenting practices, and parental modeling were positively associated with children’s SSB intake (van de Gaar et al., 2017). Availability of SSBs at home and parental attitudes were negatively associated with SSB intake. A study with 560 children, 8 to 13 years old, found that children whose parents drank soft drinks regularly were 2.88 times more likely (95 percent confidence interval=1.76-4.72) to consume soft drinks five or more times per week compared with those whose parents did not regularly drink soft drinks (Grimm et al., 2004). This study also found a positive relationship between availability of soft drinks in the home and consumption of soft drinks in children (Grimm et al., 2004). Yet another study found that greater parent support for healthy eating was associated with less sugary beverage consumption in children 5 to 8 years old (Lopez et al., 2012). The “Drink as I do” report, based on responses from 1,000 parents of children aged 4-8 years old, found that young children were almost three times (192 percent) as likely to consume carbonated drinks than other children their age if their parents drank them too (Derbyshire, 2016). A systematic review of the determinants of SSB consumption in young children found a positive association for parental (positive) modeling and (lower) SSB consumption (Mazarello Paes et al., 2015). But the same study found equivocal evidence for child’s age and knowledge, parental knowledge, skills, rules/restrictions and home SSB availability.

Qualitative studies conducted in Mexico specifically have found that mothers acknowledge that SSBs, particularly carbonated cola drinks, are not good for children.
Leatherman and Goodman studied consumption of highly processed foods and beverages in the Yucatan region and found that their informants considered Coca-Cola and other sodas too strong and inappropriate for babies and young children (Leatherman & Goodman, 2005). However, the authors reported that it was not uncommon to see young infants with a Coca-Cola or another soft drink (Leatherman & Goodman, 2005). In a qualitative study conducted in 2008-2009 with school children in Mexico City, Théodore and colleagues (2011) found that home-made beverages and those with fruit (even those industrially produced) were valued positively, as opposed to artificial beverages. Nevertheless, consumption of industrialized SSBs (soda, juice, energy drinks) was associated with a wide range of occasions and circumstances, whereas consumption of plain water was only limited to the times when children did physical activity/exercise.

There is anecdotal information about Mexican parents who reported not offering SSBs to children while at the same time not changing their own consumption in the context of the SSB tax and the many other governmental initiatives aimed at curbing SSB consumption. A similar phenomenon was observed in a study evaluating the potential effect of a mass media campaign aimed at reducing SSB consumption in the USA. The proportion of adults who indicated they would reduce amount of SSB offered to child because of the media campaign was much higher (78 percent), than the prevalence of those intending to reduce their own consumption (51 percent) (Boles et al., 2014). While parents may wish to change their children’s behaviors, the lack of coupling a change in their own behavior may be counterproductive due to the modeling and availability roles parents occupy.
Children’s reasoning and self-control regarding dietary choices.

At age 10-11, children have a larger capacity to reason, learn and apply skills, and exercise self-control (as compared to smaller children). This is a period when children become more independent from their parents and therefore eat out more and have a larger say on what they eat at home. They are also more affected by the norms of their peers, which might dictate what children eat when they go out. Thus, more parental control is exerted over consumption behaviors for children ages 9 and younger.

Construction workers.

In Mexico, there are about 2.4 million construction workers (4.8% of the total working population), the vast majority of which are men (INEGI, 2014). This group is characterized for having low education (on average finishing 1st grade of secondary school), low access to welfare services (86%), no access to health services (89%), and working without a contract (88%), with an average hourly wage of MXN 26.4 (USD 1.41)20 (INEGI, 2014). In 2013, it was estimated that 21% of this work force lived in poor conditions (e.g., houses with tin roofs) (INEGI, 2014). Workers in the construction industry have one of the highest occupational risks (injury and accidents) of all industries in Mexico (Sanchez-Roman et al., 2006).

20 MXN to USD exchange rate from 11 March 2018. By comparison, the price of a 2-liter Coke as reported in the study was about 22-24 MXN.
Gaps in men’s health and research about men’s diet and health.

Overall, there is little research about men’s health, even though men have worse health outcomes and higher mortality rates than women, partly due to greater levels of occupational exposure to hazards, in addition to health behavior paradigms related to masculinity (Baker et al., 2014). These paradigms make men less aware of health risks, less perceptive of risks, and less likely to visit a doctor and/or to report a disease. Further, deeply embedded in the politics of gender and health, is the assumption that men are responsible for their ill health (Broom et al., 2009). In spite of this, most countries lack male-centered strategies to combat these outcomes. Health policy, public health campaigns, and the focus of community health organizations are typically centered on maternal and child health. Addressing men, and construction workers in particular, is not only a matter of equity, but also a matter of economics, because they have an increased risk of sick leave, disability, and decreased productivity resulting from (a combination of) risk factors such as high physical workload (and thus musculoskeletal disorders), obesity, and diet-related chronic diseases (Alavinia et al., 2009; Arndt et al., 2005; Claessen et al., 2009; Dong et al., 2011). Yet, little is known about their health and diets in general.

An online search about construction workers diets/food consumption (restricted to Latin American countries) only rendered two studies: one from Brazil, which found that 71.2 percent construction workers suffered from food insecurity, and another one from Chile which found a high intake of carbonated SSBs (422.5 ml/day), bread, salted and red meats and a low consumption of fruits, vegetables, legumes, coupled with high obesity rates.
Soda consumption among construction workers.

It is believed, although it’s not been formally documented, that one of the professions most associated with soda consumption in Mexico is construction. Anecdotal information published in online newspapers provides evidence of this understudied phenomenon. For example, a journalistic report on sugary beverage consumption in Mexico published in The Guardian opened with the lines:

“Mexicans love their soda. Construction workers go to their jobs in the early morning clutching giant two-liter or even three-liter bottles.” (Rosenberg, 2015).

In an interview for the newspaper El País, a foreman at a construction site was asked about the drink most consumed by workers at his site. He responded “Coca is the one that reigns” (“La coca es la que reina”). Another foreman calculated the amount each worker drinks every day: “I think that about two liters each one,” he said (de Llano, 2013).

Some of the reasons that may explain the high intake of SSBs among this group include convenience and/or a source of cheap, and quick energy. Ana Bertha Pérez Lizaur, director of graduate studies at the Iberoamerican University noted this aspect in an interview with a local news outlet:

“Unfortunately, many construction workers who do not eat breakfast fall into soda consumption because it gives them immediate energy.” (González, 2016).

Another plausible explanation is the lack of free or low cost potable water in the places where they work, as Francisco Tomás Rodríguez Montero, a Mexican politician, acknowledged:
“There are still many construction workers and farmers who have breakfast with bottles of soda because there is no water to drink.” (Morales Silva, 2013).

Personal observations from the research term permit attesting that, indeed, many construction workers have carbonated cola beverages from very early in the day and that they accompany their meals with these beverages as well.

Some critics of the SSB tax argued that the price increase would hit construction workers hardest, as captured by Juan Antonio Cortina Gallardo (president of the National Chamber of the Sugar and Alcohol Industries)’s words:

“Soda has historically been a source of cheap calories. Many people who perform physically demanding work, such as construction workers, drink soda and that gives them energy to go on. They are the ones who will suffer the price increase most.” (Redacción Énfasis Alimentación, 2013).

Others believed that it would not discourage construction workers from drinking sugary beverages, as reflected in Donatello’s report:

“Construction workers usually accompany their lunch with soda. Apparently they will continue to do so, even if the price goes up 20 or 30 percent.” (2015).

There might be some truth in these words. Some constructions workers that were interviewed in 2006 regarding a 5 percent tax on products and services, which would raise the price of SSBs, explained that they would not stop buying sugary beverages even if the price increased, because:

“It gives us strength to continue shoveling, laying bricks and pulling the wheelbarrow with gravel [...] If the price goes up, we are going to buy it in any case, we cannot leave it, it is our vice and companion.” (Gomez Flores, 2006).
2.6. Biological Determinants of SSB Consumption

Food is a potent natural reward. In particular, highly palatable foods that are rich in fat, sugar, and salt, have been associated with improved mood states and ‘addictive’ behaviors as cited in multiple studies and through anecdotal evidence. However, on the whole, the published literature gives no conclusive evidence that foods or separate ingredients (e.g., sugar) can create an addiction in the same way as drugs do.

SSBs in particular are highly liked because of humans’ biological predisposition to sweet flavors (Ventura & Mennella, 2011). In addition, sugar activates the same reward and pleasure centers of the brain that are triggered by addictive drugs like cocaine and heroin. (Avena et al., 2012). Two independent (but often coexisting) brain reward systems are thought to be at place in the desire (“craving”)²¹ to consume sugar: “liking” and “wanting”(Avena et al., 2008). While liking of sugar is mediated by the opioid system in the so-called “hedonic hot spots” in the brain, wanting of it or wanting to continue eating more is mediated by the dopamine system. Once people experience pleasure associated with increased dopamine transmission in the brain's reward pathway from eating certain foods, they quickly feel the need to eat again.

Studies based on animal models show that sugar and sweet/fat diets induce tolerance, escalation of intake, bingeing, and withdrawal-like symptoms (Avena et al.,

²¹ Food craving comprises two components: food “liking” (sensory pleasure derived from eating a given food) and food “wanting” (appetitive motivation to eat).
However, these results cannot be translated in a straightforward manner to humans for the higher complexity of the environmental and psychological factors implied. Nevertheless, neuro-imaging studies in humans show that obesity and binge eating share similar patterns with drug users in terms of the alteration of dopaminergic signals and food cues (Schienle et al., 2009). Nevertheless, in spite of the strong effect on the brain’s reward mechanisms, highly-palatable foods do not appear to produce the powerful neuro-adaptive effects (including the withdrawal effects) and physiological tolerance which are central to drug addiction (Barry et al., 2009). Caffeinated options (like cola carbonated SSBs) can also induce mild physical dependence (Meredith et al., 2013).

Food companies engineer their food products (e.g., soda, potato chips) by mixing the right amounts of sugar, fat and/or salt to optimize palatability and reach the “bliss point,” thus maximizing consumption and profits.

2.7. Health Impact of a High Sugar-Sweetened Beverage Intake

Longitudinal and randomized controlled-studies have found significant associations between SSBs and weight gain in adults and children (Malik et al., 2013; Malik et al., 2009b; Te Morenga et al., 2013). In a 20-year study involving 120,000 participants, those who increased their SSB consumption by one 12-ounce serving per day gained on average an extra pound every 4 years than those who did not change SSB consumption. In a follow-up study, children consuming an additional 12-ounce serving increased their odds of becoming obese by 60 percent (Ludwig et al., 2001). SSB have also been associated with type 2 diabetes, metabolic syndrome and coronary heart disease (de Koning et al., 2012; Fung et al., 2009; Greenwood et al., 2014; Huang et al., 2014; Imamura et al., 2015; Malik et al., 2013; Malik et al., 2010; Wang et al., 2015).
Consumption of sugar, and particularly of SSBs, as an important source of fermentable sugars has been positively associated with an increase in dental caries in children and adults (Moynihan et al., 2014). In a four-year longitudinal study conducted in Finland, adults who drank 1–2 and 3 or more SSBs every day had 31 percent (Incidence Rate Ratio: 1.31; 95%CI: 1.02–1.67) and 33 percent (IRR: 1.33; 95%CI: 1.03–1.72) greater net increase of decayed, missing and filled teeth than those not drinking any SSB (Bernabe et al., 2014). This thereby suggests a dose-response relationship between frequency of SSB intake and dental caries increments in adults.

The prevalence of overweight and obesity in Mexico stands at about 73 percent in adults and at 36 percent in children and adolescents (Shamah-Levy et al., 2017). In 2006, the type 2 diabetes prevalence reached 14 percent of the adult population — the highest among the OECD Member Countries (OECD, 2015) — the number one general cause of mortality in Mexico with 14 percent of total deaths (Barquera, Campos-Nonato, Aguilar-Salinas, et al., 2013).

Frequent consumption of SSBs has been linked to an increased risk of a number of adverse health outcomes, including obesity (Hu, 2013; Malik et al., 2006; Te Morenga et al., 2013), type 2 diabetes (Greenwood et al., 2014; Imamura et al., 2015; Malik et al., 2010; Wang et al., 2015), coronary heart disease (Huang et al., 2014), dental caries (Moynihan & Kelly, 2014), and tooth loss (Kim et al., 2017). SSBs contribute about 69 percent of added sugars, 45 percent of total sugar intake, and 10 percent of total energy intake to the Mexican diet (Sanchez-Pimienta et al., 2016), more than three times the level recommended by the American Heart Association and approximately 3 percent of total energy intake (Batis, Aburto, et al., 2016; Lloyd-Jones et al., 2010).
2.8. **Mexico’s Attempts to Tackle the Obesity Epidemic**

In response to this alarming obesity epidemic, in 2010 the Public Health Secretariat, with support from the INSP and other scholars developed the *National Agreement for Healthy Nutrition: A Strategy to Address Overweight and Obesity* (in Spanish: *Acuerdo Nacional para la Salud Alimentaria: Estrategia contra el Sobrepeso y la Obesidad*) (Secretaría de Salud, 2010). The proposed National Strategic document identified ten objectives for a national policy aimed at preventing obesity and non-communicable diseases (Table 2.1). Some objectives required regulation of the food industry and/or reformulation of products to achieve healthy food alternatives, others required the government to develop nutrition education programs aimed at increasing knowledge, changing attitudes and behaviors and practices (Barquera et al., 2010).

The National Agreement incorporated a multisectoral approach and promoted a private-sector involvement by means of self-regulation. Nevertheless, self-regulation of food companies did not produce the expected results.

| Table 2. 1 |
| National Agreement for Health Nutrition: Ten strategic objectives to address the obesity problem holistically. |
| 1. Promote physical activity among the Mexican population in school, work, community and recreation environments through the collaboration of the public, private and social sectors. |
| 2. Increase the availability, accessibility and consumption of plain drinking water. |
| 3. Reduce fats and sugars in beverages. |

22 Developed under Felipe Calderón’s government.
4. Increase daily intake of fruits and vegetables, legumes, whole grain cereals, and fiber by increasing their availability and accessibility and promoting their consumption.

5. Improve the public’s ability to make informed decisions about a proper diet through useful, easy-to-understand labeling, thereby promoting nutritional and health literacy.

6. Promote and protect exclusive breast-feeding for the first six months of life and complementary adequate feeding afterward.

7. Reduce consumption of sugars and other caloric sweeteners added to foods and increase the availability and accessibility of low- or no-calorie sweeteners.

8. Decrease daily consumption of saturated fats and minimize consumption of trans fats from commercial sources.

9. Educate the public about controlling the recommended portion sizes in foods prepared at home and in permitted processed foods and encourage restaurants and food outlets to offer smaller portion sizes.

10. Reduce daily sodium intake by reducing the amount of added sodium in foods and increasing the availability and accessibility of low- or no-sodium products.

Source: Barquera, Campos, et al. (2013)

In 2012, the Mexican National Academy of Medicine provided recommendations for national policy to curb the obesity epidemic (Rivera-Dommarco et al., 2012). They recognized the need to address both the environment, to enable healthful behaviors, and the individual, to promote behavioral changes. The National Academy of Medicine proposed a national multifaceted multisectorial strategy including a varied package of legislative and educational measures some of which were included in the 201323 National

23 It is important to note that the 2013, the Goverment of Enrique Peña Nieto launched the National Crusade Against Hunger (Cruzada Nacional Contra el Hambre), a program aimed to reduce hunger and poverty in Mexico through social intervention (Secretaría de Desarrollo Social, 2013b). The program was criticized for lacking emphasis on Mexico’s food system and food production but allowing transnational companies like Nestlé and PepsiCo to join the program in a way that would further strengthen the presence of their products among the poorest
Strategy for the Prevention and Control of Overweight, Obesity, and Diabetes (In Spanish: Estrategia Nacional para la Prevención y el Control del Sobrepeso, Obesidad y Diabetes)\textsuperscript{24}, devised under the new government of Enrique Peña Nieto (Secretaría de Salud, 2013). The third major area of the National Strategy concerns regulatory standards and fiscal policy, and includes (a) the promotion of new front-of-package labeling, (b) the regulation of marketing of food and beverage directed to children, and (c) fiscal policies designed to reduce intake of high-energy and nutrient-low foods and beverages. Some of the proposed measures have been fully passed, while others are still in process (see Table 2.2).

Table 2.2
Recommended Interventions for Obesity Prevention by the National Academy of Medicine (Rivera-Dommarco et al., 2012).

<table>
<thead>
<tr>
<th>Status*</th>
<th>Name of Intervention and Year (where applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implemented</td>
<td>Regulation of food and beverages in the school system, 2010 (Secretaría de Educación Pública &amp; Secretaría de Salud, 2010, 2014)</td>
</tr>
<tr>
<td></td>
<td>Implementation of user-friendly front-of-package labeling system, 2014 (Secretaría de Gobernación, 2014)</td>
</tr>
<tr>
<td></td>
<td>Regulation of advertisement of foods and non-alcoholic beverages</td>
</tr>
</tbody>
</table>

Mexicans. Among other things, Nestlé agreed to donate 200,000 hours in formative nutrition courses in the communities, and to help 15 thousand homeowners become micro-enterprises (i.e., owners of small stores selling Nestlé products); PepsiCo agreed to develop products to combat malnutrition (Secretaría de Desarrollo Social, 2013a, 2013c). Many saw that as a conflict of interest and pointed out the irony of the government enlisting the very same transnational companies that were seen as part of the obesity problem.

\textsuperscript{24} “The objective of this strategy is to improve the well-being of the population and contribute to the sustainability of national development by slowing the rising prevalence of overweight and obesity, so as to reverse the epidemic of non-communicable diseases (particularly type 2 diabetes mellitus) through public health interventions, a comprehensive model of medical care, and intersectoral public policies” (Pan American Health Organization, 2015).


<table>
<thead>
<tr>
<th>Some work being done</th>
<th>Promotion of public information campaigns to create awareness about diet and physical activity.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Support for breastfeeding and appropriate complementary feeding.</td>
</tr>
<tr>
<td></td>
<td>Primary and secondary prevention in the health care system.</td>
</tr>
<tr>
<td></td>
<td>Social marketing for the promotion of healthy diets and physical activity.</td>
</tr>
<tr>
<td></td>
<td>Promotion of physical activity in recreation, work/school, transportation.</td>
</tr>
</tbody>
</table>

| Not much work being done                                                            | Incentives for increasing production of healthy foods.                                           |
|                                                                                     | Incentives for increasing economic access to health foods in underserved geographic areas.       |

Notes.
* Status as of November 2015.

Information about the detrimental health effects of a high SSB consumption has been provided through official channels such as clinics and hospitals of the Mexican Social Security Institute (IMSS) and the PrevenIMSS program (the Spanish acronym for IMSS’ Integrated Preventive Care Program) (Secretaría de Salud, 2018).

Actions from non-governmental organizations in response to the obesity epidemic include informational/educational campaigns aimed at reducing SSB consumption conducted by civil society groups (Alianza por la Salud Alimentaria, 2018), and the partial voluntary self-regulation of foods and beverages advertising directed at children which was signed by food companies in 2010; this was framed as an “an adjunct tool for
promoting healthy lifestyle habits, based on a proper diet and an active lifestyle, thereby contributing to the prevention of overweight and obesity” (CONAR, 2009).

2.9. **The Mexican Sugar-Sweetened Beverage Tax**

Moreover, taxes were proposed as an strategy to fight obesity in Mexico. In general terms, justification for taxes is given by three principles: (a) to correct market externalities as a result of market failure, (b) to reduce intake of industrialized SSBs and therefore reduce obesity, morbidity from non-communicable chronic diseases and mortality, only if demand is elastic, and (c) to use fiscal revenues for obesity prevention (Rivera, 2017).

**The proposal.**

The proposal of a Special Tax on Production and Services (IEPS, from its Spanish acronym) to be levied on industrialized SSBs\(^{25}\) emerged from the joint effort of national institutions, including academia, civil society organization, the federal government, Congress, and international organizations. The purpose of the tax was framed as to reduce soda consumption in the poorest socio-economic quintile of the population (Pan American Health Organization, 2015). This population is believed to not only have high consumption, but also relatively less economic access to SSBs. Econometric studies had shown that demand for industrialized SSBs in Mexico was elastic (see following section).

---

\(^{25}\) Including carbonated SSBs, juice, energy drinks, sports drinks, powered sachets to prepare beverages with the addition of water, etc. and excluding sugar-sweetened milk.
Thus, the proposed level for the tax was 20 percent, arguing that it would have a higher impact on health outcomes.

**Pro-tax activities.**

The tax proposal was accompanied by an extensive public relations strategy, including:

“[…] major mass communication strategy carried out by civil society organizations. Key messages were publicized on billboards or advertisements and posters in such places as metro stations, streets with significant foot traffic, and avenues where the soda industry advertised. Members of civil society organizations and national research institutes also took part through radio spots, television appearances, and print media, and paid advertisements were placed in all major national newspapers.” (PAHO, 2015).

According to Donaldson (2015), the media campaign put forth by health advocates “generated over 1,000 media articles in the five-month period leading up to the vote on the tax… reaching the public as well as key decision-makers”. The beverage industry reacted by presenting a “united front against the tax, with very significant activism in the media — television, radio, press and advertising campaigns.” (PAHO, 2015). In addition, there were scientific forums and civil society forums were scientific evidence about the health consequences of high SSB intake in Mexico were discussed. All of these attracted a considerable amount of media attention, creating a national conversation on SSBs and increasing support for the tax.
The SSB tax.

Thus, a nationwide 1-peso-per-liter\textsuperscript{26} (equivalent to a 10 percent increase\textsuperscript{27}) excise tax on industrialized SSBs was levied on manufacturers and effective from January 1, 2014 (Secretaría de Gobernación, 2013).

The tax applies to caloric carbonated SSBs, juices, energy and sports beverages, as well as concentrates and powders (see Table 2. 1 for a technical definition of the beverages subject to the tax). Flavored-milk is exempt from this tax.

According to a PAHO report, “[…] the factors for success that helped advance the proposal and secure approval of the tax on sugar-sweetened beverage in Mexico may be described as a synergy of epidemiological-social, political-economic, intersectoral, and global contexts.” (PAHO, 2015).

This was the first tax of its kind implemented in Mexico to tackle SSB consumption specifically.

Table 2. 3
*Beverages subject to the SSB tax, as defined in the IEPS Acts of Mexico, Article 3* (Secretaría de Gobernación, 2013).

| XVII. Energy drinks are defined as all non-alcoholic beverages containing a mixture of caffeine (at a concentration higher than 20 milligrams per 100 milliliters of product) and taurine or glucuronolactone or thiamine and/or any other substance that produces similar stimulating effects. |
| Energy concentrates, powders, and syrups are defined as those that may be diluted to |

\textsuperscript{26} When implemented (January 2014) the value of the tax (MXN 1, per liter) was about 8 USD cents per 33.8 fluid ounces of industrialized SSBs.

\textsuperscript{27} The proposed 20\% rate was not achieved.
obtain energy drinks with the characteristics described in the previous paragraph.

XVIII. Flavored beverages are defined as all non-alcoholic beverages prepared by dissolving sugars in water of any type, and which may include additional ingredients such as natural, artificial, or synthetic flavoring agents, with or without added fruit or vegetable juice, pulp, or nectar, concentrates or extracts thereof, or other food additives, and which may or may not be carbonated.

XIX. Concentrates, powders and syrups, flavor essences or extracts used in the manufacture of flavored beverages, i.e., products, with or without sweeteners or flavoring agents, whether natural, artificial, or synthetic, with or without added fruit or vegetable juice, pulp, or nectar or other food additives.

XX. Sugars [are defined as] monosaccharides, disaccharides, and polysaccharides, whenever used as calorie-containing sweeteners.

XXI. Oral electrolyte solutions are defined as preparations that consist of an aqueous solution of each and every one of the following substances: anhydrous glucose, potassium chloride, sodium chloride, and trisodium citrate.

Notes.


Further, a tax on energy-dense foods that had not been contemplated was introduced in the same reform package through an initiative of Congress.

In addition, proponents of the tax advocated for earmarking tax revenue for water fountains as an emblematic prevention measure and appropriate use for the tax revenue (Donaldson, 2015) Nevertheless, it was not earmarked for health or water programs.

On a different note, it is important to note that an important actor in the proposal and study of the impact of the tax is Bloomberg Philanthropies (Bloomberg Philanthropies, 2018), which has donated about USD 16.5 million for tax advocacy and research related activities (Bloomberg, 2015).

**Challenges to the SSB tax.**

The challenges to the Mexican SSB tax to date include the following, as stated by Dr. Juan Rivera, the Director of the INSP (Rivera, 2017). First, the fact that the tax does
not adjust for inflation and economic growth on a yearly basis. Governments should raise taxes periodically so that real prices increase faster than the combined effects of inflation and increased consumer purchasing power. Nevertheless, in Mexico special taxes (like the SSB tax) are adjusted when they accumulate 10 percent inflation since implementation. By the end of 2017, 10 percentage inflation was already reached, but the adjustment did not take place until January 2018 (Secretaría de Gobernación, 2017). This meant that the tax lost a small percentage of its value until it was adjusted. Second, despite the evidence on the effect of the tax, some industry-sponsored studies from well-known universities concluded a lack of (intended) effects. Second, the beverage industry claims that the tax is not working. They argue that the tax has no effect on SSB consumption and or health, they accuse it of being regressive and hitting the poorest hardest. In addition, they claim that it is costing many jobs. Thus, they are actively advocating for the tax to be dropped. Third, in Mexico, the fiscal law is discussed every year, so there is always a risk that the tax may be scrapped. Fourth, it is difficult to convey the notion of the SSB tax as a single measure, is not a silver bullet in fighting obesity; it should be considered as part of a comprehensive and complementary package of interventions. And lastly, in Mexico, taxes are not earmarked, so it is difficult to track progress on water fountains and other investments from revenues.

2.10. Studies Modeling the Effect of SSB Taxes on SSB Consumption, Caloric Intake, and Diabetes.

SSB taxes are believed to operate through reduced purchases and therefore caloric intake. They hinge upon the premises that the tax is passed onto the consumed and that demand is elastic enough for taxes to have an impact on consumption. If SSB
consumption is not substituted (or at least not entirely) with other caloric products, there might be a net caloric loss, which would translate in weight loss.

SSB taxation has been associated with significant reductions in SSB consumption and energy intake in multiple econometric studies, with the higher the tax, the greater the increase in consumption (Andreyeva et al., 2011; Basu et al., 2014; Briggs, Mytton, Kehlbachert, et al., 2013; Briggs, Mytton, Madden, et al., 2013; Claro et al., 2012; Colchero, Salgado, Unar-Munguia, Hernandez-Avila, et al., 2015; Dharmasena & Capps, 2012; Etile & Sharma, 2015; Finkelstein et al., 2013; Fletcher et al., 2010; Ford et al., 2015; Kristensen et al., 2014; Lin et al., 2011; Long et al., 2015; Veerman et al., 2016).

Econometric studies in Mexico found price elasticity of SSBs to be 1, meaning that for a 1 percent increase in price, SSB consumption would decrease by 1 percent, predicting that a 10 percent tax would decrease consumption by 10 percent (Colchero, Salgado, Unar-Munguia, Hernandez-Avila, et al., 2015). Most studies show own-price elasticities on the order of -0.80 to -1.5. A meta-analysis conducted in 2013 found that the pooled own-price elasticity of SSBs was -1.30 (Cabrera Escobar et al., 2013). Studies that have looked at the impact of SSB taxes on body weight have found that higher taxes would have small but significant reductions in weight and obesity prevalence.

The observed effects of a tax depend on a ‘pass on rate’ in the order of 80-100 percent. That is, SSB producers increase final retail prices and do not absorb the tax themselves. In addition, it is assumed that taxes are passed on equally to all SSBs, all sizes of SSBs, and in all regions in a country or city under study. However, the pass on rate of SSBs to consumers may be less than or greater than 100 percent. There is evidence that suggests that SSB taxes may be applied unequally. In Mexico, one year into
the SSB tax’s implementation, there were differences in price changes by region and package size, with smaller beverage sizes having a substantial increase in price while larger beverage sizes had a minimal price increase (Colchero, Salgado, Unar-Munguia, Molina, et al., 2015). Thus, there is reason to doubt the ubiquity of such taxes.

The effects also depend on an absence or low substitution of SSBs with other high-sugar beverages or foods. Studies that have analyzed substitution effects of SSB taxation have found an increase in purchases/consumption of untaxed beverages (mainly driven by water) (Colchero, Popkin, et al., 2016), such as milk, fresh fruit and juice (Basu et al., 2014), other caloric beverages and food (Andreyeva et al., 2011), water, milk and sugar (Colchero, Salgado, Unar-Munguia, Hernandez-Avila, et al., 2015), low-fat milk, fruit juices and coffee (Dharmasena et al., 2012), and fruit juices (Finkelstein et al., 2013). An increase in consumption of other caloric products (such as in the following studies (Colchero, Salgado, Unar-Munguia, Hernandez-Avila, et al., 2015; Dharmasena et al., 2012)) could partially offset the results of a tax on SSBs.

The empirical studies of the substitution effect of the Mexican SSB tax found that one year after implementation, purchases of bottled water went up when prices of SSB increased (Colchero, Popkin, et al., 2016). It is believed that a reduction in purchases of SSBs may have translated in a reduction of SSB consumption and therefore of caloric intake, but this has not been proven to date. Nevertheless, to date, there are no empirical studies that have demonstrated the effect of SSB taxes on obesity anywhere in the world.
2.11. Evaluations of the Mexican SSB Tax

Recent evidence shows that one year into the SSB tax, there were differences in price changes by region and package size, with smaller beverage sizes having a big increase in price and larger beverage sizes having a minimal price increase (Colchero et al., 2015).

These first evaluations have shown that, as it had been mathematically modeled, the price increase disincentivized purchases — which ultimately might have affected consumption. Using data on consumer purchases from stores, researchers found that one year after the passage of the Mexican SSB tax, purchases of taxed beverages in stores decreased by 5.5 percent on average (Colchero et al., 2017); reductions among the lowest socioeconomic groups were 9 percent on average (Colchero et al., 2016). Two years after implementation of the tax, purchases decreased 9.7 percent on average, yielding an average reduction of 7.6 percent over the first two years (Colchero et al., 2017). As indicated previously, during the first year, purchases of untaxed beverages (including bottled water) increased by 4 percent (Colchero et al., 2016). The results suggest that a reduction in purchases of SSBs may have translated into a reduction of SSB consumption and therefore of caloric intake, but this has not been proven to date.

Nevertheless, these quantitative evaluations of the SSB tax are limited in their ability to draw conclusions about the workings of the tax for several reasons.

First, researchers used cross-sectional data, thus, causality, among other things, cannot not be established because there were many other concurrent factors that might have affected demand and purchases of SSBs. For example, while the SSB tax was implemented, an 8 percent ad valorem tax was imposed on discretionary energy-dense
food, which has shown to be associated with reduced purchases of some of the taxed foods (Batis, Rivera, et al., 2016). This tax may have also influenced the demand for beverages.

Second, the decrease in purchases and consumption may not be fully explained by the (economic) elastic nature of SSBs (Colchero et al., 2016), but may be the result of an increased awareness of the detrimental health effects of SSBs. One study conducted prior to the implementation of the tax had already found declines in sales of SSBs in Mexico which, the authors hypothesize, may have been due to “[a very] visible and well-funded media campaign linking [SSBs] with diabetes” (Popkin & Hawkes, 2016).

Third, there were other measures implemented around the same time by the Mexican government that may have had an effect on SSB consumption, including the regulation of unhealthy food and beverages in schools (Secretaría de Educación Pública & Secretaría de Salud, 2010, 2014), and regulation on the advertisement of foods and non-alcoholic beverages during children’s television viewing time (Secretaría de Salud, 2014). On the other hand, an increase in marketing efforts by the carbonated soft drink industry in the period after the tax (Velasco et al., 2015) might have attenuated its effect.

Lastly, these studies use data of store purchases, but do not capture purchases of taxed beverages out of stores, and they do not use actual data on dietary intake. Therefore, they cannot explain if people shifted to beverages sold out of stores or even to sweetened or unsweetened beverages prepared at home such as aguas frescas.

There is, however, an opportunity to fill these gaps since a large ENSANUT will be conducted in the summer of 2018. Evaluation of the beverage consumption data will make possible to ascertain whether SSB consumption has decreased in relation to prior
surveys, and how differences in SSB consumption vary across different demographic groups.

2.12. Potential Awareness Raising and/or Signaling Effect of the SSB Tax

There is emerging evidence that junk food taxes and the discussions and debates that surround them may contribute to enhancing people’s awareness about the negative health consequences of unhealthy foods and beverages and thereby trigger them to choose healthier options (WHO, 2016). In economic theory, this is known as the “signaling effect” of a tax policy, which poses that in addition to the tasks of raising public funds and correcting external effects, tax policies signal missing information to individuals about the effect of their consumption of the taxed product (Barigozzi & Villeneuve, 2006).

In the Mexican case, Donaldson (2015) noted that one of the effects of the SSB tax discussion in Mexico was “increasing awareness of the harms of SSBs among the Mexican population (Alianza por la Salud Alimentaria, 2014), which was a beneficial effect of the advocacy campaigns and political debate surrounding the tax”. As a matter of fact in mid-2014, 98% of respondents in a national poll believed that SSB consumption increases obesity risk, compared to 90% of respondents in mid-2013 (Alianza por la Salud Alimentaria, 2014).

Likewise, there is evidence from other countries supporting this theory. For example, in Hungary, a high percentage of consumers (22–38 percent, depending on food categories) reported having reduced their intake of unhealthy foods due to an increased health consciousness after the introduction of a junk food tax in 2011 (WHO, 2016).
the city of Berkeley (United States of America), decreases in consumption have been registered. However, they are being attributed to the pro-tax media campaign and not necessarily to the price increase (Falbe et al., 2016).

In addition to “signaling missing information” to consumers, SSB taxes may nudge people towards healthier choices by “countering the immediate benefits of enjoying a [SSB] with the immediate costs of the [SSB] tax.” (Abdukadirov, 2016b). (This is further discussed in the behavioral economics section below).

2.13. Similar Cases-Lessons from Tobacco Control Initiatives

Tobacco taxation is considered to be one of the most successful measures to reduce smoking prevalence rates. Thus, it seems intuitive to think that SSB taxation might function in a similar way to reduce consumption of soda and other industrialized SSBs. In addition, given that the soda beverage companies have penetrated markets in low- and middle-income countries to a similar extent as tobacco companies have (Stuckler et al., 2012), and that they use similar tactics to oppose soda taxes as tobacco companies have (such as funding research that downplays the negative health consequences of their products), it would seem logical to regulate these companies in a similar fashion.

Nevertheless, when attempting to draw a comparison between the two types of taxation one should have in consideration that current approved taxes in most countries are relatively small (the Mexican SSB tax was about USD 8 cents per liter) compared to the extremely large taxes on tobacco which often are in the order of a few 100 percentage
points. For example, the current New York City (NYC) cigarette tax is USD 4.34 per pack (Tax Foundation, 2018).

Also, it is important to remember that in many cases, tobacco taxes were implemented in combination with other measures, including smoke-free air laws and educational campaigns, which also contributed to the decrease in smoking rates. Likewise, in the case of consumption of ultra-processed foods and beverages, comprehensive measures are needed. Education in particular is necessary because, unlike smoking, an unnecessary behavior where the only recommended action is to quit, eating is a necessity. People therefore require knowledge and skills to be able to navigate the complex food environments in which they increasingly live.

Nevertheless, there are lessons drawn from multifaceted tobacco control initiatives that are useful for public health advocates and policy makers considering passing SSB taxes. Thus, in the following section I review the case of New York City and some studies about the core motivations to quit smoking.

**Elements of success in tobacco control strategies in NYC.**

In NYC, tobacco taxation and smoke-free places were two of the key elements of tobacco control strategies (Bader et al., 2011). However, part of the success could also be attributed to a shift in social norms and attitudes that emanated from policy activities and health education campaigns (NCI, 1991). It is believed that SSB taxes might effect change in a similar fashion.

In NYC, the Health Department implemented a four-pronged attack on tobacco (Frieden et al., 2005): (a) *Tax increase* (year 2002): combined city/state tax that resulted
in a 32% increase in the retail price of a pack of cigarettes (from USD 5.20 to USD 6.85); (b) *Smoke-Free Air Act* (year 2002): smoking bans in all indoor spaces, specially workplaces (including restaurants and bars); (c) *Cessation campaign* (year 2003): including nicotine-dependence treatment guidelines sent to all physicians and distribution of nicotine replacement therapy and 6-week free courses to heavy smokers; (d) *Education* (year 2006): well-funded public education campaigns via television (including the Spanish-language cable networks *Telemundo* and *Univision*) accompanied by print ads between January and October 2006. The campaign emphasized the health risks of smoking, the benefits of quitting, and the dangers of indoor tobacco smoke pollution. There was also extensive media coverage surrounding the debate regarding smoke-free workplace legislation.

Academic studies followed these public-awareness campaigns: authors of a comprehensive and systematic evaluation study (Frieden *et al.*, 2005) found a decline in smoking prevalence of 11 percent (from 22 percent to 19.2 percent), concluding that increased taxation appeared to have accounted for approximately 33 percent to 54 percent of the decline, while smoke-free workplace legislation accounted for 13 percent to 21 percent of the decline, and the nicotine-patch program thus accounted for 8 percent of the decline. The authors point out that the remaining decline may have been caused by individual or synergistic effects of public education, changing social norms, additional cessation interventions, or greater-than-estimated effects of taxation or smoke-free workplace legislation on smoking initiation, or relapse. According to the authors, their findings suggested that “people with lower incomes may have been more heavily affected by the increase in taxation, whereas people with higher incomes may have been more
affected by greater awareness of the dangers of environmental tobacco smoke and expansion of smoke-free workplace legislation.” (Frieden et al., 2005).

**Health concerns are the principal motivation to quit smoking.**

Studies of motivations to quit smoking have found that higher cigarette prices appear to be associated with greater motivation to stop smoking. However, health considerations about the self or impact on others seem to be the core motivator to quit. McCaul and colleagues (2006) conducted a review of 30 studies (retrospective reports of ex-smokers, cross-sectional surveys of current smokers, and prospective studies of smokers in cessation studies, including adults and high-school aged teenagers) spanning over three decades and concluded that taken the data strongly suggested that health concern is the primary motive for quit attempts; the second most cited reason was social concerns (defined as setting a better example for children and others, family’s pressure to quit, etc.) (McCaul et al., 2006).

Likewise, in the case of the SSB consumption, it could be expected that motivation to “drastically reduce” or even “quit” drinking industrialized SSBs may be driven by health beliefs, perceived risk of disease, and changes in social norms (including influence of family members), and not necessarily by price increases.

**Topic Two: Theoretical Framework**

This section provides an overview of health behavior change theories including the different levels of influence they address. It also examines the Reasoned Action Approach- the main health behavior change theory used to explain SSB consumption - and psychosocial determinants of SSB consumption in the context of the tax. Lastly,
Behavioral Economics Theory is reviewed to provide a frame of reference for the SSB tax.

2.14. **Health Behavior Change Theories**

Theories provide generalized explanations of behaviors and their influences based on formal or informal observations. Behavioral theories try to represent the relationship between constructs, definitions and propositions in a systematic and structured manner, thus making it possible to explain and predict behaviors. In health education and communication, behavior change theories provide an explanatory framework of health behaviors and different levels of influence, and why people decide to act or not act to protect their health.

Health behavior change theories are grouped according to the level at which they aim at explaining behavior. Five levels are typically proposed: individual (intrapersonal), interpersonal, community, institutional and policy (See Table 2. 4). The community, organizational and policy levels sometimes are presented together. All levels are addressed in socio-ecological models.

<table>
<thead>
<tr>
<th><strong>Table 2. 4</strong></th>
<th>Levels of Influence in Health Behaviors – An Ecological Perspective.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Concept</strong></td>
<td><strong>Definition</strong></td>
</tr>
<tr>
<td><em>Intrapersonal level</em></td>
<td>Individual characteristics that influence behavior, such as knowledge, attitudes, beliefs, and personality traits.</td>
</tr>
<tr>
<td><em>Interpersonal level</em></td>
<td>Interpersonal processes and primary groups, including family, friends, and peers that provide social identity, support, and role definition.</td>
</tr>
<tr>
<td><em>Community level</em></td>
<td></td>
</tr>
<tr>
<td>Concept</td>
<td>Definition</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Institutional</td>
<td>Rules, regulations, policies, and informal structures, which may constrain or promote recommended behaviors.</td>
</tr>
<tr>
<td>Community factors</td>
<td>Social networks and norms, or standards, which exist as formal or informal among individuals, groups, and organizations.</td>
</tr>
<tr>
<td>Public Policy</td>
<td>Local, state, and federal policies and laws that regulate or support healthy actions and practices for disease prevention, early detection, control, and management.</td>
</tr>
</tbody>
</table>

Source: (NIH, 2005)

Individual level theories explain health behaviors and how behavior change takes place, focusing on the characteristics of the individual such as knowledge, beliefs, attitudes, values, and skills (NIH, 2005). Interpersonal level theories acknowledge that individuals’ health behaviors are influenced by their social environment — which includes family members, coworkers, friends, health professionals, etc. An individual’s feelings and behaviors are thus influenced by the opinions, thoughts, advice, support, and behaviors of those surrounding her/him, and in turn, she/he has a reciprocal effect on those people (NIH, 2005).

According to Glanz and Rimer (NIH, 2005), at the intrapersonal and interpersonal levels, health behavior change theories can be broadly categorized as “cognitive-behavioral,” with three overarching concepts that unite them:

1. Behavior is mediated by cognitions, that is, what people know and think affects how they act;
2. Knowledge is necessary for, but not sufficient to produce, most behavior changes; and
3. Perceptions, motivations, skills, and the social environment are key influences on behavior.
Many theories focus at the intrapersonal and interpersonal levels, but this dissertation only utilizes the Reasoned Action Approach.

**The Reasoned Action Approach.**

The Reasoned Action Approach is the latest version of the theoretical ideas of Martin Fishbein and Icek Ajzen, following the earlier Theory of Reasoned Action and the Theory of Planned Behavior (Fishbein & Ajzen, 2010). It is an integrated approach in the sense that it includes many of the key constructs that most healthy behavior change theories share; in fact, it is identical to the *General model of the determinants of behavior change* developed by a committee of the Health and Medicine Division (HMD) which included the originators of the Health Belief Model, the Theory of Planned Behavior, and Social Cognitive Theory (HMD, 2002).

The Reasoned Action Approach and its predecessor the Theory of Planned Behavior, have been extensively used to understand dietary behaviors, including consumption of SSBs and sugar restriction, (Masalu & Astrom, 2003; Tipton, 2014; J. Zoellner et al., 2012), as well as to develop and evaluate nutrition education interventions (J. Zoellner et al., 2013; J. M. Zoellner et al., 2016), and even to explore views of SSB taxes (Krukowski et al., 2016).

In the Reasoned Action Model (see Figure 2. 1), intentions, skills and abilities, perceived behavioral control, and environmental factors are seen as the immediate determinants of behavior. Intention is influenced by: (a) attitudes towards the behavior, which in turn are influenced by behavioral beliefs and outcome expectations, (b) perceived norms, which are influenced by beliefs about what loved ones and close friends
think about the behavior and motivations to comply with those expectations, and (c) perceived control, which signifies the beliefs about the control exerted over the behavior and the perceived power the person seems to have. Thus, this theory is grounded in three types of beliefs: behavioral, normative and control. It emphasizes motivation, which is based on expectations and values; thus, it is considered an expectancy-value theory.

The model shows that there are many background influences, such as past behavior, culture, socioeconomic status, and media exposure, which may determine underlying beliefs, attitudes and norms. However, while these distal variables are very important to understand behavior, many of them are not amenable to change in an intervention; thus, the model does not elaborate on them. Nevertheless, considering that the purpose of this study was purely to understand behavior (and not to modify it), we did explore the structural and background influences in beverage consumption, such as past consumption/habit/custom (i.e., history of SSB consumption), gender, working context, and social class, as conditioners of beverage-related behaviors.

The constructs of the Reasoned Action Approach and their relationships to each other and to behavior are shown in Figure 2. Table 2. 5 provides a summary of the constructs of the theory and their definitions.
Figure 2. 1 Reasoned Action Approach.
Source: Fishbein and Ajzen (2010).
Table 2. 5
Reasoned Action Approach: Major Constructs and Definitions.

<table>
<thead>
<tr>
<th>Theoretical construct</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral beliefs and outcome expectations</td>
<td>These are the individuals’ beliefs that the behavior leads to certain desired or negative outcomes (in the areas of health, personal, social, etc.), and the subjective expectations about the outcomes of the behaviors. In other words, what will happen if the individual continues engaging in the current behavior and/or what will happen if the individual were to change his/her behavior.</td>
</tr>
<tr>
<td>Attitude: Cognitive/Instrumental</td>
<td>Attitude, positive or negative, about the specific behavior being promoted or about the object of the behavior that wants to be improved. These are typically favorable or unfavorable judgments about the behavior.</td>
</tr>
<tr>
<td>Attitude: Affective/Experiential</td>
<td>Individual’s emotional response to the idea of performing the behavior. Affect or feelings are more likely to be derived from direct experience, such as physiological reactions to food (e.g., taste, smell, sight, or fillingness of food) and familiarity through frequent exposure.</td>
</tr>
<tr>
<td>Perceived norms: Subjective (injunctive) norms</td>
<td>Subjective ideas about what important referent individuals or groups think about the behavior in question and expect the individual to do.</td>
</tr>
<tr>
<td>Descriptive norms</td>
<td>Individuals’ beliefs about important others’ attitudes or behaviors in regard to the behavior.</td>
</tr>
<tr>
<td>Control beliefs</td>
<td>Control beliefs are subjective ideas about barriers (including environmental) and facilitators of behaviors that will make it easy or difficult to perform the behavior.</td>
</tr>
<tr>
<td>Perceived behavioral control (self-efficacy)</td>
<td>This construct signifies the perceived amount of control over a behavior a person feels he/she has.</td>
</tr>
<tr>
<td>Behavioral intention</td>
<td>The perceived likelihood of performing the behavior and the plans to carry out the intended action.</td>
</tr>
</tbody>
</table>

Source: Adapted from Contento (2014) and Glanz et al. (2008).
2.15. Traditional Economic theory and Behavioral Economics Theory

Traditional economic theory.

SSB taxes are based on basic traditional economic theory: that is, when prices increase demand for a product decreases. They hinge upon the premises that the tax is passed onto the consumer and that demand is elastic enough for taxes to have an impact on consumption. If SSB consumption is not substituted (or at least not entirely) with other caloric products, there might be a net caloric loss, which would again translate in weight loss.

Most conventional economic theories are created and used under the assumption that all individuals taking part in an action/activity are behaving “rationally” from an economic point of view; that is, in their own best interest so as to achieve desired levels of satisfaction, happiness or personal benefit (Darnton, 2008; Robson, 2001). In other words, behavioral decisions are based on a calculation of the expected costs and benefits of a behavior ultimately resulting in a maximization of the resources available. This is sometimes termed “economic rationality.”

Behavioral economics: hyperbolic (future) discounting concept.

However, many psychological experiments have found that the assumption of rational choice assumption is not realistic. In some instances, people act ‘irrationally,’ not according to economic models, and therefore in inconsistent and unpredictable manners. Choices are thus believed to be systematically biased (Marlow & Abdukadirov, 2012).
One of the reasons people deviate from rational decisions, economists argue, is that they privilege the here and now and heavily discount the future (Roberto & Kawachi, 2015). This concept is referred to as “hyperbolic discounting,” and it is defined as “the tendency for people to increasingly choose a smaller-sooner reward over a larger-later reward as the delay occurs sooner rather than later in time”. For example, people exhibit biased preferences and chose to consume ultra-processed food resulting in immediate gratification even though they may disprove of this choice in the long run. According to Roberto and Kawachi (2015), the hyperbolic discounting phenomenon is important “because so many of the potential benefits of our health decisions accrue in the distant future, while the costs tend to be born in the present”. For example, the pleasure of drinking a soda is immediate, while the potential cost (developing obesity or type 2 diabetes) is (potentially far) in the future.

Moreover, behavioral economics relies on the idea, backed by psychological research, that there are two systems of thought operating simultaneously in the human brain: System 1 (naïve, knee-jerk actions, irrational) and System 2 (rational) (Roberto & Kawachi, 2015). System 1 (also called “hot state”) produces an automatic response; under this system we eat for taste, convenience, size, visual effect, etc. i.e. “this decision is an exception.” In contrast, System 2 (also called “cold state”) produces a reasoned response, which requires attention and effort; under this system we consider other factors such as health information and prices. For instance, in a decision to drink a soda, System 1 might draw on the desire to get a sugar and caffeine quickly, while System 2 may draw on beliefs about the association between soda and health outcomes. System 2 monitors the activities of System 1, but when cognitive resources are stretched (e.g., we are thirsty,
hungry, stressed, or in a distracted state), System 1 wins out. Part of the reason we rely so heavily on System 1, Roberto and Kawachi explain, “is because humans are boundedly irrational, in the sense that we have a limited ability to attend to, process, and remember the information in our environment.” (Roberto & Kawachi, 2015). Nevertheless, the predominance of one or the other system in decision making varies from person to person and for different behaviors. From all of this follows that price and education may affect the rational and irrational consumer differently. Thus, it is believed that cognitive policies (i.e., price or information) may not impact “irrational” consumers; whereas education may be more effective with “rational” consumers.

On a different note, behavioral economics theory suggests that people are heavily influenced by the way choices are presented (Roberto & Kawachi, 2015), that is the way in which taxes are presented or framed matters and could influence their impact (Leicester et al., 2012). Further, SSB taxes are believed to provide consumers a behavioral rationale for changes (like nudges), in addition to traditional economic justification (Abdukadirov, 2016a). According to Adbukadirov (2016a), SSB taxes can increase the prominence of beverage choice to consumers through two mechanisms: first, “[SSB taxes] and the publicity that surround[s] [them may] trigger consumers to think about their health goals and to choose healthier drink[s],” and second, “attaching higher costs to unhealthy choices at the time of purchase may help undercut consumers’ myopia by “countering the immediate benefits of enjoying a [SSB] with the immediate costs of the [SSB] tax.”
2.16. Use of Theoretical Models in this Dissertation

The framing of the questions for the survey and multi-case study, as well as the analysis and interpretation of findings, was informed by the theories presented and discussed above.

In the quantitative study, the primary theory used to develop the questions related to determinants of SSB consumption was the Reasoned Action Approach. In addition, many of the analyses where stratified by or controlled for socio-demographic background variables of interest (such as gender, age, socio-economic level, body mass, index, presence of disease [i.e. type 2 diabetes], urban-rural location, and geographic location) that may modulate consumption of SSBs. Interpretation of findings from the survey was also guided by the propositions of behavioral economics theory.

The qualitative multi-case study drew on the Reasoned Action Approach to explore SSB beliefs, attitudes, social norms, and behaviors as they are nested in different social and environmental contexts. First, for each one of the groups, we were able to allow for a determination of relevant theoretical constructs that contribute to current SSB consumption, which helped explain reduction in SSB consumption in the context of the tax. Second, by having socio-demographic characteristics in consideration, we were able to explicate behaviors in the social context in which they originate (e.g., explored history of consumption, environmental determinants, etc.). This multi-case study helped discern patterned practices in each of the groups under study as well as the collective basis for those patterns. The hyperbolic discounting concept from Behavioral Economics Theory was used to explicate why people continued consuming high quantities of SSBs even if they believed them to be detrimental to their health.
2.17. References


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Hu, F. B. (2013). Resolved: there is sufficient scientific evidence that decreasing sugar-sweetened beverage consumption will reduce the prevalence of obesity and obesity-related diseases. Obes Rev, 14(8), 606-619. doi:10.1111/obr.12040


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99
DECRETO por el que se establece el Sistema Nacional para la Cruzada contra el Hambre, (2013b).


Guidelines in nutritional labeling and nutrimental distinctive [ACUERDO por el que se emiten los Lineamientos a que se refiere el artículo 25 del Reglamento de Control Sanitario de Productos y Servicios que deberán observar los productores de alimentos y bebidas no alcohólicas preenvasadas para efectos de la información que deberán ostentar en el área frontal de exhibición, así como los criterios y las características para la obtención y uso del distintivo nutrimental a que se refiere el artículo 25 Bis del Reglamento de Control Sanitario de Productos y Servicios.], (2014).

ACUERDO por el que se actualizan las cuotas que se especifican en materia del impuesto especial sobre producción y servicios, (2017).


Secretaría de Salud. (2014). Guidelines presenting the nutritional and advertising criteria to be observed by food and non-alcoholic beverage advertisers to advertise their products on open and restricted television, and movie theaters, in accordance with the provisions in articles 22 Bis, 79, section X and 86, section VI, of the Regulation of the General Health Law in relation to Advertising. [LINEAMIENTOS por los que se dan a conocer los criterios nutrimentales y de publicidad que deberán observar los anunciantes de alimentos y bebidas no alcohólicas para publicitar sus productos en televisión abierta y restringida, así como en salas de exhibición cinematográfica, conforme a lo dispuesto en los artículos 22 Bis, 79, fracción X y 86, fracción VI, del Reglamento de la Ley General de Salud en Materia de Publicidad.]. Mexico: Diario Oficial de la Federación Retrieved from http://www.dof.gob.mx/nota_detalle.php?codigo=5340694&fecha=15/04/2014.


Chapter 3: Methods

3.1. Introduction and Overview

The purpose of this study was to explore Mexicans’ beliefs, attitudes, social norms, and behaviors in relation to SSBs in the context of the SSB tax, in addition to whether, why, and how behaviors have been modified. We used an explanatory sequential mixed methods design, involving quantitative data collected through a nationally representative survey and further explained with in-depth qualitative data derived from a multi-case study.

The first phase of the study consisted of closed-ended questions inserted into the *Perception of Obesity, Physical Activity and Diet Questionnaire* (POCAA-Q, by its Spanish acronym), that was included in the 2016 National Health and Nutrition Survey (ENSANUT). The questionnaire contains questions related to perceptions of weight, physical activity, and dietary practices, as well as psychosocial determinants of SSB consumption and awareness of and opinion about the effectiveness of the SSB tax. The questionnaire was administered face-to-face to Mexican adults 20-59 years old, providing a representative sample at the national, regional, urban-rural levels.

The second phase consisted of a qualitative multi-case study with three subgroups — we only report the results from two of the groups in this dissertation — designed to

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28 The previous surveys were conducted in 2012, 2006, 1999, and 1988. The next survey will be conducted in 2018.
explain and interpret the findings of the quantitative study. It also expanded upon the quantitative findings, particularly in relation to the ways in which some people modified their purchasing and consumption behaviors after the imposition of the SSB tax. This analysis was informed by health behavior change theory (i.e., the Reasoned Action Approach) and the Hyperbolic Discounting Concept from Behavioral Economics Theory.

The entirety of the study was conducted by researchers from Teachers College Columbia University, in collaboration with researchers at the Nutrition Research Centre at the Mexican INSP, all of whom, together, have expertise in nutritional epidemiology, health behavior change, sociology psychology, anthropology, and medical anthropology in addition to quantitative, qualitative, and mixed methods approaches.

This chapter starts by presenting the rationale for using a mixed-methods approach and the overall design of the study, followed by a description of the quantitative and qualitative methods utilized to explore the research questions. Lastly, it discusses how the integration of the quantitative and qualitative data was conducted.

3.2. **Research Approach: Mixed-Methods**

**Rationale.**

The object under study can be considered a complex phenomenon because perception and consumption of SSBs are closely linked to the contexts and social structures that circumscribe them. We would not be able to understand how the adult Mexican population perceives the SSB tax without using a nationally representative survey, nor would we be able to capture the symbolic meanings that relevant groups hold towards SSBs in the context of the tax — and the many other simultaneous initiatives.
aiming at curbing consumption — were we not to undertake a qualitative study. In general, we cannot fully comprehend dietary practices, which have very strong socio-cultural ties, without studying the context in which they take place and their historical dimension. As Edgar Morin would put it “we cannot isolate an object of study from its context, its background, and its evolution” (Morin, 2009).

According to Morin, the statistics field allows for the consideration of a finite number of elements and to explore their relationship with given outcomes. However, it is rooted in a reductionist perspective that ignores the reality of the abstract system from which the elements under consideration arise (Morin, 2009). In contrast, the anthropological field allows for the exploration of hypercomplexity: revealing the relation between all the parts of what we call “the real”. Nevertheless, on their own none of these methods are sufficient to answer complex research questions as presented here.

Thus, there exist pleas for the use of mixed methods from proponents of the two approaches. Kim Hopper (2008) calls for the use of qualitative approaches in public health, providing a rather pragmatic reason: “we can’t understand what’s actually going on without them”. And, LeCompte and Schendul in their book on the Analysis and Interpretation of Ethnographic Data: A Mixed Methods Approach state that ethnographers “must be able to use both types of data in order to compile a complete and valid portrayal of the events under study” (2013, pp.10) and that they should use quantitative approaches “simply because the data collected from small groups of key informants is insufficient evidence to substantiate claims made about a larger group” (2013, pp.205).
The complexity of the phenomenon under study here does call for the use of a combination of methods for its study as well as a multidimensional intellectual approach to understand it. A mixed methods approach was therefore the most adequate for the study of Mexicans’ perceptions, attitudes and behaviors in the context of the SSB tax for several reasons. Foremost, the object of inquiry — i.e., the perception and adaptation of a fiscal policy aimed to reduce consumption of products that are highly liked and deeply rooted in the Mexican dietary habits— required people’s views about the SSB tax and potential pathways of influence to be explored at large scale in order to assess differences across subgroups. Moreover, a deep understanding of why and how behaviors have changed was also required. Thus, a mixed methods design was useful to leverage the potential of both quantitative and qualitative approaches, gaining a fuller understanding of this complex phenomenon.

Mixed methods recently grew to prominence as a distinct research approach in the health and medical sciences, including in fields like nutritional behavior. From the 1990s onwards its procedures have been developed and refined to suit a wide variety of research questions and to enhance validity and trustworthiness of findings (Creswell & Plano Clark, 2011).

**Description and criteria.**

The term “mixed methods” refers to an expanding research methodology for collecting, analyzing, and integrating, either simultaneously or sequentially, both quantitative and qualitative data within a single study or series of studies to understand a research problem (Creswell & Plano Clark, 2011). The basic premise of this methodology
is that the integration of different types of data allows for a more inclusive analysis and understanding of a research problem or issue than do separate quantitative and qualitative data collection and analysis (Creswell & Plano Clark, 2011). Mixed methods maximizes the strengths of both approaches by providing a greater possibility of generalizing findings to a larger audience than a qualitative approach typically can, and by adding more depth to the comprehension of an issue than a quantitative approach. On the other hand, mixed methods research poses challenges innate to both quantitative and qualitative approaches, such as extensive data collection and time-intensive analysis of both text and numeric data. In addition, it requires that the researcher (or team of researchers) be familiar with both quantitative and qualitative forms of research.

**Quantitative approach.**

Using a quantitative approach with a sample of the Mexican adult population (representative at the national, regional, and urban-rural levels) allowed us to characterize the extent to which the Mexican adult population was aware of the SSB tax, their opinions about its effectiveness in reducing purchases of SSBs, and their beliefs about the effect of SSB consumption on health. It also allowed us to test a theory of effect of the SSB tax on perceptions, attitudes and intake deductively — all while crosschecking with information on current SSB consumption and other variables of interest.

One of the main advantages of this method was the opportunity to use a large and a nationally representative sample size, which allowed for generalization of findings to the Mexican population at the national level, by urban and rural locations, and by four regions. By virtue of using this kind of data, we were able to perform sophisticated
statistical analyses while accounting for and controlling multiple socio-demographic and anthropometric variables collected as part of the broader inquiry of the ENSANUT 2016.

**Qualitative approach.**

Little research has been conducted across multiple disciplines about people’s perceptions of food taxes imposed for public health reasons, the educational campaigns that surround them or the effect of these taxes on (dietary). More specifically, in Mexico, SSBs hold multiple sociocultural meanings that range from the magical (in some indigenous groups) to symbolic, such as conviviality, hospitality, and status. This phenomenon of interest requires more in depth research and thus merits a qualitative approach.

The qualitative data assists in explaining and interpreting the findings of the quantitative study. Moreover, the qualitative study expands on the quantitative findings with additional research questions about people’s experiences with SSBs before and after the tax; these questions could not be asked in a national close-ended survey because methodology and resource constraints.

In summary, the use of a mixed methods approach in the study of this complex object of inquiry allowed us to exploit the advantages of both quantitative (i.e., large sample size and generalization), and qualitative (i.e., detail, small numbers, in-depth) methods.
Tradition / genre.

A pragmatic interpretive framework was adopted for this study because pragmatism is not committed to any particular system of philosophy but rather uses multiple methods of data collection to best answer research questions (Creswell, 2013). Researchers using this framework are free to choose multiple methods, techniques and procedures (Creswell, 2013), including both quantitative and qualitative data sources.

3.3. Research Design Overview

Study design.

An explanatory sequential mixed methods design was used, which is characterized by the collection and analysis of quantitative data followed by the collection and analysis of qualitative data (Creswell & Plano Clark, 2011; p.215). The results of the two methods were integrated during the interpretation phase of the study (see Section 3.6 Integration of the Quantitative and Qualitative Data). The quantitative and qualitative approaches address different questions. However, the interpretation of both kinds of data help us answer the larger research questions: what are Mexicans’ beliefs, attitudes, social norms, and behaviors in relation to SSBs in the context of the SSB tax, and whether, how, and why behaviors have been modified?

**QUANTITATIVE**
Data collection
Survey: n=6,650 adults
May-October 2016
Analysis & Results

**QUALITATIVE**
Data collection
Interviews & Focus Groups
May-July 2017
Analysis & Results

Interpretation of entire analysis
Figure 3. 1 Study Design.

Two-stage mixed methods sequential explanatory design.

In the first, quantitative phase of the study, a close-ended survey was administered to adults (20-59 years) who made up a nationally representative sample of Mexicans through the ENSANUT 2016 to test whether awareness of and opinion about the SSB tax were associated current consumption of taxed SSBs and reported changes in SSBs in the two years prior. The second, qualitative (multi-case) phase was conducted as a follow up to the quantitative results to help explain and supplement these findings. In this exploratory follow-up, the proposed plan was to investigate three important groups in relation to SSB consumption — parents of children 9 years of younger, construction workers, and indigenous peoples — to discern whether, why, and how they had changed their purchasing and consumption behaviors in the context of the SSB tax. The rationale for choosing each one of these three groups has been presented in Chapter 1. Due to time constraints this dissertation only presents and discussed the results from the parents and construction workers groups; the results of the indigenous peoples group will be published separately.

3.4. Methods of the Quantitative Study

Research sample.

The sample for the quantitative study consists of 6,650 adults 20-59 years participating in the ENSANUT 2016.

The ENSANUT is a nationally representative probabilistic multistage stratified cluster survey. The ENSANUT 2016 was conducted between April and October 2016 in
Mexico. The survey was constructed with sufficient sampling power to make distinctions between urban (≥ 2,500 inhabitants) and rural (< 2,500 inhabitants) areas, and four geographic regions (North, Centre, South, and Mexico City) described in detail below. Sampling weights were used to estimate nationally representative prevalences and values. A detailed description of the sampling procedures and survey methodology can be found in Romero-Martinez et al. (2017). The ENSANUT 2016 aimed at updating the prevalence, distribution and trends of health, nutrition and their associated risk factors, with an emphasis on first line health prevention programs, particularly the National Strategy for the Prevention and Control of Overweight, Obesity, and Diabetes, at national, regional and urban/rural levels.

A total of 9,474 households participated in the ENSANUT 2016. From each household, a random selection was performed to interview the following individuals: a child (under age 10), an adolescent (aged 11-19 years), and an adult (aged 20 years or older). The adult questionnaire included self-reported responses to questions such as household expenditures on health services, use of health services and programs, disease presence (e.g., obesity, depression, accidents, type 2 diabetes, hypertension, cardiovascular disease), disease risk factors (e.g., tobacco and alcohol consumption), and experience of food insecurity. This iteration of the survey also included for the first time a questionnaire on the Perception of obesity, physical activity and diet questionnaire (POCAA-Q, by its Spanish acronym). Moreover, Anthropometric measurements and dietary intake were assessed for all participants. Trained personnel administered all questionnaires and measures face-to-face.
The ENSANUT 2016 is representative of Mexico’s four regions including states with common geographic and socio-economic characteristics. These are: (a) North: Baja California, Southern Baja California, Coahuila, Chihuahua, Nuevo Leon, Sonora, Sinaloa, San Luis Potosí, Tamaulipas, and Zacatecas, (b) Centre: Aguascalientes, Colima, Guanajuato, Hidalgo, Jalisco, Michoacán, Morelos, Nayarit, Queretaro, and the rest of the State of Mexico; (c) Mexico City: Mexico City, and the suburbs of the State of Mexico; and (d) South: Campeche, Chiapas, Guerrero, Oaxaca, Puebla, Tlaxcala, Quintana Roo, Tabasco, Veracruz, and Yucatan (Shamah-Levy et al., 2017). This regionalization scheme has been used in diverse epidemiologic transition analysis for within country comparisons.

**Measures.**

**Data access.**

We primarily utilized data from the POCAA-Q data file, which had been applied to a random subsample of 6,553 adults aged 20–59 years. Additional data were obtained from other ENSANUT 2016 files: the semi-quantitative food frequency questionnaire (SFFQ), and the demographic file (i.e., demographic, socio-economic characteristics and sample weights). Permission to use these data was sought from the INSP. A description about the development and validation of the POCAA-Q follows.
Perception of obesity, physical activity and diet questionnaire development.

The POCAA-Q was developed in January-February 2016 by researchers at Teachers College, Columbia University (Cristina Álvarez Sánchez, Isobel Contento, Pamela Koch, and Heewon Lee Grey) and at the INSP in Mexico (Alejandra Jiménez, Rebeca Uribe, Teresa Shama, and Juan Rivera). Its overarching aims were to explore: Mexicans’ perceptions of their dietary and physical activity habits; perceived benefits, self-efficacy, and attitudes towards healthy eating and physical activity; and knowledge about causes and consequences of obesity. The questionnaire also explores the population’s awareness of and opinion about the effectiveness of governmental legislation to prevent and control obesity.

The questionnaire was developed using constructs from four health behavior change theories/models: Social-Cognitive Theory, the Reasoned Action Approach, the Health Belief Model, and the Transtheoretical Model. Social-Cognitive Theory was utilized to determine knowledge about the causes and consequences of obesity, as well as the knowledge about the consequences of a high SSB intake. It was also used to explore self-perception of obesity, defined as the interpretation that the individual creates based on his/her knowledge, experiences, beliefs and interaction with the environment. The Health Belief Model was used to investigate the population’s perceived risk of developing obesity in the near future; perceived severity was assessed in relation to perception of the problem of obesity in Mexico. Self-efficacy and barriers for eating healthily and regular physical activity according to international recommendations were also explored. The Reasoned Action Approach underlies the development of questions
related to SSB consumption (e.g., outcome expectations, self-efficacy, attitudes). Finally, the Transtheoretical Model was used to classify the Mexican population into five stages of change (pre-contemplation, contemplation, preparation, action and maintenance) in relation to fruit and vegetable consumption and physical activity.

The POCAA-Q consists of 64 multiple-choice questions, which are divided into seven sections:

1. States of the change of fruit and vegetable consumption and physical activity (12 questions).
2. Perceived benefits of a healthy diet and physical activity (1 question).
3. Self-efficacy (3 questions).
4. Perceived barriers (personal and interpersonal) (14 questions).
5. Psychosocial determinants of sugar-sweetened beverage and water consumption (13 questions).
6. Perceptions, attitudes and knowledge about obesity (14 questions).
7. Awareness and opinion about governmental initiatives (including the SSB tax) to address obesity (7 questions).

In the questionnaire, definitions and examples of the terms sugar-sweetened beverages (examples: sodas, sweetened juices and flavored waters) and physical activity (example: walking, going up and down the stairs, jogging, cycling and swimming) were included to facilitate understanding. For some of the questions, participants were separately asked about their consumption of industrialized and/or homemade SSBs to not confuse data regarding taxed SSBs that were under study in the survey.
For this particular study we used questions from sections 3, 5, and 7. The selected questions as presented in the POCAA-Q interviewer-administered interface can be found in Appendix III. The operational description of each one of those question, as well as the rational for choice are presented in Table 3.1.

In the survey, the questions were presented in the following order: (a) self-efficacy, (b) perception of change in consumption of SSBs in the two years prior, (c) liking of SSBs, (d) availability of free/low-cost potable water in community, (e) health beliefs, (f) awareness of the SSB tax, and (g) opinion about the effectiveness of the SSB tax in reducing purchases of SSBs. We believe that this order reduced overall bias in framing and leading questions.

Table 3.1
Operational definitions and rationale of variables of choice from the Perception of obesity, physical activity and diet questionnaire (POCAA-Q). ENSANUT 2016.

<table>
<thead>
<tr>
<th>Variable/construct</th>
<th>Valid Response Options</th>
<th>Descriptions &amp; Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported change in consumption of SSBs in the 2 years prior to the survey *</td>
<td>“¿En los dos últimos años, usted considera que su consumo de bebidas azucaradas disminuyó, se mantuvo, o incrementó?” (In the past two years, do you think that your consumption of sugary beverage‡ has decreased, stayed the same, or increased?) Valid response options: decreased, stayed the same, increased.</td>
<td>There was no pre-test data available to compare current with past consumption of SSBs. Self-reported change in consumption provides a proxy of change, although it does not provide information on change in quantity and frequency. Other studies had inquired about changes in past consumption of SSBs using the same question (Boles et al., 2014).</td>
</tr>
<tr>
<td>SSB tax Awareness of the SSB tax †</td>
<td>“¿Sabía usted que desde el año de 2014 hay un impuesto sobre el precio de las bebidas azucaradas (refrescos, jugos y aguas</td>
<td>Key variable in this study to assess whether people knew that a tax on SSBs was implemented in 2014.</td>
</tr>
<tr>
<td>Variable/construct</td>
<td>Survey Question(s)/Statement &amp; Valid Response Options</td>
<td>Descriptions &amp; Rationale</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>endulzadas)?” (Did you know that since 2014 there is a tax on industrialized sugary drinks such as sodas, juices and flavored water?)</td>
<td>Valid response options: yes, no.</td>
<td></td>
</tr>
<tr>
<td>Opinion about the potential of the SSB to reduce purchases of SSBs *</td>
<td>“¿Considera que esta acción está ayudando a disminuir la compra de bebidas azucaradas?” (Do you think that this [tax] is helping to reduce purchases of sugary beverages?)</td>
<td>Key variable in this study to assess people’s opinion about the potential of the SSB tax to reduce SSB purchases. It is considered a proxy of social norms.</td>
</tr>
<tr>
<td>Health beliefs</td>
<td>“Por favor, dígame si considera que el consumir bebidas azucaradas favorece el desarrollo de: (a) presión alta, (b) obesidad, (c) diabetes (azúcar alta en sangre), (d) caries dental” (Please, tell me if you think that SSB consumption contributes to the development of: (a) high blood pressure, (b) obesity, (c) diabetes (high blood sugar), (d) dental caries)</td>
<td>The theoretical construct “health belief” was operationalized as the negative physical outcome expectations of a dietary habit (Bandura, 1977). The evidence regarding the role of health beliefs in SSB consumption is adult is scant; some studies have found significant associations (Park et al., 2014). This association has never been studied in Mexican adults at national scale in Mexico. The health beliefs chosen (SSBs contribute to high blood pressure, obesity, and dental caries) are based on evidence of the link between a high SSB consumption and those conditions (Greenwood et al., 2014; Hu, 2013; Huang et al., 2014; Imamura et al., 2015; Malik et al., 2010; Moynihan &amp; Kelly, 2014; Wang et al., 2015).</td>
</tr>
<tr>
<td>Self-efficacy (confidence to drink &lt; 1 glass of SSBs per week)</td>
<td>“¿Qué tan capaz se siente de limitar su consumo a uno o menos vasos a la semana de bebidas azucaradas como refrescos, jugos y aguas endulzadas?” (How confident do you feel about limiting your consumption to one or fewer glasses a week of sugary beverages such as soft drinks, juices, and flavored water?)</td>
<td>Self-efficacy is the confidence to carry out the intended behavior successfully or overcome barriers to engaging in the behavior. It is a psychosocial construct from social cognitive theory (Bandura, 1977); in the theory of</td>
</tr>
<tr>
<td>Variable/construct</td>
<td>Survey Question(s)/Statement</td>
<td>Valid Response Options</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td>you feel about drinking one or less glasses of sugary drinks (such as sodas, juices, nectars, and sweetened water) a week?”</td>
<td>very confident, confident, somewhat confident, not confident.</td>
</tr>
<tr>
<td>Liking of SSBs</td>
<td>“¿Está de acuerdo con la afirmación: ‘El sabor de las bebidas azucaradas me gusta’” (Do you agree with this statement “You like the taste of sugary drinks”)</td>
<td>completely agree, agree, disagree, completely disagree.</td>
</tr>
<tr>
<td>Environmental determinant *</td>
<td>“¿Está de acuerdo con la afirmación: ‘Puedo beber agua potable de forma gratuita o a bajo costo en mi comunidad’” (Do you agree with the statement “I can drink potable water in my community at no cost or for free”)?</td>
<td>completely agree, agree, disagree, completely disagree.</td>
</tr>
</tbody>
</table>

Notes.
* “Don’t know” and no responses were converted to missing.
† “Don’t know” responses were converted to “no”, and no responses were converted to missing.
‡ In the questionnaire, the term “sugary drinks” was used instead of the technical term sugar-sweetened beverages. A description of the different categories of beverages included in the term “sugary drinks” was provided the first time it was used and two additional times throughout the questionnaire.
**Questionnaire validation.**

Validity of the POCAA-Q was established using a panel of experts in addition to field tests. Researchers at Teachers College and at the INSP reviewed subsequent iterations of the questionnaire to ensure that different questions were capturing what was intended, and that important aspects of the different constructs were included.

After theoretically ensuring validity, the questionnaire was practically applied to a small sample of people (n=10) in Cuernavaca to ensure appropriate wording of the questions and response options. The tool was further refined while training of data collectors (n=50) which took place in Cuernavaca (Mexico) in April 2016 over two consecutive days. (Cristina Álvarez, Alejandra Jiménez, and Rebeca Uribe delivered the training.) After presenting and explaining the tool, data collectors practiced interviewing peers. Each also administered it to two people not familiar with the study (n=100 in total). Issues with the application of the tool were discussed in small groups and then with the whole group. Most issues referred to the wording of the questions and meaning of some concepts. As a result, we reworded five of the questions to improve comprehension and extended and improved explanations of concepts in the data collectors’ manual.

Psychometric validation of the SSB-related questions (i.e., test-retest reliability and validity) is being conducted and will be reported elsewhere (Álvarez-Sánchez et al., In preparation).

**Consumption of taxed SSBs.**

Beverage consumption was assessed using a SFFQ validated for use with Mexican adolescents and adults (Denova-Gutierrez et al., 2016). The questionnaire
includes 140 food items including a variety of sugar-sweetened and unsweetened or artificially sweetened beverages. To assess consumption of each food item, reported frequency of consumption was converted into grams. To calculate consumption of taxed industrialized SSBs, we summed quantities (g/person/day) of all SSBs subject to the excise tax included in the SFFQ: regular carbonated SSBs, industrialized flavored waters with added sugar, and industrialized fruit nectars with added sugar. Sweetened energy and sports beverages are subject to the SSB tax, but they are not captured by the FFQ, thus they are not contemplated in this study. The data from the SFFQ had already been cleaned and processed (Ramirez-Silva et al., 2016); we excluded an additional 3 individuals with extreme observations (more than 3 standard deviations the log consumption of taxed SSBs) were excluded.

Covariates

Socio-demographic variables included sex (men and women), age (continuous variable), and a validated socio-economic status index (Gutierrez, 2013) with terciles derived from principal components analysis of eight variables: household building materials; number of bedrooms; basic services infrastructure; ownership of a car, television, radio, and refrigerator, etc.). Body mass index (BMI) was calculated as the weight in kilograms divided by the square height in meters (kg/m\(^2\)) (WHO, 2017) where height and weight were measured using standardized procedures (Habicht, 1974; Lohman et al., 1991). Values between 10 and 58 kg/m\(^2\) were considered valid data (Shamah-Levy et al., 2017). We used the WHO BMI classification to categorize individuals as: underweight: <18.5, normal weight: 18.5-24.9, overweight: 25.0-29.9, or obese: ≥ 30.0 (WHO, 2017). We also included self-reporting of diabetes diagnosis in response to the
question: “¿Algún médico le ha dicho que tiene diabetes o alta el azúcar en la sangre?”
(Has a doctor told you that you have diabetes or high blood sugar?). Table 3. 2 presents a summary outline of all variables utilized in the analysis.

Table 3. 2  
*Variables Used in the Data Analysis*

<table>
<thead>
<tr>
<th>ENSANUT 2016 data file</th>
<th>Primary Variables</th>
</tr>
</thead>
</table>
| Perception of Obesity, Physical Activity and Diet Questionnaire (POCAA-Q) | Perception of change in SSB consumption in the 2 years prior (2014-2016)  
Awareness of the SSB tax  
Opinion about the effectiveness of the SSB tax in reducing purchases of SSBs  
Self-efficacy (ability to drink ≤1 glasses SSB/week)  
Health beliefs regarding SSB drinking  
Liking for SSBs drinking  
Availability of free/low-cost potable water for in community |
| Semi-Quantitative Food Frequency Questionnaire (SFFQ) | Consumption of SSBs (log g/day) |
| ENSANUT 2016 data file | Variables for Stratification and Control |
| Demographic and socio-economic questionnaire | Sex (male and female)  
Age (continuous)  
Socio-economic status (terciles 1, 2, and 3)  
Urban-rural location  
Region (North, Centre, Mexico City, South)  
Diabetes diagnosis (yes, yes – pregnant, no) |
| Anthropometry | Body Mass Index (normal weight, overweight, obesity) |
Statistical Analyses.

The relationship between categorical variables (e.g., awareness of the SSB tax and socio-demographic variables) was examined using \( \chi^2 \) tests with a \( p \)-value of <.05 as the cut-point for statistical significance. Differences between subcategories of a variable were considered to be statistically significant if their 95% confidence intervals (CIs) did not overlap; we used this approach recognizing its limitation, namely, that when the CIs of two statistics do not overlap, but they could be significantly different even if their CIs overlap (Knezevic, 2008).

A binary logistic regression was conducted to evaluate the probability that a given person would report a decrease in their SSB consumption in the two years prior, given their awareness of the SSB tax, opinion about the effectiveness of the SSB tax in reducing purchases of SSBs, psychosocial determinants (health beliefs scale, self-efficacy, and liking of SSBs), and an environmental determinant (availability of potable water for free or at a low cost). We constructed the binary outcome variable (consumption of SSBs decreased and consumption did not decrease) from the three-category perception of change in the SSB consumption variable by keeping the “consumption decreased” category and combining the “consumption stayed the same” and “consumption increased” categories.

Multiple linear regression analysis was used to examine the association between awareness and opinion of the SSB tax, psychosocial determinants of SSB consumption (health beliefs scale, liking of SSBs, and self-efficacy) and an environmental determinant (availability of potable water for free or at a low cost) and current consumption of taxed SSBs (log g/d), after controlling for sex, age, diabetes diagnosis, SES, area, and region.
The outcome variable (consumption of taxed SSBs (log g/person/day)) was strongly, positively skewed. Thus, a "logarithmic" transformation was conducted. For the purpose of improving interpretability of the beta estimates, for each estimate we calculated the percentage change in the outcome variable for one unit change in the independent variable while all other variables in the model were held constant; we used the equation:

\[
\% \text{ change in consumption of taxed SSBs} = (e^\beta - 1) \times 100
\]

(University of California Los Angeles (UCLA) Institute for Digital Research and Education (IDRE), 2017).

Lastly, we estimated mean consumption of taxed SSBs for the total sample and by the theoretical variables of interest (awareness and opinion about the tax, psychosocial and environmental factors).

All statistical analyses were performed with IBM SPSS, version 24.0. Calculations were weighted by expansion factors and adjusted for the complex sampling survey design using the SPSS command for complex surveys. Data for the \( \chi^2 \) tests met the assumptions of sample size and independence of observations. The binary logistic regression model was checked for linearity and multicollinearity. The multiple regression model was checked for multicollinearity, linearity and for normality, homoscedasticity, and independence of residuals.

3.5. Methods of the Qualitative Study

In reporting the methods of the qualitative study, the Consolidated Criteria for Reporting Qualitative Research (COREQ) (Tong et al., 2007) was followed. The COREQ is a comprehensive checklist for reporting the design components of interviews and focus
groups. This helps to increase transparency and to compare results. The full COREQ 32-item checklist is presented in Appendix IV.

**Strategy of inquiry: case study.**

There are many research approaches employed in qualitative research. Creswell distinguishes the five most commonly used contemporarily: narrative research, phenomenology, ethnography, grounded theory, and case study (Creswell, 2013).

Many definitions and interpretations of case studies as a strategy exist in the literature; however, for the purposes of this study, the terms are defined as in Robert K. Yin’s book *Case Study Research: Design and Methods* (2009). Yin provides a twofold definition of case study as a research method. The first refers to the scope of a case study “A case study is an empirical enquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin, 2009; pp.18). The second refers to the data collection and data analysis strategies “The case study inquiry copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another results benefits from the prior development of theoretical propositions to guide data collection and analysis.” (Yin, 2009; pp.18). A multi-case study can help discern patterned practices in each of the groups under study and the collective basis for those patterns (Cockerham, 2005).

The qualitative portion of this dissertation focuses on 2 of the 3-group comparative qualitative investigation that explored SSB consumption in the context of
the SSB tax. The two groups described here are (a) parents of children 9 years or younger and (b) construction workers. The results from the third group — composed of indigenous peoples from Chiapas Highlands (Chiapas, Mexico) — have not been included here because of time constraints but they will be published separately. A cross-case analysis involving the three groups will also be published separately.

In short, this study aimed at exploring “why” and “how” participants in these groups may have changed their perceptions and consumption of SSBs in the context of the SSB tax. “How” and “why” questions are more explanatory in nature and deal with operational links that need to be traced back over time (Yin, 2009). Generally, a case study is the preferred form of study when “(a) “how” and “why” questions are being posed, (b) the investigator has little control over events, and (c) the focus is on a contemporary phenomenon within a real-life context” (Yin, 2009). Therefore, a case study seemed the most appropriate strategy of inquiry to answer the qualitative research questions of this dissertation.

Given the various groups included in this study, this design is considered a multi-case with literal replications. The rationale for using a multi-case study stemmed from the hypothesis that different types of conditions (e.g., demographic characteristics, work context, parental role) may influence SSB consumption and their response to a price increase in SSBs. The three separate case studies allowed us to deepen our understanding
of the effect of the SSB tax in different contexts: (a) Work context where (low-income) men perform a physically demanding job and where consumption of SSBs has become part of the identity of the workers, (b) The family environment or home where promotion and development of children’s eating habits takes place, 3) Context of extreme marginalization and powerful historical and cultural roots (indigenous group). As previously mentioned, this dissertation only reports and discusses the results of the parents and construction workers group.

**Participants and study sites.**

The sample for the sub-studies reported herein consisted of two groups of Mexican adults: (a) Parents of children 9 years of age or younger, and (b) Construction workers. Each one of these conformed a “case”. This allowed for identifying themes of the cases as well as conducting cross-case theme analysis. The rationale for selecting each one of these groups has been presented in Section 2.5.

The research site was Cuernavaca (*Figure 3. 2 shows a map of Mexico with the region marked with a red dot*), a city of approximately 349,000 residents situated in the southwestern Mexican state of Morelos, about 52 miles from Mexico City. Cuernavaca was nicknamed “the city of eternal spring” because of its warm climate (70–79 °F) all year long. This site was chosen for the study for convenience reasons, because the

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29 The rationale for including the group of indigenous peoples from The Chiapas Highlands was that they are considered as some of the highest soda consumers in the world and that they live in a context of extreme social exclusion.
principal offices of the Mexican INSP are located there. The study was conducted with urban population only.

Figure 3. 2 Map of Mexico. 
Source: Googlemaps (retrieved: January, 2018)

**Sampling of participants.**

Qualitative research is less concerned with generalizing results concerning a particular aspect (as in quantitative studies) than with exploring that aspect in depth from the inside. As Ruiz Olabuénaga (2012) explains, its orientation is toward “vertical” wisdom, not “horizontal” and its “obsession” is internal validity rather than external validity or ecological reliability. The task of selecting representative samples, therefore, is of no importance in qualitative methods. While quantitative studies most often uses the probabilistic rules of chance to select representative samples, qualitative studies typically use purposeful sampling techniques that allow the researcher to collect relevant information to answer the study’s research questions (Ruiz Olabuénaga, 2012). Ruiz Olabuénaga (2012) divides purposive sampling techniques in two:
1. *Strategic sampling:* Informants are chosen based on “strategic” criteria, such as being easy to reach (to save time, money, etc.), volunteering to participate, having knowledge of the situation or issue under study, having come in contact with the researcher through participants that have been previously interviewed (*snowball* sampling), etc.

2. *Theoretical sampling:* Is used to generate theories where the researcher collects, codes, and analyzes data and decides what further data should be collected and where to find it to improve his/her theory. The researcher is not concerned about selecting participants randomly or selecting the right number, but rather, he/she is interested in collecting relevant information for the concept or theory sought. Theoretical sampling does not end until new concepts and categories no longer appear, that is, until the saturation level is reached.

This study employed a theoretical sampling technique, as proposed by Ruiz Olabuénaga (2012). Ten interviews and four focus groups were conducted with each case, for a total of twenty interviews and eight focus groups. This number of interviews and focus groups seemed adequate to achieve saturation of responses based on other qualitative studies of dietary practices (Bunting et al., 2013; Eli et al., 2017).

The specific inclusion requirements for each of the groups are described below.

*Inclusion Criteria for Case 1: Parents of children nine years or younger*
• Being 19-59 years old.

• Having a child (or being a primary caregiver\textsuperscript{30} of a child) 9 years of age or younger \textsuperscript{31}.

• Low socio-economic status, classes D and D+\textsuperscript{32} as defined by the AMAI NSE 8X7 questionnaire\textsuperscript{3334}.

Inclusion Criteria for Case 2: Construction workers

• Being 19-59 years old.

• Belonging to a low socio-economic class defined as level D and D+, as assessed with the AMAI NSE 8X7 questionnaire, proposed by the Mexican Association of Market Intelligence and Opinion (AMAI) (AMAI, 2017).

\textsuperscript{30} The term “parents” is used to refer to both parents and caregivers of young children in the home.

\textsuperscript{31} Parents of older children were not be selected because at age 10-11 children have a larger capacity, compared to smaller children, to reason, learn and apply skills, and exercise self-control. This is a period when children become more independent from their parents and therefore eat out more and have a bigger say on what they eat at home. They are also more affected by the norms of their peers, which might dictate what children eat when they go out.

\textsuperscript{32} According to the AMAI rule, the D + and D categories are the second and third groups with the lowest quality of life (category E is the first) (AMAI, 2017). Individuals in Category D live in a house that lacks basic services and amenities (e.g., cooking stove, toilet, shower). It is the largest group and currently represents 31.8\% of households in the country and 23.8 percent of households in cities with more than 100 thousand inhabitants. The D + category is characterized by living in houses with minimum sanitary infrastructure. It represents 19.0 percent of households in the country and 20.2 percent of households in cities with more than 100 thousand inhabitants.

\textsuperscript{33} We had originally planned to only include individuals from a low socio-economic class (D+ and D). Nevertheless, it was challenging to recruit enough participants who met this criteria for the study, so individuals from socio-economic levels other than D and D+ where allowed to participate. A description of the challenges experienced when trying to recruit is further explained in the following section about recruitment of parents.

\textsuperscript{34} It should be noted that the construction of socio-economic levels with the AMAI rule is different from that of the ENSANUT.
• Working as a construction worker for at least 6 months before the passing of the SSB tax (July 2013).

**Recruitment of participants.**

*Recruitment of participants for Case 1: Parents.* We recruited parents of children 9 years or younger living in Cuernavaca through the elementary schools their children attended. The recruitment strategy was to first contact the principals of primary schools located in low-income neighborhoods in person and ask them for permission and assistance to (a) recruit parents (or primary caregivers) within the school premises and (b) to use one of the schoolrooms to conduct the interviews and focus groups. A written letter was accompanied followed the initial in-person contact. (The letter used to present the study to the school principals can be found in Appendix V.)

We first attempted to enroll schools from Gualupita, the poorest neighborhood in Cuernavaca, to ensure we found participants meeting the low-income criteria. We contacted the principals of two schools there, but they did not grant us permission to conduct the study in their premises for two main reasons. First, they argued that the authorization from the INSP IRB was not sufficient and that we needed an authorization from the *Institute of Basic Education of the State of Morelos* (Instituto de Educación Básica del Estado de Morelos) — which we did not have and could have taken up to three months to obtain. Second, both said that their schools were located in a “red” zone that had many issues with theft and safety in the past; thus, they were concerned about having to keep the gates unlocked for parents to come into the school to participate in the study or having one of their staff members opening and locking the gates every time a
parent would come for an interview. Moreover, through conversations with local residents we learned that the Gualupita neighborhood houses many drug dealers and violent criminals. Thus, even though conducting the study in that neighborhood would have allowed us to find a higher number of low-income parents, we did not continue attempting to enroll schools from that area for the aforementioned concerns.

Further, we approached and obtained permission from the principals of two schools: Escuela de Primaria Federal Yaocalli and Escuela de Primaria Kuaujtlá, in the Lomas de Cortes neighborhood. They were located in the same address and shared the same building, but met at different times of the day. The choice of the first school was made on the grounds that the principal was a relative of one of the co-researchers, Dr. Guillén, and based on that relationship of trust she accepted the IRB letter from the INSP and offered to facilitate our work. The principal of the second school posed no objections to us conducting the study in her premises upon learning that the other principal had granted us permission.

The inclusion criteria listed above were used to determine eligibility. (However, for the reasons explained earlier, it was not possible to apply the income level criterion.) Participants were invited to participate by C. Álvarez-Sánchez (as the researcher) with the aid of the school principal and one of the teachers. They were asked face-to-face at

Note about the school procedures. About ten minutes before the start of classes two teachers stand by the school gate and only let in students. After which, the gates are locked and are only reopened again at the end of classes or exceptionally if a visitor with a pre-scheduled appointment comes and/or if a teacher needs to get out.

The names of the two schools have been changed to protect their identity.
the school gate either at the start of the school day, when they dropped their children off, or after classes when they picked them up. In the event that participants were available at the time of the invitation, the interview or focus group was conducted immediately after recruitment. Alternatively, potential dates and times were established with them.

Recruitment of participants for Case 2: Construction workers. Anticipating that most construction workers would be male, recruitment and fieldwork with this group was conducted by H. Guillén.

As in the case of the parents, there were several unsuccessful attempts to access construction sites because several contractors did not grant permission. Nevertheless, we were able to recruit individuals through three different construction sites. The first site was the Nursing School of the Autonomous University of the State of Morelos (Universidad Autónoma del Estado de Morelos; UAEM) where new classrooms were being built — H. Guillén, teaches in this institution. The director of the Nursing School was contacted first and she introduced Héctor to the contractor. The contractor granted permission to interview the construction workers at that site and also facilitated access to a second work site located about 34 Kilometers away from Cuernavaca where water tanks were being built. The third was the Plaza Comercial Forum (a roundabout in a shopping mall in Cuernavaca). Access to workers at that site was facilitated by the responsible engineer for the project, who happened to be H. Guillén’s brother.

The letter used when contacting the contractors/foremen can be found in Appendix VI.

The inclusion criteria mentioned above were used to determine eligibility. Participants were recruited face-to-face. In most cases, interviews and focus groups were
conducted outside of working hours, but in a few instances they were conducted during working hours if allowed by the contractor/foreman and if their participation did not affect their work.

All fieldwork was carried out between June and August 2017.

**Ethical considerations.**

The was approved by the three Institutional Review Boards in Mexico (the Ethics in Research Committee, the Research Committee, and the Biosafety Committee; project ID: 1484) at the INSP and in the United States of America by the Institutional Review Boards in Teachers College Columbia University. The consent forms, stamped by the INSP IRB, can be seen in Appendix VII.

All participants were provided with a thorough overview of the study through the process of informed consent and participants’ rights. An oral informed consent was administered and consent was recorded on an audio recorder. Informants were left with a card with the contact information of the president of the Research and Ethics Committee at the INSP (see Appendix VIII). A copy of the Oral Informed Consent letter was provided when participants asked for it.

**Data collection and procedures.**

The primary methods of data collection utilized in this study include in-depth semi-structured interviews and focus group interviews. Observations during lunch breaks and environment observations around the schools were conducted to gather supplementary information. The use of different data sources is recommended to build a
stronger and coherent justification for themes (Creswell, 2003). This process is known as “triangulation” and can add validity to the study, as is done here.

**In-depth semi-structured interviews and focus groups.**

Qualitative interviews provide descriptions for the life-world of participants with respect to interpretation of their meaning (Kvale, 1996). According to Yin, interviews are one of the most important sources of information in a case study Yin (2009). The advantage of using interviews is that they focus directly on case study topics and provide perceived causal inferences and explanations (Yin, 2009). Their main weaknesses include bias due to poorly articulated questions, response bias, inaccuracies due to poor recall, and reflexivity (the respondent says what the interviewer wants to hear) (Yin, 2009). In-depth interviews are the most adequate method to explore views, experiences, beliefs, and motivations from single individuals (Gill et al., 2008). They allow the researcher to probe to obtain more detail on answers.

Focus groups share many features with semi- or non-structured interviews, however, they are not mere collections of similar data from different participants (Gill et al., 2008). They are a useful method to explore collective views, social norms, and the underlying meanings of certain opinions (Gill et al., 2008). They provide an opportunity to deepen understanding of an issue, to explain statistical data, and to seek clarification of information collected through in-depth interviews. They are particularly useful (in comparison with individual interviews) because they allow for the exploration of disparate views and help people generate and share their ideas, thereby revealing perceptions that might go undetected in an individual interview.
The in-depth semi-structured interview and focus group guides were developed based on the research questions, the literature reviewed, and expert insights. Several iterations of the guides were reviewed by two of the co-researchers. The final version of the questions were in Spanish and in simple language easily understood by people with low literacy. Each interview guide was pilot-tested with two individuals from each group prior to the start of the study (four in total); each focus group guide was pilot-tested with one focus group (two in total).

The following aspects were assessed during the pilot testing of the guides: 1) participants’ comprehension of questions and key concepts, 2) use of key terminology by informants (e.g., how they referred to sugary drinks, plain water), 3) adequacy of the sequence of the questions and blocks of questions, and 4) our ability to connect and generate empathy with the informants. No modifications to the interview or focus group guides were necessary, so we decided to include the four pilot interviews and the two pilot focus groups as part of the study sample. Appendices XII and III present the interview and focus groups guides, respectively.

The guides were structured in four blocks of questions as follows:

1. *Current consumption & motivation (reasons) for consumption.* Qualitative description of own consumption of SSBs and unsweetened beverages (including water, *aguas frescas*, carbonated SSBs, sweetened juice, sports drinks, energy drinks, coffee, tea, traditional drinks such as *pozol*; but excluding alcohol), as well as consumption of those beverages by children and other adults in the household. We explored consumption of different types of non-alcoholic sweetened and unsweetened beverages in different scenarios (at
home, during celebrations, and in a work context—the last being particularly important in the case of construction workers) different locations, times of day, and combinations of beverages with food, as these have been shown to be important with regards to beverage choice (Zoellner et al., 2013). In addition, we explored consumption based on: (a) time periods: consumption throughout life, in addition to before and after the tax, and (b) seasons: summer versus winter (hot versus cold seasons). Amount of money spent on SSBs, and personal and social norms around consumption were also examined.

2. Changes in practices. Description of changes, particularly since the time the SSB tax was implemented, with a particular emphasis on the strategies informants put in place to adapt to the price increase (e.g., switching to cheaper brands, making own beverages, reduced consumption). The motivation for change, and intention to change in the future were also explored.

3. Health beliefs and attitudes toward SSBs. Health beliefs in relation to SSBs, either based on participants’ own experience, on information heard or read, and/or the source of information. To elicit information about a wide variety of beverages, we used cards with images of 18 beverages37 (sweetened, sugar-free, sugar-free sports drinks, water, energy drinks).

37 The images are the following: 1) 600 ml plastic bottle of regular Coca-Cola, 2) 600 ml plastic bottle of Coca-Cola Sin Azúcar, 3) 600 ml plastic bottle of Coca-Cola Light, 4) 600 ml plastic bottle of Coca-Cola Stevia, 5) 600 ml plastic bottle of Orange Fanta, 6) Tang sugar-sweetened (SS) powder sachets, 7) tetra brick of industrialized SS Jumex mango juice, 8) tetra pack of industrialized SS Boing strawberry juice, 9) Vive 100, SS energy drink, 10) Gatorade, SS sports drink, 11) Be Light, industrialized SS water, 12) Fonafont Levité, industrialized SS water, 13)
artificially sweetened and unsweetened) representative of different beverages categories and identified during supermarket trips and discussions with INSP colleagues (See images in Appendix IX). Participants were asked to sort the cards according to their own criteria in order to identify meanings and practices associated with each one of them. On a second round, participants were asked to sort the cards according to the following criteria: (a) good to drink on a daily basis, (b) good to drink a few times a week, (c) should be avoided. The activity was done individually in the case of interviews, and as a group in the focus groups.

4. The SSB tax – If the SSB tax had not been mentioned spontaneously by participants near the end of the interview, they were asked if they had noticed a change in the prices of SSBs (and other products) in the recent past, what the size of the price increase was and if they knew the reason for the price increase. If participants expressed being aware of the tax, they were asked to describe what they knew and their opinion about it. In the case that they were not aware, they were given a brief description of it then asked what they thought about this measure and its likely impact.

The interview and focus group guides can be found in Appendices X and XI.

Industrialized SS chocolate milk, 14) glass of orange juice, 15) glass of water, 16) glass of lime cool water, 17) milk, 18) atole (traditional Mexican hot corn- and masa-based beverage with added sugar).


**Socio-demographic information.**

Participants provided socio-demographic (e.g., age, education, occupation) and other relevant information (e.g., illness, recipient of social program) through a closed-ended questionnaire (see Appendices XII and XIII) administered at the beginning of the interview.

**Beverage consumption.**

For all participants, we assessed qualitatively consumption of non-alcoholic SSBs and unsweetened beverages, including water, *aguas frescas*, carbonated SSBs, sweetened juice, sports drinks, energy drinks, coffee, tea, and traditional drinks such as *pozol*. In addition, we explored consumption of different types of in different scenarios (at home, during celebrations, and in a work context, the last being particularly important in the case of construction workers) different locations, times of day, and combinations of beverages with food, as those have been shown to be important with regards to beverage choice (Zoellner et al., 2013). In addition, we explored consumption based on: (a) time periods: consumption throughout life, and before and after the tax, in addition to (b) seasons: summer versus winter (hot seasons versus cold seasons).

In addition, for 15 parents (11 who took part in the interviews and four focus group participants), we quantitatively assessed their frequency and quantity of consumption of water and a variety of sugar-sweetened, unsweetened or artificially sweetened beverages. To that end we utilized modified version of the beverage intake section from the food-frequency questionnaire (FFQ) that was utilized in the ENSANUT 2016 (INPS, 2016). The modifications made including removing the question about consumption of alcoholic beverages, adding two questions about milk and flavored milk
consumption from the dairy section, and adding two questions (not included in the FFQ) about consumption of energy and sport beverages. The questionnaire used in this study can be seen in See Appendix XIV.

We did not assess quantitative consumption of all parents participating in focus groups or construction workers due to logistical and time constraints that had not been initially anticipated.

**Flow of data gathering:**

Data gathering in interviews and focus groups occurred in the following order:

1. Before the start of the interview or focus group, a description of the study and the purpose of the interview were provided, while questions from participants (if any) were clarified. The informed consent was read out loud and consent was recorded verbally using a digital recorder. Participation and confidentiality rules were also explained during the focus groups.

2. The socio-demographic questionnaire (paper version) was interviewer-administered during the interviews, and self-administered during the focus groups.

3. The beverage intake questionnaire (paper version) was interviewer-administered to parents participating in the interviews.

4. The interview or focus group was conducted.

**Data collection with parents.**

A total of 23 parents were invited to participate in the interviews; 39 parents were invited to take part in the focus group discussions. Eleven interviews (one of them with a
couple, making a total of 12 people interviewed) were conducted. One interview was discarded because the participant seemed to have some cognitive issues and the quality of the information generated was deemed inadequate. The 10 interviews included in the study lasted an average of 54 min (32–96 min); 9 of them were administered to parents and only one was completed by a primary caregiver (i.e., a grandmother). The socio-economic level of the interviewees was as follows: four were of D or D+ level, five (including the couple) were of C or C+ level, and two were of B level. Four focus groups (27 people in total; 15 in the first group, and four people in each of the subsequent ones) were conducted lasting an average of 62.5 min (41-1-45 min); all participants were parents. Thirteen focus group participants were of socio-economic level C-, C or C+, the rest were D or D+.

The interviews and focus groups were conducted, in Spanish, in a private room in the schools, such as a library or media room when not in use, in June 2017. Most of the interviews were conducted by C. Álvarez-Sánchez (who has training in behavioral nutrition and public health) with the exception of two that were conducted by H. Guillén (who has PhD in anthropology and health). C. Álvarez-Sánchez and H. Guillén jointly facilitated the first and largest of the four focus groups; and C. Álvarez-Sánchez facilitated the other three focus groups solely.

Prior to the start of the interviews and focus groups, participants were given a thorough overview of the study and were asked to provide their oral consent; (consent was audio recorded). No incentives were given, but beverages and biscuits were provided. All interviews and focus groups were audio recorded with consent from interviewees. No repeat interviews were conducted.
In addition, field notes were made during those two weeks and included descriptions of the school, foods sold at recess time, food stands outside of the school, corner stores near the school, publicity and educational campaigns in relation to SSBs near the schools, informal discussions with teachers, parents, and a school custodian. Notes were also made after each interview and focus group.

Table 3.3
Data collection techniques, sample sizes, and information collected from parents of children 9 years or younger

<table>
<thead>
<tr>
<th>Method/ Instrument and Number (n)</th>
<th>Description / Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-demographic questionnaire (n=37)</td>
<td>Socio-demographic, presence of chronic illness (of self or relative) and other relevant information were collected before the start of the interviews and focus groups.</td>
</tr>
</tbody>
</table>
| Semi-Quantitative Beverage Frequency Questionnaire (n=15) | The frequency and quantity of 17 beverages: water consumption, and a variety of sugar-sweetened, unsweetened or artificially sweetened beverages were assessed using a modified version of the beverage intake section from the food-frequency questionnaire (FFQ) that was utilized in the ENSANUT 2016 (INPS, 2016). The modifications made including removing the question about consumption of alcoholic beverages, adding two questions about milk and flavored milk consumption from the dairy section, and adding two questions (not included in the FFQ) about consumption of energy and sport beverages (see questionnaire in Appendix XIV).

The questionnaire was interviewer-administered. This questionnaire was only administered during the interviews and to a few focus groups participants. We were not able to administer it to all focus group participants due to logistical and time constraints. |
| In-depth interviews with a semi-structured guide (n=10) | The aims were to explore: (a) Parents and their children’s consumption of taxed SSBs and psychosocial determinants of consumption/feeding SSBs to children, (b) Whether consumption of taxed SSBs had changed, and why and how, (c) Whether the SSB tax influenced consumption of taxed SSBs and/or psychosocial determinants of consumption. |
To address these aims we examined the following in detail:

- Qualitative assessment of parents’ and their children’s consumption of a wide variety of sweetened and unsweetened beverages38 (taxed and untaxed) in different scenarios and locations (at home, at school, on the street, during celebrations), times of day, and combinations of beverages with food. In addition, we explored consumption based on: (a) time periods: consumption throughout life, in addition to before and after the tax, and (b) seasons: summer versus winter (hot seasons versus cold seasons).
- Parental beverage-related feeding practices.
- Reported change in parents’ and their children’s SSB consumption and reason for change.
- Psychosocial determinants of taxed SSB beverage consumption.
- Parental SSB-related beliefs and attitudes.
- Liking for SSBs by parents and children.
- Personal and social norms in relation to SSB consumption and giving SSBs to children.
- Perceived control over own beverage consumption and child beverage feeding-related practices.
- Intention to change own consumption and modify children’s consumption, and action plans.
- Perception of environmental determinants of beverage consumption including: beverage availability (at home, eating out, school, etc.), publicity, educational campaigns, and cost for different types of beverages (plain water, aguas frescas, other homemade SSBs, carbonated industrialized SSBs [soda] other industrialized SSBs, and other beverages). In addition, for plain water we explored perception of safety of home tap water and perception of safety of the school’s drinking fountain water.
- Awareness of the SSB tax, source of information about it, opinion about its likely impact, changes participants made as a result of the tax, potential reaction if the SSB tax were increased to 20

38 Beverages asked about included the following categories: (a) water (plain, tap, bottled, etc.), (b) carbonated industrialized SSBs (Coca-Cola, Pepsi, Sprite, and local brands of beverages such as Jarritos), (c) non-carbonated industrialized SSBs (industrialized juice, sport drinks, and energy drinks), (d) aguas frescas (homemade beverages with fruit, flowers, or seeds blended with sugar and water), (e) other homemade SSBs (coffee, tea, pozol), and (f) other beverages (e.g., homemade unsweetened natural juice).
percent.

Focus groups ($n=4$; 27 people in total) focused on the same items as in the individual interviews but gave less emphasis to the individual history of beverage consumption and more to the social norms regarding SSB drinking and giving SSBs to children.

Environmental observations
As part of field work observations of the environment around the school were conducted to gather information about availability of different types of beverages in and outside of the school, advertisements and promotions of SSBs, as well as about potential educational campaigns aimed at the reduction of SSBs.

Data collection with construction workers.

H. Guillén, conducted all interviews and focus groups with construction workers because they were all male and having a foreign female interviewing them could have greatly influenced the information being generated.

Data collection was conducted between June and July 2017. Two focus groups were conducted after working hours and two during the workers’ lunch breaks. Four interviews were conducted during the lunch breaks and six during working hours upon approval by the contractor/foreman and in agreement with participants as to not infringe on their quality of work.

Prior to the start of the interviews and focus groups, participants were given a thorough overview of the study and were asked to provide their oral consent (consent was audio recorded). No incentives were given, but beverages and biscuits were provided. All interviews and focus groups were audio recorded with consent from interviewees. No repeat interviews were conducted.
In addition, and considering that some of the focus groups and interviews were conducted at lunchtime, notes about what the participants were eating and drinking were made. Field notes also included descriptions of the presence of water bottles in the construction sites.

Table 3.4
*Data collection techniques, sample sizes, and information collected from construction workers in three construction sites.*

<table>
<thead>
<tr>
<th>Method/ Instrument and Number (n)</th>
<th>Description / Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-demographic questionnaire (n=30)</td>
<td>Socio-demographic, presence of chronic illness (of self or relative) and other relevant information were collected before the start of the interviews and focus groups.</td>
</tr>
</tbody>
</table>
| In-depth interviews with a semi-structured guide (n=10) | • The aims were to explore: (a) Consumption of taxed SSBs in the construction work context and psychosocial determinants of consumption (beverage-related beliefs, attitudes, social norms, intention, perceived behavioral control, self-identity), (b) Whether consumption of taxed SSBs had changed, and why and how, (c) Whether the SSB tax in particular influenced consumption of taxed SSBs and/or psychosocial determinants of consumption.  
• To address these aims we examined the following in detail:  
• Qualitative assessment of construction workers’ consumption of a wide variety of sweetened and unsweetened beverages* (taxed and untaxed) in different scenarios and locations (at work, at home, during celebrations), times of day, and combinations of beverages with food. In addition, we explored consumption based on: (a) time periods: consumption throughout life in addition to before and after the tax, and (b) seasons: summer |

---

*39 Beverages asked about included the following categories: (a) water (plain, tap, bottled, etc.), (b) carbonated industrialized SSBs (Coca-Cola, Pepsi, Sprite, and local brands of beverages such as Jarritos), (c) non-carbonated industrialized SSBs (industrialized juice, sport drinks, and energy drinks), (d) aguas frescas (homemade beverages with fruit, flowers, or seeds blended with sugar and water), (e) other homemade SSBs (coffee, tea, pozol), and (f) other beverages (e.g., homemade unsweetened natural juice).
<table>
<thead>
<tr>
<th>Method/ Instrument and Number (n)</th>
<th>Description / Objective</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>versus winter (hot seasons versus cold seasons).</td>
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<tr>
<td></td>
<td>• Reported change in consumption of taxed SSBs and reason for change.</td>
</tr>
<tr>
<td></td>
<td>• Psychosocial determinants of consumption of taxed SSBs.</td>
</tr>
<tr>
<td></td>
<td>• Liking for SSBs.</td>
</tr>
<tr>
<td></td>
<td>• Personal and social norms in relation to SSB consumption.</td>
</tr>
<tr>
<td></td>
<td>• Perceived control over own beverage consumption.</td>
</tr>
<tr>
<td></td>
<td>• Intention to change consumption of taxed SSBs and water.</td>
</tr>
<tr>
<td></td>
<td>• Perception of environmental determinants of beverage consumption including: beverage availability (at work, home, eating out, etc.), publicity, educational campaigns, and cost for different types of beverages (plain water, <em>aguas frescas</em>, other homemade SSBs, carbonated industrialized SSBs [soda] other industrialized SSBs, and other beverages). In addition, for plain water we explored perception of safety of home tap water.</td>
</tr>
<tr>
<td>Focus groups (<em>n</em>=4; 20 people in total)</td>
<td>Focus groups centered on the same items as in the individual interviews but gave less emphasis to the individual history of beverage consumption and more to the social norms regarding SSB drinking.</td>
</tr>
<tr>
<td>Environmental observations</td>
<td>As part of field work, observations of the environment around the construction sites (50 meter perimeter) were conducted to gather information about availability of different types of beverages, advertisements and promotions of SSBs, as well as about potential educational campaigns aimed at the reduction of SSBs.</td>
</tr>
</tbody>
</table>

**Observations of the food and information environment.**

These methods of data collection were supplemented with observations to gather data in relation presence of street food stands and corner stores and beverages sold in these places, SSBs and bottled water prices. Information about the information environment, i.e. SSB advertisements, educational campaigns, was also an object of study.
Data analysis and synthesis.

Audio recordings from interviews and focus groups were professionally transcribed (verbatim) into Word documents. Transcripts were analyzed with NVivo, a Computer Aided Qualitative Data Analysis Software program. The transcripts were not returned to participants for comment and/or correction.

Interview and focus group data.

We analyzed qualitative data using a coding scheme primarily based on the Reasoned Action Approach (2010) and developed by the bilingual members of the research team (C. Álvarez-Sánchez, F. Théodore, and H. Guillén). The coding scheme was primarily based on the Reasoned Action Approach Theory, and the hyperbolic discounting concept from Behavioral Economics Theory (see detailed description below). The coding scheme was translated into English and discussed with the other members of the team (I. Contento and P. Koch).

C. Álvarez-Sánchez and H. Guillén read through initial transcripts and added to or modified some of the initial codes. We then applied this codebook to the next set of transcripts coded by two researchers and compared for accuracy and comprehensiveness.

In order to ensure that the approach to coding was consistent, known as qualitative validity (Creswell, 2003), a set of three interviews were independently coded by two researchers compared for accuracy and comprehensiveness. The coding scheme was shared and discussed with the rest of the research team. Once agreement was achieved, the rest of the transcripts were independently coded by only one of the researcher in NVivo version 11 (QSR International, Doncaste, Victoria, Australia), a
computer aided qualitative data analysis software program. C. Álvarez-Sánchez coded the entire parents data set and H. Guillén coded the entire construction workers data set. The final coding scheme and the definitions (in Spanish and translated into English) can be seen in Appendix XV.

Data analysis was carried out in Spanish. Translation of the data into English was limited to selected quotes. (Conducting the analysis in the original language is recommended to prevent misinterpretations of participants’ statements (Temple & Young, 2004; van Nes et al., 2010)) Quotes were translated into English by C. Álvarez-Sánchez (who is a native Spanish speaker) and checked for accuracy by an independent bilingual researcher whose native language is English. Relevant quotes are presented in English and Spanish.

It is important to note that while we explored consumption of many different types of beverages, for the purposes of this dissertation, we primarily focused on the analysis of data pertaining to carbonated SSBs (abbreviated as “soda”), and analyzed data regarding consumption of other types of beverages when it was needed to explain certain aspects of soda-related beliefs and practices.

Data from each case (group) was analyzed and discussed separately in Chapters 5 and 6. After, a “cross-case” analysis was conducted (as suggested by Yin [2009] for multi-case studies), comparing responses and themes from the different groups; the qualitative results were also discussed in light of the results of the quantitative study. This analysis is presented in Chapter 7.
Explanation of the coding scheme

The coding scheme is organized in the following categories:

1. *Behaviors*, which include consumption of plain water, carbonated industrialized SSBs, non-carbonated industrialized SSBs, homemade aguas frescas, other homemade SSBs, and other beverages. (Each behavior has sub-codes for daily consumption, consumption during celebrations, consumption on the street, combination of beverages with food, consumption during cold and hot seasons, and expense.)

2. *Theoretical constructs from the Reasoned Action Approach*, including health beliefs, attitudes (cognitive and affective), personal norms, social norms, perceived behavioral control, barriers, intention, action plans, and environmental factors. (In order to facilitate the analysis by type of beverage we included sub-codes for each beverage category within most of the theoretical constructs. We added the following sub-codes for the environmental determinants construct since it encompasses several practical aspects: educational campaigns, availability, advertisements, promotions, and cost.)

3. *Additional relevant codes as determinants of behavior*, based on the literature or emerging from the text: hyperbolic discounting, addiction, and vice.

4. *Perceived changes in behavior in the past few years*, sub-codes include: description of change, motivation for changing, breaking point, barriers and facilitators, and time from change.
5. *The SSB tax*, sub-codes include: noticing a price variation, spontaneously mentioning the tax, awareness of the tax, source of information, opinion about impact of the tax, and potential reaction if the SSB tax were increased to 20 percent.

Lastly, in order to evaluate potential changes or differences in theoretical constructs before and after the tax, we duplicated all codes for present time and past (time before the tax or approximately three and a half years before the interviews took place since that is when the tax had been implemented). The only exception was for codes relating to “change in practices” and the “SSB tax”.

*Analysis of the beverage frequency consumption data.*

The beverage frequency consumption data was analyzed with SPSS version 24.0. We calculated frequencies, means and standard deviations.

*Validation strategies.*

Credibility: The criterion of credibility (or validity) suggests whether the findings are accurate and credible from the standpoint of the researchers, the participants, and the reader. Validity was achieved by means of *triangulation*. Creswell describes triangulation as when “researchers make use of multiple and different sources, methods, investigators, and theories to provide corroborating evidence. Typically, this process involves corroborating evidence from different sources to shed light on a theme or perspective.” (Creswell, 2013). This study drew from two principal methods of data collection: (a) in-depth interviews, and (b) focus groups; it employed multiple investigators and used various theories as a way of corroborating findings.
Peer debriefing was the second strategy implemented to address the issue of credibility. The last strategy used to ensure credibility was clarifying the bias the researcher brings to the study. A description of my initial assumption before starting data collection is included in the Introduction Chapter.

Dependability: It refers to whether one can track the processes and procedures used to collect and interpret data. In order to ensure dependability, we provided detailed and thorough explanations of how the data were collected and analyzed in what is known as an “audit trail”, through the use of a research journal and memos to document changes in design and procedures. Inter-rater reliability was established by having two data coders and analysts code the same subset of transcripts, then subsequently comparing codes and agreeing on a common coding scheme.

Transferability: The term is different from that of generalizability in quantitative research, since the intent in qualitative research is not to generalize findings to individuals, sites, or places outside of those under study. Transferability is typically achieved by providing detailed descriptions of the samples, their setting, and processes at work. This allows the reader to determine whether similar processes could take place in other settings. Nevertheless, there are some discussions in the literature about the generalizability of findings from qualitative studies, especially from multi-case studies (Creswell & Plano Clark, 2011). Yin (Yin, 2009) feels that qualitative results from multiple case studies can be generalized to some broader theory. He calls this “analytical generalization”, analogous to “statistical generalization” in quantitative research. In an attempt to achieve transferability, we have provided rich, thick descriptions of the
informants and their settings. Additionally, we have conducted a cross-case analysis to draw generalizable conclusions to other population groups in Mexico.

**Research team in the qualitative study.**

The members of the research team in the qualitative study were:

- Cristina Álvarez-Sánchez, Doctoral Candidate in Behavioral Nutrition at Teachers College (Columbia University). MSc in Nutrition and Public Health, NYC, USA
- Isobel Contento, Doctoral Sponsor. PhD in Microbiology, Mary Swartz Rose Professor of Nutrition and Education, Teachers College Columbia University, NYC, USA
- Pamela Koch, Doctoral Advisor. EdD in Behavioral Nutrition, Associate Research Profession, Teachers College Columbia University, NYC, USA
- Florence Théodore, Doctoral Advisor for Qualitative Study. PhD in Sociology, researcher, Mexican National Institute of Public Health, Mexico City, Mexico
- Héctor Guillén, Co-Researcher in Qualitative Study. PhD in Anthropology, Associate Professor at Universidad Autónoma del Estado de Morelos

C. Álvarez-Sánchez originated the study, supervised all aspects of its implementation, conducted fieldwork with parents, conducted the formal data analysis, and drafted the articles. H. Guillén conducted fieldwork with the construction workers, contributed substantially to the preliminary data analysis, and commented on drafts of the articles. F. Théodore provided scientific and professional mentorship during the development of the study as well as throughout the fieldwork and analysis, and
commented on drafts of the articles. I. Contento and P. Koch provided scientific mentorship during the development of the study and commented on drafts of the articles.

3.6. **Integration of the Quantitative and Qualitative Data**

The analysis of the quantitative data was conducted prior to the collection of the qualitative data, and highlighted areas that were further explored in the qualitative study.

After both studies were conducted and data analyzed separately, results were integrated. Creswell and Plano Clark (Creswell et al., 2011) proposed three approaches for integrating multiple forms of data: merging, connecting, and embedding.

- **Merging data.** This integration involves combining the quantitative data (text, images) with the qualitative data (numbers). This can be done by reporting results together in a discussion section, for example reporting the statistical results first followed by quotes or themes from the qualitative study that support or contradict the quantitative results. Another way of merging data is to transform the qualitative dataset into numbers (e.g., counting the occurrence of responses or themes) and compare it with the quantitative dataset.

- **Connecting data.** In this form of integration results from one dataset (e.g., survey) are used to inform a subsequent data collection (e.g., interview questions).

- **Embedding data.** This integration consists of embedding a dataset of secondary priority (e.g., qualitative explanatory data) within a larger, primary design. Qualitative data may be collected prior to an experiments trial to inform procedures or after an experiment to aid in explaining the findings.
In this dissertation, the integration of the quantitative and qualitative sets of data occurred at the discussion stage (merging approach), in Chapter 7. The qualitative data therefore helped support and/or refute findings from the survey. We did not perform transformation of qualitative data into counts of frequencies because we believe that the essence of qualitative research would be lost in the process.

3.7. References


Hu, F. B. (2013). Resolved: there is sufficient scientific evidence that decreasing sugar-sweetened beverage consumption will reduce the prevalence of obesity and obesity-related diseases. *Obes Rev, 14*(8), 606-619. doi:10.1111/obr.12040


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Chapter 4 (Article 1) “Does The Mexican Sugar-Sweetened Beverage Tax Have A Signaling Effect? ENSANUT 2016”

(Submitted to PLOS ONE)

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4.1. Introduction

In Mexico, 73 percent of adults and 36 percent of children and adolescents (aged 2-19 years) have overweight or obesity (Shamah-Levy et al., 2017). Nearly 15 percent of adults are estimated to have type 2 diabetes — being the principal cause of mortality (Barquera et al., 2013). Frequent consumption of SSBs has been linked to an increased risk of a number of adverse health outcomes, including obesity (Hu, 2013; Malik et al., 2006; Te Morenga et al., 2013), type 2 diabetes (Greenwood et al., 2014; Imamura et al., 2015; Malik et al., 2010; Wang et al., 2015), coronary heart disease (Huang et al., 2014), dental caries (Moynihan & Kelly, 2014), and tooth loss (Kim et al., 2017). SSBs
contribute about 69 percent of added sugars, 45 percent of total sugar intake, and 10 percent of total energy intake to the Mexican diet (Sanchez-Pimienta et al., 2016), more than three times the level recommended by the American Heart Association and approximately 3 percent of total energy intake (Batis et al., 2016; Lloyd-Jones et al., 2010).

Due to this context, public health professionals advocated for the passage of an excise SSB tax and carried out strong and focused public awareness campaigns about the sugar content in SSBs, the health consequences of a high SSB consumption, and the rationale of a SSB tax; they also proposed that the SSB tax revenue be used to pay for purified water fountains in schools (Donaldson, 2015). The debate around the Mexican SSB tax attracted a considerable amount of media attention and raised the profile of these issues among the public (Donaldson, 2015). This culminated in the passing of a nationwide 1-peso-per-liter\(^{40}\) (equivalent to a 10 percent increase) excise tax on SSBs (Secretaría de Gobernación, 2013), levied on manufacturers and effective from January 1, 2014 — along with the implementation of other public health actions — as a public health measure to counteract obesity.

Studies conducted since the implementation of the tax indicate that SSB purchases by Mexican households declined by 7.6 percent on average in 2014 and 2015, even more than trends predicted (Colchero et al., 2016; Colchero et al., 2017). The

\(^{40}\) When implemented (January 2014) the value of the tax (MXN 1, per liter) was about 8 USD cents per 33.8 fluid ounces of industrialized SSBs.
decrease in purchases suggests a corresponding reduction in SSB consumption and therefore of caloric intake. The decrease in purchases and consumption may not be fully explained by the (economic) elastic nature of SSBs (Colchero et al., 2016), but may be the result of an increased awareness of the detrimental health effects of SSBs. One study conducted prior to the implementation of the tax had already found declines in sales of SSBs in Mexico which, the authors hypothesize may have been due to “[a very] visible and well-funded media campaign linking [SSBs] with diabetes” (Popkin & Hawkes, 2016).

Behavioral economics research suggests that the way in which taxes are presented or framed matters and could influence their impact (Leicester et al., 2012). SSB taxes are believed to provide consumers a behavioral rationale for changes (like nudges), in addition to traditional economic justification (Abdukadirov, 2016). According to Adbukadirov (2016), SSB taxes can increase the prominence of beverage choice to consumers through two mechanisms, first, “[SSB taxes] and the publicity that surround[s] [them may] trigger consumers to think about their health goals and to choose healthier drink[s],” and second, “attaching higher costs to unhealthy choices at the time of purchase may help undercut consumers’ myopia by “countering the immediate benefits of enjoying a [SSB] with the immediate costs of the [SSB] tax.” There is emerging evidence supporting the hypothesis that “junk food” and SSB taxes imposed with public health goals in mind may contribute to enhancing people’s awareness about the negative health consequences of highly processed, less healthy foods and beverages (Falbe et al., 2016; WHO, 2016). In economic theory, this is known as the “signaling effect” of tax policy, which poses that in addition to the tasks of raising public funds and correcting
external effects, tax policies signal missing information to individuals about the effect of their consumption of the taxed product (Barigozzi & Villeneuve, 2006).

Understanding the impact of the Mexican SSB tax is further complicated by the fact that there were other initiatives undertaken during the same period, including the regulation of unhealthy food and beverages in schools (Secretaría de Educación Pública & Secretaría de Salud, 2010, 2014), the partial voluntary self-regulation of foods and beverages advertising directed at children (CONAR, 2009), and the regulation of advertisement of foods and non-alcoholic beverages during children’s television viewing time (Secretaría de Salud, 2014) that may have had an impact on SSB purchases over the same time period.

While it would be very difficult to evaluate the separate effects of the SSB tax and other simultaneous public health initiatives aimed at curbing SSB consumption, it is important to explore whether awareness of the SSB tax and opinion about its potential to reduce SSB intake, as well as psychosocial and environmental determinants of SSB consumption, are associated with current consumption of taxed SSBs, and with self-reported changes in consumption of SSBs since the SSB tax was passed. To our knowledge, no study has examined these associations after the implementation of a nation-wide SSB tax. Therefore, the current study addressed the following research questions:

6. Are Mexican adults aware of the SSB tax? What is their opinion about the effectiveness of the SSB tax in decreasing purchases of taxed SSB? Do awareness of and opinion about the SSB tax differ by socio-demographic characteristics?
7. Are Mexican adults’ SSB health-related beliefs associated with awareness of the SSB tax and opinion about its effectiveness?

8. Are awareness of and opinion about the effectiveness of the SSB tax, and psychosocial and environmental factors of SSB consumption, associated with a reported decrease in SSB consumption?

9. Are awareness and opinion about the effectiveness of the SSB tax and psychosocial and environmental factors of SSB consumption associated with current consumption of taxed SSBs?

Overall, we hypothesized that a higher percentage of adults living in Mexico City and of higher socio-economic status (SES) would be aware of the tax, and that those who were aware and expressed a positive opinion about the effectiveness of the SSB tax in reducing purchases of SSBs would, in effect, drink less SSBs and/or report a decrease in SSB consumption, compared to those who were not aware and/or expressed a negative opinion about the effectiveness of the SSB tax. These findings would be useful for health advocates and policy makers when considering passing a SSB tax.

4.2. Methods

4.2.1 Population and study design.

The current study is an analysis of data collected with the 2016 National Health and Nutrition Survey (ENSANUT). The ENSANUT is a nationally representative probabilistic multistage stratified cluster survey constructed with sufficient sampling power to make distinctions between urban (≥2,500 inhabitants) and rural (<2,500 inhabitants) areas, and among four geographic regions (categorized as North, Central,
Mexico City, and South). Sampling weights are used to estimate nationally representative values. (A detailed description of the sampling procedures and survey methodology has been described elsewhere (Romero-Martinez et al., 2017).) The ENSANUT 2016 was approved by the Research, Ethics and Biosafety Committees at the INSP. Informed consent was obtained from all study participants. Trained personnel administered all questionnaires and measures face-to-face.

We primarily used data from the data file Perception of Obesity, Physical Activity and Diet Questionnaire (POCAA-Q, by its Spanish acronym), which had been applied to a random subsample of 6,550 adults aged 20–59 years. A description about the development and validation of the POCAA-Q can be found elsewhere (Gutierrez, 2013). Additional data were obtained from other ENSANUT 2016 files: the semi-quantitative food frequency questionnaire (SFFQ), and the demographic file (i.e., demographic, socio-economic characteristics and sample weights).

4.2.2 Measures.

Awareness of and opinion about the effectiveness of the SSB tax.

The variables awareness of the SSB and opinion about the effectiveness of the SSB tax come from the POCAA-Q. Their operational definitions can be found in Table 3. 1 (presented earlier in Chapter 3).
Self-perception of change in consumption of SSBs.

The variable self-perception of change in consumption of SSBs in the two years prior to the survey is a proxy for the time when the SSB tax was implemented. It also comes from the POCAA-Q. Its description can be found in Table 3. 1.

Consumption of taxed SSBs.

Beverage consumption was assessed using a SFFQ which was validated for use with Mexican adolescents and adults (Denova-Gutierrez et al., 2016). The questionnaire includes 140 food items including a variety of sugar-sweetened, unsweetened, or artificially sweetened beverages. To assess consumption of each food item, reported frequency of consumption was converted into grams. To calculate consumption of taxed industrialized SSBs, we summed quantities (g/person/day) of all SSBs subject to the excise tax included in the SFFQ: regular carbonated SSBs, industrialized flavored waters with added sugar, and industrialized fruit nectars with added sugar. Sweetened energy and sports beverages are subject to the SSB tax, but they are not captured by the FFQ; thus they were not contemplated in this study. The data from the SFFQ had already been cleaned and processed (Ramirez-Silva et al., 2016); we excluded an additional 3 individuals with extreme observations (more than 3 SDs the log consumption of taxed SSBs).

Psychosocial and environmental determinants of SSB consumption.

The selection of psychosocial and environmental variables from the POCAA-Q was informed by the health literature and includes SSB health-related beliefs (Park et al., 2014) (measured with four items), self-efficacy (Riebl et al., 2016; Zoellner, Estabrooks,
et al., 2012) (measured with one item), taste preference (Zoellner, Krzeski, et al., 2012) (measured with one item; with a higher score indicating lower preference of SSBs), and availability of free/low-cost water (Onufrek et al., 2014) (measured with one item) (See Table 3. 1 in the Methods Chapter for definitions and rationale for choices).

For SSB health-related beliefs, a composite scale/measure was constructed based on the four health beliefs questions, with one additional point for a “yes” response regarding the belief about each condition. The scale ranged from 0 (reporting “no” to all four health beliefs questions) to 4 (reported “yes” to all four questions), with a higher score indicating an incremental agreement with the statements regarding the health damage of SSBs. (Cronbach’s alpha for the scale was 0.844.)

Covariates.

Socio-demographic variables included were sex (men and women), age (continuous variable), and a validated socio-economic status index (Gutierrez, 2013) (with terciles derived from principal components analysis of eight variables: household building materials; number of bedrooms; basic services infrastructure; ownership of a car, television, radio, and refrigerator). Body mass index (BMI) was calculated as the weight in kilograms divided by the square height in meters (kg/m$^2$) (WHO, 2017). Height and weight were measured using standardized procedures (Habicht, 1974; Lohman et al., 1991). Values between 10 and 58 kg/m$^2$ were considered as valid data (Shamah-Levy et al., 2017). We used the WHO BMI classification: underweight: $<18.5$, normal weight: 18.5-24.9, overweight: 25.0-29.9, and obesity: $\geq 30.0$ (WHO, 2017).
We also included self-reporting of diabetes diagnosis, in response to the question: “¿Algún médico le ha dicho que tiene diabetes o alta el azúcar en la sangre?” (Has a doctor told you that you have diabetes or high blood sugar?).

### 4.3. Statistical analyses

The relationship between categorical variables (e.g., awareness of the SSB tax and socio-demographic variables) was examined using \( \chi^2 \) tests; with a \( p \)-value <.05 as the cutoff point for statistical significance. Differences between subcategories of a variable were considered to be statistically significant if their 95% confidence intervals (CIs) did not overlap; we used this approach recognizing its limitation, namely, that when the CIs of two statistics do not overlap, they are necessarily significantly different, but they could be significantly different even if their CIs overlap (Knezevic, 2008).

A binary logistic regression was conducted to evaluate the probability that a given person would report a decrease in their SSB consumption in the two years prior, given their awareness of the SSB tax, opinion about the effectiveness of the SSB tax in reducing purchases of SSBs, psychosocial determinants (health beliefs scale, self-efficacy, and liking of SSBs), and an environmental determinant (availability of potable water for free or at a low cost). We constructed the binary outcome variable (consumption of SSBs decreased and consumption did not decrease) from the three-category perception of change in the SSB consumption variable by keeping the “consumption decreased” category and combining the “consumption stayed the same” and “consumption increased” categories. Covariates sex, BMI, SES, geographic region, urban-rural location, and diabetes diagnosis were entered as categorical variables; age was entered as a continuous variable. We started with a full model, tested for interactions,
and eliminated insignificant predictors to arrive at a parsimonious final model. Results are expressed as adjusted *Odds Ratio (OR)* and their corresponding 95% CIs. Results were considered to be statistically significant if the 95% CI excluded the value of 1 (Field, 2014).

Multiple linear regression analysis was utilized to examine the association between awareness and opinion of the SSB tax, psychosocial determinants of SSB consumption (health beliefs scale, liking of SSBs, and self-efficacy) and an environmental determinant (availability of potable water for free or at a low cost) and current consumption of taxed SSBs (log g/d), after controlling for sex, age, BMI, diabetes diagnosis, SES, urban-rural location, and region. The outcome variable (consumption of taxed SSBs (log g/person/day)) was strongly, positively skewed. Thus, a "logarithmic" transformation was conducted. For the purpose of improving interpretability of the beta estimates, we calculated the percentage change for each estimate in the outcome variable per one unit change in the independent variable while all other variables in the model were held constant; we used the equation: (University of California Los Angeles (UCLA) Institute for Digital Research and Education (IDRE), 2017). After starting with a full model, we tested for interactions, and subsequently eliminated insignificant predictors to arrive at a parsimonious final model. Multiple regression results are expressed as: regression coefficients, percent changes in consumption of taxed SSBs in relation to changes in independent variables, and standard errors. The (adjusted) R square is presented to indicate the estimated amount of explained variance. Results were considered significant at *p*<.05 (Field, 2014).
Lastly, we estimated mean consumption of taxed SSBs for the total sample and by the theoretical variables of interest (which include awareness and opinion about the tax, as well as psychosocial and environmental factors).

All statistical analyses were performed with IBM SPSS, version 24.0. Calculations were weighted by expansion factors and adjusted for the complex sampling survey design using the SPSS command for complex surveys. Data for the $\chi^2$ tests met the assumptions of sample size and independence of observations. The binary logistic regression model was checked for linearity and multicollinearity. The multiple regression model was checked for multicollinearity, linearity and for normality, homoscedasticity, and independence of residuals.

4.4. Results

Study population characteristics are presented in Table 4.1.

Table 4.1
Socio-demographic characteristics of study participants and current intake of SSBs, industrialized SSBs and plain water.

<table>
<thead>
<tr>
<th></th>
<th>Un-weighted n</th>
<th>Weighted n (in millions)</th>
<th>Weighted percentages (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>6,650</td>
<td>59.5</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2,152</td>
<td>25.7</td>
<td>47.8</td>
</tr>
<tr>
<td>Female</td>
<td>4,498</td>
<td>28.5</td>
<td>52.2</td>
</tr>
<tr>
<td>SES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>2,276</td>
<td>12.4</td>
<td>20.8</td>
</tr>
<tr>
<td>Medium</td>
<td>2,266</td>
<td>17.3</td>
<td>29.1</td>
</tr>
<tr>
<td>High</td>
<td>2,108</td>
<td>29.8</td>
<td>50.1</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>3,323</td>
<td>46.0</td>
<td>77.3</td>
</tr>
<tr>
<td>Rural</td>
<td>3,327</td>
<td>13.5</td>
<td>22.7</td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>1,434</td>
<td>12.5</td>
<td>21.0</td>
</tr>
<tr>
<td>Centre</td>
<td>2,171</td>
<td>19.6</td>
<td>33.0</td>
</tr>
<tr>
<td>Mexico City</td>
<td>763</td>
<td>10.4</td>
<td>17.6</td>
</tr>
</tbody>
</table>

168
<table>
<thead>
<tr>
<th></th>
<th>South</th>
<th>2,282</th>
<th>17.0</th>
<th>28.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (\text{mean} \pm \text{SEM})</td>
<td>(38.6 \pm 0.1)</td>
<td>(36.6 \pm 0.3)</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>1,647</td>
<td>19.1</td>
<td>32.1</td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>1,936</td>
<td>17.2</td>
<td>28.9</td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>1,694</td>
<td>13.2</td>
<td>22.2</td>
<td></td>
</tr>
<tr>
<td>50-59</td>
<td>1,373</td>
<td>10.0</td>
<td>16.8</td>
<td></td>
</tr>
<tr>
<td>BMI (\text{mean} \pm \text{SEM})</td>
<td>(28.7 \pm 0.1)</td>
<td>(28.5 \pm 0.1)</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Normal weight</td>
<td>1,582</td>
<td>14.6</td>
<td>26.3</td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>2,423</td>
<td>21.9</td>
<td>39.5</td>
<td></td>
</tr>
<tr>
<td>Obesity</td>
<td>2,316</td>
<td>19.0</td>
<td>34.2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Un-weighted mean</th>
<th>Weighted mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>g/day (\pm \text{SEM})</td>
<td>g/day (\pm \text{SEM})</td>
</tr>
<tr>
<td>Plain water</td>
<td>1513.9 (\pm 17.6)</td>
<td>1646.3 (\pm 120.58)</td>
</tr>
<tr>
<td>SSBs *</td>
<td>537.4 (\pm 9.0)</td>
<td>646.4 (\pm 21.4)</td>
</tr>
<tr>
<td>Taxed SSBs **</td>
<td>376.2 (\pm 8.4)</td>
<td>462.0 (\pm 19.8)</td>
</tr>
<tr>
<td>Regular soda</td>
<td>240.3 (\pm 56.0)</td>
<td>298.3 (\pm 13.4)</td>
</tr>
</tbody>
</table>

Notes.
SES, socio-economic status; SEM, standard error of the mean; BMI, body mass index; NA; non-applicable.
Data are from the ENSANUT 2016: Mexican adults (20-59 years old), \(n = 6,650\).
* The SSBs (g/day) variable was created by combining the following consumption variables: soda, fruit waters, sweetened coffee, sweetened tea, nectars, industrialized fruit waters.
** The taxed (industrialized) SSBs (g/day) variable was created by combining the following consumption variables: soda, nectars, industrialized fruit waters.

### 4.4.1 Awareness and opinion about the SSB tax.

At national level, 65.2 percent of the respondents reported being aware of the existence of the SSB tax, however, only 20.3 percent indicated that they thought the SSB tax was helping to decrease the purchase of the SSBs (Figure 4.1); the majority of those who reported being aware of the tax (53.1 percent) indicated that they thought it was not reducing purchases of SSBs. The percentage of respondents who thought that the SSB tax was reducing purchases of SSBs was significantly greater among individuals aware of the SSB tax (12.1 percent) than among those not aware of the SSB tax (8.2 percent).
Figure 4. Awareness of the SSB tax and opinion about whether it was reducing the purchases of SSBs. Mexican adults (20-59 years old) (n = 6,321).

In the analyses stratified by socio-demographic characteristics (Table 4.2), chi-squared tests of independence revealed statistical significant differences between awareness and opinion about the SSB tax and sex ($\chi^2 =30.366, p=.019$), SES ($\chi^2 =306.593, p<.001$), area ($\chi^2 =87.617, p < .001$), region ($\chi^2 =113.116, p=.002$), and age ($\chi^2 =178.097, p< .001$). The percentages of respondents who were aware of the SSB tax were significantly higher among people of high SES (74.4 percent), and living in Mexico City (76.6 percent) and in urban areas (67.5 percent).
Table 4. 2
Awareness of the SSB tax and opinion about whether it was reducing purchases of SSBs, stratified by socio-demographic characteristics. *

<table>
<thead>
<tr>
<th></th>
<th>Aware of the SSB tax</th>
<th>NOT aware of the SSB tax</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Belief the SSBs tax is reducing purchases of SSBs</td>
</tr>
<tr>
<td></td>
<td>Unweighted n</td>
<td>Weighted n</td>
</tr>
<tr>
<td>National</td>
<td>6,321</td>
<td>6.9</td>
</tr>
<tr>
<td>Sex †</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2,054</td>
<td>27.6</td>
</tr>
<tr>
<td>Female</td>
<td>4,267</td>
<td>29.8</td>
</tr>
<tr>
<td>SES †</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low a</td>
<td>2,088</td>
<td>11.7</td>
</tr>
<tr>
<td>Medium b</td>
<td>2,175</td>
<td>16.8</td>
</tr>
<tr>
<td>High c</td>
<td>2,058</td>
<td>28.9</td>
</tr>
<tr>
<td>Area †</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban a</td>
<td>3,213</td>
<td>44.6</td>
</tr>
<tr>
<td>Rural</td>
<td>3,108</td>
<td>12.8</td>
</tr>
<tr>
<td>Region *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North a</td>
<td>1,372</td>
<td>12.2</td>
</tr>
<tr>
<td>Centre b</td>
<td>2,083</td>
<td>18.7</td>
</tr>
<tr>
<td>Mexico City c</td>
<td>751</td>
<td>10.4</td>
</tr>
<tr>
<td>South d</td>
<td>2,115</td>
<td>16.1</td>
</tr>
<tr>
<td>Age †</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29 a</td>
<td>1,575</td>
<td>18.6</td>
</tr>
<tr>
<td>Total</td>
<td>Aware of the SSB tax</td>
<td>NOT aware of the SSB tax</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td></td>
<td>Believe the SSBs tax is reducing purchases of SSBs</td>
<td>DO NOT believe the SSB tax is reducing purchases of SSBs</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>(95% CI)</td>
</tr>
<tr>
<td>Unweighted</td>
<td>Weighted (in MM)</td>
<td>n</td>
</tr>
<tr>
<td><strong>30-39</strong>&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td>1,837</td>
</tr>
<tr>
<td><strong>40-49</strong>&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td>1,621</td>
</tr>
<tr>
<td><strong>50-59</strong>&lt;sup&gt;d&lt;/sup&gt;</td>
<td></td>
<td>1,288</td>
</tr>
<tr>
<td><strong>BMI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal weight</td>
<td></td>
<td>1,489</td>
</tr>
<tr>
<td>Overweight</td>
<td></td>
<td>2,304</td>
</tr>
<tr>
<td>Obesity</td>
<td></td>
<td>2,220</td>
</tr>
</tbody>
</table>

Notes.
SSB, sugar-sweetened beverages; MM, millions; SES, socio-economic status; BMI, body mass index.
Data are from the ENSANUT 2016. Mexican adults (20-59 years old).
* Values are percentages and 95% CIs. Percentages across a row sum up to 100.
† p<.05 based on $\chi^2$ test across categories. For each socio-demographic variable, different subscripts down a column (a, b, c, d) indicate statistically significant differences based on the 95% CIs (i.e., the CIs do not overlap).
4.4.2 Association between awareness and opinion about the SSB tax and SSB health-related beliefs

A large percentage of the population believed that SSBs contribute to the development of obesity (92.3%), diabetes (93.1%), high blood pressure (HBP) (86.1%), and dental caries (93.5%) (Figure 4.2). Chi-square tests of independence indicated a significant association between awareness about the SSB tax and HBP ($\chi^2 = 20.784, p<.009$), obesity ($\chi^2 = 28.983, p=.001$), diabetes ($\chi^2 = 23.786, p=.005$), and dental caries ($\chi^2 = 16.816, p=.007$). In all cases, the percentage of respondents who believed that SSBs contribute to the four health conditions asked about, was higher among people who were aware of the tax, compared to those who were not aware. Opinion about the impact of the tax on purchases was significantly associated with obesity ($\chi^2 = 23.460, p=.006$) and dental caries ($\chi^2 = 17.178, p<.018$) (Table 4.3).

![Figure 4.2 Percentage of the Mexican adult population who believe that sugar-sweetened beverages (SSBs) contribute to the development of high blood pressure, obesity, diabetes, and dental caries. Mexican adults (20-59 years old) (n = 6,650).](image)
Table 4.3
SSBs health-related beliefs by awareness and opinion about the SSB tax.

<table>
<thead>
<tr>
<th>Health beliefs: SSBs contribute to the development of...</th>
<th>Awareness of the SSB tax</th>
<th>Opinion: the SSB tax is decreasing purchases of SSBs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Aware</td>
</tr>
<tr>
<td></td>
<td>Unweighted, n, n</td>
<td>Weighted (in MM)</td>
</tr>
<tr>
<td>...HBP *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5327</td>
<td>49.2</td>
</tr>
<tr>
<td>No</td>
<td>981</td>
<td>7.9</td>
</tr>
<tr>
<td>...obesity *†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5967</td>
<td>54.3</td>
</tr>
<tr>
<td>No</td>
<td>555</td>
<td>4.6</td>
</tr>
<tr>
<td>...diabetes *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6023</td>
<td>54.7</td>
</tr>
<tr>
<td>No</td>
<td>503</td>
<td>4.1</td>
</tr>
<tr>
<td>... dental caries *†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5980</td>
<td>54.7</td>
</tr>
<tr>
<td>No</td>
<td>474</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Note.
SSB, sugar-sweetened beverages; HBP, high blood pressure; MM, millions.
Data are from the ENSANUT 2016. Mexican adults (20-59 years old).
For each health belief variable, percentages across a column for a given variable sum up to 100.
* p <0.05 based on χ² independence test with “awareness of the SSB tax” variable.
† p <0.05 based on χ² independence test with “opinion about the effectiveness of the SSB tax in reducing SSB purchases” variable.
4.4.3 Factors associated with a self-reported decrease in SSB consumption.

The full binary logistic regression model included seven variables (awareness of the tax, opinion about the effectiveness of the tax, self-efficacy, liking of SSBs, health-beliefs, and availability of free/low-cost potable water) and covariates (age, diabetes diagnosis, sex, socio-economic status, geographic region, and area). The reference category included adults who reported that their SSB consumption in the two years prior had decreased. The final model was significant $F(19, 268)=8.479, p<.001$, and explained 8.7 percent (Nagelkerke pseudo-$R^2$) of variance in change (Table 4. 4). Among the six independent variables and seven covariates only three were significant: self-efficacy, liking of SSBs, and diabetes diagnosis.

Table 4. 4
Full model for self-reporting a decrease in consumption of SSBs since the year the SSB tax was implemented. * †

<table>
<thead>
<tr>
<th>Consumption decreased vs consumption did not decrease since the year the SSB tax was implemented</th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The SSB Tax</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awareness of the SSB tax</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aware</td>
<td>1.20</td>
<td>0.98, 1.47</td>
<td>.086</td>
</tr>
<tr>
<td>Not aware</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opinion about the effectiveness of the SSB tax</td>
<td></td>
<td></td>
<td>.608</td>
</tr>
<tr>
<td>It is being successful</td>
<td>1.06</td>
<td>0.85, 1.31</td>
<td></td>
</tr>
<tr>
<td>It is NOT being successful</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Psychosocial and environmental factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td></td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>Very confident</td>
<td>1.58</td>
<td>1.09, 2.30</td>
<td></td>
</tr>
<tr>
<td>Confident</td>
<td>1.07</td>
<td>0.73, 1.56</td>
<td></td>
</tr>
<tr>
<td>Slightly confident</td>
<td>0.88</td>
<td>0.57, 1.35</td>
<td></td>
</tr>
<tr>
<td>Not confident</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liking of SSBs**</td>
<td></td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>Dislike them very much</td>
<td>1.59</td>
<td>1.13, 2.24</td>
<td></td>
</tr>
<tr>
<td>Dislike them</td>
<td>3.51</td>
<td>2.27, 5.42</td>
<td></td>
</tr>
</tbody>
</table>
## Consumption decreased vs consumption did not decrease since the year the SSB tax was implemented

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health Beliefs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Like them</td>
<td>3.30</td>
<td>1.66, 6.56</td>
<td></td>
</tr>
<tr>
<td>Like them very much</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Availability of free or low cost potable water</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completely agree</td>
<td>1.43</td>
<td>0.77, 2.63</td>
<td>.672</td>
</tr>
<tr>
<td>Agree</td>
<td>1.33</td>
<td>0.79, 2.22</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>1.22</td>
<td>0.67, 2.20</td>
<td></td>
</tr>
<tr>
<td>Completely disagree</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Covariates</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>1.01</td>
<td>0.99, 1.02</td>
<td>.097</td>
</tr>
<tr>
<td>Sex (female vs male)</td>
<td>0.97</td>
<td>0.79, 1.20</td>
<td>.797</td>
</tr>
<tr>
<td>SES</td>
<td></td>
<td></td>
<td>.091</td>
</tr>
<tr>
<td>Low</td>
<td>0.81</td>
<td>0.63, 1.03</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>0.90</td>
<td>0.72, 1.11</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location (urban vs rural)</td>
<td>1.11</td>
<td>0.93, 1.33</td>
<td>.213</td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
<td>.821</td>
</tr>
<tr>
<td>North</td>
<td>1.05</td>
<td>0.82, 1.35</td>
<td></td>
</tr>
<tr>
<td>Centre</td>
<td>1.03</td>
<td>0.81, 1.30</td>
<td></td>
</tr>
<tr>
<td>Mexico City</td>
<td>1.07</td>
<td>0.73, 1.58</td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Yes</td>
<td>1.84</td>
<td>1.38, 2.45</td>
<td></td>
</tr>
<tr>
<td>Yes - gestational</td>
<td>0.63</td>
<td>0.11, 3.58</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td></td>
<td>.352</td>
</tr>
<tr>
<td>Obesity</td>
<td>1.15</td>
<td>0.87, 1.52</td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>1.18</td>
<td>0.90, 1.54</td>
<td></td>
</tr>
<tr>
<td>Normal weight</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*R² Cox and Snell = .065
*R² Nagelkerke = .087

**Notes.**

SSB, sugar-sweetened beverages.

Data are from the ENSANUT 2016: Mexican adults (20-59 years old), n = 6,650.

* The full binary logistic regression model included seven variables (awareness of the tax, opinion about the effectiveness of the tax, self-efficacy, liking of SSBs, health-beliefs 4 point scale, and availability of free/low-cost potable water) and covariates (age, diabetes diagnosis, sex, socio-economic status, geographic region, and area). The reference category included adults who reported that their SSB consumption in the two years prior had decreased. The statistics presented are from the parsimonious model, which includes only statistically significant (or nearly significant) predictors and covariates.

** The question about liking of SSBs was as follows: “Do you agree with this statement ‘You like the taste of sugary drinks?’” Valid response options were completely agree, agree, disagree, completely disagree. In this table the response options have been simplified to make it easier for the reader to understand.
† Values are Odds Ratios, 95% CIs, and P-values of variable effect in overall model based on Wald F test.
‡ Significant findings of subcategories based on the 95% CI (i.e., the CI does not include 1).

The final (parsimonious) logistic regression model only included statistically significant (or nearly significant) predictors and covariates. The final model was significant, $F(9, 279)=16.623$, $p<.001$, and explained 9.4 percent (Nagelkerke pseudo-$R^2$) of the variance in change (Table 4.5). Among the six independent variables, three were statistically significant: awareness of the SSB tax, self-efficacy, and liking of SSBs. Respondents who were aware of the SSB tax were 30 percent more likely to report a decrease in consumption of SSBs in the two years prior. High self-efficacy and low liking of SSBs were also individually associated with a reported decrease in SSBs (OR=1.68) and (OR=4.29), respectively.

Table 4.5
Final, parsimonious, model for self-reporting a decrease in consumption of SSBs since the year the SSB tax was implemented.* †

<table>
<thead>
<tr>
<th>Consumption decreased vs consumption did not decrease since the year the SSB tax was implemented</th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of the SSB tax</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aware</td>
<td>1.30</td>
<td>1.06, 1.59</td>
<td>.012</td>
</tr>
<tr>
<td>Not aware</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td></td>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Very confident</td>
<td>1.68‡</td>
<td>1.15, 2.46</td>
<td></td>
</tr>
<tr>
<td>Confident</td>
<td>1.12</td>
<td>0.77, 1.64</td>
<td></td>
</tr>
<tr>
<td>Slightly confident</td>
<td>0.88</td>
<td>0.58, 1.35</td>
<td></td>
</tr>
<tr>
<td>Not confident</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liking of SSBs**</td>
<td></td>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Dislike them very much</td>
<td>4.29‡</td>
<td>1.90, 9.70</td>
<td></td>
</tr>
<tr>
<td>Dislike them</td>
<td>3.33‡</td>
<td>2.19, 5.01</td>
<td></td>
</tr>
<tr>
<td>Like them</td>
<td>1.68‡</td>
<td>1.23, 2.30</td>
<td></td>
</tr>
<tr>
<td>Like them very much</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>1.00</td>
<td>1.00, 1.02</td>
<td>.056</td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Yes</td>
<td>1.77‡</td>
<td>1.33, 2.35</td>
<td></td>
</tr>
</tbody>
</table>

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Consumption decreased vs consumption did not decrease since the year the SSB tax was implemented

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes - gestational</td>
<td>1.24</td>
<td>0.25, 6.10</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$R^2_{\text{Cox and Snell}} = 0.063$

$R^2_{\text{Nagelkerke}} = 0.094$

Notes.
SSB, sugar-sweetened beverages.
Data are from the ENSANUT 2016: Mexican adults (20-59 years old), $n = 6,349$.
* The full binary logistic regression model included seven variables (awareness of the tax, opinion about the effectiveness of the tax, self-efficacy, liking of SSBs, health-beliefs, and availability of free/low-cost potable water) and covariates (age, sex, socio-economic status, geographic region, urban-rural location, BMI, and diabetes diagnosis). The reference category included adults who reported that their SSB consumption in the two years prior had decreased. The statistics presented are from the parsimonious model, which includes only statistically significant (or nearly significant) predictors and covariates.
** The question about liking of SSBs was as follows: “Do you agree with this statement ‘You like the taste of sugary drinks?’” Valid response options were completely agree, agree, disagree, completely disagree. In this table the response options have been simplified to make it easier for the reader to understand.
† Values are Odds Ratios, 95% CIs, and P-values of variable effect in overall model based on Wald F test.
‡ Significant findings of subcategories based on the 95% CI (i.e., the CI does not include 1).

### 4.4.4 Factors associated with current consumption of taxed SSBs.

The full model significantly predicted consumption of taxed SSBs, $F(19, 260) = 26.84$, $p < .001$, with $R^2 = 20.5\%$ (Table 4.6). Among the six independent variables and seven covariates, the following were significantly associated with consumption of taxed SSBs: being aware of the SSB tax, self-efficacy, liking of SSBs, age, sex, urban/rural location, region, BMI, and diabetes diagnosis.

Table 4.6
*Full model of factors associated with current consumption of taxed SSBs.*

<table>
<thead>
<tr>
<th>The SSB Tax</th>
<th>$\beta$</th>
<th>SE of the $\beta$</th>
<th>$P$-value (F test)</th>
<th>$P$-value (t tests)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of the SSB tax</td>
<td>.027</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( \beta )</td>
<td>( SE ) of the ( \beta )</td>
<td>( P )-value (F test)</td>
<td>( P )-value (t tests)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------</td>
<td>-----------------------------</td>
<td>------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Aware</td>
<td>-0.13</td>
<td>0.06</td>
<td>.027</td>
<td></td>
</tr>
<tr>
<td>Not aware Reference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opinion about the</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>effectiveness of the SSB tax</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is being successful</td>
<td>-0.06</td>
<td>0.07</td>
<td>.368</td>
<td></td>
</tr>
<tr>
<td>It is NOT being</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>successful Reference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Psychosocial and environmental factors**

<table>
<thead>
<tr>
<th>Self-efficacy</th>
<th>( \beta )</th>
<th>( SE ) of the ( \beta )</th>
<th>( P )-value (F test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very confident</td>
<td>-0.76</td>
<td>0.13</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Confident</td>
<td>-0.44</td>
<td>0.11</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Slightly confident</td>
<td>-0.22</td>
<td>0.13</td>
<td>.094</td>
</tr>
<tr>
<td>Not confident Reference</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liking of SSBs**</th>
<th>( \beta )</th>
<th>( SE ) of the ( \beta )</th>
<th>( P )-value (F test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dislike them very much</td>
<td>-0.87</td>
<td>0.31</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Dislike them</td>
<td>-0.76</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>Like them</td>
<td>-0.38</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Like them very much</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health Beliefs</th>
<th>( \beta )</th>
<th>( SE ) of the ( \beta )</th>
<th>( P )-value (F test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of free or low cost potable water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completely agree</td>
<td>-0.01</td>
<td>0.20</td>
<td>.971</td>
</tr>
<tr>
<td>Agree</td>
<td>-0.11</td>
<td>0.13</td>
<td>.403</td>
</tr>
<tr>
<td>Disagree</td>
<td>0.10</td>
<td>0.09</td>
<td>.299</td>
</tr>
<tr>
<td>Completely disagree</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Covariates**

<table>
<thead>
<tr>
<th>Age</th>
<th>( \beta )</th>
<th>( SE ) of the ( \beta )</th>
<th>( P )-value (F test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.61 - 0.02</td>
<td></td>
<td></td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sex (female vs male)</th>
<th>( \beta )</th>
<th>( SE ) of the ( \beta )</th>
<th>( P )-value (F test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>-0.03</td>
<td>0.08</td>
<td>.718</td>
</tr>
<tr>
<td>Medium</td>
<td>0.06</td>
<td>0.07</td>
<td>.458</td>
</tr>
<tr>
<td>High</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location (urban vs rural)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reference</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>( \beta )</th>
<th>( SE ) of the ( \beta )</th>
<th>( P )-value (F test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>0.40</td>
<td>0.11</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Centre</td>
<td>0.18</td>
<td>0.08</td>
<td>.016</td>
</tr>
<tr>
<td>Mexico City</td>
<td>-0.03</td>
<td>0.09</td>
<td>.753</td>
</tr>
<tr>
<td>South</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diabetes</th>
<th>( \beta )</th>
<th>( SE ) of the ( \beta )</th>
<th>( P )-value (F test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>-0.27</td>
<td>0.10</td>
<td>.005</td>
</tr>
<tr>
<td>Yes - gestational</td>
<td>1.05</td>
<td>0.71</td>
<td>.143</td>
</tr>
<tr>
<td>No</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMI</th>
<th>( \beta )</th>
<th>( SE ) of the ( \beta )</th>
<th>( P )-value (F test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td>0.30</td>
<td>0.09</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Overweight</td>
<td>0.08</td>
<td>0.09</td>
<td>.380</td>
</tr>
<tr>
<td>Normal weight Reference</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( R^2 = 0.205 \)

Notes.
SSBs, sugar-sweetened beverages; \( \beta \), regression coefficient; SE, standard error; \( R^2 \) proportion variance explained.
Data are from the ENSANUT 2016: Mexican adults (20-59 years old), \( n = 4,624 \).
* The outcome variable, consumption of taxed SSBs (log g/person/day), was created combining the following variables: soda, nectars, taxed fruit waters.
** The question about liking of SSBs was as follows: “Do you agree with this statement ‘You like the taste of sugary drinks’?” Valid response options were completely agree, agree, disagree, completely disagree. In this table the response options have been simplified to make it easier for the reader to understand.
† Values are \( \beta \) coefficients, \% change in consumption of taxed SSBs (log g/person SSBs* (log g/person/day)), SEs of the \( \beta \)s, p-values of each coefficient estimate in the Wald F test, and p-values of the t tests for each of the coefficients of the sub-categories within each factor. Lower \( \beta \)s indicate expectation of less SSB consumption/lower score on unfavorable behavior.
§ \% change in consumption of taxed SSBs (log g/person/day) was calculated as \( (e^{\beta} - 1) \times 100 \).

The final (parsimonious) model significantly predicted consumption of taxed SSBs, \( F(18, 262)=32.51, p<.001 \), with \( R^2=21.1\% \) (Table 4. 7). Self-efficacy and liking of SSBs added significantly to the prediction (\( p<.001 \)). Respondents who were very confident or confident in limiting their consumption of SSBs to <1 glass/week consumed less taxed SSBs (53.2 percent and 36.9 percent, respectively) than those who did not feel confident. Individuals who dislike SSBs consumed less (42.3 percent) than those who like them. A significant interaction between urban-rural location and awareness of the tax was found (\( p=.017 \)), indicating that location of residence moderated the relationship between awareness of the SSB tax on consumption of taxed SSB beverages. In particular, only individuals living in urban areas a significant difference between those aware and not aware of the SSB tax was observed (a 15.7 percent decrease in consumption of taxed SSBs among those aware, compared to those who were not aware; \( p=.023 \)).
Table 4.7
*Final, parsimonious, model of factors associated with current consumption of taxed SSBs.*

<table>
<thead>
<tr>
<th>Factor</th>
<th>β</th>
<th>% change in consumption of taxed SSBs §</th>
<th>SE of the β</th>
<th>P-value (F test)</th>
<th>P-value (t tests)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of the SSB tax AND Area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban (aware vs not aware)</td>
<td>-0.17</td>
<td>-15.72</td>
<td>0.08</td>
<td>0.023</td>
<td></td>
</tr>
<tr>
<td>Rural (aware vs not aware)</td>
<td>0.08</td>
<td>8.76</td>
<td>0.08</td>
<td>0.250</td>
<td></td>
</tr>
<tr>
<td>Awareness of the SSB tax</td>
<td>Reference</td>
<td></td>
<td></td>
<td></td>
<td>.394</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Very confident</td>
<td>-0.76</td>
<td>-53.23</td>
<td>0.21</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>Confident</td>
<td>-0.46</td>
<td>-36.87</td>
<td>0.11</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>Slightly confident</td>
<td>-0.23</td>
<td>-20.55</td>
<td>0.13</td>
<td>.076</td>
<td></td>
</tr>
<tr>
<td>Not confident</td>
<td>Reference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liking of SSBs**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Dislike them very much</td>
<td>-0.55</td>
<td>-42.31</td>
<td>0.28</td>
<td>.046</td>
<td></td>
</tr>
<tr>
<td>Dislike them</td>
<td>-0.73</td>
<td>-51.81</td>
<td>0.13</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>Like them</td>
<td>-0.34</td>
<td>-28.82</td>
<td>0.10</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>Like them very much</td>
<td>Reference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.02</td>
<td>-1.98</td>
<td>&lt;0.01</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>Sex (female vs male)</td>
<td>-0.60</td>
<td>-45.12</td>
<td>0.05</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>Location (urban vs rural)</td>
<td>0.37</td>
<td>44.20</td>
<td>.09</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td>North</td>
<td>0.42</td>
<td>50.20</td>
<td>0.11</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>Centre</td>
<td>0.20</td>
<td>22.14</td>
<td>0.08</td>
<td>.008</td>
<td></td>
</tr>
<tr>
<td>Mexico City</td>
<td>-0.01</td>
<td>-1.00</td>
<td>0.09</td>
<td>.891</td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>Reference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
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<td></td>
<td>.005</td>
</tr>
<tr>
<td>Yes</td>
<td>-0.28</td>
<td>-24.42</td>
<td>0.09</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td>Yes - gestational</td>
<td>1.04</td>
<td>182.92</td>
<td>0.96</td>
<td>.141</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Reference</td>
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<tr>
<td>BMI</td>
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<td>&lt;.001</td>
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<tr>
<td>Obesity</td>
<td>0.31</td>
<td>36.34</td>
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<tr>
<td>Overweight</td>
<td>0.10</td>
<td>10.52</td>
<td>0.09</td>
<td>.285</td>
<td></td>
</tr>
<tr>
<td>Normal weight</td>
<td>Reference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = 0.211$

Notes.
SSBs, sugar-sweetened beverages; β, regression coefficient; SE, standard error; R² proportion variance explained.
Data are from the ENSANUT 2016: Mexican adults (20-59 years old), n = 4,624
* The outcome variable, consumption of taxed SSBs (log g/person/day), was created combining the following variables: soda, nectars, taxed fruit waters.
** The question about liking of SSBs was as follows: “Do you agree with this statement ‘You like the taste of sugary drinks’?” Valid response options were completely agree, agree, disagree,
completely disagree. In this table the response options have been simplified to make it easier for the reader to understand.
† The full multiple regression included seven variables (awareness of the tax, opinion about the effectiveness of the tax, self-efficacy, liking of SSBs, health-beliefs, and availability of free/low-cost potable water) and covariates (age, sex, socio-economic status, geographic region, urban-rural location, BMI, and diabetes diagnosis). The statistics presented are from the final (parsimonious) model which includes only statistically significant variables.
‡ Values are β coefficients, % change in consumption of taxed SSBs (log g/person SSBs* (log g/person/day), SEs of the βs, p-values of each coefficient estimate in the Wald F test, and p-values of the t tests for each of the coefficients of the sub-categories within each factor. Lower βs indicate expectation of less SSB consumption/lower score on unfavorable behavior.
§ % change in consumption of taxed SSBs (log g/person/day) was calculated as \( (e^\beta - 1) \times 100 \).

4.5. Discussion

4.5.1 Awareness of the SSB tax and opinion about the impact of the SSB tax.

The percentage of adults that reported being aware of the SSB tax at national level (65.2 percent). There are no equivalent data at the country-level but in the US city of Berkeley, a study conducted about a year after the passing of an excise tax on SSBs there found a similar figure — 68 percent of people interviewed knew that the tax had been on their city’s ballot (Falbe et al., 2016). On the other hand, while it is possible that some respondents may have given socially desirable responses, this finding can be explained by the fact that the tax was passed in the midst of very visible and controversial campaigns from proponents and opponents of the fiscal measure (Donaldson, 2015; PAHO (Pan American Health Organization), 2015). According to Donaldson (2015), the media campaign put forth by health advocates “generated over 1,000 media articles in the five-month period leading up to the vote on the tax… reaching the public as well as key decision-makers”. According to a Pan American Health Organization report (PAHO (Pan
American Health Organization), 2015) “the entire industry involved presented a united
front against the tax, with very significant activism in the media — television, radio,
press and advertising campaigns.”

In the current study, the largest percentage of respondents aware of the SSB tax
was again found among people living in Mexico City and in urban areas, and of high
SES. This finding is congruent with our hypothesis and can be explained by the fact that
Mexico City was the stage of most of the advocacy and opposition campaigns, and that
people of high SES living in urban areas might have had increased exposure and
attentiveness to all the health messaging (print media, television, radio debates, etc.)
about SSBs that went with the tax.

At national level, only 20.3 percent of respondents (combining those aware and
unaware of the tax) thought that the fiscal measure was helping to decrease the purchase
of SSBs. This finding may be explained by several potential factors. First, respondents
reporting that the SSB tax was not reducing their purchases of SSBs could have made
their judgment based on negative reports, articles and/or debates about the impact of the
SSB tax. Second, they could have based their response on judgments of their own
behavior and/or that of their peers. Third, in the past few decades, consumption of SSBs
became deeply rooted in Mexican’ dietary habits (Barquera et al., 2008), thus, in spite of
an average 7.6 percent decrease in purchases of SSBs over the first two years (Colchero
et al., 2017), the perception might be that SSBs are still ubiquitous. Further
qualitative/mixed methods studies are warranted to explore the reasons why most
Mexican adults think the SSB tax is not working.
### 4.5.2 Factors associated with a self-reported decrease in SSB consumption and with current consumption of taxed SSBs.

Results of the binary logistic regression analysis showed that factors associated with a self-reported decrease in SSB consumption in the 2 years prior are: awareness of the SSB tax, high self-efficacy, and not liking of SSBs. Results of the multiple regression analysis showed that factors significantly associated with current consumption of taxed SSBs (log g/person/day) are: self-efficacy, liking of SSBs; and the interaction between awareness of the SSB tax and urban-rural area. In none of the models were opinion about the impact of the tax, health beliefs, and drinkable water availability significant.

Individuals *aware of the SSB tax* were 23 percent more likely to report a decrease in SSB consumption that those who were not aware. In addition, those aware of the tax, and living in urban areas, consumed 16.6 percent less taxed SSBs than people not aware. These findings suggest that the SSB tax and the publicity that surrounded it may have had a “signaling effect” thereby making people more conscious about their beverage choices. Our findings agree with the results of two prior studies that examined the impact of taxes on unhealthy food. An impact assessment of a tax on unhealthy non-staple food products passed in Hungary, found that 22–38 percent of consumers (depending on food categories) had reduced their intake of taxed products due to an increased health consciousness (WHO, 2016). In the US city of Berkeley, a stronger than expected reduction in consumption of SSBs after the passing of SSB tax was partly attributed to the pro-tax media campaign, which, according to the study authors, may have shifted social norms and increased overall health consciousness (Falbe et al., 2016). Nevertheless, causality between awareness of a SSB tax and consumption of SSBs cannot
be established, as people with a priori favorable attitudes and behaviors might have been more likely to pay attention to campaigns and debates.

Opinion about whether the SSB tax was reducing SSB purchases was not a significant predictor of reported change in SSB consumption since the year the tax was implemented. Two plausible explanations for this finding are that even if there has been a considerable decrease in purchases of SSBs — 7.6 percent on average over the first 2 years since the introduction of the tax (Colchero et al., 2017) — the change in participants’ purchases (in number of units or volume) of taxed beverages may have been small and not clearly noticeable to them, or perhaps there has not been a large enough critical mass who have changed their behaviors so as to have precipitated a change in social norms (Rogers, 2003; Xie et al., 2011). In this regard, it should be noted that when the ENSANUT 2016 was conducted the tax had already lost a small percent of its value because of inflation — the tax was adjusted in January 2018 after it rose 10 percent inflation from the time of implementation.

Liking of SSBs was a strong significant predictor of a self-reported decrease in SSB consumption in the 2 years prior to the survey, and also of current consumption of taxed SSBs. Studies have found that taste is one of the primary drivers of SSBs consumption (Block et al., 2013; Zoellner, Krzeski, et al., 2012). This is not surprising given that humans are genetically predisposed to prefer sweet taste (Ventura & Mennella, 2011). However, preference is also learned (Ventura & Mennella, 2011). In Mexico, there is a high exposure to sweetened beverages, starting from infancy (Barquera et al., 2010; Rodriguez-Ramirez et al., 2016). Therefore, interventions and programs should focus on reducing children’s repeated exposure to SSBs to prevent heightened SSB
preferences and familiarity early in life from developing. In addition, it is not certain whether a liking for sweet taste can be reduced, thus efforts should be aimed at improving individuals’ self-efficacy and self-regulation skills.

**SSB-health related beliefs** were not associated with either a self-reported change in consumption of SSBs or current consumption of taxed SSBs. There are two plausible reasons for the absence of significance. One is that while beliefs about health outcomes or risks of behavior are a precondition for change, they are not enough on their own, and self-efficacy is needed to overcome impediments or barriers to adopting and maintaining healthy behaviors (Bandura, 2004). A second reason could be that there was little variation in the health beliefs data: 83 percent of all survey respondents believed that drinking SSBs is associated with the four diseases/conditions they were asked about (See Table 4. 8).

**Self-efficacy** was also a strong, significant predictor in both regression models. This suggests that people may have felt that they had the confidence to limit their SSB consumption if they wanted to, and, that if they have decreased SSB consumption, it might have been because they had a high sense of self-control. To find out whether people who reported being self-efficacious were those who did not drink SSBs, we conducted further analyses eliminating individuals with low consumption of SSBs (≤50 g/person/day), and the results remained significant (data not shown). Self-efficacy has been shown to be significantly associated with SSB consumption in other studies conducted in adults. For example, a study with US parents (n=66) of adolescents found that perceived behavior control was a significant predictor of SSB consumption and was significantly correlated with intention to decrease SSB consumption (Riebl et al., 2016).
In another study with adults \( n=199 \), Zoellner et al. (2012) found that perceived behavioral control was significantly associated with SSB consumption. While drinking (or stopping drinking) SSBs is not a complex behavior in itself, the innate preference for sweet taste and the important sociocultural aspects of SSB drinking in Mexico makes drinking less SSBs a challenging behavior change. Given that the awareness about the detrimental health consequences of drinking SSBs in this population is high (83 percent of respondents believed that SSBs contribute to obesity, HPB, diabetes, and dental caries), future public health efforts should focus less on changing health beliefs and more on increasing people’s self-efficacy (Bandura, 2004). Nutrition education is therefore called for to help individuals develop self-efficacy and self-regulation skills, as well as to help them recognize their susceptibility to disease based on their current SSB consumption.

Overall, the regression models explained a modest amount of variation in the data (9 percent in self-reported change of SSB consumption, and 21 percent in current consumption of taxed SSBs). Nevertheless, the existing quantitative psychosocial models of dietary behavior change report a predictive validity less than 30 percent (Baranowski et al., 1999) suggesting that the results of this study are in line with the literature and indicates that the processes underlying food choice are complex and influenced by many factors.

4.6. Limitations and Strengths

There are several limitations to this study that should be considered when interpreting its results. First, the data from the POCAA-Q survey are self-reported, and thus could be subject to recall and social desirability response biases. Second, the
associations are cross-sectional and do not permit assessment of causality or ascertaining the direction of the association. Third, the study did not use a pre-post design; thus, it was unable to assess change in measures before and after the SSB tax. Fourth, a post-only comparison of outcomes between those aware and not aware of the SSB tax does not fully take into account individuals with a priori favorable attitudes and behaviors who might have been more likely to pay more attention to the campaign. Fifth, there were other public health interventions aimed at decreasing consumption of SSBs that were implemented around the same time as the SSB tax. Lastly, the preference and self-efficacy constructs were assessed with only one item each; according to some researchers this may not adequately define a construct that is stable enough to use in future studies (Tabachnick & Fidell, 2001; Velicer & Fava, 1998).

Despite these limitations, the study has several strengths. Foremost, it provides the first analysis of awareness of the Mexican SSB tax and opinion about its effectiveness in reducing purchases of SSBs in addition to its relationships with a self-reported change in SSB consumption and with current consumption among Mexican adults. It is also the first to assess the association of self-efficacy, taste preference, and health beliefs with SSB consumption in Mexico on a national scale. Findings are generalizable nationally because the ENSANUT 2016 survey uses a probabilistic representative sample.

4.7. Conclusions

Our findings suggest that accompanying SSB taxes with highly visible educational/informational campaigns may contribute to amplifying their effect by further reducing consumption of SSBs. Similarly, studies of tobacco control initiatives have suggested that while tobacco taxation and smoke-free places were two of the key
elements of tobacco control strategies (Bader et al., 2011), part of the success could also be attributed to a shift in social norms and attitudes that emanated from policy initiatives and health education campaigns (Centers for Disease & Prevention, 2007). Further research is needed to understand the signaling effect of taxes and the influence of the publicity of taxes on SSB consumption but the aforementioned research lends support to suggested educational campaigns. Researchers in countries that are about to pass SSB taxes could more thoroughly examine this phenomenon by employing pre/post designs. The use of mixed-method approaches for the study of this complex phenomenon — beverage choice in the context of SSB taxes — is advised.

In addition, we found that SSB health-related beliefs were not significantly associated with either a self-reported decrease in SSB consumption after the implementation of the SSB tax, or to current consumption of taxed SSBs. Self-efficacy, on the other hand, and liking of SSBs, were significantly associated. In this context, where a majority of the Mexican adult population likes SSBs, drinks them frequently, and possesses knowledge about the detrimental consequences of SSBs consumption, public health and nutrition education efforts should be aimed at helping people develop self-efficacy and self-regulation skills.
### SUPPLEMENTARY TABLES

**Table 4.8**

Percentages and (unadjusted) mean consumption of taxed SSBs in people self-reporting a decrease (or no decrease) in consumption of SSBs in the 2 years prior, by awareness of and opinion about the tax and psychosocial determinants of SSB consumption.*

<table>
<thead>
<tr>
<th>Awareness of the SSB tax</th>
<th>Total (n = 6550)</th>
<th>People who decreased in SSBs</th>
<th>People who did not decrease in SSBs †</th>
<th>Total (n = 4867)</th>
<th>People who decreased in SSBs</th>
<th>People who did not decrease in SSBs*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Un-weighted n</td>
<td>Weighted (in MM) n</td>
<td>%</td>
<td>%</td>
<td>(95% CI)</td>
<td>Mean taxed SSB (g/day)± SEM</td>
<td>Mean taxed SSB (g/day)± SEM</td>
</tr>
<tr>
<td>Awareness of the SSB tax</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aware</td>
<td>3,944</td>
<td>38.0</td>
<td>64.2</td>
<td>44.8 (40.9-48.8)</td>
<td>55.2 (51.2-59.1)</td>
<td>2,925</td>
</tr>
<tr>
<td>Not aware</td>
<td>2,617</td>
<td>21.0</td>
<td>35.8</td>
<td>37.9 (34.7-41.2)</td>
<td>62.1 (58.8-65.3)</td>
<td>1,903</td>
</tr>
<tr>
<td>Opinion about the effectiveness of the SSB tax</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is being successful</td>
<td>1,586</td>
<td>11.6</td>
<td>20.3</td>
<td>42.4 (38.5-46.4)</td>
<td>57.6 (53.6-61.5)</td>
<td>1,142</td>
</tr>
<tr>
<td>It is NOT being successful</td>
<td>4,709</td>
<td>45.6</td>
<td>79.7</td>
<td>42.2 (38.8-45.7)</td>
<td>57.8 (54.3-61.2)</td>
<td>3,522</td>
</tr>
</tbody>
</table>

**Health Beliefs (scale)**

| 0 – “No” to all 4 Qs | 279 | 2.2 | 4.0 | 34.5 (47.8-29.4) | 65.5 (76.8-70.6) | 188 | 1.6                                                     | 390.8± 152.2                      | 514.1± 137.7                        |
| 1 – “Yes” to 1 Q     | 111 | 1.0 | 1.8 | 29.4 (45.4-46.2) | 70.6 (82.7-53.8) | 83  | 0.8                                                     | 479.6± 205.1                      | 615.9± 198.4                        |
| 2 – “Yes” to 2 Qs    | 158 | 1.2 | 2.2 | 46.2 (58.7-41.2) | 53.8 (65.7-58.8) | 100 | 0.7                                                     | 237.4± 62.1                       | 793.6± 165.7                        |
| 3 – “Yes” to 3 Qs    | 621 | 5.2 | 9.3 | 41.2 (48.6-43.5) | 58.8 (65.9-56.5) | 448 | 3.7                                                     | 316.8± 50.5                       | 533.8± 71.1                         |
| 4 – “Yes” to all 4 Qs| 5,002|46.5|82.7|43.5 (46.7-42.7) | 56.5 (59.6-57.3) | 3,708|35.8                                                     | 314.5± 23.1                       | 544.7± 28.1                         |

**Self-efficacy**

<p>| Very | 1,822|18.9|32.0|51.7 (45.8-57.5) | 48.3 (42.5-54.2) | 1,181|12.7                                                     | 271.2± 36.2                       | 451.7± 57.0                         |</p>
<table>
<thead>
<tr>
<th>Un-weighted n</th>
<th>Weighted (in MM) n</th>
<th>%</th>
<th>People who decreased in SSBs</th>
<th>People who did not decrease in SSBs†</th>
<th>Un-weighted n</th>
<th>Weighted (in MM) n</th>
<th>Mean taxed SSB (g/day)±SEM</th>
<th>Mean taxed SSB (g/day)±SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total (n = 6550)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confident</td>
<td>2,694</td>
<td>22.4</td>
<td>38.2</td>
<td>40.3 (36.9-43.8)</td>
<td>59.7</td>
<td>(56.2-63.1)</td>
<td>2,034 17.9</td>
<td>306.8±24.9</td>
</tr>
<tr>
<td>Slightly</td>
<td>1,530</td>
<td>13.2</td>
<td>22.5</td>
<td>34.7 (30.8-38.9)</td>
<td>65.3</td>
<td>(61.1-69.2)</td>
<td>1,237 10.5</td>
<td>369.2±56.3</td>
</tr>
<tr>
<td>Not confident</td>
<td>459</td>
<td>4.3</td>
<td>7.3</td>
<td>35.0 (27.5-43.4)</td>
<td>65.0</td>
<td>(56.6-72.5)</td>
<td>351 3.6</td>
<td>427.1±61.7</td>
</tr>
<tr>
<td><strong>Liking of SSBs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dislike</td>
<td>777</td>
<td>1.4</td>
<td>2.3</td>
<td>67.3 (22.6-35.8)</td>
<td>32.7</td>
<td>(64.2-77.4)</td>
<td>73 0.9</td>
<td>157.0±35.0</td>
</tr>
<tr>
<td>Slightly</td>
<td>158</td>
<td>9.4</td>
<td>16.1</td>
<td>59.4 (22.6-35.8)</td>
<td>40.6</td>
<td>(34.5-47.0)</td>
<td>797 5.9</td>
<td>168.8±23.2</td>
</tr>
<tr>
<td>disagree</td>
<td>1,291</td>
<td>39.0</td>
<td>65.8</td>
<td>40.5 (37.6-43.5)</td>
<td>59.5</td>
<td>(56.5-62.4)</td>
<td>3,321 30.6</td>
<td>347.2±25.5</td>
</tr>
<tr>
<td>Like them</td>
<td>4,323</td>
<td>9.2</td>
<td>15.8</td>
<td>28.7 (22.6-35.8)</td>
<td>71.3</td>
<td>(64.2-77.4)</td>
<td>630 7.4</td>
<td>423.4±73.4</td>
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<tr>
<td><strong>Availability of free/low-cost potable water</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>951</td>
<td>9.2</td>
<td>2.6</td>
<td>39.8 (33.2-46.9)</td>
<td>60.2</td>
<td>(53.1-66.8)</td>
<td>715 7.3</td>
<td>294.7±35.9</td>
</tr>
<tr>
<td>Agree</td>
<td>4,584</td>
<td>40.3</td>
<td>13.3</td>
<td>42.7 (39.7-45.8)</td>
<td>57.3</td>
<td>(54.2-60.3)</td>
<td>3,371 30.7</td>
<td>344.7±26.3</td>
</tr>
<tr>
<td>Disagree</td>
<td>857</td>
<td>7.8</td>
<td>68.4</td>
<td>44.5 (35.1-54.2)</td>
<td>55.5</td>
<td>(45.8-64.9)</td>
<td>627 5.7</td>
<td>177.1±31.2</td>
</tr>
<tr>
<td>Strongly</td>
<td>142</td>
<td>1.5</td>
<td>15.7</td>
<td>36.5 (27.4-46.7)</td>
<td>63.5</td>
<td>(53.3-72.6)</td>
<td>96 1.0</td>
<td>301.4±105.3</td>
</tr>
</tbody>
</table>

Notes.
SSBs, sugar-sweetened beverages; MM, millions; SEM, standard error of the mean; Q, question; Qs, questions.
Data are from the ENSANUT 2016: Mexican adults (20-59 years old).
* Values are percentages (they sum up to 100 across rows), and unadjusted means and SEMs. The total samples sizes of the percentages and the means are different because the means are calculated with data from the SFFQ data file which has fewer cases than the POCAA-Q data file.
** The question about liking of SSBs was as follows: “Do you agree with this statement ‘You like the taste of sugary drinks’?” Valid response options were completely agree, agree, disagree, completely disagree. In this table the response options have been simplified to make it easier for the reader to understand.
† The “did not decrease” category was calculated combining the “decrease” and “stayed the same” categories of the variable perception of change in consumption of SSBs.

Table 4.9
Percentages and (unadjusted) mean consumption of taxed SSBs in people self-reporting a decrease (or no decrease) in consumption of SSBs in the 2 years prior, by socio-demographic characteristics. Mexican adults (20-59 years old). *

<table>
<thead>
<tr>
<th></th>
<th>Total Total (n = 6550)</th>
<th>People who decreased in SSBs</th>
<th>People who did not decrease in SSBs †</th>
<th>Total (n = 4867)</th>
<th>People who decreased in SSBs</th>
<th>People who did not decrease in SSBs*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unweighted n</td>
<td>Weighted (in MM) n</td>
<td>%</td>
<td>%</td>
<td>Mean taxed SSB (g/day)±SEM</td>
<td>%</td>
</tr>
<tr>
<td>National</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2123</td>
<td>28.2</td>
<td>47.8</td>
<td>40.9</td>
<td>(36.2-45.8)</td>
<td>59.1</td>
</tr>
<tr>
<td>Female</td>
<td>4446</td>
<td>30.8</td>
<td>52.2</td>
<td>43.6</td>
<td>(40.7-46.6)</td>
<td>56.4</td>
</tr>
<tr>
<td>SES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>2216</td>
<td>12.1</td>
<td>20.5</td>
<td>38.4</td>
<td>(34.9-42.1)</td>
<td>61.6</td>
</tr>
<tr>
<td>Medium</td>
<td>2250</td>
<td>17.2</td>
<td>29.2</td>
<td>40.5</td>
<td>(36.7-44.4)</td>
<td>59.5</td>
</tr>
<tr>
<td>High</td>
<td>2103</td>
<td>29.7</td>
<td>50.3</td>
<td>45.0</td>
<td>(40.5-49.5)</td>
<td>55.0</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>3294</td>
<td>45.7</td>
<td>77.4</td>
<td>43.6</td>
<td>(40-47.2)</td>
<td>56.4</td>
</tr>
<tr>
<td>Rural</td>
<td>3275</td>
<td>13.4</td>
<td>22.6</td>
<td>38.1</td>
<td>(35.5-40.7)</td>
<td>61.9</td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>1426</td>
<td>12.5</td>
<td>21.2</td>
<td>42.0</td>
<td>(37.4-46.7)</td>
<td>58.0</td>
</tr>
<tr>
<td>Centre</td>
<td>2158</td>
<td>19.5</td>
<td>33.0</td>
<td>42.9</td>
<td>(38.1-47.8)</td>
<td>57.1</td>
</tr>
<tr>
<td>Mexico City</td>
<td>759</td>
<td>10.4</td>
<td>17.7</td>
<td>44.8</td>
<td>(33.8-56.4)</td>
<td>55.2</td>
</tr>
<tr>
<td>South</td>
<td>2226</td>
<td>16.6</td>
<td>28.2</td>
<td>40.3</td>
<td>(37.3-43.5)</td>
<td>59.7</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>1631</td>
<td>19.0</td>
<td>32.1</td>
<td>38.0</td>
<td>(34.5-41.6)</td>
<td>62.0</td>
</tr>
<tr>
<td>30-39</td>
<td>1912</td>
<td>17.0</td>
<td>28.8</td>
<td>41.1</td>
<td>(34.3-48.3)</td>
<td>58.9</td>
</tr>
<tr>
<td>40-49</td>
<td>1672</td>
<td>13.1</td>
<td>22.3</td>
<td>43.8</td>
<td>(38.8-48.9)</td>
<td>56.2</td>
</tr>
<tr>
<td>50-59</td>
<td>1354</td>
<td>9.9</td>
<td>16.8</td>
<td>50.8</td>
<td>(45.2-56.3)</td>
<td>49.2</td>
</tr>
</tbody>
</table>
### Table 4.10

**Perception of change in SSB consumption among children living in own household.**

<table>
<thead>
<tr>
<th></th>
<th>N Unweighted</th>
<th>MM</th>
<th>Estimate %</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Decreased</strong></td>
<td>1506</td>
<td>13.4</td>
<td>33.8</td>
<td>30.8-37.0</td>
</tr>
<tr>
<td><strong>Stayed the same</strong></td>
<td>2145</td>
<td>18.3</td>
<td>46.4</td>
<td>43.5-49.2</td>
</tr>
<tr>
<td><strong>Increased</strong></td>
<td>832</td>
<td>7.8</td>
<td>19.8</td>
<td>17.5-22.3</td>
</tr>
</tbody>
</table>

Notes.
MM, millions; CI, confidence interval
Data are from the ENSANUT 2016: Mexican adults (20-59 years old), national level, n = 4,483.
Table 4. 11
Perception of change in SSB consumption among children living in the same household by perception of change in own consumption.

<table>
<thead>
<tr>
<th>Change in children’s consumption</th>
<th>Total (children)</th>
<th>%</th>
<th>CI</th>
<th>%</th>
<th>CI</th>
<th>%</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreased</td>
<td>33.9</td>
<td>21.5</td>
<td>(19.0-24.2)</td>
<td>8.5</td>
<td>(7.2-9.9)</td>
<td>3.9</td>
<td>(3.0-5.2)</td>
</tr>
<tr>
<td>Stayed the same</td>
<td>46.3</td>
<td>13.0</td>
<td>(11.4-14.8)</td>
<td>27.1</td>
<td>(24.3-30.0)</td>
<td>6.2</td>
<td>(5.2-7.5)</td>
</tr>
<tr>
<td>Increased</td>
<td>19.8</td>
<td>5.9</td>
<td>(4.6-7.5)</td>
<td>7.4</td>
<td>(6.0-9.0)</td>
<td>6.5</td>
<td>(5.1-8.3)</td>
</tr>
<tr>
<td>Total (adults)</td>
<td>100</td>
<td>40.4</td>
<td>(37.0-43.9)</td>
<td>42.9</td>
<td>(39.7-46.2)</td>
<td>16.7</td>
<td>(14.6-18.9)</td>
</tr>
</tbody>
</table>

Notes.
Data are from the ENSANUT 2016: Mexican adults (20-59 years old), national level.
Chi-square test of independence of rows and columns was highly significant. Pearson chi-square test (3.677, 1055.383) = 712.237. Sig <.001
The percentage of adults who reported a decrease in consumption in SSBs among children in the HH was higher among those who had reported a decrease in own consumption.
4.8. References


Hu, F. B. (2013). Resolved: there is sufficient scientific evidence that decreasing sugar-sweetened beverage consumption will reduce the prevalence of obesity and obesity-related diseases. *Obes Rev, 14*(8), 606-619. doi:10.1111/obr.12040


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Secretaría de Salud. (2014). Guidelines presenting the nutritional and advertising criteria to be observed by food and non-alcoholic beverage advertisers to advertise their products on open and restricted television, and movie theaters, in accordance with the provisions in articles 22 Bis, 79, section X and 86, section VI, of the Regulation of the General Health Law in relation to Advertising. [LINEAMIENTOS por los que se dan a conocer los criterios nutrimentales y de publicidad que deberán observar los anunciantes de alimentos y bebidas no alcohólicas para publicitar sus productos en televisión abierta y restringida, así como en salas de exhibición cinematográfica, conforme a lo dispuesto en los artículos 22 Bis, 79, fracción X y 86, fracción VI, del Reglamento de la Ley General de Salud en Materia de Publicidad]. Mexico: Diario Oficial de la Federación Retrieved from http://www.dof.gob.mx/nota_detalle.php?codigo=5340694&fecha=15/04/2014.


Chapter 5 (Article 2) “A qualitative study of consumption patterns of sugar-sweetened beverages (SSBs) and their psychological determinants among Mexican parents and their children in the context of the SSB tax”

5.1. Introduction

Mexico has one of the highest prevalence rates of childhood overweight and obesity (Hernandez-Cordero et al., 2017) worldwide, affecting 33 percent of school-aged children (5-11 years) (Shamah-Levy et al., 2017). Significant increases in trends were registered between the 1988 and 2012 National Health and Nutrition Surveys (Hernandez-Cordero et al., 2017), spurred by globalization processes and food system changes that engulfed most of the developing world starting in the 1980s.

Carbonated SSBs (“soda”), in the form of Coca-Cola, entered the Mexican market in the 1920s first a rarity only attainable by high classes. Coca-Cola become relatively regularly drunk in Mexico in the 1950s driven by marketing and promotion campaigns (Blanding, 2010: pp. 156). Soda consumption becoming deeply entrenched in Mexican culture in the 1980s and 1990s as a result of NAFTA (Clark et al., 2012) that made soda cheaper and widely available, poor water quality (García-Urigüen, 2012), and aggressive marketing campaigns (Hawkes, 2002) portraying Coke as a Mexican product of which consumers should be proud (Blanding, 2010; 156).

Mexican children are exposed to SSBs from a very young age. A study based on ENSANUT 2012 data ($n = 2,057$) found that SSBs were consumed by 63 percent of
infants 12 months old and 78 percent of infants 24 months old, carbonated SSBs were consumed by 16 percent of infants 12 months old, and by 35 percent of infants 24 months old (Deming et al., 2015). This worrisome because of the implication that a high SSB consumption has in the development of childhood obesity (Ludwig et al., 2001; Malik et al., 2013; Malik et al., 2009), cavities (Moynihan & Kelly, 2014), type 2 diabetes (Greenwood et al., 2014; Imamura et al., 2015; Malik et al., 2010; Wang et al., 2015), and coronary heart disease (Huang et al., 2014).

SSBs are highly liked because of humans’ biological predisposition to sweet flavors (Ventura & Mennella, 2011) and because sugar has a powerful brain stimulating potential that can induce strong cravings (Avena et al., 2012). Caffeinated options (like cola carbonated SSBs) can also induce mild physical dependence (Meredith et al., 2013). Thus an added concern about frequent exposure to SSBs from infancy) is that this may favor consumption later in life (Park et al., 2014; Ventura & Mennella, 2011).

**Mexico’s attempts to tackle the obesity epidemic**

In response to the alarming obesity epidemic among children, the government has implemented a number of legislative measures, including the regulation of foods and beverages sold in schools (Secretaría de Educación Pública & Secretaría de Salud, 2010, 2014), and the regulation of advertisement of foods and non-alcoholic beverages during children’s television viewing time (Secretaría de Salud, 2014). Two additional measures aimed at all age groups include an excise tax on nonessential energy-dense foods and an excise tax on SSBs (Secretaría de Gobernación, 2013). All measures were effective in 2014. Information about the detrimental health effects of a high SSB consumption has been provided through official channels such as clinics and hospitals of the Mexican
Actions from non-governmental organizations in response to the obesity epidemic include informational/educational campaigns aimed at reducing SSB consumption conducted by civil society groups (Alianza por la Salud Alimentaria, 2018), and the partial voluntary self-regulation of foods and beverages advertising directed at children signed by food companies in 2010; this was framed as an “an adjunct tool for promoting healthy lifestyle habits, based on a proper diet and an active lifestyle, thereby contributing to the prevention of overweight and obesity” (CONAR, 2009).

Even though various measures have been taken to combat the obesity epidemic thus far, the SSB tax in particular is the object of our study.

**Current Evaluations of the SSB tax and Need for Additional (Qualitative) Evaluations**

Current evaluations of the SSB tax are based on the economic principle of price elasticity of demand and thus rely on sale and household expenditure data (Colchero, Guerrero-Lopez, et al., 2016; Colchero, Molina, et al., 2017; Colchero, Popkin, et al., 2016). A study found that that over the first two years after a tax is implemented, there was an average 7.6 percent decrease in store purchases of taxed beverages (Colchero, Rivera-Dommarco, et al., 2017). However, these changes in consumer behavior may not be totally explained by a price increase, as there were other concurrent factors that might have affected demand and purchases of SSBs (Colchero, Rivera-Dommarco, et al., 2017).
In addition to the tax itself, campaigns and debates that surrounded it could have contributed to increasing people’s awareness of the negative health outcomes of SSBs (WHO, 2016) and to shifting social norms, thus, further discouraging individuals from drinking them. For instance, in a recent study we analyzed nationally-representative ENSANUT 2016 data (n = 6,650 adults) finding that adults who were aware of the SSB tax were significantly more likely to report a decrease in SSB consumption (compared with adults who were not aware). Moreover, in urban areas, adults aware of the tax drank a significantly lower amount of taxed SSBs than those not aware (Álvarez-Sánchez et al., Submitted). In addition, the current evaluations do not help us understand how Mexicans have reacted and adapted to the price increase on a day-to-day basis and their reasons for having (or not) changed.

While quantitative evaluations of the SSB tax are extremely important to document the extent to which the fiscal measure may have an effect in the goal behavior, nevertheless, the sole use of a quantitative approach is reductionist as it neglects the historical dimension and the contexts and social structures that circumscribe these behaviours (Morin, 2009). Food choice is complex, being driven not only by environmental factors (such as price) but also by biological predispositions, beliefs, attitudes, and social norms, among others (Contento, 2014).

Thus, to have a deeper, more contextual understanding of the potential influence of the SSB tax, we followed up our quantitative study (Álvarez-Sánchez et al., Submitted) with a multi-case cross-sectional qualitative study that explored three groups — parents of children aged 9 years or younger, construction workers, and indigenous peoples in Southern Mexico — whether, how, and why, consumption of taxed SSBs and
the psychosocial determinants of consumption have been modified in the context of the tax, and if the tax was a contributor to those changes.

This manuscript presents and discusses the findings of the parents group.

*Rationale for Examining Parental Beliefs about SSBs*

We decided to study parents as a group because of the powerful influence they exert on the development of their children’s eating habits in their role as food providers and exemplars (Savage et al., 2007). Some studies have found that parenting practices associated with children’s (lower) SSB consumption include parental (positive) modeling (Mazarello Paes et al., 2015; van de Gaar et al., 2017), parents’ subjective norms and parental child-feeding practices (Lopez et al., 2012; Pettigrew et al., 2015; van de Gaar et al., 2017); whereas availability of SSBs in the home (Grimm et al., 2004), and parents’ frequency of consumption of SSBs (Derbyshire, 2016; Grimm et al., 2004) are associated with children’s higher SSB consumption. Thus parents exert strong control on children’s’ SSB consumption overall.

Moreover, Leatherman and Goodman found that even though parents in the Mexican Yucatan region considered Coca-Cola and other carbonated beverages too strong and inappropriate for babies and young children, but many young infants drank them. In a qualitative study conducted in 2008-2009 with school children in Mexico City, Théodore and colleagues (2011) found that consumption of plain water was only limited to the times when children did physical activity/exercise, whereas consumption of industrialized SSBs (soda, juice, energy drinks) was associated with a wide range of occasions and circumstances.
5.1.1 Study aim and research questions

The aims of the parental study were to explore: (a) parents and their children’s consumption of taxed SSBs and psychosocial determinants (beverage-related beliefs, attitudes, social norms, intention, perceived behavioral control, self-identity) of consumption/feeding SSBs to children, (b) whether consumption of taxed SSBs had changed, and why and how, (c) whether the SSB tax in particular influenced consumption of taxed SSBs and/or psychosocial determinants of consumption.

The research questions are as follows:

1. What has been the participants’ consumption of taxed SSBs patterns from the time before the SSB tax to the present?

2. How do participants describe their motivation (e.g., beliefs, attitudes, social norms) for consuming taxed SSBs?

3. In what ways, if any, do participants intend to modify their consumption of taxed SSBs? What elements facilitate or impede their ability to change?

4. What has been the participants’ experience of the SSB tax and of other concurrent initiatives aimed at decreasing SSB consumption?

5. In what ways, if any, have participants’ consumption of SSBs reportedly changed in the context of the SSB tax and why?

6. How do participants describe the elements that may have influenced their beliefs and attitudes toward SSBs since the implementation of the tax?

7. What are the beverages children consume most frequently? Why?

8. Has children’s beverage consumption changed since the application of the tax? And Why?
5.1.2 Theoretical framework

Because the focus of our study was on exploring psychosocial determinants of SSBs consumption and child-feeding in addition to potential modification of these in the context of the tax, our theoretical framework was primarily based on the Fishbein & Ajzen’s Reasoned Action Approach (RAA) (2010), an extension of the Theory of Planned Behavior. The RAA is a comprehensive theory because it includes many of the key constructs that most health behavior change theories share. In the RAA, intentions, skills and abilities, perceived behavioral control, and environmental factors are seen as the immediate determinants of behavior, and all contribute to SSB consumption. Intention is influenced by attitudes towards the behavior (which, in turn, are influenced by behavioral beliefs and outcome expectations), social norms (influenced by what significant others do and think, expectations by other of what you will do, and motivations to comply with those expectations), and perceived control (which signifies the beliefs about the control exerted over the behavior and the perceived power a person seems to have). The RAA model shows that there are many background influences, such age, socioeconomic status, past behavior (habit/custom), and media exposure, which may influence underlying beliefs. This theory allowed us to determine and explore relevant theoretical constructs that contribute to current SSB (or change in) consumption, within the social and cultural context in which they originate.

In addition, we relied on the hyperbolic or future discounting concept (“discounting a future consequence or reward over an immediate one”) from behavioral economics theory (Roberto & Kawachi, 2015) to explain why participants continue
consuming SSBs in spite of knowing and/or suffering the negative health effects of a high SSB consumption.

5.2. Methods

5.2.1 Research design and participants

Our study was conducted in two schools (“Escuela de Primaria Federal Yaocalli” and “Escuela de Primaria Kuaujtila”) in Cuernavaca, a low-middle income neighborhood in Mexico, the capital city of the Morelos State. Moreover, both schools share the same building but meet at different times of the day. While there were no official breakfast and/or lunch programs, foods sold during recess time include tacos, tostadas, popcorn, seeds or nuts with chili sauce, crushed iced with flavorings, etc. Drinking fountains had been recently installed; in addition, teachers sold small water bottles to children in the classrooms. In both schools, the regulation of food sales and beverages (Secretaría de Educación Pública & Secretaría de Salud, 2010, 2014) included the ban on the sale of industrialized SSBs, which according to participants had been enforced recently. However, three or four snack and beverage stalls were set up a few feet away from the gate at the beginning and end of the school day; they offered an array of beverages, including plain water, industrialized sugar-sweetened juice and aguas frescas (such as Bonafont Levité), and snacks such as cookies (Appendix XVI shows an image of one of the stalls). Within 100 meters from the school, there was a perpendicular street with a large number of corner shops selling all types of SSBs, snacks and candy.

Pooling participants from this school setting, we conducted 10 in-depth semi-structured interviews (with one being a couple, resulting in 11 participants in total) and 4
209

focus groups (with a total of 26 participants) using a convenience sample of parents. (This number of interviews and focus groups seemed adequate to achieve saturation of responses based on other qualitative studies of dietary practices (Bunting et al., 2013; Eli et al., 2017).) We recruited participants face-to-face, with the aid of the school principals and teachers, at the beginning or end of the school day. Parents and primary caregivers, aged 18 to 59 years, whose children were 9 years or younger\textsuperscript{41} were eligible to participate. The term ‘parents’ will be used from here onwards to refer to both parents and caregivers of young children in the home.

Our study was approved by the three Institutional Review Boards in Mexico (the Ethics in Research Committee, the Research Committee, and the Biosafety Committee; project ID: 1484) at the INSP and in the United States of America by the Institutional Review Boards in Teachers College Columbia University.

5.2.2 Data collection

The purpose of the in-depth semi-structured interviews was to explore the history of participants’ SSB consumption, and SSB-related beliefs, attitudes, perceived behavioral control, social norms, and intention to change, as well as parental beverage-feeding practices. According to Yin (2009), interviews are one of the most important

\footnote{\textsuperscript{41} We chose children 9 years or younger because at age 10-11 children have a larger capacity compared to smaller children to reason, learn and apply skills, and exercise self-control. This is a period when children become more independent from their parents and therefore eat out more and have a bigger say on what they eat at home. They are also more affected by the norms of their peers, which might dictate what children eat when they go out.}
sources of information in a case study as they focus directly on case study topics and provide perceived causal inferences and explanations. The purpose of the focus groups was to explore the collective views and social norms (Gill et al., 2008) regarding SSB drinking and feeding SSBs to children. They provided us with an opportunity to explain the statistical data collected in a previous nation-wide survey and to seek clarification of information collected through the in-depth interviews.

The interviews and focus groups were conducted, in Spanish, in a private room in the schools, such as a library or media room when not in use, in June 2017. Most of the interviews were conducted by C. Álvarez-Sánchez (who has training in behavioral nutrition and public health) with the exception of two that were conducted by H. Guillén (who has a PhD in anthropology). C. Álvarez-Sánchez and H. Guillén jointly facilitated the first and largest of the four focus groups; and C. Álvarez-Sánchez facilitated the other three focus groups solely.

Oral consent was obtained (audio recorded) from all participants. The interviews and focus groups lasted an average of 54 min and 62.5 min, respectively, and were audio recorded and professionally transcribed verbatim. The names of the schools and participants have been changed to protect their identity/confidentiality.

No incentives were given. The interview and focus group guides (see Appendix XII and XIII) were structured in four sections: current consumption and reasons for consumption, changes in practices, health beliefs and attitudes, and the SSB tax.
To elicit information about a wide variety of beverages, we used cards with images of 18 beverages \(^{42}\) (sweetened, artificially sweetened and unsweetened) representative of different beverages categories and identified during supermarket trips and discussions with INSP colleagues. Participants were asked to sort the cards according to their own criteria in order to identify meanings and practices associated with each one of them. On a second round, participants were asked to sort the cards according to the following criteria: (a) good to drink on a daily basis, (b) good to drink a few times a week, (c) should be avoided.

In addition, field notes were made during the two weeks spent at school which included descriptions of the school, foods sold at recess time, food stands outside of the school, corner stores near the school, SSB-related advertisements and promotions, as well as informal discussions with teachers, parents, and the school custodian. Notes were also made after each interview and focus group.

\(^{42}\) The images are the following: 1) 600 ml plastic bottle of regular Coca-Cola, 2) 600 ml plastic bottle of Coca-Cola Sin Azúcar, 3) 600 ml plastic bottle of Coca-Cola Light, 4) 600 ml plastic bottle of Coca-Cola Stevia, 5) 600 ml plastic bottle of Orange Fanta, 6) Tang sugar-sweetened powder sachets, 7) tetra brick of industrialized sugar-sweetened Jumex mango juice, 8) tetra pack of industrialized sugar-sweetened Boing strawberry juice, 9) Vive 100, sugar-sweetened energy drink, 10) Gatorade, sugar-sweetened sports drink, 11) Be Light, industrialized sugar-sweetened water, 12) Fonafont Levité, industrialized sugar-sweetened water, 13) Industrialized sugar-sweetened chocolate milk, 14) glass of orange juice, 15) glass of water, 16) glass of lime cool water, 17) milk, 18) *atoles* (traditional Mexican hot corn- and masa-based beverage with added sugar).
Table 5. 1

*Data collection techniques, sample sizes, and information collected. Parents of children 9 years or younger. Morelos (Mexico).*

<table>
<thead>
<tr>
<th>Method/Instrument and Number (n)</th>
<th>Description / Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-demographic questionnaire (n=37)</td>
<td>Socio-demographic, presence of chronic illness (of self or relative) and other relevant information were collected before the start of the interviews and focus groups.</td>
</tr>
<tr>
<td>Semi-Quantitative Beverage Frequency Questionnaire (n=15)</td>
<td>The frequency and quantity of water consumption, and a variety of sugar-sweetened, unsweetened or artificially sweetened beverages (17 beverages in total) were assessed using a modified version of the beverage intake section from the food-frequency questionnaire (FFQ) that was utilized in the ENSANUT 2016 (INPS, 2016). The modifications made including removing the question about consumption of alcoholic beverages, adding two questions about milk and flavored milk consumption from the dairy section, and adding two questions (not included in the FFQ) about consumption of energy and sport beverages (see questionnaire in Appendix XIV). The questionnaire was interviewer-administered. This questionnaire was only administered during the interviews and to a few focus groups participants. We were not able to administer it to all focus group participants due to logistical and time constraints.</td>
</tr>
<tr>
<td>In-depth interviews with a semi-structured guide (n=10)</td>
<td>• The aims were to explore: (a) Parents and their children’s consumption of taxed SSBs and psychosocial determinants of consumption/feeding SSBs to children, (b) Whether consumption of taxed SSBs had changed, and why and how, (c) Whether the SSB tax influenced consumption of taxed SSBs and/or psychosocial determinants of consumption. • To address these aims we examined the following in detail: • Qualitative assessment of parents’ and their children’s consumption of a wide variety of sweetened and unsweetened beverages (taxed and untaxed) in different scenarios and</td>
</tr>
</tbody>
</table>

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43 Beverages asked about included the following categories: (a) water (plain, tap, bottled, etc.), (b) carbonated industrialized SSBs (Coca-Cola, Pepsi, Sprite, and local brands of beverages such as *Jarritos*), (c) non-carbonated industrialized SSBs (industrialized juice, sport drinks, and energy drinks), (d) *aguas frescas* (homemade beverages with fruit, flowers, or seeds blended with sugar and water), (e) other homemade SSBs (coffee, tea, *pozol*), and (f) other beverages (e.g., homemade unsweetened natural juice).
<table>
<thead>
<tr>
<th>Method/ Instrument and Number (n)</th>
<th>Description / Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>locations (at home, at school, on the street, during celebrations), times of day, and combinations of beverages with food. In addition, we explored consumption based on: (a) time periods: consumption throughout life, in addition to before and after the tax, and (b) seasons: summer versus winter (hot seasons versus cold seasons).</td>
</tr>
<tr>
<td></td>
<td>• Parental beverage-related feeding practices.</td>
</tr>
<tr>
<td></td>
<td>• Reported change in parents’ and their children’s SSB consumption and reason for change.</td>
</tr>
<tr>
<td></td>
<td>• Psychosocial determinants of taxed SSB beverage consumption.</td>
</tr>
<tr>
<td></td>
<td>• Parental SSB-related beliefs and attitudes.</td>
</tr>
<tr>
<td></td>
<td>• Liking for SSBs by parents and children.</td>
</tr>
<tr>
<td></td>
<td>• Personal and social norms in relation to SSB consumption and giving SSBs to children.</td>
</tr>
<tr>
<td></td>
<td>• Perceived control over own beverage consumption and child beverage feeding-related practices.</td>
</tr>
<tr>
<td></td>
<td>• Intention to change own consumption and modify children’s consumption, and action plans.</td>
</tr>
<tr>
<td></td>
<td>• Perception of environmental determinants of beverage consumption including: beverage availability (at home, eating out, school, etc.), publicity, educational campaigns, and cost for different types of beverages (plain water, aguas frescas, other homemade SSBs, carbonated industrialized SSBs [soda] other industrialized SSBs, and other beverages). In addition, for plain water we explored perception of safety of home tap water and perception of safety of the school’s drinking fountain water.</td>
</tr>
<tr>
<td></td>
<td>• Awareness of the SSB tax, source of information about it, opinion about its likely impact, changes participants made as a result of the tax, potential reaction if the SSB tax were increased to 20 percent.</td>
</tr>
</tbody>
</table>

**Focus groups (n=4; 27 people in total)**
Focus groups focused on the same items as in the individual interviews but gave less emphasis to the individual history of beverage consumption and more to the social norms regarding SSB drinking and giving SSBs to children.

**Environmental observations**
As part of field work observations of the environment around the school were conducted to gather information about availability of different types of beverages in and outside of the school, advertisements and promotions of SSBs, as well as about potential educational campaigns aimed at the reduction of SSBs.
5.2.3 Data analysis

*Interview and focus group data*

We analyzed qualitative data using a coding scheme primarily based on the Reasoned Action Approach (2010) and developed by the bilingual members of the research team (C. Álvarez-Sánchez, F. Théodore, and H. Guillén). The coding scheme was translated into English and discussed with the other members of the team (I.C. and P.K).

C. Álvarez-Sánchez and H. Guillén read through initial transcripts and added to or modified some of the initial codes. We then applied this codebook to the next set of transcripts coded by two researchers and compared for accuracy and comprehensiveness. The entire data set was then coded by C. Álvarez-Sánchez in NVivo version 11 (QSR International, Doncaste, Victoria, Australia), a computer aided qualitative data analysis software program. The final coding scheme and the definitions (in Spanish and translated into English) can be seen in Appendix XV.

Data analysis was carried out in Spanish. Translation of the data into English was limited to selected quotes. (Conducting the analysis in the original language is recommended to prevent misinterpretations of participants’ statements (Temple & Young, 2004; van Nes et al., 2010)) Quotes were translated into English by C. Álvarez-Sánchez (who is a native Spanish speaker) and checked for accuracy by an independent bilingual researcher whose native language is English. Relevant quotes are presented in English and Spanish.

*Explanation of the coding scheme*
The coding scheme (Appendix XV) was organized in the following categories:

1. **Behaviors**, which include consumption of plain water, carbonated industrialized SSBs, non-carbonated industrialized SSBs, homemade *aguas frescas*, other homemade SSBs, and other beverages. (Each behavior has sub-codes for daily consumption, consumption during celebrations, consumption on the street, combination of beverages with food, consumption during cold and hot seasons, and expense.)

2. **Theoretical constructs from the RAA**, including health beliefs, attitudes (cognitive and affective), personal norms, social norms, perceived behavioral control, barriers, intention, action plans, and environmental factors. (In order to facilitate the analysis by type of beverage we included sub-codes for each beverage category within most of the theoretical constructs. We added the following sub-codes for the environmental determinants construct since it encompasses several practical aspects: educational campaigns, availability, advertisements, promotions, and cost.)

3. **Additional relevant codes as determinants of behavior**, based on the literature or emerging from the text: hyperbolic discounting, addiction, and vice.

4. Children’s beverage consumption and parental beverage feeding practices.

5. **Perceived changes in behavior in the past few years**, sub-codes include: description of change, motivation for changing, breaking point, barriers and facilitators, and time from change.

6. **The SSB tax**, sub-codes include: noticing a price variation, spontaneously mentioning the tax, awareness of the tax, source of information, opinion about
impact of the tax, and potential reaction if the SSB tax were increased to 20 percent.

Lastly, in order to evaluate potential changes or differences in theoretical constructs before and after the tax, we duplicated all codes for present time and past (time before the tax or approximately three and a half years before the interviews took place since that is when the tax had been implemented). The only exception was for codes relating to “change in practices” and the “SSB tax”.

Socio-demographic and beverage consumption data

The beverage frequency consumption data was analyzed with SPSS version 24.0. We calculated frequencies, means and standard deviations.

5.3. Results

After we conducted 10 in-depth semi-structured interviews (one of them with a married couple for a total of 11 participants) and 4 focus groups (with 27 participants), our final sample yielded a total of 37 participants. The socio-demographic and other characteristics of participants are presented in Table 5. 2. 32 participants were female (mothers) and only 4 were male (fathers); the predominance of females in our sample seems reasonable and representative of the Mexican culture considering that parenting in Mexico is attributed to mothers than to fathers. Slightly under half of the participants (n =16) had at least one relative that had been diagnosed type 2 diabetes.
Table 5.2  
Socio-demographic and other characteristics of study participants. Parents of children 9 years or younger. Morelos (Mexico).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total</th>
<th>Interviews</th>
<th>Focus Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Number of participants</td>
<td>36</td>
<td>11</td>
<td>25</td>
</tr>
<tr>
<td>Sex (women)</td>
<td>32 (88.9)</td>
<td>9 (81.8)</td>
<td>23 (92.0)</td>
</tr>
<tr>
<td>SES*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A/B</td>
<td>2 (5.6)</td>
<td>2 (18.2)</td>
<td>0</td>
</tr>
<tr>
<td>C+, C, C-</td>
<td>18 (50.0)</td>
<td>5 (45.5)</td>
<td>13 (52.0)</td>
</tr>
<tr>
<td>D+, D</td>
<td>16 (44.4)</td>
<td>4 (36.4)</td>
<td>12 (48.0)</td>
</tr>
<tr>
<td>Diagnosis of type 2 diabetes</td>
<td>17 (47.2)</td>
<td>5 (45.5)</td>
<td>12 (48.0)</td>
</tr>
<tr>
<td>Self</td>
<td>1 (2.8)</td>
<td>0</td>
<td>1 (4.0)</td>
</tr>
<tr>
<td>Relative</td>
<td>16 (44.4)</td>
<td>5 (45.5)</td>
<td>11 (44.0)</td>
</tr>
<tr>
<td>Type of family**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear</td>
<td>21 (58.3)</td>
<td>8 (72.7)</td>
<td>13 (52.0)</td>
</tr>
<tr>
<td>Single parent</td>
<td>1 (2.8)</td>
<td>1 (9.1)</td>
<td>0</td>
</tr>
<tr>
<td>Extended</td>
<td>15 (41.7)</td>
<td>3 (27.3)</td>
<td>12 (48.0)</td>
</tr>
<tr>
<td>Employed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>16</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>No</td>
<td>18</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>No response</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Type of employment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic work</td>
<td>7</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Beauty/Cosmetics industry</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Selling sweets on the street or working at a bodega</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Administrative work</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Participating in the social program PROSPERA</td>
<td>5 (13.9)</td>
<td>2 (18.2)</td>
<td>3 (12.0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean</th>
<th>Range</th>
<th>Mean</th>
<th>Range</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants’ age</td>
<td>37.6</td>
<td>(27-63)</td>
<td>35.4</td>
<td>(29-46)</td>
<td>40.8</td>
<td>(27-63)</td>
</tr>
<tr>
<td>Number of children 9 years or younger</td>
<td>1.9</td>
<td>(1-4)</td>
<td>1.8</td>
<td>(1-3)</td>
<td>1.9</td>
<td>(1-4)</td>
</tr>
<tr>
<td>Children’s age</td>
<td>6.7</td>
<td>(1-9)</td>
<td>7.4</td>
<td>(3-9)</td>
<td>6.6</td>
<td>(1-9)</td>
</tr>
</tbody>
</table>

Notes.
SES, socio-economic status; PROSPERA is a government-funded cash-transfer social assistance program, whereby families receive cash payments in exchange for health clinic visits, children’s regular school attendance, etc.
* SES levels, calculated with the AMAI rule (AMAI, 2017). According to the AMAI rule, households are divided into seven socioeconomic groups (from highest to lowest): A/B, C+, C, C-, D+, D, and E.
** Type of family. Nuclear: consists of two parents and their children. Single parent consist of one parent raising one or more children on his/her own. Extended family: beyond the nuclear family and includes near relatives living in the same household.
Beverage consumption was assessed for 15 participants (see Table 5.3). Nine out of 15 participants (60%) who completed the beverage frequency questionnaire reported drinking taxed carbonated SSBs (soda) 2-4 times a week or less. Mean consumption of taxed carbonated SSBs (soda) was: 292.1 ± 357.6 ml/day.

Table 5.3
Sugar-sweetened beverage and water consumption of 15 study participants*. Morelos (Mexico).

<table>
<thead>
<tr>
<th>Beverage type</th>
<th>Consumption (ml/day)</th>
<th>Frequency of consumption (past 7 days)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Range</td>
</tr>
<tr>
<td>Carbonated SSBs (taxed)</td>
<td>292.1 (357.6)</td>
<td>0-1333.0</td>
</tr>
<tr>
<td>Sweetened juice (taxed)</td>
<td>48.2 (82.5)</td>
<td>0-280.7</td>
</tr>
<tr>
<td>Water</td>
<td>1208.9 (720.0)</td>
<td>112.3-2358.0</td>
</tr>
<tr>
<td>Aguas frescas</td>
<td>444.7 (706.1)</td>
<td>0-2646.0</td>
</tr>
</tbody>
</table>

*15 participants, out of a total of 37, completed the beverage frequency questionnaire.
5.3.1 Families’ beverage-related behaviors and practices

General description of participants and their families’ beverage consumption.

The types and amounts of beverages consumed differed widely from person to person: from the very few who reported only drinking carbonated SSBs (from now own referred as “soda”) to those that never drank it. However, the general pattern reported by most participants is to have coffee with milk for breakfast and homemade aguas frescas44 with the main meals. For the most part, soda is consumed only a few times a week, typically on weekends. Thus, the portion of participants who drink only soda daily is small.

The qualitative description of participants’ soda consumption largely concurs with the quantitative assessment (assessed with the beverage frequency questionnaire) in that the majority of participants who completed the beverage frequency questionnaire reported drinking soda two to four times a week or less (see Table 5.3). Interestingly, even if participants generally only drink soda a few times a week, the mean daily consumption (292 ml/day) was still fairly large (see Table 5.3).

Soda, particularly Coca-Cola (or “La Coca”, as it is called in Mexico) was generally considered as suitable to drink pretty much any time of the day, particularly

44 Traditional Mexican homemade beverages made with fruit, flowers, seeds, or cereals, blended with water and sugar.
with the main meals: almuerzo, comida, and cena (mid-morning snack, lunch and dinner) with the exception of breakfast. However, it seemed like participants were actively trying to avoid buying and drinking soda on a daily basis and this is the reason why they have aguas frescas on weekdays.

Coca-Cola was associated with a wide variety of (high-fat) savory Mexican dishes, such as tacos, mole, pancita de res (beef tripe) and chilaquiles (strips of fried corn tortillas simmered in salsa served with cheese, eggs, or beans). One woman’s comment vividly illustrated the Mexican tradition of combining salty foods with sweet beverages:

[My husband] says ‘Don’t give me just water, bring me a coke’. Because Coke is very sweet and logically, you are tasting various flavors, no? Sweet and later with the salty like you’re eating a chile. In other words, those types of changes in flavor are the ones that make you satisfied from a food, right?

[Mi marido] dice, “No me des agua simple, tráeme una coca”. Porque pues la coca es muy dulce y lógicamente que estás probando varios sabores ¿no? Dulce y luego con lo salado que estás comiendo chile. O sea, ese tipo de cambios en de sabor son los que hacen que te agrade la comida ¿no?.

(Amparo, Mother, Interview, Morelos)

In addition, according to participants, Coca-Cola can enhance the flavor of any food and “liven up” plain dishes.

On the contrary, water was not associated to any particular food or dish (or with food or meals at all) only to medicines. “There are foods that I could not eat with water” (“hay comidas que yo no me las podría comer con agua”), was an expression frequently cited. Only a few participants reported drinking plain water at lunch and dinnertime, but this seems to be the exception rather than the rule. As a matter of fact, two interviewees reported never drinking plain water (see Table 5. 3), and a few more reported never
drinking it during the weekends. The mean daily water consumption (as assessed with the beverage FQ) was approx. 1200 ml/day, well below the recommended daily intake.

For the most part, water does not seem to be conceptualized as the principal beverage for daily consumption. Rather, many only drink it when thirst kicks in ("cuando da sed") or “in doses” as if it were a medicine — for example, “I have a glass [of water] before breakfast because it is healthy” ("tomo un vasito antes de desayunar porque es saludable").

Soda is always consumed during celebrations (further described in the social norms section), when eating out in taquerías (food stalls, food carts or restaurants that specialize in tacos and other Mexican dishes), fondas, and fast food restaurants.

Soda consumption throughout the year seems fairly constant. It seems that participants drink a bit more of it when it is hot; but this could be a result of drinking more liquids (including water) overall.

**Family member consumption.**

Generally, other household members have a similar pattern of beverage consumption as theirs, with some exceptions. Adult men ("the fathers") are invariably the household member that drinks the most soda, and on some occasions the only ones that drink it on a daily basis. Many female participants described how their husbands drink

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45 Fondas are small family-owned restaurant serving comidas corridas (set daily menu).
Coca-Cola® frequently even during the week (both at work and when they come back home in the evening) and moreover refuse drinking plain water.

**Children’s beverage consumption.**

Participants’ reports of their children’s beverage consumption included a combination of different beverages such as plain water, aguas frescas, sweetened juice, soda (Coca-Cola® and many other kinds of drinks such as refresco de sabor) fruit-flavored sodas), in addition to coffee and milk (for breakfast). As per their descriptions, children seem to follow a similar pattern of consumption as the most of our study participants: drinking aguas frescas with the main meals during the week and leaving soda for the weekends and special occasions.

At school, children drink mostly water, and to a lesser extent aguas frescas, that mothers prepare for them in refillable bottles. No parent reported an instance where their child drank soda or industrialized juice at school, and while the regulation of the sale of industrialized SSBs in schools does not prohibit children from bringing them from home, children do not seem to do it. After school and into the evening, children drink

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46 It was surprising to find out that giving coffee to children (even small ones) was widespread practice, but this will not be discussed here because it is out of the scope of this dissertation.

47 In one focus group, it was noted that many parents (“other parents”) send their kids to school without breakfast or may buy them something, like flavored milk, on their way to school. Thus, for many students, their first meal of the day is the one they buy during recess time. This information was confirmed by one of the teachers and some of her 5-6 year-old students to whom she asked (during recess time) what they had had for breakfast that morning.

48 As a matter of fact, according to the school custodian (also a participant in this study) even teachers do not drink Coca-Cola® in the school anymore. No participant reported buying
milkshakes, juice, *aguas frescas*, and plain water. Water consumption was associated with physical activity in only a few instances.

Overall, the most substantial differences in practices between parents and their children are that for the most part, children drink much more plain water, some industrialized sugar-sweetened juice (which participants did not generally report consuming themselves), and much less (or no) soda. This marks a significant difference in consumption patterns based on age or generation according to the participants in this group.

*Parental beverage-related feeding practices.*

Female participants (mothers) have the primary role in deciding what beverages to give to their children and in preparing them. Men (fathers) play a secondary role, which very often takes the form of spoiling children by offering them treats (e.g., candy, soda). However, some also have a marked positive influence in their children’s beverage habits by, for example, encouraging them to drink plain water even if they do not drink it themselves.

Most participants were actively trying to get their children to drink more plain water and less SSBs, including soda and sugar-sweetened juices such as Boing® and Jumex®. They described many different strategies to achieve that purpose including beverages or snacks for their children from the stands outside the school, but could think of other parents who did it do it.
(listed from high to low frequency of response): only allowing soda on special occasions, only allowing children to drink a small amount of soda (half a glass or only a sip), having children drink one or two glasses or water after every glass of soda (to “level soda out”), restricting soda completely, carrying water bottles for children to drink when they are thirsty, watering down industrialized juices or soda, and adding less sugar when they make *aguas frescas*.

For the most part, participants acknowledged their personal responsibility in fostering healthy beverage habits in the children, (which we describe in detail in the personal norms section). They also recognized the influence (positive and negative) they can exert:

> Since my children were small were had already changed their habits. And they are growing up with this habit and they are watching us drinking water.

*Ya, desde que, mis hijos eran chiquitos les habíamos cambiado esa rutina. Y ellos están creciendo con ese hábito y nos están viendo ya tomar agua.*

(Couple, Interview, Morelos)

> In reality, we are the ones who spoil/ruin our children.

*En realidad somos nosotros los que echamos a perder a los hijos.*

(Mother, Focus Group 1, Morelos)

### 5.3.2 Psychosocial Determinants of Consumption

**Beliefs about expected health outcomes.**

Beliefs about the health consequences of a high soda consumption and other SSBs seem to arise from personal experience or the experiences of a relative or close friend, in addition to information heard or read through formal (TV, documentaries, news, radio, etc.) or informal channels (Facebook, acquaintances). In all cases, these beliefs are
heavily influenced by scientific evidence (i.e., the medical/nutritionists discourse) and participants’ acceptance of that evidence. This was inferred from the way participants described beverages (for example, employing terms like “healthy” and “unhealthy”), and by their use of medical/technical terms to describe the consequences of drinking a high amount of SSBs and subsequent treatment (e.g., insulin use, kidney dialysis) for illnesses “caused” by SSBs.

**Beliefs about soda consumption.**

There were hardly any positive physical effects associated with soda consumption, only sentiments such as “it gives you energy”, or “it wakes you up,” and that “it helps to get the air out (to burp) after eating.” On the contrary, there was general agreement that soda has no or low nutritional value, and that high consumption can result in adverse health consequences such as diabetes and kidney failure (described in some instances as “*mal de orina*” [problems urinating]). Other unfavorable outcomes from soda consumption included: weight gain (in children), osteoporosis, teeth damage, lower immune defenses, liver disease, damage to the urinary tract, constipation, gastritis, and pancreatic problems. Weight gain and obesity in adults was not particularly mentioned as a negative outcome of SSB consumption.

Interestingly, high soda consumption was singled out as the cause of these health issues. However, no participant mentioned whether those problems could be the result of, or compounded by, the lack of plain water in the daily diet.

In addition, there was a common belief that soda only harms you if you drink it in “excess” and that it is okay if you drink it in “moderation”: “A glass [of soda] does not
harm me” (“Un vasito no me hace daño”). Furthermore, it was generally believed that drinking water with or after soda levels it out or in a sense washes it out (perhaps because water was ascribed as having quasi-medicinal properties). As a focus group participant declared:

I am trying to drink less Coca-Cola, and if I drink one glass I drink two of water. Why? To level it out.

_Procuro ya tomar menos y si me tomo un vaso de refresco me tomo dos de agua. ¿Por qué? Porque para más o menos para nivelar._

(Mother, Focus Group 1, Morelos)

These beliefs seem to derive from a mantra of the Mexican food industry: that there are no bad foods or beverages, everything can be consumed in moderation⁴⁹. Further, participants were quick to identify that drinking soda daily amounted to excess, but they had difficulties defining what could be a moderate soda consumption, they were not aware of the recommended limit of daily sugar intake and most could not quantify the amount of sugar in soda and other SSBs (they would simply say “a lot”). Some participants thought that drinking soda a few times a week was fine; however, considering that each day people drink, they tend to do so in large quantities, this occasional consumption tends to exceed the daily limit on average.

Furthermore, sugar was identified as the substance responsible of most of the negative health effects of soda, followed by chemicals or dyes:

⁴⁹ This argument has repeatedly been used by the food industry to justify its opposition to any government interference in the formulation, distribution or promotion of junk foods and beverages.
Coke has too much sugar. A lot of sugar. I think that one glass is the equivalent to seven tablespoons of sugar. And, this scares me.

La Coca tiene demasiada azúcar. Mucho azúcar. O sea, creo que un vaso equivale a siete cucharadas soperas de azúcar. Entonces, a mi sí eso me espanta.

(Amparo, Mother, Interview, Morelos)

Soda is a candy that has no nutritional value [...] what we’re consuming is chemicals.

El refresco es una golosina no tiene nada de calidad nutricional [...] lo que estamos consumiendo es químicos.

(Mother, Focus Group 1, Morelos)

While participants expressed trepidation about these aspects, of particular concern was Coca-Cola®. Participants repeatedly described it as bad for one’s health using expressions such as “La Coca hace mucho daño” and “La Coca es muy mala” (“Coke does a lot of damage” and “Coke is very bad”). Moreover, many participants cited no difference in terms of health effects between the different types of Coca-Cola® (regular, Light, Zero, and Stevia) and other carbonated sodas (such as Fanta). Some even mentioned that the artificially sweetened versions of Coca-Cola® were more damaging than the original (dubbed “natural”), because they are thought to contain carcinogenic chemicals. In addition, there were also some isolated negative comments or rumors about Coca-Cola®, namely that it could contain cocaine, bull sperm, and gasoline.

Many participants perceived that soda was equally bad for adults and children. However, some felt that it was worse for children because they are “small” while a few believed that it does less damage to children because they have faster metabolisms and can process sugar more quickly. Overall, the perception was that plain water was the best beverage for children, followed by natural beverages like aguas frescas and other unsweetened homemade juices.
Beliefs about other beverages.

In addition, many parents considered chocolate milk and industrialized juice, especially the popular brands like Jumex and Boing, “damaging” (dañinos) for because of their high sugar content, dyes, and preservatives:

M1.- The [juice] Jumex also comes with a lot of sugar, with a lot of pulp. [...] F.- And your children drink Boing [juice]?
VARIABLE ANSWER AT THE SAME TIME.- No
F.- Why?
M4.- No.
M1.- Because in fact they have also told me this one, that it is harmful Jumex and all of these.
M2.- Yes.
M1.- It’s better to make aguas frescas [for them] or give them plain water.
F.- Why?
M1.- Because it industrialized juice] has a lot of concentrates and preservatives to avoid it from going bad.
M4.- Everything that comes in a Tetra Pack has preservatives. It is not good to give children too much of it.
M1.- El Jumex también viene con mucho, azúcar, con mucha pulpa. [...] F.- ¿Y el Boing lo toman sus hijos?
VARIAS RESPONDEN.- No
F.- ¿Por?
M4.- No.
M1.- Porque de hecho me han dicho también así este que, que hace mucho daño lo que son el Jumex todo eso.
M2.- Si
M1.- Mejor que le hagas natural o darle agua natural.
F.- ¿Por qué?
M1.- Que porque tiene mucho concentrado y muchos conservadores para que no se eche a perder.
M4.- Todo lo que viene en lata de Tetra Pack, tiene conservadores. No es bueno darles mucho a los niños.
(Three Mothers, Focus Group 2, Morelos)

Aguas frescas were generally perceived as healthy because they contain real fruit (albeit in small quantities) and are homemade — hence, mothers know what they put in them, as opposed to store-bought beverages. The most frequently mentioned flavors were
lemon, mango, guava, orange, Jamaican roselle, and melon; however, for the most part, participants use whatever fruit is in season because they are cheaper. Parents were largely aware that adding sugar to aguas frescas is not good either, and some pointed out that fruit was naturally rich in sugar and, therefore, adding extra sugar should be minimal. Nevertheless, in spite of concerns about the sugar added, aguas frescas were regarded as nutritionally superior to soda, as exemplified by this discussion between a married couple:

Father. - It is not the same [as drinking] natural water, that does not damage you, than to drink only soda, soda.
Mother. - Well, even aguas frescas have a lot of sugar, if you put too much sugar.
Father. - Well, you do not really know what are the ingredients in soda, on the other hand, at home [aguas frescas] are made with chopped fruit, sugar and plain water, and you prepare it to your liking. You do not know what energy drinks and soda contain.
P.- No es lo mismo un agua natural, que no hace daño, que estar tomando puro refresco, refresco.
M.- Es que incluso hasta un agua de sabor entonces estaría con mucha azúcar, si es que le pones demasiada azúcar.
P.- Pero, pero eh, en los refrescos, uno no sabe cuáles son los ingredientes, y en la casa [el agua] es con la fruta picada, azúcar y agua natural, y uno lo prepara a su gusto. Y en las bebidas energizantes y refresco no sabemos que contenidos tengan.
(Couple, Interview, Morelos)

Sources of information about health outcomes.

Many participants had learned about the detrimental effects of soda and other SSBs directly from health care providers (doctors and nutritionists) at hospitals and at health clinics — mostly clinics from the Mexican social security institute (IMSS). In many instances, information and recommendations had been provided to them or their relatives following a professional diagnosis of an SSB-related disease. Others had heard things about SSBs through mass media (the internet, documentaries, TV debates, the news, etc.) and to a lesser extent from printed advice in official guides and/or pamphlets.
In addition, family members (including children, who, in turn, had learned things in school or on the internet) served as a source of information as well. It did not seem uncommon for families to have conversations about the negatives health effects of soda together, discussing whether they (adults and/or children) should drink less.

It is worth noting that no participant could remember any specific official informational/educational programs or campaigns regarding soda or SSBs. Nevertheless, a few participants made reference during the interviews and focus groups to the regulation of the sale of SSBs and other highly processed products in the school premises. It would seem like these public policy efforts have made parents reflect on their eating habits, thereby acting as an educational tool.

“Addiction” and “Vice”.

There were multiple accounts of participants expressing how intensely they craved Coca-Cola® and how difficult it would be for them to drink less or to give it up completely. Many referred to their strong desire to drink Coca-Cola® as an “addiction” and in some instances also as a “vice”\(^\text{50}\). They described these cravings as a physical dependency using expressions such as “el cuerpo lo necesita”, “porque mi cuerpo lo está pidiendo”, and “calma la ansiedad” (“the body needs it”, “my body is asking for it”, and

\[\text{\textcopyright{\textquoteleft\textquoteleft}}\]

\(^{50}\) Participants constantly referred to the habit of soda drinking as an “addiction” and a “vice”; the two terms were used interchangeably. However, while these terms they are related, they have different connotations, therefore, they were coded separately. “Addiction” belongs to the field of health/psychiatry, while “vice” has a moral connotation.
“it reduces anxiety”). Accounts stressed the urgency to engage in these behaviors, for example:

Sometimes you become addicted to soda. If I don’t drink a glass of soda I feel desperate.

*A veces se vuelve uno adicto hacia el refresco. Yo no me tomo un vasito de coca y me siento desesperada.*

(Mother, Focus Group 3, Morelos)

There was also a theme of exhilaration and excitement after drinking it; as Fortunata explained:

I.- But, Can you go one day without having [soda]?
M.- Well, perhaps I could. But then the day after you feel anxious to drink soda.
I.- Right. And when you have it? What effect does it have on you?
M.- Even a change in mood [laughs].

E.- *Pero entonces ¿puedes pasar un día sin tomar [Coca-Cola]?*
M.- *Mmm, pues a lo mejor sí, pero al otro día ya estás con el ansia de que ya quieres un refresco.*
E.- *Ajá ¿y ya cuando te la tomas? ¿Qué te genera?*
M.- *Un cambio hasta de ánimo [ríe].*

(Fortunata, Mother, Interview, Morelos)

In many instances, the desire to drink Coca-Cola was compared to an addiction to tobacco, alcohol, or even cocaine:

*Coke, for me is the same as being addicted to cocaine or cigarettes.*

*La Coca-Cola, esto para mí es como ser adictos a la cocaína o el cigarro.*

(Salustia, Mother, Interview, Morelos)

M2.- It’s like being an addict and I think about or imagine the chemicals that coke has, it’s as if you’re an alcoholic, like with the alcohol if you don’t’ drink it makes you….
M2.- Or the cigarette.
F.- Does this happen to you?
M1.- With Coke, yea, but cigarettes no, not with alcohol either.
In the large majority of cases, participants did not elaborate much in regards to what makes Coca-Cola® so “addictive” — with the exception of a few that related this feeling to its sugar and chemical content and to possibly containing cocaine. Participants also did not mention “why” or “when” it becomes a vice.

**Attitudes.**

**Affective attitudes based on feelings (taste & sensations).**

“We all love soda!” ("Pues es que de hecho el refresco a todos nos gusta") - Perseo, a focus group participant, exclaimed. This expression very well captures how many participants felt about soda, in particular about Coca-Cola®. The most valued attributes were the taste and the fizz, especially when it is hot outside and drinks are ice-cold. The familiarity with Coca-Cola® and other SSBs, attained through frequent exposure throughout the years, was also a contributing factor to the positive affective attitudes towards these beverages. This helps create positive associations, a sense of collective memory, and strong socialization to Coke in the Mexican culture.

Specific aspects of Coca-Cola® were discussed by participants, emphasizing its superiority over other cola brands (such as Pepsi or Red Cola, a local brand). Participants make a clear distinction between the taste of the regular version (called “natural”) over
the Light or Zero ones. The feeling of drinking a Coke was described by some using expressions that seemed like it could have been taken from an advertisement:

When you haven’t had a Coke for a long time and, and the truth is, you taste it again, and you feel like…wow! That your soul returns to you!

 Cuando la dejas de tomar por mucho tiempo, la verdad es que tomas la Coca y bueno, sientes ¡ah! que te regresa tu alma.

(Mother, Focus Group 1, Morelos)

I love it! And to be honest, when I drink it, wow! I feel like coming back to life.

 Cuando yo la tomo, ¡ay! hasta siento que revivo la verdad.

(Adriana, Interview, Morelos)

While taste was the main reason given for drinking soda, there were other desirable immediate effects such, aiding in digesting greasy foods (like sausages and beef tripe) and to burp. However, a few participants commented on the discomfort of feeling full and losing their appetites after drinking Coke, a feeling they did not like and a reason for them not drinking many carbonated SSBs.

Participants also largely commented on how their children liked sweet tastes, such as that of soda (“los niños son los que más piden el refresco”) and sweet aguas frescas. They felt the same about themselves. Moreover, many participants, with a few exceptions, reported not liking the taste of plain water (either tap or bottled), to the point of detesting it. Espartaco explained this in detail during an interview:

I.- But do you think you should drink more (plain) water?
Father.- This, well I should, I should…
I.- And why not? Have you thought about it?
Father.- Yes, but I cannot. My palate does not tolerate it. In fact, even my brother tells me off, [he says] that I should drink water. At least a liter, I’d say. But I cannot get it down. That is, I drink it and it’s like something that I don’t like. In other words, no, it doesn’t satisfy you.
E.- ¿Pero usted piensa que debería tomar más agua simple?
P.- Este, pues sí debería de, debería de...
E.- ¿Y no lo? ¿Si se lo ha planteado?
P.- Sí, pero como que no. Mi paladar no, no me lo tolera. De hecho hasta mi hermano también me regaña, que debo de tomar agua. Por lo menos un litro, digo. Pero es que no, no me pasa. O sea, la tomo y es como si algo que no te gustara pues. O sea no, no te sacia pues. (Espartaco, Father, Interview, Morelos)

Even more, others expressed disgust at the thought of eating their favorite dishes with plain water. “Food does not taste good” and “Food doesn’t taste the same” (“No nos sabe bueno el alimento” and “La comida no sabe igual”) were some of the comments made in this regard. The dislike for plain water seems common in the adult household members, including grandparents. In contrast, participants reported that their children like the taste of plain water.

**Cognitive attitudes and ambivalence.**

As is evident from the section describing participants’ SSB health-related beliefs, their cognitive attitudes toward industrialized SSBs (i.e., carbonated, juices, flavored milk) were predominantly negative, focusing heavily on the negative health outcomes of soda drinking, even after describing how much they enjoy them. In addition, habitual soda consumption was associated with negative concepts such as “addiction” and “vice” which could perhaps hint to the beginning of the stigmatization of this practice.

However, even if these negative outcomes were acutely present in participants’ minds — and they were reminded by their relatives and/or friends who have type 2 diabetes — it seems like the possible benefits of a changing their behavior (e.g., quitting soda) were perhaps not powerful or motivating enough for them to take action. Further,
some people’s statements reflected the aphorism “We all have to die to something, so why bother being healthy?”:

Ah no! The thing is that if they’re offering us [healthier options] “hey, I’ll sell you this so that you’re feel good, eh? They’re vitamins.” No way! I prefer Coke because coke tastes better and I feel better. If I’m going to die of something, better I die from Coke.

¡Ah no! El problema es que si nos están ofreciendo [bebidas más saludables] “oye te vendo este para que te sientas bien eh, son vitaminas”. ¡Ay no! yo prefiero la Coca, porque la Coca sabe más rica y me siento mejor, si me voy a morir de algo, mejor me muero de [Coca]...

(Mother, Focus Group 1, Morelos)

Yes, because sometimes we aren’t conscious of it, right? We say ‘oh well, I’m going to die of something’ (might as well be Coke).

Sí, porque a veces pues no hacemos conciencia ¿no? Decimos “ah pues de algo nos habremos de morir”

(Fortunata, Mother, Interview, Morelos)

**Conflicting attitudes**

Many participants held conflicting negative and positive attitudes resulting from the cognitive (beliefs) and affective aspects (taste, feelings, familiarity) of SSBs, very often prioritizing the immediate gratification over long-term health (this is further elaborated upon in the hyperbolic discounting section). This ambivalence about the outcomes of soda consumption may partly explain why well-meant intentions to decrease soda consumption do not come to fruition.

**Why drink soda if it’s bad for you? (hyperbolic/future discounting).**

Informants provided many reasons for why they (and/or others) continue drinking soda in spite of feeling susceptible to falling ill and/or already suffering the negative
consequences of a high consumption. The most cited reason was “liking” with many accounts illustrating the immediate gratification of drinking it.

The clearest example of hyperbolic discounting was found in an explanation provided by Fortunata, a life-long consumer whose parents and siblings had diabetes. Her words clearly demonstrate how she focused on the instant pleasure of drinking Coca-Cola, heavily discounting the potential future health benefits that self-control would entail:

I.- And for example, if there is so much history of diabetes in your home and well, and you know that sugary drinks can contribute to develop [diabetes], why do you keep drinking it?
M.- Yes, because sometimes we are not aware. Right? We say [to ourselves] ‘Ah well we will die of something’ Right? Well, maybe we say that while we're doing well, but when something happens, well, you say to yourself ‘Not anymore, I'm not going to consume it anymore’. But not really, because there it is. Right? The soda is there and you're ready to drink it. […]
I.- What do you pay more attention to the fact that it may harm you or the pleasure that it gives you when you drink it?
M.- I think the pleasure, right? Because then we see it [the consequences] and continue [drinking], right? That is, we see the situation and we continue.
E.- Y por ejemplo, si hay tanto historial de diabetes en tu casa y bueno, y sabes que a lo mejor las bebidas azucaradas pueden hacer que se desarrolle más rápido [la diabetes], ¿por qué lo sigues tomando?
M.- Sí, porque a veces pues no hacemos conciencia ¿no? Decimos “Ah pues de algo nos habremos de morir” ¿no? O sea, pero a lo mejor eso decimos mientras estemos bien, pero y cuando sucede algo, pues si uno dice “Pues ya no, ya no lo voy a consumir”. Pero realmente no, porque ahí está ¿no? O sea, ahí está el refresco presente y tu listo para tomarlo […]
E.- ¿A que le pones más atención, al hecho de que pueda llegar hacerte daño o a el placer que te produce tomarlo?

51 A few months after the interview Fortunata, she was diagnosed with diabetes.
M.- Yo creo que placer ¿no? Porque pues lo vemos y seguimos ¿no? O sea, vemos la situación y seguimos.
(Fortunata, Mother, Interview, Morelos)

This phenomenon of prioritizing instant physical gratification over health may partly be explained by the fact that for economically disadvantaged participants, soda may be the one of the only “pleasures” within their reach. This is compounded by the fact that, people who live in a precarious economic situation mostly live day-to-day and can find it difficult to afford long-term plans or to think long-term. This notion was described by participants in a focus group:

F.- Here we have to very valid opinions: some people think about the money they are going to spend right now, and Berenice is talking (to us) about long-term health and [medical] expenses in the long term. How do you think families consider these short-term and long-term costs?
M3.- What happens is that sometimes the long-term...
M1.- It doesn’t matter.
M3.- Exactly. What happens is that sometimes we do not think about the long-term.
Father1.- You do not think about [the long-term] in the present...
M1.- Exactly, you sort out today’s problems as they come and unfortunately, we do not think about the medium or long term.
F.- Entonces tenemos aquí dos opiniones, que las dos son muy válidas, unas personas piensan en el dinero que se van a gastar ahora mismo, y Berenice nos está hablando de la salud a largo plazo y los gastos a largo plazo ¿cómo creen que las familias consideran esos costos a corto plazo y a largo plazo?
M3.- Lo que pasa es que a veces el largo...
M1.- No importa.
M3.- Exacto, lo que pasa es que a veces nosotros mismos no pensamos en el largo plazo.
P1.- No lo piensa uno...en el momento.
M1.- Exacto, vas solucionando tus problemas inmediatamente de lo que va pasando y desgraciadamente no pensamos en el largo o mediano plazo.
(Two Mothers and a Father, Focus Group 1, Morelos)
But while pleasure was an important reason given by many participants for consuming soda (Coca-Cola) in spite of their health knowledge and perceived risk, so was the feeling that they were “addicted” to it and could not quit it:

I.- Do you think that you value more the taste and the feeling than your health?
A.-Yes, yes, well, for example, I know that it hurts me and all of that, and I say ‘Oh my god, how am I going to quit it [Coke], how can it quit it?’ Yes, I know I can stop drinking soda, yes I can, I don’t say that I can’t, but it would probably be very difficult, it's like a smoker.
E.-Pero ¿creen entonces que valoran más lo que es ese sabor y esa sensación, que su salud?
A.-Sí, sí o sea mira yo, por ejemplo, yo sé que me hace daño y todo, y yo digo “¿dios mío como la voy a dejar, o sea, como puedo dejarla?” Sí, yo sé que si puedo dejar de tomar refresco, sí puedo, o sea, yo no digo que no, pero tal vez me costaría mucho trabajo, es como un fumador.
(Amparo, Interview, Morelos)

Others conceded (with resignation) that drinking Coca-Cola was part of the Mexican culture. They indicated that since it is difficult for adults to change their practices, future health campaigns should focus on reducing children’s exposure to soda in order to “break from tradition” (“para cortar con el costumbrismo”). Paradoxically, many parents give soda to their children, even if only a few times a week, in spite of health considerations; the principal reasons for doing so seem to be to please their children and to give them what they (themselves) did not have as children because their parents could not afford it.

**Social norms.**

Mexicans drink a lot of soda. You may find one or two people who do not [drink], but let's say that out of a 100 percent, 80 does drink it.
_Los mexicanos tomamos mucho refresco. Habrá que te encuentras uno que otro que no, pero digamos que de un 100 por ciento, un 80 sí toma._
(Amparo, Interview, Morelos)
Based on the participants' statements, it was possible to infer that drinking soda, and Coca-Cola in particular, is a rooted Mexican custom — even though for some it might be fairly recent. Only a few individuals declared not drinking Coca-Cola frequently, but for the great majority, the fizzy beverage has (or had) a central role in their eating practices. Some grew up drinking Coca-Cola frequently, some picked up the practice when they were older, but they all recognize it as a familiar and Mexican beverage (“Because people, what they consume most is Coke. What is mostly in people’s houses is Coke.”, “Porque la gente, lo que más consumen es la Coca. Lo que hay más en los hogares mexicanos”). Soda/Coca-Cola is consumed not only because of its desirable sensory properties, but also due to its symbolism as a token of hospitality and indicator of social status, and simply, out of force of habit (“costumbrismo”).

Soda is typically consumed when visits are made or received. Soda seems to be the first, and sometimes only, beverage offered to guests. This is done out of norms and courtesy, as participants in a focus group explained:

F.- When you all go to someone’s house, the first thing they offer you is…?
SEVERAL PARTICIPANTS AT THE SAME TIME.- Soda! A glass of Coke.
M3.- And if there isn’t any, they go out to buy it! But, they don’t serve you water unless you ask for it.
[…]
F.- But, why do they offer soda?
M1.- Because it’s like a courtesy.
F.- But why Coke and not another typical drink?
SEVERAL PARTICIPANTS AT THE SAME TIME.- Because people, what they drink is Coke. That’s what’s in most Mexican homes.
F. ...cuando ustedes van a casa de alguien ¿Lo primero que les ofrecen es?
TODOS.- ¡El refresco!, Un vasito de coca
M3.- Y si no hay ¡se salen a comprar!, pero no te sirven agua a menos de que tú pidas.
F.- Pero ¿por qué se ofrece el refresco?
M1.- Porque es como una cortesía.
F.- Pero ¿por qué Coca y no otra bebida a lo mejor típica?
VARIOS AL MISMO TIEMPO.- Porque la gente, lo que más consumen es la Coca. Lo que hay más en los hogares mexicanos.
(Two Mothers, Focus Group 1, Morelos)

Furthermore, if hosts do not have soda at the time guests arrive, it is common to send a child to fetch it from the corner store.

Participants largely concurred that soda is invariably at the center of celebrations. Drinking soda at social gatherings is conceptualized as a norm, and not having it on-hand can lead to negative reactions from guests, including comments insinuating that the host is stingy or poor. At the same time, many frowned at the idea of offering or being offered water at such events:

Yes, because here in Mexico, I have never seen water offered at a party to have with your food, they give you soda. 
*Sí porque pues aquí en México, yo nunca he visto que en una fiesta te ofrezcan una jarra de agua para que combines con tu alimento, sino te ponen refresco.*
(Father, Focus Group 3, Morelos)

While some mentioned that *aguas frescas* are offered on occasions, especially if it is a children’s party, all agreed with the fact that it is rare for plain water to be served. As a matter of fact, responses revealed a lack of planning for water and the fact that if guests ask for it, the host would probably have to go out to buy it. As a father described during an interview:

Father.- Soda! The base of parties is soda. That’s the base! There almost isn’t water (at parties) and yes when you go to parties, yes there we have to drink soda...because it’s what is offered on the table. I mean if you get there and you sit down and they serve you a plate of food, we’re going to put this [down] and the drink you’re gonna chose will
already be Coke or flavored soda, a 3-liter [bottle]. So already [you're there] you with your family [and] you're serving yourself the flavor you want, but they won't offer you water [...] 

I.- But for example, if somebody asks for water? 
Father.- Ah, if you want [water] it's difficult for them to actually give it to you, you need to go out (to buy it). Because at parties there isn't, there isn't [water].

P.- ¡El refresco! La base en las fiestas es el refresco. ¡Eso es la base! El agua casi no la hay y si cuando vas a fiestas sí ahí sí tenemos que tomar refresco. [...] Porque es lo que te ofrecen en la mesa, o sea uno llega se sienta y te sirven tu plato de comida, vamos a poner este y tu refresco a escoger ya sea Coca, de sabor de 3 litros. Entonces ya tú con tu familia te sirves el sabor que quieras, pero jamás se ofrece agua [...] 

E.- ¿Pero y si uno por ejemplo pides agua simple? 
P.- Ah, si quieres es muy difícil que te la consigan, necesitas salir a...[comprar]. Porque no, en las fiestas no hay, no hay.

(Esparataco, Father, Interview, Morelos)

The custom of drinking soda during celebrations is reinforced by the notion that it is not polite to refuse what you are offered, even if you would prefer drinking something else:

M2.- When you go to a party or something I mean there isn't a way to say, 'well no, I'll ask for water (instead). It's logical that you don't. 

M1.- You sit and the first thing they offer you is a soda.. a two-[liter bottle].

M2.- You have to drink what they're offering (you), right? So obviously you have to drink [it], because of [good] manners.

M2.- Cuando vas a una fiesta o algo o sea ni modo de decir “¡ay no! A mi pídeme agua” Pues lógico que no... 

M1.- Te sientas y lo primero que te ofrecen es un refresco de...de dos [litros]... 

M2.- Vas a consumir lo que te están ofreciendo ¿no? Entonces, pues lógico que tienes que tomar lo que están ofreciendo. Lo tienes que tomar por educación

(Two Mothers, Focus Group 4, Morelos)

These rules seem to be lifted only when a guest has diabetes:

M1.- When there's a person with diabetes in the family, that's when people are more sensitive, no? You say, I'm gonna put...have a jug of
natural water, maybe with flavored water or a jug of plain water for whomever wants it. But the basic rule is...

M3.- Soda.
M1.- Más cuando hay algún diabético en la familia es cuando se vuelven más sensibles ¿no? Dices “voy a po...tener un vitrolero con agua natural o digo, con agua de sabor o, o un garrafón de agua simple para quien quiera”. Pero era regla básica de que...

M3.- Refresco.

(Two Mothers, Focus Group 4, Morelos)

_influence from the different family members._

Participants felt it would be easier for them to enact their intention if they had support from their families. But in many instances it is the family who asks for soda, or refuses to drink plain water, or brings it home, or so in that sense relatives can act as an obstacle to change:

I.-But how would you do it then, to cut down on soda?
A.-Mmm, to begin with, the family is a big influence. I mean, if they helped me. Right?
I.- How could they help you?
A. - Well, so if I tell them that I'm going to prepare them aguas frescas, well, they could say ‘Well yes, it's okay’, right? But, uh, the truth is that they love soda. And when weekend arrives it’s like ‘Hey, let's have a soda’. Right? [Laughs]
E.- Pero y ¿cómo lo harías entonces, para bajarle al refresco?
A.-Mmm, para empezar, es que también, la familia influye mucho. O sea, si también ellos no me ayudan ¿no?
E.- ¿Cómo te podrían ayudar?
A.-Pues eso, o sea, que yo diciéndoles, que les voy hacer agua de sabor, bueno si, que ellos también digan, “bueno si, está bien” ¿No? Pero, eh, la verdad, sí, se les encanta el refresco. Entonces, llega el fin de semana es así de aay vamos a tomar refresco ¿no? [Risas]

(Amparo, Mother, Interview, Morelos)

For the most part, men drink more soda than women. Some female participants reported having tried to talk their husbands out of drinking so much soda, but for the most part, men refuse correction from their partners, the typical reaction being “Leave me alone! It’s my life and I know how to manage it (“¡Ay tú no te metas! Yo, es mi vida, y yo
sé cómo, como lo manejo”). On the one hand, the fact that many male heads of families drink soda regularly seems to have a negative influence on the overall beverage practices of the family, which wives try to offset. Male partners are often the ones who demand to have Coke on the table and/or who give a taste to children. On the other hand, when husbands are cooperative, either by not drinking soda themselves or not giving it to children, it acts as a strong positive influence.

The influence on a family’s beverage practices can even come from extended family members (frequently a grandmother) who visit and either bring Coke®, industrialized juice, or candy with them and/or expect that you offer soda to them. That was the case of this frustrated mother who could not control what the mother gave to her children:

They encourage bad [habits], the same family – my mom also comes to my home and she gives each kid like a liter of Jumex and a lot of sweets.

_Fomentan lo malo, la misma familia, mi mamá también llega a la casa y con los niños es o un Jumex de a litro para cada niño y un montón de dulces._

(Mother, Focus Group 4, Morelos)

In addition, many participants reported how the older family members (i.e., grandparents) were “hooked” to Coca-Cola® and that attempts to convince them to drink less have been fruitless. Senior family members often defended their practices asserting, “I deserve it” (lo merezco) and “My food doesn’t taste good without Coke” (mi comida no me sabe sin Coca), acting as if they were offended if not offered a soda when visiting.

**Personal norms.**
An important consideration for limiting soda consumption mentioned by some mothers was their perceived personal responsibility in setting a good example for their children by feeding them healthy food, as well as being healthy themselves so as to not leave their children motherless. However, there were no reported instances of behavior (soda consumption) linked to thoughts about themselves as health-conscious eaters. Many identified and justified their practices based on their cultural identity (“La Coca es lo que más hay en los hogares Mexicanos”).

Further, many female participants seemed torn between their desire to drink less soda for their own health, and their wish to set a good example for their children. Moreover, they want to please their family and guests by offering them a beverage they like. In addition, feelings of disappointment were sometimes expressed when discussing the discrepancies between their actual practices and what they considered ideal.

**Perceived behavioral control.**

Many participants felt confident to be able to drink much less soda, as if it were only a matter of strong willpower. However, quite a few conceded that it would be difficult and that their resolutions would probably not last for longer than a few days or weeks.

Most accounts manifested a feeling of self-blame for one’s own dietary behaviors, considering difficulty in controlling their behavior due to a fault in their own personal characters or will (“somos débiles”, “we are weak”). They did not necessarily identify or held beverage companies and/or the government accountable for contributing to their soda drinking habits. This belief regarding (a perceived lack of) individual responsibility
in controlling and changing practices was illustrated in several discussions where participants commented on the “foolishness of the Mexicans” for continuing to drink soda in spite of their knowledge about the health consequences:

We say [to ourselves] ‘no, we are not going to buy Coke anymore’, but after two or three days we buy it again. We are Mexicans, we are fools, we Mexicans here are stupid, even if they tell us that all these types of drink hurt us, we continue consuming them, we continue consuming them.

*Decimos “no pues ya no se va a comprar coca”, pero nada más pasa dos, tres días y se vuelve a comprar. Es que somos mexicanos, somos necios, nosotros aquí el mexicano tenemos necedad, aunque nos digan que nos hace daño todo este tipo de bebidas lo seguimos consumiendo, lo seguimos consumiendo.*

(Salustia, Mother, Interview, Morelos)

Listen, listen, in regards to your question about whether we could would quit drinking it or what we would do: we are not going to quit it [the soda]. People are so foolish and silly, we are so foolish and stupid that we go back to the same thing, we fall back to the same thing.

*Mira, mira con respecto a tu pregunta que lo dejaríamos de consumir o que, que haríamos: no lo vamos a dejar [el refresco]. O sea, la gente es tan necia y tonta, somos tan necios y tontos, que vamos a lo mismo, caemos a lo mismo.*

(Father, Focus Group 1, Morelos)

Another perceived barrier for participants to drink less soda was, in their view, a lack of suitable substitutes. While participants largely like *aguas frescas* — which are an iconic Mexican drink — and see them as nutritionally superior to soda, many are discouraged by the time and effort (and money) that it takes to prepare them. Thus, soda is seen as a more convenient and, in some instances (especially when certain fruits are not in season) as a cheaper alternative to *aguas frescas*.

Arguments against plain water included its bad taste, not being potable (it must be either boiled or bought), and importantly, it not being part of their custom. Lastly, some participants (in a particular focus group) highlighted the fact that it was complex to
choose healthy alternatives to soda, because even *aguas frescas* contain a fair amount of sugar:

F.- What are strategies so that you do not [buy it]?
M6.- The jug of water, of plain water, has cost my children a lot. But it’s ‘let's drink simple delicious water’... but not even that, the fruit also has sugar.
M1.- Sure ...
M6.- So, really, we don’t go and get advice are not going to ‘advise ourselves’ and say: what fruit can we eat ?, or put something in the water so that it does not raise our [blood] sugar, right?
Father1.- You would need to go to a nutritionist to know the amount of sugar because, fruit... everything, everything has sugar.
VARIOUS PEOPLE.- Yes, it's true ...
Father1.- Also the *aguas frescas*, in excess they hurt you, then, you need to go to a nutritionist to advise you.
F.- ¿Cuáles son estrategias para que no lo [compres]?
M6.- La jarra de agua, de agua simple, a mis hijos les ha costado mucho. Pero es de “vamos a tomar agua simple deliciosa”...pero ni siquiera eso, el, la fruta también lleva azúcar.
M1.- Claro...
M6.- Entonces realmente nosotros no somos de que nos vayamos a asesorar y digamos: ¿qué fruta podemos comer?, o echarle al agua para que no nos eleve la azúcar, equis cosa ¿No?
P1.- Necesitarías ir a un nutriólogo para saber qué cantidad de azúcar porque, las frutas...todo, todo tiene azúcar.
VARIOS.- Sí, es verdad...
P1.- También las aguas de natural, en exceso hace daño, entonces necesitas ir a un nutriólogo para asesorarte.
(Two Mothers and a Father, Focus Group 1, Morelos)

Nevertheless, in spite of these perceived barriers, there were a considerable number of participants who had been successful in reducing the amount of soda they and their families drink. This, and the strategies employed to achieve it, are further explained in the *Reported change in consumption of taxed SSBs* section.

**Intention to change and action plans.**
Individual accounts demonstrated awareness about the detrimental effects of soda and the potential benefits of changing behaviors. Many participants stated a desire and intention to further reduce consumption — with the price of soda and the cumulative cost of frequently consuming it weighing in their considerations to drink less. However, they were also acutely aware of the barriers to changing their behavior. For many participants, there was an ongoing struggle of counterbalancing the positive outcomes of drinking less with the difficulty in changing a deeply embedded habit, coupled with the ubiquity of soda. In spite of these circumstances, some were actively trying to change their practices and/or to effect a change in their families’ drinking habits.

Strategies that participants were using (or had used in the past) to drink fewer SSBs included: having discussions with their families about the negative health consequences of soda drinking and making a decision (as a family) to drink less, not buying it/making it available at home, drinking a small amount of soda only when they crave it, and drinking it only on the weekends and/or social events. To encourage more water consumption in their children, some mothers carry bottled water with them when they go out in case their children get thirsty.

Nevertheless, despite these good intentions and clear action plans, many participants reported not being able to stick to their resolutions for more than only a few days or weeks.

Environmental determinants of consumption.

Under the environmental determinants construct, we explored participants’ perceptions of availability (at home, eating out, school, etc.), publicity, educational
campaigns, and cost for different types of beverages (mainly plain water, soda and other industrialized SSBs, and *aguas frescas*). In addition, for plain water we explored perception of safety of home tap water and perception of safety of the school’s drinking fountain water.

**Industrialized sugar-sweetened beverages.**

Wherever you go, there is soda…soda is always there.

*Y es que a dónde vas hay refresco…el refresco está siempre ahí.*

(Adriana, Mother, Interview, Morelos)

According to participants’ accounts, soda has a ubiquitous presence. It is widely available in many flavors and formats in supermarkets and corner stores. The main brands can also be found in *taquerías* and *fondas*, while water, especially bottled water, is rarely available in those places:

M.- …this past weekend we eat out…and they do not sell you water.
I.- No? (Even) if you ask?
M.- It is very rare, usually it is only soda.
I.- Don’t they have water in the stores, in the places where you eat?
M.-Yes, but almost never, in some places. In other words, they sell you soda more than water, it depends on where you go, for example, where they sell pizzas they sell you just soda. Where they sell hamburgers, they usually sell you only soda, well maybe in a few small places they have *aguas frescas*, but they know that here consume a lot of soda.
M.- …el fin de semana comimos afuera… y no te venden agua.
E.- ¿No? ¿Si la pides?
M.-Es muy raro, por lo regular es puro refresco.
E.- ¿No tienen agua en las tiendas, en dónde comes?
M.-Sí, pero casi no, en algunos lugares. O sea, te venden mucho más el refresco que el agua, depende pues a donde te metas, por ejemplo, en, en donde venden pizzas te venden puro refresco. Donde venden hamburguesas, por lo regular te venden puro refresco, sí, a lo mejor en unos cuantos localitos, que sí tienen su agua de sabor y así, pero, porque pues saben que la gente de aquí consume mucho refresco.

(Amparo, Mother, Interview, Morelos)
Industrialized SSBs, like soda and juices, were not sold in the schools under study because the regulation of the sale of this type of products had been already implemented. However, this governmental regulation does not extend beyond the school premises. Thus, parents were quick to note that while junk food and beverages had been banned from the school, they were available right outside its doors:

M1.- [...] Here at the school they don’t sell juices or sodas......

M1.- Because of the sugar.

M5.- Only water..

F.- They can’t sell soda here?

M2.- No, neither artificial juice.

F.- Have they explained why not?

M2.- Because of the obesity issue.

Father1.- So, eh, the government came up with mandating getting rid of junk food and soda in all of the schools.

F.- The government mandated it?

Father1.- Yes

M4.- But they [children] wait until the end [of the school day] and then they find all of the junk [food] and beverages possible [laughs]

M1.- [...] aquí en la escuela no se venden ni jugos, ni refrescos...

M1.- Por el azúcar.

M5.- Puras agüitas.

F.- ¿No se pueden vender aquí refrescos?

M2.- No, ni jugos tampoco artificiales.

F.- ¿Les han explicado el por qué?

M2.- Por la cuestión de la obesidad.

P1.- Entonces eh, surgió que el gobierno mando a quitar comida chatarra y refrescos a todas las escuelas.

F.- ¿El gobierno lo mandó?

P1.- Sí...

M4.- Pero se esperan [los niños] a la hora de la salida y van a encontrar ¡toda la gama de chatarra y bebida que usted quiera! [Risas]

(Five Mothers and a Father, Focus Group 1, Morelos)

As a matter of fact, snack and beverage stalls (three or four) are set up a few feet away from the school gates at the beginning and end of day. The stalls offer an array of beverages, including plain water, industrialized sugar-sweetened juice and aguas frescas
(such as Bonafont Levité), in addition to snacks such as cookies (Appendix XVI shows an image of one of the stalls).

Furthermore, participants were not aware of any official (governmental) educational campaign about the effect of SSBs on health, and as a matter of fact, a few criticized the lack of direct and clear advice in regards to SSB consumption from the government. This perceived lack of official information and education campaigns contrasts with the concern voiced by many participants about the large amount of misleading publicity of soda:

I.- Have you seen any education campaign about soda, or education in billboards or television?
M.- They will never announce it. No, the only thing [advertised] is that you have to consume Coke. In other words, what they sponsor here is consumption. No, they do not say what it causes, like tobacco, tobacco, you see, they put deformed fetuses [on the cartons], the people lose their teeth, they have holes in their palate, they have pulmonary emphysema.
E.- ¿Ha visto algún tipo de campaña educativa sobre el refresco, o información en pancartas o televisión?
M.- Nunca lo van a anunciar. No, nada más [anunciado] hay que consumir coca. O sea, aquí lo que patrocinan es el consumo. No, no dicen lo que provoca, como el cigarro, el cigarro ya ve, les ponen los fetos deforme, a la gente se les caen los dientes, se les hace hoyos en el paladar, tiene enfisema pulmonar.
(Simona, Mother, Interview, Morelos)

M4.- They have to do less publicity [...]. During the advertisements, every ad advertises Coke.
M7.- Yes
M4.- ‘Spectacular: soda’.
M4.- Tienen que hacerle menos publicidad [...]. En los comerciales, comercial que pasa comercial que te anuncia Coca
M7.- Sí
M4.- “Espectaculares: refresco”.
(Two Mothers, Focus Group 1, Morelos)
Lastly, while many participants commented on how expensive Coca-Cola was and the high expense of drinking soda frequently, others commented that in some instances buying Coke is cheaper than preparing *aguas frescas* at home. Some strategies mentioned to continue drinking soda and not spending more money included buying the bigger size (3-Liter) bottles or cheaper brands, such as Red Cola and Jarrito.

**Water.**

Over half of the participants reported that the type of water they drink/use is bottled (called “*agua de garrafón*” [jug water], because they typically buy 20-Liter/5.3 gallons [plastic returnable] jugs). The rest use tap water, boiled or straight from the tap. A few reported cooking with tap water but only drinking bottled water. The principal reason why many participants buy bottled water is because they perceive tap water (*agua de la llave*) as dirty and non-potable ("*El agua de llave está sucia, no es potable...*”). But apparently, they do not necessarily believe that water is contaminated from origin, but rather that the water pipes are dirty/rusty and this is what pollutes the water. Nevertheless, it seems like the perception of tap water being dirty or clean (safe vs. unsafe) depended on which part of the city people live. Some participants reported that their neighborhood’s tap water was perfectly fine ("*no sale contaminada*”) and found the taste of fresh tap water better than that of bottled water. In addition, the perceived high
cost of bottled water was a reason for participants to use tap water, or only to buy bottled water when tap water runs out\textsuperscript{52}.

The issue of water safety was also discussed when talking about the drinking fountains in schools. Most parents were aware of the fact that fountains had been installed in the school recently. However, many confessed being distrustful about the safety of that water and preferred to have their children take water with them from home. Further, some mothers reported that their children would only drink water from the fountains as a last resort, only if they were extremely thirsty and theirs had run out. Based on the observations made in the school during the two weeks I spent there, I saw two (new-looking and mostly unused) drinking fountains. Children did not use them much and teachers did not use them at all — as a matter of fact there is a big water jug for teachers in the central office which is where they get water. During one of many conversations with the school custodian (who was also one of the interviewees), he assured us that the water from the fountains was clean because he changes the filters regularly, and that in any case, he has been drinking water directly from the water hose at the school for a long time and he has never gotten ill.

Lastly, as stated above, bottled water is often not available in eat-out places like taquerías or food stands.

\textit{Aguas frescas.}

\textsuperscript{52} In many parts of Cuernavaca (Morelos State), tap water is only available a couple of times a week and only for a few hours.
A majority of participants reported preparing and/or drinking *aguas frescas* at home. The cost of making *aguas frescas* was brought up by a considerable number of participants, stating that during some times of the year it is cheaper to buy Coke than buying the ingredients (bottled water, sugar, and fruit) and making aguas frescas at home. As a father exclaimed during a focus group:

M7.- For example if I have 50 pesos, I have to buy my tortillas and if I want to make something delicious for my daughters I have to buy, how much?, about half a watermelon, a quarter watermelon and how much will that *aguas fresca* cost me, [including] the sugar...  
Father1.- It’s cheaper to buy a 2-liter Coke!  
M3.- Exactly.  
M7.- *Por ejemplo si yo tengo 50 pesos, tengo que comprar mis tortillas y si le quiero hacer algo de sabor a mis hijas tengo que comprar ¿cuánto?, una media sandía, un cuarto sandía y cuanto me sale el agua, [incluyendo] el azúcar...*  
P1.- ¡Que sale más barato una coca de 2 litros!  
M3.- *Exactamente.*  
(Two Mothers and a Father, Focus Group 1, Morelos)

Natural fruit juice was reported to be expensive too. Some participants noted that in the past, people use to have their own fruit trees, and that they could simply get the fruit from the tree, but that this was not the case anymore.

Lastly, the cumbersomeness and time required to make *aguas frescas* as compared to the easiness of getting a Coke from the corner store, was mentioned as a reason for sometimes choosing (buying) a soda over (making) *aguas frescas*.

53 Participants reported prices in the order of 20-25 pesos for a 2-Liter Coca-Cola, 30-39 pesos for a 20-Liter jug, 10-30 pesos for fruit (depending on the type of fruit and season), and about 25 pesos for 1 Kilogram of sugar (some families go through 1 Kg of sugar a week).
5.3.3 The SSB tax

This section presents the results about awareness of and opinion about the likely impact of the SSB tax, as well as an analysis, about whether the SSB tax influenced beliefs, attitudes and behaviors via the price increase or if it has had an educational effect. It also contains additional information about the importance participants gave to the SSB tax and the use of the tax revenue, as well as their potential reaction if the SSB tax were increased by 20%.

Sensitivity to price increases.

A majority of individuals reported, either spontaneously or when probed, an increase in the price of industrialized SSBs, particularly that of Coca-Cola, in the years prior. However, responses were heterogeneous in regards to how much and since when prices had changed. Many informants perceived that the prices of Coca-Cola started to increase sharply about 2-3 years prior to the interview (i.e., in the year 2014-2015); with a few pointing out that there was a price spike at the beginning of 2017 (“Este año fue el que ya le subieron más”) — this coincides with an increase in beverage prices by Coca-Cola FEMSA, the Coca-Cola franchise bottler in Mexico, in the last quarter of 2016 and the first quarter of 2017 (El Financiero, 2017). Other participants simply thought that

54 They mostly reported on the price increase of the 2-liter Coca-Cola bottle because that’s the beverage and size they usually buy to drink at home.
prices are always increasing. An (small) increase in the price of other products, notably petrol, tortillas, and sabritas\(^{55}\) (potato chips and other snacks) was mentioned too.

The estimations of how much prices had increased were also heterogeneous. On average, participants reported an increase of MXN 7-10 for the 2-Liter Coca-Cola bottle (about 3.5-5 MXN/liter) — which is well above the MXN 1 per liter corresponding to the SSB tax. The rise in the price of soda was, for the most part, attributed to a price increase for petrol and sugar, and more generally to the increased price of the basic goods basket:

I.-And in recent years, for example, in the last 3 years have you seen that the price has risen or changed for any of these drinks?
M.-Yes because...well we are the ones who do the supermarket shopping. Yes you realize that the price has risen.. in fact we know that everything went up in price, because every now and then...the price of the basic goods basket increases. Basically, all prices increase in the supermarket. [...] If the price of gas goes up, everything goes up, the price of sugar goes up, the price of eggs goes up, the price of tortillas goes up, the price goes up for everything.
E.-Y en los últimos años, por ejemplo, en los últimos 3 años ¿Han visto que ha subido que ha cambiado el precio de alguna de estas bebidas?
M.-Sí porque...bueno nosotros que hacemos el súper. Sí se da uno cuenta de que sube el precio...de hecho sabemos que todo subió de precio, porque cada que... es el aumento a la canasta básica. Prácticamente en el súper sube todo. [...] si sube la gasolina, sube todo, sube el azúcar, sube el huevo, sube las tortillas, sube el precio todo.
(Doris, Mother, Interview, Morelos)

However, some thought that the price of soda was raised so that people would drink them less, which was the original intention of the SSB tax. However, the fact that

\(^{55}\) Sabritas was a Mexican snack company that was bought out by PepsiCo. Sabritas is the brand under which PepsiCo currently brands the Frito-Lay products in Mexico, such as Cheetos, Fritos, Doritos and Ruffles.
this was seldom mentioned shows the difficulty in producing intended behavioral health outcomes.

**Awareness of the SSB tax.**

The SSB tax was mentioned spontaneously by two participants:

I.- When? When were they cheaper?
M3.- Two or three years ago.
I.- Yes?
M1.- They raised the tax because, for the same reason, to prevent Mexicans from continuing...consuming sugar...
M2.- Yes because of obesity...
E.- ¿Cuándo? ¿Cuándo eran más baratos?
M3.- Hace dos o tres años.
E.- ¿Sí?
M1.- De que le subieron al impuesto porque, por lo mismo para evitar que los mexicanos sigamos...consumiendo azúcar...
M2.- Sí por la obesidad...
(Two Mothers, Focus Group 4, Morelos)

I.- But do you know why the price has gone up?
Father.- Eh, because they pay what, the tax? Something about the sweet...the tax on sweetened drinks. Yeah, right?
E.- Pero ¿usted sabe por qué ha subido el precio?
P.- Eh, uno porque pagan ¿qué, el impuesto? Algo sobre sobre las dulces... del impuesto sobre las bebidas endulzantes. ¿Sí, verdad?
(Espartaco, Father, Interview, Morelos)

None of the rest mentioned it at all. Thus, after discussing price changes, the remaining participants were asked if they had heard about the special tax on industrialized SSBs and what they knew about it. Subsequently, about half of interviewees and focus participants stated that they were aware of the SSB tax, mostly via mass media, such as radio, television, print news, and social media:

F.- Where have you heard about it?
M2.- on the radio ...
The general perception was that most people were aware of the SSB tax because it had received widespread attention from the television and other media:

I.- How many of you know this tax?
M1.- The majority, because they announced it on television. There was much propaganda56.
E.- ¿Cuántos de vosotros conocéis este impuesto?
M1.- La mayoría, porque lo anunciaron en televisión. Hubo propaganda. (Mother, Focus Group 4, Morelos)

**Perceived purpose of the SSB tax.**

56 In Mexico, the term “propaganda” is often used to refer to the diffusion of information of political nature through mass media channels. But it does not necessarily carry a negative connotative meaning of misleading information as a form of persuasion.
Among all individuals who were aware of the SSB tax, most knew its aim, describing it as either to decreasing consumption sugar/SSBs and/or to decrease obesity and diabetes. As some focus group participants explained:

M1 ... What they are looking for [with the tax] is to reduce obesity in both children and adults by (reducing consumption of) sugary products. [...] M1.- It’s that they raised the tax because, for the same reason, to prevent Mexicans from continuing ... consuming sugar ... M2.- Yes because of obesity ... [...] That's why they did it, that's why they did it to prevent ... obesity. M3.- And diabetes too
M2.- Yes and diabetes too!
M1.- (That) we are the first place (for diabetes) in adults and second (place) in children.
M1...Lo que están buscando [con el impuesto] es bajar la obesidad tanto en niños y en adultos con los productos azucarados. [...] M1.- De que le subieron al impuesto porque, por lo mismo para evitar que los mexicanos sigamos...consumiendo azúcar... M2.- Sí por la obesidad...[...] Por eso lo hicieron, por eso lo hicieron para evitar... la obesidad.
M3.- Y diabetes también
M2.- ¡Sí y diabetes también!
M1.- Que somos el primer lugar en adultos y segundo en niños.
(Three Mothers, Focus Group 4, Morelos)

If participants were not aware of the SSB tax, the interviewer/facilitator briefly explained the tax policy and asked them what they thought about this measure and their opinion about the likely impact of the price increase. Thus, information about opinion of the effect of the tax was collected from all participants regardless of whether or not they were aware of the tax prior to the interview. It should be noted that some participants associated (or confused) the SSB tax with the “junk food” tax (taxation of energy-dense
highly-processed foods\textsuperscript{57}) that was implemented at the same time. The researchers also made note of this confusion.

\textit{Perception of the effect of the SSB tax on consumption of taxed SSBs.}

For many participants, increases in soda prices made them reflect about the amount of money they spend on those beverages, whether to cut down on consumption, and even made them reduce or quit soda consumption (albeit only temporarily). However, participants largely perceived that the SSB tax had not reduced consumption of soda as a whole, based mostly on their perception of other people’s behavior, such as Mexicans in general or some of some of their family members (i.e., husbands):

I say that many people won’t quit Coke. I have seen that most, most continue consuming their soda. Although it is expensive, they keep consuming soda, and (I’m) not just (speaking) for my husband, but for other people that I have seen.

\textit{Yo digo que mucha gente no deja la Coca. Yo he visto que la mayoría, la mayoría sigue consumiendo su refresco. Aunque esté caro sigue consumiendo refresco, y no nada más por mi marido, sino por otras personas que yo he visto.}

(María de la Luz, Mother, Interview, Morelos)

I.- And has this affected you and your families? For example, Manuela, is your husband drinking less sugary drinks?

M3.- No, the same.

M1.- Nothing stretches the money like it did before (Laughs)

M3.- He says ‘Yes, it's very expensive. Oh man, I guess not.’

I.- Your husband says that it is expensive?

\textsuperscript{57} The tax on energy-dense foods, applied at the same time as the tax on SSBs, consisted of 8\% applied to nine categories of high-calorie highly processed foods, including: chips, pastries, chocolate and derivatives, puddings; desserts made with fruit and vegetables, peanut, Dulce de leche, cereal-based foods, and ice-cream. (Secretaría de Gobernación, 2013)
M3. - Uh-huh, he complains and everything but still buys it.
M2. - In other words, he keeps consuming it, right?
M3. - Yes, I guess.
M2. - He says ‘it's expensive but I keep buying it’ (laughs)
M3. - Yes, he keeps buying it.
M1. - ‘I will sacrifice myself” (Laughs)
M3. - [He] keeps drinking it all the same.

E.- ¿Y a ustedes y a sus familias les ha afectado? Por ejemplo, Manuela ¿su esposo está tomando menos bebidas azucaradas?
M3. - No, igual.
M1. - Nada más no alcanza el dinero igual que antes (Ríe)
M3. - Él dice “Si está muy caro. Ay hijole, no pues.”
E.- ¿Su esposo sí dice que está caro?
M3. - Ajá, se queja y todo pero pues bueno lo compra.
M2. - O sea, lo sigue consumiendo ¿no?
M3. - Sí, o sea.
M2. - Dice “está caro pero lo sigo comprando” (Ríe)
M3. - Sí lo sigue comprando.
M1. - “Me sacrificaré” (Ríe)
M3. - Sigue tomando lo mismo.
(Three Mothers, Focus Group 4, Morelos)

F.- And do you think that this price increase will make people drink less soft drinks or eat less junk?
M3. - No, people follow.
M4. - No, the person who is already ravenous about soda won’t. But the one that says "I hardly drink (soda), but I'm going to leave it too", he’s already there.
M1. - Limits.
M4.- Exactly.
M1. - It’s that, when you see that something is hurting (you) and on top of that, it is expensive, logically, you do not think twice ... Well, one who can, tries to be conscious. So, you say "I won’t buy it anymore".
F.- ¿Y ustedes piensan que ese aumento de precio hacer que la gente tome menos refrescos o que coman menos chatarra?
M3. - No, la gente sigue.
M4.- No, el que es vicioso ya al refresco ya no. Pero el que dice “yo apenas tomo, pero lo voy a dejar también”, ya ahí sí.
M1.- Límite.
M4.- Exactamente.
M1. - Es que, cuando ves que algo hace daño y aparte está caro, lógico no le piensas dos veces...Bueno uno que puede, trata de ser consciente. Pues dices “ya no lo compro”.
(Three Mothers, Focus Group 2, Morelos)
To demonstrate the strength of this habituation, there is no amount the price could increase that would discourage the inelastic consumer from buying it:

I. - Do you think that the fact that the prices of this type of drink have increased makes people buy more or less soda?
M1.- No 'well' even if it's expensive ...
Father1.- No, even if it's expensive, people buy it.
M3.- This is like the vice of tobacco, tobacco is something, that is, I am a smoker and cigarettes are increasing (in price) more and more, but I, I said, "I'm going to buy it even though it costs 40, 50 pesos a pack! ". I think that is something similar to consuming soda, right? No matter what it costs ...
Father1.- It's a vice.
M3.- Exact is a vice! No matter what it costs, as she said, ‘my body needs it!’ [Laughs], it's true, that's the way it is with cigarettes, too.
E. - ¿Ustedes creen que el hecho de que se alcen los precios de este tipo bebidas hace que la gente compre más o menos refresco?
M1.- No "pues" aunque esté caro...
P1.- No, pues aunque esté cara la gente lo compra.
M3.- Esto es como el vicio del cigarro, el cigarro es algo, o sea yo soy una persona fumadora y el cigarro cada vez va más en aumento yo, más sin embargo yo, yo le he dicho, ‘¡lo voy a comprar aunque cueste 40, 50 pesos la cajetilla!’ . Yo pienso que eso es algo parecido con el consumo del refresco ¿No? No importa lo que cueste...
P1.- Es un vicio.
M3.- ¡Exacto es un vicio! No importa lo que cueste, como dijo ella ¡mi cuerpo lo necesita! [Risas], pues es que es cierto, así pasa con el cigarro también.
(Two Mothers and a Father, Focus Group 1, Morelos)

I.- And do you think that this price increase makes people drink (soda) in a different way?
M.- No, no, that's why I'm telling you, look, the owners of Coca-Cola know that even if they make it too expensive, people will buy it, because Coca-Cola has a lot of demand. In other words, they are aware that people are not going to stop buying Coca-Cola.
I.- No?
M.- No, even if it's expensive, why? Because people like it, (they are) addicted to Coca and Coke sells a lot, right? Wherever you go there is Coca-Cola. That is, there are very large profits. Yes, then, yes, even if they up (the price) it, it does not change anything. That is, people buy it, consume it, including myself [Laughs].
E.- Y ¿usted cree que este aumento de precio hace que la gente tome de manera diferente?
M.-No, no, es por eso que te digo, mira los dueños de la Coca-Cola saben que aunque la den muy cara la gente la va a comprar, porque la Coca-Cola tiene mucha demanda. O sea, ellos están conscientes que la gente no va a dejar de comprar Coca-Cola.
E.- ¿No?
M.-No, aunque esté cara ¿por qué? Porque a la gente le gusta, es adicta a la Coca y la Coca se vende demasiado ¿no? En donde vayas hay Coca-Cola. O sea, y son ganancias muy grandes. Sí, entonces, sí, aunque la suban no, no cambia nada. O sea, la gente la compra, la consume, incluyéndome yo [Risas].
(Amparo, Mother, Interview, Morelos)

To the extent that the inelastic consumers would even prioritize buying soda (Coca-Cola®) over food:

I.- ¿What do you think about the fact that they [the government] has increased the [price of the 2-liter bottle] by 2 pesos for people to buy less?
M.- Well, I say no, we don’t stop buying it.
I.- Why not?
M.- Well, I think maybe we wouldn’t have [money] for tortillas but for coke, yeah [we would], right? Then, so, [we’re] rationalizing that it’s quite a bit what we spend on sodas, right? But, perhaps we can say ‘we don’t have money’ but for coke, there is [money], right? So I think that for some it’s less important that the price increases- no matter what, we’ll buy it.
E.- ¿Qué piensas de que [el gobierno] le hayan subido esos 2 pesos [a la botella de 2 litros] para que la gente deje de comprar?
M.- Pues, yo digo que no, no deja uno de comprar.
E.- ¿Por qué no?
M.- Pues yo creo que a lo mejor no tendríamos para las tortillas pero para la coca sí. ¿No? Entonces, pues razonando pues sí es bastante lo que gastamos en refresco ¿no? Pero, a lo mejor podemos decir “no tenemos dinero” pero para la coca sí, ¿no? Entonces yo creo que para unos pues no les importa que suba, de todas maneras lo compramos.
(Fortunata, Interview, Morelos)

I.- So, do you think there are families that sometimes do not have money to buy milk, but that do buy Coca-Cola?
M.- Well, they buy more Coke than milk.
I.- You think so?
M.- Yes
I.- And do you know any family like that?
M.- ... Well, I’m telling you, with my mother-in-law... always Coke... instead of milk, they are always drinking Coke, even if they do not have [the money]. Who knows how they do it?
E.- Entonces, ¿usted cree que hay familias que a veces no tienen dinero para tomar leche, pero sí compra Coca-Cola?
M.- Pues compran más la coca que la leche.
E.- ¿Usted cree?
M.- Sí
E.- ¿Y conoces alguna familia así?
M.- ... Pues le digo, con mi suegra... pero siempre la coca no... en lugar de leche, siempre están tomando la coca, aunque no tengan [dinero]. Quién sabe cómo le hacen.
(Monica, Mother, Interview, Morelos)

An additional reason (mentioned in one focus group) for the perceived lack of success of the SSB tax was that coinciding with its application, beverage companies started producing a wider variety of soda sizes, including small cheap bottles that “anybody” could afford no matter their economic situation. Participants identified this as a marketing strategy of beverage companies in that they targeted all income groups:

F.- But then, do you think that in the last three years you have bought a different amount of soda?
Father1.- No, it’s the same.
M4.- No, it’s the same [amount], it [the price] increased, I think, right? I think a little more.
Father.- Do you think that people are buying more or less soda?
M6.- Yes [they are], because before there were not two and a half liter [bottles]. And now there are two and a half [liter bottles] [...] I think it was when the tax thing happened.
M3.- They [the soda companies] realize the great variety [of markets] ... there is [Coke] for everyone’s economic situation... for everything-if you want to have a small one, you can take it [with you], if you want [some] at your house [that works too], that is to say- it is marketing you, hitting you hard to [promote a] heavy consumption .
M3.- There are [Cokes that cost] 5, 6, 8, 10 11, 23 [pesos].
M4.- There is [Coke] for every instance, for all economies. Right now you could leave work and not have enough for your transportation [home], but it turns out that there is a Coke for three pesos that you can manage [buying]. So, they’re hitting you up for..., in marketing they’re playing with everything, they look at all the markets to be able to sell you [Coke].
F.- Pero entonces, ¿ustedes creen que en los últimos tres años han comprado una cantidad distinta de refresco?

P1.- No, es lo mismo.

M4.- No, es lo mismo se incrementó yo creo ¿no? Yo creo que un poco más.

F.- ¿Creen que la gente está ahora comprando más refresco o menos?

M6.- Sí, porque antes no había de dos litros y medio. Y ahora sí hay de dos y medio […] yo creo que fue cuando lo del impuesto.

M3.- Se dan cuenta de la gran variedad…hay para todas las economías…para todas las cosas si quieres llevar una chiquitita, la puedes llevar, si quieres a tu casa, o sea te está la mercadotecnia que está pegando fuertemente para el fuerte consumo.

M3.- Hay de 5, de 6, de 8, de 10 de 11, 23 [pesos].

M4.- Hay para todos los momentos, para todas las economías. En este momento puedes salir del trabajo y no tener lo suficiente para tu pasaje, pero resulta que hay una Coca de tres pesos que te puedes alcanzar. Entonces, te va pegando..., en la mercadotecnia están jugando con todo, buscan todos los mercados para poderte vender.

(Five Mothers and a Father, Focus Group 1, Morelos)

Furthermore, some responses manifested the idea that individuals are to blame for drinking so much soda and are personally responsible for making changes — as opposed to beverage companies having some responsibility for having fostered a culture of soda drinking. Participants used expressions such as “we [Mexicans] are foolish” (somos necios), “we are weak” (somos débiles), “the mentality hasn’t changed” (la mentalidad no ha cambiado) to explain why Mexicans continue drinking soda in spite of price increases and their own health knowledge:

I.- And do you think that this tax is effective? Is it achieving its objective?

M1.- In some cases yes

M3.- No, [it’s] not because many people say ‘oh yes, it went up in price but I cannot live without [it], without Coca-Cola, without the soda, without …’

M2.- That’s right!

M1.- That’s right! Yes, that!

M2.- In other words, the mentality has not changed...

M3.- Yes, the mentality did not change.
E.- ¿Y ustedes piensan que este impuesto está siendo efectivo? ¿Está consiguiendo el objetivo?

M1.- En algunos casos sí
M3.- No, no porque muchas personas dicen “ay sí, subió de precio pero yo no puedo vivir sin, sin Coca-Cola, sin el refresco, sin...”

M2.- ¡Ajá eso!
M1.- Ajá eso sí, eso sí
M2.- O sea, la mentalidad no ha cambiado...
M3.- Si, no cambió la mentalidad.

(Three Mothers, Focus Group 4, Morelos)

I.- Then, have you heard other people talk about the increase in the price of Coca-Cola?
M.- Yes, well everyone. Everyone, everyone, everyone.
I.- Yes? And what do they say?
M.- Well, listen, for example, we might say ‘No, so now [we’re] not going to buy Coke’. But nothing else happens, two, three days and [we] buy it again. It’s that we are Mexicans, we are fools, we Mexicans here are stupid, even if they tell us that all this type of drink hurts us, we continue consuming it, we continue consuming it.
E.-Entonces, ¿usted ha oído otra gente hablar del aumento del precio de la Coca-Cola?
M.- Sí, pues todos. Todos, todos, todos.
E.- ¿Sí? Y, ¿qué dicen?
M.- Es que mire a veces este. Por decir, nosotros decimos “No pues ya no se va a comprar coca”. Pero nada más pasa dos, tres días y se vuelve a comprar. Es que somos mexicanos, somos necios, nosotros aquí el mexicano tenemos necedad, aunque nos digan que nos hace daño todo este tipo de bebidas lo seguimos consumiendo, lo seguimos consumiendo.

(Simona, Mother, Interview, Morelos)
Potential influence of the SSB tax on health beliefs & attitudes

Discussions in three of the four focus groups revealed that soda price increases and the debate around the tax might have contributed to increasing awareness about the detrimental health consequences of these types of beverages. A clear example came from one focus group participant who explained how the tax could be triggering consumers to think about their health goals by choosing healthier drinks, in a similar fashion as health warnings on cigarette packs:

[The purpose of this tax] is that we cannot buy soda as freely as before or that you think about it, saying to yourself ‘I'm not going to spend 21 pesos, it'd be better to buy 1 Kilogram of sugar for 10 or 15 [pesos] because I can get more out of this for the whole week’. Right? It also tries to raise awareness, like it is like cigarettes, right? like when they started to put those images on the packs. Well, the price of soda is increasing and it's going to announce or tell you that if you're diabetic you should take better care of yourself...

[El objeto de este impuesto es] que no podamos comprarlo con la misma libertad que antes o que lo pienses, dices ‘no me voy a gastar 21 pesos, mejor compro un kilo de azúcar en 10, en 15 y me rinden más en la semana o esto’ ¿no? Buscar la forma y también de que cree conciencia de que es como el cigarro ¿no? Que empezaron a sacar en las cajetillas las imágenes, bueno el refresco está subiendo de precio y ya te va a empezar a anunciar o a decir que si eres diabético te cuides más...

(Mother, Focus Group 4, Morelos)

Likely reaction if the SSB tax were increased to 20 percent.

When participants were asked to reflect on whether an even higher increase (an additional 10 percent increase, totaling a 20 percent tax) would affect their SSB consumption, they largely thought it would not, for similar reasons why they thought the current tax was not being effective.
Some participants thought that a higher price increase would most likely have an impact on low(er)-income people\textsuperscript{58}, pointing out that for those, food should be more important than drinking soda.

E.- And do you all think [if they did increase] the tax by two pesos per liter [that] would help people drink less [soda]?
M.- Yes.
Father.- It would in some way.
M.-Yes or no.
Father.-Yes, no, that’s why I’m telling you that in same way it would, because there are people...the middle class...these [people], low...and middle [class], if the people in the lower class didn’t...didn’t give themselves the pleasure of drinking...soda, now even less. They prefer to buy some tortillas, right? Let’s say it like that.
E.- Y ustedes piensan [que si se incrementa] el impuesto a dos pesos por litro, ¿eso ayudaría a que la gente tome menos?
M.-Sí.
P.-De cierta forma sí.
M.-Sí o no
P.-Sí, no, por eso le digo de cierta forma sí, porque hay personas...clase media...este, baja...y media, si las de la clase baja no...no...se daban sus gustos de tomar...el refresco, pues ahorita menos.
Prefieren comprarse tortilla ¿no? Digámoslo así.
(Couple, Interview, Morelos)

E.-And yes because there are health experts that are asking the government to increase the price of these types of drinks, to increase it another peso per liter, so that people drink less. So, we are talking about a 2 Liter Coke for 20 pesos turning into 22 pesos.
A.-Mhmm
E.- What do you think? Do you think this would affect what they [people] buy?
A.-Well, no [laughs]
E.- No?
A.-Well no, I still buy it.

\textsuperscript{58} It should be noted that many of these statements came from participants of low income status (D or D+).
E.- Yes, and do you think that it would affect other people? Do you think that other people…
A.- Maybe so.
E.- Which people would it affect?
A.- Well, maybe those that can only buy Coke making an effort or that have to make an effort to buy soda.
E.- Y sí, porque hay expertos de salud que están pidiendo al gobierno que suba más el precio de este tipo de bebidas, que suban otro peso por litro, para hacer que la gente tome menos. Entonces, estamos hablando que la coca de 2 litros de 20 pesos pasaría a 22 pesos.
A.- Mjum
E.- ¿Qué piensa usted? ¿Usted cree que le afectaría lo que compran?
A.- Pues, no (se ríe)
E.- ¿No?
A.- Pues no, este, yo la compro
E.- Sí y ¿cree que a otra gente le afectaría, cree que otra gente…?
A.- Tal vez sí
E.- ¿A qué gente, le afectaría?
A.- Pues, a la mejor, a la que, con trabajos pueda comprar una coca o tenga que hacer un esfuerzo por comprar un refresco.
(Amparo, Mother, Interview, Morelos)

However, the general sentiment was that a higher increase would not significantly affect their practices, or those of others.

F.- And do you all think that if they were to increase the price, instead of one peso per liter, two per liter, that people would stop drinking soda or drink less?
M1.- People buy it no matter what, they find ways [to buy it].
P.- Nah
M1.- Well in my case...
F.- Would you keep buying it if the price increased more?
M1.- Me, yes, although I would [buy] a little less but yes. It’s like tortillas, you have to buy tortillas, to, to eat.
M2.- It’s that sometimes a lot, sometimes these, the people sometimes, it’s that, how can you say it? ‘It’s…something vital for them.’ In this aspect, when I’m saying that they become addicts or I’m imagining that…they find a way.
M1.- At any cost, exactly.
M2.- ‘I have to buy it.’
M1.- Yes, they find any way to buy it..
F.- Y ustedes piensan que si subiera el precio más en vez de un peso por litro, dos pesos por litro ¿la gente dejaría de tomar o tomaría menos?
M1.- De todo modo la gente compra, la gente pues busca.
P.- Nah
M1.- Bueno en mi caso...
F.- ¿Usted lo seguiría comprando si sube más?
M1.- Yo sí, aunque disminuiría un poquito pero yo sí. Es como la tortilla, tiene que comprar la tortilla para, para comer.
M2.- Es que a veces muchas, a veces este la, la gente a veces este es, ¿cómo se puede decir? “Su... algo vital para ellos”. En ese aspecto cuando le digo que se vuelven adictos o estoy me imagino que... buscan la forma
M1.- A como dé lugar, exacto.
M2.- ‘Tengo que comprarla’
M1.- Sí, buscan la forma de comprarla.
(Two Mothers and a Father, Focus Group 4, Morelos)

F.--But for example if they’re trying to increase this tax from one peso per liter to two pesos per liter, you all are…they don’t know if they will approve it but they have talked about it. For you all, if it were to increase, for example, this 1L bottle of Coke by another peso, eh, do you think it would change consumption or what?
M1.- No
M3.- No
M5.- No
M7.- No
M1.- People will keep consuming [it].
M4.- Neither Coke, nor beer, nor cigarettes [would change], not even if they made beer 100 pesos.
M2.- They will buy it.
F.--Pero por ejemplo se está intentando aumentar este impuesto de un peso por litro a dos pesos por litro, ustedes están...no se sabe si se aprobará pero se ha hablado. Ustedes, si aumentase por ejemplo, esa botella de un litro de Coca Cola un peso más eh, ¿creen que cambiaría el consumo o qué?
M1.- No
M3.- No
M5.- No
M7.- No
M1.- La gente va a seguir consumiendo
M4.- Ni el consumo de la coca, ni el consumo de la cerveza, ni el consumo de los cigarros, ni así se las den a 100 pesos la cerveza
M2.- La van a comprar.
(Six Mothers, Focus Group 1, Morelos)
And that in order to keep drinking Coca-Cola they would resort to practices such as buying bigger bottles (like the 3-liter Coke bottle which has a lower cost per liter); or buying cheaper foods or less of some other foods (like vegetables):

M.- [...] I would at least try to lower it [my consumption] still a little more.
E.- Ah, okay, but would [you] continue buying it?
M.- Yes, less but yes.
E.- Because a little while ago you mentioned that some [people] stop buying some food to be able to buy soda.
M.- Yes.
E.- You have done it?
M.- [...] well, you distribute the money, you buy something else, I don’t know…cheaper food, you distribute it or buy less vegetables or it’d go something like that.
E.- So that you can stretch [the money] for Coke.
M.- To stretch out [the money] for everything, for Coke, yes.
M.- [...] yo por lo menos sí trataría ya de bajarle todavía un poco más.
E.- Ah, ok ¿Pero lo seguiría comprando?
M.- Sí, menos pero sí.
E.- Porque hace rato mencionaba que a lo mejor dejan [otros] de comprar algo de comida para poder comprar el refresco.
M.- Sí.
E.- Lo han hecho.
M.- Pues.
E.- Distribuir el...
M.- Distribuir a lo mejor este no, como, pues se distribuye el dinero. Este, se compra otra cosa pues no sé de comida que sea un poco más económica, pues se va distribuyendo o se compra menos verduras o así ahí le vamos.
E.- Para que alcance para la coca.
M.- Para que alcance para todo, para la coca, sí.
(Santina, Mother, Interview, Morelos)

Importance given to the SSB tax and views about the use of the tax revenue.

A few participants were distrustful of the objective behind the tax, indicating that in reality the government does not care about the health of its citizens but only about their own gain and some companies’ profit. Also, while overall, most were pleased to learn
that the revenue of the taxation had been earmarked to build drinking fountains in
schools, most thought that the government was pocketing the money and not using it for
that purpose. Examples include:

M.- I think that in reality the government doesn’t care.
E.- Doesn’t care?
M.- No, they don’t care, I think this is in the interest of the companies
because people keep consuming [soda] even if they [the companies]
increase it and increase it [the price].
M.- Pues yo pienso que, en realidad al gobierno no le preocupa.
E.- ¿No le preocupa?
M.- No, no le preocupa, esto es pues en beneficio de las empresas yo
creo porque pues la gente sigue consumiendo [refresco] aun cuando le
aumenten y le aumenten.
(Santina, Mother, Interview, Morelos)

E.-...And I’m going to tell you, the tax eh, the objective was, with this
money to construct water fountains with potable water in the schools.
G.-Well, then we are making those in the government richer, because
[nothing] ever got here [to us], all of those projects, from 10 they make
2 to be able to take some photos, and there you go. So I think it would
be a good, eh, proposition if they really did what they say.
E.-...Y yo le voy a decir, el impuesto eh, el objetivo era, con ese dinero
construir bebederos de agua potable en las escuelas
G.-Bueno, entonces enriquecemos más al que está en el gobierno,
porque nunca llegan hasta acá los, todos los proyectos, de 10 hacen 2
para tener alguna fotografía y listo. Entonces, creo que sería una
buena eh, propuesta si de verdad se llevara a cabo lo que dicen.
(Guadalupe, Mother, Interview, Morelos)

5.3.4. Reported Change in Consumption of Taxed SSBs

Change in participants’ consumption of taxed SSBs.

For the vast majority of participants, quitting soda consumption entirely seems
impossible. Reflecting on what takes for people to quit soda, some participants
acknowledged that people can only become aware of how harmful soda drinking is when
they become ill from it (“Yo creo que tomamos conciencia cuando ya estamos enfermos”).

Nevertheless, a large majority of respondents reported drinking less soda at present compared to some time ago. The period of reference for when practices had changed was, on average, 2-4 years prior to the interview. The two principal strategies put in place to reduce consumption of soda included (a) restricting availability and consumption at home, for example, allowing only or two sodas a week or banning it altogether and (b) self-restriction/self-control, for example, drinking only a few sips once in a while or only “when they crave it” (“cuando se les antoja”). A complementary strategy was to drink one or two glasses of water for every glass of soda they had.

In most cases, excess soda consumption had been replaced by aguas frescas or plain water. But while participants declared to have succeeded to some extent in changing their practices, to the point that they felt comfortable and confident to maintain their new habits, at the same time, most were not willing to give soda up completely, even if they thought they should. Only one person reported having quit soda altogether.

**Motivation for changing.**

The main reasons cited for having decreased soda consumption were all health-related, including: onset of an illness related to high soda drinking (personally or of a family member, learning (i.e., reading, hearing) about the negative health effects of a high SSB consumption, and wanting to instill good habits or set a good example for one’s children. For the most part, an increase in the prices of industrialized SSBs was not perceived as a trigger point for changes in practices. While for many, the cost of SSBs (in
particular the cost of maintaining a habitual consumption) was a concern and a small impediment, many others thought that price was not an important barrier for the habitual (inelastic) consumers.

*Personal illness as a cue to action.* Several people reported having decreased soda consumption at once following an illness (diabetes, kidney disease, gastrointestinal issues, high blood pressure), resulting from drinking large amounts of soda and/or no water. On some instances, the illness had been professionally diagnosed and the participant had been directed by a health care practitioner to decrease their soda consumption. That was the case of this focus group participant:

M7.- Six months to approximately a year ago, I got sick in my kidneys, precisely from drinking Coca-Cola.
F.- They told you that?
M7.- Yes, yes, for drinking [it] because I wasn’t drinking water at all. When I was thirsty [I drank] Coke. And lunch, Coke. Dinner, Coke. So, I wasn’t drinking any water. None! Absolutely no water. And so, I got sick in the kidneys and they sent me (to) treatment and they told me ‘No Coca-Cola, because this is affecting your kidneys."

(Mother, Focus Group 1, Morelos)

*Illness of a family member (or friend) as a cue to action.* In other cases, it was the illness (or death) of a relative or friend that created a sense of threat and precipitated the readiness to take action and change. For example, Perseo (interview) switched from Coca-Cola® to water when his brother fell ill with diabetes (the brother used to drink about 4 liters of soda a day), and Jairo (Focus Group 1) stopped drinking and “prohibited”
his wife and daughters from bringing Coca-Cola® into the house after his mother died from kidney failure, because, according to him, the illness was a consequence of drinking a lot of Coca-Cola.

Cost of SSBs as a motivation for changing soda consumption. When discussing motivation for changing practices, the cost of soda was mentioned on a few occasions, but only on two it was put forth as a reason for having reduced consumption or to consider drinking less. For example, for Mercedes, a grandmother and caregiver of three grandchildren and a professed Coca-Cola® lover, the price was a clear reason for not drinking more Coca-Cola:

F. - When, you've told me that lately you drink less soda than what you used to, uh, and when do you think those practices changed, how long ago?
M1.- More than anything [because of] the money.
F.- Yes?
M1.- Yes, because ... well, there are not [resources]. Because, to be able to support three children, others five, it’s not enough. But, so it goes like that. [...] 
F.- But you, have you changed the soda you drink, because of the price increase? Has it been [like] that, [for] some reason?
M1.- Me, I did for a while.
M4.- And now.
M2.-[It’s] very expensive now.
M1.- Yes very expensive.
F.- Cuando, me han dicho que últimamente toman menos refresco que lo que solian tomar eh, y ¿cuándo creen que cambiaron, esas prácticas, hace cuánto tiempo?
M1.- Más que nada la economía.
F.- ¿Sí?
M1.- Sí, porque...pues que no hay. Luego, estar manteniendo 3 niños, otros de 5, no alcanza. Pero, pues ahí vamos. [...] F.- ¿Pero ustedes, han cambiado el refresco que toman, por el aumento de precio? ¿Ha sido esa, alguna razón?
M1.- Yo un tiempo sí.
M4.- Y horita.
M2.-Muy cara ya.
M1.- Sí muy cara.
(Three Mothers, Focus Group 2, Morelos)

There were many others for whom the price did not seem to be the main determinant of behavior or of a change in behavior. For example, when Santina was asked if she thought that the price increase (resulting from the tax) had made her drink less soda, she answered negatively explaining that health considerations, not money, was her main concern:

M.- Yeah, before we used to drink more soda, I think we drank about one a day.
I.- A 2 liter one?
M.- A 2 liter one, and we have decreased [the amount drunk] because of the diseases that we have been having, what’s why I was telling that the ... the tax it’s like we don’t, we don’t pay attention to that. It’s because of the diseases that that [soda] causes that one stops drinking it, you realized that it is hurting you and you quit it. But it’s not because you tell to yourself ‘oh, have to pay more, because the tax they imposed is ...’
M.- Sí, anteriormente sí se tomaba más refresco, tomábamos pues yo creo que uno diario.
E.- ¿De 2 litros?
M.- De 2 litros, ya en relación a las enfermedades que hemos venido teniendo es que le hemos disminuido, por eso le digo, el... lo del impuesto pues como que no, ni nos fijamos en eso. Si no es por las enfermedades que va causando y es que ya deja uno de consumir, te vas dando cuenta que va haciendo daño y lo dejas. Pero no es porque digas “ay tengo que pagar más, porque el impuesto que impusieron es...”
(Santina, Mother, Interview, Morelos)

Other motivations for changing. Other participants reported having reduced soda consumption because they had heard or read about its negative health effects such as increasing the risk of diabetes, obesity, and other illnesses — the expression commonly used was that “it harms you” (“que hace daño”). Other reasons included quitting after having a child or having gotten together with a partner who drank no SSBs (who exerted a positive influence on them). The only person who had quit soda entirely did so in order
to support her teenage daughter suffering from obesity and diabetes (she was struggling to follow a restrictive diet and wanted to show support).

**Support and barriers of changes made.** The most important aspect that made it easy for some participants to reduce soda consumption was having good role models (most likely a partner who did not drink) and social support. On the other hand, for many participants one of the major barriers to drinking less soda had been to break the pull of deeply rooted-habits, which very often were described as an “addiction”. Many attempts at changing and relapses were described, which some individuals making resolutions to cut soda consumption down, only to go back to their usual ways after a few days or weeks.

**Changes in children’s consumption of taxed SSBs.**

Some parents believed that their children’s beverage consumption habits had always been good and need not modification. Yet, others noted that in comparison to the past few years, their children were drinking less industrialized SSBs (including juice, flavored milk and soda) and more plain water and/or aguas frescas. For the most part, changes in children’s beverage consumption were a result of a shift in parental feeding practices. However, in a handful of cases, parents reported that their children had reduced soda consumption out of their own volition, due to health/weight concerns triggered by information they had heard or read on the Internet or at school. In a separate case, a mother reported that her daughter had quit soda on instruction of her athletics instructor, because she was not doing well in her sport classes.
5.4. Discussion

Parents, most of whom were mothers, reported drinking soda only a few times a week, mostly during the weekends, when going out, and during celebrations. According to parents, their children drink much more water and less soda than they themselves do, largely as a result of their efforts to restrict their children’s exposure to industrialized SSBs. Drinking soda, and Coca-Cola in particular, is considered as part of the Mexican culture. Most parents reported drinking less soda and less frequently than in the two to four years prior. However, they were not willing to give soda up completely, even if they thought they should, because of their perception of being “addicted” and “habituated to it” (i.e., it’s part of the Mexican culture). These changes in SSB consumption had been primarily motivated by disease (e.g., kidney pain or diabetes), as a preventive measure to avoid disease (i.e., perceived risk), and a perceived personal responsibility to set a good example to their children; and not necessarily by price increases (which seem to have a short-term effect). Half of the participants knew about the tax and its purpose; it seems like the debate around the tax might have contributed to increasing awareness about the detrimental health consequences of these types of SSBs. We conclude that for many of these parents the current taxation of SSBs may have had a mild effect on SSB consumption; a higher level of the tax (20 percent) may impose an additional constraint.

Beverage consumption and parental beverage-feeding practices.

Most parents reported only drinking soda a few times a week, mostly during the weekends and celebrations. The mean soda consumption (assessed quantitatively) of 15 participants was 292±358 ml (10±12 ounces) per day, which is above the per capita soda
consumption in Mexican adults, estimated at 201.6 ml (6.8 ounces) per day (Stern et al., 2014). Based on this, it is important to highlight that even if most parents only drink soda a few times a week, their average daily consumption is very high.

Many parents declared to have succeeded to some extent in reducing the frequency and amount of soda in the two to four years prior, to the point that they felt comfortable and confident in maintaining their new habits. At the same time, most were not willing to give soda up completely, even if they thought they should. Changes were in response to a personal illness associated with SSBs, as a result of increased perceived risk precipitated by somebody else’s disease or having learned about the negative health consequences of SSBs. Price increases seem to have only a small effect on long-term behavior; they seem to only have a short-term effect, days or weeks (“I stop buying it but after two or three days I buy it again”).

According to all participants (with only one exception), their children do not drink soda during the week, only on the weekends and on some special occasions; but drink much less and less frequently than they (the parents) do. On the other hand, children are reported to drink more water and more frequently than their parents. Other beverages consumed include aguas frescas, and industrialized juice and flavored milk to a lesser extent. We cannot objectively comment on the children’s beverage consumption because their parents qualitatively reported it. Nevertheless, the most important point here is that parents reported differentiated beverage behaviors for themselves and their children and that, for the most part, they seem to be making a conscious effort to reduce the amount of SSBs they and their children drink for health-related reasons, as we discuss below. And
while some parents felt they will never be able to quit soda completely they do not want their children to grow up used to drinking it (the only way to stop “costumbrismo”).

**Health beliefs and attitudes.**

We found that health beliefs and cognitive attitudes in relation to SSBs are all predominantly negative and based on scientific/medical discourse. Parents have a very good knowledge of the negative health consequences of drinking industrialized SSBs (i.e., soda, juice, flavored milk), demonstrated not only by their ability to correctly mention some of the diseases that are associated with a high SSB consumption (e.g., kidney failure, diabetes), but also due to their ability to describe some of the mechanisms whereby those conditions develop (e.g., “the kidneys do not filter the blood well”, “your blood sugar levels increase so insulin is needed”). On the other hand, aguas frescas were considered healthier because they contain real fruit and are made at home where one can control the ingredients (and the amounts) that go into them. Their knowledge about the health effects of industrialized juice (and flavored milk) are worth noting; previous qualitative studies with Mexican parents and children conducted about a decade ago have found that industrialized juice was perceived as “healthy” and “natural” because it contained some fruit (albeit a tiny amount, approx. 5%) (Théodore, Bonvecchio, Blanco, & Carreto, 2011; Théodore, Bonvecchio, Blanco, Irizarry, et al., 2011).

It is possible that the acquisition of this detailed, SSB health-related knowledge in these study participants may be the result of the many public policies and programs implemented in an attempt to contain and reduce adult and childhood obesity, as well as of the news articles, TV debates, and non-governmental healthy eating campaigns and
programs — in particular, after the upsurge in the prevalence of adult and childhood obesity registered with the ENSANUT 2006. In this group of parents in particular, the fact that the schools had stopped selling industrialized juice and ultra-processed foods and beverages seems to have acted as a potent educational message. The debate and information about the SSB tax also seem to have contributed to increasing awareness among parents. Furthermore, many participants have relatives with diabetes, which may have also contributed to reinforcing their negative health beliefs about SSBs.

Nevertheless, their knowledge about the “consequences” of SSB consumption contrasts with their ignorance about the recommended limit of sugar and SSB intake, and about the amount of sugar that soda and other SSBs contain. The common view was that drinking SSBs in “moderation” is not harmful, and this may explain why some families have set rules to allow drinking soda two or three times a week. However, from a public health point of view, drinking SSBs “only” a few times a week might still be too much, as on those occasions large quantities may be drunk resulting in a high average daily consumption. The belief that everything can be consumed in moderation seems to derive from a mantra of the food industry, which poses that there are no bad foods or beverages\(^{59}\). However, as evidenced in this study, this overly simplistic and ambiguous

\[^{59}\text{For instance, on its website, the Mexican National Association of Soda and Carbonated Water Companies (ANPRAC) states: “There are no bad or good foods. Experts agree that classifying foods and beverages as good or bad, is harmful to our health, in general. You can drink soda in moderation, without forgetting that the base of your diet should be vegetables, fruits, whole grains and proteins with low cholesterol and saturated fat. Including plain water and frequent physical exercise are also an important part of a healthy lifestyle.” [Original statement in Spanish: “No hay alimentos buenos o malos. Expertos coinciden que el clasificar los alimentos y bebidas}
concept of “eat unhealthy foods/beverages in moderation” is not helpful for parents to restrain their soda consumption within an adequate limit\textsuperscript{60}.

Further, our study shows that cognitive and affective attitudes conflicted, with participants often yielding to the allure of the immediate gratification, foregoing the long-term health benefits that self-control would bring. This could be explained by the fact that for economically disadvantaged people, soda may be one of the few pleasures they can afford — in Mexico almost half of the population (43.6\%) lives below the poverty line (CONEVAL, 2017).

**Perceived behavioral control and hyperbolic (future) discounting.**

Interestingly, most parents expressed being confident to further reduce their soda consumption as if it were only a matter of willpower, yet, at the same time they recognized it would be difficult to exercise control in an environment where soda is so ubiquitously present, and in particular for the ones who described themselves as “addicted to soda”.

An interesting aspect is that, for the most part, participants believe that the decisions they make regarding their beverage choices are solely their responsibility and

\textsuperscript{60} Experts recommend that SSBs be consumed only sporadically and in small portions (Rivera et al., 2008).
fault. And while some recognized the existence of heavy marketing to encourage consumption of soda, they did not really seem to acknowledge the extent to what beverage companies and governmental policies contribute to their beverage practices; nor did they hold them accountable in any manner. Rather, they criticized “Mexicans” for being “foolish” and “weak” and continuing to drink soda in spite of the health damage it inflicts. We argue, that this is the result of neoliberalism in contemporary health promotion which shifts blame to individuals for their choices and bad health, especially if they had access to information (Schrecker, 2016).

Further, if we conceptualize perceived behavioral control as the ability to choose long-term over short-term outcomes — the opposite to the hyperbolic discounting concept — we could argue that this construct is probably influenced by their socio-economic status. Research shows that people of low socio-economic level focus more on the present than the future (Guthrie et al., 2009), in part because they have immediate needs that they need to meet. In this study, this was clearly illustrated in the dialogue between some focus group participants about how they considered the short-term (pleasure of drinking SSBs) and long-term aspects (health, medical expenses) of SSB drinking. One said “What happens is that sometimes we do not think about the long-term” a mother said. “Exactly, you sort out today’s problems as they come and unfortunately, we do not think about the medium or long term”, responded another. In addition, poverty causes stress and negative affective states thereby making people more short-sighted and less risk adverse, possibly limiting attention and favoring habitual behaviors at the expense of goal-directed ones (Haushofer & Fehr, 2014). Lastly, we should also consider that in many parts of Mexico (including Cuernavaca where this
study was conducted) crime and violence are ongoing and pressing issues. As a matter of fact Mexico experienced a spike in crime in 2017 (Seguridad Justicia y Paz, 2018). This situation probably diminishes people’s ability to worry about long-term goals. Participants in this study complained about drug dealing problems in the neighborhood. In fact, during the weeks the fieldwork was conducted, there was a shooting in a taquería two blocks away from the schools and somebody got killed (rumors where that it was a settling of scores linked to drugs). Based on this, one could even question whether the usual definition of perceived control even makes sense for people of lower socio-economic status who do not have the luxury to plan long-term.

Self-identity.

We also explored self-identity as a determinant of own SSB consumption and of giving SSBs to children. We found that for some participants their identity as mothers and caregivers indeed explicated both behaviors, in the sense that a high personal responsibility in setting a good example for their children and looking after them was often linked with an intention to limit soda consumption in the home.

Mexico is a predominantly patriarchal society with very differentiated gender roles: men are typically the head of household and providers, whereas women are primarily responsible for child rearing, and the tasks associated with family feeding and health (Figueroa, 2014). As a matter of fact, a study conducted with women from different social classes in urban Mexico found that most considered motherhood as their main source of identity (García & De Oliveira, 2005). Moreover, most of the public policies and programs are aimed at women and children (Figueroa, 2014). In addition,
there are more societal pressures for Mexican women to stay slim, resulting in them paying more attention to their bodies and dieting (Bojorquez et al., 2018; Unikel et al., 2005). A qualitative study with middle-aged Mexican women found that most were extremely dissatisfied with their overweight bodies, and had engaged in weight loss initiatives at some point (Valdez-Hernández et al., 2017).

Thus, considering that the group under study was predominantly composed of women, it is possible that their identity as mothers makes them more conscious about their own food and beverage consumption and more likely to pay attention to information about diet and health programs and policies such as the SSB tax.

Social norms.

We found that consumption of soda, and Coca-Cola in particular, is considered part of the Mexican culture (“We are Mexicans, we drink soda”), even though the practice only became widespread in the past few decades (and parents realized that). This is likely the result of soda marketing campaigns that for long have systematically targeted many segments of the population presenting their products as typically Mexican and creating brand familiarity from an early age (Blanding, 2010; García-Calderón, 2011). Conversely, aguas frescas, which are an iconic Mexican drink, were not necessarily referred to in such a way, and did not seem to hold such a special meaning for this group.

Drinking soda, particularly at gatherings and celebrations, is considered a social norm. However, there are a few factors that may hint at the beginning of a shift in social norms. First, most parents stated that they would like to drink less soda and are trying to limit their children’s consumption of industrialized SSB. Furthermore, while still
widespread, soda is becoming less seen as “the beverage” of choice demonstrated by the fact that a few participants stated they hide their soda drinking from their families, or were defensive, noting that others around them drink larger amounts than they do, while not recognizing their own high consumption. Lastly, the general sense of the group was that drinking soda frequently is a practice that should be stopped, but participants conceded since it might be difficult for them to change their own practices, efforts should focus on the next generation.

Indeed, as stated by the participants themselves, it might not be realistic to expect dramatic changes in their SSB consumption in given that they are already habituated. It is perhaps the future generation of adults, which is now being socialized into drinking more plain water at home and at school and being exposed to more health campaigns and policies in relation to the negative effects of SSBs, where a large change in practices will be seen.

**Intention to change and action plans.**

In the Reasoned Action Approach, the “intention to change” is predicted by the beliefs, attitudes, social and personal norms in relation to the behavior, as well as by the perception of control over the behavior. In spite of that, many parents reported drinking soda less frequently than some years prior and also expressed an intention to cut back on soda even more. Nevertheless, nobody expressed an intention to quit soda altogether. The most important factors that triggered an intention to drink less soda in this group were the presence of illness (own or of a close person), health beliefs, and a concern for their own health and of their families.
The SSB tax.

About half of the parents were aware of the tax and could explain what its purpose was. This finding is plausible considering that the tax was passed in the midst of very visible and controversial campaigns from proponents and opponents of the fiscal measure on television, radio, outdoor advertisements, and in the press (Donaldson, 2015; PAHO, 2015). Also, in a recent study where we analyzed ENSANUT 2016 data (n = 6,650 adults) we found that at national level, 65.2 percent of adults reported being aware of the existence of the tax (Álvarez-Sánchez et al., Submitted); in this survey, the largest percentage of respondents aware of the SSB tax were found among people living in urban areas and in Mexico City (which was the stage of most of the campaigns). Many people living in Cuernavaca travel to Mexico City frequently given its proximity, so it is likely that they were also exposed to much of the activism regarding the SSB tax that took place in the capital city.

Besides, for many parents, increases in soda prices had made them reflect about the amount of money they spend on these beverages, which in turn made them want to cut down on how much soda they drink, or even made them reduce or quit consumption (albeit only temporarily). However, the price of SSBs was not a principal reason to want to stop drinking soda. In a similar fashion, studies of motivations to quit smoking have found that higher cigarette prices appear to be associated with greater motivation to stop smoking; nevertheless, health considerations are the core motivator to quit (McCaul et al., 2006).

In addition, the price increase attached to the SSB taxation was largely perceived as not having reduced soda consumption. This perception was principally based on the
impression that “other people were still drinking soda”. This finding may be explained by several potential factors. For instance, even if purchases of taxed beverages decreased considerably (7.6 percent) over the first couple of years since implementation (Colchero, Rivera-Dommarco, et al., 2017), and despite the fact that these participants reported a decrease in soda consumption, the changes may not have been clearly noticeable to them or not linked to monetary reasons. Also, perhaps there has not been a large enough critical mass that changed their behaviors to have precipitated a shift in social norms and in the perception of the social norm (Rogers, 2003; Xie et al., 2011).

In this group there was some evidence that the tax may have an educational effect by making some parents rethink their beverage choices (increasing salience of beverage choice) and marking the taxed beverages as unhealthy (like the images on tobacco packs). This effect is as hypothesized and according to behavioral economics theory (Abdukadirov, 2016).

**Other environmental determinants of consumption.**

The ubiquity and persistent marketing of taxed beverages makes it difficult for this group of parents to resist temptation to drink soda in particular. In addition, in some instances soda can be more convenient and cheaper than *aguas frescas*.

The fact that industrialized SSBs can be cheaper than the traditional homemade fruit beverages, and even bottled water, is worrisome. It was precisely one the arguments put forward by health advocates to propose a tax.

A study that analyzed trends in the affordability of SSBs in 82 countries from 1990 to 2016 found that SSBs have become more affordable in low and middle-income
countries and that found that bottled water is typically more expensive and less affordable than SSBs (Blecher et al., 2017).

By increasing the price of industrialized SSBs and keeping price of bottled water constant, water becomes a more attractive alternative. Therefore, manipulating the price of industrialized SSBs (i.e., making them less affordable) through taxes is definitively an important strategy to attempt to decrease their consumption.

5.5. Conclusion

The aim of this paper was to explore whether, how, and why consumption of taxed SSBs and the psychosocial determinants of consumption have been modified in the context of the tax, and if the tax was a contributor to those changes. The main findings of this research are that most parents reported drinking less soda and less frequently than in the two to four years prior and that they significantly try to reduce their children’s consumption of SSBs and encourage water consumption. Changes in practices were precipitated by health concerns and not necessarily by price increases (although these were also a factor). Half of the participants knew about the tax and its purpose; and it seems like the debate around the tax might have contributed to increasing awareness about the detrimental health consequences of taxed beverages. We conclude that for many of these parents the current taxation of SSBs may have had a mild effect on SSB consumption; a higher level of the tax (20 percent) may impose an additional constraint.

5.6. Limitations and Strengths

This study was only conducted in two schools and in one state in Mexico. Thus, the results may not be transferable to parents in other parts of Mexico that have a
different climate and culture. An additional limitation of this study is that we did not assess SSB and water consumption of children directly but relied on parental descriptions, which at times referred to multiple children. Nevertheless, the primary purpose of the study was not to quantitatively assess soda consumption but to understand the meanings associated with SSBs and the influences on consumption. Lastly, given the nature of the study, it is possible that parents gave socially desirable responses.

In spite of these limitations, this study contributes greatly to the literature because it is the first one (to our knowledge) that assesses consumption of SSBs in Mexican parents in the context of the tax. Further, this study relies on a robust behavior change theory and uses a qualitative methodology (both interviews and focus groups) to explicate behaviors in depth.

5.7. References


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Chapter 6 (Article 3) “Mexican construction workers continue drinking soda in spite of the SSB tax – a qualitative study based on the Reasoned Action Approach”

6.1. Introduction

What soda does to me, it’s not anxiety, but like we say ‘it’s a lifestyle’. A construction worker that does not drink soda well, basically not, he is not. Go to a worker with a Coke and let’s go, a glass [of Coke] and let’s go!, and they’re happy. We drink Coke. We drink Coke at home and in your home...my family are Coke lovers at heart. El refresco lo que me hace es pues, pues no ansiedad, si no ya es casi como decimos nosotros “ya es una forma de vida”. Un albañil que no toma Coca pues prácticamente no, no es. Tú llégale a un albañil con una Coca y sobres, vasito y vámonos, y son felices. O sea, nosotros si tomamos Coca. Tomamos Coca en la casa y en tu casa, este...mi familia es coquera de corazón. (Eros, Construction Worker, Interview, Morelos)

In January 2014, Mexico became one of the first countries in the world to pass a nation-wide tax on industrialized sugar-sweetened beverages (SSBs) (Secretaría de Gobernación, 2013) with a public health aim. The SSB tax was part of a comprehensive package of measures implemented by the Mexican government\(^6\) in an attempt to curb the staggering rates of overweight and obesity and type two diabetes — which currently

\(^6\) The legislative measures that have been passed to date include: (a) the regulation foods and beverages sold in schools (Secretaría de Educación Pública & Secretaría de Salud, 2010, 2014), (b) the regulation of advertisement of foods and non-alcoholic beverages during children’s television viewing time (Secretaría de Salud, 2014), and (3 & 4) two nation-wide taxes on nonessential energy-dense foods and sugar-SSBs (Secretaría de Gobernación, 2013), all of them effective 2014. While the two first measures are aimed at reducing children’s exposure to ultra-processed foods and beverages, the two taxes affect all consumers, including adults.
stand at 69 percent and 14 percent, respectively, in the adult population (Barquera et al., 2013; Shamah-Levy et al., 2017).

Two years into the SSB tax, in-store purchases of taxed SSBs decreased by 7.6 percent on average (Colchero et al., 2017). Nevertheless, little is known about how different population groups have reacted and adapted to the price increase resulting from the SSB tax. Critics of public health taxes posit that this type of measure has a higher effect on the elastic\textsuperscript{62} consumers and little to no behavioral effect on the inelastic consumers, such as citizens with obesity, targeted by the government (Abdukadirov & Marlow, 2012). In addition, it is possible that changes in purchases may have been partly motivated by an increased health awareness of the negative outcomes of SSB consumption (WHO, 2016), perhaps resulting from the pro-tax activities and debates that surrounded the implementation of the tax.

To be able to investigate in depth how consumption of taxed SSBs and interpersonal and intrapersonal determinants of beverage choice may have been modified in the context of the SSB tax in several groups of theoretical interest — parents, construction workers and indigenous peoples in Southern Mexico — we conducted a multi-case cross-sectional qualitative study that explored awareness and opinion of the

\textsuperscript{62} When the demand for a good is highly inelastic, consumers respond very little to changes in price. Thus, inelastic consumers can be said of those not responsive to price increases of a certain product. It this case it would be those habituated to consuming soda on a regular basis and/or considering themselves as “addicted” to it. Conversely, when the demand for a good is highly elastic, consumers make drastic changes to the quantity they demand in response to relatively small changes in price. In this case, the elastic consumers would be those who do not feel they are “addicted” to soda and/or that do not drink it on a regular basis.
tax, and taxed SSB-related beliefs, attitudes and practices in these three groups. The present study introduces and discusses the findings of the construction workers group.

We decided to study construction workers for several reasons. First, they are commonly considered as high consumers of carbonated SSBs (from now on referred as “soda”), yet their dietary practices have not been formally studied (even though this group represents a considerable number of the workforce). Second, we believed that soda drinking among construction workers was strongly connected to their work context, and that it was determined by factors such as gender, socio-economic status, and shared ideas and norms, to the point of having become an expression of social identity. Thus, we hypothesized that for this reason this group would be relatively irresponsive to price increases. Third, there is a dearth of studies of adult males’ health (and diet studies are rare), even though men’s health outcomes are worse than that of women.

To study construction workers’ soda consumption in the context of the SSB tax we relied on the theoretical framework of the Reasoned Action Approach (Fishbein & Ajzen, 2010), which considers individual, interpersonal and environmental determinants of behavior, and has been extensively used to explicate dietary behaviors (including SSB consumption in adults) (Zoellner, Estabrooks, et al., 2012; Zoellner, Krzeski, et al., 2012). The use of a qualitative methodology allowed us to explore individuals’ practices in the context where these practices are generated, considering the multiple structural influences on behavior.

**Obesity, type 2 diabetes, and soda consumption in Mexico.**
Although obesity and chronic diseases multietiological in nature, evidence shows that consumption of SSBs is an important risk factor for obesity, type 2 diabetes, and coronary heart disease (Greenwood et al., 2014; Hu, 2013; Huang et al., 2014; Imamura et al., 2015; Malik et al., 2010; Malik et al., 2006; Te Morenga et al., 2013; Wang et al., 2015). Carbonated industrialized SSBs in particular are widely consumed by Mexicans (Stern et al., 2014), and in a higher amount by males, constituting the main source of added sugars in the adults’ diets (Rivera et al., 2016; Sanchez-Pimienta et al., 2016).

However, obesity and type 2 diabetes in Mexico are relatively a recent phenomenon; disease rates started to soar in the 1980s and 1990s (Barquera et al., 2007; Rivera et al., 2002; Rivera et al., 2004) concomitantly with the introduction of more ultra-processed foods and beverages (non-essential energy-dense and nutrient poor food products) into much of the Mexican food market (Clark et al., 2012), largely as a result of free-trade agreements and direct foreign investment (which increased availability and lowered prices) (Hawkes, 2005; Popkin et al., 2012; Rivera et al., 2002). Modern food distribution networks (supermarkets, convenience stores) (Popkin et al., 2012) and the increased purchasing power of the growing populations (Hawkes, 2005), also played a role.

63 They contribute 69% of added sugars and 9.8% of total energy intake (Rivera et al., 2016; Sanchez-Pimienta et al., 2016).
64 It is worth noting that between 2000 and 2016 the prevalence of overweight increased 1.1% and obesity increased 42.8% (Shamah-Levy et al., 2017).
But even before that, consumption of sodas was already part of Mexican culture (Blanding, 2010). Sodas (Coca-Cola in particular) appeared in the Mexican market in 1926, first a rarity only attainable by high classes. Coca-Cola become relatively regularly drunk in Mexico in the 1950s driven by marketing and promotion campaigns (Blanding, 2010). A few decades later Coca-Cola had become ubiquitously available, thus soda and its meanings percolated downward through Mexican society reaching the lower classes. A study in the 1970s found that white bread and soda (Coca-Cola) were the food items Mexican peasants bought “as soon as they could afford them — and sometimes even when they couldn’t.” (Global Reach: The Power of the Multinational Corporations by R.J. Barnet, R.E. Müller, reported in Blanding, 2010, page 156). The NAFTA and more aggressive advertising further entrenched the presence of sodas in the Mexican’s diets (Clark et al., 2012) and minds (Blanding, 2010).

While the working class’ consumption of soda may have originated as a class-attainment goal made possible by government policy and globalization processes, it was transformed into a dietary necessity, as people supplemented their bread, and/or tortillas and frijoles with cheap sugar calories in the form of soda. This happened in very much the same way as sugar became a “staple of the working classes” in England in the 18th and 19th centuries (Mintz, 1985).
Mexican construction workers as the object of this study

Description

There are about 2.4 million construction workers (4.8 percent of the total working population), the vast majority of which are men (INEGI, 2014). This group is characterized for having low education (average, 1st grade of secondary school), low access to welfare services (86 percent), no access to health services (89 percent), and working without a contract (88 percent), with an average hourly wage of MXN 26.4 (USD 1.41)65 (INEGI, 2014). In 2013, it was estimated that 21 percent of this work force lived in poor conditions (e.g., houses with tin roofs) (INEGI, 2014). Workers in the construction industry have one of the highest occupational risks (injury and accidents) (Sanchez-Roman et al., 2006).

Men’s health and research gap.

Overall, there is little research about men’s health even though men have worse health outcomes and higher mortality rates than women, partly due to greater levels of occupational exposure to hazards, and also to health behavior paradigms related to masculinity (Baker et al., 2014) — that make them less aware of health risks, less perceptive of risks, and less likely to visit a doctor and/or to report a disease. Further, deeply embedded in the politics of gender and health is the assumption that men are

65 MXN to USD exchange rate from 11 March 2018. By comparison, the price of a 2-liter Coke as reported in the study was about MXN 22-24.
responsible for their ill health (Broom & Tovey, 2009). In spite of this, most countries lack male-centered strategies. Health policy, public health campaigns and the focus of community health organizations are typically focused on maternal and child health. Addressing men, and construction workers in particular, is not only a matter of equity, but also a matter of economics, because they have an increased risk of sick leave, disability, and decreased productivity results from (a combination of) risk factors such as high physical workload (and musculoskeletal disorders), obesity, and diet-related chronic diseases (Alavinia et al., 2009; Arndt et al., 2005; Claessen et al., 2009; Dong et al., 2011). Again, little is known about their health and diets in general.

Soda consumption among construction workers

It is believed that one of the professions most associated with soda consumption in Mexico is construction. However, to our knowledge, the diet and beverage patterns of this group have never been formally studied. Based on our own previous observations, journalistic pieces, and discussions with other researchers we believed that construction workers drank a high amount of soda as a quick energizer — it’s both a source of energy and an stimulant — to perform physically demanding work. Further, we hypothesized that soda consumption in work sites was probably part of the organizational culture to the point of having become a norm; therefore, we hypothesized that construction workers would be relatively inelastic consumers, not having modified their soda consumption in reaction to the SSB tax.
6.1.1 Study Aim and Research Questions

The aims of the construction workers study were to explore: (a) consumption of taxed SSBs in the construction work context and psychosocial determinants of consumption (beverage-related beliefs, attitudes, social norms, intention, perceived behavioral control, self-identity), (b) whether consumption of taxed SSBs had changed, and why and how, (c) whether the SSB tax in particular influenced consumption of taxed SSBs and/or psychosocial determinants of consumption.

1. What has been the participants’ consumption of taxed SSBs patterns from the time before the SSB tax to the present?

2. How do participants describe their motivation (e.g., beliefs, attitudes, social norms) for consuming taxed SSBs?

3. In what ways, if any, do participants intend to modify their consumption of taxed SSBs? What elements facilitate or impede their ability to change?

4. What has been the participants’ experience of the SSB tax and of other concurrent initiatives aimed at decreasing SSB consumption?

5. In what ways, if any, have participants’ consumption of SSBs reportedly changed in the context of the SSB tax and why?

6. How do participants describe the elements that may have influenced their beliefs and attitudes toward SSBs since the implementation of the tax?
6.1.2 Theoretical framework

Because the focus of our study was on exploring psychosocial determinants of SSBs consumption and child-feeding in addition to potential modification of these in the context of the tax, our theoretical framework was primarily based on the Fishbein & Ajzen’s Reasoned Action Approach (RAA) (2010), an extension of the Theory of Planned Behavior. The RAA is a comprehensive theory because it includes many of the key constructs that most health behavior change theories share. In the RAA, intentions, skills and abilities, perceived behavioral control, and environmental factors are seen as the immediate determinants of behavior, and all contribute to SSB consumption. Intention is influenced by attitudes towards the behavior (which in turn are influenced by behavioral beliefs and outcome expectations), social norms (influenced by what significant others do and think, expectations by other of what you will do, and motivations to comply with those expectations), and perceived control (which signifies the beliefs about the control exerted over the behavior and the perceived power a person seems to have). The RAA model shows that there are many background influences, such as age, socioeconomic status, past behavior (habit/custom), and media exposure, which may influence underlying beliefs. This theory allowed us to determine and explore relevant theoretical constructs that contribute to current SSB (or change in) consumption, within the social and cultural contexts in which they originate.

In addition, we relied on the hyperbolic or future discounting concept (discounting a future consequence or reward over an immediate one) from behavioral economics theory (Roberto & Kawachi, 2015) to explain why participants continue
consuming SSBs in spite of knowing and/or suffering the negative health effects of a high SSB consumption.

6.2. Methods

6.2.1 Research design and participants

Our study was conducted in three construction sites in Cuernavaca, the capital city of the Morelos State in Mexico — Cuernavaca has a warm stable climate all year long. The first site was the Nursing School of the Autonomous University of the State of Morelos (Universidad Autónoma del Estado de Morelos; UAEM) where new classrooms were being built. The second work site was located in Huitzilac, about 20 kilometers away from the center of Cuernavaca; workers were building water cisterns in houses as part of a government program. The third one was the Plaza Comercial Forum (a shopping mall in Cuernavaca) to the south of the city; where they were building a playground and planters for plants). In the first site, work was conducted indoors, in the second and third workers were outdoors. Participants in the first and second sites were working under the same foreman and lived with their families, participants in the third site worked under a different foreman and lived all together.

Pooling participants from the three construction sites, 10 in-depth semi-structured interviews and 4 focus groups (with a total of 20 participants) were conducted using a convenience sample of construction workers. This number of interviews and focus groups seemed adequate to achieve saturation of responses based on other qualitative studies of dietary practices (Bunting et al., 2013; Eli et al., 2017). Participants were recruited face-to-face at the construction sites; permission to access the sites and talk to the construction
workers had been previously sought from the contractor and/or foreman. To be eligible to participate they were required to be 18 years or older, belong to a low socio-economic class defined as level D and D+66 (as assessed with the AMAI NSE 8x7), and to have worked in that, or a similar kind of job, since at least six months before the implementation of the tax (i.e., July 2013).

The study was approved by the three Institutional Review Boards (the Ethics in Research Committee, the Research Committee, and the Biosafety Committee; project ID: 1484) at the Mexican INSP and by the Institutional Review Boards in Teachers College Columbia University.

6.2.2 Data Collection

Both in-depth interviews and focus groups were conducted. The purpose of the interviews was to explore the history of participants’ SSB consumption, as well as their beliefs, attitudes, perceived behavioral control, social norms, and intention to change in relation to SSB consumption. According to Yin (2009), interviews are one of the most important sources of information in a case study as they focus directly on case study topics and provide perceived causal inferences and explanation. The purpose of the focus

66 According to the AMAI rule, the D + and D categories are the second and third groups with the lowest quality of life (category E is the first) (AMAI, 2017). Individuals in Category D live in a house that lacks basic services and amenities (e.g., cooking stove, toilet, shower). It is the largest group and currently represents 31.8% of households in the country and 23.8 percent of households in cities with more than 100 thousand inhabitants. The D + category is characterized by living in houses with minimum sanitary infrastructure. It represents 19.0 percent of households in the country and 20.2 percent of households in cities with more than 100 thousand inhabitants.
groups was to explore the collective views and social norms (Gill et al., 2008) regarding SSB drinking in the work context. They provided us with an opportunity to explain the statistical data collected in a previous nation-wide survey and to seek clarification of information collected through the sub-sequent in-depth interviews.

H. Guillén (with a PhD in anthropology) conducted the fieldwork, including the interviews and focus groups, between June-July 2017. Two focus groups were conducted after working hours and two during the workers’ lunch breaks. Four interviews were conducted during the lunch breaks and six during working hours upon approval by the contractor/foreman and in agreement with participants as to not infringe on their quality of work.

Oral consent was obtained (and audio recorded) from all participants. The interviews and focus groups were audio recorded and professionally transcribed verbatim. The names of the participants have been changed to protect their identity and confidentiality.

No incentives were given. The interview and focus group guides (see Appendices XII and XIII) were structured in four sections: 1) current consumption and reasons for consumption, 2) changes in practices, 3) health beliefs and attitudes, and 4) the SSB tax itself.
To elicit information about a wide variety of beverages, we used cards with images of 18 beverages\(^6\) (sweetened, artificially sweetened and unsweetened) representative of different beverages categories; these were identified during supermarket trips and discussions with INSP colleagues. Participants were asked to sort the cards according to their own criterion in order to identify meanings and practices associated with each one. On a second round, participants were asked to sort the cards according to the following criterion: (a) good to drink on a daily basis, (b) good to drink a few times a week, (c) should be avoided.

In addition, field notes were made which included descriptions of foods and beverages consumed during lunch breaks, availability of water (tap, bottled) at construction sites, and availability of food stands or corner stores near the site. Notes were also made after each interview and focus group. These notes were utilized for corroborating the researchers’ accuracy in data collection and to augment the aforementioned data with the completeness these field notes provided.

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\(^6\) The images are the following: 1) 600 ml plastic bottle of regular Coca-Cola, 2) 600 ml plastic bottle of Coca-Cola Sin Azúcar, 3) 600 ml plastic bottle of Coca-Cola Light, 4) 600 ml plastic bottle of Coca-Cola Stevia, 5) 600 ml plastic bottle of Orange Fanta, 6) Tang sugar-sweetened powder sachets, 7) tetra brick of industrialized sugar-sweetened Jumex mango juice, 8) tetra pack of industrialized sugar-sweetened Boing strawberry juice, 9) Vive 100, sugar-sweetened energy drink, 10) Gatorade, sugar-sweetened sports drink, 11) Be Light, industrialized sugar-sweetened water, 12) Fonafont Levité, industrialized sugar-sweetened water, 13) Industrialized sugar-sweetened chocolate milk, 14) glass of orange juice, 15) glass of water, 16) glass of lime cool water, 17) milk, 18) *atole* (traditional Mexican hot corn- and masa-based beverage with added sugar).
### Table 6.1

Data collection techniques, sample sizes, and information collected. Construction workers in three construction sites. Morelos (Mexico).

<table>
<thead>
<tr>
<th>Method/ Instrument and Number (n)</th>
<th>Description / Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-demographic questionnaire (n=30)</td>
<td>Socio-demographic, presence of chronic illness (of self or relative) and other relevant information were collected before the start of the interviews and focus groups.</td>
</tr>
<tr>
<td>In-depth interviews with a semi-structured guide (n=10)</td>
<td>The aims were to explore: (a) Consumption of taxed SSBs in the construction work context and psychosocial determinants of consumption (beverage-related beliefs, attitudes, social norms, intention, perceived behavioral control, self-identity), (b) Whether consumption of taxed SSBs had changed, and why and how, (c) Whether the SSB tax in particular influenced consumption of taxed SSBs and/or psychosocial determinants of consumption.</td>
</tr>
</tbody>
</table>

To address these aims we examined the following in detail:

- Qualitative assessment of construction workers’ consumption of a wide variety of sweetened and unsweetened beverages\(^ {68}\) (taxed and untaxed) in different scenarios and locations (at work, at home, during celebrations), times of day, and combinations of beverages with food. In addition, we explored consumption based on: (a) time periods: consumption throughout life in addition to before and after the tax, and (b) seasons: summer versus winter (hot seasons versus cold seasons).
- Reported change in consumption of taxed SSBs and reason for change.
- Psychosocial determinants of consumption of taxed SSBs.
- Liking of SSBs.
- Personal and social norms in relation to SSB consumption.
- Perceived control over own beverage consumption.
- Intention to change consumption of taxed SSBs and water.

---

\(^{68}\) Beverages asked about included the following categories: (a) water (plain, tap, bottled, etc.), (b) carbonated industrialized SSBs (Coca-Cola, Pepsi, Sprite, and local brands of beverages such as Jarritos), (c) non-carbonated industrialized SSBs (industrialized juice, sport drinks, and energy drinks), (d) aguas frescas (homemade beverages with fruit, flowers, or seeds blended with sugar and water), (e) other homemade SSBs (coffee, tea, pozol), and (f) other beverages (e.g., homemade unsweetened natural juice).
<table>
<thead>
<tr>
<th>Method/ Instrument and Number (n)</th>
<th>Description / Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Perception of environmental determinants of beverage consumption including: beverage availability (at work, home, eating out, etc.), publicity, educational campaigns, and cost for different types of beverages (plain water, aguas frescas, other homemade SSBs, carbonated industrialized SSBs [soda] other industrialized SSBs, and other beverages). In addition, for plain water we explored perception of safety of home tap water.</td>
<td></td>
</tr>
<tr>
<td>• Awareness of the SSB tax, source of information about it, opinion about its likely impact, changes participants made as a result of the tax, potential reaction if the SSB tax were to increase.</td>
<td></td>
</tr>
</tbody>
</table>

Focus groups (n=4; 20 people in total)  
Focus groups centered on the same items as in the individual interviews but gave less emphasis to the individual history of beverage consumption and more to the social norms regarding SSB drinking.

Environmental observations  
As part of field work, observations of the environment around the construction sites (50 meter perimeter) were conducted to gather information about availability of different types of beverages, advertisements and promotions of SSBs, as well as about potential educational campaigns aimed at the reduction of SSBs.

### 6.2.3 Data analysis

**Interview and focus group data**

We analyzed qualitative data using a coding scheme primarily based on the Reasoned Action Approach (2010) and developed by the bilingual members of the research team (C. Álvarez-Sánchez, F. Théodore, and H. Guillén). The coding scheme was translated into English and discussed with the other members of the team (I. Contento and P. Koch).

C. Álvarez-Sánchez and H. Guillén read through initial transcripts and added to or modified some of the initial codes. We then applied this codebook to the next set of transcripts coded by two researchers and compared for accuracy and comprehensiveness.
H. Guillén then coded the entire data set in NVivo version 11 (QSR International, Doncaste, Victoria, Australia), a computer aided qualitative data analysis software program. The final coding scheme and the definitions (in Spanish and translated into English) can be seen in Appendix XV.

Data analysis was carried out in Spanish. Translation of the data into English was limited to selected quotes. Conducting the analysis in the original language is recommended to prevent misinterpretations of participants’ statements (Temple & Young, 2004; van Nes et al., 2010). Quotes were translated into English by C. Álvarez-Sánchez (who is a native Spanish speaker) and checked for accuracy by an independent bilingual researcher whose native language is English. Relevant quotes are presented in English and Spanish.

*Description of the coding scheme*

The coding scheme is organized in the following categories:

1. *Behaviors*, which include consumption of plain water, carbonated industrialized SSBs, non-carbonated industrialized SSBs, homemade *aguas frescas*, other homemade SSBs, and other beverages. (Each behavior has sub-codes for daily consumption, consumption during celebrations, consumption on the street, combination of beverages with food, consumption during cold and hot seasons, and expense.)

2. *Theoretical constructs from the Reasoned Action Approach*, including health beliefs, attitudes (cognitive and affective), personal norms, social norms, perceived behavioral control, barriers, intention, action plans, and
environmental factors. (In order to facilitate the analysis by type of beverage we included sub-codes for each beverage category within most of the theoretical constructs. We added the following sub-codes for the environmental determinants construct since it encompasses several practical aspects: educational campaigns, availability, advertisements, promotions, and cost.)

3. Additional relevant codes as determinants of behavior, based on the literature or emerging from the text: hyperbolic discounting, addiction, and vice.

4. Perceived changes in behavior in the past few years, sub-codes include: description of change, motivation for changing, breaking point, barriers and facilitators, and time from change.

5. The SSB tax, sub-codes include: noticing a price variation, spontaneously mentioning the tax, awareness of the tax, source of information, opinion about impact of the tax, and potential reaction if the SSB tax were increased to 20 percent.

Lastly, in order to evaluate potential changes or differences in theoretical constructs before and after the tax, we duplicated all codes for present time and past (time before the tax or approximately three and a half years before the interviews took place since that is when the tax had been implemented). The only exception was for codes relating to change in practices and the SSB tax.
6.3. Results

We conducted 10 in-depth semi-structured interviews and 4 focus groups (with 20 participants), for a total of 30 participants. The socio-demographic and other characteristics of participants are presented in Table 6.2.

Table 6.2
Socio-demographic and other characteristics of study participants. Construction workers, Morelos (Mexico).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total</th>
<th>Interviews</th>
<th>Focus Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of participants</td>
<td>30</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Age (mean and range)</td>
<td>31.5 (19-54)</td>
<td>32.7 (19-50)</td>
<td>30.9 (21-54)</td>
</tr>
<tr>
<td>Highest level of education attained</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>1 (3.3)</td>
<td>0</td>
<td>1 (5.0)</td>
</tr>
<tr>
<td>Some primary</td>
<td>7 (23.3)</td>
<td>4 (40.0)</td>
<td>3 (15.0)</td>
</tr>
<tr>
<td>Primary finished</td>
<td>6 (20.0)</td>
<td>2 (20.0)</td>
<td>4 (20.0)</td>
</tr>
<tr>
<td>Some secondary</td>
<td>5 (16.7)</td>
<td>1 (10.0)</td>
<td>4 (20.0)</td>
</tr>
<tr>
<td>Secondary finished</td>
<td>4 (13.3)</td>
<td>2 (20.0)</td>
<td>2 (10.0)</td>
</tr>
<tr>
<td>Some college</td>
<td>6 (20.0)</td>
<td>0</td>
<td>6 (30.0)</td>
</tr>
<tr>
<td>College finished</td>
<td>1 (3.3)</td>
<td>0</td>
<td>1 (5.0)</td>
</tr>
<tr>
<td>Self-reported presence of chronic disease***</td>
<td>17 (56.7)</td>
<td>7 (70.0)</td>
<td>10 (50.0)</td>
</tr>
<tr>
<td>Self</td>
<td>3 (10.0)</td>
<td>1 (10.0)</td>
<td>2 (10.0)</td>
</tr>
<tr>
<td>Type 2 diabetes</td>
<td>1 (3.3)</td>
<td>0</td>
<td>1 (5.0)</td>
</tr>
<tr>
<td>Kidney damage</td>
<td>2 (6.7)</td>
<td>0</td>
<td>2 (10.0)</td>
</tr>
<tr>
<td>Family member</td>
<td>15 (50.0)</td>
<td>6 (60.0)</td>
<td>8 (40.0)</td>
</tr>
<tr>
<td>Type 2 diabetes</td>
<td>12 (40.0)</td>
<td>5 (50.0)</td>
<td>7 (35.0)</td>
</tr>
<tr>
<td>Kidney damage</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>3 (10.0)</td>
<td>1 (10.0)</td>
<td>2 (10.0)</td>
</tr>
</tbody>
</table>

Notes.
All participants belong to a low-income level class.
* Percentages are calculated separately for total (based on 30 participants), interviews (based on 10 participants, and focus groups (based on 20 participants).
** At least one relative (parent, parent in law or sibling) with a chronic disease. Numbers do not add not add up because one participant reported being ill himself and having a relative that was ill.
6.3.1 Beverage-consumption and practices

General description of construction workers’ soda consumption during the workday

Based on the interviews and focus group discussions with construction workers, as well as observations made during lunch times, it was possible to infer that consumption of industrialized carbonated SSBs (from here on referred to as “soda”), particularly Coca-Cola and Fanta and to a lesser extent cheaper brands like Pepsi, Red Cola and Jarritos, during the work day is very high. We estimated that on average each participant consumed about 1.25 liters (42.3 ounces) of soda on a given workday.

However, the popular belief is that construction workers mostly drink soda while working, and people have associated soda consumption in construction sites with the idea that it gives workers the energy necessary to support their heavy workdays. But, according to the construction workers themselves, they mainly consume soda during breaks when they eat food, and not necessarily in order to quench thirst due to fatigue and sun exposure. Moreover, in these work situations, they drink water in quantities almost double that in which they drink soda.

69 The following acronyms were used in the quotations: (a) Spanish quotations: E, entrevistador; F, facilitador de grupo focal; A, albañil. (b) English quotations: I, interviewer; F, focus group facilitator; CW, construction worker. Numbers were used to identify workers within a given focus group; pseudonames were used to identify interview participants.

70 1.25 liters of Coca-Cola provide 132.5 grams of sugar and 530 Kcal. Source of information about sugar content in Coca-Cola: http://www.coca-cola.co.uk/drinks/coca-cola/coca-cola
Generally, participants started working between 6:00 and 8:00 am. Since it is so early, the majority of workers find it difficult to eat something for breakfast prior. If there are food stands or shops near the construction site they may have a coffee or another drink like *atole*[^71], accompanied by bread or a *tamal*[^72]. Otherwise, most of the time they do not eat anything until their first break, generally around 10:00 and 11:00 a.m. — breaks are established in agreement with the foreman and based on the progress made with the tasks that have been assigned to them. Drinking soda during meal breaks is very common, although there were two participants who reported preferring drinking water instead.

Soda is consumed in combination with a wide variety of salty foods and dishes, including bread, tacos, *tamales*, *tortas*[^73], eggs, beans, vegetables, chicken, beef, fried pork belly, and cheese. Some construction workers bring their own food from home, which they “ration out” to last throughout the workday (*Eso lo rindes para almorzar y comer*). Others buy food nearby, depending on what’s available in close proximity to the construction site. For the most part, there was a generalized rejection of eating food in combination with water, noting that food does not taste the same as when they consume it with soda. This sentiment was expressed in an interview with two construction workers to demonstrate this sentiment:

[^71]: An *atole* is a traditional Mexican hot corn- and masa-based beverage with added sugar.
[^72]: *Tamal* is a Mexican dish made of minced and seasoned meat packed in cornmeal dough, wrapped in corn husks or banana leaves, and steamed.
[^73]: Mexican tortas are a kind of sandwich with crusty bread. They are often are filled with ham, beef, chicken, egg, or avocado.
I.- And here, with tacos you have to have soda?
CW.- Soda, yes [we] want soda [with tacos] or let’s see what [we] want.
I.- And, for example, you couldn’t have water with tacos?
CW.- No, because I, I mean for me I feel like no, like I [can’t], not this, no.
CW2.- It doesn’t have taste, right?
CW.- Uhuh, the food doesn’t taste, doesn’t taste (right).
I.- With water?
CW.- After I eff around and I have finished eating, I have a soda and that’s it, after a while that’s when I drink a water so yeah, that would be logical.
I.- Uhuh, but so, water with food doesn’t work?
CW.- I mean, how could it, I mean depending on each person, because…
I.- And not any food?
CW.- No, no, no.
I.- So, it has to be [with Coke then]?
CW.- How can it not be, I mean yea, it doesn’t settle, it doesn’t settle.
E.- ¿Y ahí, con el taco tiene que ser el refresco?
A.- Refresco, sí quiere refresco o a ver que quiere.
E.- Y por ejemplo ¿No puede ser con agua el taco?
A.- No, porque yo, bueno para mí siento que no, como que no, no este no.
A2.- No sabe ¿No?
A.- ¡Ajá, no sabe la comida, no sabe la comida.
E.- Con el agua.
A.- Después que me chingue y acabé de comer y me tomo un refresco y ya, al rato ya me tomo una agua, pues ya, sería lógico.
E.- ¡Ajá, pero entonces ¿El agua para comer, no va?
A.- Pues como que no, Bueno, dependiendo de cada uno, porque…
E.- ¿Y ninguna comida?
A.- No, no, no.
E.- O sea tiene que ser.
A.- Como que no, ora si que, no asienta pues, no asienta (Ríen)
(Two Construction Workers, Interview 1, Morelos)

Also, certain cultural aspects are associated with soda consumption at meal times, in particular the combination of soda with fatty foods. Participants believed this has the effect of helping with digestion or belching. Some were quoted saying:

It kind of makes you burp, right? It’s like it makes the food go down, right?
Como que te hace eructar ¿no?, como te que baja el alimento ¿no?  
(Construction Worker, Focus Group 3, Morelos)

You know it. Our way of eating is, let's suppose that right now, they serve us a plate of carnitas\textsuperscript{74} that is super greasy. What goes with it? It comes with rice that also has grease. You will not get it down with a glass of water, they do not go together, it does not taste the same, I mean, and it leaves a bunch of fat in your mouth. So, what do you do? [Drink] A Coke.  

Tú lo sabes. Nuestra forma de comida es, vamos a suponer que tu ahorita, nos sirven un plato de carnitas que es grasoso, ¿con que va acompañado? Con arroz que también lleva grasa. No te lo vas a bajar con un vaso de agua, no te vas, o sea no te sabe lo mismo, o sea, y te queda ese buque de grasa en la boca. Entonces ¿Qué es lo que haces? Una coquita.  
(Eros, Construction Worker, Morelos)

The way in which construction workers organize themselves to buy and consume soda at work deserves a detailed explanation. We found a similar pattern in the three construction sites. Construction workers pool their money together to buy soda; this constitutes a norm, which stipulates that only those who have put in money in equal parts can have a drink. Based on the workers' discussions, there are not reprisals for those who do not want to participate, and their decisions are respected. On the occasions in which they do not bring food from home, they can contribute extra money to get food. Commonly, one person is picked to go and buy soda and food — this is almost always the youngest colleague or the one who has worked there the least amount of time. In the first and second sites (Huitzilac and university) construction workers bought soda in bodegas; whereas participants in the second site (the shopping mall) bought it in a supermarket.

\textsuperscript{74} Mexican dish similar to pulled pork, made with the heavily marbled cut of pork and often cooked in lard. It is typically served with chopped coriander leaves, diced onion, salsa, guacamole, tortillas, and refried beans.
inside the mall. The amount of soda purchased depends on the number of individuals who have “cooperated”. Usually, they purchase a 2-liter (67.6 ounces) soda bottle for every four or five workers\textsuperscript{75} at every break. When the number of individuals is six or greater, they buy two 2-liter bottles. However, all agreed that at most they only get drink only one or two glasses at each break. In the first two construction sites (Huitzilac and the university), workers had too breaks, thus, they drank about four glasses of soda during the workday. In the third site, they reported stopping only once, so their soda consumption during the workday was about two glasses.

Pooling resources saves workers time and money, “It’s cheaper when we share” ("Es más económico en coperacha") because as a group they buy larger bottles that have a lower cost per liter, whereas if they bought smaller bottles individually, the cost per liter would be higher. But the flip side is that they are not that aware of soda prices and that they lose track of how much they are spending individually or in total on soda.

\textit{Amount of money spent on soda drunk at work}

It is important to mention the perception construction workers have about the amount of money they spend on soda. The majority was surprised to realize, after doing the calculations with them, that on average they spend between 400 and 600 pesos a month (USD 22 to 32\textsuperscript{76}). Take Eduvijes:

\textendnote{75}{This was the average number of workers in the sites where this study was conducted.}
\textendnote{76}{By comparison, the average wages of a Mexican construction worker (based on a MXN 26.4 (USD 1.41) hourly wage estimate (INEGI, 2014) is about MXN 4,224 (USD 226.3) per month}
I.- And, who pays? Or how do you all do it to buy it?
CW.- Ah! We cooperate.
I.- More or less, how much does each person contribute?
CW.- So more or less, sometimes from 20 up to 30.
I.- And this, I mean that it would be ‘how much are you all spending each week?’ Per person?
CW.- Per person, I mean it’s that [we] don’t, here we [don’t]…
I.- If it’s 20 or 30… between 100 and 150 pesos per week on soda?
CW.- More or less.
E.- Y ahí ¿Quién paga? ¿O cómo le hacen para comprarla?
A.- ¡Ah! Cooperamos
E.- ¿Más o menos cuánto les toca poner?
A.- Pues más o menos, a veces de a 20 de a 30
E.- Y este, o sea que estarían ¿Cuánto estarían gastando a la semana?
¿Por persona?
A.- Por persona, pues es que no, ahí no nos..
E.- Sí, son 20 o 30 ¿De entre 100 y 150 pesos a la semana en refresco?
A.- Más o menos.
(Eduvijes, Construction Worker, Interview, Morelos)

Nevertheless, they largely agreed that they had never paid much attention to the cost of soda, because it does not seem to be very much given that they pay it day by day. This was the case for two interviewees:

I.- And how much does Coke cost you? the 2 liter one you say you buy.
CW.- Well, the simple truth is that I don’t know how much it costs.
I.- Well, more or less.
CW.- 22 pesos the 2 liter one, I think so.
I.- Then, how much does each one pay? 10 pesos? 11?
CW.- 11, right.
I.- So, for a week; it comes out to be more than 50 [pesos].
CW.- Yes. About 100 [pesos]
I.- And do you think that is a lot or a little, for soda?
CW.- Well, saying it like that, that's a lot, that’s a good amount. But little by little, no, it does not feel like much.

(calculated for a 40-hour work week, 20 days a month) or MXN 211.2 (USD 11.3) per day (calculated for a 8-hour shift). Thus, an expense of 400, 500, or 600 pesos a month would represent about 9.5%, 11.8%, and 14.2%, respectively of the monthly salary.
E.- Y ¿Cuánto les cuesta la Coca? esa que dicen que compran de 2 litros.
A.- Pues la mera verdad no, no sé cuánto viene valiendo.
E.- Pero más o menos.
A.- 22 pesos el de 2 litros, creo sí.
E.- Entonces, ¿De cuánto les toca a cada quién? ¿De 10 pesos? ¿11?
A.- 11, Ajá
E.- Entonces, entonces a la semana; viene siendo; más de 50
A.- Sí. Unos 100
E.- Y ¿Eso te parece mucho o poco, para refresco?
A.- Pues así diciéndolo así, así es mucho, en una cantidad. Pero de a poco no, no, no se siente que sea mucho.
(Construction Worker, Interview 6, Morelos)

Their opinions about this expense differed; some considered it excessive, stating that they would like to halve it and/or save that money to buy other things; as Eros explains below:

I.- And then, would you like to drink a different amount of soda?
CW.- Yes, always, economically it hits me ... because imagine, if I did not drink soda and I said ‘no, I'm not going to drink soda’. Those 300 pesos that I think I spend on soda every week, I would save them, well I would spend 100 pesos on waters [or] on different things. Well, 200 pesos in my pocket... imagine. How many weeks are there? 52 every year.
E.- Y entonces, ¿te gustaría tomar una cantidad diferente de refresco?
A.- Sí, siempre, económicamente me pega... porque imagínate, que no tomara refresco, que dijera ‘no, no voy a tomar refresco’. Esos 300 pesos que siento que me gasto a la semana en refresco, pues los voy a guardar, bueno voy a gastar 100 pesos en aguas en cosas diferentes. Bueno, 200 pesos a mi bolsa... imagínate ¿cuantas semanas son? Al año 52.
(Eros, Construction Worker, Morelos)

While others thought it was a normal or acceptable sum:

I.- Then, more or less, in a week, how much do you spend on refreshments?
CW.- Well, we pretty much don’t think about it because we go here to eat, and we go there to eat, we do not think about it.
I.- You do not take [that] into account.
CW. - No, we just go, we buy. Who knows if we spend 400, 500 pesos a week.
I.- Oh, so don’t take that into consideration.
CW. - Well, food is sacred because one has to eat in any case.
I.- Right, and for example making a calculation, 30 pesos for 5 [people] would be like 150 or a little bit more, wouldn’t it?
CW.- Right.
I.- Do you think that amount of soda a week is a lot or little?
CW.- Well, for me it’s normal.
E.- Entonces más o menos a la semana ¿Cuánto gastan en refresco?
A.- Pues casi ni le tomamos la cuenta porque luego que vamos para acá a comer, vamos para acá a comer, y no le tomamos na’ más.
E.- No le toman la cuenta.
A.- Nada más vamos, compramos. Quién sabe si nos chingamos a la semana 400, 500 pesos.
E.- Ajá, eso no, no lo toman en consideración.
A.- Pues la comida es sagrada porque uno tiene que comer de por sí.
E.- Ajá, y por ejemplo haciendo un estimado que eran 30 pesos por 5 serían como 150 un poquito más ¿No?
A.-Mjum.
E.- ¿Se les hace mucho o poco a la semana para refrescos?
A.- Pues, pues para mí, normal.
(Jair, Construction Worker, Morelos)

Water consumption at work

As mentioned earlier, contrary to popular belief, construction workers consume a large amount of water, which in some cases quadruples that of soda — at least this was the case with our study participants. Based on the participants’ reports and own observations average daily consumption per worker was estimated to be 4 liters (135.3 ounces).

In the three construction sites, workers reported to drink bottled water from 20-liter jugs (this was confirmed by the researcher’s observations), even though they had access to tap water. In two of the sites (the university site and Huitzilac) the water was brought by the foreman in a truck at the beginning of the day, together with the
construction materials. In the third site (the shopping mall), workers bought the water jug on their way to work (because they lived together).

Construction workers rarely drink water at meal breaks, which they associate with soda consumption. On the contrary, they drink it freely during the working day, and especially when they feel thirsty. The following dialogue among three workers gives some insight into this practice:

CW2.- We usually drink Coke when we are resting.
CW4.- During those five minutes of relaxation.
CW2.- During a break like that, or at lunch.
CW2.- Because Coke, not that way, (but) water always. For example, right now we finished our [water] jug. Coke is for when we are more or less resting, things like that.
I. – So, you buy a water jug.
CW2.- Uh-huh.
I.- The big one.
CW3.- We have it there all day, and every time we feel like drinking water we take it from there.
I.- Only that [water jug] for…?
CW3.- The eight of us.
CW3.- Yes, 20 liters.
I.- Ok, and you drink this [water] when you rest or when?
CW3.- No, when we rest we drink Coke.
CW2.- We drink water when we are thirsty.
CW3.- Uh-huh. Water, is for when you are working hard.
I.- So, soda is for breaks then.
CW2.- Yes, because, let’s say, we have Coke at 10 [am], at 1 [pm], and around this time at 4 [pm], and at 5 [pm] it’d only be those three Cokes; but water, [we drink it] after 10 [am], at 1 pm, [we drink] water, water, water every so often.
I.- And do you have set times for your breaks?
CW3.- Well yes, for example right now because we're done [for the day], right?
CW3.- But usually, it’s always the same, around 10 [am] “go to get Coke”.
CW4.- Uh-huh
CW2.- Yes, it's what I was telling you, at 10 [am], then at 1 [pm] because it’s lunch time.
CW3.- At 10 [am], at 1 [pm], at 4-5 [pm].
I.- And when Coke gets here, you stop [working]?
CW3.- For a short while.
CW2.- Yes at lunch time. (Three Construction Workers, Focus Group 1, Morelos).
A2.- Por lo regular la Coca a veces la tomamos cuando estamos descansando.
A4.- En los cinco minutos de relajación.
A2.- En un rato así, o en la comida.
A2.- Porque casi la Coca, así no, siempre el agua, por ejemplo, ahorita nuestro garrafón [de agua] ya nos los acabamos. La Coca es cuando más o menos estamos un poco descansando, cositas así.
E.- O sea, compran el garrafón.
A2.-Aja
E.-Ese grande.
A3.-Ese lo tenemos todo el día cada vez que tenemos ganas de tomar agua pues ahí la tomamos.
E.-¿Nada más es ese para los...?
A3.-Para los ocho.
A3.-Sí, 20 litros.
E.-Ok, y este, y esa la toman cuando descansan o cuando...
A3.-No, cuando descansamos nos echamos la Coca.
A2.-El agua, la tomamos cuando nos da sed.
A3.-Aja el agua pues es así cuando esta uno más “entrado”.
E.-O sea, que el refresco es más para el descanso.
A2.-Sí, porque digamos que la Coca es una a las 10, a la 1, y por decir como ahorita a las 4, a las 5 nada más serían esas tres Cocas; pero el agua, después de las 10 a la 1 pues el agua, el agua, el agua, el agua a cada ratito.
E.-¿Ya tienen marcados entonces estos tiempos de descanso?
A3.-Pues sí, bueno por ejemplo ahorita pues porque ya acabamos ¿no?
A3.-Pero más o menos por lo regular siempre es lo mismo de a las 10 “vete por la Coca”
A4.-Ajá
A2.-Sí es lo que le digo a las10, a la 1 porque pues es la hora de comida
A3.-A las 10, a la 1, a las 4-5.
E.-Y llega la Coca y ¿se detienen?
A3.-Un ratito sí.
A2.-Sí a la hora de comida.
(Three Construction Workers, Focus Group 1, Morelos).

77 20-Liter (676.3 ounces) water jug.
Soda consumption during the weekends/at home

From the construction workers’ testimonies, it seems that they also have a high soda consumption during the weekends (at home). However, this varies according to their living situation. Some workers live in Cuernavaca and return to their homes at the end of the working day, while others have their permanent residences in a different state and live in rented accommodation with other workers to reduce expenses.

These different living circumstances generate diverse situations regarding soda consumption during the weekends. For those who live at home, it seems like they drink more soda during the weekends than at work, given that for the most part their families do not consume soda during the week but mostly in the weekends as a special treat. Nevertheless, some workers reported how their wives nagged them to drink less. For those sharing accommodation, the impression is that they drink less in the weekends that they spend away from home because they are saving money to take home; whereas, they consume more in the weekends when they return to their homes (with fresh money to buy soda).

In addition, during the weekends, many individuals play soccer, but during those moments of exercise they prefer to drink plain water instead of soda.

Furthermore, in the words of those interviewed, soda is always present at celebrations. While depending on the type of celebration, other drinks may also be available, like aguas frescas at a kids’ party or alcoholic beverages (beer and tequila) when there are adults. But, soda cannot be absent. Family outings are another occasion where participants reported consuming SSBs.
Beverage consumption in different seasons

It seems like soda consumption is fairly constant throughout the year\(^{78}\). Nevertheless, during the winter months, it is common for them to drink more hot drinks like coffee. Whereas when it is hot and participants are working, both soda and water consumption are increased. However, for some, water is more effective in quenching thirst in comparison to soda (which is sweet), whereas others thought that water is not as refreshing as soda, which, when drunk ice-cold gives the sensation of regaining strength. These contradictory opinions are reflected in the quotations below:

I.- And there for example, when it's cold, what do you prefer to drink?
CW.- A coffee.
I.- And in the hot season. Why more Coke?
CW.- Because the heat is pretty strong, water does not quench it [thirst].
I.- Water does not quench the heat?
CW.- No. Coke, because it’s cold, it relaxes you.
E.- Y ahí por ejemplo, cuando hace frío ¿Qué prefieres tomar?
A.- Un cafecito
E.- Y en temporada de calor ¿Por qué más Coca?
A.- Por la calor que ta' bien fuerte, el agua no la calma.
E.- ¿El agua no calma el calor?
A.- No. La Coca pues por lo frío como que te tranquiliza.
(Interview 4, Construction Worker, Morelos)

CW3.- We as construction workers drink a lot of water, but when it’s very hot, when it is extremely hot, even if it’s [soda] cold, the soda does not feel good, on the other hand, water feels good, but it does not quench your thirst and you keep drinking water and water and water, because the heat is strong. But if you are cool, you don’t even drink water, only a soda.

\(^{78}\) Nevertheless, it should be noted that for the most part Cuernavaca has a mild-hot climate, and that the temperatures do not drop much during the winter months.
And, do you drink the same amount of soda or water depending on whether it is cold or hot?

CW.- Well, I think we drink more water when it’s hot. Because soda does not quench your thirst, and then you drink more water and when it is cold sometimes we drink neither water nor soda.

E.- Y por ejemplo ¿Consumes la misma cantidad de refresco o de agua dependiendo de si hace frío o si hace calor?

A.- Pues bueno, yo digo que pues cuando hace calor tomamos más agua. Porque pues, el refresco no te quita la sed, y pues toma uno más agua y cuando esta frío a veces no, ni tomamos ni agua ni refresco.

(Construction Worker, Focus Group 3, Morelos)

6.3.2 Psychosocial Determinants of Consumption

Beliefs about expected health outcomes.

Illnesses associated with soda consumption

Beliefs about the health consequences of high soda consumption seemed to arise from personal experience or the experience of a relative, and from information learning through formal (professional health providers, TV news, documentaries, news, radio) or informal channels (Facebook, discussions with relatives or friends) channels.

The illnesses most often associated with soda consumption was diabetes, referred to as the “enfermedad del azúcar” (sugar disease). For many, it was considered a serious disease (la diabetes es una las muertes más encabronadas, “diabetes is one of the worst deaths”). The second most frequently mentioned condition was kidney pain/damage,
referred to as “mal de orina” (“problems urinating”), which several participants reported having or suffering from at least once, as one of the interviewees commented:

I hope this won’t offend you, but when a man drinks a lot of soda you pee yellow and the smell is very strong. I mean, basically, because your kidney feels that it does not filter everything completely, no it does not filter it completely, I do not know... The truth, when I see that and when I go to the bathroom and I pee I tell myself ‘No, dude, you already know that [it’s] time to quit the fucking Coke, dude’. And for two days it’s like I want to change but then I fall back into it.

Vaya ofender esto pero, uno como hombre cuando toma mucho refresco orinas amarillo y el olor es fuerte. O sea, prácticamente porque tu riñón siento que no lo filtra todo completamente no, no lo filtra completamente, no sé... La verdad, cuando veo eso y cuando voy al baño y digo ‘No, ya wey ya sabes que chingue su madre la Coca wey ya’. Y dos días como que quiero cambiar y caes a la misma.

(Eros, Construction Worker, Interview, Morelos)

Other conditions associated with soda were high blood pressure, obesity, cardiovascular disease, osteoporosis, stained teeth, and anxiety disorder.

For the most part, participants believed that the negative health effects of soda were caused by the sugar it contains, and that they were proportional to the frequency and quantities consumed. Drinking “a lot of” soda (e.g., 2 liters [67.6 ounces] a day) was considered to be damaging, but drinking it in “moderation” (“Don’t eat more than the [recommended] daily amounts, the serving sizes!, “No pasarse de ahí, de las cantidades, ¡porciones! al día”; “I don’t think it’s harmful to have one [glass] a day”, “No creo que sea malo tomar uno al día”) was deemed adequate. Based on participants’ explanations and reported practices, we concluded they did not seem to really know what was the daily maximum recommended limit of soda and the recommended water intake. Nevertheless, it seems like participants do not reflect on their soda consumption. This aspect was not
only evident when they were asked to report on the amount of soda and water they drink, but also it seems like they have never even questioned it or thought about it.

Well, we are not going to measure how much soda and water [you drink...], because we are not aware of these things or because we like it [soda] too much.

Porque uno no va a medir el refresco y el agua [...] [No tomo menos refresco] porque pues, uno no tiene conciencia de las cosas o de que le gusta demasiado.

(Construction Worker, Interview 2, Morelos)

Further, some participants also expressed a belief that the body needs the energy that sugar provides. One of the interviewees verbalized this in the following way:

[...] maybe soda does not make you ill, but you also have to drink something sweet so that your sugar [level] is balanced out, that is, neither low nor high. Then, maybe it is a question of ‘no, nothing happens if you drink a glass of soda’.

[...]a lo mejor no te hace mal el refresco, pero también hay que tomar algo dulce para que el azúcar se vaya compensando, o sea no esté ni bajo ni alto. Entonces, a lo mejor es la cuestión de que a ver ‘no pues no le pasa nada con que se tome un vaso de refresco’.

(Eduvijes, Construction Worker, Interview, Morelos)

The only positive outcomes associated with soda consumption were that it gives them energy (‘Brings you back to life’), and motivates you to work more. “Soda is pretty much our fuel to work” (“El refresco es casi nuestro gas para trabajar”).

Beliefs in relation to water and soda consumption

In addition, participants expressed a set of assumptions about combining soda with water. On the one hand, it is generally accepted that consuming water with or after soda offsets the damage of the sweet beverage, arguing that water helps the body to dilute the sugars, thus lessening the damage on bodily systems. As this participant explained:
I.- So you mean that if you drink a lot of water, or more water than Coke, it balances it out? Or?
CW4.- Well, not exactly because the body takes a long time to process sugar, I think. Right?
CW2.- Yes.
CW4.- But at least like that.
CW1.- It decreases it.
CW4.- It decreases a bit I think.
CW3.- It dissolves it. Right?
CW4.- This is what can damage your kidneys or I do not know, I mean, the liquid is constantly going in and out, although sugar does not come out completely. Right? Well, this is what I think.
E.- O sea, que si tomas mucha agua, o más agua que la que consumes de Coca ¿Se equilibra? ¿O?
A4.- Pues no exactamente porque pues la azúcar tarda mucho en procesarlas el cuerpo yo creo ¿No?
A2.- Sí.
A4.- Pero por lo menos así.
A1.- Disminuye.
A4.- Disminuye un poco digamos.
A3.- Se va deshaciendo ¿No?
A4.- Este en el aspecto de que pueda dañar al riñón o no sé, o sea constantemente entra el líquido y vuelve a salir pues, aunque no totalmente el azúcar pues ¿No? Pero yo pienso pues así.
(Focus Group 3, Morelos)

On the other, some individuals thought that neither water nor soda on their own are good for the body, as even plain water (alone and or in excess) could be harmful, as these focus group participants discussed:

CW3.- [...] people have marked alcohol, drugs, and tobacco, as a bad thing, right? But in reality there are other things that are as bad...
CW1.- Maybe even water.
CW3.- Well, yes, anything in excess.
I.- Could water also hurt you?
CW3.- In excess.
I.- Why do you think this would happen?
CW2.- What?
I.- Where did you hear that? How or where did you hear it?
CW1.- You are not going to drink [water] just to drink it, you drink because you are thirsty. Right?
I.- Right.
When talking about ingredients in sugary beverages, participants invariably mentioned sugar. However, they largely believed that all types of soda, the sweetened (regular) and the artificially sweetened (light, and Zero) versions, are the same, or even that artificially sweetened products could turn out to be more damaging. Some could not even believe that the ingredients in these products could be changed or altered: “How do they take out the sugar or how do they take out the calories or how? So that, that I don’t know, they say that but in reality I feel that they’re the same, right?” (‘¿Cómo le quitan la azúcar o como le quitan las calorías o cómo? Pues eso, eso na’ más lo dicen ahí pero en realidad yo siento que son iguales ¿No?’).
In the same way, the most constructions workers expressed confusion with respect to the other ingredients that these products, particularly Coca-Cola, contain, principally those participants who expressed an “impossibility” to stop drinking them and those who classified them as “drugs” or “chemicals”. This overall uncertainty is also fed by the secrecy around the Coca-Cola recipe and the participants’ collective imagination, as expressed by this participant below:

This is what one wonders ‘Why do we drink so much Coke?’ And many people say ‘Well, it’s because Coke contains a drug, that’s why you cannot stop [drinking] it’. But we really do not know what it contains. Right? Many say that in the Coke factory there is blood, I do not know what. Right? That they prepare it with human blood and whatever, that is... what people say but we really do not know. Why? Sometimes I would also like to know what else Coke contains, because nothing I am not the only one [who would like to know what it contains], I feel that it is the majority of Mexicans.

Es lo que también uno dice “¿Por qué uno toma mucha Coca?”. Y mucha gente dice “No, pues que la Coca trae una droga, que por eso uno no la puede dejar” pero realmente no sabemos qué es lo que traiga ¿No? Muchos dicen que la fábrica de Coca que hay sangre que no sé qué ¿No? que la preparan con sangre humana y que no sé, o sea son... lo que la gente cuenta pero realmente no sabemos ¿Por qué? Yo también quisiera a veces saber qué es lo que contiene la Coca, porque no nada más soy yo el único [que le gustaría saber que contiene], si no yo siento que es la mayoría de los mexicanos.

(Patricio, Construction Worker, Interview, Morelos)

Nevertheless, even though participants recognized the damaging potential of soda, many believed that they negative health outcomes are not only due to those beverages, but the results of their combination with other unhealthy products, such as chips and cookies:

CW3.- ... too much of anything can be harmful, right?
CW1.- I think that we drink Coke more. And well, Coke has sugar, but I think that chips, cookies and all of that also have an influence. I mean, there are things that raise your cholesterol, there are things that [raise]
your sugar and this and that and salt and the body then, all of these affect you, right?

A3.- ...todo con exceso, hace mal ¿No?

A1.- Yo creo que bueno en este caso, pues tomamos más la Coca. Y bueno la Coca digamos porque es azucarada, pero igual todo eso de que las papas, las galletas, yo creo que también van influyendo pues tanto. Por decir, hay cosas que en subir nuestro colesterol hay cosas que en la azúcar y así y en la sal y el cuerpo pues, y pues todo va afectando ¿No?

(Two Construction Workers, Focus Group 3, Morelos)

“Addiction” and “Vice”.

One of the recurring aspects in discussions with the construction workers was the association of soda drinking with “addiction” and “vice” 79, which served as a justification of not only their consumption habits, but also of the impossibility of changing them, including during “adverse” moments such as a price increase or the presence of an illness (their own or that of a loved one).

In order to explain soda’s “addictive” character, participants continually compared it to alcoholic beverages and tobacco. Some of the most frequently used expressions reflect those aspects, such as the sensation of satisfaction, not only in terms of taste but also psychologically, with or without a bodily necessity. For example:

It’s something like…that we’re addicted, right? Just like that, like those who have to take a bump [of cocaine or marihuana], right? In the same way we have to drink Coke in the morning, right?

79 Participants constantly referred to the habit of soda drinking as an “addiction” and sometimes as a “vice”; the two terms were used interchangeably. However, while these terms they are related, they have different connotations, therefore, they were coded separately. “Addiction” belongs to the field of health/psychiatry, while “vice” has a religious connotation.
Algo así como, que estamos como adictos ¿No? Así como aquel que se tiene que echarse su toque\(^80\) ¿No? Entonces pues nos tenemos que tomar la Coca en la mañana ¿No?
(Constructor Worker, Focus Group 3, Morelos)

It’s a drug like tobacco.
*Es una droga como el tabaco.*
(Eros, Construction Worker, Interview, Morelos)

People are addicted to Coke. If they don’t drink a Coke, they aren’t happy.
*La gente están ya adictos la Coca. Mientras no tomen una Coca no están contentos.*
(Constructor Worker, Interview 1, Morelos)

I’m saying—your body asks for something that isn’t water, it’s Coke. Why? Becase it’s like, for example, an alcoholic.
*Porque o sea yo digo que el organismo te está pidiendo algo que no es el agua, es la Coca ¿Por qué? Porque es como por ejemplo, un alcohólico.*
(Constructor Worker, Interview 2, Morelos)

I.- Well, if you know the effects that this [beverage] has. Why keep drinking it?
*CW1.*- Well, like Toño just said, it’s like an…
*CW3.*- It’s like an addiction …
*CW1.*- Uh-huh, like a vice already, that already…
*CW4.*- It’s already a vice, an addiction
*CW1.*- Uh-huh, it’s like if the body already got used to it. Right?
*CW5.*- I, I also think that it’s the mind. Right? It gives you the idea ‘we are going to eat’…‘well, no, let’s have soda.’

*E.- Ahora, si conocen como los efectos que tiene ¿Por qué seguirlo tomando?*

*A1.*-Pues es como acaba de mencionar Toño es como un…
*A3.*-Es como adicción…
*A1.*-Ajá, como un vicio pues ya que ya…
*A4.*-Ya es un vicio, una adicción
*A1.*-Pues ya el cuerpo como que ya se acostumbró ¿No? a..

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\(^80\) The expression “echarse un toque” refers to snorting cocaine or smoking marihuana.
The perception of the impossibility of quitting soda, justified based on this “addiction,” is so strong or powerful — not only present in the imagery of this group but also in Mexican society — that one of the interviewees noted, in an ironic tone, that a possible solution would be to create a denomination of “Coca Cola's Anonymous,” an allusion to the association Alcoholics Anonymous, that has the objective of helping people to overcome alcoholism, or in this case addition to Coke:

I.- Have you always drunk the same amount of water and soda? Or has it changed a bit the way you drink?
CW.- Well, there have been times where it has changed, sometimes there has been a change, sometimes somebody says ‘we shouldn’t drink Coke’ ‘okay, let’s not drink Coke’.
I.- Right.
CW.- But if we do not drink Coke, we buy a flavored soda.
I.- Okay.
CW.- So, we, we, we are [babbling] because any other type of soda is the same thing, right? It’s not the same because many [people] say that Coke contains a drug, that's why the Mexican cannot quit it. The, we might stop buying Coke but we are not going to, for example, I feel that we can’t go a full week without drinking Coke, we don’t last. Why? Because we are buying a different type of soda or there is already someone who wants to buy it. So no, no.
E.- La manera en la que han tomado, tanto agua como refresco ¿Siempre ha sido así? ¿O ha cambiado un poco la forma en la que toman?
A.- Pues hay a veces que sí ha cambiado, en forma de que alguien a veces [dice] ‘pues ya no hay que tomar Coca’ ‘órale pues ya no tomamos Coca’
E.- Ajá
A.- Pero si no tomamos Coca, compramos uno [refresco] de sabor.
E.- Ok
A.- O sea que, que, que estamos [balbucea] porque cualquier otro refresco es lo mismo ¿No? no es lo mismo porque muchos dicen que la Coca trae una droga, que por eso el mexicano no la deja, ajá. Entonces, a lo mejor si dejamos de comprar la Coca pero no vamos a, por ejemplo, que, yo siento que no duramos una semana sin tomar Coca, o
sea no duramos ¿Por qué? Porque estamos comprando de otro refresco o ya, ya hay alguien que quiere comprarla. O sea no, no.
(Construction Worker, Focus Group 2, Morelos)

Attitudes.

Affective attitudes based on feelings (taste & sensations).

Undoubtedly, all participants liked soda, in particular Coca-Cola. Construction workers described their liking for and desire to drink Coke with expressions such as:

It’s like you come back to life; you are more motivated to work.
Y vuelve uno como que, a la vida; te motivas más a chambear.

When you have a soda, you feel like you are happy afterwards.
Pues cuando te tomas un refresco, te sientes que te contentas pues.

This group employed diverse arguments with the object of explaining, or justifying, their soda consumption. Among these is a series of associations that intertwine taste and sensations with social norms. One of the most mentioned aspects refers to the sugar these products contain, giving Coke the sweet flavor participants crave. Moreover, when soda is drunk cold, which is culturally conceptualized as more appropriate, it can be attributed to making a person feel cooler or calmer, including taking away sensations of hunger. This is seen as particularly positive in the work context given the demands of the job. For these various reasons, participants rationalize wanting to drink soda.

The majority of participants reported preferring Coca-Cola to other brands of cola drinks, because in their opinion it had the perfect balance of sweetness and fizziness. However, for many, the final choice is determined by price, as Coke is the most expensive of all soda brands. Alternative (cheaper) cola drinks include Red Cola, Jarritos Mexican Cola, and Pepsi, among others). A conversation among construction workers in
one of the focus groups illustrates participants’ preference of Coke over other brands given this economic constraint:

I. What type of beverages do you consume?  
CW1.- The one that is on the table, Coke.  
CW5.- Coke.  
CW2.- Beverages like that, with gas.  
I.- Only Coca, or something else?  
CW1.- Lately, even Red Cola.  
CW2.- Pepsi, we’ve even had Red Cola.  
CW1.- It’s the cheapest.  
I.- Is there a big difference between Coke and the Red Cola?  
CW2.- Yes.  
CW4.- The taste.  
CW1.- The price.  
CW4.- Red Cola has more sugar.  
CW1.- [And] it feels more fizzy.  
I.- Which one do you prefer?  
ALL RESPOND: Coke.  
I.- So, would you prefer to pay ...  
CW1.- More.  
I.- ... more in order to drink Coke...?  
CW5.- Yes, I would.  
CW2.- Yes.  
CW1.- But we don’t do it. We do not pay more, I tell you, we buy Red Cola more than anything for the price. But we like Coke better.  
CW3.- Coke, yeah, Coke.  
E.- ¿De qué tipo de bebidas de estas ustedes consumen?  
A1.- No pues aquí está en la mesa, Coca.  
A5.- Coca.  
A2.- Bebidas así refrescos de gas.  
E.- ¿Solamente Coca, o de algún otro?  
A1.- Últimamente hasta Red Cola.  
A2.- Pepsi, hasta red cola hemos caído.  
A1.- Es de lo más barato.  
E.- ¿Es mucha la diferencia con la Coca el Red Cola?  
A2.- Sí.  
A4.- El sabor.  
A1.- El precio.  
A4.- Tiene más azúcar la Red Cola.  
A1.- [Y] se siente que es más gaseosa.  
E.- ¿Cuál prefieren?  
TODOS RESPOENDEN: La Coca.  
E.- O sea que ¿Preferirían pagar ...  
A1.- Más.
Some participants especially like Coke when the weather is hot, although, as previously mentioned, it is consumed year-round.

Because of this strong preference for Coke, plain water or *aguas frescas* are not used as substitutes, at least not during break times, which is when these types of products are consumed. Again, water consumption is primarily associated with work rather than with breaks, also making it an inappropriate substitute for Coke in the participants’ view

**Why drink soda if it’s bad for you? (Hyperbolic Discounting).**

After inquiring about the associations established between soda consumption and health effects, we explored the participants’ rationale for drinking soda in spite of the eventual diseases that their behaviors can bring about. This particular exploration elicited reactions that ranged from nervous laughter to self-awareness based on guilt.

The most common reasons alluded to: (a) the great taste of soda (“Because it’s delicious”, “Porque está rico”); (b) self-identity as Mexicans (“No, we can’t quit it, because we’re Mexican”, “No, pues no lo podemos dejar, es que somos mexicanos”); (c) self-identity as construction workers (“Construction workers drink Coke”, “Los albañiles beben Coca”); (d) tradition/custom/socialization (“Because it’s the best, it’s what you’re most used to in your daily life, drinking a coke and all that”, “Pues, ora sí que es lo que más, ora sí que es lo que más estás acostumbrado la vida rutinaria de diario tomar Coca
y todo eso”); (e) activating and energizing properties, to the extent of drawing a parallel between soda and alcoholic beverages and cigarettes (“Coke will always get you, it’s almost as if it were equal to a drug [...] because of all of the energizer it has” Siempre te va a ganar ora sí que la Coca, prácticamente es igual como si fuera una droga [...]. Por todo el energetizante que tiene también); and its widespread ubiquity.

In addition, for many, the negative consequences of drinking SSBs in general, or soda in particular, did not seem to be much of a concern, or not a priority at the present, to the point of sometimes not even thinking about them:

I.- What do you think about why if it [Coke] damages you why continue drinking it? Haven’t you thought about it?

CW3.- No. Well, we’ve never thought [about it], we just do [laughs]

E.- ¿Qué piensan de si les hace daño lo siguen consumiendo? ¿No han pensado en eso?

A3.- No. Pues nunca hemos pensado nada más actuamos [risas] (Construction Worker, Focus Group 2, Morelos)

I.- And for example, this information, do you pay attention to it? Do you take it seriously?

CW4.- [...] On the spot you, you care about your health, but then you suddenly forget and you are already again [drinking it]. Right? [...] But in the long run, right now we are young, maybe we don’t feel the consequences, but maybe in about 5, 10 years, we may be prone to diabetes or have kidney damage, I don’t know, in the long run, because of so much [soda], more than anything because of large amounts of sugar that the body receives.

E.- Y por ejemplo esta información ¿Le prestan atención? ¿La toman en serio?

A4.- [...] Uno, uno pues al momento pues se preocupa por la salud digamos así, pero pues ya de repente se le olvida y ya otra vez ¿No? [...]Pero sí, a la larga pues, ahorita a lo mejor estamos jóvenes, a lo mejor no tenemos consecuencias, pero a lo mejor en unos 5, 10 años, puede que seamos este, propensos a una diabetes o un malestar en los riñones, no sé, ya a la larga, pues de tanto o sea, más que nada de suministrar al cuerpo grandes cantidades de azúcar pues. (Construction Worker, Focus Group 3, Morelos)
Thus, health concerns seem to be overridden by the desire for immediate gratification and the pull of deeply rooted habits, as reflected in these participants’ words:

I know it damages you, especially on an empty stomach, but I crave Coke a lot.

_Ya sé que hace mal, y luego en ayunas, pero sí se me antoja un chingo la Coca._

(Construction Worker, Focus Group 2, Morelos)

I.- What do you think happens to people who drink this [soda] for a long time?
CW.- Well, like the boss says, I’ve heard that it gives you diabetes, your kidneys
I.- Okey and, is that important for you?
CW.- Well, yes, because your kidneys, you can’t pretty much live without your kidneys.
I.- Well, then, why keep drinking it?
CW.- Because it tastes good [laughs]
I.- Right? So, what do you think is more important for you, to get sick or…?
CW.- Well no, we can’t quit it, because we are Mexican.
I.- Oh, so you mean that Mexicans drink soda?
CW.- Yes, oh yeah.

_E._- Y ¿Qué crees que le pasa a la gente que toma esto por mucho tiempo?
_A._- Pues como dice el mai, he escuchado que la este pues diabetes. Pues los riñones.
_E._- Ok y ¿Para ti sería importante eso?
_A._- Pues sí, porque pus los riñones, uno casi no puede vivir con los riñones
_E._- Pero y entonces ¿Por qué seguirlo tomando?
_A._- Porque esta rico (ríe)
_E._- ¿Sí? ¿O sea que crees más importante eso que enfermarse o…?
_A._- No pues no lo podemos dejar, es que somos mexicanos.
_E._- Ah, o sea ¿Los mexicanos tomamos refresco?
_A._- Sí, Pues sí.

(Construction Worker, Interview 2, Morelos)

Although there were multiple reasons participants used to justify soda consumption in the face of its negative consequences, it seems that the most important is the fact that this practice is to strongly rooted in the Mexican culture, to the extent that
daily consumption has been normalized. This process of normalization has had an effect on the participants’ ability to reflect on one’s behavior. This can be illustrated in the words of this participant:

Yes, yes, yes, yes, because now you are talking with me and my case is not serious, but I have friends, colleagues who are old. They don’t have breakfast in the morning; their first morning meal is 1 liter of coke and three cigarettes. That’s their first meal. At lunchtime they don’t eat either, every now and then they have a taco and they also have a smaller soda and a lot of cigarettes. They only have a good breakfast and have dinner. I mean, they prefer Coke; it’s their way of like, drinking Coke. And they, imagine that we are talking about a liter and a half, well sorry a liter and about 600 ml, and in the morning they have coffee and at night they have Coke with dinner. And that’s not very much, in between breakfast and lunch there is always the woman on the house that comes and says ‘a Coke’… and we drink it, and after lunch, around 3-6 pm, when somebody else comes ‘a Coke’, and I drink it. A Mexican will never refuse a Coke. True, true, true, true. […] It’s as useful as alcohol, just as useful. Imagine if you could get a hangover from drinking Coke, we’d always have a hangover, we’ve live having a hangover, true.

Sí, sí, sí, porque horita estas tomando mi caso y la verdad no es grave, yo tengo amigos, compañeros que ya son señores grandes. Ellos en la mañana no almuerzan, su almuerzo es una Coca de a litro y 3 cigarros ese es su almuerzo. En la comida ellos tampoco comen, de vez en cuando se echan un taquito y también de echan un refresco más chiquito y un chingo de cigarro. Ellos nada más desayunan bien y cenan. O sea, ellos prefieren Coca es su forma de vida, tomar Coca. Y ellos, imagínate estás hablando de litro y medio, bueno perdón un litro y unos 600 y dice que bueno en la mañana toman café y en la noche cenan con Coca. Y eso es poco, porque te digo, en los lapsos el almuerzo y la comida siempre hay un que llega la señora de la casa y ‘una coquita’…pus no la chingamos y que después de la comida que son como de 3 a 6, que llega alguien más, ‘una coquita’, me la chingo. Nunca un mexicano nunca le va hacer feo a una Coca. Neto, es neto, neto, neto. Es como, yo siento que es como dicen ‘wey la Coca-Cola es más socorrida que un taco’, wey, neto. […] Es la neta, o sea, es igual
de socorro, que el alcohol, es igual de socorro. Imaginate que nos agarrara cruda\footnote{"Cruda" means hangover.} la Coca, viviríamos crudos, viviríamos crudos, neta.

(Eros, Construction Worker, Interview, Morelos)

**Social Norms**

In many instances, construction workers justified their soda drinking habits by stating that “it was question of culture” or “what they were used to.” In this group, drinking SSBs, soda in particular, is a rooted practice that is manifested and conceptualized in multiple contexts: at work, home, and celebrations. Soda is consumed when families and friends get together; as a matter of fact, it’s often the first beverage offered to guests, as Eros explained:

Suppose that there is a celebration, you and I are together and my aunt and mom com and the first thing they say is “What’s up? You fancy a Coke? Right? And you send the kid to fetch a Coke. And we do, we drink Coke.

\( O \text{ sea vamos a suponer que ahorita llega una reunión, estamos nosotros dos llega mi tía y llega mi mamá y lo primeritito que dicen “qué onda la coquita ¿no?” Y mandas al chavo que vaya por la Coca. Y nosotros si, sí tomamos Coca.} \)

(Eros, Construction Worker, Interview, Morelos)

The custom of drinking soda during a get-together is reinforced by the food etiquette in Mexico of always accepting what you are offered:

I do drink a lot [of Coke], why?, because wherever I go I always get invited, like this "Do you want a Coke?" and no, you cannot refuse it, and here with my colleagues, early, at 10 in the morning- Coke, at lunch time, Coke. Around 4 pm and before leaving work, Coke, and Coke for dinner.
Yo si tomo mucho [Coca], el porqué, porque donde voy siempre me invitan, así, porque “¿Quiere una coquita?” pues no, no la puedes despreciar, y aquí con los chavos, tempranito, a las 10 de la mañana Coca, a la hora de la comida Coca, como eso de las 4 de la tarde antes de salir Coca y al cenar Coca.

(Eros, Construction Worker, Interview, Morelos)

Furthermore, in the words of those interviewed, soda is an essential element of celebrations, again constituting a significant aspect of Mexican culture. Depending on the type of celebration, other drinks may be present, like aguas frescas at a kids’ party. Soda, as well as alcoholic beverages (beer and tequila), cannot be missing. And, if they are, it will most likely attributed to a lack of resources on the part of the hosts:

I.- In what other contexts would you drink drinks like these?
CW4.- Well, soda at parties. Right?
CW3.- Social events, at parties, at meals.
CW4.- In the kermes
CW3.- Family reunions, a day camp, a ...
CW2.- Yes [laughs] all of that.
CW4.- Well everywhere.
CW5.- Everywhere.
CW2.- You will find it [soda] everywhere.
CW4.- Yes, because it is everywhere, right?
CW1.- Even in the farthest away villages.

E.- ¿En qué otros contextos tomarían como estas bebidas?
A4.- Pues los refrescos, en las fiestas ¿No?
A3.- Eventos sociales, en las fiestas, en las comidas.
A4.- En las kermes.
A3.- Reuniones familiares, un día de campo, un...
A2.- Sí (ríe) todo eso.
A4.- Pues en todos lados.
A5.- En todos lados.
A2.- En todos lados la vas a encontrar.
A4.- Pues sí, porque están en todos los lugares ¿No?
A1.- Hasta los pueblitos más lejos.

82 A “kermes” is like a carnival or like a catholic religious bazaar. It's usually a fundraiser held at the church where rides, games for kids, music, bingo, raffles, dancing and food are available.
(Focus Group 3, Morelos)

I.- And what do you [drink] on social events like parties?
CW.- Right. Well, there is soda, beer, it depends on the party. For example, if it is a children’s party sometimes there are aguas frescas, but commonly there is always soda and beer. [...] 
I.- What would you think if you arrived at a party and they [the hosts] only give you water?
CW.- I don’t know, well, I’d think that they did not have [money] to buy soda and for this one, they did not have for the soda and guarachera [the partying]
E.- ¿Y [qué toman] en eventos sociales como fiestas?
A.- Ya. Como decir, hay refresco, cerveza, dependiendo de la fiesta, por decir; si es de niños pues a veces hay agua de sabor, pero pues siempre, común es refresco y cerveza. [...] 
E.- ¿Qué pensarías si llegas a una fiesta y solo te dan [los anfitriones] agua?
A.- No sé, este, no tuvieron para el refresco y guarachera.

Peer pressure on the part of colleagues is particularly notable, to the point of some stating that they could not quit soda (and drink only water) as long as there colleagues were still drinking for two primary reasons: because they would be laughed at, and because soda would be irresistible. In the words of two of the interviewees:

I.- If you come here one day with your junior colleagues and said to them ‘from now on I am only drinking plain water’ What do you think they would think of you?
CW.- They would crack up and tell me “Don’t fuck around, motherfucker”.
E.- Si llegaras un día aquí con tus chalanes [...] y les dices “no, de hoy en adelante voy a tomar pura agua” ¿Qué crees que pensarian ellos de ti?
A.- Se cagan de la risa me van a decir “no mames Cabrón”.
(Eros, Construction Worker, Interview, Morelos)

I.- But could you do it? Live without soda?
CW.- I don’t think I could live without soda, [I do not think so] because my friends are drinking [it], and if my friends are drinking soda, What am I going to do? Watch them and…?
I.- So you mean that you continue drinking soda because of your friends?
CW.- Yes, I’d keep drinking soda.
E.- ¿Pero lo podrías hacer tu? ¿Vivir sin refresco?
Further, the practice of habitual soda consumption has been created by various socialization processes and is constantly reinforced by social norms and the environment, to the point of having become “common sense.” These processes involve not only personal but social dynamics, practices, and symbols. Moreover, socialization is ingrained in various aspects Mexican society, particularly in government initiatives and interests on the part of the health field that, according to the subjects, not only estranges them from their realities but also, on occasions, ignores them or does not take them into consideration. The words of one of these individuals summarizes in a clear way the role of SSBs/soda in Mexican society:

Tacos, let’s see, a taco with water, I mean, a *taco al pastor* with its pineapple and spicy salsa that they make here in Morelos are [almost never served] with water, so “give me a glass of water”, everyone is going to see that as weird. I’m telling you drinking Coca-Cola is a culture in Mexico, it’s a culture and I already… how long would that be? Like a half a year (ago), we were in Cuautla and we were digging and we found some family-size glass Coca-Cola bottles. I don’t know if you remember, there were like about a 1 L, 200 ml, something like that, I saw it and truthfully I thought “No way, I remember when my mom used to buy this”. Then, you are stricken by melancholy, at the end of the day, whatever you do….even at funerals people offer Coke. [Enough said.] At the end of the day they offer Coke at a funeral. Now that there are patronal feasts here in town, they are giving soda away. That’s it, it’s all a party. In a primary school children get water. Why?

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83 Tacos with shawarma spit-grilled meat (mostly pig).
Because they [the teachers] have to promote good eating habits…the famous healthy eating triangle. But what you’re seeing is that the professor is eating with his Coke. It’s like, in the seguro social\textsuperscript{84}. They tell you “shouldn’t eat fat, you shouldn’t eat on the street”, but then you go outside and they [health care professionals] are eating tacos acorazados\textsuperscript{85} and walking around with a Coke. In the end they ask you these things because they have to do it by law and professional etiquette. But in the end, it’s like if we’re told Chapo Guzmán ‘yanno what son, don’t snort cocaine’. In the end you have it at home, you have the enemy at home, you have the enemy at home.

*Tacos, a ver, un taco con agua. Ó sea, un taquito al pastor con su piñita y la salsa picosa que hacen aquí en Morelos más que nada con agua, o sea, “dame un vasito de agua” todos se te van a quedar viendo raro. Te digo que ya es una cultura tomar Coca-Cola en México, es una cultura, sí yo todavía, hace...¿Cuándo será? Como medio año, estábamos en Cuautla rascando una cepa y salieron unos envases de Coca-Cola de cristal de los familiares. No sé si te acuerdas, que era como un litro doscientos algo así, lo vi y la neta me acordé, me dije, “No manches me acuerdo cuando esto compraba antes mi jefa”. O sea, te llega la melancolía, al final de cuentas, lo que, lo que llegues a hacer...Hasta en los velorios dan Coca, con eso te digo todo, hasta en los velorios dan Coca. O sea, al final de cuentas en un velorio dan Coca. Ahorita que hay fiestas patronales aquí en el pueblo, están dando refresco. O sea, todo es, un convivio. En una primaria a los niños les dan agua ¿Por qué? Porque lógicamente ellos [los profesores] tienen que fomentar lo que es la buena alimentación...el famoso triangulito de la buena alimentación. Pero tú los estás viendo y el profesor por acá está comiendo y con su coquita. Es como, es como también lo del seguro social. Te dicen, “es que no deben comer grasa, no deben de comer en la calle”, y sales afuera y ellos [personal de salud] están comiendo tacos acorazados con su Coca. Al final de cuentas ellos por ley y por ética profesional te lo piden. Al final de cuentas, es como si al chapo Guzmán le dijeran “sabes qué hijo, no te metas perico”. Pues al final lo tienes en la casa, tienes el enemigo en casa, tienes el enemigo en casa.

(Eros, Construction Worker, Interview, Morelos)

\textsuperscript{84} Seguro social refers to the clinics of the social security system.

\textsuperscript{85} Tacos with rice and a meat-based stew.
**Personal Norms.**

As mentioned earlier, the consumption of industrialized SSBs, principally soda, and Coca-Cola among them, is an integral part of the Mexican culture. Although soda drinking is a custom rooted in the collective imaginary that materializes in the daily and collective practices of a large number of people in Mexico, for this particular group (i.e., construction workers), it also constitutes an element of self-identity.

Identity is relational, that is, it is a process of inclusion/belonging in a group based on shared similarities, which at the same time generates a process of exclusion based on differences. For these construction workers, soda and soda consumption, and thus the dynamics by which they relate to these beverages and to each other, have become a central part of their identity as a group. As illustrated in these participants comments:

- A construction worker that does not drink Coke it’s not [a construction worker].
  *Un albañil que no toma Coca pues prácticamente no, no es [albañil].*  
  (Eros, Construction Worker, Interview, Morelos)

- For most construction workers it’s soda, there will never be another [drink] but soda.
  *Pero casi la mayoría de trabajadores de albañilería, es el refresco, nunca va a haber otro [bebida] que es el refresco.*  
  (Focus Group 2, Morelos)

This can be appreciated by the ways in which they organize themselves to buy soda and drink them during meal breaks. Soda consumption during this spatial-temporal contexts serves to strengthen social bonds and generate a sense of belonging.

Furthermore, we studied personal norms as a construct to identify potential health-related, ethical or moral concerns that may influence beliefs and practices in relation to SSBs. Construction workers, in general, did not conceptualize themselves as
health-conscious eaters. In addition, as mentioned earlier, this is a group that does not engage in reflective considerations about their influence on others people’s dietary behaviors, or the influence others have on their own. Thus, they did seem to feel any personal responsibility in setting a good example, towards their children for example, by drinking less, or in supporting ill family members that have been advised to quit drinking soda. However, as is also mentioned earlier, the norms that seem to guide or dictate this group’s beliefs and behaviors are based on the widespread social norm of drinking soda in work contexts.

This general lack of reflexivity about one’s own practices, coupled with various conditioning environmental factors (availability, aggressive marketing campaigns, etc.), in addition to the norms or ritual of consumption at work (e.g., drinking soda during breaks and with food), results in a weak perceived self-control and lack of intention to change. It is thus difficult for construction workers to change behaviors from the lens of personal norms.

**Perceived Behavioral Control.**

The constructions workers’ perceived personal control in changing their soda consumption seems to be heavily influenced by their work context, which combines a generalized consumption by other workers with the association of soda drinking during rest breaks and meal periods (which thereby ensures soda is available).

I’ve tried to stop drinking coke but at my work you can’t eh. It’s as if you said to a bartender, ‘what’s going on? Don’t drink beer at the bar!’ That’s the way it is.
He tratado de dejar de tomar Coca, pero en mi chamba no se puede eh. Es como si le dijeras a un mesero “Qué onda ¡No te eches unas chelas en el bar!””. Pues es de ley.
(Enrique, Construction Worker, Morelos)

Another element that impedes these construction workers from conceptualizing an ability to change is that, for them, soda consumption is a matter of cultural or identity, recognizing that if they had not been “socialized” to drink soda, it would be easier for them to give it up. This is reflected in the words of these two interviewees:

[It would be difficult to quit drinking Pepsi] because I’ve been…I mean, as if it had been already taken it from, I mean, as if it were my life, because now. I drink it since I was born; I have drunk it as long as I can remember: Pepsi, Coca and water. Because now I’ve been having it since…I mean, if it were already out of my life, then yea, but I’ve been drinking it since I was born…

(Sería difícil dejar de tomar Pepsi] porque ya lo llevo de… o sea, como si fuera mi vida pues ya. Lo tomo desde que nací; así desde que tengo memoria lo he tomado: Pepsi, Coca y agua.
(Jair, Construction Worker, Interview, Morelos)

I.- Can you imagine yourself only drinking plain water? Would it be difficult? CWV.- It’d be difficult. But I think it also depends on if a person has not yet come to try Coke. Then, if I didn’t taste it again, I feel like it would be easy, right?

E.- ¿Te imaginas tomando solo agua pura? ¿Sería difícil?
A4.- Está algo difícil. O también sería dependiendo si es que no ha llegado a probar la Coca aún. Ora si que, si no llegara a probarla otra vez pues, yo siento que sería fácil ¿No?
(Sidronio, Construction Worker, Interview, Morelos)

The value attached to the taste and feeling of drinking soda, and the “addictive nature” of cola drinks also influence this groups’ confidence in their ability to change. On the other hand, the expense of maintaining a habit of daily soda consumption was a motivation to drink less, but it did not seem strong enough to break the pull of custom and peer influence:
I.- And for example, the money you spend every week. Does it seem a lot or little to you?
CW.- A lot.
I.- And would you like to spend less?
CW.- Well yes. Right? Sometimes I bring water. When I worked in the plant nursery I brought my own water and...I had my food with aguas frescas. And I saved on soda. But here everyone drinks soda and then ‘let’s drink soda’
I.- And, if they drank plain water, would you drink plain water?
CW.- Oh, yes.
I.- So, it also depends on what others drink?
CW.- Right, of the people you are with.
E.- Y por ejemplo él, el dinero que te gastas a la semana ¿Te parece mucho, poco?
A.- Mucho.
E.- Y ¿Te gustaría gastar menos?
A.- Pues si ¿No? A veces yo traigo agua. Cuando trabaja en el vivero traía mi agua y...ya comí con agua de sabor. Ya me ahorraba el refresco. Pero pues aquí todos toman refresco y pues “órale a tomar refresco”
E.- O ¿Y si ellos tomaran agua fresca, tomarías agua fresca?
A.- Pues sí.
E.- O sea ¿También depende de lo que toman los demás?
A.- Ajá, si pues de las personas con las que tu estés.
(Patricio, Construction Worker, Interview, Morelos)

Moreover, a considerable number of participants felt that they did not feel confident enough to change, without providing any justification or explanation. Many expressed their feelings with expressions like “I just can’t quit it” (“es que no la puedo dejar”). Nevertheless, what is possible to generalize from their testimonies is the idea that, even if exercised, “behavioral control” would only be temporary:

Well, at the moment I could perhaps do it, but maybe tomorrow I would be drinking soda again, right?
Pues sí a lo mejor de momento para mi sí, pero a lo mejor mañana ya estoy tomando otra vez refresco ¿No?
(Construction Worker, Focus Group 2, Morelos)

I.- But, for example, do you think it would be difficult for you to stop drinking soda?
CW.- Well, I feel that it would be, yes it would be.
I.- Why do you think it would be difficult?
CW.- You get used to doing it, you're already used to drinking soda.
E.- Pero y por ejemplo ¿Crees que te sería difícil dejar de tomar refresco?
A.- Pues, yo siento que sí, tal vez sí
E.- ¿Por qué crees que sería difícil?
A.- Se acostumbrá, ya está uno acostumbrado a tomar refresco.
(Francisco, Construction Worker, Interview, Morelos)

Based on the above, the possibility that this group changes its soda consumption habits does not seem like an easily achievable objective. What is more, quitting soda altogether seems inconceivable. The ubiquity of soda, not only physically in shops, food stands, and restaurants, but also as a fundamental part of daily life and celebrations, is a major barrier. This is in addition to strong marketing campaigns via public messaging and promotions. These constitute the principal barriers that impede this objective from materializing. The influence of these elements is immensely strong, to the point that many of the interviewees put forth the idea that the only solution would be to not have the adequate economic resources to acquire these products or not bring money with them to work (although at the same time they recognize that in some cases they would generate strategies to buy them), as some participants explained:

I.- And for example, you mentioned that sometimes you have thought about quitting drinking soda. How would you do it?
CW2.- You have to stop buying it or live away from a store.
E.- Y por ejemplo, mencionabas que si has pensado a veces dejar de tomar refresco. ¿Cómo le harías?
A2.- Tiene que dejarlo de comprar o vivir lejos de una tienda.
(Sidronio, Construction Worker, Interview, Morelos)

I.- Would you like to drink less sugary drinks, not only this one, I mean in general?
CW3.-Yes
CW5.-Yes
I.- How would you do it?
CW1.-Well, I would have to not bring money with me.
CW3.- Only [that’s the only way].
CW1.- Bring water and not bring money, then, yes, because I would not have money to buy it [soda], but if I have it, even if I bring water, I’m going to buy it [soda].
CW3.- [sarcastically] Well, then you can start by quitting your job dude.
CW1.- I think that would be a good one.

E.- ¿Les gustaría a ustedes tomar menos bebidas azucaradas no solamente esta si no en general?
A3.- Sí.
A5.- Sí.
E.- ¿Cómo le harían?
A1.- Pues yo necesito no traer dinero.
A3.- Solamente.
A1.- Traer agua y no traer dinero entonces, sí, porque no tengo para comprarla, pero si tengo pues aunque traiga el agua la voy a comprar.
A3.- [sarcasticamente] Pues puedes empezar por renunciar a tu trabajo wey.
A1.- Yo creo que si eso sería una buena.
(Three Construction Workers, Focus Group 1, Morelos)

A more radical idea to impede consumption was that they disappear from the market altogether. This last point would not only generate an impact on their acquisition, but would also avoid the sensation of wanting them altogether:

CW2.- For all of us to quit [drinking Coke], the Coke [company], soda [companies] would have to close.
CW5.- Instead of Coke [they should] put water in the bottles.
A2.- Yo creo que para quitarnos, todos [de tomar Coca], necesitaría clausurar pues la Coca, el refresco.
A5.- En vez de Coca dar agua en los envases.
(Two Construction Workers, Focus Group 2, Morelos)

Additionally, while the general agreement was that it’d be extremely difficult, if not impossible, for them to change at this points in their lives, they pointed out that a solution for future generations is not to expose children to soda from birth and to socialize them to drink plain water. This suggestion is clear from Patricio’s words:

I imagine for myself (life) without soda and without sugar, yes it would be very difficult, right? Better from the start, when you are born to be
accustomed to just water because that way you would already go, grow up or something, just drinking water.

Yo me imagino que sin refresco y sin azúcar, como que si sería muy difícil ¿No? Mejor desde un principio nacer y que te acostumbren al pura agua, porque así uno ya va, creciendo o sea, tomando pura agua.

(Patricio, Construction Worker, Interview, Morelos)

**Intention to Change and Action Plans.**

Reflection on current behaviors is a prerequisite for any intention to change, or action plan to enact that change. When examining intention to change soda consumption habits, as well as potential action plans, it was noted that in the majority of cases, reflection was brought about in the moment of the interview. This is to say, many participants related consuming soda with possible negative health effects, but this association did not seem to contribute to materializing concrete actions. Actually, for many of these individuals, it wasn’t even possible to formulate any intention; therefore they do not materialize action plans either. This lack of conceptualization is evident from Eros’s words:

I.- Do you imagine yourself drinking soda only twice a week and water all the time?
CW.- No, I never imagined it.
I.- Well, if you imagined it. Could you do it?
CW.- Well, I do not think so.
I.- No? Why?
CW.- Because it can’t be. Always, every day, I crave a Coke.
I.- If you do not drink Coke one day, do you feel weird?
CW.- Well, no, I have never gone a whole day without drinking a Coke.
I.- Then you do not know what it is not to drink Coke in a whole day?
CW.- No, I do not know.
I.- What do you think would happen to you if you stopped doing it? For one day.
CW.- Well, who knows, it would feel strange to me, [without] try[ing] something sweet.
E.- ¿Tú te imaginas tomando refresco solo dos veces a la semana y todo el tiempo agua?
A.- No, nunca me lo he imaginado.
E.- Bueno, si te lo imaginas ¿podrías hacerlo?
A.- Pues, no creo.
E.- ¿No? ¿Por qué?
A.- Porque no. Siempre, así al día, sí se me antoja una coquita.
E.- Si no te tomas la Coca en ese día ¿te sientes raro?
A.- Pues no, no hay día que no he tomado Coca.
E.- ¿Entonces no sabes lo que es no tomar Coca un día?
A.- No, no sé.
E.- ¿Qué crees que te pasaría si dejas de hacerlo? Un día.
A.- Pues quién sabe me sensoría raro pues, [sin] probar alga de Dulce.
(Eros, Construction Worker, Interview, Morelos)

However, while conceptualizing an intention change is not likely, if it were to occur it seems to be only precipitated by the presence of illness, specifically one’s own illness. Yet, the intention and any actions taken seem to be only temporary (only during the period of sickness or until the person feels better). Moreover, in this group, the presence of an illness for a third party rarely acts as a cue to action that modifies personal practices in a definitive way.

A significant element through which some participants conceptualized intention and possible changes was tobacco addiction and quitting. Some argued since it is possible to quit smoking then it should be possible to stop drinking soda as well, with a strong will power being the required factor to make change possible because of the addictive nature of soda. Meanwhile, others thought that the addictive component of the beverage signified impossibility for change.
Environmental Determinants of Consumption.

Industrialized SSBs.

The construction workers’ perception that soda is available “everywhere you go” seemed to make it easier for them to drink those types of beverages. Soda and other types of industrialized SSBs are sold not only in supermarkets, but also in corner stores, food stands, bars, and restaurants. Based on the participants’ reports, it can be inferred that the offer of SSBs is vast, not only in terms of diversity and quantity, but also in terms of price. It is precisely their widespread ubiquity that makes it difficult for them to drink less, as Jair explained:

I.- But can you imagine your life without soda? Never soda, only plain water.
CW.- Only plain water.
I.- Would it be difficult? That is, that there was no soda, for example.
CW.- Ah, well, if it didn’t exist no, it makes senses that if you don’t see it you are not going to crave it. Right?
I.- But then, could you imagine only drinking plain water?
CW.- Well, now that there is soda here I don’t think you can live here without a soda. Inevitably, you have to drink one.
I.- Oh right! Because it’s there? That’s what you said.
CW.- And if it’s not that store, it’s another store, or another one.
I.- The thing is that they sell them everywhere.
CW.- Yes. Right? Because inevitably, you crave it, ‘let’s go for one’.
E.- ¿Pero te imaginas una vida sin refresco? Nunca refresco, pura agua.
A.- Pura agua
E.- ¿Sería difícil? O sea, que no existiera el refresco, por ejemplo.
A.- Ah, no pues si no existiera, pues no, ya es lógico que de por si no se te va antojar, no lo vas a ver? ¿Veas?
E.- ¿Pero entonces, podrías imaginarte vivir con pura agua?
A.-Pues ahorita que hay refresco pues no creo que puedas vivir aquí sin un refresco. A fuerza tienes que tomarte uno.
E.- Ajá ¿Porque está ahí? Dices
A.- Y si no es esa tienda, sino es a la otra, sino es a la otra
E.- La cosa es que venden en todos lados
A.- Sí ¿No? Es que a fuerzas, se te antoja, ‘vamos por uno’.
(Jair, Construction Worker, Interview, Morelos)
From the construction workers’ perspective, the widespread availability of these products contributes to the serious problem of adult and infant obesity in Mexico; and they even questioned why soda is produced and sold if it is harmful to health (“One wonders, if it is bad [for your health] Why do they sell it?, “Uno piensa, si es malo [para la salud] ¿Por qué lo venden?”). In addition, they thought that the lack of education about the effect of a high soda consumption was to blame too. In some participants’ views soda containers (bottles/cans) should carry explicit health messages about their negative consequences as cigarette packets do. Nevertheless, they recognized it would be difficult for this suggestion to be carried out, due to the power that these soda companies exert over their content and markets:

Dude, the government put them [images on cigarette pack], and why don’t we put something like that [on soda] dude? Some fucking fat kids or with diabetes. On soda it would be very cool dude, very cool and…but anyway dude, I smoke dude, I buy Marlboro, and on the Marlboro [pack] there is [an image of] a dead rat dude, a dead child, dude. I mean, I don’t give a fuck. I still buy it and I smoke it, dude. I mean, it would be something very cool, on the gansitos\textsuperscript{86} [packages] dude, on all the chips [packages] dude. Obese children due, children with diabetes, dude. I think that we are the most obese country [...] That would be an option dude, but obviously, Coke...the soda companies are going to tell us to fuck off.

\textit{El gobierno lo puso [imágenes en las cajetillas de tabaco], wey y ¿por qué no ponemos algo así [en los refrescos] wey? Unos pinches niños gordos o con diabetes. En los refrescos así chingón wey estaría chingón y...pero de todos modos wey yo fumó, wey, compro Marlboro, y en [la cajetilla] el de Marlboro viene una rata muerta wey un niño muerto wey. O sea, y me vale madre. Yo lo compro y me lo fumo wey. O sea, sería algo chingón wey o en los gansitos wey en todas las papitas wey. Niños obesos wey, niños con diabetes wey. Somos el país creo más}

\footnote{86 Mexican snack industrialized cake similar to the American Twinkie.}
gordo [...] Eso sería una opción wey, [pero] lógicamente la coca... las refresqueras nos iban a mandar a la verga.

(Εros, Construction Worker, Interview, Morelos)

CW2.- People were against that, they should make a bad publicity, paint a skull there, do not "Be careful"
CW4.- The same advertisement, that is, it gets into the brain, right?
CW2 .- "You're like killing your bones" "You're disintegrating your bones" If that advertising is done, people get scared ...
CW1.- That does not happen.

A2.- La gente fuera en contra de eso, deberían de hacerle una mala publicidad, pintarle una calavera ahí, no se “Ten cuidado”
A4.- La misma publicidad, o sea que se mete en el cerebro ¿No?
A2.- “Te estás como matando los huesos” “Te estás desintegrando tus huesos” Si esa publicidad se llega a hacer, la gente se espanta...
A1.- Eso no pasa.

(Three Construction Workers, Focus Group 1, Morelos)

From their point of view, marketing messages for these products are misleading:
Instead of exposing the health risks they instead focus on promoting their consumption.
And, advertisement channels and strategies (e.g., promotions) are so varied,
simultaneously targeting many sectors of society (from working men, to stay-home wives, to children) that they also become ubiquitous and thereby achieve high impact.

CW3.- Then they say ‘get together 5 bottle caps and 20 pesos and we’ll give you a glass’
CW4.- Oh that’s right! Those are, the promotions.
CW3.- And ‘quick let's go to get another Coke, quicker’, it’s like a magnet.
CW4.- The promotions [laughter] or the dinnerware they sometimes give.
CW2 .- Yes, it’s what we were saying while ago, the promotions.
CW4.- The promotions get into your mind.
CW2.- To sell more.
CW4.- So many things.
CW2.- ‘Your unique soccer ball’ [laughter]
CW4.- At Christmas, they also have Christmas toys and ...
CW3.- Your roller-coaster, right?
CW4.- ... the little train, right! All those advertisements that get into your mind.
CW3.- Go get another Coke!
A3.- Luego dicen “junta 5 corcholatas más 20 pesos igual a tu vaso”
A4.- ¡Ah también! Estos, es la promoción.
A3.- Y rápido “vamos por otra Coca” más rápido, parece un imán.
A4.- Son las promociones [ríen] o las vajillas que luego dan.
A2.- Sí, es lo que decíamos hace rato, la promoción.
A4.-La promoción se le mete a uno en la mente.
A2.-Que se venda más.
A4.-Con tantas cosas.
A2.- ‘Tu balón único’ [ríen]
A4.-En la navidad también que esas cosas de los muñequitos navideños que...
A3.- Tu carrusel ¿No?
A4.-...el trenecito, aja! Toda esa publicidad que se mete en la mente de uno pues.
A3.- ¡Vete por otra Coca!
(Three Construction Workers, Focus Group 3, Morelos)

In addition, as stated earlier the current cost of soda (and incremental increases) do not seem to be a barrier for consumption in this group of construction workers.

Lastly, an element that seemed to facilitate consumption of soda over the iconic Mexican drink *aguas frescas*, was the higher perceived cost-benefit of soda. In comparison with aguas frescas, soda is not only more practical, but in some instances cheaper than buying water and the other ingredients for the *aguas*. “In the end it’s more expensive to make aguas frescas” (“al final sale más caro hacer agua fresca”), was a shared sentiment. The following excerpt from a focus group provides a detailed example of this:

CW3.- …if you offer me a jug of orange water and a Coke I prefer to drink the orange water.
CW2.- Actually, I would prefer to do it but for example sometimes it's a matter of money, because here, sometimes there are five, six of us and a 21 peso Coke, a Red Cole, how much is that each one of us? Right? On the other hand, if you go out there, they sell aguas frescas, but with half a liter you don’t get full up, and one liter costs…how much?
CW3.-15 pesos.
CW2.-15 pesos, right? so sometimes it's more a matter of money than, than taste.
A3.-...si tú me pones una jarra de agua de naranja y una Coca prefiero tomar el agua de naranja.
A2.-En realidad, yo preferiría hacerlo porque por ejemplo a veces es cuestión económica también, porque aquí entre cinco, seis personas que a veces somos una Coca de 21 pesos, una Red Cola, en cuanto nos sale a cada quien ¿No? y si y en cambio, si tu sales allá afuera a ver, venden agua de sabor pero pues el agua de, con medio litro no te llenas y el agua de litro te cuesta ¿Cuánto?
A3.-15 pesos.
A2.-15 pesos ¿no? entonces a veces es más cuestión económica que, que por gusto.
(Two Construction Workers, Focus Group 1, Morelos)

Water.

Contrary to what is generally thought, constructions workers, at least in our study, consume a high amount of water during the workday. Various individuals mentioned bringing water from home to work. However, they had little notion about the cost of water bought at home and how often is bought, because they are not the person directly charged with buying it. For example, according to their testimonies, the cost of a 20-liter bottle (676.28 ounces) ranges from MXN 25 to 35 (USD 1.34-1.87), but they do not know exactly how long it lasts.

Regarding water use in the home, the majority concurred in that they used bottled (jug) water for drinking, and tap water for cooking. However, an important difference relates to the conceptualization and use of tap water, since various participants reported drinking it directly without boiling it, arguing that the flavor is different (better and fresher) than that of bottled water:

So to prepare the feeding bottles [for babies] and all of that, you need to use water from the jug, but for me, I don’t like it. I prefer to drink tap water because it’s cold, it comes out cold all at once.
Entonces para preparar las mamilas y eso, pues tienes tener ese garrafón, pero, a mí no me gusta tampoco. Prefiero tomar de la llave porque está más fría, sale fría de repente.
(Construction Worker, Focus Group 1, Morelos)

However, this practice cannot be generalized, because other individuals expressed opposite (negative) ideas about drinking water directly from the tap. “No matter how poor I could be, I’d never drink water from the tap, I would buy a water jug” (“Por más que esté yo jodido, yo no tomaría yo de la llave, yo mejor me compro mi garrafón de agua”), expressed Jair during an interview.

There are cases in which it is not possible to bring water from home, especially for those workers who travel using transport made available by the construction sites. Access to water at construction sites depends on several factors, such as whether there are taps where it can be obtained, if there are shops nearby where they can buy it, or whether supervisors bring it to them while they’re working. Sometimes, workers use both bottled and tap water:

I.- The [20 liter water] jug? Do you also buy it every day?
CW3.- No! Sometimes we refill it when there is tap water.
CW 1.- Yes, when it gets finished we refill it with tap water.
CW 5.- Yes, we do not buy it.
CW 2.- So as not buy it.
I.- But that way, then that way you don’t. You don’t pay for the water?
CW1.- Yes! When we go and buy it up here, yes.
CW2.-Yes, when there is no tap water yeah, we buy it.
CW1.- Occasionally.
CW2.- Purified.
CW1.- But when there is tap water we take advantage of that and we refill it [the water jug].
E.- ¿El garrafón? ¿También lo compran todos los días?
A3.- ¡No! A veces lo llenamos cuando hay de la llave.
A1.- Ese de cuando se termina lo llenamos de la llave.
A5.- Ese no lo compramos.
A2.- Para no comprarlo.
E.- Pero ahí, entonces ahí no ¿No pagan por el agua?
A1.- ¡Sí! Cuando lo vamos a comprar aquí arriba, sí.
A2.- Sí, cuando no hay de la llave sí, sí la compramos.
A1.- De vez en cuando.
A2.- Purificada.
A1.- Pero cuando hay en la llave lo aprovechamos y lo llenamos.
(Three Construction Workers, Focus Group 3, Morelos)

6.3.3 The SSB Tax

Sensitivity to Price Increase.

Most participants reported, spontaneously or when asked directly, to have noticed an increase in the price of soda in recent years. However, opinions were diverse regarding the timing and quantity of the increase. With the purpose of exploring whether the price increase was associated with the time the tax was implemented, we probed about a change in prices in the three years prior to the interview (since 2014, when the tax was implemented). Within this time period, participants reported that industrialized SSBs had increased about MXN 3 to 5 (an average of 1 or more MXN a year).

Participants could more easily remember price increases in the 600 ml, 2-liter and 3-liter PET bottles (20.3, 67.6, and 101.4 ounces, respectively), because these are the ones they typically buy. Price changes ranges from MXN 6-7 to 12, from MXN 18 to 22, and from MXN 22 to 30, respectively for the three different bottle sizes. However, opinions about the timing and frequency of increase were divided; some assured that

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87 It should be noted that Coca-Cola FEMSA increased the products of its prices in Mexico in November 2016 and March 2017 (El Financiero, 2017).
the increase was sudden; others reported it increases every day or little by little; yet others thought that prices usually increase in the months of December and January.

The rise in the price of soda was for the most part attributed to gasoline price changes (which in turn pushes prices of most other goods up). And more generally to the fact that there is a very high demand for this type of products (“pues porque la consumen mucho”), so companies can easily increase prices to generate more profit without fear of losing market control or clients. However, some participants thought that the price of soda had been increased in order to discourage people from drinking it (“lo hacen para que consuma uno menos”). Some participants expressed not knowing the reason for the increase in the cost of industrialized SSBs. Regardless, it seems like for the most part participants do not pay much attention and do not care very much about price fluctuations, as reflected in this participants words:

Dude, to be honest, I don’t notice [the price…]. I just pay. Holy shit.  
La neta ni me doy cuenta wey [del precio...] Yo sólo pago. Chingue su madre.  
(Francisco, Construction Worker, Interview, Morelos)

**Awareness and Perceived Purpose of the SSB tax.**

Most construction workers were unaware of the SSB tax. Only three participants (one in an interview and two in a focus group) talked about it spontaneously. Thus, after discussing price changes, the rest of the participants were asked if they had heard about the special tax on industrialized SSBs and what they knew about it. But most did not. The
few participants that were familiar with the tax described its aim as to discourage consumption of “obesity-generating” products, such as SSBs and fried snacks, thus, associating it with the “junk food” tax\textsuperscript{88} that was implemented at the same time.

I. - Have you heard about the tax that on…?
CW1.- Yes.
CW2.- Yes, in fact, they said that it [applied] to everything that is fried, chips, fat, all that
CW4.- [The things that] make you obese.
CW2.- Sugary drinks...
CW4.-Soda.
CW2.- ... they were going to increase [the price] so that people could not…
CW4.- [So that they would] consume less.
CW2.- In other words, people were going to think that it’s more expensive, so I won’t buy anymore. Right?
E.-¿Habían escuchado hablar del impuesto este que se le pone…?
A1.-Sí.
A2.-De hecho bueno, decían pues que a todo lo que son así que frituras, todo eso que son de papas, todo eso, grasa.
A4.-Lo que da obesidad.
A2.- Este bebidas azucaradas pues...
A4.-Gaseosas.
A2.-... se iban a aumentar [el precio] para que ya la gente no pudiera...
A4.- Consumiera menos.
A2.-O sea, iban a hacerse la idea la gente de que ya vale más, ya no lo compro. ¿No?
(Two Construction Workers, Focus Group 3, Morelos)

Nevertheless, for the most part, construction workers were very skeptical about the aim of the tax and the use of its revenue, as this participant expressed:

\textsuperscript{88} The tax on energy-dense highly processed foods was applied in January 2014, in the same tax reform as the tax on SSBs, consisted of 8% applied to nine categories of high-calorie highly processed foods, including: chips, pastries, chocolate and chocolate products, puddings; desserts made with fruit and vegetables, peanut, Dulce de leche, cereal-based foods, and ice-cream. See: http://losimpuestos.com.mx/impuestos-sobre-comida-chatarra/ (Secretaría de Gobernación, 2013)
Ugh man, we going to...but I want to know, this tax, who is it for? [...] I mean they fuck us over and take our money right? So at the end, man, they poison us. It’s like, what do you want? I mean at the end no...They poison us and the same people pay for our medicine, right? They charge us for the medicine.

*Una madre wey, o sea, vamos a pero...pero quiero saber ¿ese impuesto, para quién es? [...] O sea nos chingan y nos cobran ¿no? [...] pues es que al final si wey nos envenenan es ¿qué quieres? O sea al final no...Nos envenenan y ellos mismos nos pagan la medicina ¿no? Nos cobran la medicina.*

(Eros, Construction Worker, Interview, Morelos)

The distrust regarding the tax is based on the belief that there is collusion between the government and soda companies, and that the government prioritizes economic gain over the health of its people.

CW4.- And tax revenues go to the government and for the business owners.
CW1.- At the same time, it looks as if they want to reduce obesity, diabetes, cardiovascular diseases. Right? But in reality I think it’s a profit [for them]. Right?

*A4.- Y los impuestos van para el gobierno y van para los empresarios.
A1.-A la vez, en un sentido pues figura de que pues quieren reducir que obesidad, que diabetes, que enfermedades cardiovasculares ¿No? Pero en realidad pues también es una ganancia yo pienso ¿No?*

(Two Construction Workers, Focus Group 3, Morelos)

Most of the testimonies shared this negative sentiment regarding how it seems that the interests of enriching a handful of people were prioritized over societal interests. Some thought the tax revenue should be used to ensure basic services like infrastructure for potable water and hospitals. However, there was a shared belief that the money generated was being used to offset tax breaks given to companies and/or going straight into some politicians’ pockets. Regardless, all agreed that this fiscal measure would not damage beverage companies, “Companies will never lose out” (“La empresa nunca va a perder”).
Also worthy of mention is participants’ perception of the great influence that soda companies have in manipulating consumers and maintaining their products on the market. There was also a perceived potential conspiracy between soda and pharmaceutical companies, whereby “one produces the poison and the other the antidote,” as Eros’s words reflect:

[...] the owner of Coca-Cola is like a fucking Vatican. That’s it. But bro, tell me something bro, don’t you think that those guys who sell insulin have something to do with Coca-Cola? [...] Damn, of course [they think] “We’re going to invent some sickness to sell some healthy water”…. fuck them, that’s it. So yea it’s like that or, what’s going on? [...] This is a fucking cunning plan bro, a cunning plan bro.

[...] el dueño de la Coca-Cola es como un vaticano cabrón. Así de fácil. Pero wey…a ver dime una cosa wey ¿no tendrán nada que ver los weyes que venden insulina y los de la Coca-Cola wey? [...] A huevo, [ellos piensan] “vamos a inventar una enfermedad wey pa’ vender aguas saludables”… este sí wey chingue su madre, pues es que sí wey es que ¿Qué es lo que pasa? [...] Ese es un pinche plan con maña wey, es un plan con maña wey.

(Eros, Construction Worker, Interview, Morelos)

**Perception of the effect of the SSB tax on consumption of taxed SSBs and on the determinants of consumption.**

With a few exceptions, most construction workers thought that the application of a 1-pesos-per-liter tax on industrialized SSBs had not generated a reduction in soda consumption. Moreover, many expressed the belief that consumption would not decrease even if prices were increased even more — for example, as a result of a higher tax. The logic behind these convictions seem to be rooted in the belief that soda consumption is firmly ingrained in Mexican society and that for many drinking it has become a daily habit and even an “addiction”. The words of several study participants clearly illustrate their sentiments about how they experience this public policy:
CW4.- Since there is an addiction people continue drinking the same.
CW2.- And even if it’s more expensive.
CW4.- The difference is that they spend more.
CW2.- You spend more.
A4.- Ya como hay adicción la gente sigue con el mismo consumo.
A2.- Y aunque sea más caro digamos.
A4.- La diferencia es que gastan más.
A2.- Gasta más, uno.
(Two Construction Workers, Focus Group 3, Morelos)

They would buy a little less at the time when they say “well it went up [the price], we have to cut it down” but when they get used to the [new] price [...] they continue doing the same thing.
Lo comprarían un poco menos al momento de que dicen “bueno ya subió [el precio], hay que dejar tantito” pero ya, ora sí que acostumbrándose al precio [...] siguen en lo mismo.
(Fabián, Construction Worker, Interview, Morelos)

I think this is business for all, because they say "raising the price we will avoid so many diseases and people won’t drink as much", but in reality they generate the same consumption and more profits for companies [...] and for the government I suppose.
Yo creo que es negocio para todos, porque dicen “subiéndole el precio ya vamos a evitar tantas enfermedades y no va a haber tanto consumo”, pero en realidad se generan el igual consumo y más ganancias para las empresas [...] y para el gobierno supongo.
(Construction Worker, Focus Group 3, Morelos)

Last week I went to the store [...] and the two and a half liter [Coca-Cola bottle] (that costs 23, 22), they tell me "it’s gone up by one peso" and I said "well". That is, basically you say it’s a peso. But at the end of the day, it's like beer, even if they increase it by 10 pesos, the drunkards will buy it.
La semana pasada fui a la tienda [...] y la [botella de Coca-Cola] de dos litros y medio. [...] (que es, que ya vale 23, 22) me dicen “ya subió un peso” y yo dije “bueno”. O sea, prácticamente dices un peso. Pues al final de cuentas es como la cerveza, aunque le suban 10 pesos los borrachos la van a comprar.
(Eros, Construction Worker, Interview, Morelos)

In addition, from their point of view, the way they organize themselves at work to buy soda (sharing large sized bottles) mitigates the impact of possible price increases.

Regardless, some of the strategies they put in place in response to price increases include
working extra hours to be able to afford buying the same amount of beverages (“You may have to push yourself and work a bit longer to be able to get, to be able to pay for it”, “Pues a lo mejor tienes que esforzarte trabajar otro ratito más para, para poder sacar, completarle”), shifting to cheaper brands, or spending less on food such as tortillas (“Well, it’s like they say ‘you might not have [money] to [buy] tortillas, but you always have it to [buy] Coke’”, “Porque, bueno es como dicen ‘no tendrás para las tortillas, pero si para una coca siempre tienes’”).

But these strategies are delusional, because in the end, they do not reduce the total amount of soda consumed or money spent. As this participant explained:

You might not buy a big one [bottle], but instead you might buy little ones that are cheaper but, but it balances itself off because if you consume three of the small ones in a day, and of the big ones you consume too, that is compensated.

Ya no vas a comprar una grande, pero vas a comprar pequeñitas que valen más baratas pero, pues ahí se va compensando porque consumes tres al día ponle de esas chiquitas, y esa consumes dos grandes, o sea, que se compensa.

(Jair, Construction Worker, Interview, Morelos)

Further, they conceded with resentment that soda companies (in particular Coca-Cola) know that their products are in high demand and they can easily increase prices in order to increase their profits. In the words of Eros:

At the end of the day, the big soda companies have a monopoly, they have us eating from their hands...well, drinking soda from their hands. They increase [the price] one peso and people still buys it. There are other brands: cola, Big cola, Jarrito, but you drink them and they are not the same. In other words, Coca-Cola is a monopoly, we are being fucked...we are being manipulated as puppets in a nasty way. If they said right now (you know that the half-liter glass Coca-Cola bottle, the one we all like, costs seven pesos)...if they said right now "eight pesos", people would say "no way, it's too expensive", but they'll buy it. At the
end of the day you will buy it, because it is a pleasure, it is not a need; well, it can be a need mixed with pleasure.

*Al final de cuentas, el monopolio que tiene la grandes empresas refresqueras nos tienen o sea, nos tienen comiendo de sus manos...o sea, tomando refresco de sus manos. O sea, ellos le suben un peso y la gente lo va a comprar, lógicamente. Hay otras marcas: red cola, Big cola, Jarrito, pero las consumes y no es lo mismo. O sea, Coca-Cola es un monopolio, o sea, encabronadamente estamos...nos titeretean bien feo. O sea, si ellos ahorita dicen (sabes que la Coca-Cola de medio litro, la de cristal la que a todos nos gusta vale siete pesos)...si ahorita dicen "ocho pesos" de la noche a la mañana, la gente va a decir “no, que está bien cara”, pero la van a comprar. Al final de cuentas la vas a comprar, es que es un gusto, o sea, ya no es una necesidad; bueno, puede ser necesidad mezclada con gusto.*

(Eros, Construction Worker, Interview, Morelos)

Based on all the above, we conclude that the 1-peso-per-liter tax on industrialized SSBs has had little to no effect in the soda/SSB consumption practices of this group of construction workers. To have a potential effect in this professional/group taxes would need to be much higher, and availability of SSBs/soda should be dramatically reduced.

This is precisely what Jair suggested:

I.- Would they have to increase a lot [for people to stop drinking it]?
A.- Well, yes, increase it, to be more, more expensive, but they’d better stop selling it
I.- Not sell it? That is, Do you think it would be easier then?
A.- Well, yes, that way you’d forget about soda, and no longer buy Coke.
E.- ¿Tendrían que aumentarle mucho [para que se deje de tomar]?
A.- Pues, ora si de aumentarle, de estar más caro, mejor deberían de ya no vender.
E.- No vender, o sea ¿Crees que sería más fácil?
A.- Pues sí, ya así te olvidas del refresco, de ya no comprar Coca.
(Jair, Construction Worker, Interview, Morelos)
6.3.4 Reported Change in Consumption of Taxed SSBs

Change in participants’ consumption of taxed SSBs and reasons for changing.

The majority of construction workers stated that their soda consumption had not changed in the past few years. A remarkable thing/aspect when exploring this topic was that it seems like they had never contemplated the need and/or possibility of changing their practices.

I.- And in the last three years, for example from the World Cup to here, Have you drunk [soda] consumed in the same way? Or, Has it ever changed?
CW2.-Well, I think that is more or less in the same way.
CW5.- The same as always. Right? I think.
E.- Y en los últimos tres años, supongamos desde el mundial para acá ¿Han consumido [refresco] de la misma forma? o ¿En algún momento ha cambiado?
A2.-Pues yo creo que pues así más o menos así en esa tendencia.
A5.- Lo regular ¿No? yo pienso.
((Two Construction Workers, Focus Group 3, Morelos)

However, there were a few reported cases where there had been a change in consumption (albeit temporarily) triggered by the onset of disease, kidney pain most likely. Nevertheless, for the most part, they resumed consumption when the disease and/or pain was over. This was explained by several focus participants:

I.- Have you always drunk in the same way? Since you can remember? Or has it changed?
CW5.- Take into account that, on one occasion, my kidneys hurt and I got scared. And I said "I won’t drink Coke anymore"; and I quit it for about a month, but after a while they did not longer hurt and I started drinking again. But when my kidneys hurt, that scared me! But afterwards not anymore longer, I said "Well, whatever, let’s do it again." [...] I.- Has anybody else had a similar problem? or not?
CW1.- I did, the same, also like that, my kidneys hurt, just the same. I quit it and I [felt] better for a while, but [although you leave it for a while] you say "well, he is drinking and the other is drinking Coke", and then you crave a cold Coke [laughs]. Perhaps an illness stops you from drinking it. But when you feel “more or less” better(?), then you have a glass of Coke, and once again, the daily life of Coke.

E.- ¿Siempre ha sido como así la forma en la que beben? ¿Desde que se acuerdan? ¿O ha cambiado?

A5.- Haga de cuenta que, que a mí una ocasión me dolía los riñones y me espante. Y dije “Ya no tomo Coca”; y dejaría no sé, a la mejor un mes, pero al rato que ya no me dolían ‘amonos otra vez. Pero cuando me dolieron los riñones ¡me espante! Pero después ya no, dije “Vaa ya paso, otra vez.”[

E.- ¿Alguno de ustedes, ha tenido como este problema también? ¿O no?

A1.- Yo sí, igual, también así, me dolían los riñones igual. La dejé y mejor por un rato, pero [aunque uno deja un rato] aun que dice “no pues uno está tomando, otro está tomando Coca” y se te antoja una Coca bien fría [ríen]. Pero pues a lo mejor la enfermedad te detiene a que no tomes. Ya después cuando ya te sientes más o menos ¿mejor? ya ahora sí, otro vaso de Coca y ya, otra vez, la vida cotidiana de la Coca.

(Two Construction Workers, Focus Group 3, Morelos)

…yes, it damages you. Right? But no, you can’t quit it, I can’t, I can’t. Well I would quit it if I fell ill, but even then! If the illness (for example, caused by soda) goes away, the kidney pain and I would leave her for an illness at the best, but even that! [If I had an] illness caused by soda, kidney pain and all that, you quit it, Right? Perhaps for about a month but then you go back to [drinking it]. I don’t know what it is that soda contains but for the majority of construction workers soda is [the preferred beverage], there will never be another [drink] like soda. es de albañilería, es el refresco, nunca va a haber otro que es el refresco.

…pues que sí hace daño ¿No? Pero no, uno no puede dejar, yo pues no, pues no. O sea si la dejaría por una enfermedad a lo mejor pero ¡Hasta eso! [Si tuviera una] enfermedad que ocasiona el refresco, el dolor de riñón y todo eso pues la dejas ¿no? a lo mejor un mes, pero después otra vez. No sé qué es lo que contenga el refresco pero casi la mayoría de trabajadores de albañilería, es el refresco, nunca va a haber otro que es el refresco.

(Construction Worker, Focus Group 2, Morelos)

An illness of a family member a friend or colleague, related to the consumption of SSBs, did not seem to act as a stimulus/cue to action for these men to change their practices. This was the case of Patricio:
I.- ... and before your mother got sick and they [doctors] told her all these things, Did you know that those products were so harmful?  
CW.- No?  
I.- No? And knowing that they hurt your mum, I imagine that she tells you what the doctor say. Did this make you think about these products in a different way? CW.- Well, yes, but as I say then, one [you] is a fool and drink[s].  
E.- ...y antes de que se enfermara tu mamá y que [los médicos] le dijeran todas estas cosas ¿tu sabías que esos productos hacían tanto daño?  
A.- No  
E.- ¿No? Y bueno y saber que a tu mamá le hizo daño, y me imagino que ella te cuenta lo que le dice el médico, ¿Te ha hecho a ti pensar de manera distinta; con respecto a estos productos o no?  
A.- Pues sí, pero como digo pues, uno es necio y toma.  
(Patricio, Construction Worker, Interview, Morelos)

In addition, some participants (like Eros, below) even showed reluctance to change their behavior in support of a family member or friend. This seems to be rooted in the belief that individuals have personal responsibility over their dietary habits and health; but it could also be that participants are not aware/do not recognize the influence of peers and family in one’s behavior.

I.- Given that your mother is sick, Don’t you drink less in front of her?  
CW.-No, no, no, no, no because in the end, this is something that I tell her, look, I told you, because I tell the truth, I don’t mince my words. Look mom “don’t complain, because it’s a fucking [illness] that you brought upon yourself; you always drank soda, and I’m sorry but you’ll die drinking soda and in the end, at your funeral, we’ll drink soda”.  
E.- Y estando enferma tu mamá, ¿no consumen menos delante de ella?  
A.-No, no, no, no porque al final de cuentas, es algo que yo se lo digo, mira ya te lo dije soy claridoso y yo, yo no tengo pelos en la boca o sea, ni en la lengua o sea. Mire jefa, “no se queje, porque es un pinche mal buscado; usted siempre tomo refresco y...perdón pero se va a morir tomando refresco al final y cuando la, la estemos velando vamos a tomar refresco”.  
(Eros, Construction Worker, Interview, Morelos)

Further, it is important to note that even in the cases where construction workers reduce the amount of soda they consume at meal and break times, they tend to replace it
with another sweet beverage, like an industrialized sweetened juice or aguas frescas, considered less harmful. As two participants in a focus group verbalized:

I.- And have you thought about drinking less [soda]? [...] 
CW2.- I may, perhaps I feel, that the time will come when ... I will say ‘You know what, not another glass of Coke’ [...] 
CW4.- Well, but we would quit Coke, but we would not change Coke, I mean, we would change Coke but we would buy another. Wouldn’t we? 
CW2.- Well, maybe I’d shift to juice [laughs] 
CW2.- Or something with flavor that feels almost the same. Right? But, but Coke is more harmful. 
E.- ¿Y han pensado en tomar menos [refresco]? [...] 
A2.- Yo quizás, quizás yo siento, va a llegar el momento en que...voy a decir ‘¿Sabes qué? Ni un vaso de Coca más’ [...] 
A4.- Pero sería la Coca, pero no cambiaríamos la Coca, o sea cambiaríamos la Coca pero comprariamos otro líquido ¿No? 
A2.- Pues quizás cambiaría a un juguito [risas] 
A2.- O algo de sabor que se sienta casi lo mismo ¿No?. Pero, pero la Coca es más dañina. 
(Two Construction Workers, Focus Group 3, Morelos)

A few participants reported sometimes drinking less soda and more water because they were bored of drinking soda so often. But similarly, the changes are momentary, not long-term.

Facilitators and barriers of change

For this group of individuals, the constant increase in the price of SSBs is an issue, but it is not strong enough to trigger permanent changes. As mentioned elsewhere, consuming soda at work is part of daily life: soda is seen as a source of energy or relaxation to enjoy at rest breaks, and something to share with the rest of their colleagues. In addition, soda consumption by peers increases its availability and access in the work context.
An additional factor that constitutes a barrier for change include the lack of perceived risk and reflection about their practices on the part of the participants. While the majority of construction workers had knowledge about the detrimental health consequences of soda drinking, this did not seem to constitute a problem for them until the time this study was conducted. This is reflected in the responses provided, where a result of the interaction with the interviewer/facilitator, many participants recognized that the presence of an illness could result in a change, however, as previously mentioned, the change would be limited to the duration of the disease.

6.4. Discussion

Construction workers consume a high amount of soda and water during their work days (approx. 1.25 liters and 4 liters, respectively). They associate consumption of soda with pause and meal breaks, and consumption of water with work time. Nevertheless, their identity as construction workers is closely connected to their soda consumption. For them, working in that profession means drinking soda, and this is unquestionable. While they are aware of the health consequences that a high soda consumption can entail, it appears that they have never contemplated the need and/or possibility of changing their practices. Construction workers have not (permanently) altered their patterns of soda consumption in the context of the tax. Presence of an illness (e.g., kidney problems) triggered changes in some, but these changes were only temporary. We conclude that a 1 peso-per-liter (10 percent) tax is not enough to trigger changes in practices in this group, and that the government should consider a higher level of the tax, coupled with targeted behavior change interventions, to have an effect on these consumers.
SSB and water consumption

As hypothesized, construction workers drink frequent and high amounts of soda during their workdays: an estimated 1.25 liters (42.3 ounces/day)\(^{89}\). This is well above the average per capita (201 ml or 6.8 ounces) and per consumer (478 ml or 16.2 ounces) daily soda consumption in Mexican adults (Stern et al., 2014). However, contrary to popular belief, the construction workers associated soda drinking with rest and meal breaks, and not necessarily as an energy source to withstand the workday. On the other hand, plain water is associated with the moments when they are working. In fact, water consumption at work (about 4 liters [135.3 ounces] a day) more than triples the amount of soda consumption reported; and is also higher than the per capita consumption (626 ml [21.2 ounces] per day) (Stern et al., 2014). This suggests that overall, construction workers seem to have a high fluid intake, likely due to the physically demanding nature of their jobs and the thermally stressful work environment.

Based on our qualitative assessment, construction workers drink about 5.25 liters (1.4 gallons) of fluid during the working day. Although high\(^{90}\), this fluid intake level seems plausible when compared with other research studies on the fluid consumption of manual workers in similar conditions. A study of the hydration status of construction workers...

\(^{89}\) Estimated consumed amount during workday, not including fluids consumed before or after work.

\(^{90}\) The USA National Academies of Sciences, Engineering, and Medicine recommend an adequate water intake of 3.7 liters for a healthy adult male living in a temperate climate. Moisture in foods accounts for about 20% of that recommendation (Health and Medicine Division, 2004). Nevertheless, they recognize that high levels of activity and exposure to high temperature (e.g., in the case of firefighters and athletes) can greatly increase sweat losses and therefore fluid requirements.
workers (n = 22) in the United Arab Emirates conducted over a 3-day period found that on average participants drank 5.4 liters (183.9 ounces) per day; fluid intake ranged from an average of 6.0±1.4 liters (202.9±47.3 ounces) on the first day to 5.0±1.1 liters (169.1±37.2 ounces) on day three. In this study, the fluids consumed included water (primarily), coffee, tea, and soda (Bates & Schneider, 2008). Another study of occupational heat stress and fluid intake among sugarcane workers (n= 86), construction workers (n=56) and farmers (n=52) in Nicaragua found that the total fluid intake was 6.2±4.1, 4.4±2.1, and 4.0±2.7 liters a day (209.6±138.6, 148.8±71.0, and 135.3±91.3 ounces a day), respectively (Wesseling et al., 2016). Fluid intake among construction workers included 2.9±2.1 liters (98.1±71.0 ounces) of water and 1.5±0.9 liters (50.7±30.4) of SSBs.

Habit

While some extensions of the Theory of Planned Behavior (a precursor of the Reasoned Action Approach) include “habit” (also called “past behavior”) as a theoretical construct, the version of the theoretical framework we used did not. However, after analyzing and reflecting on participant responses during this study, the construct of habit seems critical to understanding the construction workers’ reasons for drink soda and their perceived inability to change. Research suggests that food habits or routines often appear to occur with little to no thought (Contento, 2014). Instead, they seem to be automatic responses to situations and often the driving force in behavior. In fact, it is often said that “past behavior is the best predictor of future behavior”. Bourdieu (1984) formulated the analogous concept of “habitus”: a “cognitive map” or set of principles that guides and evaluates a person’s choices and behavioral options; or more simply: “habitual ways of
acting when performing routine tasks”. Bourdieu illustrates how the influence of exterior social structures and conditions (e.g., gender, age, socio-economic level, profession) are incorporated into the habitus with little conscious realization of their existence, thus, the practices that result from the habitus are integrated into routine behaviors.

The only factor that may trigger an intention to drink less soda in this group seems to be the presence of illness, specifically one’s own illness.

*Health beliefs and attitudes*

The construction workers in this study were relatively knowledgeable about the health consequences of a high soda consumption. We infer that this knowledge is partly the result of the many obesity-related public policies and programs that have, for a few decades, provided the public with information about the risks of certain dietary practices, and of direct advice from health care providers.

Nevertheless, there is an apparent lack of knowledge about the recommended limit of soda consumption and confusion about the effect of drinking only water (perceived as “not good”), or water with or after soda (perceived as diluting the negative effects of the sugary beverage). We largely attribute this confusion to the food industry’s dogma that all “foods are good if eaten in moderation”, as well as a failure in public programs to convey a specific and clear message regarding a daily/weekly limit of SSB consumption. For example, while the Mexican food-based dietary guidelines recommend that individuals “decrease consumption of high caloric beverages such as soda, nectars,
and sugar-sweetened fruit-flavored beverages”\(^9\) (Bonvecchio-Arenas et al., 2015), studies have found that people usually find the messages “decrease” and “increase” unclear since they do not specify exact recommended quantities (FAO, 2014).

Moreover, participant discourse demonstrated a sense of personal responsibility over their choices and health. For example, participants expressed the view that if an individual has diabetes it is their fault and that quitting Coke is purely a matter of willpower \textit{rather than} holding the obesogenic food environment responsible for promoting soda consumption, or holding the state responsible for citizen health. Many authors, like Schrecker (2016), have attributed this outlook to the influence of neoliberalism in contemporary health promotion which assigns responsibility for healthy lifestyles primarily to individuals while paying scant attention to the constraints imposed on “choice” and the responsibility of the state and private enterprise.

Despite the construction workers’ knowledge about the consequences of soda drinking, this is a group that does not seem to engage in reflective considerations of their dietary habits. Any considerations in that regard mentioned during interviews or focus groups seem to have been conceptualized in those very moments. The lack of reflection about their practices seems to derive from the fact that consumption has been normalized in their work context, as well as by defining characteristics such as gender, age, socio-economic status, profession, etc., as is further elaborated upon in the following sections.

\(^9\) In Spanish: “Disminuir el consumo de bebidas con contenido energético como refrescos, nectares, bebidas azucaradas con sabor a fruta”.
Finally, it is important to mention that many in this group felt that they were addicted to cola beverages. It has not yet been proven that sugar, or sugar-sweetened beverages are addictive in humans. Nevertheless, a growing number of studies have indicated that sugar produces a very strong effect on the brain’s reward mechanisms which can induce strong cravings (Avena et al., 2012). In addition, cafféinated options (like cola carbonated SSBs) can also induce physical dependence (Meredith et al., 2013).

*Self-identity (Personal norms)*

Soda drinking constitutes a central part of the way of life of construction workers and contributes to shaping their identity. This relationship is clearly captured in the comment “A construction worker that does not drink Coke it is not [a construction worker]” (“Un albañil que no toma Coca pues prácticamente no, no es [albañil]”). Interestingly, even if their water consumption is much higher than that of soda, their identity is constructed based on the second; suggesting that identity in relation to consumption of a product is not created in regards to the “amount” consumed but rather to the meaning the product has for individuals.

The phenomenon of consumption as a means of social identification has been studied by many social behaviorists (including Max Weber, Mead, and Bourdieu) since the beginning of the 20th century. However, Cockerham (2005) notes that particularly in the second half of the century, lifestyle consumer habits in advanced societies have increasingly become a fundamental source of social identification, in addition to fulfilling utilitarian needs.
Cockerham (2005), in his theoretical proposition of a Health Lifestyle Theory argues that the decisions people make with respect to diet (and other health-related behaviors) are not largely a matter of individual choice but principally shaped by structural variables such as social class position and gender. In agreement with this theory, it is plausible that the soda and water consumption patterns we found in this group of construction workers are not individualist behaviors, but a generalized pattern of conduct, that are given by some of the characteristics they have in common such as being male, having a low level of education and income, and having the same physically demanding and underappreciated profession.

*Background/structural factors as explanatory factors of SSB intake and low interest in health outcomes*

We find that the phenomenon of construction worker identification with soda drinking cannot be totally explained with the theoretical constructs of the Reasoned Action Approach. And while this theory recognizes that background factors have an influence on health-related behaviors, it is silent on how those give rise to beliefs, attitudes, and social norms. Thus, to comment on how background characteristics of construction workers — such as socioeconomic level, age, gender, and occupation — come together to shape their soda consumption we will rely on some social behaviorists propositions.

One of the first works identifying social class as an influential factor in the determination of taste and lifestyles was Bourdieu (1984) seminal work *Distinction*. He observed that in France, professionals (upper-middle class) preferred healthy and light food, whereas the working class favored hearty and cheap food. According to Bourdieu,
their “distance from necessity” explained class differences in lifestyle. That is, the more distant a person is from working for economic necessity, the more freedom and time that person has to develop refined personal tastes. In this way, the working class tend to favor the acquisition of items of necessity. “Taste classifies, and it classifies the classifier. Food serves a social function of legitimating social differences.” Bourdieu (1984) wrote.

Bourdieu (1984) also posited that collective patterns of behavior/health lifestyles are developed at the intersection of the exercise of life choices (agency) and life chances (structure). That is, individuals make choices through a volitional process — involving the ability to interpret the situation and attach subjective meaning to their actions — in the context of constraints and opportunities provided the social “structure” (which is determined by income and educational level, age, gender, race, living conditions, and belonging to a particular social group through work, religion, politics affiliation, etc.).

Socio-economic level. There is an abundance of literature demonstrating how groups of lower socioeconomic status take worse care of their health, have less access to healthcare, and have worse health outcomes (Pampel et al., 2010). Research has also found that privileged classes are more able and likely to adopt new healthy behaviors such as plant-based diets. Most construction workers have a low socioeconomic status, and often live in conditions close to poverty and social marginalization. These conditions may force them to focus on more immediate issues rather than long-term health issues. Finally, we should not forget that Mexico has a serious violence and insecurity problem. In light of these conditions, we argue that long-term health issues derived from present soda consumption are not considered a priority for relatively poor people like the construction workers in this study.
Gender. Men have been found to have worse health outcomes than women partly due to greater levels of occupational exposure and to health behavior paradigms related to masculinity (Baker et al., 2014) that make them less aware and perceptive of risks and less likely to visit a doctor. As articulated in the work *Public Policies and the experience of being a man: paternity, work contexts, health, and education* edited by Figueroa (2014), Mexico is a predominantly patriarchal society where men typically play the role of providers and head of household. They are seen as strong, with a large physical and emotional capacity to solve family problems. They are also not typically involved in child-raising practices. Largely, for these reasons, men have been systematically excluded from many public policies, including health and education. The authors of *Public Policies and the Experience of Being a Man* argue that in Mexico gender is a determinant factor of health in relation to both the origin of the health issue and/or in its evolution and treatment (Figueroa, 2014). Further, the authors demonstrate how the “exercise of masculinity itself” is a risk factor for poor health in Mexican men; and that a lack of attempts in public health policy to modify “harmful masculinities” have perpetuated health inequalities between men and women to the extent that men have the

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93 Original excerpt in Spanish “Es difícil imaginar algún campo o problemática de la salud en donde el género no esté presente en alguna medida, ya sea en el origen del problema o en su evolución y su atención” (Figueroa, 2014).
94 Original excerpt in Spanish “[…] el factor de riesgo asociado a una mala salud en los varones es el ejercicio de la masculinidad misma, y que los escasos abordajes en la política de salud para modificar las masculinidades nocivas han llevado a la inmovilidad de las desigualdades en salud en hombres y mujeres, y la concentración de mortalidad por violencia, accidentes y adicciones en los varones” (Figueroa, 2014).
highest mortality rates for violence, accidents, and addictions. Based on this cultural context, and considering that construction work is a male-dominated profession, we argue that the SSB-related beliefs and practices of these construction workers may be influenced by paradigms related to masculinity that promote consumption of strong drinks and pay little attention to personal health (which, on the other hand is often associated to the women’s role in child rearing).

*Age.* It is also plausible that the construction workers participating in this study were not worried about the consequences of their soda consumption because they are relatively young (the mean age was 31.5 years). Studies have found that health outcomes that have meaning for younger adults are short-term (e.g., that they will have more energy, better athletic performance, better physical appearance) and not necessarily long-term health and avoidance of disease (Contento, 2014). In addition, younger adults are more likely to take risks with their health and tend to perceive themselves as immune to sickness. These attitudes might lead younger male adults to perceive fewer health risks and to take fewer precautions to protect their health. In reference to this phenomenon, young adults are sometimes referred to as “young invincibles”.

*Social norms (within the work context)*

As established above, soda drinking in construction sites is a common practice, which emerges from a broader cultural norm of soda drinking in Mexico. New construction workers are quickly socialized to drink soda at work. This socialization seems to be facilitated by the fact that groups of construction workers typically buy and share food together and that those moments may contribute to bonding. This social consumption of soda is reinforced by an environmental context where SSBs are easily
available. Deviation from this social norm seems implausible for individuals as long as their colleagues keep drinking, and is perceived as likely to result in negative consequences such as peers laughing at them.

Thus, it seems that the pattern of behavior in relation to soda consumption at work, rather than being individualist, is dictated by “group” behaviors and the perceived expectations of what the group expects the individual to do.

Therefore, we conclude that the class position of these workers, as well as the social relationships among them and their environmental and work context, have substantial effects on their soda-related beliefs, attitudes, and behavior.

In contrast, we had initially considered studying taxi or truck drivers as one of the potential groups, based on the similar notion that they drink soda frequently and in large quantities in a work context. However, individuals in these groups spend little time with their peers, and are thus less likely to be exposed to peer pressure to conform to a group norm than construction workers. Thus, we argue that in these professions the process of socialization of soda drinking (as well as their ability to implement intentions) is different than for construction workers.

**Perceived behavioral control**

The constructions workers’ perceived personal control to reduce consumption of soda is very low. There is some suggestion that sickness would force them to drink less soda (and some individuals even reported to have done this), but any changes would only be temporary. Quitting soda altogether seems inconceivable for the participants in this study.
The principal reason participants use to explain their ongoing habit of soda drinking was that they were used to it (a discussion about the influence of “habit” in consumption is provided in the next section). Other elements that impeded these construction workers from conceptualizing an ability to change included the perception that soda (and Coca-Cola in particular) is “addictive” and the ubiquitous presence of soda in their environment. Some of these barriers seemed so insurmountable that many of the ideas that participants proposed to help them quit drinking soda (e.g., soda companies should close) were very drastic and infeasible.

Nevertheless, a significant element through which some participants did conceptualize a possibility for limiting their soda consumption was addiction to tobacco and quitting. Some argued since it is possible to quit smoking then it should be possible to stop drinking soda as well, with a strong will power being the required factor to make change possible.

*Intention to Change and Action Plans*

In the Reasoned Action Approach, the “intention to change” is predicted by the beliefs, attitudes, social and personal norms in relation to the behavior, as well as by the perception of control over the behavior. Participants in our study associated soda consumption with negative health effects, but the practice of drinking soda at work was so deeply rooted in their daily routines and practices that it had developed into a social identifier and a social norm for construction workers.

Thus, we argue that one of the principal reasons that impeded participants from conceptualizing an intention to change is that they were used to drinking soda.
The SSB tax

For the most part construction workers were not aware of the tax, nor did they seem to care much about its purpose. The few participants that were familiar with the tax described its aim as the discouragement consumption of “obesity-generating” products, such as SSBs and fried snacks, thus associating it with the tax on energy-dense and nutrient-poor food products implemented at the same time.

Most participants had noticed incremental increases in the price of soda in recent years, but given that they buy large bottles (that are cheaper [per liter] than individual ones); a price rise has a smaller direct effect on the amount each individual spends on soda on a daily or weekly basis. Nevertheless, most participants confessed to not paying much attention to the cost of soda or how much they spend on it.

Thus, we infer that for this group of construction workers, the taxation on SSBs (and other recent price increases for that matter) do not seem to have had any effect on their soda consumption. It does not seem to have acted as an economic barrier or prompted reflection on consumption or health goals among construction workers. While it may be tempting to conclude that construction workers are inelastic consumers who will continue drinking the same amount of soda regardless of price, the current level of the tax, i.e. 1 peso-per-liter (about 10% increase) may simply be too low to effect change. Based on mathematical models, experts recommend that taxes are at least 20 percent of the total unit price to have a meaningful effect (Brownell & Frieden, 2009; Cabrera Escobar et al., 2013). The findings of this study lend support to that proposal by demonstrating that the current level of the tax has little to no effect on the soda consumption habits of one of the least elastic consumer groups in Mexico.
Moreover, construction workers were distrustful of the governmental motivation behind the tax and did not give it credibility, thinking instead that it was just another ploy to get money from citizens. Many participants expressed a belief in collusion between the government and soda companies, and that the government prioritizes economic gain over the health of its people. This distrust and skepticism around soda taxes aligns with the fact that many Mexicans perceive the Federal Government to be corrupt, and generally do not respect or recognize its actions as legitimate. As a matter of fact, a 2017 world poll found that 83 percent of Mexican participants do not have trust in the government (Pew Research Center, 2017).

*Other environmental determinants of consumption*

Construction workers have multiple opportunities to drink soda during their work days and at home with their families. Two of the factors that encourage constant consumption of soda among this group are the ubiquity of this type of beverage (“they are everywhere you go”) and the aggressive marketing targeting different segments of the population.

These two factors have been so consistently associated with a higher intake of SSBs (and other ultra-processed products) and detrimental health outcomes that many countries have passed regulations to limit availability and marketing of ultra-processed foods, particularly in zones frequented by children.

Interestingly, even from the perspectives of the construction workers participating in our study, the widespread availability of these products contributes to the adult and infant obesity in Mexico; and they even questioned why soda is produced and sold if it is
harmful to health. Participants were also acutely aware of the many marketing strategies soda companies employ to encourage consumption; and suggested that soda bottles carry warning messages (like tobacco packs) alerting consumers of the potential health risks.

*Availability versus self-control.* The beverage industry spends astronomical amounts of money on advertising to entice consumers to drink, while simultaneously blaming consumers for not practicing self-control or making healthy decisions. They advocate for no-regulation (or self-regulation) and for giving people information to make good choices. However, as evidenced by the construction workers responses and behaviors, knowledge alone does not translate into practice. Participant responses demonstrate that they have little self-control in the presence of soda, and that the best way for them not to consume it would be if it were not available. Thus, the findings of our study lend support for the regulation of the availability and marketing of SSBs in (at least) spaces such as hospitals, universities, public workplaces, etc., as a way to nudge people towards healthier choices.

*Changes in consumption of soda*

The majority of construction workers in this study stated that their soda consumption had not varied in the past few years. Only a few individuals interviewed had reduced soda consumption temporally in the presence of a disease (mostly kidney pain and problems urinating). Furthermore, for the most part, these individuals resumed consumption when the disease and/or pain was over.

Additionally, while the general agreement among participants was that it would be extremely difficult, if not impossible, for them to change at this points in their lives,
they pointed out that a possible solution for future generations would be to protect children from exposure soda from birth and to socialize them to drink plain water. As a matter of fact, most governmental efforts in relation to the promotion of healthier diets and the prevention of obesity are aimed at children.

6.5. Conclusion

In response to our overarching research questions: has SSB consumption changed for construction workers in the context of the tax? and, has the tax had an effect? we answer “no” to both questions. Consumption of SSBs among construction workers has not changed, and the tax has not had an effect. Given these results, a new question arises: what would it take for construction workers to change their attitudes, social norms, and behaviors in relation to soda?

Given the strong socio-cultural meaning of this practice for construction workers, that this is an ingrained habit, and that caffeinated SSBs beverages can create physical dependence and cravings, we consider that any intervention aimed at decreasing soda consumption among this group would need to address different levels of influence, including the individual, interpersonal, organizational, and policy and systems levels (according to the Socio Ecological Model (Contento, 2014)).

At the individual level, construction workers must be made more aware of their habits and increase their perception of risk. They must also have opportunities to increase their self-efficacy to control their consumption. At the interpersonal and organizational levels, an intervention could highlight and promote the social norm of drinking water among construction workers, and aim to create new meanings in relation to water
consumption. At the policy and systems levels, the regulation of availability and marketing of soda and other SSBs is called for. Given that the number of construction workers in Mexico is very high (2.4 million), more studies to better understand their food and beverage practices, and approaches to improve these are necessary.

6.6. Limitations and Strengths

This study was conducted in only three construction sites and in one state in Mexico. Thus, the results may not be transferable to construction workers in other parts of Mexico which have a different climate and culture. Nevertheless, the population of construction workers is relatively homogeneous in regards to socioeconomic status, gender, and profession, thus, it is very possible that beverage consumption practices and meanings are similar. An additional limitation of this study is that we did not use a quantitative measure to assess consumption of soda and water. Nevertheless, the primary purpose of the study was not to quantitatively assess soda consumption but to understand the meanings and influences associated with this practice.

In spite of its limitations, this study contributes greatly to the literature because it is the first (to our knowledge) to assess consumption of taxed SSBs in a population group with a high consumption of that product. Further, this study relies on a robust behavior change theory and uses a qualitative methodology in both interviews and focus groups to explicate behaviors in depth.

6.7. References


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exhibición cinematográfica, conforme a lo dispuesto en los artículos 22 Bis, 79, fracción X y 86, fracción VI, del Reglamento de la Ley General de Salud en Materia de Publicidad].

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Chapter 7: Discussion

7.1. Main Findings

This dissertation examined whether the Mexican SSB tax potentially influenced Mexicans’ purchases and consumption of taxed beverages by enhancing their awareness about the detrimental health effects of those types of beverages; using a mixed methods approach and relying in the theoretical framework of the Reasoned Action Approach.

For the first study (quantitative), we used a nationally representative sample from the ENSANUT 2016 to examine the percentage of the Mexican adult population that was aware of the SSB tax, in addition to those who thought it had its intended effect of reducing purchases of SSBs. By using logistic and multiple regression analysis, we were able to examine the relationship between awareness of and opinion about the effectiveness of the SSB tax and a number of psychosocial determinants of SSB consumption, including self-reported change in SSB consumption and current consumption of taxed SSBs, (accounting for relevant socio-demographic and anthropometric variables). Important findings included that health beliefs and being aware of the tax were significantly associated, i.e. the percentage of respondents who believed that SSBs contribute to health damage, was higher among people who were aware of the tax, compared to those who were not aware. Additionally, we found that being aware of the tax was significantly associated with both a self-reported decrease in SSBs and a lower consumption of taxed SSBs since the time the tax was implemented.

In the qualitative studies, we used qualitative methods to examine the potential influence of the tax in SSB-related behaviors and psychosocial determinants in two
groups: parents (mostly mothers) of children 9 years or younger and construction workers. Important findings were that in both groups drinking soda was considered as part of the Mexican culture and that they had fairly good knowledge about the negative health consequences of a high consumption of soda and other industrialized SSBs. Common perceived barriers to drink less soda included the perceived difficulty of breaking with the habit and social norm, a perceived “addiction”, and the difficulty of exercising self-control in an environment where taxed SSBs are omnipresent.

Additionally, important findings in the parents’ group include reporting drinking less taxed SSBs than in prior years and trying to expose children to more water, but less soda, industrialized juice, and other sugary beverages. These changes and intention to change were motivated by disease and health concerns and perceived responsibility towards one’s children. The findings suggest that the SSB tax might have prompted some parents (half of the sample was aware of the tax) to reconsider their choices via the price increase and the messaging that surrounded it. It is possible that in this group, other policies that parents have been exposed to, such as a the ban on sales of ultra-processed foods and beverages in schools, also had an effect on their practices.

Specifically in the construction workers group, we found high consumption of soda (about 1.25 liters) and water (about 4 liters) during their work day and that participants have not changed their soda consumption practices in a meaningful way in the context of the tax. However, presence of an illness (i.e., kidney problems) triggered temporary changes in some. Moreover, soda drinking is part of the identity as construction workers and thus these individuals do not intend to change their practices. For the most part, they do not pay much attention to prices, but if (and when) money is an
In this dissertation, the interpretation of the quantitative and the qualitative results in combination yields a better understanding about the potential influence of the SSB tax on Mexicans SSB-related behaviors and psychosocial factors in general. The key conclusions of this work are that: (a) a considerable number of the Mexican adult population is aware of the tax on SSBs, but that awareness differs by socio-demographic characteristics; (b) a large majority of the population believes that the tax is not reducing consumption of taxed SSBs meaningfully; (c) having been exposed to debates, campaigns, etc. in relation the tax may have contributed to increasing health awareness and/or rethinking beverage choices in some population groups that are more sensitive to diet, nutrition, and health (e.g., parents in their role as caregivers) but not of others (e.g., construction workers); (d) the most salient determinants of SSB consumption are: social norms, liking for SSBs, perceived behavioral control, and the beverage environment; (e) Mexican adults are knowledgeable about the health consequences of a high consumption of industrialized SSBs, however, this knowledge often does not translate into intention and behavior change.

These conclusions contribute to the fields of public health and food and nutrition policy by suggesting an additional pathway through which health taxes may exert an impact on peoples’ behavior. It also highlights the complexity of food choice and behavior change and the need for comprehensive approaches, grounded in research of
psychosocial determinants, to have a meaningful impact on changing consumers’ behaviors.

Table 7.1
Principal findings in the quantitative and qualitative studies

<table>
<thead>
<tr>
<th>Variable / Construct</th>
<th>Quantitative Study</th>
<th>Qualitative Study</th>
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<tbody>
<tr>
<td></td>
<td>Parents</td>
<td>Construction Workers</td>
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<tr>
<td><strong>The SSB tax</strong></td>
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<tr>
<td>Aware of the SSB tax</td>
<td>65% of the Mexican adult population (51% in low, 58% medium, and 74.4% high SES)</td>
<td>A little less than half of the parents (16 out of 37) were aware.</td>
</tr>
<tr>
<td>Opinion about the effect of the tax on purchases and consumption of taxed SSBs</td>
<td>80% think the tax did not reduce purchases of taxed items.</td>
<td>Most thought that consumption of taxed SSBs had not changed, as a result of the tax, but remarked that it was probably having a greater effect in people with fewer monetary resources.</td>
</tr>
<tr>
<td>Noticed a variation in the price of SSBs in the 3 years prior / Cared about the price increase</td>
<td>NA</td>
<td>Noticed multiple price increases over the 3 years prior, and associated them with petrol prices and with the tax. Price increases made some parents rethink their choices and had a temporary impact.</td>
</tr>
<tr>
<td>Reaction if tax were increased from 10% to 20%</td>
<td>NA</td>
<td>Mixed reactions. The general sentiment was that it would affect people differentially based on their (low)income and level of “addiction”.</td>
</tr>
<tr>
<td>Behavior: Beverage consumption</td>
<td></td>
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<tr>
<td>Self-reported decrease in SSB consumption</td>
<td>42% reported a decrease in the</td>
<td>Most reported drinking less soda at present compared to 2-4 years prior, as a result of</td>
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</table>
since the application of the tax* 2 years prior. illness or health concerns. Children are reportedly drinking less SSBs too. only temporary and only in response to own illness.

| Consumption of taxed SSBs | Mean consumption: 462.0 ml (± 19.8)/person/day. | Average soda and juice consumption: 340 ml/person/day. Most parents reported drinking soda 2-4 times a week (at weekends). | Average soda and water consumption at work: 1.25 and 4 L/person/day, respectively. CWs drink soda daily. They pool money to buy large bottles, which they share. |

**Psychosocial determinants of SSB consumption**

| Perceived behavioral control (self-efficacy) | 32% and 38% were very confident and confident, to limit consumption of SSBs to <1 glass/week). PBC was sig. associated with a reported decrease and current intake of taxed SSBs. Most stated that they felt confident to drink less soda, but they were acutely aware of barriers to change: being used to it/“addiction”, preference/liking, ubiquity. They blamed themselves for not being able to exercise self-control. Most seemed to be making a conscious effort to reduce the amount of SSBs they and their children drink for health related-reasons. | Most were not confident to drink less soda. Quitting soda compared to quitting smoking. Barriers to change: widespread consumption at work, “addicted” to soda. |

| Affective Beliefs (liking of SSBs) | 16% and 66%, really like and like SSBs. | A majority (but not all) referred liking soda. Both groups associated soda with a wide variety of (high-fat) savory Mexican dishes; and water to none of those. | All referred liking soda. |

**Health beliefs**

<p>| Diabetes | 93 % believe SSBs contribute to diabetes. Principal outcome mentioned by most parents; belief based on experience (personal or of relative) or learned directly from health care practitioner, mass-media, etc. | Principal outcome mentioned by most CWs. |
| Obesity | 92.3% believe SSBs contribute to obesity. Some parents mentioned weight gain in children as an outcome, but not in adults. | Mentioned briefly. |</p>
<table>
<thead>
<tr>
<th>Variable / Construct</th>
<th>Qualitative Study</th>
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<tbody>
<tr>
<td>Cognitive attitudes</td>
<td>The predominant attitude is that ALL industrialized SSBs are detrimental for health. They felt ambivalent about desire to drink and desire to quit.</td>
</tr>
<tr>
<td>Perception of “addiction to soda” or “vice”</td>
<td>Many parents referred to the desire to drink Coke as an “addiction” or a “vice”.</td>
</tr>
<tr>
<td>Hyperbolic (future)</td>
<td>Health concerns weighed heavily in parents’ minds, but they often prioritize the (present) pleasure of drinking Coke.</td>
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</tbody>
</table>

Table 7.2
Principal findings only explored in the qualitative studies (continuous from Table 7.2)
<table>
<thead>
<tr>
<th><strong>discounting</strong></th>
<th>over long-term health.</th>
<th>concern/priority. Their attention is focused on the present: taste and pull of habit.</th>
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</thead>
<tbody>
<tr>
<td><strong>Social norms</strong></td>
<td>The perceived social norm is that Mexicans drink a lot of soda and that one is expected to offer soda to guests (symbol of hospitality and social status). Soda is specially consumed when people get together (e.g., celebrations). Deviance from the norm results in negative consequences, such as guests thinking that the host does not have enough money or that is greedy.</td>
<td>The perceived social norm is that most Mexicans drink soda, and the norm at work is to drink soda. Deviance from the norm can result in negative consequences such as colleagues laughing at them.</td>
</tr>
<tr>
<td><strong>Self-identity and personal norms</strong></td>
<td>Drinking soda is conceptualized as part of the Mexican culture. An identity as mothers and perceived personal responsibility in setting a good example for their children and feeding them good food seemed to mediate SSB consumption.</td>
<td>Drinking soda is conceptualized as part of the Mexican culture. It is also an indivisible part of their identity as CWs.</td>
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<tr>
<td><strong>Behavioral intention</strong></td>
<td>Most indicated wanting to drink less SSBs and further reducing SSB consumption at home. Some have set goals with their families in the past to drink less soda.</td>
<td>Most did not conceptualize / formulate an intention to change. Changes are only in response to illness, but typically consumption resumes when the pain goes away.</td>
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<tr>
<td><strong>Action plans / Implementation intentions</strong></td>
<td>Action plans tried, trying or proposed included: not buying soda or making it less available at home, drinking a small amount of only when they crave it, and/or drinking soda only on the weekends and/or social events.</td>
<td>They stop (or plan to stop) drinking soda only during episodes of disease.</td>
</tr>
<tr>
<td><strong>Environmental factors</strong></td>
<td>“Wherever you go, there is soda…soda is always there.” – This was the general feeling. Bottled water is rarely available in the places where they eat out. Soda can be cheaper and more convenient than making aguas frescas at home. There is a perception that there is too much marketing of SSBs.</td>
<td>There is widespread availability of soda and there are multiple opportunities for them to drink throughout the day. Plain water is available at work (from the tap or they buy bottled water). They found that marketing messages for SSBs are misleading.</td>
</tr>
</tbody>
</table>

**Suggestions provided to help them to stop drinking SSBs**

- They proposed that soda should disappear from the market altogether (implausible idea), having good roles
- They proposed that soda should disappear from the market altogether or not carry any money
models/family support. They also suggested that the focus should be on getting children less exposed to industrialized SSBs and more exposed to water.

Notes.
NA: non-applicable as it was not explored in the national survey; SES: socio-economic status.
* The quantitative survey was conducted in the Spring-Summer of 2016, about 2.5 years after the tax was implemented. The qualitative study was conducted in the Spring-Summer of 2017, about 3.5 years after the tax was implemented.

7.2. Interpretation of the Key Findings from the Quantitative and Qualitative studies

7.2.1 Awareness of the tax

Findings from this dissertation suggest that, at national level, a considerable number of the population was aware of the tax (65%); among low SES and medium SES individuals, the prevalence of awareness was considerably lower (51% and 58%, respectively). As discussed in Chapter 4 (Article 1), this level could be considered high. Nonetheless, while it is possible that some respondents may have given socially desirable responses, this finding can be explained by the fact that taxation of SSBs in Mexico was covered extensively by the national and international media (Donaldson, 2015, PAHO, 2015). In the current study, the largest percentage of respondents who were aware of the SSB tax was again found among older people living in Mexico City, in urban areas, and those of high SES. This finding is congruent with our initial hypothesis and can be explained by the fact that Mexico City was the context for most of the advocacy and opposition campaigns, coupled with the possibility that people of high SES living in
urban areas might have had increased exposure and attentiveness to this health messaging (print media, television, radio debates, etc.).

In the qualitative study with parents, we found that about half of the sample knew about the tax and its purpose; this concurs with the results of the national survey for lower SES individuals. However, only a few construction workers were aware of the tax. These findings may be explained by various factors related to the socio-demographic characteristics and roles of individuals in the two groups in addition to the way the tax was framed and presented to each. First, the constructions workers were all male and have low SES, whereas the group of parents was primarily composed of a middle and low SES mothers. As discussed in Chapter 6 (Article 3), Mexico is a very patriarchal society with differentiated gender roles (Figueroa, 2014), where women typically take on the role of caregivers and men of providers; in addition, most public policies and programs are targeted at women (Figueroa, 2014). These differing roles may have an influence on the type of information that these two groups consumed or paid attention to. In other words, parents responsible for child raising might have been likely to watch, read, or listen to health (and tax) related information/news/programs and then retain it, whereas construction workers may have paid little attention. In addition, in this sample of parents, the fact that their children’s schools had banned SSBs seems to have acted as an educational message for its deterrence.

Moreover, the differing findings might indicate that information on the SSB tax was not specifically targeted at certain population groups, like low-income male workers. Behavioral economics research suggests that the way in which choices and taxes are presented or framed matters and could influence their impact (Roberto and Kawachi,
Thus, it could be that the SSB tax was framed in a way that made it less salient to certain population groups, like construction workers. As a matter of fact, the principal pro-tax messages emphasized the relationships between SSB consumption and the rampant obesity and diabetes rates in Mexico, as well as the potential effectiveness of SSB taxes in reducing consumption and generating revenue for potable water fountains in primary schools (Donaldson, 2015). These messages may not have resonated as well with construction workers as they did with caregivers or parents who are in charge of children, and thus more aware of issues such as the lack of potable water in schools. Another qualitative study of awareness of the Mexican tax among adolescents in North West Mexico conducted in 2016 found that most participants were unaware of the SSB taxation (Ortega-Avila et al., 2018). Therefore, the findings in our qualitative study may suggest that caregivers of children may have been the population group that received more exposure and/or paid more attention to information in relation to the tax. Future tax campaigns in Mexico, or other countries for that matter, should thus carefully consider targeting relevant groups whose characteristics differ, including high soda consumers like construction workers.

**Sensitivity to price increases.**

Our qualitative findings suggest that all participants had noted incremental price increases in taxed SSBs in the past several years. To put this finding into context, it is important to mention two facts. First, that a study conducted in 2014 found that the tax had been completely passed onto consumers in urban areas (Colchero et al., 2015). Particularly for the carbonated SSBs category, prices were slightly higher than 1 peso per liter. Therefore, we can assume that participants in our samples were definitively exposed
to SSB price increases. Nevertheless, this study also found that increases in prices were higher for the smallest package sizes (Colchero et al., 2015). Colchero and colleagues (2015) discuss how this strategy “may reflect producers’ strategies to avoid discouraging the consumption of large package beverages that are more penalized by the excise tax,” and thus could be counterproductive against the objective of the tax. In the study with construction workers, participants reported buying large size bottles (2-3 liters), for consumption at work, because they are cheaper, while many parents reported buying the 2-liter bottles for consumption at home. Thus, buying large size bottles may be one of the strategies employed by individuals to adapt to price increases. Second, at the time our quantitative and qualitative studies were conducted, the tax had already lost a small percent of its value because of inflation — the tax was adjusted in January 2018 after it rose 10 percent inflation from the time of implementation.

Moreover, individuals in the parents’ group seemed to be more sensitive to price increases than construction workers (who sometimes seemed to not even pay attention to the price). The reason could be again be grounded on their different genders and roles. Whereas mothers have a responsibility to budget for groceries and may rely on the money that the husband brings home and on their decisions on how to spend that money⁹⁵, all construction workers obviously work and, as men in a patriarchal country, most likely make decisions about their money without consulting with their partners.

⁹⁵ Note: about half of the mothers in the parents’ group did not work.
7.2.2 Effect on the tax on SSB consumption and the psychosocial determinants of consumption

Participants’ opinion about the effectiveness of the tax.

In the quantitative study, 80 percent of adults at national level thought that the fiscal measure was not decreasing the purchase of SSBs. In addition, the variable “opinion about whether the SSB tax was reducing SSB purchases” was not a significant predictor of reported change in SSB consumption or current intake of taxed SSBs. In both qualitative studies, participants believed that, overall, the tax had not changed patterns of consumption of taxed SSB — nevertheless, some parents indicated (even some of low SES) that the tax was probably having a greater effect in people with even fewer monetary resources than themselves. It seemed like construction workers based their judgments about the absence of impact of the tax on their own behavior, while mothers mostly based it on their perception of their husbands’ and others’ soda consumption. These finding may be further explained by two additional factors. First, even if purchases of SSBs have decreased by 7.6 percent (Colchero, Rivera-Dommarco, et al., 2017), soda is considered part of contemporary Mexican culture; thus, the change in participants’ purchases (in number of units or volume) of taxed beverages may have been small and not clearly noticeable to them. The perception might be that SSBs are still ubiquitous, or perhaps there has not been a large enough critical mass of those who have changed their behaviors to have precipitated an overall change in social norms (Rogers, 2003; Xie et al., 2011).
Reasons why participants thought the SSB tax was not having an impact.

The principal reasons why participants in the qualitative study thought the tax was not having much impact were the fact that soda drinking is a widespread habit and that many people were “addicted” to Coca-Cola. (The constructs of addiction and habit are further elaborated below). This finding is consistent with a recent qualitative study exploring Mexican adolescents’ views on SSB taxation in Mexico, where “addiction” and “habit” were also mentioned by participants as a factor that could hinder the potential effect of the tax (Ortega-Avila et al., 2018).

Additionally, participants largely thought that the current tax (10 percent) was not sufficient to reduce SSB intake. Most studies that have simulated the effects of the SSB tax suggest a 20 percent of the total unit price to have a meaningful effect (Brownell & Frieden, 2009; Cabrera Escobar et al., 2013). Therefore, the current tax rate could indeed be a drawback when aiming to reduce intake among high consumers and people who are habituated. This shows that while price is an important determinant of SSB consumption, it might not be the primary driver. Therefore, in countries like Mexico where soda consumption is considered a part of the culture, it is important to take into account socio-cultural determinants (in addition to economic ones) in the design of public policies and programs.
7.2.3 Changes in SSB consumption in the context of the tax

(Self-reported) Changes in SSB consumption.

In the quantitative study, 42 percent of adults at national level reported having decreased their consumption of SSBs in the two years prior (i.e., since the year the tax was implemented). For those who lived with children in their homes, 33.8 percent indicated that children had decreased consumption as well. The percentage of adults who reported a decrease in consumption in SSBs among children in the household was significantly higher among those who had reported a decrease in their own consumption. Our findings thus concur with the econometric evaluations of the tax that found a sustained decrease in purchases of taxed SSBs even two years after impositions of the fiscal measure (Colchero et al., 2017c). Nevertheless, the results of our study and the quantitative evaluations of the tax cannot be straightforwardly compared because they rely on different datasets covering different periods. In particular, our study relies on subjective measures (i.e., self-reported data) and not on objective measures about the amount of the decrease. Nevertheless, what is important to highlight from our findings is that a considerable portion of the Mexican adult population perceive and reported that they and the children living in their homes are drinking less SSBs. Even if participants gave socially desirable responses, these findings could indicate that the social norm regarding SSB drinking is changing, as perception of change is a prerequisite for shifts in social norms.

In the qualitative studies, most parents perceived that they were drinking less industrialized SSBs than in the two to four years prior — changes included drinking
SSBs less frequently and in lesser amounts, setting family rules to not buy soda to have in the household, etc. Some also felt that their children were drinking less SSBs (including juice, flavored milk, and soda) and more plain water and/or *aguas frescas*; yet others thought that their children’s beverage consumption habits had always been good and did not need modification.

In contrast with the parents group, constructions workers did not report permanent and/or meaningful changes in amounts or frequency of soda consumed over the previous year; however, something worth noting is that when money is a concern, they tend to buy cheaper brands, like Pepsi and Red Cola, instead of Coca-Cola.

**Motivation to change: Disease and Health Beliefs.**

In the quantitative study, the likelihood of an individual reporting a decrease in consumption was significantly associated with being aware of the tax but not with health beliefs. Interestingly, there was a significant association between being aware of the tax and reporting that SSBs contribute to negative health conditions. These findings may suggest that those who were exposed to the information in relation to the tax may have developed more awareness regarding health outcomes of high SSB consumption. The reason why health beliefs was not a significant predictor of reported decrease in SSB could be that there was little variation in the beliefs data.

In the qualitative studies, we found that in both groups, changes in SSB consumption were primarily in response to health concerns. Nevertheless, there were substantial differences between the two groups. In the parents’ group, the main reasons cited for having decreased soda consumption were onset of an illness related to high soda
drinking (personally or of a family member), learning (i.e., reading, hearing) about the negative health effects of a high SSB consumption, and wanting to instill good habits or set a good example for one’s children. Whereas in the case of construction workers, a decrease in soda consumption tends to be only temporary and only in response to one’s own illness. Likewise, studies of motivations to quit smoking have found that higher cigarette prices appear to be associated with greater motivation to stop smoking; nevertheless, health considerations are the core motivator to quit (McCaul et al., 2006). The implications of policies that focus on health effects to change behavior, in this case consuming SSBs, should thus be further considered. Our findings on SSB-related beliefs, however, suggest that people are well informed about the health effects of SSB drinking and that this may be partly the results of public health campaigns.

### 7.2.4 Potential effect of the tax (via price and increased awareness) on consumption and psychosocial determinants

**Effect of prices increases (i.e., the tax).**

The effect of price increases (e.g., due to the SSB tax) on SSB consumption was only explored in the qualitative studies.

In parents, for the most part, an increase in the prices of industrialized SSBs was not perceived as a trigger point to dramatically or permanently reduce SSB consumption. Many parents perceived that increases in soda prices made them reflect about the amount of money they spend on those beverages, whether to cut down on consumption, and even made them reduce or quit soda consumption (albeit only temporarily). However, participants largely perceived that the SSB tax had not reduced consumption of soda as a
whole. The tax (i.e., 10% price increase) probably had a very small effect on parents’ SSB consumption. Our findings regarding a short-term change in response to prices contrast with a study of the impact of the tax, which found larger decreases two years after the tax in comparison to the first year (Colchero, Rivera-Dommarco, et al., 2017). Moreover, the economic theory of rational addiction which poses that “addicts respond more to permanent than to temporary changes in prices of addictive goods” (Becker & Murphy, 1988).

In construction workers, increases in prices of soda may be more of a burden because participants tend to buy it on a daily basis and sometimes even a few times a day. However, it seems that this group is fairly inelastic in regards to increases in the price of SSBs (i.e., they might keep buying them regardless of the price), but we might also argue that the current level of the tax is probably too low for this group to even consider modifying its practices.

We could not objectively assess the impact of the tax on purchases and consumption of taxed products since this was outside of the scope of this study and it has already been the object of multiple evaluations conducted by the INSP in Mexico (Colchero, Guerrero-Lopez, et al., 2016; Colchero, Molina, et al., 2017; Colchero, Popkin, et al., 2016; Colchero, Rivera-Dommarco, et al., 2017; Colchero et al., 2015; Colchero, Zavala, et al., 2017). Nevertheless, from the qualitative descriptions in our study, we are able to infer that the construction workers in our sample perceived that their soda consumption had remained stable within the past few years, whereas most parents in our sample perceived that increases in the price of soda only had small and short-term effects on their SSB consumption. Based on our qualitative data, we are unable to
determine if the price increase attached to the tax has had a permanent effect on children’s SSB consumption.

7.3.5 Most important psychosocial determinants of SSB consumption and barriers to change

Based on the analysis of SSB consumption using the Reasoned Action Approach, we found some common and strong determinants of consumption. In the quantitative study, we found that a lower liking of SSBs and feeling more self-efficacious (but not health beliefs) were significant predictors of a lower current consumption of taxed SSBs and a reported decrease in SSB consumption. In the qualitative studies, we found that participants in both groups were well aware of the negative health effects of a high consumption of SSBs. Nevertheless, they found it difficult to reduce their consumption of soda given their liking, a feeling of addiction and habituation, a perceived low behavioral control, and the prevailing social norms. The following sections will discuss each one of these constructs.

Liking of SSBs (Affective beliefs).

Innate predisposition and development of preference for sweet taste. In the studies included in this dissertation, liking of SSB was a very strong determinant of SSB consumption. In the quantitative study, individuals with a stated stronger preference for SSBs had a higher SSB consumption were less likely to report a decrease in SSB consumption. In the qualitative studies, soda (Coca-Cola in particular) was hailed for its delicious taste. From the analysis of the qualitative data, we also learned that soda (i.e., Coca-Cola) was associated with a large number of foods whereas water was not. These
findings may be explained by two potential factors: the innate human predisposition to liking sweet tastes and familiarity (i.e., associate learning, exposure) with SSBs (Drewnowski et al., 2012).

As stated in various parts of this dissertation, humans have a biological predisposition for sweet tastes. Babies are born with an innate preference for sweet, and liking for high levels of sweetness in foods and beverages is heightened in infancy and childhood (Mennella & Bobowski, 2015), but decreases during adolescence and adult ages (Desor & Beauchamp, 1987; Liem & Mennella, 2002; Monneuse et al., 1991; Pepino & Mennella, 2005; Schwartz et al., 2009). On a different note, studies suggest that men prefer higher intensities of sweet than women (Hayes & Duffy, 2008; Monneuse et al., 1991).

Some studies have suggested that high levels of sweetness or sustained exposure to sweet(s) taste help maintain or favor preference for this taste. This has at least been demonstrated in association studies comparing babies who were routinely fed sweetened water during the first months of life, to babies who were not — the earlier exhibited a greater preference for sweetened water when tested during infancy and several years later (Beauchamp & Moran, 1982; Pepino & Mennella, 2005). Based largely on these studies, it is commonly believed that a reduction in exposure to sweetness could facilitate
adaptation to lower sugar intakes; nevertheless, there is not enough evidence to endorse this recommendation (Appleton et al., 2018).  

Nevertheless, even if because of lack of adequate studies this has not yet been proven, a large body of research has found that food habits developed at an early age tend to be maintained throughout adulthood (Contento, 2014). It seems that a sustained preference for sweet taste throughout life is learned and modulated by experience (Drewnowski et al., 2012), as foods acquire meaning through associative learning (Beauchamp & Cowart, 1985; Sclafani, 2004). Therefore, the recommendation of reducing children’s exposure to sweet foods and beverages would still hold from that perspective. The wide availability of intensely sweet foods (and heavy marketing) provides ample opportunities for people to repeat and further reinforce the experience (Popkin & Nielsen, 2003).

On a different note, studies have also found that sugars have pain and stress reducing properties — which may also influence a liking for sweetness (Stevens et al., 2004). Thus, in stressed low-income populations, like construction workers, sweet foods and beverages may be consumed to compensate for feelings of stress.

*Taste preference as a social identifier.* According to Bourdieu, cultural tastes and lifestyles are dependent on one’s class position which is in turn determined by the economic and cultural capitals that one possesses (1984). Key concepts in his theory are  

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96 A recent (industry-funded) study systematically reviewed studies available and concluded that based on the small, low-powered, and heterogeneous body of research the evidence was equivocal and did not lend support to such a recommendation (Appleton et al., 2018).
what he called “taste of luxury” and the “taste of necessity.” That is, those with large resources/capitals have the luxury to prioritize aesthetics over function, whereas those under conditions of scarcity tend to favor the acquisition of items of necessity, such as cheaper, high-energy filling foods (Bourdieu, 1984). However, for Bourdieu, taste is not only a function of income (as economic theory may suggest), rather it is developed early in life, through socialization and experience, and tends to endure even if one’s SES position changes (Bridle-Fitzpatrick, 2016).

Bourdieu’s proposition about the relationship between SES and food preferences was explored in Mexican families of different SES as part of an in-depth ethnographic study in 2013 in Northwestern Mexico (Bridle-Fitzpatrick, 2016). This study also explored the relationship between SES and the diets that people aspire to consume. Bridle-Fitzpatrick (2016) found that high-income families placed a greater value on “lighter” foods, especially fruits and vegetables and despised some lower-cost foods popular in the low-income community such as pork and artificially flavored juice (this demonstrated the “taste of luxury”); low-income families prioritized and preferred more filling and economical foods (the “taste of necessity”). Bridle-Fitzpatrick (2016) also found that medium-income families had the highest consumption of soda and reported the most satisfaction with their diets and fewer dietary changes they would like to make; whereas the high-income families expressed an aspiration to cut down on less-healthy foods and beverages and eat healthier. Low-income families had aspirations for foods beyond their means, such as ultra-processed/prepared foods, cheese, better meat, and more soda. Also, low-income families were not interested in limiting their diets in order to reduce their risk of obesity.
In the qualitative part of this dissertation, parents and construction workers were mostly of low and middle SES. While we did not test the propositions of Bourdieu’s theory and did not explore food consumption, there are some points of interest with Bridle-Fitzpatrick’s study that could be applicable here. In the parents’ group, we found a preoccupation for one’s own health and for families’ health: most expressed a desire to cut back on soda back, but stated how difficult it was to do so. Note, our study was conducted four years after this one, at a time when not only the SSB tax but may other regulations and programs (i.e., a tax on junk food, the regulation of marketing of unhealthy foods and beverages to children, and the ban of the sale of unhealthy foods and beverages in schools, etc.) have been implemented. Thus, it is plausible that this package of public policies, together with other programs, may have made families, and caretakers in particular, to reflect upon their diets and health regardless of their SES. In the case of construction workers, in line with Fitzpatrick’s study, we found that they were not interested in modifying their diets to reduce their health risks. We can assume that these young men that work in construction sites were raised in poor communities (with an affinity for ultra-processed foods and beverages), that they do not have their own resources to buy them, and that they are not willing to quit it.

“Addiction” and habit.

Participants in the qualitative studies found quitting drinking soda (Coca-Cola in particular) very difficult, based on the notion that it is “addictive” and that it was already a habit. While parents and construction workers did not elaborate much on what makes soda addictive, some referred to it as “physically” or “psychologically” addictive, as an extreme bodily satisfaction; some even explicated the addictive potential of Coca-Cola by
comparing it with highly addictive substances like cocaine, alcohol, and tobacco, but not necessarily with the caffeine it contains. A qualitative studies of water consumption in low-income Mexican adults also found that participants believed that soda contains some sort of drug that makes it addictive (Espinosa-Montero et al., 2013).

Having stated the aforementioned, there is no empirical evidence that SSBs are “addictive.” A growing number of studies have found that sugar produces a very strong effect on the brain’s reward mechanisms, which can induce strong cravings (Avena et al., 2012); moreover, caffeinated options (like cola carbonated SSBs) are stimulants that can be mildly addictive (Meredith et al., 2013). However, it has not yet been proven that sugar, or SSBs for that matter, can cause an addiction in the same way as drugs may.

Experts argue that in reality, a soda drinking habit is two habits: the soda habit and the caffeine habit (Popkin, quoted in Magee, 2018). Indeed, the participants’ feelings of “addiction” to soda might precisely be better explained from their deeply ingrained habituation. Early and continued exposure to SSBs, and consumption in social contexts reinforced by environmental cues — such as ample availability of SSBs at home and other venues, in addition to aggressive marketing — may have all contributed to the development of this deeply entrenched habit. In fact, in economic theory, addiction has been described as “an extreme form of habit formation” (Becker & Murphy, 1988).

In light of these findings, it would be important in the Mexican context to, first, continue implementing and monitoring measures to reduce children’s exposure to industrialized SSBs (to prevent habituation from developing), second, consider implementing measures to reduce adolescents’ and adults exposure to industrialized SSBs to reduce the number of cues they receive to drink them, and third, provide consumers
with accurate information in regards to what makes SSBs to be craved and caffeine dependence, and with skills for them to be able to break the soda drinking habit.

**Social norms.**

There is ample evidence that social norms surrounding eating have a powerful effect on both food choice and amounts consumed, because, among other things they facilitate food sharing, and because following (or not following) said norms is associated with social judgments (Higgs, 2015).

In our qualitative study, we found that consumption of soda, and Coca-Cola in particular, is considered part of the Mexican culture (“We are Mexicans, we drink soda”), even though the practice only became widespread in the past few decades. Additionally, for construction workers, drinking soda at work is another perceived norm, coupled with being conceived as a part of their identity. Deviating from the norm, for example, by offering water to guests instead of soda, results in negative consequences, like guests becoming offended or attributing negative social traits to the host such as being poor or greedy.

In spite of this seemingly strong social norm, many parents reported to be socializing their children to drink more water, to the extent of it becoming norm in some households. This is possibly the result of the many policies and programs that, for the past few decades, have encouraged parents to give their children water instead of SSBs. The aforementioned is summarized by the fact that many parents reported drinking soda less frequently than in the prior years, which may hint to the beginning of a change in norms regarding SSB drinking. Nevertheless, the number of people who have changed or
the amounts changed might not have yet been enough to precipitate a larger overall change in socials norms (Rogers, 2003; Xie et al., 2011).

In Mexico, the development of a culture of soda drinking was brought about and was backed up by investments worth billions of dollars. Reverting this norm might prove difficult but possible, as examples from changes in social norms regarding smoking have shown. As Graff and Ackerman explain, specific “social norm change” approaches yielded tremendous public health gains in tobacco control, “creating a social environment and legal climate in which harmful products and conduct become less desirable, acceptable, and attainable” (Graff & Ackerman, 2009). Smoke-free air policies are credited with having positively changed the social climate; but so are tobacco taxes which made smoking less affordable. In addition, strategic culturally appropriate mass-reach health communication interventions and counter marketing strategies in different media (e.g., television, radio, billboards, print) have been promoted (CDC, 2014), helping to uncouple smoking for the messages and ideas (freedom, masculinity, inconformity) promoted by tobacco companies. While measuring social norms (at a national level) and assessing the direct influence these had on tobacco cessation is difficult, experts agree that they “played an important role in the sea change that occurred in smoking behavior during the latter half of the 20th century” (RWJF, 2011). It is likely that the dramatic changes were the result of the combination of policy and legal developments which interacted with public attitudes, norms, and behavior change (Kingdon, 1984, as reported in RWJF, 2011).

Nevertheless, studies in contained spaces, such as schools, have found that using a social norms approach (for example, to “denormalize” the behavior) is an effective way
of changing children’s’ and youths’ perceptions regarding tobacco (Sheikh et al., 2017). On a different note, the social norm change program for tobacco control, which was successful in California, is now being promoted for obesity control there (Graff & Ackerman, 2009). While its success is yet to be determined, the transferability of these types of programs is definitely applicable.

**Perceived behavioral control.**

Among the studies included in this dissertation, the confidence to limit consumption of SSBs was a very strong determinant of actual consumption. In the quantitative study, individuals who felt stronger control over their consumption of SSBs had a lower SSB consumption and were more likely to report a decrease in consumption in the two years prior. In the qualitative study, most parents expressed being confident to further reduce their soda consumption, yet, at the same time they recognized it would be difficult to break the habit, particularly for those “addicted” to soda. Construction workers felt little confidence to change, also based on the idea that soda drinking was a habit, “addictive,” and part of their work culture. These findings may be explained by several potential factors.

First, the difference in perceived control between construction workers and parents may be explained by their actual drinking patterns and contexts: workers drink soda on a daily basis in a social environment that strongly reinforces the practice, while the later drink it only a few times a day.

Second, perceived behavioral control (self-efficacy) is developed by observing and learning from others (Bandura, 1999). However, the individuals in our qualitative
studies, particularly construction workers, may not have good role models who practice self-control in relation to SSB consumption from whom they could learn.

Third, the obesogenic environments, typical in low-income communities in Mexico, and aggressive marketing of ultra-processed foods and beverages constantly challenge and erode people’s will power and self-control to change behaviors. It has been posed that one of the characteristics of the obesity environment is its ability for strongly stimulating or triggering the intake of highly palatable foods (such as sweet foods and beverages) even in satiated persons (Berridge, 2009, as reported in Drewnowski et al., 2012). For instance, Bridle-Fitzpatrick (2015), in a qualitative study of food environments in three different SES communities in a Mexican city, found that low-income neighborhoods had a higher number of access points to ultra-processed snacks and beverages as compared higher income neighborhoods; teenage participants in Bridle-Fitzpatrick’s study noted that the ubiquitous presence of these products made it very difficult not to pay attention to them because they found them “tempting” and “irresistible.” In our qualitative studies, we did not conduct a comprehensive assessment of the food environments but nevertheless noted that around the school environment there were multiple access points to buy ultra-processed SSBs and snacks; and participants were quick to note that, in their environments, soda is “everywhere”. Therefore, we hypothesize that participants in our qualitative study live in environments with high levels of chronic temptation, which makes it more difficult for them to exercise self-control.

Fourth, if we conceptualize perceived behavioral control as the ability to choose long-term over short-term outcomes — the opposite of the hyperbolic (future)
discounting concept — we could argue that this construct is probably influenced by participants’ SES. Research shows that people of low SES focus more on the present than the future (Guthrie et al., 2009), in part because they have immediate needs that they need to meet. In addition, poverty causes stress possibly making people less capable of thinking clearly and possibly favoring habitual behaviors at the expense of goal-directed ones (Haushofer & Fehr, 2014). In this regard, we should also take into account that in many parts of Mexico (including Cuernavaca where this study was conducted) crime and violence are ongoing, pressing issues (Seguridad Justicia y Paz, 2018). Therefore, this situation likely further diminishes people’s ability to worry about long-term goals. For instance, parents in our study complained about drug dealing problems in the neighborhood and worried about letting their children play on the street. This is one of the many short-term goals with which participants were more preoccupied. Similarly, many construction workers face serious, daily dangers as this profession has one of the highest occupational risks (Sanchez-Roman et al., 2006). Consequently, one could even question whether the usual definition of perceived control even makes sense for people of lower SES who do not have the luxury to plan long-term.

While there are multiple structural factors (i.e., poverty) that may affect participants confidence to reduce their SSB consumption, coordinated policies are required to address, at least, restricting the availability and exposure of industrialized SSBs for adults. The Mexican government should thus consider targeted nutrition education, social, and behavior change interventions to help participants in these groups develop the self-efficacy required for these changes.
**Beverage Environment.**

*Access to taxed SSBs.* In both groups in the qualitative studies, we found that the ubiquity of soda made it difficult for participants not to give up to the temptation of drinking it. The issue of how the current food environments promote overconsumption of unhealthy foods and beverages was out of the scope of this study, nevertheless, it has been comprehensively covered in other works (Barquera et al., 2013; Barquera et al., 2010; Bridle-Fitzpatrick, 2015; J. A. Rivera et al., 2012). What is more important for our purposes is that participants in our qualitative study noted that soda is “everywhere they go”, “even in the farthest away villages.”

The Mexican government has already taken steps to decrease children’s access to ultra-processed SSBs and foods by banning their sale from schools (Secretaría de Educación Pública & Secretaría de Salud, 2010, 2014). However, implementation has been marred by delay and low compliance (e.g., industrialized SSBs are still sold in some schools); plus, there is no penalty for noncompliance (Jimenez-Aguilar et al., 2017). Therefore, monitoring and overseeing of important regulatory policies like this one is critical. There is also less programming to reduce SSB consumption in adults beyond the SSB tax and messaging that surrounds it, which is why nutrition education and behavior change interventions are recommended here.

*Lack of trust in tap water.*

In this dissertation, we found that most people have access to potable water in their homes and/or communities. However, to a great extent, people do not trust it. This seems to be a barrier to drinking more plain water and to reducing SSBs. In addition, even though the government agreed to use part of the SSB tax revenue for building
potable water fountains in schools, there is still limited drinking water infrastructure there. Even in the schools where the study was conducted, mothers were distrustful of the water. Thus, the Mexican government should abide by its commitment to building drinking fountains in schools, invest in water infrastructure to repair defective infrastructure, and develop campaigns to increase trust in public water.

**Affordability of taxed SSBs.** A worrisome finding which emerged from the qualitative study is that in some instances, soda can be more convenient and cheaper than making aguas frescas at home or buying natural juice from a street vendor. The fact that industrialized SSBs can be cheaper than the traditional homemade fruit beverages or even bottled water is alarming — this was precisely one the arguments put forward by health advocates in proposing a tax. A recent study which analyzed trends in the affordability of industrialized SSBs in 82 countries (from 1990 to 2016), found that SSBs have become more affordable in low and middle-income countries, and that bottled water is typically more expensive and less affordable than SSBs (Blecher et al., 2017). By increasing the price of industrialized SSBs and keeping price of bottled water constant, water becomes a more attractive alternative. Therefore, manipulating the price of industrialized SSBs (i.e., making them less affordable) through taxes is definitively an important strategy to make them a less attractive option.

**Marketing of taxed SSBs.** Another important issue is the excessive advertisement of SSBs. Participants in the qualitative study, both parents and construction workers, pointed out that there was “too much publicity” encouraging people to drink soda. Participants felt this publicity is targeted at different groups (adults, children, etc.) and it should be cut down.
Excess advertisement of ultra-processed foods and beverages has been identified as a significant contributor to the obesity epidemic in Mexico; recommendations have been provided to at least reduce children’s exposure to it (Barquera et al., 2010b, Rivera et al., 2012). In 2014, the Mexican government passed a law to regulate the marketing of unhealthy foods to children on TV during certain times, and also in movie theaters (Secretaría de Salud, 2014). However, food companies have failed to adhere to a voluntary code to reduce marketing to children (Théodore et al., 2016, CONAR, 2009a). Nevertheless, the law does impose a penalty for non-compliance. While the evaluation of this law is still in process, an earlier study found loopholes in it, such as the fact much marketing directed at children (directly and indirectly) takes place outside to the TV viewing times as defined by law (Théodore et al., 2016).

**Perceived Behavioral Control and the Environment**

At the intersection between the food/beverage environment and self-efficacy is the participants’ belief that dietary decisions and health are an individual’s choice and responsibility as opposed to being the result of structural factors, which the state and food companies are responsible for. Nevertheless, as Cohen points out, “a more accurate conceptualization of the obesity epidemic is that people are responding to the forces in their environment, rather than lacking in willpower and self-control” (Cohen, 2008).

We argue that the participants’ outlook is the result of neoliberalism in contemporary health promotion, which shifts blame to individuals for their choices and bad health, especially if they have had access to information (Schrecker, 2016). The beverage industry spends large amounts of money on advertisements to increase
consumption of its products, yet at the same time, it blames consumers for not practicing self-control. The food industry as a whole advocates for non-regulation (or self-regulation) and for giving people information to make good choices. However, as evidenced by the participants’ responses and behaviors, knowledge alone does not necessarily translate into good practices. Participant responses demonstrate that they have little self-control in the presence of soda, and that the best way for them not to consume it would be if it were not available.

Thus, the findings of our qualitative study lend support for the regulation of the availability and marketing of SSBs as a way to guide people towards healthier choices.

**Health beliefs.**

The work undertaken as part of this dissertation (both in the quantitative and qualitative studies) found that Mexican adults are knowledgeable about the negative outcomes of drinking industrialized SSBs. This is likely the result of many governmental policies and programs, as well as information provided from civil society platforms and mass-media channels, that have reached the population in the past decades. In addition, the fact that a considerable number of the population has type 2 diabetes or a relative/friend who has it — (in our study, half of the parents and construction workers reported having a relative with diabetes) — has potentially acted as a source of information and a cue to action for some.

Nevertheless, we found that knowledge on its own was not necessarily associated with a change in SSB consumption. In the quantitative study, beliefs about health outcomes of SSB drinking was not associated with SSB consumption or a reported
change in consumption. In the qualitative study with parents, health concerns (and most particularly illness) had prompted them to reduce SSB consumption and give less SSBs to children. However, for construction workers, it was not enough to trigger a change.

A worrying finding from the qualitative studies is the perception that drinking soda in “moderation” is not harmful, coupled with an absolute unawareness about what constitutes a “moderate amount.” This belief may perhaps explain why participants were not willing to quit soda completely. As discussed in Chapter 5 (Article 2), the belief that anything can be consumed in moderation seems to derive from the food industry, which also promotes the message that there are no bad foods or beverages. This argument has repeatedly been used by the food industry to justify its opposition to any government interference in the formulation, distribution, or promotion of unhealthy foods and beverages. However, as evidenced in this study, this overly simplistic and ambiguous concept of “you can eat unhealthy foods/beverages in moderation” is not helpful for individuals to restrain their soda consumption within an adequate limit. This is compounded by the fact that participants cannot seem to adequately define what is a “moderate amount.” Researchers have found that generally people are bad at estimating portion sizes, the caloric content of food, and even the food they have just eaten (vanDellen et al., 2016). A “moderate” portion size depends on how much someone likes the food and how much they are already eating or drinking (vanDellen et al., 2016). It

97 Experts recommend that SSBs be consumed only sporadically and in small portions (Rivera et al, 2008).
also does not help that most official dietary advice, including the Mexican dietary guidelines (Bonvecchio-Arenas et al., 2015) and current national health promotion campaigns (Secretaría de Salud, 2018), provide messages such as “reduce consumption of soda” (“reduce tu consumo de refresco”) or “cut back on soda” (“bájale al refresco”) without specifying limits or amounts. We find that these types of messages are not an effective way to guide people’s choices, as they do not provide a benchmark for people to set dietary goals or to compare their dietary intake.

On a different note, an interesting yet disturbing finding of the qualitative studies was the widespread belief that combining water with soda (drinking water with or after soda) “dilutes” the negative effects of the sweet beverage. Also, a smaller number of participants thought that drinking water on its own was not good either, and that it was better to balance it out with a sweet beverage. We have been unable to find the source and/or origin of these type of beliefs, as an online search of the published literature and discussions with researchers in Mexico brought no information in this regard. However, we believe that this could be rooted in the belief that water has detoxifying properties and, again, stemming from the food-industry’s messaging that it is better to eat everything in moderation.

Our findings suggest that the Mexican’s population’s awareness of health effects of soda and other SSBs is high, probably as a result of public policy and programs. Nevertheless, more specific and targeted nutrition education programs and advice are needed, among others things, to provide people with accurate information about the adequate limit, frequency, and quantity to consume soda and other industrialized SSBs.
7.3. Implications for Research, Practice, and Policy

The findings of this dissertation point to several future directions for research, practice, and policy in regards to SSB taxation and SSB reduction interventions.

7.3.1 Research Implications and Future Directions

Research implications include new directions in understanding the potential signaling or awareness raising effect of SSB taxation (and the campaigns and debates that surround them), as well as the modification of psychosocial determinants of SSB consumption and actual SSB consumption in the context of a SSB tax.

First, examining the signaling or awareness raising impact of SSB taxation in other countries, ideally with pre-post and mixed-methods designs, will provide additional evidence as to whether accompanying taxes with informational and/or educational campaigns may further amplify the impact of these fiscal policies in the short- and/or long-term.

Second, further large quantitative surveys, in Mexico and other countries, should explore other potential predictors of SSB consumption, such as social norms, motivations to change, intention to change, and perceived risk.

Additionally, more research is needed in regards to the determinants of SSB consumption in other socio-demographic groups, including adolescents and other high SSB consumers such as taxi drivers and truck drivers, and people of medium- and high socio-economic status, so as to generate evidence that can be used in developing targeted nutrition education campaigns.
In particular for construction workers, there is no published research about overweight/obesity and chronic disease rates among this group, and their association with SSB consumption. The fact that this group has a high energy expenditure puts into question to what extent the amount of soda they drink is detrimental for their health when at the same time they are drinking a high volume of water. Additional quantitative studies are required to understand the contribution of SSBs to dietary energy intake and health outcomes among this group. This type of information will be important to have in consideration for the development of messaging and advice targeted at construction workers specifically.

7.3.2 Practice Implications and Future Directions

The Mexican government has already implemented several regulatory measures, including the SSB tax, to decrease SSB consumption. Nevertheless, based on the findings of this dissertation, we consider that these should be supported with effective nutrition education (i.e., behavior change) programs to educate the population to make adequate beverage choices for their health, develop self-efficacy and self-regulation skills to resist temptation, and eventually shift the social norm in regards to consumption of soda in particular.

Practice implications include the information that health care professionals, nutrition, educators, and the civil society communicate to the public in relation to taxed SSBs and water consumption, and the development of stand-alone targeted nutrition education and/or social marketing campaigns, or of campaigns to accompany SSB taxes.
First, the studies included in this dissertation uncovered that the Mexican population is knowledgeable about the health consequences of a high consumption of industrialized SSBs; however, they lack specific instrumental knowledge about the sugar content in industrialized SSBs, and the recommended maximum daily/weekly intake of SSBs (soda in particular). This information is crucial for people to be able to assess their SSB consumption, to set goals to drink less, and monitor them. Additional information that needs to be clearly conveyed to the public is that drinking water with/or after soda does not help offset the harm of soda.

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Second, the findings of the qualitative study identified that price was not a primary determinant of consumption of taxed SSBs; on the contrary, social norms, the food environment, and perceived-behavioral control were. Given the importance of these determinants, future public health and nutrition education campaigns should make these the focus of their efforts. For example, a social norms approach to reducing consumption of industrialized SSBs in the Mexican context could aim at correcting the misconception of what is normal behavior, highlight the shifts in practices that are being registered (i.e., parents are giving more water to their children), and (in the case of construction workers), underscore consuming large amounts of water. In addition, community agents (e.g., faith organizations, non-governmental organizations, etc.) could be further mobilized or leveraged to promote a practice of drinking plain water. Moreover, public advocates should teach people about the environmental forces that shape their dietary choices and empower them to protest against them. This type of content has been successfully included in nutrition education curricula developed by the Behavioral Nutrition Program at Teachers College Columbia University, such as the Choice, Control and Change (Koch et al., 2010), In Defense of Food (Bhana et al., 2015), Food Day School (Koch & Contento, 2011), and Food, Health & Choices curricula.

Nevertheless, all of these recommendations for practice should consider the practical, political, and economic context of a country, Mexico in this case. As repeatedly
mentioned throughout this dissertation, there are many factors at work in the promotion of consumption of industrialized SSBs, an important one being the economic interests of transnational beverage corporations. Therefore, it should be acknowledged that even though the Secretariat of Health and the National Institute of Public Health in Mexico may wish to promote further changes in SSB consumption and change the social norm about it, there is a big push back from these corporations which have considerable power and larger resources than public institutions have. In addition, several of the SSB and tax-related campaigns were funded by a foreign philanthropic organization\textsuperscript{98}, however, that source of funding may not always be available. Thus, in the absence of external funding, implementation of future campaigns may prove difficult.

Finally, we consider it critical to address men in public health and nutrition education campaigns. In the qualitative study with parents, we found that fathers seem to be the ones who drink soda the most, and that they have an influence in the family’s beverage habits, while in the study with construction workers we found that these men felt no responsibility in regards to the influence their SSB behavior has on others. Thus, targeting men specifically is crucial to changing behaviors as models for these behaviors, regardless of the “ownness” they feel toward them.

\textsuperscript{98} Bloomberg Philanthropies donated about USD 16.5 million for tax advocacy and research related activities (Bloomberg, 2015).
7.3.3 Policy Implications and Future Directions

The results of qualitative studies show that the current level of the tax may be not be enough to achieve important changes in consumption of taxed SSBs in some population groups. One of the findings of the qualitative study with parents was that the current taxation of SSBs may have had a small effect on SSB consumption. Thus, a higher level of the tax (20 percent) may impose an additional constraint. Based on mathematical models, experts recommend that taxes are at least 20 percent of the total unit price to have a meaningful effect (Brownell & Frieden, 2009; Cabrera Escobar et al., 2013). Public health advocates in Mexico are advocating for an increase in the tax, and this study would lend support for such an increase.

The results of the quantitative study in particular showed that the Mexican SSB tax may had had an awareness raising effect, plausibly amplifying the effect on consumption of the price increase. Therefore, future junk food tax campaigns in Mexico and other countries should consider accompanying tax proposals with targeted and broad educational campaigns.

Additional policy implications include those that would encourage or require a more supportive external context in the form of neighborhood environments.

The Mexican government has already taken steps to ban the sales of SSBs from primary schools and to regulate marketing of ultra-processed foods and beverages to children. However, studies have found some weaknesses in implementation and design (Jimenez-Aguilar et al., 2017; Théodore et al., 2016). Therefore, there should be adequate surveillance and evaluation of these measures to ensure that they are correctly implemented. Additionally, one of the most consistent findings of the qualitative studies
was the challenge of reducing soda consumption in an environment where soda is so ubiquitous. Therefore, the Mexican government should consider measures to further reduce children’s as well as adults’ exposure to industrialized SSBs to decrease the number of cues they receive to drink them. An initial first step could be to ban the sales of SSBs from educational spaces like high-schools and universities and hospitals. A further step could be to limit the number of access points to SSBs in neighborhoods and to pass legislation to reduce overall marketing of SSBs. Furthermore, having simple front of pack labels that indicate which commercial beverages are high in sugar (an approach taken by other countries like Chile and Ecuador) may further help people make good choices at the point of purchase.

Ultimately, drinking plain water should be made an easier choice, and the government could do this by investing in potable water infrastructure, for example, by repairing old, rusty pipes, and building public trust in tap water.

7.4. Strengths and Limitations

This is a novel study in many ways. It the first study that has looked at the relationship between awareness of a national SSB tax and self-reported change and consumption of taxed SSBs. Therefore, the findings may be of interest to the many other countries, regions, or cities that have passed or are considering passing SSB taxes. It is also the first study in Mexico that has systematically explored soda and water consumption among construction workers as well as the meanings they attach to these beverages. Lastly, it is also the first to study qualitatively explore parents’ SSB consumption and SSB/water-feeding practices in the context of the SSB tax.
In addition, by using a mixed methods approach, we were able to draw conclusions in regards to the potential awareness raising effect of the SSB tax with at a national level, to deepen our understanding of meanings attached to SSBs, and to illuminate barriers to decreasing SSB consumption in some theoretically interesting groups. Finally, a major strength of the qualitative study is the use of multiple methods, which allowed us to triangulate various data sources.

There are several limitations to the quantitative study that should be considered when interpreting its results. First, the data from the POCAA-Q survey are self-reported, and thus could be subject to recall and social desirability response biases. Second, the associations are cross-sectional and do not permit assessment of causality or ascertaining the direction of the association. Third, the study did not use a pre-post design; thus, it was unable to assess a change in measures before and after the SSB tax. Fourth, a post-only comparison of outcomes between those aware and not aware of the SSB tax does not fully take into account individuals with a priori favorable attitudes and behaviors who might have been more likely to pay more attention to the campaign. Fifth, there were other public health interventions aimed at decreasing consumption of SSBs that were implemented around the same time as the SSB tax. Lastly, the preference and self-efficacy constructs were assessed with only one item each; according to some researchers this may not adequately define a construct that is stable enough to use in future studies (Tabachnick and Fidell, 2001, Velicer and Fava, 1998).

There are also several limitations to the qualitative study that should be considered when interpreting its results. First, when fieldwork was conducted, about three and a half years had passed from the implementation of the tax — the prices of some
taxed beverages (Coca-Cola products in particular) had increased for reasons unrelated to
the tax. Thus, people referred to those multiple increases; it was therefore not possible to
isolate the effect of the tax. Second, adjustment of the tax by inflation (when it lost 10
percent of its value) took effect in January 2018: thus, the tax had already lost a small
percent of its value when the study was being conducted. Third, this study relies on self-
reported data, which could be subject to social desirability bias. Lastly, the study was
conducted in one state only with small samples — the results, particularly from the
parents’ groups, may not be transferable to parents in other parts of Mexico who have a
different climate and culture. The results of the construction workers’ group, however,
may be transferable to construction workers throughout the country given that this is a
relatively homogeneous population in regards to socioeconomic status, gender, and
profession.

7.5. Conclusion

The quantitative and qualitative studies in this dissertation explored whether the
Mexican SSB tax potentially influenced Mexicans’ purchases and consumption of taxed
beverages by enhancing their awareness about the detrimental health effects of those
types of beverages. The quantitative and qualitative studies used different methods and
each sought to explicate the potential influence of the tax at a different level. Each
individual article, as well as the three taken together, contribute to the understanding of
the effect that the Mexican SSB tax had on the population.

The findings of this dissertation suggest that at national level (Article 1) and for
adult caregivers of children (Article 2) the SSB tax and campaigns that surrounded it may
have had an awareness raising effect. In addition, for parents, the price increase attached
to the tax may have prompted some to reconsider their choices and decrease purchases of SSBs, albeit only temporarily. Construction workers (Article 3), who were largely unaware of the tax, seem to be fairly irresponsive to small increments in prices of SSBs. Nevertheless, even if the SSB tax only had an (small) effect on certain groups, it is important to remember that SSB taxes cannot be conceived as a single most important intervention but rather as part of a comprehensive package of interventions. Or, as the editorial of the Lancet Public Health put it in April 2018: “To meaningfully address the obesity epidemic, what can be done? An initial step may be to acknowledge a critical and challenging truth: the most important intervention to tackle obesity, as noted by obesity researcher Harry Rutter, is ‘to understand that there is no single most important intervention’.” (The Lancet Public, 2018).

This dissertation also demonstrates the value of exploring psychosocial determinants of consumption of taxed beverages at national level as well as with specific groups. An important finding was that while price is an important determinant of SSB consumption, it might not be the primary one. Therefore, in countries like Mexico where soda consumption is considered a part of the culture, it is important to take into account socio-cultural determinants (in addition to the economic) in the design of public policies and programs.

The findings of this dissertation suggest that in the future, governments could consider accompanying public health taxes with comprehensive and targeted education campaigns in an attempt to create synergy between both approaches. In addition, future nutrition education and public health campaigns might focus more on teaching self-
regulation skills, after motivation has been established, and on shifting social norms around SSB drinking.

7.6. References


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Secretaría de Salud. (2014). **Guidelines presenting the nutritional and advertising criteria to be observed by food and non-alcoholic beverage advertisers to advertise their products on open and restricted television, and movie theaters, in accordance with the provisions in articles 22 Bis, 79, section X and 86, section VI, of the Regulation of the General Health Law in relation to Advertising. [LINEAMIENTOS por los que se dan a conocer los criterios nutrimentales y de publicidad que deberán observar los anunciantes de alimentos y bebidas no alcohólicas para publicitar sus productos en televisión abierta y restringida, así como en salas de exhibición cinematográfica, conforme a lo dispuesto en los artículos 22 Bis, 79, fracción X y 86, fracción VI, del Reglamento de la Ley General de Salud en Materia de Publicidad].** Mexico: Diario Oficial de la Federación Retrieved from http://www.dof.gob.mx/nota_detalle.php?codigo=5340694&fecha=15/04/2014.


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Appendices

Appendix I: Rationale for studying indigenous peoples as a third group in the multi-case qualitative study

In the qualitative multi-case project we studied three population groups: (1) Parents of children 9 years old or younger, (2) Construction workers, and (3) Indigenous peoples in Chiapas, Southern Mexico. Due to time limitations the data analysis of the indigenous peoples group has not been included in this dissertation and will be published separately. Notwithstanding, the rationale for having chosen this group is presented below.

Rationale.

Some studies have found that SSB intake is highest in regions that comprise the largest indigenous populations in the country, such as Chiapas (in the South) and Sonora (in the North-West) (Page-Pliego, 2013; Yáñez-Moreno, 2012). Two ethnographic studies conducted recently in indigenous communities found extremely large figures of SSB intake. Page-Pliego studied diabetes and SSB intake among indigenous peoples in the highlands of Chiapas and found that on average people were drinking 2.25 liters of Coca-Cola every day (Page-Pliego, 2013). Yáñez Moreno, in his study of type 2 diabetes in indigenous populations in the Sonora region, found that during hot days people drank up to 5 liters of Coca-Cola (Yáñez-Moreno, 2012). Some of the reasons that may explain the high soda intake in these regions include the fact that carbonated soft drink
companies, like Coca-Cola and Pepsi, have employed aggressive marketing campaigns towards indigenous communities and kept their products cheaper in these places, even after the SSB tax was passed (Colcher et al., 2015). Chiapas is also the home to two Coca-Cola bottling plants, so this ensures easy access to sugary beverages. Also of importance is the symbolic and cultural meaning that Coca-Cola has in indigenous communities of Chiapas. There, the beverage is conferred magical powers, such as expelling spirits and curing illnesses, and used in healing rituals. It is also important to highlight that Chiapas is one of the poorest states in Mexico, with 75 percent of the population suffering from extreme poverty (CONEVAL, 2014).
### Appendix II: Research questions and theoretical constructs

<table>
<thead>
<tr>
<th>Question</th>
<th>Theoretical construct &amp; Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantitative study</strong></td>
<td></td>
</tr>
<tr>
<td>1 - Are Mexican adults aware of the SSB tax? What is their opinion about the effectiveness of the SSB tax in decreasing purchases of taxed SSB? Do awareness of and opinion about the SSB tax differ by socio-demographic characteristics?</td>
<td>NA</td>
</tr>
<tr>
<td>2 - Are awareness and opinion about the effectiveness of the SSB tax, and psychosocial and environmental factors of SSB consumption associated with a reported decrease in SSB consumption?</td>
<td>Beliefs, Affective Attitudes, Perceived Behavioral Control, (past) Behavior (RAA)</td>
</tr>
<tr>
<td>3 - Are awareness and opinion about the effectiveness of the SSB tax and psychosocial and environmental factors of SSB consumption associated with current consumption of taxed SSB?</td>
<td>Beliefs, Affective Attitudes, Perceived Behavioral Control, (current) Behavior (RAA)</td>
</tr>
<tr>
<td><strong>Qualitative studies</strong></td>
<td></td>
</tr>
<tr>
<td>1 - What has been the participants’ consumption of taxed SSBs patterns from the time before the SSB tax to the present?</td>
<td></td>
</tr>
<tr>
<td>What are/were the most commonly consumed taxed SSBs? How frequently are/were they consumed?</td>
<td>Behavior (RAA)</td>
</tr>
<tr>
<td>What are/were the occasions (celebrations, work break, etc.) locations (home, work, bar, etc.) and time (breakfast, lunch, etc.) of consumption?</td>
<td>Behavior (RAA) Social Norms (RAA)</td>
</tr>
<tr>
<td>What foods and meals are/were associated with consumption of taxed SSBs?</td>
<td>Behavior (RAA)</td>
</tr>
<tr>
<td>Who buys/bought taxed SSBs (at work or at home)?</td>
<td>Behavior (RAA) Social Norms (RAA)</td>
</tr>
<tr>
<td>How much money do/did they usually spend/spent on taxed SSBs?</td>
<td>Environmental Determinant (RAA)</td>
</tr>
<tr>
<td>2 - How do participants describe their motivation (or lack thereof) for consuming taxed SSBs?</td>
<td></td>
</tr>
<tr>
<td>What are their beliefs, attitudes, self-identity, perceived behavioral control (and barriers) in relation to different taxed SSBs (e.g., soda, fruit juice)?</td>
<td>Beliefs/Outcome Expectations, Affective Attitudes, Cognitive Attitudes, Personal Norms, Perceived Behavioral Control</td>
</tr>
<tr>
<td>Question</td>
<td>Theoretical construct &amp; Theory</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>What are the social norms in relation to taxed SSBs derived from social and family situations and cultural traditions?</td>
<td>Normative beliefs (RAA)</td>
</tr>
<tr>
<td></td>
<td>Motivation to comply (RAA)</td>
</tr>
<tr>
<td>How do they report their reasons for continuing drinking SSBs even when they think taxed SSBs are not good for their health?</td>
<td>Beliefs (RAA)</td>
</tr>
<tr>
<td></td>
<td>Hyperbolic discounting (BET)</td>
</tr>
<tr>
<td>3 - In what ways, if any, do participants intend to modify their consumption of taxed SSBs? What elements facilitate or impede their ability to change?</td>
<td></td>
</tr>
<tr>
<td>Have participants considered modifying their consumption of taxed SSBs? How?</td>
<td>Behavioral Intention and Action Plans (RAA)</td>
</tr>
<tr>
<td>How do they describe the factors that would motivate and enable them to drink fewer taxed SSBs?</td>
<td>Beliefs/outcome expectations (RAA)</td>
</tr>
<tr>
<td></td>
<td>Social norms (RAA)</td>
</tr>
<tr>
<td></td>
<td>Perceived Behavioral Control: Facilitators (RAA)</td>
</tr>
<tr>
<td>How do participants describe the factors that impede them to drink fewer taxed SSBs?</td>
<td>Beliefs/outcome expectations (RAA)</td>
</tr>
<tr>
<td></td>
<td>Social norms (RAA)</td>
</tr>
<tr>
<td></td>
<td>Perceived Behavioral Control: Barriers (RAA)</td>
</tr>
<tr>
<td>4 - What has been the participants’ experience of the SSB tax and of other concurrent initiatives aimed at decreasing SSB consumption?</td>
<td>Background influences (RAA)</td>
</tr>
<tr>
<td></td>
<td>Environmental determinants (RAA)</td>
</tr>
<tr>
<td>What have they heard about the SSB tax? What do they understand as its main purpose? What important do they attach to the purpose behind the tax?</td>
<td></td>
</tr>
<tr>
<td>Have they noticed a price increase? On which products?</td>
<td></td>
</tr>
<tr>
<td>What educational campaigns regarding SSBs have they heard about/been exposed to in the past three years? What’s their opinion about them?</td>
<td></td>
</tr>
<tr>
<td>5 - In what ways, if any, have participants’ consumption of SSBs</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Theoretical construct &amp; Theory</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>reportedly changed in the context of the SSB tax and why?</td>
<td>Behavior (change) (RAA)</td>
</tr>
<tr>
<td>In what ways, if any, have participants modified their consumption of SSBs since the implementation of the tax?</td>
<td>Beliefs/Outcome Expectations (past) (RAA)</td>
</tr>
<tr>
<td>How do participants describe the most important reasons, if any, for having modified consumption of SSBs since the implementation of the tax? What made it easy or difficult to do so?</td>
<td>Social norms (past) (RAA)</td>
</tr>
<tr>
<td></td>
<td>Perceived Behavioral Control (past) (RAA)</td>
</tr>
<tr>
<td></td>
<td>Environmental determinants (past) (RAA)</td>
</tr>
<tr>
<td>6 - How do participants describe the elements that may have influenced their beliefs and attitudes toward SSBs since the implementation of the tax?</td>
<td>Behavioral beliefs/outcome expectations, Attitudes, Social norms (RAA)</td>
</tr>
<tr>
<td>In what ways, if any, did the debate about the tax and the price increase influenced their beliefs and attitudes about SSBs?</td>
<td>Behavioral beliefs/outcome expectations, Attitudes, Social norms (RAA)</td>
</tr>
<tr>
<td>How do they report the effect that other measures aimed at decreasing SSBs may have had on their views about SSBs?</td>
<td>Behavioral beliefs/outcome expectations, Attitudes, Social norms (RAA)</td>
</tr>
<tr>
<td>Where do they get information about the effects of SSBs on health? Do they pay attention/act upon to this information?</td>
<td>NA</td>
</tr>
<tr>
<td>Questions only for parents</td>
<td></td>
</tr>
<tr>
<td>7 - What are the beverages children consume most frequently? Why?</td>
<td>Children’s behavior (change) (RAA)</td>
</tr>
<tr>
<td>What are the parental practices to either encourage or restrict children’s consumption of taxed SSBs? What are other people’s practices toward their children?</td>
<td>Parental influences/Social influences (RAA)</td>
</tr>
<tr>
<td>How do parents/caretakers describe the difference between their own consumption of taxed SSBs and their children’s consumption of the same beverages? OR Is there a difference? What are the reasons?</td>
<td></td>
</tr>
<tr>
<td>8 - Has the children’s beverage consumption changed since the application of the tax? And Why?</td>
<td>Children’s behavior (change) (RAA)</td>
</tr>
<tr>
<td>Question</td>
<td>Theoretical construct &amp; Theory</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>In what ways, if any, has the consumption of SSBs at home changed differentially between adults and children?</td>
<td>Behavior, Social Norms (RAA)</td>
</tr>
</tbody>
</table>

Notes:
Appendix III: Selected questions from the POCAA-Q used (translated into English)

NATIONAL INSTITUTE OF PUBLIC HEALTH
NATIONAL HEALTH AND NUTRITION SURVEY 2016
PERCEPTION OF OBESITY, PHYSICAL ACTIVITY AND DIET QUESTIONNAIRE

<table>
<thead>
<tr>
<th>SUGARY BEVERAGE INTAKE AND PERCEPTION OF CHANGE OF INTAKE AND PRICE IN PAST 2 YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the past two years, do you think… your consumption of industrial and homemade sugary drinks…</td>
</tr>
<tr>
<td>Increased Stayed the same Decreased Decreased Don’t know No response</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENVIRONMENTAL FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>You can drink “pure” water at no or at a low cost in your community</td>
</tr>
<tr>
<td>Completely agree Agree Disagree Completely disagree Don’t know No response</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PREFERENCE / AFFECTIVE OUTCOME EXPECTATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>You like the taste of sugary drinks</td>
</tr>
<tr>
<td>Completely agree Agree Disagree Completely disagree Don’t know No response</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SELF-EFFICACY</th>
</tr>
</thead>
<tbody>
<tr>
<td>How confident do you feel to drink one or less glasses of sugary drinks (such as sodas, juices, nectars, and sweetened water) a week?</td>
</tr>
<tr>
<td>Very confident Confident Somewhat confident Not confident Don’t know No response</td>
</tr>
</tbody>
</table>

| OUTCOME EXPECTATIONS SUGARY BEVERAGES (NEGATIVE – PHYSICAL) | 454 |
| Do you think drinking sugary drinks contributes to the development of: |
|-------------------------------------------------|------------------|----------------|
| High blood pressure | Yes | No | Don’t know | 140 |
| Obesity | Yes | No | Don’t know | 141 |
| Diabetes (also known as sugar in the blood) | Yes | No | Don’t know | 142 |
| Dental cavities | Yes | No | Don’t know | 143 |

**GOVERNMENTAL INITIATIVES TO PREVENT AND COMBAT OBESITY (AWARENESS AND OPINION)**

| Did you know that since 2014 there is a national tax on industrial sugary drinks such as sodas, juices and flavored water? | Yes | No | Don’t know | 158 |
| Do you think this tax is helping to reduce purchases of sugary drinks? | Yes | No | Don’t know | 159 |
Appendix IV: Consolidated Criteria for Reporting Qualitative Research (COREQ)

Source (Tong et al., 2007)

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Guide questions/description</th>
<th>Reported on Page #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Domain 1: Research team and reflexivity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personal Characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Interviewer/facilitator</td>
<td>Which author/s conducted the interview or focus group?</td>
<td>Methods (chapter 3 and methods sections of chapters 5 and 6)</td>
<td>CAS and HG conducted the interviews and focus groups with parents. HG conducted the interviews and focus groups with construction workers.</td>
</tr>
<tr>
<td>2.</td>
<td>Credentials</td>
<td>What were the researcher’s credentials? E.g. PhD, MD</td>
<td>Methods</td>
<td>CAS, MSc, MPhil, Doctoral Candidate IC, PhD, Professor FRT, PhD PK, EdD HG, PhD</td>
</tr>
<tr>
<td>3.</td>
<td>Occupation</td>
<td>What was their occupation at the time of the study?</td>
<td>Methods</td>
<td>CAS, Doctoral Candidate FLT, Researcher at a national government office IC, University professor and researcher, program director PK, University professor and researcher HG, Associate Professor regional university</td>
</tr>
<tr>
<td>No. Item</td>
<td>Guide questions/description</td>
<td>Reported on Page #</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------</td>
<td>--------------------</td>
<td>-------------</td>
<td></td>
</tr>
</tbody>
</table>
| 4. Gender | Was the researcher male or female? | N/A | CAS is female, from Spain  
IC is female, from the USA  
FRT is female, French/Caribbean, settled in Mexico  
PK is female, from the USA  
HG is male, from Mexico |
| 5. Experience and training | What experience or training did the researcher have? | Methods | CAS is a public health nutritionist and behavioral/nutrition educator  
IC is a behavioral/nutrition educator  
PK is a registered dietitian and behavioral/nutrition educator  
HG is an anthropologist  
FRT is a sociologist |

**Relationship with participants**

| 6. Relationship established | Was a relationship established prior to study commencement? | N/A | No |

<p>| 7. Participant knowledge of the interviewer | What did the participants know about the researcher? e.g. personal goals, reasons for doing the research | Appendices: consent forms | The researchers doing fieldwork presented themselves as affiliated with the National Institute of Public Health. The goals of the study were described as to learn about sugary beverage consumption practices and |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Guide questions/description</th>
<th>Reported on Page #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.</td>
<td>Interviewer characteristics</td>
<td>What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic</td>
<td>Chapter 1</td>
<td>A statement of positionality is provided in Chapter 1</td>
</tr>
<tr>
<td>9.</td>
<td>Methodological orientation and Theory</td>
<td>What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis</td>
<td>Methods</td>
<td>Case study</td>
</tr>
<tr>
<td>10.</td>
<td>Sampling</td>
<td>How were participants selected? e.g. purposive, convenience, consecutive, snowball</td>
<td>Methods</td>
<td>Convenience</td>
</tr>
<tr>
<td>11.</td>
<td>Method of approach</td>
<td>How were participants approached? e.g. face-to-face, telephone, mail, email</td>
<td>Methods</td>
<td>In person in all cases.</td>
</tr>
<tr>
<td>12.</td>
<td>Sample size</td>
<td>How many participants were in the study?</td>
<td>Results</td>
<td>There were 37 participants in the study with parents and 30 in the study with construction workers.</td>
</tr>
<tr>
<td>13.</td>
<td>Non-participation</td>
<td>How many people refused to participate or dropped out? Reasons?</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Item</td>
<td>Guide questions/description</td>
<td>Reported on Page #</td>
<td>Description</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------</td>
<td>----------------------------</td>
<td>-------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>14.</td>
<td>Setting</td>
<td></td>
<td>Methods</td>
<td>In the parents study it was collected in their children’s school, in the construction workers’ study it was collected in their workplaces.</td>
</tr>
<tr>
<td></td>
<td>Setting of data collection</td>
<td>Where was the data collected? e.g. home, clinic, workplace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Presence of non-participants</td>
<td>Was anyone else present besides the participants and researchers?</td>
<td>N/A</td>
<td>No</td>
</tr>
</tbody>
</table>
| 16. | Description of sample     | What are the important characteristics of the sample? e.g. demographic data, date | Results (Chapters 5 and 6) | Parents were: predominantly female and low socio-economic status  
Construction workers were: all male, low socio-economic status |
<p>| 17. | Interview guide           | Were questions, prompts, guides provided by the authors? Was it pilot tested? | Methods           | The interview and focus group guides are included in the Appendices. All were pilot tested.                                               |
| 18. | Repeat interviews         | Were repeat interviews carried out? If yes, how many? | N/A               | No                                                                                                                                       |
| 19. | Audio/visual recording    | Did the research use audio or visual recording to collect the data? | Methods           | Yes, audio recording.                                                                                                                     |
| 20. | Field notes               | Were field notes made during and/or after the interview or focus group? | Methods           |                                                                                                                                            |
| 21. | Duration                  | What was the duration      | Methods           |                                                                                                                                            |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Guide questions/description</th>
<th>Reported on Page #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Data saturation</td>
<td>Was data saturation discussed?</td>
<td>Methods</td>
<td>Briefly</td>
</tr>
<tr>
<td>23</td>
<td>Transcripts returned</td>
<td>Were transcripts returned to participants for comment and/or correction?</td>
<td>N/A</td>
<td>No.</td>
</tr>
</tbody>
</table>

**Domain 3: analysis and findings**

**Data analysis**

<table>
<thead>
<tr>
<th>24</th>
<th>Number of data coders</th>
<th>How many data coders coded the data?</th>
<th>Methods</th>
<th>Two, CAS and HG</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Description of the coding scheme</td>
<td>Did authors provide a description of the coding scheme?</td>
<td>Methods</td>
<td>Yes, a description is provided in the Methods Chapter, the actual coding scheme and its translation into English are included as an Appendix.</td>
</tr>
<tr>
<td>26</td>
<td>Derivation of themes</td>
<td>Were themes identified in advance or derived from the data?</td>
<td>Methods</td>
<td>In advance.</td>
</tr>
<tr>
<td>27</td>
<td>Software</td>
<td>What software, if applicable, was used to manage the data?</td>
<td>Methods</td>
<td>NVivo 11.0</td>
</tr>
<tr>
<td>28</td>
<td>Participant checking</td>
<td>Did participants provide feedback on the findings?</td>
<td>Strengths and limitations</td>
<td></td>
</tr>
</tbody>
</table>

**Reporting**

<p>| 29  | Quotations presented | Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. | Results (Chapters 5 and 6) | Yes |</p>
<table>
<thead>
<tr>
<th>No. Item</th>
<th>Guide questions/description</th>
<th>Reported on Page #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>30. Data and findings consistent</td>
<td>Was there consistency between the data presented and the findings?</td>
<td></td>
<td>Relationship to existing knowledge</td>
</tr>
<tr>
<td>31. Clarity of major themes</td>
<td>Were major themes clearly presented in the findings?</td>
<td></td>
<td>Results</td>
</tr>
<tr>
<td>32. Clarity of minor themes</td>
<td>Is there a description of diverse cases or discussion of minor themes?</td>
<td></td>
<td>Discussion</td>
</tr>
</tbody>
</table>

CAS: Cristina Álvarez Sánchez; HG: Héctor Guillén; FLT: Florence L. Théodore.
Appendix IV: Letter of introduction to school principals (in Spanish only)

Instituto Nacional de Salud Pública

"Creencias, actitudes y prácticas en relación a las bebidas azucaradas en el contexto del impuesto en México".

CARTA DE INFORMACIÓN PARA LOS DIRECTORES DE ESCUELAS PRIMARIAS

Director(a) de la Escuela Primaria:______________________________
De la localidad:____________________________________________
Presente

El Instituto Nacional de Salud Pública (INSP) está realizando un proyecto de investigación titulado: "Creencias, actitudes y prácticas en relación a las bebidas azucaradas en el contexto del impuesto en México".

Este proyecto tiene como objetivo investigar cuáles son las creencias, actitudes y prácticas de la población adulta en relación al impuesto aplicado a las bebidas azucaradas en el año 2014, el estudio se llevará a cabo en la Ciudad de México, y en los estados de Morelos y Chiapas, durante los meses de mayo a agosto de 2017. El estudio incluye la realización de entrevistas y grupos de discusión con diversos actores sociales. Esta investigación ha sido aprobada por el Comité de Ética en Investigación del Instituto Nacional de Salud Pública.

En esta ocasión nos permitimos solicitar su apoyo para reclutar a una muestra de aproximadamente 25 padres y madres a través de la escuela primaria que está a su cargo, para poder realizarles una entrevista (máximo a 5 personas) o que participen en dos grupos focales (máximo 10 personas en cada uno). También le solicitamos que nos proporcione un espacio dentro de la escuela, en donde puedan llevar a cabo dichas actividades. Ruego a Usted otorgue al personal del INSP previamente identificado las facilidades necesarias para la realización de su trabajo y quédese a disposición para ampliar la información requerida.

Le comentamos que las escuelas que participen, no recibirán dinero a cambio, tampoco los padres o madres, pero no les costará participar y en cambio, la información que proporcionen será de gran utilidad para entender el funcionamiento de esta política pública para mejorar la salud de la población. La participación de los padres y madres es voluntaria y no obligatoria. Los padres y madres son libres de negarse a participar o retirarse en cualquier momento del estudio. Así mismo, le informamos que toda la información que se genere se tratará de manera anónima.

La información será utilizada únicamente por los investigadores del proyecto y no estará disponible para ningún otro propósito. No se identificarán los datos por escuela ni el nombre de los participantes.

Sin más por el momento, agradecemos todo el apoyo que usted y su equipo de trabajo pueda hacer a nuestra investigación.

Atentamente,

Dra.Florence L. Théodora Rowerson
Investigadora en Ciencias Médicas "C"
Appendix V: Letter of introduction to constructors/foremen (in Spanish only)

Instituto Nacional de Salud Pública

"Creencias, actitudes y prácticas en relación a las bebidas azucaradas en el contexto del impuesto en México".

CARTA DE INFORMACIÓN PARA LOS CONTRATISTAS Y/O CAPATACES DE OBRAS

Estimado Sr./Sra:
Nombre de la obra: ____________________________
Localidad: __________________________________
Presiente

El Instituto Nacional de Salud Pública (INSP) está realizando un proyecto de investigación titulado: "Creencias, actitudes y prácticas en relación a las bebidas azucaradas en el contexto del impuesto en México".

Este proyecto tiene como objetivo investigar cuáles son las creencias, actitudes y prácticas de la población adulta en relación al impuesto aplicado a las bebidas azucaradas en el año 2014, el estudio se llevará a cabo en la Ciudad de México, y en los estados de Morelos y Chiapas, durante los meses de mayo a agosto de 2017. El estudio incluye la realización de entrevistas y grupos de discusión con diversos actores sociales. Esta investigación ha sido aprobada por el Comité de Ética en Investigación del Instituto Nacional de Salud Pública.

En esta ocasión nos permitimos solicitar su apoyo para reclutar a una muestra de aproximadamente 25 albañiles a través de la obra que está a su cargo para poder realizarles una entrevista (máximo a 5 personas) o que participen en dos grupos focales (máximo 10 personas en cada uno). Las entrevistas y grupos de discusión se llevarán a cabo fuera del horario laboral y no afectarán en manera alguna el trabajo de los albañiles. Ruego a Usted otorgue al personal del INSP previamente identificado las facilidades necesarias para la realización de su trabajo y quede a su disposición para ampliar la información requerida.

Le comentamos que las obras que tomen parte en esta investigación no recibirán dinero a cambio, tampoco los albañiles, pero no les costará participar y en cambio, la información que proporcionen será de gran utilidad para entender el funcionamiento de esta política pública para la mejora de los hábitos alimentarios. La participación de los albañiles es voluntaria y no obligatoria. Los albañiles son libres de negarse a participar o retirarse en cualquier momento. Así mismo, le informamos que toda la información que se genere se tratará de manera anónima. La información será utilizada únicamente por los investigadores del proyecto y no estará disponible para ningún otro propósito. No se identificarán los datos por obra ni el nombre de los participantes.

Sin más por el momento, agradecemos todo el apoyo que usted y su equipo de trabajo pueda hacer a nuestra investigación.

Atentamente,

Dra. Florence L. Théodore Rowlerson
Investigadora en Ciencias Médicas "C"

Avenida Universidad 655
Carrera Los Pinos y Caminera
Colonia Santa María Amatepecatlán
42100 Cuernavaca, Morelos, México
Appendix VIII: Consent Forms (in Spanish only)

Parents Oral Consent Interviews

Instituto Nacional de Salud Pública (INSP), Cuernavaca, Morelos, México

Título de proyecto: Creencias, actitudes y prácticas en relación a las bebidas azucaradas en el contexto del impuesto a las bebidas azucaradas del año 2014

CARTA DE CONSENTIMIENTO ORAL
ENTREVISTAS CON PADRES/MADRES Y CUIDADORES DE NIÑOS(AS)

Buenos días/tardes/noches Señor/Señora:

Nuestros nombres son [nombres del personal de salud]. Somos investigadores y estamos llevando a cabo un estudio en favor del Instituto Nacional de Salud Pública. El objetivo del estudio es entender las razones por las que la población en México consume bebidas azucaradas, porque se las dan a sus hijos(as) y qué es lo que piensan acerca de estas bebidas. El estudio se está realizando en varias comunidades. Nos gustaría invitarle a participar en una de las entrevistas que estamos haciendo.

Si Usted acepta participar en el estudio, el siguiente:

- Le haremos algunas preguntas generales acerca de las bebidas azucaradas que consume y sobre qué es lo que le gusta de estas bebidas. La entrevista tendrá una duración aproximada de 60-90 minutos, según lo que nos quiera compartir. La entrevistaremos en un lugar, y en un día y hora que sea conveniente para usted y que acordemos previamente.
- La conversación se grabará en audio. Si usted no desea que se grabe la conversación en audio, tomaremos notas de lo que nos comenta.
- Aplicaremos un cuestionario que incluye información sobre las características de su vivienda y bienes en el hogar, sobre su participación y/o la de los miembros de su familia en programas de ayuda alimentaria y asistencia social, sobre condiciones de salud, y sobre el consumo de bebidas azucaradas. Esta información no se grabará en audio. La aplicación del cuestionario tomará aproximadamente 5-10 minutos.
- El total del tiempo que pedimos que nos dedique, incluyendo la entrevista y el cuestionario, es de 100 minutos (1 hora y 40 minutos).

Le aclaramos que yo o mi compañero(a) llevaremos cabo esta entrevista y que estamos capacitados para ello.

Usted no recibirá un beneficio directo por su participación en el estudio, sin embargo si usted acepta participar, estará colaborando con el Instituto Nacional de Salud Pública para entender mejor el consumo de las bebidas azucaradas por parte de la población Mexicana, lo que ayudará a elaborar programas para promover una alimentación saludable.

Toda la información que usted nos proporcione para el estudio se tratará de manera anónima. Usted quedará identificado(a) con un pseudónimo y no con su nombre real. La información será utilizada...
Instituto Nacional de Salud Pública (INSP), Cuernavaca, Morelos, México

sólomente por los investigadores del proyecto y no estará disponible para ningún otro propósito. Los resultados de este estudio serán publicados con fines científicos, pero se presentarán de tal manera que no podrá ser identificado(a).

Los riesgos potenciales que implican su participación en este estudio son mínimos. Si alguna de las preguntas la hicieran sentir un poco incómodo(a), tiene el derecho de no responder. Usted no recibirá ningún pago por participar en el estudio, y tampoco implicara alguna costo para usted.

La participación en este estudio es absolutamente voluntaria. Usted está en plena libertad de negarse a participar o de retirar su participación del mismo en cualquier momento. Su decisión de participar o de no participar no tendrá ninguna consecuencia negativa en caso de que rechace esta invitación.

Si tiene alguna pregunta, comentario o preocupación con respecto al proyecto le vamos a dejar una tajeta con la información de la investigadora responsable del estudio. Asimismo, si tiene preguntas generales relacionadas con sus derechos como participante en un estudio de investigación le dejamos los datos de la Presidente del Comité de Ética en Investigación del Instituto.

¡Muchas gracias por su participación!

Av. Universidad No. 635 Col. Sta. María Ahuacatitlan – CP 62100 Cuernavaca, Mor.
Email: rtheodore@insp.mx  Tel. 01 (55) 54 5710 50
Carta de Consentimiento Oral
Entrevistas de Grupo con Padres/Madres y Cuidadores de Niños(as)

Buenos días/tardes/noches Señor/Señora:

Nuestros nombres son [nombres]. Somos investigadores y estamos llevando a cabo un estudio en favor del Instituto Nacional de Salud Pública. El objetivo del estudio es entender las razones por las que las personas adultas consumen bebidas azucaradas y por qué le dan bebidas azucaradas a sus hijos(as). En el estudio se llevarán a cabo discusiones de grupo sobre estos temas. Les invitamos a formar parte de una de las discusiones de grupo. El estudio se está realizando en varias comunidades.

Si Usted acepta participar en el estudio ocurrirá lo siguiente:

- Participará en una discusión de grupo junto con otras personas donde platicaremos acerca de los tipos de bebidas azucaradas que consumen usted y sus hijos/hijas, y acerca de qué es lo que les gusta de estas bebidas. Durante la discusión usted no tiene que responder a todas las preguntas, solo aquellas que usted quiera.

- La discusión durará aproximadamente 90 minutos. La entrevista de grupo se llevará a cabo en un lugar, y en un día y hora que sean convenientes para usted y para los otros participantes y que acordemos previamente.

- La conversación se grabará en audio. Si usted no desea que se grabe la conversación en audio puede rechazar esta invitación. No hay consecuencias negativas si rechaza esta invitación.

- Aplicaremos un cuestionario que incluye información sobre las características de su vivienda y bienes en el hogar, sobre su participación y/o la de los integrantes de su familia en programas de ayuda alimentaria y asistencia social, sobre condiciones de salud, y sobre el consumo de bebidas azucaradas. El cuestionario se aplicará de manera individual y privada, sin que las otras personas que participan en el grupo de discusión escuchen las respuestas. Esta información no se grabará en audio. La aplicación del cuestionario tomará aproximadamente 5-10 minutos.

- El total del tiempo que pedimos que nos dedique, incluyendo la entrevista y el cuestionario, es de 100 minutos (1 hora y 40 minutos).

Le aclaramos que yo y mi compañero(a) llevaremos cabo esta entrevista de grupo y que estamos capacitados a este efecto.
Instituto Nacional de Salud Pública (INSP), Cuernavaca, Morelos, México

Usted no recibirá un beneficio directo por su participación en el estudio, sin embargo si usted acepta participar, estará colaborando con el Instituto Nacional de Salud Pública para entender mejor el consumo de las bebidas azucaradas por parte de la población Mexicana, lo que ayudará a elaborar programas para promover una alimentación saludable.

Toda la información que usted nos proporcione para el estudio se tratará de manera anónima. Usted quedará identificado(a) con un pseudónimo y no con su nombre real. La información será utilizada únicamente por los investigadores del proyecto y no estará disponible para ningún otro propósito. Los resultados de este estudio serán publicados con fines científicos, pero se presentarán de tal manera que no podrá ser identificado(a).

Los riesgos potenciales que implican su participación en este estudio son mínimos. Si alguna de las preguntas le hiciera sentir un poco incómodo(a), tiene el derecho de no responderla. No recibirá ningún pago por participar en el estudio, y tampoco implicará algún costo para usted.

La participación en este estudio es absolutamente voluntaria. Usted está en plena libertad de negarse a participar o de retirar su participación del mismo en cualquier momento. Su decisión de participar o de no participar no tendrá ninguna consecuencia negativa en caso de que rechace esta invitación.

Si usted tiene alguna pregunta, comentario o preocupación con respecto al proyecto le vamos a dejar una tarjeta con la información de la investigadora responsable del estudio. Asimismo, si tiene preguntas generales relacionadas con sus derechos como participante en un estudio de investigación le dejamos los datos de la Presidente del Comité de Ética en Investigación del Instituto.

¿Muchas gracias por su participación!

Av. Universidad No. 655 Col. Sta. María Almacatlán. – CP 62100 Cuernavaca, Mor.
Email: Theodore@insp.mx Tel: 01 (53) 34 5710 50
Construction Workers Oral Consent Interviews

Instituto Nacional de Salud Pública (INSP), Cuernavaca, Morelos, México

Título de proyecto: Creencias, actitudes y prácticas en relación a las bebidas azucaradas en el contexto del impuesto a las bebidas azucaradas del año 2014

CARTA DE CONSENTIMIENTO ORAL
ENTREVISTAS CON ALBAÑILES

Buenos días/tardes/noches Señor:

Nuestros nombres son [nombres del personal de salud]. Somos investigadores y estamos llevando a cabo un estudio en favor del Instituto Nacional de Salud Pública. El objetivo del estudio es entender las razones por las que la población en México consume bebidas dulces no alcoholizadas y qué es lo que piensan de estas bebidas. El estudio se está realizando en varias obras de construcción. Nos gustaría invitarle a participar en una de las entrevistas que estamos haciendo.

Si Usted acepta participar en el estudio ocurrirá lo siguiente:

- Le haremos algunas preguntas generales acerca de su experiencia con los tipos de bebidas dulces que consume usted y qué es lo que le gusta de estas bebidas. La entrevista tendrá una duración aproximada de 60-90 minutos, según lo que nos quiera compartir. Le entrevistaremos fuera de la obra y fuera del tiempo de trabajo en un horario que sea conveniente para usted y que acordemos previamente.

- La conversación se grabará en audio. Si usted no desea que se grabe la conversación en audio, tomaremos notas de lo que nos comenta.

- Aplicaremos un cuestionario que incluye información sobre las características de su vivienda y bienes en el hogar, sobre su participación y/o la de los integrantes de su familia en programas de ayuda alimentaria y asistencia social, sobre condiciones de salud, y sobre el consumo de bebidas azucaradas. Esta información no se grabará en audio. La aplicación del cuestionario tomará aproximadamente 5-10 minutos.

- El total del tiempo que podremos que nos dedique, incluyendo la entrevista y el cuestionario, es de 100 minutos (1 hora y 40 minutos).

Le aclaramos que yo y/o mi compañero(a) llevaremos cabo esta entrevista y que estamos capacitados para ello.

Usted no recibirá un beneficio directo por su participación en el estudio, sin embargo si usted acepta participar, estará colaborando con el Instituto Nacional de Salud Pública para entender mejor el consumo de las bebidas azucaradas por parte de la población Mexicana, lo que ayudará a elaborar programas para promover una alimentación saludable.

Toda la información que usted nos proporcione para el estudio se tratará de manera anónima. Usted quedará identificado con un pseudónimo y no con su nombre real. La información será utilizada únicamente por los investigadores del proyecto y no estará disponible para ningún otro propósito. Los
resultados de este estudio serán publicados con fines científicos, pero se presentarán de tal manera que no podrá ser identificado.

Los riesgos potenciales que implican su participación en este estudio son mínimos. Si alguna de las preguntas le hicieran sentir un poco incomodo(a), tiene el derecho de no responderla. Usted no recibirá ningún pago por participar en el estudio, y tampoco implicará algún costo para usted.

La participación en este estudio es absolutamente voluntaria. Usted está en plena libertad de negarse a participar o de retirar su participación del mismo en cualquier momento. Su decisión de participar o de no participar no tendrá ninguna consecuencia negativa ni afectará en su trabajo, porque este estudio no tiene relación alguna con la empresa que lo contrata.

Si usted tiene alguna pregunta, comentario o preocupación con respecto al proyecto le vamos a dejar una tarjeta con la información del investigador responsable del estudio. Asimismo, si tiene preguntas generales relacionadas con sus derechos como participante en un estudio de investigación le damos los datos de la Presidente del Comité de Ética en Investigación del Instituto.

¡Muchas gracias por su participación!

Av. Universidad No. 635 Col. Sta María Ahmatitlán – C.P 62100 Cuernavaca, Mor.
Email: ftheodore@insp.mx Tel: 01 (55) 54 5710 50
Construction Workers Oral Consent Focus Groups

Instituto Nacional de Salud Pública (INSP), Cuernavaca, Morelos, México

Título de proyecto: Creencias, actitudes y prácticas en relación a las bebidas azucaradas en el contexto del impuesto a las bebidas azucaradas del año 2014

CARTA DE CONSENTIMIENTO ORAL
GRUPOS DE DISCUSIÓN CON ALBAÑILES

Buenos días/tarde/noches Señor:

Nuestros nombres son [nombres]. Somos investigadores y estamos llevando a cabo un estudio en favor del Instituto Nacional de Salud Pública. El objetivo del estudio es entender las razones por las que algunos grupos poblacionales, como los albañiles, consumen bebidas azucaradas y qué es lo que piensan de estas bebidas. En el estudio se llevarán a cabo discusiones de grupo sobre estos temas. Le invitamos a formar parte de una de las discusiones de grupo. El estudio se está realizando en varias obras de construcción.

Si Usted acepta participar en el estudio, ocurrirá lo siguiente:

- Participará en una discusión de grupo junto con otras personas donde platicaremos acerca de los tipos de bebidas azucaradas que consumen ustedes, y acerca de qué es lo que les gusta de estas bebidas. Durante la discusión usted no tiene que responder a todas las preguntas, solo aquellas que usted quiera.

- La discusión durará aproximadamente 90 minutos. La entrevista de grupo tendrá lugar en un lugar, y en un día y hora que sean convenientes para usted y para los otros participantes y que acordemos previamente.

- La conversación se grabará en audio. Si usted desea que se grabe la conversación en audio puede rechazar esta invitación. No hay consecuencias negativas si rechaza esta invitación.

- Aplicaremos un cuestionario que incluye información sobre las características de su vivienda y bienes en el hogar, sobre su participación y/o la de los integrantes de su familia en programas de ayuda alimentaria y asistencia social, sobre condiciones de salud, y sobre el consumo de bebidas azucaradas. El cuestionario se aplicará de manera individual y privada, sin que las otras personas que participan en el grupo de discusión escuchen las respuestas. Esta información no se grabará en audio. La aplicación del cuestionario tomará aproximadamente 5-10 minutos.

- El total del tiempo que pedimos que nos dedique, incluyendo la entrevista y el cuestionario, es de 100 minutos (1 hora y 40 minutos).

Le aclaramos que yo y mi compañero(a) llevarnos cabo esta entrevista de grupo y que estamos capacitados a este efecto.
Instituto Nacional de Salud Pública (INSP), Cuernavaca, Morelos, México

Usted no recibirá un beneficio directo por su participación en el estudio, sin embargo si usted acepta participar, estará colaborando con el Instituto Nacional de Salud Pública para entender mejor el consumo de las bebidas azucaradas por parte de la población Mexicana, lo que ayudará a elaborar programas para promover una alimentación saludable.

Toda la información que usted nos proporcione para el estudio se tratará de manera anónima. Usted quedará identificado con un pseudónimo y no con su nombre real. La información será utilizada únicamente por los investigadores del proyecto y no estará disponible para ningún otro propósito. Los resultados de este estudio serán publicados con fines científicos, pero se presentarán de tal manera que no podrá ser identificado.

Los riesgos potenciales que implican su participación en este estudio son mínimos. Si alguna de las preguntas le hicieran sentir un poco incomodo(s), tiene el derecho de no responderla. Usted no recibirá ningún pago por participar en el estudio, y tampoco implicará algún costo para usted.

La participación en este estudio es absolutamente voluntaria. Usted está en plena libertad de negarse a participar o de retirar su participación del mismo en cualquier momento. Su decisión de participar o de no participar no tendrá ninguna consecuencia negativa ni afectará su trabajo, porque este estudio no tiene relación alguna con la empresa que lo contrata.

Si usted tiene alguna pregunta, comentario o preocupación con respecto al proyecto le vamos a dejar una tarjeta con la información del investigador responsable del estudio. Asimismo, si tiene preguntas generales relacionadas con sus derechos como participante en un estudio de investigación le dejamos los datos de la Presidente del Comité de Ética en Investigación del Instituto.

¿Muchas gracias por su participación!

Av. Universidad No. 655 Col. Sta. María Alhucemas – C.P. 62100 Cuernavaca, Morelos
Email: rtheodore@insp.mx Tel: 01 (55) 54 5710 50
Appendix VIII: Contact information (in Spanish only)

Datos de Contacto

INSTITUTO NACIONAL DE SALUD PÚBLICA

Título del proyecto: Creencias, actitudes y prácticas en relación a las bebidas azucaradas en el contexto del impuesto a las bebidas azucaradas del año 2014

Agradecemos mucho su participación.

En caso de que usted tenga alguna duda, o comentario respecto al estudio, favor de comunicarse con la investigadora responsable del proyecto Dra. Florence Théodore, al teléfono:
01 (55) 54 5710 50 de lunes a viernes de 9:00 a 16:00 hrs.

Si usted tiene preguntas generales acerca de sus derechos como participante de un estudio de investigación, puede comunicarse con la Presidente del Comité de Ética en Investigación de este Instituto, Dra. Angélica Ángeles Lierenas, al teléfono: 01 (777) 329-30-00 extensión 7424 de lunes a viernes de 9:00 a 16:00 hrs. o si prefiere puede usted escribirle a la siguiente dirección de correo: efisa@insp.mx

Fecha _____/_____/_____  Día  Mes  Año

Av. Universidad # 655 Col. Santa María Ahuacatlán; Cuernavaca Morelos, México.
Appendix IX: Beverage images used in the card sorting activity

Industrialized sugar-sweetened and artificially-sweetened beverages

<table>
<thead>
<tr>
<th>Regular Coca-Cola, carbonated SSB</th>
<th>Coca-Cola Sin Azucar, artificially-sweetened carbonated beverage</th>
<th>Coca-Cola Light, artificially-sweetened carbonated beverage</th>
<th>Coca-Cola Stevia, sweetened carbonated beverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange Fanta, carbonated SSB</td>
<td>Tang powder packets</td>
<td>Jumex mango juice, industrialized SSB</td>
<td>Boing strawberry juice, industrialized SSB</td>
</tr>
<tr>
<td>Vive 100, energy drink</td>
<td>Gatorade, sports drink</td>
<td>Be Light water</td>
<td>Fonafont Levité water</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------------</td>
<td>---------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Chocolate milk</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Natural/home-made (not industrialized) beverages

<table>
<thead>
<tr>
<th>Beverage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange juice</td>
<td></td>
</tr>
<tr>
<td>Plain water</td>
<td></td>
</tr>
<tr>
<td>Cool water made with lime and sugar</td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td></td>
</tr>
<tr>
<td>Atole, traditional Mexican hot corn- and masa-based beverage with sugar added</td>
<td></td>
</tr>
</tbody>
</table>
Appendix X: Interview Guides

Parents Interview Guide (Spanish)

GUÍA DE ENTREVISTA

PADRES/MADRES Y CUIDADORES PRINCIPALES DE NIÑOS(AS)

Durante la entrevista es importante explorar creencias y actitudes de los padres/madres y cuidadores hacia el consumo propio de bebidas azucaradas y hacia el consumo de bebidas azucaradas por parte de los niños(as). También es importante explorar el consumo de los entrevistados y el de los niños(as) (reportado por los padres/madres/cuidadores) antes y después del impuesto haciendo especial énfasis en las estrategias que los entrevistados hayan aplicado para adaptarse al aumento de precio (por ejemplo, comprar marcas más baratas, hacer sus propias bebidas en casa, reducir el consumo en general y consumir más agua). Se deben considerar tres niveles/escenarios de consumo de bebidas azucaradas: (1) el hogar, (2) fuera del hogar, (3) durante celebraciones; así como dos ejes importantes: (a) tiempo: consumo a lo largo de la vida, consumo antes y después del impuesto; (b) estaciones del año: verano versus invierno (épocas de calor vs épocas de frío). Considerar también los datos de la ficha técnica sobre edad, enfermedades y consumo de bebidas azucaradas.

A. ANTES DE LA ENTREVISTA

- Preséntese y agradezca al entrevistado(a) por su tiempo.
- Explique el propósito de la entrevista.
- Enfatice la importancia que esta entrevista tiene para nosotros como investigadores. Haga que el/la entrevistado(a) se sienta como un(a) "experto(a)" en este tema.
- Explique la dinámica de la entrevista, asegurando que su interés está en lo que el entrevistado(a) hace y piensa sobre ciertos temas. Explique que esto no es una prueba y que no se harán juicios sobre lo que diga.
- Asegure la confidencialidad de la entrevista.
- Explique que la información recopilada se utilizará únicamente para fines de investigación y enseñanza.
- Lea la carta oral de consentimiento informado y registre el consentimiento verbal en la grabadora. Deje la tarjeta con la información de contacto del Instituto Nacional de Salud Pública (INSP) y una copia de la carta de consentimiento informado si el entrevistado lo solicita.
• Pregunte al/la entrevistado(a) si prefiere que se hable de “usted” o de “tú”.
• Pregunte al/la entrevistado(a) si tiene alguna pregunta.
• Solicite autorización para grabar la entrevista y encienda la grabadora después de tomar los datos para la ficha técnica.

B. COMIENZO DE LA ENTREVISTA

Introducción:

1. Compra y consumo de alimentos en el contexto familiar.

   a) Platíqueme de las bebidas (que le gustaba tomar cuando era niña(o).
   b) Y de esas bebidas, ¿cuáles sigue consumiendo ahora? ¿por qué?
      • Consumo de bebidas azucaradas:
         ○ ¿Qué bebidas toma? ¿Por qué?
         ○ ¿Cuánta toma? ¿Por qué?
         ○ ¿Tamaño de bebida comprada? ¿Por qué?
         ○ ¿Dónde bebe este tipo de bebidas (p. j. casa, bar)? ¿Por qué?
         ○ ¿Cuándo bebe (p. j. desayuno, almuerzo, etc.)? ¿Por qué?
         ○ Consumo los fines de semana y en otras ocasiones (p. ej., celebraciones).
         ○ ¿Qué le gusta de estas [bebidas azucaradas]? ¿Por qué?
         ○ ¿Qué alimentos combina con estas [bebidas azucaradas]? ¿Por qué?
         ○ ¿Consumo las mismas bebidas y cantidad en otras temporadas del año (p. ej. en invierno)? Por ejemplo, ¿consumen las mismas cosas cuando hace frío? ¿y cuando hace calor?
      • Agua:
         ○ ¿Qué tipo (p. ej., embotellada, de llave, de llave hervida, etc.)? ¿Por qué?
         ○ ¿Dónde la obtiene? ¿Por qué?
         ○ ¿Dónde y cuándo toma agua? ¿Por qué?
         ○ ¿Con qué alimentos la toma? ¿Por qué?
   c) Me gustaría que me hablase de las bebidas (sin alcohol) que toman otros adultos en el hogar. ¿Qué beben ellos?
      • ¿Qué tipos? ¿Por qué?
      • ¿Con qué frecuencia? ¿Por qué?
      • ¿Qué tipo de agua está disponible en su hogar (p.ej. potable, embotellada, de llave)? De las que mencionen, ¿cuáles serían adecuadas para beber? ¿Por qué si o no?
      • ¿Los miembros de su hogar toman agua regularmente? ¿Por qué o por qué no?
      • ¿En qué ocasiones se toma agua?
   d) También me gustaría que me hablase de las bebidas que los niños toman normalmente.
• Consumo de bebidas azucaradas:
  o ¿Qué bebidas [azucaradas] toman ellos? ¿Por qué?
  o ¿Dónde? ¿Por qué? ¿Y en el parque? ¿Y cuando hacen ejercicio? ¿Y en la escuela? ¿Y en las fiestas? ¿Por qué?
  o ¿Con qué alimentos toman ellos estas [bebidas azucaradas]? ¿Por qué?
  o ¿Quién es la persona en el hogar que le da estas bebidas a los niños? ¿Por qué?
• Agua:
  o ¿Los niños beben agua?
  o ¿En qué ocasiones y dónde? ¿Por qué?
  o ¿Con qué alimentos? ¿Por qué?

e) Ahora me gustaría que me platicara de cómo se organizan para comprar alimentos para el hogar. ¿Quién decide lo que se compra?, ¿Quién se encarga de comprar?
  • ¿Compran [bebidas azucaradas]?, ¿Qué tipo?, ¿Cuánto compran?, ¿Quién las compra? ¿Quién decide las [bebidas azucaradas] que se compran?
f) ¿Cuánto dinero diría que gastan en [bebidas azucaradas] a la semana?
  • ¿Qué piensa usted acerca de la cantidad de dinero que gastan en [bebidas azucaradas]? ¿Le parece mucho / poco? ¿Por qué?
  • ¿Le gustaría gastar una cantidad diferente de dinero en estas bebidas? ¿Cuánto? ¿Por qué?
g) ¿Compran agua embotellada? ¿Por qué? ¿De qué tipo?

2. Cambio en prácticas

h) Ahora platiqueme, lo que toma hoy usted… ¿Siempre ha sido así? ¿O han cambiado sus formas de tomar? ¿Qué cambió y cómo cambió? ¿Por qué?
  • ¿Cambio en tipo de bebidas (esp. a consumo de agua)? ¿Por qué?
  • ¿Cambio en cantidad? ¿Por qué?
  • ¿Cómo se siente acerca de estos cambios?
  • ¿Cuándo las han cambiado? ¿Por qué?
i) Y específicamente en los últimos 3 años (desde el año 2014; descontar 3 años a su edad) ¿ha cambiado su forma de tomar? ¿qué y cómo cambió? ¿por qué?
  • Y en los últimos 3 años ¿ha gastado más o menos en este tipo de bebidas?
j) Platiqueme también, lo que toman su(s) niño(s)… ¿Siempre ha sido así? ¿O han cambiado sus formas de tomar? ¿Qué cambió y cómo cambió? ¿Por qué?
  • ¿Cambio en tipo de bebidas (esp. a consumo de agua)? ¿Por qué?
  • ¿Cambio en cantidad? ¿Por qué?
  • ¿Qué piensa usted acerca de estos cambios?
  • ¿Cuándo las han cambiado? ¿Por qué?
k) Y en los últimos 3 años (desde el año 2014; descontar 3 años a la de los niños) ¿cree que ha cambiado las bebidas azucaradas que toman sus niños? ¿qué y cómo cambió? ¿por qué?
Intenciones para el cambio en uno mismo

l) ¿Le gustaría beber una cantidad diferente de bebidas azucaradas? ¿Por qué?
   • ¿Qué cambiaría? ¿Cómo lo haría? ¿En qué circunstancias? ¿Y esas estrategias las ha probado ya?
   • ¿Sería fácil o difícil beber menos bebidas azucaradas? ¿Por qué?
   • ¿Qué bebidas podría tomar en lugar de las azucaradas? ¿Lo hace, no lo hace, por qué?

m) Las autoridades de salud mexicanas quieren alentar a la gente a que consuma menos bebidas azucaradas (como refrescos, jugos y aguas frescas) y recomiendan que estas se tomen sólo ocasionalmente (no diariamente) y en pequeñas cantidades. ¿Cómo ve usted esto? ¿Por qué? ¿Y para usted? ¿Usted se imagina haciendo esto? ¿Por qué?

n) Ahora, imagínese que dejase de tomar [bebidas azucaradas] y tomase agua en su lugar: ¿Se imagina haciéndolo (p. ej. Se imagina una vida sin refresco) en casa, en las fiestas? ¿Cómo cree que reaccionaría usted mismo? ¿Y su familia? ¿Por qué?

o) ¿Le gustaría que los niños tomasen una cantidad diferente de [bebidas azucaradas]? ¿Por qué?
   • ¿Qué cambiaría? ¿En qué circunstancias? ¿Cómo cree que esto se podría hacer? ¿Quién (qué adulto) tendría que poner en práctica esas medidas? ¿Y esas estrategias las han probado ya?
   • ¿Sería fácil o difícil que los niños tomen menos bebidas azucaradas? ¿Por qué?
   • ¿Qué bebidas podrían tomar en lugar de las azucaradas? ¿Ya toman esas bebidas? ¿Por qué?

p) Las autoridades de salud mexicanas recomiendan que los niños no tomen bebidas azucaradas (como refresco, jugos industrializados y aguas frescas) a diario, sólo en algunas ocasiones especiales. ¿Cómo ve usted esto? ¿Por qué? ¿Usted cree que su(s) niño(s) podrían hacer esto? ¿Por qué?

q) Ahora, imagínese que su niño(s) dejase de tomar bebidas azucaradas y tomase agua en su lugar: ¿Se los imagina haciendo esto? ¿Cómo reaccionaría usted? ¿Cómo reaccionaría el resto de su familia? ¿Por qué?

3. Creencias sobre prácticas

r) Ahora, usted me dijo que toma … [nombre de bebida consumida más frecuentemente]. Cuándo la toma, ¿cómo se siente?

s) ¿Qué cree que le pasa a la gente cuanto toma esta bebida por mucho tiempo? ¿Y a usted como cree que le afecta? ¿Y esto ¿es bueno o es malo?
   • Efectos positivos y negativos ¿y esto es importante para usted?
• Efectos inmediatos (por ejemplo, energía) vs efectos a largo plazo/sobre la salud (p.ej. se caen los dientes, diabetes, obesidad). ¿Y esto es importante para usted?
• ¿Qué efectos son más importantes?
• Y si ha notado que le hace daño, ¿por qué lo sigue bebiendo?
t) ¿Cómo cree que les afecta a los niños? ¿Por qué? Y esto ¿es bueno o malo?
u) ¿Qué otro tipo de bebidas [dulces] conoce usted? [Enseñar ayuda visual (tarjetas) y preguntar] ¿conoce estas bebidas? ¿cuáles cree que son las mejores? ¿Por qué? ¿para quién? ¿y las peores? ¿Por qué? ¿Para quién?
v) Y todo esto que sabe sobre estas bebidas ¿cómo lo sabe? ¿dónde lo escuchó?
• Diferentes fuentes: familia, médico, amigos, internet, medios impresos, etc.
• ¿Cuándo lo escuchó?
• ¿Cuál cree que era la intención de ese mensaje?
• ¿Presta atención a esta información? ¿Cómo? ¿Por qué?
• ¿Ha visto carteles o escuchado mensajes en la TV o radio sobre el efecto de este tipo de bebidas para la salud? ¿Qué decían? ¿De quién eran? ¿Qué le pareció a usted?
w) ¿Cree que antes de escuchar esa información pensaba de manera diferente acerca de las bebidas azucaradas? ¿Cómo? ¿Por qué?

4. El impuesto

x) [Si no sale la cuestión del precio preguntar] ¿Ha observado que en los últimos años ha cambiado el precio de las bebidas dulces sin alcohol? Y si, ¿de qué manera? Platíqueme.
• ¿Qué bebidas han aumentado de precio?
• ¿Por qué cree que han aumentado los precios?
• ¿Ha notado un aumento de precio diferente en diferentes partes de la ciudad o en diferentes tipos de tiendas? ¿Cada cuánto ha notado que aumenta el precio?
• ¿Y ha notado un aumento de precio en otros productos? ¿Cuáles?

Preguntar SI mencionan y/o conocen el impuesto

y) Oiga, ¿ha oído hablar del impuesto a las bebidas azucaradas? ¿Qué es lo que ha oído? Platícame de esto:
• ¿Sabe a qué tipo de bebidas aplica?
• ¿Sabe cuál es la cuantía del impuesto (1 peso / litro)?
• ¿Sabe cuál es el propósito del impuesto?
• ¿Por qué medio se ha enterado de esta información (medios de comunicación, amigos, familiares, etc.)?

z) ¿Cuál es su opinión sobre este impuesto?
• ¿Cree que está ayudando a reducir las compras de bebidas azucaradas? ¿Cómo? ¿Por qué?
• ¿Cree que está ayudando a reducir el consumo de bebidas azucaradas en adultos y/o niños? ¿Cómo? ¿Por qué?

aa) ¿Cree usted que este impuesto ha afectado la forma en que la gente piensa acerca de las bebidas azucaradas? ¿Cómo? ¿Por qué?
bb) ¿Qué piensa de que el gobierno imponga este impuesto? ¿por qué?
cc) La intención de este impuesto es disminuir el consumo de este tipo de bebidas porque un alto consumo causa obesidad y diabetes. ¿Qué opina usted de esto?

Preguntar si NO mencionan y/o conocen el impuesto

dd) En el año 2014 el gobierno mexicano implementó un impuesto especial de 1 peso por litro a todas las bebidas no alcohólicas que contienen azúcar añadida (incluyendo bebidas líquidas, y jarabes, y polvos para preparar bebidas saborizadas). Esto se hizo con el objetivo de disminuir el consumo de este tipo de bebidas porque causan obesidad y diabetes.
• ¿Qué piensa acerca de esta medida? ¿Por qué?
• ¿Cree que este aumento en el precio podría estar ayudando a que la gente consuma menos bebidas azucaradas? ¿Cómo? ¿Por qué?
• ¿Valora que el gobierno imponga este tipo de medidas para ayudar a la gente como usted y a los niños a alimentarse mejor y a cuidar su salud? ¿Por qué?

Continuar con la entrevista

ee) El impuesto especial a las bebidas azucaradas es de 1 peso por litro, pero se está considerando aumentarlo a 2 pesos por litro. [Dar un ejemplo concreto de cuando aumentaría el precio de lo que consumen]. ¿Qué piensa usted de esto? ¿Por qué? ¿Cree que afectaría el tipo y la cantidad de bebidas azucaradas que toma usted? ¿Y los niños en su hogar? ¿Cómo? ¿Por qué?

D. RESUMEN Y CIERRE DE LA ENTREVISTA

• Resuma rápidamente los principales puntos aprendidos durante la entrevista y pida al entrevistado que comente sobre estos.
• Pregunte al entrevistado si hay algo más que le gustaría mencionar o preguntar antes de terminar la entrevista.
• Agradezca al entrevistado por su tiempo.

Construction Workers Interview Guide (Spanish)

GUÍA DE ENTREVISTA

ALBAÑILES

Durante la entrevista es importante explorar prácticas, creencias y actitudes hacia las bebidas azucaradas antes y después del impuesto, haciendo especial énfasis en las estrategias que los entrevistados hayan aplicado para adaptarse al aumento de precio (por ejemplo, comprar marcas más baratas, hacer sus propias bebidas en casa, reducir el consumo en general y consumir más agua). Se deben considerar tres niveles/escenarios de consumo de bebidas azucaradas: (1) lugar de trabajo, (2) el hogar, (3) durante las celebraciones; así como dos ejes importantes: (a) tiempo: consumo a lo largo de la vida, consumo antes del refresco y consumo después del refresco; (b) estaciones del año: verano versus invierno (épocas de calor vs épocas de frío). Preguntar también por el consumo de bebidas azucaradas en el hogar por los adultos vs los niños. Considerar también los datos de la ficha técnica sobre edad, enfermedades y consumo de bebidas azucaradas.

A. ANTES DE LA ENTREVISTA

• Preséntese y agradezca al entrevistado por su tiempo.
• Explique el propósito de la entrevista.
• Enfatice la importancia de esta entrevista para nosotros como investigadores y de que solo podemos aprender a través de informantes como él. Haga que el entrevistado se sienta como un "experto" en este tema.
• Explique la dinámica de la entrevista, asegurando que su interés está en lo que el entrevistado hace y piensa sobre ciertos temas. Explique que esto no es una prueba y que no se harán juicios sobre lo que diga.
• Asegure la confidencialidad de la entrevista.
• Explique que la información recopilada se utilizará únicamente para fines de investigación y enseñanza.
• Lea la carta oral de consentimiento informado y registre el consentimiento verbal en la grabadora. Deje la tarjeta con la información de contacto del Instituto Nacional de Salud Pública (INSP) y una copia de la carta de consentimiento informado si el entrevistado lo solicita.
• Pregunte al entrevistado si prefiere que se hable de “usted” o de “tú”.

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• Pregunte al entrevistado si tiene alguna pregunta.
• Solicite autorización para grabar la entrevista y encienda la grabadora después de tomar los datos para la ficha técnica.

B. COMIENZO DE LA ENTREVISTA

Introducción:

1. Patrones actuales de consumo de bebidas sin alcohol y motivación para su consumo

   a) Ahora, platíqueme un poco de cómo es su trabajo/un día laboral. ¿Qué actividades realiza?
   b) ¿Qué tan difícil son estas jornadas y cómo le hacen para aguantar el ritmo?
   c) ¿y qué pasa con las bebidas y comida que consumen en un día de trabajo (desde que se levanta, la jornada de trabajo, y su regreso a casa hasta dormir)?

   • Consumo de bebidas azucaradas:
     - ¿Qué bebidas toma? 99 ¿Por qué?
     - ¿Cuánta toma? ¿Por qué?
     - ¿Tamaño de bebida comprada? ¿Por qué?
     - ¿Comparte bebidas con compañeros? ¿Por qué? ¿Cómo? ¿Qué significa esto para ustedes?
     - ¿Dónde y cuándo compra las bebidas? ¿Por qué?
     - ¿Dónde y cuándo bebe? ¿Por qué?
     - ¿Qué le gusta de estas bebidas?
     - ¿Qué alimentos combina con estas bebidas? ¿Por qué?
     - ¿consume las mismas bebidas y cantidad en otras temporadas del año (p. ej. en invierno)? Por ejemplo, ¿consumen las mismas cosas cuando hace frío? ¿y cuando hace calor?

   • Agua:
     - ¿Qué tipo (p. ej., embotellada, de llave, de llave hervida, etc.)? ¿Por qué?
     - ¿Dónde la obtiene? ¿Por qué?

99 De aquí en adelante mencionar el nombre de la(s) bebida(s) azucaradas que el entrevistado bebe principalmente.
d) ¿Cuánto dinero gasta en [tipo de bebidas azucaradas consumidas] en un día de trabajo? ¿Y a semana cuánto es? Y ¿cuánto ganas a la semana?
  • ¿Qué piensa usted acerca de la cantidad de dinero que gasta en [bebidas azucaradas]? ¿Le parece mucho/poco? ¿Por qué?
  • ¿Le gustaría gastar una cantidad diferente de dinero en este tipo de bebidas? ¿Cuánto? ¿Por qué?

e) Platíqueme de las bebidas (sin alcohol) que bebe fuera del trabajo: en la casa, con los amigos, y/o en fiestas.
  • Bebidas azucaradas:
    o ¿Qué tipo? ¿Por qué?
    o Frecuencia y cantidad ¿Por qué?
    o Hora del día (desayuno, almuerzo, etc.) ¿Por qué?
    o Ocasiones (por ejemplo, fiestas, viendo el fútbol)
    o Lugar (casa, bar, etc.)
    o ¿Qué alimentos combina con [bebidas azucaradas]? ¿Por qué?
  • Agua:
    o ¿Qué tipo? ¿Por qué?
    o ¿Dónde y cuándo toma agua? ¿Por qué?

f) También me gustaría que me platique sobre las bebidas (sin alcohol) que los miembros de su familia toman.
  • ¿Qué bebidas se toman comúnmente en su casa? ¿Por qué?
    ▪ ¿Cuáles y cuánto se compra en una semana determinada?
    ▪ ¿Cuánto se toma en una semana determinada?
    ▪ ¿Quién bebe [bebidas azucaradas]? ¿Los niños toman [bebidas azucaradas]?
      ¿Cuáles? ¿Por qué?
    ▪ ¿Con qué alimentos combinan las [bebidas azucaradas]? ¿Por qué?
  • ¿Quién compra las bebidas que se toman en casa?
  • ¿Quién decide qué bebidas se compran? ¿Por qué?
  • ¿Qué bebidas toman en las fiestas? ¿Por qué?

g) Agua:
  • ¿Qué tipo de agua está disponible en su hogar (p.ej. potable, embotellada, de llave)?
  • ¿Los miembros de su hogar toman agua regularmente? ¿Por qué o por qué no?
  • ¿En qué ocasiones se toma agua?
2. Cambio en prácticas

h) Ahora platíqueme, lo que toma hoy… ¿Siempre ha sido así? ¿O han cambiado sus formas de tomar? ¿Qué cambió y cómo cambió? ¿Por qué cambió (p. ej. Enfermedad propia o de familiares, aumento de precios, educación, influencia de colegas/amigos?
• ¿Cambio en tipo de bebidas (especialmente a consumo de agua simple/embotellada)? ¿Por qué?
• ¿Cambio en cantidad? ¿Por qué?
• ¿Cómo se siente acerca de esos cambios?
• ¿Cuándo las han cambiado? ¿Por qué?

i) Y en los últimos 3 años (desde el año 2014; desde la Copa Mundial de la FIFA Brasil 2014) ¿ha cambiado su forma de tomar? ¿qué y cómo cambió? ¿por qué?
• Y en los últimos 3 años ¿ha gastado más o menos en este tipo de bebidas? ¿por qué?

Intenciones para el cambio

j) ¿Le gustaría tomar una cantidad diferente de [bebidas azucaradas]? ¿Por qué?
• ¿Qué cambiaría? ¿Cómo lo haría? ¿En qué circunstancias? ¿Y esas estrategias las ha probado ya?
• ¿Sería fácil o difícil beber menos [bebidas azucaradas]? ¿Por qué?
• ¿Qué bebidas podría tomar en lugar de las [bebidas azucaradas]? ¿Lo hace? ¿No lo hace? ¿Por qué?

k) Las autoridades de salud mexicanas quieren alentar a la gente a que consuma menos bebidas azucaradas (como refrescos, jugos y aguas frescas) y recomiendan que estas se tomen sólo ocasionalmente (no diariamente) y en pequeñas cantidades. ¿Cómo ve usted esto? ¿Por qué? ¿Y para usted? ¿Usted se imagina haciendo esto? ¿Por qué?

l) Ahora, imagínese que dejase de tomar [bebidas azucaradas] y tomase agua en su lugar: ¿Se imagina haciéndolo (p. ej. Se imagina una vida sin refresco) en el trabajo, en casa, en las fiestas? ¿Cómo cree que reaccionaría usted mismo? ¿Y sus compañeros de trabajo? ¿Por qué? ¿Y su familia? ¿Por qué?

m) ¿Qué cree que pasaría si uno de sus compañeros de trabajo dejase de tomar [bebidas azucaradas] y se pasase a tomar solo agua? ¿Qué pensaría usted de esto? ¿Y sus compañeros? ¿Por qué?

3. Creencias sobre prácticas
n) Ahora, usted me dijo que toma … [mencionar nombre de bebida consumida más frecuentemente]. Cuándo la toma, ¿cómo se siente?
o) ¿Qué cree que le pasa a la gente cuanto toma esta bebida por mucho tiempo? ¿Y a usted como cree que le afecta? Y esto, ¿es bueno o es malo?
  • Efectos positivos y negativos ¿y esto es importante para usted?
  • Efectos inmediatos (por ejemplo, energía) vs efectos a largo plazo/sobre la salud (p.ej. se caen los dientes, diabetes, obesidad). ¿y esto es importante para usted?
  • ¿qué efectos son más importantes? Y si ha notado que le hace daño, ¿por qué lo sigue bebiendo?
q) Y todo esto que sabe sobre estas bebidas ¿cómo lo sabe? ¿dónde lo escuchó?
  • Diferentes fuentes: familia, médico, amigos, internet, medios impresos, etc.
  • ¿Cuándo lo escuchó?
  • ¿Cuál cree que era la intención de ese mensaje?
  • ¿Presta atención a esta información? ¿Cómo? ¿Por qué?
  • ¿Ha visto carteles o escuchado mensajes en la TV o radio sobre el efecto de este tipo de bebidas para la salud? ¿Qué decían? ¿De quién eran? ¿Qué le pareció a usted?
r) ¿Cree que antes de escuchar esa información pensaba de manera diferente acerca de las [bebidas azucaradas]? ¿Cómo? ¿Por qué?
s) ¿Qué piensa su familia acerca de tomar [bebidas azucaradas]? ¿Por qué cree que piensan así? ¿y sus compañeros de trabajo? ¿y sus amigos?
t) ¿Qué piensa su familia acerca de tomar agua? ¿Por qué cree que piensan así? ¿y sus compañeros de trabajo? ¿y sus amigos?

4. El impuesto

u) [Si no sale la cuestión del precio preguntar] ¿Ha observado que en los últimos años ha cambiado el precio de las [bebidas azucaradas]? Y si, ¿de qué manera? Plátame.
  • ¿Qué bebidas han aumentado de precio?
  • ¿Por qué cree que han aumentado los precios?
  • ¿Ha notado un aumento de precio diferente en diferentes partes de la ciudad o en diferentes tipos de tiendas? ¿Cada cuánto ha notado que aumenta el precio?
  • ¿Y ha notado un aumento de precio en otros productos? ¿cuáles?
Preguntar SI mencionan y/o conocen el impuesto

v) Oiga, ¿ha oído hablar del impuesto a las bebidas azucaradas? ¿Qué es lo que ha oído? Platicame de esto:
• ¿Sabe a qué tipo de bebidas aplica?
• ¿Sabe cuál es la cuantía del impuesto (1 peso/litro)?
• ¿Sabe cuál es el propósito del impuesto? ¿Sabe para qué se utiliza? ¿Usted para qué piensa que se debería utilizar?
• ¿Por qué medio se ha enterado de esta información (medios de comunicación, amigos, familiares, etc.)?

w) ¿Cuál es su opinión sobre este impuesto?
• ¿Cree que está ayudando a reducir las compras de [[bebidas azucaradas]]? ¿Cómo? ¿Por qué?
• ¿Cree que está ayudando a reducir el consumo de [bebidas azucaradas]? ¿Cómo? ¿Por qué?

x) ¿Cree usted que este impuesto ha afectado la forma en que la gente piensa acerca de las [bebidas azucaradas]? ¿Cómo? ¿Por qué?

y) ¿Qué piensa de que el gobierno imponga este impuesto? ¿Por qué?
z) La intención de este impuesto es disminuir el consumo de este tipo de bebidas porque un alto consumo causa obesidad y diabetes. ¿Qué opina usted de esto?

Preguntar si NO mencionan y/o conocen el impuesto

En el año 2014 el gobierno mexicano implementó un impuesto especial de 1 peso por litro a todas las bebidas no alcohólicas que contienen azúcar añadida (incluyendo bebidas líquidas, y jarabes, y polvos para preparar bebidas saborizadas). Esto se hizo con el objetivo de disminuir el consumo de este tipo de bebidas porque causan obesidad y diabetes.

aa) ¿Qué piensa acerca de esta medida? ¿Por qué?
bb) ¿Cree que este aumento en el precio podría estar ayudando a que la gente consuma menos [bebidas azucaradas]? ¿Cómo? ¿Por qué?
cc) ¿Usted para qué piensa que se debería utilizar la recaudación de este impuesto?
dd) En teoría se pretende utilizar este impuesto para construir bebederos de agua potable en las escuelas... ¿usted qué piensa al respecto?
ee) ¿Valora que el gobierno imponga este tipo de medidas para ayudar a la gente como usted a alimentarse mejor y cuidar su salud? ¿Por qué?
Continuar con la entrevista

ff) El impuesto especial a las [bebidas azucaradas] es de 1 peso por litro, pero se está considerando aumentarlo a 2 pesos por litro (1 peso más por litro). [Dar un ejemplo concreto de cuando aumentaría el precio de lo que consumen]. ¿Qué piensa usted de esto? ¿Por qué? ¿Cree que afectaría el tipo y la cantidad de [bebidas azucaradas] que toma? ¿Cómo? ¿Por qué?

D. RESUMEN Y CIERRE DE LA ENTREVISTA

• Resuma rápidamente los principales puntos aprendidos durante la entrevista y pida al entrevistado que comente sobre estos.
• Pregunte al entrevistado si hay algo más que le gustaría mencionar o preguntar antes de terminar la entrevista.
• Agradezca al entrevistado por su tiempo.
Construction Workers Interview Guide (translated in to English)

During the interview, it is important to explore behaviors, beliefs, and attitudes toward sugary-beverages before and after the tax, with a particular emphasis on the strategies that participants may have applied to adapt to the price increase (e.g., switching to cheaper brands, making your own beverages at home, reducing consumption in general, or drinking more water). Three scenarios of sugary-beverage consumption should be considered: (1) worksite, (2) with the family/at home, and (3) during celebrations, in addition to two important aspects: (a) time: consumption throughout one’s life, and consumption before and after the tax and (b) season: summer versus winter (warm vs cold seasons). Also, explore sugary-beverage consumption of other adults versus children in the home. Consider information provided in the socio-demographic questionnaire such as age, illness, and sugar-sweetened beverage consumption.

A. BRIEFING BEFORE THE INTERVIEW

- Introduce yourself and thank the informant for his or her time.
- Explain the purpose of the interview.
- Emphasize the importance of this interview for us (as researchers), and that our only purpose is to learn from participants such as oneself. Make the informant feel like an “expert” on this topic.
- Assure the confidentiality of the interview.
- Explain that the information gathered with be utilized only for means of research and teaching.
- Explain the dynamic of the interview, ensuring that your interest is in what the informant does and thinks about certain topics. Explain that this is not a test and that no judgments will be made about what he or she says.
- Read the Oral Informed Consent and record consent on the audio recorder. Leave card with the contact information of the INSP, and a copy of the Oral Informed Consent letter if the participant asks for it.
- Ask if the interviewee prefers to be addressed formally (usted) or informally (tú).
- Ask if the interviewee has any questions.
- Request authorization to record the interview, and turn on the recorder after recording the data on the data sheet.

B. START OF THE INTERVIEW
1. Current SSB consumption patterns and motivation for consumption

a) I’m interested to learn more about what it is to work at a construction site. Can you tell me about a workday at this site? What do you do?

b) How tiresome is it? How do you keep up with your work?

c) Now, I am interested in the foods and beverages you eat during a typical workday. Could you please tell me about what you eat and drink from the time you wake up to the time you go to bed?

   • Sugary beverages:
     - Which type? Why?
     - Amount? Why?
     - Size bought? Why?
     - Where and when bought? Why?
     - Where and when drank? Why?
     - Do you share with your colleagues? How? Why? What does that mean for you?
     - What do you like about drinking about sugary beverages?
     - What foods do you eat with sugary beverages? Why?
     - Do you drink the same types of beverages in other times of the year (when it’s hot/cold out)?

   • Water
     - What type (bottled, tap)? Why?
     - Where do you get it? Why?
     - Where and when do you drink water? Why?

d) How much money (would you say you) spend on sugary beverages on a given day? And during a week? How much do you make a week?

   • What do you think about the amount of money you spend on sugary beverages? Is it high / low?
   • Would you like to spend a different amount of money on these types of drinks? Why? How much? How come?

e) Now, tell me about drinks you consume outside work: at home, with friends, at parties. Which type? Why?

   • Sugary beverages
     - Frequency and quantity? Why?
     - Time of the day (breakfast, lunch, etc.)? Why?
     - Occasions (e.g., celebrations)?
     - Where? (at home, a bar, etc.)?
     - What foods do you usually have with these beverages?

   • Water
What type? Why?

f) I would also like to know about the (non-alcoholic) beverages that the rest of the people in your household consume. But first, please tell me:

• What beverages are commonly consumed in your household? Why?
  
  o Which and how much do you buy in a given week?
  o How much do you drink in a given week?
  o Who drinks sugary beverages? Do children (in the house) drink it? Which? How come?
  o Which foods do you have with soda? Why?

• Who buys the beverages that you all drink at home?

• Who decides what beverages are bought? Why?

• What drinks do you drink at parties? Why?

g) Water:

• What type of water is available at your home? Potable water, bottled, tap water?

• Do members of your household drink water regularly? Why or why not?

• On what occasions do you drink water?

2. Behavioral Changes

h) Now, tell me about what you drank today. Has it always been like that? Or how have your drink choices changed? What changed and how did it change? Why did it change? (e.g., your own illness or of someone close to you, higher prices, education (about it), influence from friends or colleagues? 

• Has the type of drink you consume changed, (especially consuming water or bottled water)? Why?

• Has the amount changed? Why?

• How do you feel about these changes?

• When did these changes happen? Why?

i) In the last three years, (since 2014, since the 2014 World Cup in Brazil) have you changed what you drink? What and how did it change? Why?

• In the last three years, have you spent more or less on these types of drinks? Why?

Intentions to change

j) Would you like to drink a different quantity of sugary beverages? Why?
• What would change? How would it change? In what circumstances? Have you tried those strategies already?
• Would it be difficult or easy to drink less soda? Why?
• What could you drink instead of sugary beverages? Would you do it? Wouldn’t you? Why?

k) Mexican health authorities want to encourage people to drink less sugary beverages (like soda, juice, *aguas frescas*) and they recommend that you drink them only occasionally (not daily) and in small quantities. How does this seem to you? Why? And what about yourself? Could you imagine yourself doing this? Why?
l) Now, imagine that you just stopped drinking soda and you’re drinking water instead. Could you imagine doing it, (e.g., imagine a life without soda) at work, at home, at parties?
• How would you react yourself? How would your work colleagues react? Why? And your family? Why?

m) What do you think would happen if one of your work colleagues stopped drinking soda and only drank water? What would you think about that? What would your colleagues think? Why?

3. Beliefs about behaviors

n) Now, you told me you drink…. (mention the name of the most frequently consumed beverage). When you drink it, how do you feel?

o) What do you think would happen to people when they drink (soda) for a long time? And yourself, how do you think it would affect you? And this, is it bad or good?
• (Are there) negative or positive effects? And is this important to you?
• Immediate effects (e.g., energy) versus long-term/health effects (e.g., dental caries, diabetes, obesity). And, is this important to you?
• What effects are the most important? And if you’ve noticed that it hurts you, why do you continue to drink it?

p) What other sugary drinks do you know? (Show the visual aid [cards] and ask, do you know these drinks? Which do you think are best? Why? For whom? And the worst? Why? For whom?

q) And all of this that you know about these drinks, how do you know it? Where did you hear it?
• Different sources: family, doctors, friends, internet, media, etc.
• When did you hear it?
• What do you think was the intention of that message?
• Do you pay attention to this information? How? Why?
• Have you seen posters or heard messages on the TV or radio about the effect of these types of drinks on health? What were they saying? Who were they? What did you think?

r) Do you think that before hearing this information, you thought differently about sodas? How? Why?
s) What does your family think about drinking soda? Why do they think this way? And your work colleagues? And your friends?
t) What does your family think about drinking water? Why do they think this way? And your work colleagues? And your friends?

4. The Sugar-Sweetened Beverage Tax

u) [If a question about price doesn’t come up, ask] Have you noticed that in the last few years the price of sodas has changed? And if it has, in what way? Tell me.
• What drinks have higher prices?
• Why do you think they highered the prices?
• Have you noticed a higher price in different parts of the city or in different types of stores? How often have you noticed a higher price?
• And have you noticed a price increase in other products? Which?

Ask IF they mention and/or know the tax

v) Listen/hey, have you heard talk of the tax or about sugary beverages? What have you heard? Talk to me about it.
• Do you know what types of beverages it applies to?
• Do you know what is the amount of the tax? (1 peso/liter)?
• Do you know what is the purpose of the tax? Do you what its used for? What do you think it should be used for?
• How did you find out about this information (the media, friends, relatives, etc.)

w) What is your opinion about the tax?
• Do you think it’s helping to reduce the purchase of sugary beverages? How? Why?
• Do you think it’s helping to reduce the consumption of sugary beverages? How? Why?

x) Do you think this tax has affected the way people think about sugary beverages? How? Why?
y) What do you think about the government imposing this tax? Why?
z) The intention of this tax is to lessen consumption of these types of drinks because high consumption causes obesity and diabetes. What is your opinion of this?

Ask if they DON’T mention and/or know the tax

In the year 2014, the Mexican government implemented a special tax of 1 peso per liter on all non-alcoholic beverages that contain added sugar (including liquids, syrups, and powders to prepare flavored drinks). They did this with the objective of lessening consumption of these types of drinks because they cause obesity and diabetes.

aa) What do you think about this measure? Why?
bb) Do you think this price increase could help people consume less sugary beverages? How? Why?
cc) What do you think the collections from this tax should be used for?
dd) In theory they could use this tax to construct water fountains in schools. What do you think about that?
ee) Is it worth the government imposing this type of measure to help people like you to eat better and take care of their health? Why?

Continue with the interview

ff) The special tax on sugary beverages is 1 peso per liter, but 2 pesos per liter is under consideration (one peso more per liter). (Give a concrete example of when they would higher the price of what is consumed.) What do you think about that? Why? Do you think it would affect the type and quantity of sugary beverages that people drink? How? Why?

D. DEBRIEFING & CLOSING

• Quickly summarize the main points learned during the interview and ask informant to comment on them.
• Ask the informant if there is anything else he would like to bring up or ask before finishing the interview.
• Thank the participant for his time.
Appendix XI: Focus Group Guides

Parents Focus Group Guide (Spanish)

GUÍA DE GRUPO DE DISCUSIÓN

PADRES/MADRES Y CUIDADORES PRINCIPALES DE NIÑOS(AS)

Durante el grupo de discusión es importante explorar creencias y actitudes de los padres/madres y cuidadores hacia el consumo propio de bebidas azucaradas y hacia el consumo de bebidas azucaradas por parte de los niños(as). También es importante explorar el consumo de los entrevistados y el de sus hijos (as) (reportado por los padres/madres/cuidadores) antes y después del impuesto haciendo especial énfasis en las estrategias que los entrevistados hayan aplicado para adaptarse al aumento de precio (por ejemplo, comprar marcas más baratas, hacer sus propias bebidas en casa, reducir el consumo en general y consumir más agua). Se deben considerar tres niveles/escenarios de consumo de bebidas azucaradas: (1) el hogar, (2) fuera del hogar, (3) durante celebraciones; así como dos ejes importantes: (a) tiempo: consumo antes y después del impuesto; (b) estaciones del año: verano versus invierno (épocas de calor vs épocas de frío).

A. ANTES DE LA DISCUSIÓN

• Preséntese y presente a su compañero(a) y agradezca a los entrevistados por su tiempo.
• Explique el propósito de la discusión.
• Enfatice la importancia que esta discusión tiene para nosotros como investigadores. Haga que los entrevistados se sientan como "expertos" en este tema.
• Explique la dinámica del grupo de discusión, asegurando que su interés está en lo que los entrevistados hacen y piensan sobre ciertos temas.
• Explique que su compañero estará tomando notas en un rotafolio para que todos sepamos cuales son los puntos principales que se están mencionando.
• Explique cómo se va a garantizar el anonimato de los participantes; pida a los participantes que no hablen de lo que se hablen en grupo fuera del grupo.
• Explique que la información recopilada se utilizará únicamente para fines de investigación y enseñanza.
• Lea la carta oral de consentimiento informado y registre el consentimiento verbal de cada participante en la grabadora. Deje tarjetas con la información
de contacto del Instituto Nacional de Salud Pública (INSP) con los entrevistados y copias de la carta de consentimiento informado si la solicitan.

- Solicite autorización para grabar la entrevista.
- Introduzca las reglas básicas de participación:
  - Se espera que todos participen.
  - Hay que respetar el turno de palabra.
  - No hay respuestas correctas o incorrectas.
  - Deberemos ser respetuosos con las opiniones de otras personas.
  - Pida que se apaguen los teléfonos si es posible.
- Pregunte a los participantes si tienen alguna pregunta.
- Recopile información personal a través de las fichas técnicas.
- Solicite autorización para grabar la discusión y encienda la grabadora.

**B. COMIENZO DE LA ENTREVISTA**

Introducción: En primer lugar, me gustaría que todos(as) se presentaran. ¿Podrían por favor decir su nombre, de dónde son, cuantos hijos tienen/cuidan y de qué edades? A ver, empezaré yo y mi compañero(a) y luego seguimos por mi derecha…

1. Ahora, platíquennos de las bebidas (sin alcohol) que se consumen normalmente el hogar:
   - Consumo de bebidas azucaradas:
     - ¿Qué tipo? ¿Por qué?
     - ¿Cantidad? ¿Por qué?
     - ¿Dónde? ¿Por qué?
     - ¿Y durante el fin de semana?
     - ¿Y en las fiestas?
     - ¿Y, ¿toman lo mismo cuando hace calor? ¿Y cuando hace frío? ¿Por qué?
   - Agua:
     - ¿Qué tipo (p. ej., embotellada, de llave, de llave hervida, etc.)? ¿Por qué?
     - ¿Cantidad? ¿Por qué?

2. Y los niños(as), ¿toman lo mismo o distinto?
   - Consumo de [bebidas azucaradas]:
     - ¿Qué [bebidas azucaradas] toman ellos? ¿Con qué frecuencia? ¿Qué cantidad? ¿Por qué?
• ¿Dónde? ¿Por qué? ¿Y en el parque? ¿Y cuando hacen ejercicio? ¿Y en la escuela? ¿Y en las fiestas? ¿Por qué?

• Agua:
  - ¿Los niños beben agua?
  - ¿En qué ocasiones y dónde? ¿Por qué?
  - ¿Con qué alimentos? ¿Por qué?

3. ¿Quién decide qué bebidas se compran y toman en sus hogares? ¿Por qué? ¿Quién las compra? ¿Por qué? ¿Quién les da [bebidas azucaradas] a los niños?

4. ¿Cómo se sienten cuando toman esas bebidas? ¿Cómo creen que les afecta el consumo de estas bebidas? ¿Y esto… es bueno o malo?
  - Efectos positivos y negativos ¿y esto es importante para usted?
  - Efectos inmediatos (por ejemplo, energía) vs efectos a largo plazo/sobre la salud (p.ej. se caen los dientes, diabetes, obesidad). ¿Y esto es importante para usted?
  - ¿Qué efectos son más importantes? Y si ha notado que le hace daño, ¿por qué lo sigue bebiendo?

5. ¿Cómo creen que les afectan estas bebidas a los niños? ¿Por qué? ¿Por qué? ¿es bueno o malo?

6. Y, todo esto que saben sobre estas bebidas ¿cómo lo saben? ¿dónde lo escucharon?
  - Diferentes fuentes: familia, médico, amigos, internet, medios impresos, etc.
  - ¿Cuándo lo escucharon?
  - ¿Prestan atención a esta información? ¿Cómo? ¿Por qué?

7. ¿Qué piensa su familia de este tipo de bebidas? ¿Y sus amigos(as)? ¿Por qué cree que piensan así?

8. Ahora platíqueme, lo que toman hoy ustedes… ¿Siempre ha sido así? ¿O han cambiado sus formas de tomar? ¿Qué cambió y cómo cambió? ¿Por qué?
  - ¿Cambio en tipo de bebidas (esp. a consumo de agua)? ¿Por qué?
  - ¿Cambio en cantidad? ¿Por qué?
  - ¿Cómo se sienten acerca de esos cambios?
  - ¿CUÁNDO las han cambiado? ¿Por qué?
  - Y en los últimos tres años (desde el año 2014), ¿han cambiado lo que toman?
  - ¿Y lo que toman sus hijos? ¿Ha cambiado en los últimos años? ¿Cómo? ¿Por qué?
  - ¿Han pensado en tomar menos [bebidas azucaradas]? ¿Por qué? ¿Les gustaría tomar menos [bebidas azucaradas]? ¿Por qué? ¿Qué cambiarían? ¿Cómo lo harían? ¿Sería fácil o difícil beber menos [bebidas azucaradas]? ¿Por qué?
• ¿Consideran que sus hijos deberían tomar menos [bebidas azucaradas]? ¿Por qué? ¿Qué cambiarían? ¿Cómo lo harían? ¿Sería fácil o difícil que ellos bebiesen menos [bebidas azucaradas]? ¿Por qué?

• [Si no sale la cuestión del precio preguntar] ¿Han observado que en los últimos años ha habido un aumento del precio de todas estas bebidas dulces industrializadas (como Coca-Cola, Fanta, jugos industrializados)? Con esta alza del precio, ¿qué ha pasado? Platiquemos de esto.

**Preguntar SI mencionan y/o conocen el impuesto**

9. Oiga, ¿han oído hablar del impuesto a las [bebidas azucaradas]? ¿Qué es lo que han oído? Platiquemos de esto:
   - ¿Saben a qué tipo de bebidas aplica?
   - ¿Saben cuál es la cuantía del impuesto (1 peso / litro)?
   - ¿Saben cuál es el propósito del impuesto?
   - ¿Por qué medio se han enterado de esta información (medios de comunicación, amigos, familiares, etc.)?

10. ¿Cuál es su opinión sobre este impuesto?
   - ¿Creen que está ayudando a reducir las compras de [bebidas azucaradas]? ¿Cómo? ¿Por qué?
   - ¿Creen que está ayudando a reducir el consumo de [bebidas azucaradas]? ¿Cómo? ¿Por qué?

11. ¿Creen ustedes que este impuesto ha afectado la forma en que la gente piensa acerca de las [bebidas azucaradas]? ¿Cómo? ¿Por qué?

**Preguntar si NO mencionan y/o conocen el impuesto**

12. En el año 2014 el gobierno mexicano implementó un impuesto especial de 1 peso por litro a todas las bebidas sin alcohol que contienen azúcar añadida (incluyendo bebidas líquidas como Coca-Cola, y jarabes, y polvos para preparar bebidas saborizadas). Esto se hizo con el objetivo de disminuir el consumo de este tipo de bebidas porque causan obesidad y diabetes.
   - ¿Qué piensan acerca de esta medida? ¿Por qué?
• ¿Creen que este aumento en el precio podría estar ayudando a que la gente consuma menos [bebidas azucaradas]? ¿Cómo? ¿Por qué?
• ¿Valoran que el gobierno imponga este tipo de medidas para ayudar a la gente como ustedes a alimentarse mejor y cuidar su salud? ¿Por qué?
• El impuesto especial a las bebidas azucaradas es de 1 peso por litro, pero se está considerando aumentarlo a 2 pesos por litro. ¿Qué piensan ustedes de esto? ¿Por qué? ¿Creen que afectaría el tipo y la cantidad de bebidas azucaradas que toman? ¿Cómo? ¿Por qué?

**D. RESUMEN Y CIERRE**

• Lea los puntos anotados en el rotafolio y resuma los principales puntos aprendidos durante la discusión. Pida a los entrevistados que comente sobre estos. ¿Están de acuerdo? ¿En desacuerdo?
• Pregunte a los entrevistados si hay algo más que les gustaría mencionar o preguntar antes de terminar la discusión.
• Recuérdeles que si tienen alguna pregunta acerca de esta investigación (incluyendo el uso de la información) pueden contactar a las personas del INSP que aparecen en la tarjeta de contacto.
• Recuérdeles que su nombre no aparecerá en ninguna publicación.
Durante el grupo de discusión es importante explorar comportamientos, creencias y actitudes hacia las bebidas azucaradas antes y después del impuesto, haciendo especial énfasis en las estrategias que los entrevistados hayan aplicado para adaptarse al aumento de precio (por ejemplo, comprar marcas más baratas, hacer sus propias bebidas en casa, reducir el consumo en general y consumir más agua). Se deben considerar tres niveles/escenarios de consumo de bebidas azucaradas: (1) lugar de trabajo, (2) el hogar, (3) durante las celebraciones; así como dos ejes importantes: (a) **tiempo**: consumo antes y después del impuesto; (b) **estaciones del año**: verano versus invierno (épocas de calor vs épocas de frío).

**A. ANTES DE LA DISCUSIÓN**

- Preséntese y presente a su compañero(a) y agradezca a los entrevistados por su tiempo.
- Explique el propósito de la discusión.
- Enfatice la importancia que esta discusión tiene para nosotros como investigadores. Haga que los entrevistados se sientan como "expertos" en este tema.
- Explique la dinámica del grupo de discusión, asegurando que su interés está en lo que los entrevistados hacen y piensan sobre ciertos temas.
- Explique que su compañero estará tomando notas en un rotafolio para que todos sepamos cuales son los puntos principales que se están mencionando.
- Explique cómo se va a garantizar el anonimato de los participantes; pida a los participantes que no hablen de lo que se hablen en grupo fuera del grupo.
- Explique que la información recopilada se utilizará únicamente para fines de investigación y enseñanza.
- Lea la carta oral de consentimiento informado y registre el consentimiento verbal de cada participante en la grabadora. Deje tarjetas con la información de contacto del Instituto Nacional de Salud Pública (INSP) con los entrevistados y copias de la carta de consentimiento informado si la solicitan.
- Solicite autorización para grabar la entrevista.
- Introduzca las reglas básicas de participación:
Se espera que todos participen.
Hay que respetar el turno de palabra.
No hay respuestas correctas o incorrectas.
Debemos ser respetuosos con las opiniones de otras personas.
Pida que se apaguen los teléfonos si es posible.

- Pregunte a los participantes si tienen alguna pregunta.
- Recopile información personal a través de las fichas técnicas.
- Solicite autorización para grabar la discusión y encienda la grabadora.

**B. COMIENZO DE LA ENTREVISTA**

Introducción: En primer lugar, me gustaría que todos se presentaran. ¿Podrían por favor decir su nombre, qué es lo que hacen específicamente en este lugar y por cuánto tiempo han estado haciendo este tipo de trabajo? A ver, empecemos por mi derecha…

1. Ahora, plátiquenmos de las bebidas sin alcohol que toman normalmente durante el día laboral.
- Consumo de bebidas azucaradas:
  - ¿Qué tipo? ¿Por qué?
  - ¿Cantidad? ¿Por qué?
  - ¿Dónde las consumen? ¿Por qué?
  - ¿Dónde las compran? ¿Por qué?
  - ¿Cuánto gastan normalmente en este tipo de bebidas?
- Agua:
  - ¿Qué agua hay disponible? (si no hay disponible indagar si la compran)
  - ¿Y toman agua en la obra? ¿por qué?
  - ¿Cantidad? ¿Por qué?

2. ¿Cómo se sienten cuando toman esas bebidas? ¿Cómo creen que les afecta el consumo de estas bebidas? ¿Y esto… es bueno o malo?
- Efectos inmediatos (por ejemplo, energía)
- Efectos negativos a largo plazo: p.ej. se caen los dientes, diabetes, obesidad
- Valor / importancia atribuida a esos efectos
- Valor atribuido a los efectos inmediatos vs efectos en la salud

3. Y todo esto que saben sobre estas bebidas ¿cómo lo saben? ¿dónde lo escucharon?
- Diferentes fuentes: familia, médico, amigos, internet, medios impresos, etc.
• ¿Cuándo lo escuchó?
• ¿Cuál creen que era la intención de ese mensaje?
• ¿Presta atención a esta información? ¿Cómo? ¿Por qué?

4. ¿Qué piensa su familia de este tipo de bebidas? ¿Por qué cree que piensan así?

5. Ahora platíquennos, lo que beben hoy… ¿Siempre ha sido así? ¿O han cambiado sus formas de tomar? ¿Qué cambió y cómo cambió? ¿Por qué cambió (Enfermedad propia o de familiares, aumento de precios, educación, influencia de colegas/amigos)?
   • ¿Cambio en tipo de bebidas? ¿Por qué?
   • ¿Cambio en cantidad? ¿Por qué?
   • ¿Cómo se sienten acerca de esos cambios?
   • ¿Cuándo las han cambiado? ¿Por qué?

6. Y en los últimos 3 años (desde el año 2014; desde la Copa Mundial de la FIFA Brasil 2014) ¿ha cambiado su forma de tomar? ¿qué y cómo cambió? ¿por qué?
   • Y en los últimos 3 años ¿han gastado más o menos en este tipo de bebidas?
     ¿cómo se sienten acerca de esto? ¿por qué?

7. ¿Han pensado en tomar menos [bebidas azucaradas]? ¿Por qué? ¿Les gustaría tomar menos bebidas azucaradas? ¿Por qué?
   • ¿Qué cambiarían? ¿Cómo lo harían?
   • ¿Cuáles son las estrategias que implementaría? ¿En qué circunstancias? ¿Y esas estrategias las han probado ya?
   • ¿Sería fácil o difícil beber menos bebidas azucaradas? ¿Por qué?
     o Apoyo familiar y de los amigos y compañeros de trabajo
     o Preferencias
     o Disponibilidad de substitutos adecuados

8. ¿Qué creen que pasaría si uno de sus ustedes dejase de tomar estas bebidas y se pasasen a tomar solo agua? ¿Qué pensarían usted de esto? ¿Cómo reaccionarían sus compañeros? ¿Por qué?

9. [Si no sale la cuestión del precio preguntar] ¿Han observado que en los últimos años ha habido un aumento del precio de las bebidas dulces sin alcohol? Con esta alza del precio ¿qué ha pasado? Platíquennos de esto.
**Preguntar SI mencionan y/o conocen el impuesto**

10. Oiga, ¿han oído hablar del impuesto a las bebidas azucaradas? ¿Qué es lo que han oído? Platíquennos de esto:
   - ¿Saben a qué tipo de bebidas aplica?
   - ¿Saben cuál es la cuantía del impuesto (1 peso / litro)?
   - ¿Saben cuál es el propósito del impuesto?
   - ¿Por qué medio se han enterado de esta información (medios de comunicación, amigos, familiares, etc.)?

11. ¿Cuál es su opinión sobre este impuesto?
   - ¿Creen que está ayudando a reducir las compras de bebidas azucaradas? ¿Cómo? ¿Por qué?
   - ¿Creen que está ayudando a reducir el consumo de bebidas azucaradas? ¿Cómo? ¿Por qué?

12. ¿Creen ustedes que este impuesto ha afectado la forma en que la gente piensa acerca de las bebidas azucaradas? ¿Cómo? ¿Por qué?

**Preguntar si NO mencionan y/o conocen el impuesto**

13. En el año 2014 el gobierno mexicano implementó un impuesto especial de 1 peso por litro a todas las bebidas no alcohólicas que contienen azúcar añadida (incluyendo bebidas líquidas, y jarabes, y polvos para preparar bebidas saborizadas). Esto se hizo con el objetivo de disminuir el consumo de este tipo de bebidas porque causan obesidad y diabetes.
   - ¿Qué piensan acerca de esta medida? ¿Por qué?
   - ¿Creen que este aumento en el precio podría estar ayudando a que la gente consuma menos bebidas azucaradas? ¿Cómo? ¿Por qué?
   - ¿Valoran que el gobierno imponga este tipo de medidas para ayudar a la gente como ustedes a alimentarse mejor y cuidar su salud? ¿Por qué?

14. El impuesto especial a las bebidas azucaradas es de 1 peso por litro, pero se está considerando aumentarlo a 2 pesos por litro. ¿Qué piensan ustedes de esto? ¿Por qué? ¿Creen que afectaría el tipo y la cantidad de bebidas azucaradas que toman? ¿Cómo? ¿Por qué?

**D. RESUMEN Y CIERRE**
• Lea los puntos anotados en el rotafolio y resuma los principales puntos aprendidos durante la discusión. Pida a los entrevistados que comente sobre estos. ¿Están de acuerdo? ¿En desacuerdo?
• Pregunte a los entrevistados si hay algo más que les gustaría mencionar o preguntar antes de terminar la discusión.
• Recuérdelos que si tienen alguna pregunta acerca de esta investigación (incluyendo el uso de la información) pueden contactar a las personas del INSUP que aparecen en la tarjeta de contacto.
• Recuérdelos que su nombre no aparecerá en ninguna publicación.
Appendix XII: Socio-demographic questionnaire (in Spanish only)

Nota: Esta información no se compartirá con ninguno de los otros miembros del grupo.

Datos de identificación

Nombre: ____________________________________________

Número de teléfono: _______________________________________

Localidad y municipio de residencia: ______________________________

Datos generales

1. ¿Cuál es su edad?
2. ¿En qué municipio, estado o país nació usted?
3. ¿Cuál es su estado civil (casado o soltero)?
4. ¿Cuántas personas viven normalmente en su vivienda, contando a los niños y a los ancianos?
5. Por favor, indique el parentesco con las personas que viven en su vivienda:
   - Esposo(a)
   - Hijo(a)
   - Padre/madre
   - Nieto(a)
   - Primo(a)
   - Otros parientes
   - Otro (describa): __________________

6. Por favor, indique las edades de los niños que viven en el hogar:

7. ¿Quién es el/la jefe(a) del hogar?

8. ¿Participa usted y/o los integrantes de su hogar en algún programa de apoyo social? __ ¿Cuál? (por ejemplo, PROSPERA Programa de Inclusión Social, Programa de Comedores Comunitarios)

9. ¿Cuál es el último grado que usted estudió en la escuela? Opciones de nivel
Ninguno
Preescolar
Primaria
Secundaria
Preparatoria o Bachillerato
Normal básica
Estudios técnicos o comerciales con primaria terminada
Estudios técnicos o comerciales con secundaria terminada
Estudios técnicos o comerciales con preparatoria terminada
Normal de licenciatura
Licenciatura/profesional
Maestría
Doctorado

Indicar si terminado o truncado: ___

Lengua indígena

10. ¿Usted habla alguna lengua indígena? _____ ¿Qué lengua indígena habla usted?
11. ¿Habla alguna otra lengua? ¿Cuál?

Ocupación

12. ¿Usted actualmente trabaja? (omitir pregunta para los albañiles) _____ En su trabajo, ¿cuáles son las tareas o funciones principales que desempeña?
13. ¿Podría decirme el nombre del oficio o puesto o cargo que desempeña en este trabajo? (p. ej. patrón, trabajador por su cuenta, trabajador a sueldo fijo, salario o jornal, trabajador a destajo, porcentaje o comisión, trabajador sin pago)
14. ¿Cuál es la actividad principal de la empresa, negocio o patrón donde desempeña este trabajo?

Enfermedades

15. ¿Usted o alguno de sus familiares cercanos padecen de alguna enfermedad crónica con diabetes o tensión alta? _____ ¿Quién? _______________ ¿Qué enfermedad(es) en particular?
Appendix XIII: Questionnaire to assess Socio-Economic Level (in Spanish only)

Regla AMAI NSE 8X7 (Source: http://nse.amai.org/nseamai2/)

En este documento se presentan las ocho variables que conforman el modelo para la estimación del nivel socioeconómico incluyendo la calificación que tiene cada una de ellas. Al final del documento se incluye el cuadro que indica el nivel socioeconómico de acuerdo con el total calculado a partir de las variables.

1. ¿Cuál es el total de cuartos, piezas o habitaciones con que cuenta su hogar? Por favor no incluya baños, medios baños, pasillos, patios y zócalos.

<table>
<thead>
<tr>
<th>RESPUESTA</th>
<th>PUNTOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>7 o más</td>
<td>14</td>
</tr>
</tbody>
</table>

2. ¿Cuántos baños completos con regadera y W.C. (excusado) hay para uso exclusivo de los integrantes de su hogar?

<table>
<thead>
<tr>
<th>RESPUESTA</th>
<th>PUNTOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>3</td>
<td>36</td>
</tr>
<tr>
<td>4 o más</td>
<td>52</td>
</tr>
</tbody>
</table>
3. En su hogar cuenta con regadera funcionado en alguno de los baños?

<table>
<thead>
<tr>
<th>RESPUESTA</th>
<th>PUNTOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>No tiene</td>
<td>0</td>
</tr>
<tr>
<td>Si tiene</td>
<td>10</td>
</tr>
</tbody>
</table>

4. Contando todos los focos que utiliza para iluminar su hogar, incluyendo los de techos, paredes y lámparas de buró o piso, dígame ¿cuántos focos tiene su vivienda?

<table>
<thead>
<tr>
<th>RESPUESTA</th>
<th>PUNTOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>0</td>
</tr>
<tr>
<td>6-10</td>
<td>15</td>
</tr>
<tr>
<td>11-15</td>
<td>27</td>
</tr>
<tr>
<td>16-20</td>
<td>32</td>
</tr>
<tr>
<td>21 o más</td>
<td>46</td>
</tr>
</tbody>
</table>

5. ¿El piso de su hogar es predominantemente de tierra, o de cemento, o de algún otro tipo de acabado?

<table>
<thead>
<tr>
<th>RESPUESTA</th>
<th>PUNTOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tierra o cemento (firme de )</td>
<td>0</td>
</tr>
<tr>
<td>Otro tipo de material o acabado</td>
<td>11</td>
</tr>
</tbody>
</table>

6. ¿Cuántos automóviles propios, excluyendo taxis, tienen en su hogar?

<table>
<thead>
<tr>
<th>RESPUESTA</th>
<th>PUNTOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>32</td>
</tr>
<tr>
<td>2</td>
<td>41</td>
</tr>
<tr>
<td>3 o más</td>
<td>58</td>
</tr>
</tbody>
</table>

7. ¿En este hogar cuentan con estufa de gas o eléctrica?
8. Pensando en la persona que aporta la mayor parte del ingreso en este hogar, ¿cuál fue el último año de estudios que completó? (espera respuesta, y pregunte) ¿Realizó otros estudios? (reclasificar en caso necesario).

<table>
<thead>
<tr>
<th>RESPUESTA</th>
<th>PUNTOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>No estudió</td>
<td>0</td>
</tr>
<tr>
<td>Primaria incompleta</td>
<td>0</td>
</tr>
<tr>
<td>Primaria completa</td>
<td>22</td>
</tr>
<tr>
<td>Secundaria incompleta</td>
<td>22</td>
</tr>
<tr>
<td>Secundaria completa</td>
<td>22</td>
</tr>
<tr>
<td>Carrera comercial</td>
<td>38</td>
</tr>
<tr>
<td>Carrera técnica</td>
<td>38</td>
</tr>
<tr>
<td>Preparatoria incompleta</td>
<td>38</td>
</tr>
<tr>
<td>Preparatoria completa</td>
<td>38</td>
</tr>
<tr>
<td>Licenciatura incompleta</td>
<td>52</td>
</tr>
<tr>
<td>Licenciatura completa</td>
<td>52</td>
</tr>
<tr>
<td>Diplomado o Maestría</td>
<td>72</td>
</tr>
<tr>
<td>Doctorado</td>
<td>72</td>
</tr>
</tbody>
</table>

**TABLA DE PUNTOS POR NIVEL**

<table>
<thead>
<tr>
<th>Nivel</th>
<th>Puntos</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/B</td>
<td>193+</td>
</tr>
<tr>
<td>C+</td>
<td>155 a 192</td>
</tr>
<tr>
<td>C</td>
<td>128 a 154</td>
</tr>
<tr>
<td>C-</td>
<td>105 a 127</td>
</tr>
<tr>
<td>D+</td>
<td>80 a 104</td>
</tr>
<tr>
<td>D</td>
<td>33 a 79</td>
</tr>
<tr>
<td>E</td>
<td>0 a 32</td>
</tr>
</tbody>
</table>
Appendix XIV: Beverage Frequency Questionnaire (in Spanish only)

Adapted from the semi-quantitative FFQ validated for use with adults and adolescents and used in the ENSANUT 2016 (INPS, 2016).

ID:________(Grupo)___________(No.) Fecha: __________________________

Entrevista o grupo focal: _____________________ Encuestador: _______________

<table>
<thead>
<tr>
<th>LEA TODAS LAS BEBIDAS</th>
<th>FRECUENCIA DE CONSUMO</th>
<th>Tamaño de porción</th>
<th>Número de porciones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DÍAS DE LA SEMANA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) ¿Cuántos días tomó usted?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) ¿Cuántas veces al día tomó usted?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEBIDA</td>
<td>PORCIÓN</td>
<td>Número</td>
<td>1</td>
</tr>
<tr>
<td>Agua sola</td>
<td>1 vaso (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Leche</td>
<td>1 vaso (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Leche preparada de sabor (chocolate u otro sabor)</td>
<td>1 vaso (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Café</td>
<td>1 taza (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>a) Café sin azúcar</td>
<td>1 taza (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>b) Azúcar agregada al café</td>
<td>1 cucharad a cafetera (10g)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>c) Leche agregada al café</td>
<td>1 taza (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Té o infusión</td>
<td>1 taza</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>a) Té sin</td>
<td>1 taza</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>azúcar</td>
<td>(240 ml)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Azúcar agregada al té</td>
<td>1 cucharad a cafetera (10g)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>c) Leche agregada al café</td>
<td>1 taza (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Atole de maíz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Atole con agua</td>
<td>1 taza (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>b) Atole con leche</td>
<td>1 taza (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Aguas de fruta natural con azúcar</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 vaso (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Aguas de fruta natural sin azúcar</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 vaso (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>Bebidas o aguas de sabor industrializados sin azúcar (incluyendo dietéticas como Be-light)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 vaso (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>Bebidas o aguas de sabor industrializados con azúcar (Levite)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 vaso (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Jugos naturales sin azúcar</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 vaso (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>Jugos naturales con azúcar</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 vaso (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>Néctares de frutas o pulpa de frutas industrializados con azúcar (Boing, Jumex)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 vaso (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>Bebidas energéticas (vive 100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 vaso (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>Bebidas de deporte sin gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 vaso (240 ml)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Refresco normal</td>
<td>1 vaso (240 ml)</td>
<td>1</td>
</tr>
<tr>
<td>---</td>
<td>----------------</td>
<td>-----------------</td>
<td>---</td>
</tr>
<tr>
<td>1</td>
<td>Refresco dieta</td>
<td>1 vaso (240 ml)</td>
<td>1</td>
</tr>
</tbody>
</table>

(*) TAMAÑO DE PORCIÓN: BEBIDAS: Muy chico (MC); Chico (C); Mediano (M); Grande (G); Muy Grande (MG); Estándar (E).
Appendix XV: Coding scheme and description of codes

Coding Scheme and Code Description (English)

Beverage classification and examples:

2. *Aguas frescas*: homemade beverages with fruit, flowers, or seeds blended with sugar and water.
3. *Other homemade sweetened beverages*: coffee, tea, pozol.
4. *Carbonated industrialized sugar-sweetened beverages*: Coca-Cola, Pepsi, Sprite, and local brands of beverages such as Jarritos.
5. *Other industrialized sugar-sweetened beverages*: industrialized juice, sport drinks, and energy drinks,
6. *Other beverages*: e.g. homemade unsweetened natural juice.

Note that in order to appraise potential changes or differences in theoretical constructs before and after the tax, we duplicated all codes for present time and past (time before the tax or approx. three and a half years before the interviews took place). The only exception was for codes relating to changes in behavior and the SSB tax.

<table>
<thead>
<tr>
<th>Codes and Sub-Codes</th>
<th>Definitions &amp; Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Behavior</strong></td>
<td></td>
</tr>
</tbody>
</table>

**BEHAVIORS Codes**
- Water
- Aguas frescas
- Other homemade SSBs
- Other industrialized SSBs
- Other beverages
- Carbonated industrialized SSBs
  - Sub-codes under each code
    - Combination with food
    - Daily habits
    - Special events
    - On the street
    - Cold vs. Hot weather
    - Expense

Behaviors are ‘observable’ actions or events. ‘Behaviors’ include four elements: the action performed, the objective to which the action is directed, the context in which it is carried out, and the moment in which it is carried out. For each beverage category we added the following sub-codes combination of beverage with food, daily habits (i.e., consumed on a regular/daily basis), special events (i.e., consumed during the weekends and/or celebrations), on the street (beverages bought and drunk outside of the some), cold and hot (consumption during different seasons of the year), and expense (on beverage).
### Codes and Sub-Codes

#### Definitions & Examples

<table>
<thead>
<tr>
<th>Theoretical constructs from the Reasoned Action Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BEHAVIORAL BELIEFS/OUTCOME EXPECTATIONS</strong></td>
</tr>
<tr>
<td><strong>Codes</strong></td>
</tr>
<tr>
<td>• Water</td>
</tr>
<tr>
<td>• Aguas frescas</td>
</tr>
<tr>
<td>• Other industrialized SSBs</td>
</tr>
<tr>
<td>• Other homemade SSBs</td>
</tr>
<tr>
<td>• Other beverages</td>
</tr>
<tr>
<td>• Carbonated industrialized SSBs</td>
</tr>
<tr>
<td>• Source of information</td>
</tr>
<tr>
<td><strong>BEHAVIORAL BELIEFS/OUTCOME EXPECTATIONS</strong></td>
</tr>
<tr>
<td>These are the subjective expectations about the outcomes of the current behaviors and of a potential behavior change, and the value attached (positive or negative) to the outcomes of the behavior. While there can be social and environmental outcome expectations, in this study informants only talked about beliefs about health consequences of the behavior. In this code we also included the sources of information (e.g., doctor, TV, radio, friend).</td>
</tr>
<tr>
<td><strong>Examples</strong></td>
</tr>
<tr>
<td>Belief about behavior: e.g. “Drinking a lot of Coca-Cola causes tooth decay, gives me energy, makes me feel good.” Expectations: “It’s very important for me to have healthy teeth.”</td>
</tr>
</tbody>
</table>

| **COGNITIVE ATTITUDES**                                  |
| **Codes**                                                |
| • Water                                                  |
| • Aguas frescas                                          |
| • Other industrialized SSBs                              |
| • Other homemade SSBs                                    |
| • Other beverages                                        |
| • Carbonated industrialized SSBs                         |
| **COGNITIVE ATTITUDES**                                  |
| Attitude (general evaluation) about the specific behavior being promoted or about the object of the behavior that needs to be improved. It can be positive or negative. |
| **Example:**                                             |
| “Children should not drink soda because it is not good for their health.” |

| **AFFECTIVE ATTITUDES**                                  |
| **Codes**                                                |
| • Water                                                  |
| • Aguas frescas                                          |
| • Other industrialized SSBs                              |
| • Other homemade SSBs                                    |
| • Other beverages                                        |
| • Carbonated industrialized SSBs                         |
| **AFFECTIVE ATTITUDES**                                  |
| Expected results with personal affective meaning such as taste, having energy, and memories of certain situations of the past. Feelings can be positive (like feeling happy, satisfied, proud) or negative (repentance and worry). This is where the sensory dimension of the beverage drinks comes in. |
| **Examples:**                                             |
| “I love the taste of an ice-cold Coke”, “When I have a Coke I feel like I come back to life.” |

| **SUBJECTIVE NORMS**                                     |
| **Codes**                                                |
| • Family                                                 |
| • Friends, neighbors, etc.                               |
| • Others (may include shamans, traditional healers, etc.) |
| **SUBJECTIVE NORMS**                                     |
| Practices of important referent individuals, including relatives, friends, colleagues, etc. (what, how, when, etc.); subjective ideas about what those important referent individuals or groups think about the behavior in question and expect the individual to do; and the motivation to fulfill those expectations. |
| **Examples**                                             |
| Practices of others: “My family always drinks soda with lunch.” Expectations of others: “My wife thinks that I should cut down on Coca-Cola to lose weight.” Motivations to meet those expectations: “For me it is very important to do what my wife says.” |

| **PERSONAL NORMS (This is the code)**                    |
| **Codes**                                                |
| **PERSONAL NORMS (This is the code)**                    |
| Personal rules, moral and ethical considerations, most often referred to obligations with third parties (children, family, environment, etc.). |
| **Example:**                                             |
| “I feel it is my ‘moral’ obligation to feel my
<table>
<thead>
<tr>
<th>Codes and Sub-Codes</th>
<th>Definitions &amp; Examples</th>
</tr>
</thead>
</table>
| SELF-EVALUATION/SELF-IDENTITY | Thoughts and beliefs that we have about ourselves, the expectations of what we want to become, etc., that condition our practices.  
Examples: “I consider myself an ecological consumer”, “I am a consumer concerned about health.” |
| PERCEIVED BEHAVIORAL CONTROL Codes  
- Confidence in ability to change  
- Perceived barriers  
- Perceived enablers | This construct signifies the perceived amount of control over a behavior a person feels he/she has. It includes beliefs about own ability and actual control, i.e. skills and perceived barriers and enablers.  
Example: “I am confident that I can limit my consumption of SSBs to two times per week.” |
| BEHAVIORAL INTENTION Codes  
- Yes and reasons  
- No and reasons | The perceived likelihood of performing the behavior.  
Example: “I’d like to drink more water and fewer sugar beverages”, “I am considering not drinking sugary beverages.” |
| ACTION PLANS/IMPLEMENTATION INTENTIONS (This is the code) | Deliberate action plans to implement an intention, they are influenced by the intention.  
Example: “Instead of having soda for lunch I am going to have water.” |
| ENVIRONMENTAL FACTORS Codes  
- Water  
- Aguas frescas  
- Other homemade SSBs  
- Other industrialized SSBs  
- Other beverages  
- Carbonated industrialized SSBs Sub-codes under each code  
  - Availability  
  - Price  
  - Promotions  
  - Advertisements  
  - Educational campaigns  
  - Drinking fountains in schools (only under the ‘water’ code) | External factors, such as availability and price, that determine the physical and economic accessibility to food as well as factors, such as marketing from soda companies and public health educational campaigns, that persuade people to consume or not to consume a product.  
“Water fountains in schools” was used when people talk about availability of drinking water in schools, whether children drink water from fountains and the reasons they do or don’t. The “tax” would fall under this environmental category as a sub-code, but it was coded separately because it is an important category in this study. Moreover, it has many sub-codes. |
| Additional codes | Hyperbolic discounting (from behavioral economics theory) refers to the tendency for people to increasingly choose a smaller-sooner (e.g., drink a soda) reward over a larger-later reward as the delay occurs sooner rather than later in time (e.g., be healthy, be thin). In practice, people exhibit biased preferences and chose to consume unhealthy food resulting in immediate gratification even though they may disprove of this choice in the long run.  
Example: "I love having a Coca-Cola every day, even though I know it could give me diabetes in the long run" |
PERCEPTION OF ADDICTION TO SODA OR DESCRIPTION AS VICE
Codes
• Addiction
• Vice

These codes were added to the scheme to capture instances where informants refer being ‘addicted’ to drinking soda, refer to drinking soda as ‘a vice’, and where they compared their desire to drinking soda to smoking or doing drugs.

We are using separate sub-codes for ‘addiction’ and ‘vice’ because while these terms they are related, they have different connotations. ‘Addiction’ belongs to the field of psychiatry, while ‘vice’ has a religious connotation.

Children’s beverage consumption and parental beverage feeding practices*

CHILDREN’S CONSUMPTION
Codes
• Water
• Agua frescas
• Other homemade SSBs
• Carbonated industrialized SSBs
• Other industrialized SSBs
• Other beverages
  Sub-codes under each code
  o Daily habits
  o Special events
  o On the street
  o Cold vs. Hot weather

Practices of the children who live in the household, as well as parental feeding practices and the practices of others (e.g., grandparents) toward children.

CHILDREN’S AFFECTIVE ATTITUDE
(This is the code)

Children’s sensory-affective response to beverages (e.g., liking for SSBs).

BEVERAGE-RELATED FEEDING PRACTICES
Codes
• Parental practices
• Others’ practices

Practices of the children who live in the household, as well as parental feeding practices and the practices of others (e.g., grandparents) toward children.

Perceived changes in SSB-consumption in the past few years

CHANGES IN BEHAVIOR
Codes
• Barriers encountered
• Description of change
• Enablers
• Motivation for change
• Breaking point
• Time since change
• Benefits
• Negative consequences

The description of changes in practices category includes the following codes: motivation to change, strategies for change, as well as perceived barriers and enablers.

‘Breakpoint’ refers to an event (usually a dramatic one such as an illness or death) that causes people to change their practices in a radical way.

Example: “My cousin has diabetes and had his foot amputated, from that point onwards I stopped drinking soda.”

‘Time since change’ refers to the time since a person started changing his/her practices; it could be measured in months, years, etc.

The SSB tax

The SSB tax

Codes
• Variation in price
• Reason for a price change

Used for any instance where informants talked about the SSB tax.
<table>
<thead>
<tr>
<th>Codes and Sub-Codes</th>
<th>Definitions &amp; Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Aware of the tax</td>
<td></td>
</tr>
<tr>
<td>• Source of information</td>
<td></td>
</tr>
<tr>
<td>• Spontaneously mentioning the tax</td>
<td></td>
</tr>
<tr>
<td>• Opinion about likely impact</td>
<td></td>
</tr>
<tr>
<td>• Reaction if tax increased by 20%</td>
<td></td>
</tr>
</tbody>
</table>

*The coding scheme used for construction workers did not include the codes referred to children’s beverage consumption and parental practices.*
**Coding Scheme and Code Description (Spanish)**

Clasificación de bebidas y definición de términos:

1. *Agua*: simple, pura, de la llave, de botella, etc.
2. *Aguas frescas*: de preparación casera (o en la calle) con frutas o flores de Jamaica, y azúcar añadido.
3. *Otras Bebidas azucaradas caseras*: otras bebidas de preparación casera con azúcar añadido como café, té y pozol.
4. *Refresco*: bebida azucarada industrializada con gas (Coca-Cola, Pepsi, Sprite, Jarritos, etc.).
5. *Otras bebidas azucaradas industrializadas*: jugo industrializado (Boing, del Valle, Jumex), bebidas de deporte, bebidas energéticas.

<table>
<thead>
<tr>
<th>Códigos y subcódigos</th>
<th>Definición y ejemplos</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMPORTAMIENTO/PRÁCTICAS</strong></td>
<td>Eventos “observables” que se componen de cuatro elementos: la acción realizada, el objetivo hacia el que se dirige la acción, el contexto en el que se realiza, y el momento en que se realiza.</td>
</tr>
<tr>
<td><strong>Códigos</strong></td>
<td>En cada categoría de bebidas entraría el: qué, cuándo, dónde, con qué alimentos, etc.</td>
</tr>
<tr>
<td>- Agua</td>
<td>Se han creado dos subcategorías “cotidianidad” y “eventos especiales”, para separar aquellas prácticas que se hacen habitualmente como parte de la cotidianidad del trabajo, día de diario, etc., de las prácticas de los fines de semana, los eventos especiales, fiestas, etc. También se han creado subcódigos para consumo en la calle, y en épocas de frío/calor.</td>
</tr>
<tr>
<td>- Aguas frescas</td>
<td></td>
</tr>
<tr>
<td>- Otras bebidas azucaradas caseras</td>
<td></td>
</tr>
<tr>
<td>- Otras bebidas azucaradas industrializadas</td>
<td></td>
</tr>
<tr>
<td>- Otras bebidas</td>
<td></td>
</tr>
<tr>
<td>- Refresco</td>
<td></td>
</tr>
<tr>
<td><strong>Subcódigos</strong></td>
<td></td>
</tr>
<tr>
<td>- Combinación alimentos</td>
<td></td>
</tr>
<tr>
<td>- Cotidianidad</td>
<td></td>
</tr>
<tr>
<td>- Eventos especiales</td>
<td></td>
</tr>
<tr>
<td>- En la calle</td>
<td></td>
</tr>
<tr>
<td>- Frío/Calor</td>
<td></td>
</tr>
<tr>
<td>- Gasto</td>
<td></td>
</tr>
<tr>
<td><strong>CREENCIAS</strong></td>
<td>Expectativas subjetivas sobre el resultado de la conducta actual y lo que individuo cree que ocurrirá si se modifica su conducta; y valor adscrito (positivo o negativo) a los resultados de la conducta.</td>
</tr>
<tr>
<td><strong>Códigos</strong></td>
<td>Los resultados de una acción pueden ser relacionados con la salud, sociales, ambientales, pero en este estudio solo se habló de creencias relacionadas con la salud.</td>
</tr>
<tr>
<td>- Agua</td>
<td>En esta sección también se incluyeron las fuentes de información.</td>
</tr>
<tr>
<td>- Aguas frescas</td>
<td><strong>Ejemplos:</strong></td>
</tr>
<tr>
<td>- Otras bebidas azucaradas caseras</td>
<td>Creencia sobre la conducta: “Beber mucha Coca-Cola provoca caries dental, calma la sed, me da energía, me hace</td>
</tr>
<tr>
<td>Códigos y subcódigos</td>
<td>Definición y ejemplos</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td><strong>ACTITUDES AFECTIVAS</strong></td>
<td><strong>Definición y ejemplos</strong></td>
</tr>
<tr>
<td><strong>Códigos</strong></td>
<td>sentir bien”. Expectativas sobre resultado: importancia para uno de tener dientes sanos, importancia de estar en peso normal. Resultados esperados con significado personal/afectivo como el gusto/sabor, tener energía, recuerdos de situaciones. Pueden ser positivos como: el sentirse “contento, satisfecho, feliz, orgulloso” y en general bien con uno mismo. O negativos: de arrepentimiento y preocupación. Es aquí donde entra la dimensión sensorial del consumo de bebidas. <strong>Ejemplos:</strong> “Me encanta el sabor de la Coca bien helada”, “Al tomar Coca-Cola siento como que me vuelve el alma”.</td>
</tr>
<tr>
<td>Agua</td>
<td></td>
</tr>
<tr>
<td>Aguas frescas</td>
<td></td>
</tr>
<tr>
<td>Otras bebidas azucaradas caseras</td>
<td></td>
</tr>
<tr>
<td>Otras bebidas azucaradas industrializadas</td>
<td></td>
</tr>
<tr>
<td>Otras bebidas</td>
<td></td>
</tr>
<tr>
<td>Refresco</td>
<td></td>
</tr>
<tr>
<td><strong>Subcódigos</strong></td>
<td></td>
</tr>
<tr>
<td>o Gusto</td>
<td></td>
</tr>
<tr>
<td>o Sensaciones</td>
<td></td>
</tr>
<tr>
<td><strong>ACTITUDES COGNITIVAS</strong></td>
<td><strong>Definición y ejemplos</strong></td>
</tr>
<tr>
<td><strong>Códigos</strong></td>
<td>Actitud (evaluación general) sobre una conducta; disposición latente o tendencia a responder de manera favorable o desfavorable en relación a una conducta. Tiene dos aspectos: cognitivo y afectivo; y puede ser positiva o negativa. <strong>Ejemplo:</strong> “Los niños no deben tomar Coca-Cola porque es mala para la salud”.</td>
</tr>
<tr>
<td>Agua</td>
<td></td>
</tr>
<tr>
<td>Aguas frescas</td>
<td></td>
</tr>
<tr>
<td>Otras bebidas azucaradas industrializadas</td>
<td></td>
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<tr>
<td>Otras bebidas azucaradas caseras</td>
<td></td>
</tr>
<tr>
<td>Otras bebidas</td>
<td></td>
</tr>
<tr>
<td>Refresco</td>
<td></td>
</tr>
<tr>
<td><strong>NORMAS SUBJETIVAS</strong></td>
<td><strong>Definición y ejemplos</strong></td>
</tr>
<tr>
<td><strong>Códigos</strong></td>
<td>Prácticas de referentes: el qué hacen, cómo lo hacen, cuándo lo hacen, lo que dicen etc. Así como las creencias acerca de lo que los referentes (seres queridos, amigos cercanos, colegas, etc.) piensan sobre ciertas prácticas y sobre lo que uno debería hacer: y motivación para cumplir con expectativas de otros. <strong>Ejemplos</strong></td>
</tr>
<tr>
<td>Familiares</td>
<td>Prácticas: “En mi familia siempre se consume refresco a la hora del almuerzo”.</td>
</tr>
<tr>
<td>Amigos, vecinos, gente del pueblo</td>
<td>Creencias normativas/expectativas de referentes: “Mi mujer piensa que no debería tomar Coca-Cola porque es mala para la salud”.</td>
</tr>
<tr>
<td>Otros (puede incluir curanderos, chamanes, etc.)</td>
<td>Motivaciones para cumplir con esas expectativas: “Para mí es muy importante hacer lo que dice mi mujer”.</td>
</tr>
<tr>
<td><strong>Subcódigos</strong></td>
<td>Consideraciones morales y éticas. Más bien referidas a obligaciones con terceros (hijos, familia, ambiente, etc.). <strong>Ejemplo:</strong> “Siento que es mi obligación moral alimentar bien a mis hijos y no darles refresco”.</td>
</tr>
<tr>
<td>o Qué dicen</td>
<td>Auto-evaluación: Pensamientos y creencias que tenemos acerca de nosotros mismos y las expectativas de lo que queremos llegar a ser y con lo que nos identificamos y condicionan nuestras prácticas. <strong>Ejemplo:</strong> “Me considero un consumidor ecológico”</td>
</tr>
<tr>
<td>o Qué hacen</td>
<td>La creencia de que uno puede o es capaz de realizar una conducta determinada. Incluye no solo la creencia en la capacidad de uno mismo, sino también “el control real que se ejerce”, i.e. habilidades y habilidades relevantes, <strong>así como</strong></td>
</tr>
<tr>
<td>o Qué esperan</td>
<td></td>
</tr>
<tr>
<td><strong>NORMAS PERSONALES (Este es el código)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>AUTO-EVALUACIÓN / IDENTIDAD PERSONAL (Este es el código)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CONTROL PERCIBIDO SOBRE LA CONDUCTA (Este es el código)</strong></td>
<td></td>
</tr>
</tbody>
</table>

520
<table>
<thead>
<tr>
<th>Códigos y subcódigos</th>
<th>Definición y ejemplos</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Confianza en poder cambiar</td>
<td><em>barreras y facilitadores de la conducta percibidos.</em> Ejemplos: “Confío en que puedo tomar refresco solamente 2 veces a la semana”</td>
</tr>
<tr>
<td>• Barreras percibidas</td>
<td>INTENCIÓN</td>
</tr>
<tr>
<td>• Facilitadores percibidos</td>
<td>La probabilidad o probabilidad percibida (desde el punto de vista de la persona) de realizar una conducta dada. Ejemplo “Quiero tomar más agua y menos refresco”, “Estoy considerando tomar menos refresco”.</td>
</tr>
<tr>
<td>INTENCIONES (Este es el código)</td>
<td>PLANES DE ACCIÓN/ IMPLEMENTACIÓN DE LAS INTENCIONES</td>
</tr>
<tr>
<td>• Sí y motivos</td>
<td>Plan de acción que se marca una persona para ejecutar la intención “Planes de cambio” se considera un constructo influenciado por la intención, por eso se decidió meterlo dentro de intención. Ejemplo “Para tomar más agua en vez de refresco estoy planeando comprar agua de fruta sin azúcar a la hora del almuerzo”.</td>
</tr>
<tr>
<td>• No y motivos</td>
<td>FACTORES AMBIENTALES</td>
</tr>
</tbody>
</table>
| | Factores externos, como disponibilidad y precios, que determinan la accesibilidad física y económica a los alimentos; así como factores, como el marketing y campañas educativas, que persuaden a la gente a consumir o no un producto. “Bebederos en escuelas” comentarios sobre la disponibilidad de agua potable en las escuelas y sobre si los niños consumen esa agua y las razones por las que sí o no la consumen.
El impuesto entraría en esta categoría, pero se ha colocado por separado por ser en sí mismo un código importante con muchos subcódigos. |
| • Agua | Código adicionales relacionados con determinantes de la conducta |
| • Aguas frescas | DESCUENTO HIPERBÓLICO (Este es el código) |
| • Otras Bebidas azucaradas Caseras | El descuento hiperbólico es la preferencia por la recompensa inmediata menor (p.ej. consumir alimentos sabrosos) respecto a una recompensa posterior en el tiempo, pero mayor (p. ej. estar delgado o gozar de buena salud). Ejemplo: “Prefiero disfrutar de tomar una Cola-Cola todos los días, aunque sé que me puede dar diabetes a la larga”. |
| • Otras Bebidas azucaradas industrializadas | DESCIPRACIÓN DE DESEO PARA CONSUMIR REFRESCO COMO ADDICCIÓN O VICIO |
| • Otras bebidas | Códigos |
| • Refresco | • Adicción |
| | • Vicio |
| Subcódigos | Se presentan subcódigos separados por cada término se inscribe en un registro distinto: “adicción” pertenece al campo de la psiquiatría, mientras que “vicio” proviene de la religión. |

**Consumo de bebidas por parte de los niños y prácticas parentales relacionadas con el consumo de bebidas de los hijos**

**NIÑOS**

Consumo de bebidas de los niños del hogar.
<table>
<thead>
<tr>
<th>Códigos y subcódigos</th>
<th>Definición y ejemplos</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Gusto niños</td>
<td></td>
</tr>
<tr>
<td>• Agua</td>
<td></td>
</tr>
<tr>
<td>• Aguas frescas</td>
<td></td>
</tr>
<tr>
<td>• Otras bebidas azucaradas caseras</td>
<td></td>
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<tr>
<td>• Refresco</td>
<td></td>
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<tr>
<td>• Otras bebidas azucaradas industrializadas</td>
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<tr>
<td>• Otras bebidas</td>
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<tr>
<td>\hspace{1cm} Subcódigos</td>
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<tr>
<td>\hspace{1cm} o Cotidianidad</td>
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</tr>
<tr>
<td>\hspace{1cm} o Eventos especiales</td>
<td></td>
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<tr>
<td>\hspace{1cm} o En la calle</td>
<td></td>
</tr>
<tr>
<td>\hspace{1cm} o Frío/Calor</td>
<td></td>
</tr>
<tr>
<td>ACTITUD SENSORIAL-AFECTIVA DE LOS NIÑOS (Este es el código)</td>
<td>Resposta sensorial-afectiva de los niños hacia las bebidas (por ejemplo, preferencia por las bebidas azucaradas).</td>
</tr>
<tr>
<td>PRÁCTICAS DE ALIMENTACIÓN RELACIONADAS CON LAS BEBIDAS</td>
<td>Prácticas el padre entrevistado en relación a la alimentación de los hijos relacionadas con bebidas y las prácticas de terceros (ej. abuelos) que están fuera del control de los padres.</td>
</tr>
<tr>
<td>Códigos</td>
<td></td>
</tr>
<tr>
<td>• Prácticas padres</td>
<td></td>
</tr>
<tr>
<td>• Prácticas terceros</td>
<td></td>
</tr>
</tbody>
</table>

**IMPUESTO A LAS BEBIDAS AZUCARADAS**

<table>
<thead>
<tr>
<th>Códigos</th>
<th>Se considera como un subnivel dentro del constructo de “factores ambientales”, pero por ser una categoría muy amplia e importante en este estudio se ha codificado por separado.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Conoce impuesto</td>
<td></td>
</tr>
<tr>
<td>• Mención espontánea</td>
<td></td>
</tr>
<tr>
<td>• Fuente información</td>
<td></td>
</tr>
<tr>
<td>• Variación precio</td>
<td></td>
</tr>
<tr>
<td>• Razón cambio precio</td>
<td></td>
</tr>
<tr>
<td>• Opinión</td>
<td></td>
</tr>
<tr>
<td>• Reacción si impuesto aumenta</td>
<td></td>
</tr>
</tbody>
</table>

**Cambios percibidos en el consumo de bebidas azucaradas en los últimos años**

<table>
<thead>
<tr>
<th>CAMBIO</th>
<th>Descripción de los cambios en prácticas que haya hecho la persona (incluye las estrategias de lo que hicieron para poder cambiar), así como la motivación que le/la hizo cambiar, y barreras y facilitadores (percibidas) para ese cambio.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Códigos</td>
<td></td>
</tr>
<tr>
<td>• Descripción del cambio</td>
<td>“Descripción del cambio” incluye la descripción de las prácticas que la persona cambió y las nuevas prácticas, y las estrategias que emplearon para poder cambiar.</td>
</tr>
<tr>
<td>• Motivación (para hacer el cambio reportado)</td>
<td>“Punto de ruptura” se refiere a un hecho (normalmente dramático como una enfermedad o muerte) que hace que la gente cambie sus prácticas de manera (casi) radical. Ej. “Mi prima tiene diabetes y le amputaron un pie. Eso hizo que yo dejara de tomar refresco”.</td>
</tr>
<tr>
<td>• Punto de ruptura</td>
<td>“Antigüedad” se refiere al momento cuando la persona reporta que cambio (puede ser meses, años, etc.).</td>
</tr>
<tr>
<td>• Barreras encontradas</td>
<td></td>
</tr>
<tr>
<td>• Facilitadores</td>
<td></td>
</tr>
<tr>
<td>• Antigüedad/ Temporalidad</td>
<td></td>
</tr>
</tbody>
</table>

**Los códigos referidos a los hijos y prácticas parentales no se incluyeron en el esquema de codificación que se utilizó para codificar los datos de los albañiles.**
Appendix XVI – Images of snack and beverage stands outside the schools
Appendix XVII – Meaning of some Mexican expressions (slang) used by construction workers

Aguas: “be careful”

A huevO: "Hell yeah!"

A la verga: “Ahhh shit”

(Vete) a la verga: “go to hell”, “fuck off”

Andar pedo: to be drunk

Cabrón: “motherfucker”, “bastard”, “asshole”, “jerk”

Está cabrón: “it’s tough” or “it’s nice” (it depends on the sound and phonetics)

ChalanEs: subordinates, junior employees, entry-level employees.

Chamba: “work”

Chavo: “boy”, “kid”, “dude”

Chesco: “soda”

Chido: “cool”

Chingada: vulgar or profane term it has connotations related to disgrace, difficult, miserable, or unfortunate events or conditions.

Chinga tu madre: literally it means “fuck your mother” (or “Go bother your mother”), but it’s used as “holy shit” or “oh my god”. Meaning often depends on the sound and the phonetics.

Chingón: “nice”, “cool”

Chingonada: something that is superb

Un chingo: “a lot of”
Equis: “whatever”

La jefa: “the mother”

Mike/Mai (‘maistro’): senior employee with more authority, somebody who has more experience and knowledge.

Me vale madre: “I don’t give a fuck” (I avoid the responsibility).

No mames: it's a vulgar or informal way to say "you're kidding", “no fucking way”, and "stop messing around"; sometimes can be used like saying "no way", or "damn".

No manches: "No way!", "You've got to be kidding me!", “unbelievable”

Neta: “the truth”, “in reality”

Neto: “seriously?”

Qué onda: What’s up?

Órale: “hell yeah” “right on” “hell yes” “okay” “alright”

No hay pedo: “no problem”

¿Qué pedo?: “What’s up?”


Pinche: “damn” “fucking” “bloody”, “looser”, “motherfucker”.

Sobres: “go for it” “okay”

Tu vieja: “your mother”

Wey: “dude”, “bro”.

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References Appendices


