

TRANSIT ADVERTISING WITH ALCOHOL AND VIOLENT CONTENT ON
PUBLIC PLATFORMS: A DESCRIPTIVE STUDY OF ADVERTISEMENTS WITHIN
THE NEW YORK CITY SUBWAY SYSTEM

by

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ABSTRACT

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Two of the most important behaviors affecting youth are alcohol use and aggression. Advertisements that promote alcohol consumption and display aggressive images and words may influence attitudes and behaviors of youth. While there is considerable research on these kinds of advertisements in various media channels, there is limited research describing such advertising within public transit systems. The purpose of this study was, therefore, to describe and prevalence and characteristics of advertisements about alcohol and with violent content on the platform walls of the New York City subway system.

Methods: A cross-sectional design with direct observations was used to document all advertisements in four boroughs: Bronx, Brooklyn, Manhattan, and Queens. Subway

stations with and without advertising were identified and selected characteristics of advertisements about alcohol and with violent content were described. The presence of advertisements was examined based on racial/ethnic and income characteristics of station location using logistic regression.

Results: Of 472 subway stations observed, 143 contained 8,737 advertisements, including duplicates. Of the 143 stations with any type of advertisements, 76 (53.1%) displayed one or more alcohol advertisements while over 95% included one or more advertisements with violent content (136 of 143). Of the 8,737 advertisements observed, 129 (1.5%) were for alcohol (including three public service messages) and 1,154 (13.2%) had violent content. Almost two-thirds of the 129 advertisements about alcohol were for beer. There were 144 advertisements that pictured guns. Not one public service announcement for violence prevention was observed. Examination of the presence of advertisements based on racial/ethnic and income characteristics of station location (n = 454 with complete data) showed no differences for advertisements with violent content, but greater odds of alcohol advertisements being present in locations with a higher percentage of Black population. Considerable variability existed between neighborhoods within each borough.

Conclusions: Almost 9,000 advertisements were documented in this study. Despite the low number of advertisements about alcohol, one or more such advertisements was present in over one-half of the stations with advertising.

Advertisements with violent content were pervasive. Recommendations focus on how public transit spaces can be used more productively to help cultivate caring communities.

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DEDICATION

Most of us go through life with our brakes on, holding back, not giving all, not sharing all of ourselves. Most of us go to our graves still holding on, rather than letting go, because of past experiences, past defeats, past pain. You have to separate what you do from who I am.

During the dissertation process, you find out who you are. I dedicate this great work to my Mama. She witnessed the hard times and the falling down, and told me: Anything you want, you can have. So, claim it, work hard to get it. When you get it, reach back and pull someone else up. Inspire to make a difference!

To my advisor: Nothing in life is worthwhile unless you take risk. You took a risk on me and told me: To get something you never had, you have to do something you never did. If you are going to be good at something, it does take a while. Just enjoy the getting there. You are going to get fed up, disheartened and all that. But what I can say after 15 or 20 years, I learned how to do something well, and I enjoyed the getting there as much as the being there. We created melodies with Dr. Carrera that will forever live.

To my supporters: Pam Howard, Eve Cardona, Dominic Bannister, Louise Williamson, Randal Hale, Valerie Marchenko, Teri Rosales & The BayArea!!!!!!!!!!!!

Dr. Carrera, you taught me how to fall forward on faith & exquisite focus.

In memory of Miss. Lois, Rev. L.K. Jones, Eula Grayson.

ACKNOWLEDGMENTS

There is no passion to be found playing small –
in settling for a life that is less than the one you are capable of living.

Nelson Mandela

It's an iterative process!

Charles E. Basch

I can't live my life based on what other people think about me,
so, I can't concern myself too much with what other people think.

It's just not healthy.

Denzel Washington

M.F.

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Chapter I - INTRODUCTION

Youth is a time when many different kinds of health-related behaviors are learned. From a business perspective, company brands and products deemed relevant and promoted for children during the developing years (2-17) results in billion-dollar expenditures. This level of segmentation represents the core of targeted marketing and is expected to impact the attitudes, values and behaviors of young people. Research, over the years, continues to report that marketing persuades and serves to reinforce behavioral patterns.

Two of the most important health-related behaviors that are learned and practiced in youth are alcohol use and aggression (which can take different forms). In 2015, children under the age 15 were charged with 11,036 violent crime offenses and 4,610 offenses for carrying or possession weapons (Criminal Justice Information Services Division, 2015). About 15% of third graders in the spring of 2014 reported being frequently teased, made fun of, or called names by other students. These students scored lower in reading, mathematics, and science compared to never victimized or rarely victimized third grade peers. There were 1,500 reported firearms possession incidents per 100,000 students. School-aged youth aged between 5 -18 years accounted for 12 homicides and eight suicides. Between July 1, 2013, and June 30, 2014, school-associated violent deaths totaled 48, including 26 homicides, 20 suicides, one legal

intervention death, and one undetermined death among students and/or nonstudents and staff.

Early alcohol consumption can alter structure and function in the developing adolescent brain that diminishes cognitive and learning capabilities. An estimated 17.2% of high school students reported drinking alcohol before they were 13 years of age despite a minimum drinking age of 21 in the United States (Frieden, Jaffe, Cono, Richards, & Iademarco, 2016). Some 17.7% of high school students in the U.S. reported binge drinking at least once within a 30-day period preceding the survey (Frieden et al., 2016). Since 1990, little progress has been made to curtail binge drinking among adolescents and young adults (Patton et al., 2016). Compared with underage adolescents that refrain from alcohol use, those consuming alcohol are more likely to carry out or be a victim of physical and sexual assault (Centers for Disease Control and Prevention, 2013). On average, 4,538 alcohol-attributable deaths were estimated from 2006 – 2010 by the Centers of Disease Control and Prevention (CDC) for persons under the age of 21 (Frieden et al., 2016). The challenges to prevent underage drinking and acts of aggression are complex since there are a multitude of factors that influence these learned health-risk behaviors among US adolescents.

Different aspects of their social environment, including family, peers, school, community groups and media, influence the acquisition and maintenance of health-related behaviors by youth. One reason for the complexity is the high prevalence of the behavior, which indicates peer acceptability. There were statistically significant differences in rates of drinking before age 13 among students in 9th grade (20.3%) and students in 11th (15.2%) and 12th (13.5%) grades (Frieden et al., 2016). These adolescents

have a higher probability of experimenting with other drugs, having difficulty, and facing problems with law enforcement. The negative consequences associated with drinking include poor decisions that lead to drinking and driving, unprotected sex, and aggressive or violent behavior (Centers for Disease Control and Prevention, 2013) .

At least once a month, roughly 15% of U.S. 4th and 7% of 8th graders experienced bullying in 2015 (Frieden et al., 2016). Approximately, 841,100 theft and violent victimizations (nonfatal victimizations) occurred at school among students aged 12 -18, while 545, 100 or victimizations happened away from school. A higher percentage of female students and Hispanic students indicated they were afraid of being attacked or harmed (Frieden et al., 2016).

Nature of the Problem

Media is a pervasive and important aspect of the social environment because of its reach and potential harmful effects. A potential reason for high levels of acceptability of drinking and aggression among youth is the high concentration and visibility of advertisements that promote alcohol products and depict forms of violent behavior. An effective way for advertisers to hold consumer attention is by using message cues (Cohen, Caburnay, & Rodgers, 2011, p. 566). This constant infiltration of targeted advertising messages is worrisome and may contribute to a myriad of problems for vulnerable adolescents, which can disrupt the health and well-being of vulnerable adolescents. Media choices in this information economy have forced advertisers to craft and develop effective visual and verbal cues that sustain children and adolescent's frequent interactive engagement with digital and print media technologies (Cohen et al.,

2011, p. 568). These pervasive unregulated company advertising messages and strategies distributed during the developing years of adolescence may potential affect health and wellbeing due to underdeveloped cognitive and social maturation during evaluation of these messages.

The pervasive influence of advertising of products such as alcohol, entertainment violence, and tobacco on health behavior formation among children and adolescent's consumer segments highlights an important factor of concern. While there are many different media channels that influence youth, this study focuses on advertising with alcohol and violent content within the largest subway system within the U.S.

Purpose of Study

The purpose of this study was to describe the prevalence of advertisements with alcohol and violent content in the New York City (NYC) subway system. Both alcohol use and violence are major factors affecting youth development. In turn, advertising affects the acceptability and acquisition of these behaviors. Further, as noted above, the connection between alcohol use and violence has been well established. By documenting the nature and scope of advertising throughout the NYC subway system and examining variation by geography with different racial composition and income distribution, the study is intended to inform policies related to using public spaces such as the subway for advertising with alcohol and violent content.

There is very limited research on health-related advertising within public transportation systems. One study conducted in Boston represents the main study conducted to date. Four transit lines in the greater Boston area were analyzed, which

revealed that, on average, adults and student passengers viewed 1,212,960 and 18,269 alcohol ads during their weekday transit rides (Nyborn, Wukitsch, Nhean, & Siegel, 2009). These findings resulted in an investigation of all 113 subway and streetcar stations in Boston to determine the frequency of alcohol ads when stations were stratified by race and socioeconomic status (Gentry et al., 2011, p. 10). The reach of the alcohol advertisements each day extended to a large proportion of adults and 5th–12th grade students in the Greater Boston region. Compared with neighborhoods with low rates of poverty, stations located in high poverty neighborhoods displayed more alcohol ads. To put levels of exposure in context, one day of alcohol advertising exposure in subway stations alone was 14 times greater for Boston youth than the exposure achieved by viewing a single Super Bowl commercial. The data obtained from this study contributed to a decision by Boston legislators to ban any form of alcohol-related advertising content throughout the Massachusetts Bay Transit Authority (MTBA) public transit system.

Compared with Boston, the NYC subway system is much larger and transports far more adults and students. The current study will involve photographing every advertisement located within the 472 subway stations that serve all boroughs except Staten Island (due to limited subway service there). The proposed research will expand on the study in Boston by characterizing the nature of the “advertising appeals” using a coding scheme for alcohol content developed by Padon and colleagues (Padon, Rimal, DeJong, Siegel, & Jernigan, 2016) and a coding scheme for violence developed by Jones and colleagues (Jones, Cunningham, & Gallagher, 2010). The study was intended to contribute to, indeed to prompt, debate among public policymakers about whether NYC public spaces should be used to promote exposure to advertising content focused on

alcohol and violence, which may contribute to shaping the lives of youth in harmful ways.

Specific Aims

The aims of the study are to:

1. Describe the prevalence of advertising with alcohol and violent content within the NYC subway system.
2. To describe the advertisements about alcohol and portrayals of violence.
3. To categorize subway stations by racial composition and social-economic characteristics in which they are located.
4. To compare differences in the prevalence of advertisements with alcohol and violent content by the racial composition and social-economic characteristics in which they are located.

Rationale for the Study

Across the United States, many children and adults depend on and utilize public transportation to arrive at school and work. Individuals younger than age 25 account for more than 20% of all public transit riders in the United States (Mart & Blakemore, 2014). The landscape of New York City (NYC) resembles a unique urban social environment often cited as the greatest city in the world, as well as operating the largest public transit system. Many New Yorkers, young and old, who live within the five boroughs ride the Metropolitan Transportation Authority (MTA) subway system on a regular weekday

basis. This subway system is massive and transports more adults and students on a daily basis than any other public transportation system across the nation.

Approximately, 600,000 Metrocards are distributed by the NYC Transit Authority (MTA) each year to students living in NYC. Students that utilize these Metrocards to travel to and from school use the subway platform and subway train as a bus stop and bus to school. The amount of exposure to advertisements urban subway riders encounter and how these messages affect public health is largely unexplored.

Recently, there has been growing effort of advocacy across the United States for removal of alcohol and violent media advertisements from public spaces. This study focuses on advertising in public spaces as a way to promote early investment in adolescent health and well-being, especially for vulnerable adolescents. The biggest purchaser of out-of-home (OOH) advertisements is alcohol companies (Mart & Blakemore, 2014). Revenue for this market was \$2.35 billion in 2015 and, over the last decade, experienced a 22% growth rate (Mart & Blakemore, 2014; Outdoor Advertising Association of America, 2016) .

More than three decades of research have focused on outdoor billboards, print media, radio and television. With the exception of the study in Boston, there has been virtually no research on alcohol and violent media messages within public transportation systems. The social and cultural context of underage alcohol use and acts of violence in places where people live and interact represents the social environment that may shape these behaviors. By describing the prevalence and distribution of advertisements with alcohol and violent content within the NYC subway system, this study attempts to initiate a public dialogue that shifts exclusive health promotion efforts beyond focusing on

individuals to enhancing their social environment by the removal of noxious messages in public spaces.

Chapter II - LITERATURE REVIEW

Decades of research have been conducted on various constructs of media influence. In the 21st century, public health debates about alcohol and violent media content in the United States remain inconclusive. Despite trends reported by national agencies indicating decreased acts of violence and initiation of alcohol use among youth, the prevalence of alcohol use and acts of aggressive behavior committed by children and adolescents remains high.

The study seeks to build upon this body of research by characterizing the media content New York City (NYC) children and adolescents are exposed to on a daily basis. In the context of an evolving social world that views media interactions through lenses of benefits as well as hazards, the importance of media experiences within public transit spaces have assumed increased significance. The literature review is organized into five sections: (a) public acceptance, (b) early investment, (c) advertising, (d) alcohol, and (e) violence.

Public Acceptance

The consumption of moderate amounts of alcohol is an accepted norm in American culture. U.S. dietary guidelines that suggest a healthful diet can include moderate alcohol consumption (USDA, 2015). In addition to cultural norms, alcohol advertising is one of many factors that encourage adolescent and youth drinking

(Anderson, De Bruijn, Angus, Gordon, & Hastings, 2009, p. 229). Public acceptability (Pechey, Burge, Mentzakis, Suhrcke, & Marteau, 2014) of alcohol consumption and the lack of realism by developing children and adolescents about consequences (Cho, Shen, & Wilson, 2013) further encourage early alcohol initiation and/or misuse.

Nationwide, a total of 63.2% of high school students have consumed an alcoholic beverage at least once during their life (Frieden et al., 2016). Despite a minimum legal drinking age of 21, 17.2% of American high school students reported drinking alcohol before they were 13 years of age (Frieden et al., 2016). These adolescents are unaware of the effects and influences an alcoholic beverage has on their health and behavior (NIAA_UAD). This pattern of acceptability or normalcy conceals the physiological harm that can occur in the brain, heart, liver, pancreas, and immune system, and the development of various cancers for individuals that engage in binge drinking or excessive consumption over time. The future success of young adolescents and their adulthood depends, in part, on the reward system of the brain during periods of early adolescent development, which, in turn, is affected by poor self-regulation and increased risk-taking behavior.

Early Investment

Early investment in adolescent health and well-being is an important strategy for reducing social inequality and social instability. Investment in childhood health and education alone, however, is not enough for youth living in low-income urban minority neighborhoods. Low-income urban minority youth are more likely to learn and practice a wide range of health-compromising behaviors. Children, in turn, often struggle to achieve

important developmental milestones. Adolescence is a phase of experimentation for young people to assert themselves while discovering new challenges that may involve negative and positive risk-taking. The failure to invest in the health and well-being of children and adolescents diminishes the accrual of health capital, resources helpful in transitioning from childhood to adolescence to young adult (Patton et al., 2016).

Patton et al. (2016) highlight three significant perspectives of adolescent health and well-being. First, achieving developmental tasks during adolescence is crucial for independence. These tasks include acquisition of cognitive and emotional self-regulation skills, graduating from high school, engagement in civic activities, attainment of employment, and establishment of lifelong relationships. Second, these years determine health trajectories by laying the foundations for practicing health-enhancing behaviors across the lifespan. Third, adolescents will utilize these same aspects of health capital to provide a healthy start for their own children (Sawyer et al., 2012, p. 1631).

Development of capabilities during adolescence is central to lifelong health and well-being. These capabilities affect successful transitions to employment, supportive life partnerships, marriage and parenthood (Fares, 2006, p. 302). Investments to improve capabilities associated with higher levels of education and delaying parenting have lifelong social and economic benefits. Successful transition from adolescence to adulthood is affected by many factors, one of which is timing, for example, by engaging in education longer, and delaying marriage and parenthood (Patton et al., 2016).

Developmental Capabilities/Neurodevelopment

Childhood represents a period of rapid development resulting from environmental and social exposures that impact brain development processes. Brain development is recognized as an extremely dynamic period during adolescence (Andersen & Teicher, 2008, p. 184). This understanding has emerged over the last 20 years (Patton et al., 2016, p. 2428). The development of the brain differs over the life course with various activity that consist of synaptic pruning, development of subcortical structures, and patterns emerging during adolescence (Goddings, 2015). When it comes to neurodevelopment, the second and third decades of life are highly influential across the life span (Andersen & Teicher, 2004; Birzniece et al., 2006; Robichaud & Debonnel, 2005; Romeo & McEwen, 2006) and contribute to inequalities health disparities (Patton et al., 2016). Adolescent development happens within an intricate net of cultural, family, media, peer, school and community influences (Viner et al., 2012). The acquisition of skills that enable adolescents to infer thoughts, intentions and beliefs of others (e.g., emotional processing and social cognition) is likely stimulated by the quality, security and stability of social environmental contexts in which they live and grow (Crone & Dahl, 2012, p. 646). It is also influenced by an individual's biology and gene-environment interactions.

The genetic makeup of adolescents with a family history of alcoholism experience neurochemicals in glutamatergic metabolites that alter function of protein synthesis, cellular metabolism, and neurotransmission within the prefrontal cortex and anterior cingulate cortex that influences impulse control (Cohen-Gilbert et al., 2015). This process of control appears to improve executive and self-regulatory skills for late adolescents (aged 15–19) as a result of more active brain connections between neural networks and

prefrontal cortex (Patton et al., 2016). The development and mental and physical health of an adolescents with a mother suffering from alcoholism can be affected in at least three ways, including a predisposition toward alcohol abuse from hereditary transmission, consumption of alcohol during pregnancy, and an unfavorable family environment (Sivolap, 2015).

Disruptions to the life course

Mental health issues appear commonly during the adolescent years, and in too many cases persevere into adulthood resulting in problems with social adjustment and economic productivity (Patton et al., 2014, 2016) . Many non-communicable diseases and substance use disorders increase in later-life that result, in part, from substance use during adolescence (Behrendt, Wittchen, Hofler, Lieb, & Beesdo, 2009, p. 74). Adolescents' substance use behaviors, in turn, are greatly influenced by the social environment in which they live.

Peers and media have a powerful effect during adolescent development (Somerville, 2013). Adolescents' sensitivity to peer influence may present itself in emotional displays. The role of media further heightens this sensitivity through use of entertainment and marketing with teen-oriented actors that target decision-making by shaping attitudes, behaviors, and values (Brown, Halpern, & L'Engle, 2005, p. 421). During the decision-making process, arousing, exciting, and stressful situations seem more appealing or influential for adolescents compared to adults (Steinberg, 2008, pp. 13–14). The strong emotional attachment adolescents display for media exposes their

vulnerabilities related to adolescent violence and self-harm (Starcevic & Aboujaoude, 2015).

Contribution of Environmental and Social Factors

The social places where individuals are born, grow, develop, live, work, and age create spaces that support or challenge the human condition. Neurodevelopment as well as substance use are considerably affected by these determinants (Resnick, Catalano, Sawyer, Viner, & Patton, 2012). Dealing with exposure to harmful aspects of the social-environment is one of the greatest challenges during adolescence (Patton et al., 2016).

The social-ecological framework developed by Bronfenbrenner suggests that human health and development are shaped by a spectrum of nested interactive systems where individuals are influenced by a set of macro systems such as family, peers, and schools and within a larger social context that includes media (Bronfenbrenner, 1994). Media exposures must occur on a fairly regular basis in order to be effective over an extended period of time, which seems to be the case with learning and practicing behaviors related to alcohol and violence. For example, numerous studies (Collins, Ellickson, McCaffrey, & Hambarsoomians, 2007; Ellickson, Collins, Hambarsoomians, & McCaffrey, 2005; Grenard, Dent, & Stacy, 2013; Stacy, Zogg, Unger, & Dent, 2004) suggest that high rates of alcohol advertising exposure among adolescents contribute to initiation of alcohol use at a young age and to abuse of alcohol products (e.g., binge drinking). Research studies that evaluated traditional media such as television, radio, and print provide evidence that alcohol initiation, consumption, heavy drinking, and maintenance is affected by unhealthy imagery in marketing and by media distribution of

promotional products (Patton et al., 2016). The function and structure of marketing strategies directed to adolescents and young adults change rapidly. Greater exposure to media outside of the family unit can undermine protective family values (Patton et al., 2016).

Advertising

The Beer Institute, the Distilled Spirits Council of the United States, and the Wine Institute comprise the major alcohol suppliers that have provided self-regulatory advertising initiatives, with the likelihood of reduced exposure toward youth (Commission, 2014, p. 1). Consumers of alcohol rarely purchase directly from suppliers (Commission, 2014, p. 9). The process begins with suppliers selling to either “on premise” or “off premise” retailers. Individuals consume alcohol on-site at restaurants, bars and stadiums, or “on premise” retailers; consumers purchase liquor from bodegas, convenience, and grocery stores, representing “off premise” retail sellers (Commission, 2014, p. 9).

These industry suppliers received special orders from the Federal Trade Commission requesting the total amount spent on advertising, merchandising, or promotion of beverage alcohol for the 2011 calendar year (Commission, 2014, p. 7). The combined marketing expenditures reported were \$3.45 billion in 2011 for these industry suppliers. Industry expenditure of 31.9% accounted for television, radio, and print (magazine and newspaper) categorized as traditional media. Approximately 6.90% of the industry expenditure was the maximum amount spent by any company on outdoor (5.96%) and transit advertising (0.84%). The total sponsorship categories made up of

public entertainment unrelated to sport accounted for 6.29% while 11.5% was allocated for sporting events, sports teams, and individual athletes.

Advertising Expenditure

Overall, sales of alcohol in the U.S. per capita consumption have remained largely unchanged between 1971 and 2011; sales for wine and liquor have increased while beer sales exhibit a downward trend (Wilcox, Kang, & Chilek, 2015). There was a more than 400% increase in alcohol advertising during this 40-year time period (Wilcox, Kang, & Chilek, 2015). About \$404.4 million in total advertisement expenditure for 2015 was spent by the distilled spirits industry (Kantar Media, 2017). In 2015, beer manufacturers Anheuser-Busch InBev and SABMiller (Miller Coors) allocated \$531 and \$428 million for advertising spending in the U.S., respectively (Kantar Media, 2017). The advertising expenditure for the wine, brandy and spirits industry reached \$69.03 million U.S. dollars in 2016 (Kantar Media, 2017). These marketing campaigns aim to increase sales among younger audiences, with long-term goals focused on brand and product appeal that consumers can associate with (Hastings, 2009; Wind & Sharp, 2009).

Influence of Advertising

The immediate and distal effects of alcohol and violent advertising exposure extend beyond corporate sponsorship of major brand surface level interactions. The sponsorship of specific corporate alcohol brand advertisements in public spaces such as subway platforms permits an act of “incidental exposure” that heightens implicit and

explicit attitudes toward alcohol (Zerhouni, Bègue, Duke, & Flaudias, 2016, p. 422). The implicit exposure an individual purposefully experiences, but never processes the advertisement content, is termed incidental exposure (Zerhouni et al., 2016, p. 422). Advertisements appearing in the background of a subway platform such as a movie poster depicting a gun are not likely to be purposefully evaluated, but are rather processed implicitly and act as an associative learning stimulus, which activates positive attitudes toward the source (Gibson, 2008; Gibson, Redker, & Zimmerman, 2014; Zerhouni et al., 2016). Research suggests that favorable attitude formation toward a brand can form from mere exposure coupled with associative learning (Zerhouni et al., 2016, p. 426).

The social perceptions and momentary processes adolescents and youth encounter often inform decision-making about alcoholic beverage use and acts of aggression and violence. Alcohol advertisements portray use as normative and cultivate positive attitudes toward alcohol (Martino et al., 2016, p. 89). In one study, approximately 1,000 alcohol advertisements were viewed by youth annually. Approximately three alcohol advertisements promoted on outside signage such as billboards, stores and bars, were viewed by these Southern California middle schoolers each day. Repeated exposures appeared to reinforce and heighten the intended effects (Setodji, Martino, Scharf, & Shadel, 2014). Among middle school girls, Black and Hispanic youth had the highest rates of exposure (Collins et al., 2016, p. 389), which may be attributable to more time indoors with print media (Rideout, 2015) and increasing numbers of alcohol advertisements outside of sports programming (Ross et al., 2014).

Advertisements that purportedly influence adolescents and youth to act aggressively or drink are those with engaging and persuasive narratives (Green & Brock, 2000); for example, celebrity association with an alcohol brand or portrayal of violent images in a way that normalizes it as a part of daily living (ADL) (Collins et al., 2016, p. 389). The inclination for risk-taking among adolescents combined with repeated exposures to harmful messages drives affective reactions into memory. This stored information activates impressionable cues of involvement for vulnerable adolescents intrigued by beverage appeal, delinquency and criminal activity.

Targeting Vulnerable Populations

Over the past few decades, media and advertising practices and techniques have continued to promote products with the intent of fostering consumer acceptance. The appeal of marketing strategies from a multitude of media sources deliver messages that are filled with powerful images of enticement. Radio show broadcasts in the 1930s were some of the first efforts of companies advertising to children (Pasch & Velazquez, 2013, p. 918). The invention of television increased marketing and advertising directed to children. Professionals in the advertising industry recognized children were capable of influencing purchasing decisions (Pasch & Velazquez, 2013, p. 918). Child-oriented media and advertising found legitimacy in a highly commercialized society that exploded during the 1980s with marketers targeting the newfound purchasing power of adolescents.

Over time, this purchasing power of adolescents has increased. An estimated \$19.1 billion is spent by early adolescents aged 8–12 and \$112.5 billion is spent by late

adolescents aged 12–17, while family spending influenced by adolescents exceeds \$500 billion per year (Pasch & Velazquez, 2013, p. 918). Collectively, this is a very important segment of the overall population for business, technology and economic development. This is especially true when the product can be habit-forming or addictive.

The appeal of these strategies used to maximize advertising effectiveness relies upon specially crafted messages (Jung & Hovland, 2016). Visual cues of animated characters and branded logos to attract and engage adolescents through persuasive advertising techniques are common. These persuasive techniques help establish brand awareness and loyalty as well as product recognition and value (Pasch & Velazquez, 2013, p. 918). Researchers found alcohol advertising appeals that targeted people's emotions were the most common strategy used regardless of gender (Jung & Hovland, 2016). At an early age, children are able to identify brand names and logos (Pasch & Velazquez, 2013, p. 918). The ability to decode these advertising tactics appropriately materialize in mid-adolescence (Pasch & Velazquez, 2013, p. 918), but only if these skills are learned.

Alcohol

Temperance Movement

The epidemic of alcoholism during the late eighteenth and early nineteenth century spawned a temperance movement termed teetotalism. This movement advocated for total abstinence from alcohol, which was associated with addressing problems such as spousal abuse, family neglect, and chronic unemployment. Some consumed alcohol from

dusk till dawn (Rorabaugh, 1981, pp. 20–21). This pattern of consumption generated public pressure for reform from a moral perspective as opposed to a legal one and concentrated more on hard spirits than other forms of alcohol (Fryer, 1963).

In 1789, 200 Connecticut community farmers started a temperance association that ignited a significant mass movement that quickly swept across eight states, and in some developed into statewide prohibitionist groups and organizations with the sole purpose of terminating the production of whiskey (Blocker, 1989). By 1826, this religion and morality movement transformed into the American Temperance Society, which in 12 years claimed support of over 8,000 local groups and more than 1,500,000 members (Blocker, 1989). The late 1830s witnessed a movement split between moderates who allowed some drinking and radicals demanding total abstinence. The temperance movement was crippled during the Civil War when both the North and South utilized alcohol sales to finance much of the conflict by taxing brewers and distillers (Housley, 1992). Eventually, attention on temperance was overshadowed by slavery until the 1870s when temperance groups found new life (Housley, 1992).

The push for National Prohibition enactment resulted from the establishment of the 1893 Anti-Saloon League (ASL) that stressed political results by pressuring politicians to change their votes in the legislature rather than their drinking habits (Burns, Burns, Novick, & Arkin, 2011). Restrictions on the sale of alcohol imposed in 1914 in many combatant countries during the First World War strengthened the anti-alcohol movement even further (Franklin, 1977). The United States passed the Eighteenth Amendment in 1920 that introduced prohibition.

Nationwide prohibition was enacted in many countries regulating early closing times and halting imports of alcohol through provincial referendums (Blocker, Fahey, & Tyrrell, 2003). The purchase or consumption of alcohol products was never outlawed by this prohibition ban just “the manufacture, sale, and transportation of alcoholic beverages in the United States and its possessions” (Burns et al., 2011). Pennock (2005) reports prohibition viewed from a political approach became unfeasible across American society.

The 1930s saw the start of the decline of the temperance movement due to prohibition being criticized, and on December 5, 1933, prohibition was repealed and licensing laws were gradually relaxed during the mid to late 20th century. Men and women activists from across the nation sought an abstinent America but were intensely committed to achieve temperate society. Gallop polls revealed one-third of Americans between 1930–1950 preferred reinstatement of the national prohibition. The majority that favored restoration of this policy were moral conservatives affiliated with Protestant denominations and nondenominational organizations (i.e., Christian evangelicals) that adhered to traditional values such as self-restraint, thrift, and sobriety during a period of rising mass consumerism and a new middle class. Pennock (2005) illustrates how dominant culture disregarded these postwar American values. This religious-moral system grounded firmly among anti-alcohol attitudes sought to create and embrace a nation of moral Christians through utilizing government power. The arrival of television and modern advertising techniques integrated with an enduring commitment to abstinence fueled their movement.

Movement to Control Alcoholic Beverage Marketing

Alcohol control and marketing policies have consumed the American landscape for centuries. The late 19th to early 20th century American society witnessed two temperance campaigns, with one strategy determined to ban alcohol advertising while the other focused on restricting alcohol marketing (Pennock, 2005). The public policy arena would evaluate these “old” and “new” temperance arguments that raised concerns about health, mortality, youth, mass media, the First Amendment, and rebuttals from industry opponents. Pennock (2005) reports these movements declared alcoholic beverages were harmful and young children were heavily influenced by alcohol advertisements.

The attainment of a moral, pure, and temperate America required a national-level strategy shift toward prohibition of alcohol advertising rather than the prohibition of the manufacture and sale of alcohol. The US Senate Committee on Commerce heard from hundreds of church-affiliated supporters over a ten-year period that declared alcohol was harmful to American society and a sinful influence on children. The cultural conservatives from both parties supported these anti-alcohol ad bills. The supporters implemented ambitious letter-writing, petition campaigns, and pressured members of Congress in both houses to publicly introduce their bills year after year. These tactics yielded widespread support that dominated the national forum despite opposing industry arguments that alcohol ads impacted a small minority of Americans.

The alcoholic beverage industries reacted by galvanizing into a loose coalition including wholesalers and distributors, representatives of restaurant, hotel, and tavern industries, and broadcasting and print media to convey reasoned arguments in opposition of alcohol advertising restrictions. The momentum activists gained during the 1950s

prompting brewers and distillers to cease inter-industry tension and tighten advertising standards through marketing self-regulation. The Distilled Spirits Institute developed an industry advertising code in 1936. The components of the code prohibited advertising on the radio, religious publications, Sunday newspapers, and depiction of women in ads. The Distilled Spirits Institute made a pledge to avoid advertising on television in 1948. The National Association of Broadcasters followed this lead and disallowed hard liquor advertisements on radio or television.

The brewing and wine industry practiced a different form of self-regulatory rules than the distilled spirits industry. Media formats that accepted beer and wine advertisements allowed these advertisers to depict women and advertise on broadcast media. The manufacturers of beer and wine were careful to demonstrate acceptable public relations despite American's suspicions of unethical practices.

By 1954, the broadcasting, brewing, and wine industries agreed to exclude actual consumption of beer and wine from television advertising. The following year, an advertising review panel was established to serve as the gatekeeper for objectionable advertising. In the late 1960s, the National Association of Broadcasters updated their advertising code to ban cocktail mixed drinks. This period of alcohol advertising resorted to themed advertising that portrayed brewers, vintners, and distillers' products as acceptable to gentlemanly living either for benign beer drinking in the home or sophisticated beverages consumed during an elegant dinner. Activists were unwilling to accept these self-regulatory themed efforts of respectability and "fine living" being promoted in major media markets as positive. From the activist perspective, these advertisements glamorized alcohol instead of illustrating the harms to health, mortality,

and social relations. Pennock (2005) suggested the very existence of these industry efforts incited an attack that prompted activists to move beyond advertising alterations for a complete alcohol advertisement ban.

Alcohol researchers were determined to remain out of this advertising conflict and concentrate on the concept of alcoholism as a disease. These scientists' intent was the removal of stigma and medicalized alcohol problems. Congressional hearings overheard advertising control concerns with neither professionals nor scientists testifying on behalf of anti-alcohol supporters. After a ten-year campaign with extended support from U.S. Senators and Americans across the heartland, activists were unable to achieve government support for alcohol advertising restrictions as the bill never reported out of committee.

Social policy-making and public life during the second half of the twentieth century shifted toward a more conscientious scientific and secular orientation ethic that transpired between religious morality and secular morality and between science and values. The decision-making by citizens and policy-makers relied upon values they embraced and employed within a system of secular morality. Pennock (2005) reminds us that abortion issues became a high political action priority over alcohol consumption for conservative religious groups. During the Regan era, advocates for greater control of alcohol advertising revamped their policy objectives to call for advertising bans specifically on beer and wine from broadcast media, and implementation of warning labels to protect American children's health. Pennock (2005) indicated these alcohol policy changes were guided by actions against cigarette marketing that occurred during the 1960s and 1970s.

The new alcohol temperance movement of the 1980s was profoundly influenced and explicitly emulated lessons learned from tobacco. This new temperance campaign of the 1980s received support from conservatives and liberals that were affiliated with secular organizations intending to assist alcohol advocates in curbing alcohol marketing (Pennock, 2005). The arguments articulated before Congress by both advocates and industry were similar to claims and objections that were presented in the 1950s. In 1988, alcohol marketing restrictions were imposed on the industry to implement a warning label on alcohol packaging. The warning label had to bear a statement that warned alcoholic beverage consumers of the health problems alcohol could cause and the dangers of consuming alcohol during pregnancy or before operating a car or heavy machinery (Davis, 1989). Failure to comply with these warning requirements resulted in fines for manufacturers each day the violation existed (Davis, 1989).

Mass media became more dominant during this time period with images that enticed human behavior during a consumer-oriented age. Many activists viewed marketing as the lifeblood of these businesses. This model of advertising encouraged expansion to new consumers, particularly youth. Therefore, controlling these industries ability to market their products was perceived by activists as a strategy to handicap the expansion process.

The advertising industry thrives on building brands deliberately through powerful crusades that have short- and long-term effects on the younger consumer. This creates psychological outcomes and social norms that influence youth (Cohen et al., 2011, p. 567).

Public Transit and Alcohol

Both alcohol use and violence are major factors affecting youth development. In turn, advertising affects the acceptability and acquisition of these behaviors. Alcohol advertising has been shown to influence underage alcohol use (Mart & Blakemore, 2014, p. 280). An emergent tactic by alcohol companies is advertising in public transportation spaces, which contributes to alcohol advertising exposure for early adolescents. There is very limited empirical research on this topic. In late 2006, the governing body of the Bay Area Rapid Transit (BART) overturned a longstanding alcohol advertising policy in San Francisco (Simon, 2008). This reversal of policy provoked an advocacy group (Marin Institute, now known as Alcohol Justice) to conduct a case study and national transit survey of 25 public transit systems across the United States. The survey evaluated the transit agencies on three categories: the first being if they had an “inadequate or no written policy for advertising,” the second was if “advertising policy allows alcohol ads,” and the third was “does the advertising policy forbade alcohol ads.” The Institute raised awareness among community and youth members that viewed reversal of the policy as harmful and initiated a collaborative advocacy effort that led to the BART Board of Directors re-instating the alcohol ban on all San Francisco public commuter service trains. Results from the survey indicated 80% (20 of 25) of agencies responded to the survey and 75% of respondents (15 of 20) had a policy that prohibited alcohol advertising. Despite evidence-based reports that indicate exposure to alcohol advertisement increases alcohol consumption, many US transit agencies have written alcohol advertisement policy with little enforcement.

In 2008, subway cars (n = 142) running on four Boston transit lines located in Middlesex, Norfolk, and Suffolk counties were assessed during a typical summer weekday (246 cars each day) for total number of cars with alcohol advertisements, type of product, and number of persons affected by the advertisement termed gross impressions and gross rating points (Nyborn et al., 2009). Approximately 42.7% of all Boston-area transit passengers viewed (1,212,960 times) an alcohol advertisement during an average weekday compared to 54.1% of student passengers (18,269) aged 11–18 in Boston public schools. These high rates of exposure to alcohol advertisements account for almost half the population of Boston adult and student transit passengers.

Another assessment of the Massachusetts Bay Transit Authority (MTBA) occurred in 2009 to determine whether the frequency of alcohol ads differed by location characterized by racial composition, socioeconomic status, and age. Instead of train cars, all train stations and streetcar stations in the same counties were surveyed for all visible alcohol advertisements on doorways or turnstiles or attached to MTBA property at each station (n = 113) over the course of three consecutive days (Gentry et al., 2011). Researchers captured data on the number of ads, type of alcohol, alcohol brand name, size of ads, description of each ad, gross impressions, and gross rating points. The demographic data stratified percent minority residents and percent living below the poverty level into low or high categories based on mean percentages for the three counties. Compared with low-minority and low-poverty serving stations, the prevalence of alcohol brands Absolute and Coors advertisements were three times as prevalent in surrounding high-minority and high-poverty neighborhoods. On average, high-poverty stations had 1.27 alcohol advertisements compared to 1.16 in low-poverty stations.

However, the number of alcohol ads was 0.88 in high-minority serving stations compared to 1.52 ads in stations serving in lower minority neighborhoods.

Public transit system subway studies in NYC are very limited. One study conducted on one subway line that runs through a lower income neighborhood (Bronx) and a higher income neighborhood (Manhattan) downtown and uptown platforms evaluated the prevalence of alcohol-related content (Fullwood, Basch, & LeBlanc, 2016). A total of 26 advertisements were identified, which marketed an alcohol product. There was a statistically significant difference in the frequency of ads between the different lines $t(20.04) = 7.62, p < 0.001$, with an average of 1.5 advertisements on the uptown lines traveling toward and through the lowest median income borough versus 0.06 advertisements on the downtown lines heading toward the highest median income borough. The research suggests there is merit for concern given the far reach these subway advertisements may have on NYC children and adolescents to initiate that first drink and/or encourage acts of aggressive behavior.

This might be one place where you can include one paragraph about the NYC alcohol advertising ban that occurred during the course of your study.

Violence

Human aggression exhibited by children or adults that permeates our society on a daily basis finds all of mankind struggling to understand the causes of complex human action. In the past, violence was seen as a criminal justice issue. But in the past 30 years, violence has become recognized as one of the leading public health problems in the U.S. (Dahlberg & Mercy, 2009, p. 1). Since 1965, homicide and suicide consistently rank

within the leading causes of death. The characterization of violence stems from various frameworks that include trauma, contagion, learned behavior, or addiction (NASEM, 2017) The rates of substance abuse and violence among youth today are alarming.

In 2015, an estimated 1 million persons under age 18 were arrested and 53,600 of these adolescents were detained for aggravated assault (30,100), robbery (19,400), rape (3,300), and murder and non-negligent manslaughter (800) (OJJDP, 2015). The biological and social forces linked with individuals becoming violent emerge from deficiencies in cognitive functioning (Dodge & Frame, 1982), neurological hormonal abnormalities (Berman, Gladue, & Taylor, 1993; Miles & Carey, 1997) as well as availability of guns, drugs, poverty (Archer, 1994; Guerra, Huesmann, Tolan, Van Acker, & Eron, 1995), and mass media (Strasburger, Wilson, & Jordan, 2009, p. 146).

Violence in American Media

Many empirical studies are in agreement that violence in media permeates antisocial effects that are harmful to children (Strasburger et al., 2009, p. 146). In 1975, Rothenberg offered conservative average U.S. yearly rates of exposure an average child or teenager encountered on television, which was found to be 1,000 murders, rapes, and aggravated assaults. Reports in 1992 indicated this number approximates to 200,000 acts of violence on television alone before a child achieves teenager status (Huston et al., 1992). During 1995 through 1997, almost 10,000 hours of broadcast programming were evaluated in a national television study that identified 61% of that programming portrayed entertaining or glamorized content of interpersonal violence (Federman, 1998).

This approximation is likely higher for children and adolescents that concentrate their viewing on certain channels and types of programs (Strasburger et al., 2009, p. 147).

Films and television shows appeal to large audiences despite violent content. The producers and writers of these shows often claim society's attraction with violence stimulates and sustains this form of content in American culture (Strasburger et al., 2009, p. 151). Previous research on this level of attraction point to several contextual features based on who committed the aggression, if the violent act was punished or rewarded, and if negative consequences resulted (Strasburger et al., 2009, p. 149). The conclusions drawn from the study report nearly 40% of violence is glamorized by "good characters" on television while 71% of violent scenes were absent of criticism, penalties, and remorse for acts of violence (Smith & Donnerstein, 1998). Close to half of violence on television remains sanitized with the victim showing no physical harm or pain with the other half depicting real life forms of aggression that appear deadly (Smith & Donnerstein, 1998). These unrealistic depictions or patterns of aggression and violence as harmless compared with real life tragedies that occur each day is problematic, especially for children under the age of seven (Strasburger et al., 2009, p. 150).

Appeal of Media Violence

The real-life appeal of media programming, including television and cartoon shows, and slasher and animated films, continue to attract and draw high levels of viewership among teenagers (Strasburger et al., 2009, pp. 151–152). Viewers have been exposed to aggression in earlier research studies to understand the appeal of different violent programs (Diener & Woody, 1981; Greenberg & Gordon, 1972). This

methodology of determining the appeal of different programs that showcase violence are harder to tease out (Strasburger et al., 2009, p. 152). Several factors such as the nature of the aggression involved, the form of violence, and the type of viewer seems to affect the appeal of violence (Strasburger et al., 2009, p. 154). Empirical support demonstrates that violence sells. Selection of nonviolent content becomes challenging at times since fewer nonviolent options are available on television and in movies (Strasburger et al., 2009, p. 155).

Media Violence Equals Aggression

Most of the attention that violence in the media leads to aggression finds strong agreement among social scientists (Strasburger et al., 2009, p. 156). Several theoretical perspectives including cognitive priming, social learning, and social informational processing theories have informed this literature through experimental, correlational, and longitudinal studies.

The earliest evidence demonstrating that exposure to violent media was sufficient to cause short-term increases in aggression for children date back to controlled experiments conducted in the 1960s (Strasburger et al., 2009, pp. 157–158). Investigators that conducted this research tended to survey large populations of children and teenagers with various violence measurement instruments such as a self-reported checklist on aggressive acts, hypothetical situations of violence, and peer ratings (Dominick & Greenberg, 1972; McIntyre, Teevan Jr, & Hartnagel, 1972; McLeod, Atkin, & Chaffee, 1972). Many of these correlational studies across different regions of the country compiled samples that reported consistent findings despite use of different measures of

aggression (Strasburger et al., 2009, p. 159). The results identified a positive relationship between violent television exposure and levels of aggressive behavior among children and teenagers (Belson & Belson, 1978; Dominick & Greenberg, 1972; McLeod et al., 1972; Robinson & Bachman, 1972). These findings were sustained even after parental education, school achievement, socioeconomic status (SES) and total television viewing were controlled for in the analysis (McLeod et al., 1972).

In 2006, adolescents from eight countries were surveyed on patterns of television viewing, which revealed significant associations between substantial viewing of television with increased verbal aggression and bullying, even after age and gender were controlled across the eight countries (Kuntsche et al., 2006). Despite these studies, the link between media exposure and aggression and the effect of exposure on viewers' behaviors remains equivocal (Strasburger et al., 2009, p. 159). The quandary of which came first, "the chicken or the egg", force social scientists to pursue research designs that uncover cumulative effects for groups of individuals at different time points often termed longitudinal studies.

The most compelling longitudinal study to address the question: "Does violence in the media lead to aggression, or do aggressive people seek out such content?" was conducted over a 22-year period with a sample of children from upstate New York. Sample participants at ages eight, 19, and 30 were measured at three periods of time on habits of viewing television and aggressive behavior. The results indicated a significant relationship among third grade boys that watched violent television and aggressive behavior at age 19. Therefore, early childhood exposure to television violence was highly predictive of levels of aggressive behavior 10 years later. These results held up even after

controlling for IQ, SES, and total exposure to television. The support for aggressive behavior expressed by a third grader being predictive of aggressive behavior at 19 yielded no support for girls (Eron, Huesmann, Lefkowitz, & Walder, 1972; Huesmann, Lagerspetz, & Eron, 1984; Lefkowitz, Eron, Walder, & Huesmann, 1971). These same individuals were followed up 10 years later with most of them aged 30. The data revealed two compelling pieces of evidence that linked self-reported male aggression at age 30 with television violence exposure at age eight. Television habits with a lot of violence significantly predicted seriousness of criminal acts performed at age 30 even after controlling for childhood aggression, IQ, SES, and numerous parenting variables (Huesmann & Miller, 1994). The authors concluded correlations between early childhood television habits and adult criminality were independent of other plausible causal factors (Huesmann, 1986, p. 139).

These same researchers applied a similar approach to more than 1,000 children living in Australia, Finland, Israel, Poland and the United States over a three-year study period (Huesmann & Eron, 1986). Even though these nations offered different television programming and crime rates, the findings showed that exposure to television violence during early childhood was predictive of aggression among every country besides Australia. The United States along with two other countries demonstrated this relationship for boys and girls.

From the perspective of Huesmann and colleagues, the answer to the quandary of which came first seemed not so crucial, as they suggest a probable reciprocal relationship occurring between television aggression and aggression. In other words, interest in violent content on television is heightened either by behaving aggressively, and viewing

violence early stimulates aggression (Huesmann et al., 1984). This “downward spiral model” over time mutually reinforces aggressive behavior and television violence relationship (Slater et al., 1996). These longitudinal studies suggest a cyclical relationship whereby one behavior reinforces and encourages the other. The evidence is powerful from the earliest to recent studies showing exposure over time can have a cumulative effect for boys and girls on aggression (Strasburger et al., 2009, p. 162).

How Does Exposure to Violence Encourage Aggression?

The perspective of the *cognitive priming* model was developed by Berkowitz and colleagues to explain how effects of short intervals with violent media trigger aggressive behavior and thoughts already learned by an individual (Berkowitz, 1990; Jo & Berkowitz, 1994). These thoughts are considered to “prime” (Bushman & Geen, 1990) stored feelings and thoughts located in the forefront of an individual’s mind that, after short exposure, places them in an active state to enact tendencies of hostile thoughts and actions (Strasburger et al., 2009, p. 165). The unfolding of these aggressive feelings and thoughts into aggressive behavior are encouraged by an individual’s emotional state, experiencing negative affect (Berkowitz, 1990), and justification (Jo & Berkowitz, 1994) to act out these scripts. Those media scripts that portray violent cues as morally proper inhibit an individual’s aggression temporarily, which enables them to justify or rationalize the act of such behavior afterward (Strasburger et al., 2009, p. 165). These environmental cues help rationalize, reactivate, reinforce, and sustain these previously primed thoughts and tendencies that enable individuals to rationalize their own aggression (Jo & Berkowitz, 1994).

Another model, developed by Huesmann, termed the social informational processing theory, embraces ideas from Bandura's observational learning and cognitive priming theories that allow for broader views on how, over time, media can contribute to aggression (Huesmann, 1988a). This theory focuses on how mental routines referred to as scripts that utilize information from comparable events stored in an individual's memory helps advise behavior and social problem-solving. Individuals obtain scripts from lived experiences and even from mass media exposure (Krcmar & Hight, 2007). The ability to retrieve these learned scripts from memory may prove vital in the early learning experiences of children due to easier recall than other scripts in certain social situations. Consistent and repeated exposures lead to the development of a stable network of steadfast cognitive scripts for a growing child. This perspective highlights that media may contribute to habitual forms of aggression among children and adolescents (Huesmann, 1988a). The risk that a child will internalize and commit violent acts after viewing media violence is summarized by Huesmann and Eron (1986):

For most children, aggressiveness seems to be determined mostly by the extent to which their environment reinforces aggression, provides aggressive role models, frustrates and victimizes the child, and instigates aggression. (p. 4)

Younger children have yet to develop and internalize social norms against aggression (Strasburger et al., 2009, p. 170). The likelihood of violent content being learned by children is logical when they perceive highly scripted and unrealistic portrayals of violent characters on television as realistic (Huesmann, Taylor, & Gentile, 2003; Konijn, Nije Bijvank, & Bushman, 2007). Learning aggression from the media does not require children to be angry (Hearold, 1986). Although, identification with

characters that portray violence and acceptance of this television content as realistic by children likely informs children's learning about violent content.

Public Transportation and Violence

The visual appeal of violent media content can become impressionable and problematic too. In one pilot study on the Lexington Avenue//East Side subway line in NYC, researchers determined the frequency and type of violent advertising (Basch, Fullwood, & LeBlanc, 2016). The most frequent theme, say what the theme was, accounted for 42.7% of advertisements (n = 32) located in neighborhoods with lower median household incomes (e.g., Bronx). Other prominent themes identified were intent to strike (n = 18, 24%), showing a weapon (n = 15, 20%), and horror (n = 10, 13.3%). Clearly, more research is needed on this controversial topic.

Summary

These five sections have provided a lens of the benefits as well as hazards associated with media advertisement related to alcohol and violence. Despite decades of well-documented experimental studies, correlation research, longitudinal studies and meta-analysis research on the influence of media and advertisements on children and adolescent behaviors, the evidence remains inconclusive.

The public's acceptance of moderate alcohol consumption conceal the potential consequences and harms associated with early alcohol imitation and acts of aggressive behavior among children and adolescents. National data indicates consumption of alcohol

before age 13 increases the odds of increased risk-taking behavior and physiological damage over time.

An important strategy during this phase of experimentation requires early investment in adolescent health and well-being. Assisting adolescents with achievement of developmental milestones and practicing health-enhancing behaviors lay the foundation for a healthy start. The acquisition of these milestones and behaviors enable adolescents to persevere in unfavorable environments.

Media exposures represent one mechanism in a spectrum of nested interactive systems detailed within the social-ecological framework. The learning and practicing of behaviors related to alcohol and violence may arise, in part, from repeated exposures of a multitude of factors. One pervasive factor is advertising and associated marketing campaigns. The function and structure of marketing strategies in various forms including television, radio, and print strive to influence the decision-making process through arousing and exciting emotions, and use of teen-oriented actors that appeal toward adolescents' and children's emotions.

The expenditure on advertising with alcohol and violent content is considerable. These marketing campaigns often focus on brand and product appeal that resonate with younger consumers. The influence of this form of advertising provides a direct and implied learning stimulus that may influence youth behaviors.

The arguments to remove alcohol and aggressive media content remain an on-going debate. Despite a variety of research findings, the literature causally linking media or advertising with behavior remains inconclusive. The sparse research on the nature and

scope of advertised content in public transportation system is a gap in current knowledge that the proposed study aims to help fill.

Chapter III - METHODS

This study used a cross-sectional design. All advertisements within NYC subway system with alcohol or violent content were counted, photographed and described. The total number of advertisements was also counted to enable calculating the proportion of total advertisements that had alcohol or violent content. All data were collected through direct observations.

Setting

New York City is an urban environment with 5,650,610 adults and adolescent passengers using mass transit on an average weekday in 2015 (Basch et al., 2016). The study was delimited in scope to four boroughs, including Manhattan, Brooklyn, Queens, and Bronx. Passengers that travel from Staten Island to another borough utilize the NYC ferry or bus since a rail link is absent within the subway system. The New York City Metropolitan Transit system operates 472 stations with 40% of the track lines above ground. The current study included observations within single stations and station complexes.

Single stations were defined as those with only one train line, and with no passageways to other train lines. Station complexes were defined as stations serving multiple train lines, which may or may not connect to different train lines. The subway system offers 25 train services that were surveyed. These train services included three

shuttles (42 Street Shuttle, Franklin Avenue Shuttle, Rockaways Park Shuttle), fully local trains as in 1, 6, 7, C, G, J, L, M, R, W, M and Z, along with express and local trains such as 2, 3, 4, 5, <6>, <7>, A, B, D, E, F, N, and Q.

Sampling and Station Configuration

The framework for conducting this type of subway research required appraisal of the station environment, which was termed station configuration. While there is an eclectic mix of advertisements in an array of formats, including the interior or exterior of trains, on the turnstiles, static or interactive platform displays, and interactive kiosks strategically placed to captivate and engage users of this form of public transportation, the study was delimited in scope to advertisements on the walls of platforms. The advertising in the NYC subway system provides an eye level opportunity to target passengers through amplified media campaigns. These multiple points of exposure require a systematic approach of surveillance in order to detail the presence of a particular appeal.

On a weekday in March 2017, the researcher observed 472 stations within the Metropolitan Transit Authority. The researcher had a specific train route to follow with a code sheet that tracked whether the station platform had wall advertisements, had outside platform advertisements, or had a digital kiosk on the platform. The process began at 6:00 a.m. and concluded at 9:30 p.m. These observations defined the stations to be included in the study because they contained one or more advertisements. That number was 143.

A Metropolitan Transportation Authority (MTA) paper subway map was used to outline the best plan for collecting data from every subway train route in an efficient

manner. Using the paper map, the Researcher generated an efficient route that enabled all stations to be covered in a four-to-five-day data collection period. The objective was to exit at each subway station stop that had advertisements, walk the entire platform, and document every advertisement with a photograph. This method was performed on downtown and uptown subway station stops.

Preliminary analysis of the MTA subway system enabled the researcher to remain on the train and bypass stations that had previously been identified as having no advertisements. During this preliminary phase of the project, pilot work determined that the use of the paper-and-pen method of data collection would prove inefficient for capturing over 400 subway stops. Therefore, the researcher designed a mobile data collection app that captured all the necessary information about the subway stop and snapped a photograph of the advertisement on the platform. The app storage capacity was unlimited and allowed for quick synchronization of data into the internet cloud.

As mentioned above, the study was delimited in scope to static advertisements on platform wall panels distributed throughout the MTA single stations and station complexes. These static two-sheet large platform billboards are 60” wide x 46” high and attract an estimated 20,000 impressions per advertisement per day with a 25% recommended reach of the daily population (Ouffront media, 2017). The length of subway platforms range from 480 to 600 feet (150 to 180 m). The study design required surveillance of all train lines above and underground to describe selected subway platform advertisements on the walls of every station. The process of analysis for complex stations consisted of examination of wall space and passageways toward other

subway platforms that potentially offer continuous media advertisements, termed station domination (advertisements for the length of the passageway).

Inclusion and Exclusion Criteria

All advertisements located on the subway platform walls of every subway station line were included. Stations that had advertisements on the walls outside of the turnstile heading toward the enter/exit stairwell were assessed as well. All digital kiosks that displayed any form of advertisement on the platform were excluded. As mentioned above, stations identified as station complexes included subway platforms as well as every passageway that may have potentially displayed advertisements.

Subway stations that displayed no advertisements on the subway platform were documented so that the number and location of these stations could be incorporated into the analysis. MTA advertisements located within the entryway to subway stations were excluded. This exclusion was based on the observation that the only (or almost only) kinds of advertisements located in these spaces were advertisements for the MTA (e.g., MTA service bulletin announcements or MTA subway destination maps). A random sample of subway station entryways ($n = 30$) was conducted and only Times Square and Grand Central stations included advertisements on turnstiles. The distribution of turnstile advertisements was low throughout the four boroughs and therefore excluded from the data collection. All advertisements that were partially removed in such a way that coding could not be completed were excluded. The number of these defaced advertisements was documented.

Instrumentation

The instrument used to collect the data was a fulcrum mobile location leverage app created for iOS and Android mobile forms. Fulcrum provides end-users with the ability, in just minutes, to build an app that allows for easy data collection anywhere and anytime. The customization of forms and deployment to mobile device for reliable mobile data collection seemed appropriate for this data collection use case. This platform enabled the researcher to create a survey, take it into the field, record conditions, take photos, and input many data types. Once the app was created, the Researcher input data from the field directly into his iPhone. The information that was input included: date, latitude, longitude, time, whether the platform had an advertisement, single or complex station, defaced advertisement, photo, subway line, and station location.

The information gathered from the MTA subway map was used to build a customized form in a web browser. This web-based form was used to collect data in each of the four NYC boroughs. The app stored data either online or offline and synced data to the fulcrum internet cloud. These collected data records were extensible enough to permit integration into a specific database through the fulcrum application programming interface (API).

QGIS

Open source products are free and supported by community developers and non-developers that encourage end users to change and customize the product to achieve their specific use case goals. Maps are a great way to visualize and explore spatial data. Some data is only intelligible when mapped. The Quantum Geographic Information System

(QGIS), a free and open source software (FOSS) supported by a strong community of developers, was used in this study.

This professional GIS desktop application provided many features that work well with different data types. These features allowed for the visualization of spatial data queried from a relational database management system (RDBMS). RDBMS store data as a set of carefully structured tables.

Geography

This study applied geographic information system (GIS) to answer certain research questions. National Geographic Education encyclopedia defines GIS as “Any system for capturing, storing, checking, and displaying data related to positions on the Earth’s surface.” In other words, connect data with geography. GIS permits creation of interactive queries that enable analysis of spatial information or allows for data in maps to be edited.

The design resources used to map and analyze city-level features were obtained from the most updated Baruch College Geoportal “NYC Geodatabase”. This resource is a SQLite Spatialite database that contains identical information collected by the US Census Bureau and NYC Office of City Planning that can be used with open source software. The contents of the databases used in this study extracted select geographic features and statistical areas at the census tract and neighborhood tabulation area (NTA) levels and transit and public facility point features. The datasets available at this geoportal were licensed under a creative commons license. The coordinate reference system (CRS) used NAD 83 NY State Plane Long Island Zone (feet).

The data processing of geographical information systems (GIS) point features and shapefiles excluded Staten Island from the four polygon shapefiles including a_boroughs, a_facilities, a_greenpace, a_tracts, and one point shapefile a_subway_stations acquired from the Baruch Geoportal NYC Geodatabase. Shapefiles are the basic file for storing spatial data like points, lines, and polygons. These spatial layers were renamed to nyc_boroughs = a_boroughs, nyc_facilities = a_facilities, nyc_greenpace = a_greenpace, nyc_census_tracts = a_tracts, and nyc_subway_stations = a_subway-station.

Using the unique federal information processing standard code (FIPS) associated with the nyc_census_tracts attribute table allowed for aggregation to the neighborhood level for later analysis based on column indexing the neighborhood values (nta_name) field. After completion of that join, this new layer, nyc_ct_nta_joined was joined with the nyc_subway_stations attribute table. This joined layer associated the subway information with the appropriate census tract. The new layer produced nyc_ct_nta_subway, which contains all of the four boroughs and subway station information. This layer enabled 2015 American Community Survey (ACS) 5-year estimate data to be joined with this new table for further geographic analysis.

The use of GIS enabled the creation of general reference and thematic maps. General reference maps provide a simple aid to help visualize important known physical features. The ability to focus on a specific theme or subject area such as a neighborhood borough or using spatial features for reference highlights the benefit of thematic maps to navigate or discover stations with alcohol and violent advertisements. In addition, base maps were applied when necessary to accentuate the map context.

PostgreSQL

The project required organization and structure for this large and unique set of data. The researcher selected a program that runs on a computer or server with the ability to connect to spatial databases through many types of software such as open source software including, QGIS. Spatial databases store and analyze spatial features that optimize the processing of location-aware queries.

Relational database management system (RDBMS) stores data as a set of carefully structured tables. The most important capability of a database is its ability to link data together across tables. Standard Query Language (SQL) is a declarative language meaning the end user tells the computer what you are trying to achieve. PostgreSQL works some internal magic to handle this task for you.

Data Collection

The method of data collection for single stations and station complexes occurred over a five-day period in June 2017. Data were collected using a mobile app developed by the researcher specifically for the study. This method of data collection enabled recording the station location of every advertisement.

Every advertisement identified on a single station platform or station complex was photographed. For example, the investigator rode the MTA Blue train line (A train) toward Far-Rockaway-Mott station (end of the line) exiting at each subway stop to count and photograph all advertisements on the platform for that particular subway stop and board the following train to the next stop and apply the same procedure until the Far-Rockaway destination was reached. At the end of the line, the investigator either crossed

the platform or exited the station in order to ride the train line in the other direction toward 207th Street subway stop. The same method of advertisement documentation occurred at every subway stop until the investigator arrived at the last stop for that train line. Upon completion of a particular downtown and uptown train line, the investigator navigated to the next train line and applied the same method of data collection. This process was applied for every train line operating in the Bronx, Brooklyn, Manhattan, and Queens.

Every station complex was inspected for advertisements located along the wall space of every passageway that leads toward another transfer platform. The surveillance of these advertisements within these complexes were counted as one station.

The data collection mobile app functions as either a cloud-based web app or mobile app such as iOS and Android cellular devices. The NYC Subway Inspection app provides a customized mobile form for each advertisement identified throughout the MTA subway system. These customized data entry fields allowed for audio and video capture as well as quick offline data input fields with predefined choice lists associated with survey information attributes concerned with alcohol and violent media content, stored for later data retrieval from a web-based cloud server. All data collection records for each coded advertisement were date- and time-stamped.

Description of the content of advertisements was based on the photographs. The photographs were uploaded into a video editing program (Final Cut Pro X) that will allow removal of duplicate images and categorize all alcohol and violent advertisements for analysis (duplicates will be described only once but will be counted as many times as they appear). The selected static advertisements will be transposed into a digital movie

slideshow format. This will allow for the primary investigator to describe each alcohol and violent advertisement in an efficient manner.

Data Analysis

The first Aim of the Study involved calculating a variety of descriptive statistics. Frequency distributions were calculated by borough and for all four boroughs combined regarding the total number of stations, with and without any advertisements, alcohol advertisements and violent advertisements, as well as for the absolute number of advertisements about alcohol or with violent content. In addition, a variety of rates were calculated to describe the proportion of total advertisements about alcohol or with violent content, and the proportion of total stations, with and without advertisements that included advertisements about alcohol or with violent content.

Each borough was then examined separately. This analysis involved collapsing all of the stations in each borough into neighborhoods. These neighborhoods were already conceptualized by the NYC MTA (MTA, 2018), and these socially constructed neighborhoods were used in this study. These analyses involved calculating the total number of stations, with and without any advertisements as well as the number of stations within each neighborhood with advertisements about alcohol or with violent content. The rate of total advertisements about alcohol or with violent content was also determined.

Aim 2, to describe the advertisements about alcohol and portrayals of violence, involved two different approaches for advertisements about alcohol versus those with violent content. For alcohol, the frequency and percentage of the total number of advertisements about alcohol were classified into five categories (beer, spirits, wine,

restaurants/clubs or public service). For advertisements with violent content the frequencies and percentages were calculated regarding the object (i.e., movie, television show, play, or public service), and then describing each advertisement with respect to the presence of animation, guns, weapons other than guns, images of fighting/attacking, fear, anger/aggression, destruction, injured people and words associated with aggression and violence.

Aim 3, required that each station be categorized by racial composition and social-economic characteristics. The smallest geographic unit for which these data are available is the census tract. For the majority of stations ($n = 320$ of 378 for which data were available), there was only one station in the respective census tract. Forty-six census tracts had two stations, seven had three stations, four had four stations and one had five stations. Racial and social-economic data was derived from the American Community Survey estimates, which was obtained from The American Fact Finder (Bureau, 2018). The racial and social-economic demographic characteristics selected were percent white, percent Black, percent Asian, percent Hispanic, percent of residents who graduated from high school, percent of households with children under age 18, and median annual income in dollars (which was rounded). There was considerable co-linearity among these variables. For example, the percentage of white population was inversely associated with the percentage of Black population ($r = -.7, p < .000$) and Hispanic population ($r = -.45, p < .000$) and percent of households with children under age 18 ($r = -.50, p < .000$). While income was strongly positively associated with the percentage of whites ($r = .65, p < .000$), it was inversely associated with the percentage of Blacks ($r = -.40, p < .000$),

Hispanics ($r = -.54, p, .000$) and percent of households with children under age 18 ($r = -.51, p, .000$)

To examine if there were associations between the racial composition and social-economic characteristics in which stations were located and the prevalence of advertisements about alcohol and violent content a variety of regression analyses were conducted. The outcome variables used in these analyses were the presence of advertisements about alcohol or with violent content in stations, thus the outcome was binary (e.g., advertisements versus no advertisements). If the logistic regression analysis shows that there are statistically significant associations for particular demographic or income variables, this will be explored further. This subsequent analysis will involve classifying the stations into quintiles based on the demographic or income variable and calculating the number and proportion of stations within the quintiles that have advertisements related to alcohol or violence. In addition, Chi square values will be determined to assess the extent to which there are statistically significant differences in the rates of advertisements between quintiles and if there are statistically significant linear trends.

Chapter IV - RESULTS

The results of the study are presented using a variety of descriptive statistics and regression analysis. First, an overview of advertising within the NYC subway system is presented using a variety of units of analysis such as the absolute numbers and rates of advertisements themselves, and the numbers and rates of stations with and without different kinds of advertisements. These data are shown for each borough as well as for the four boroughs combined. Second, a greater level of detail is presented for each of the four boroughs. In these analyses, the different kinds of advertisements (i.e., any advertisement, advertisements about alcohol or advertisements with violent content) nested within stations, nested within neighborhoods are described. Third, the advertisements were examined in a crude way to provide a qualitative description of their content. Finally, logistic regression analysis was used to examine if there were associations between the racial/ethnic and income characteristics of the locality in which the stations were located and the prevalence of advertising

Overview of Selected Aspects of Advertising in the New York City Subway System

Table 1.1 provides a summary of the subway stations with and without advertisements, and the advertisements observed across the four boroughs. There were a total of 472 subway stations observed. Of these, 143 contained advertisements. There were a total of 8,737 advertisements documented, including duplicates. Brooklyn has the

greatest number of both stations (169) and advertisements (3,100) followed by Manhattan (151 stations; 2,751 advertisements), Queens (82 stations; 1,834 advertisements) and Bronx (70 stations; 1,052 advertisements).

Table 1.1 - Frequencies and Rates of Advertisements, Subway Stations with and without Advertisements, and Type of Advertisements by Borough, New York City, 2017.¹

	Bronx	Brooklyn	Manhattan	Queens	Total
Total Ads	1052	3100	2751	1834	8737
Total Stations	70	169	151	82	472
Stations with Ads	21	43	53	26	143
Stations without Ads	49	126	98	56	329
Stations with Alcohol Ads	12	28	18	18	76
Stations with Violence Ads	20	43	48	25	136
Number of Alcohol Ads	23	42	32	32	129
Number of Violence Ads	115	404	425	210	1154
Rate of Alcohol Ads / Total Ads	2.2	1.4	1.2	1.7	1.5
Rate of Violent Ads / Total Ads	11.0	13.0	15.4	11.5	13.2
Rate of Total Stations with Alcohol Ads	17.1	16.6	12.0	22.0	16.1
Rate of Total Stations with Violent Ads	28.6	25.4	13.8	30.5	28.8
Rate of Stations with Alcohol Ads when any ads are present	57.1	65.1	34.0	69.2	53.1
Rate of Stations with Violence Ads when any ads are present	95.2	1	90.6	96.2	95.1
Rate of Stations with any Advertisements	31.4	25.4	35.1	31.7	30.3

The rate of stations with any advertisements ranged from a low of 25.4% in the Brooklyn (43 of 169) to a high of 35.1% in Manhattan (53 of 151). Of the stations with any type of advertisements, 76 (53.1%) displayed alcohol advertisements while over 95% included one or more advertisements with violent content (136 of 143). There was considerable variation in the rate of stations with alcohol advertisements (stations with alcohol advertisements/stations with any advertisements), which ranged from a low of

¹ The rate and total number of advertisements were based on stations located in four NYC boroughs. These remaining values were primarily based on field collection data regarding alcohol, violent, and other advertisements.

34% in Manhattan (18 of 53) to a high of 69.2% in Queens (18 of 26). In contrast, over 90% of the stations in every borough that had advertisements displayed one or more with violent content.

Of the 8,737 advertisements observed, 129 (1.5%) were for alcohol and 1,154 (13.2%) had violent content. The number of alcohol advertisements in the boroughs ranged from a low of 23 in the Bronx to a high of 42 in Brooklyn and the variability in these numbers was associated with the number of stations within each borough with advertisements. Overall, between 1% and 3% of all the advertisements within the boroughs focused on alcohol. The number of advertisements with violent content was much greater, ranging from 115 in the Bronx to 425 in Manhattan. The percentage of all advertisements within the boroughs that displayed violent content ranged from 11% in the Bronx (115 of 1,052) to 15.4% in Manhattan (425 of 2,751).

There was considerable variability between the boroughs. Even though Brooklyn had the lowest rate of stations with advertisements (i.e., number of stations with advertisements/total number of stations), this borough had the second highest absolute number of stations with advertisements ($n = 43$). Compared with Manhattan, the rate of stations with alcohol advertisements was over 40% greater in the Bronx and Brooklyn (~12% versus ~17%) and was almost double in Queens (22%).

In all boroughs, the absolute number and rate of stations with advertisements that had violent content was greater than that observed for alcohol. As noted above, almost all of the stations with advertisements included advertisements with violent content.

Manhattan and Brooklyn had the highest absolute number of stations with advertisements

including violent content, which mirrored the larger number of stations both with and without advertising in these boroughs.

Descriptive Analysis of Advertisements by Borough Neighborhoods

In Tables 1.2 through 1.5, a descriptive analysis of advertisements about alcohol and with violent content is presented. For these analyses, the stations were collapsed into socially constructed neighborhoods. These neighborhoods were conceptualized by New York City MTA (MTA, 2018). Each table presents the following data by neighborhood: number of total stations in the neighborhood, with and without any advertisements; number of stations with advertisements about alcohol or with violent content; and the absolute number of advertisements about alcohol and with violent content; and the proportion of total advertisements that were for alcohol or with violent content.

Bronx

There were 28 neighborhoods served by the NYC subway system in the Bronx, which represented 70 total stations (Table 2). The number of stations in these neighborhoods varied from one ($n = 6$) to seven ($n = 1$). The majority of neighborhoods had two ($n = 8$) or three ($n = 9$) stations. Eleven of the 28 neighborhoods had advertisements, thus 17 did not contain any advertisements.

Alcohol products were being advertised in nine of the 11 neighborhoods with advertisements, which included 12 stations. Advertisements with violent content were observed in 10 of the 11 neighborhoods with advertisements, which included 20 stations.

Of the 70 total subway stations in the Bronx, a total of 12 (17.1%) contained advertisements for alcohol and 20 (28.6%) contained advertisements with violent content.

Table 1.2 - Frequencies of Subway Stations with and without Any Advertisements, and Advertisements About Alcohol and Violent Content, and Frequencies and Rates of Advertisements about Alcohol and Violence, Bronx, New York City, 2017.

Neighborhood	Stations					Advertisements			Rates	
	Total	Ads	No Ad	Alc Ad	Vio Ad	Alc	Vio	Total	Alc	Vio
Allerton-Pelham Gardens	2	0	2	0	0	0	0	0	0	0
Bedford Park	4	2	2	2	2	3	6	76	3.9	7.9
Bronxdale	2	0	2	0	0	0	0	0	0	0
Co-op City	1	0	1	0	0	0	0	0	0	0
Crotona Park East	1	0	1	0	0	0	0	0	0	0
East Concourse	1	1	0	1	1	2	16	128	1.6	13.3
East Tremont	3	0	3	0	0	0	0	0	0	0
Eastchester-Edenwald	0	1	0	0	0	0	0	0	0	0
Fordham South	2	2	0	1	2	3	20	190	1.6	10.5
Hunts Point	3	0	3	0	0	0	0	0	0	0
Longwood	3	2	1	1	2	1	14	60	1.7	23.3
Melrose South	3	0	3	0	0	0	0	0	0	0
Morrisania-Melrose	1	0	1	0	0	0	0	0	0	0
Mott Haven-Port Morris	7	5	2	2	5	3	22	148	1.4	14.9
Mount Hope	3	2	1	1	1	5	12	165	2.4	7.3
Norwood	3	1	2	1	1	1	3	15	6.7	20.0
Pelham Bay	3	0	3	0	0	0	0	0	0	0
Pelham Parkway	2	0	2	0	0	0	0	0	0	0
Soundview-Bruckner	3	0	3	0	0	0	0	0	0	0
Spuyten Duyvil	3	0	3	0	0	0	0	0	0	0
University Heights	2	1	1	0	1	0	1	20	0	5.0
Van Cortlandt Village	2	2	0	1	2	2	5	30	6.7	16.7
Van Nest-Morris Park	1	0	1	0	0	0	0	0	0	0
West Concourse	5	3	2	2	2	3	16	220	1.4	7.3
West Farms-Bronx River	1	0	1	0	0	0	0	0	0	0
Westchester-Unionport	2	0	2	0	0	0	0	0	0	0
Williamsbridg-Olinville	4	0	4	0	0	0	0	0	0	0
Woodlawn-Wakefield	2	0	2	0	0	0	0	0	0	0
Totals	70	21	49	12	20	23	115	1052		

Of the 1,052 total advertisements documented in the Bronx, just over 2% (n = 23) were for alcohol products. In contrast, over one out of 10 (11%, n = 116) advertisements included violent content. While the rate of alcohol or violent advertisements varied across

the neighborhoods, compared with alcohol advertisements, the prevalence of violent advertisements was always higher.

The majority of all the advertisements in the Bronx were concentrated within five of the 28 neighborhoods: (1) West Concourse (n = 220) (2) Fordham South (n = 190) (3) Mount Hope (n = 165) (4) Mott-Haven-Port Morris (n = 148), and (5) East Concourse-Concourse Village (n = 128). These five neighborhoods contained 81% of the total advertisements in the Bronx (n = 851 of 1,052), 69.6% of the alcohol advertisements (n = 16 of 23) and 75% of the violent advertisements (n = 86 of 115). Excluding the neighborhoods with no advertisements, the prevalence rate of alcohol advertisements across the neighborhoods (i.e., number of alcohol advertisements/total advertisements) varied from 1.4% to 6.7%. The corresponding rates for advertisements with violent content varied from a low of 5% (1 of 20) to a high of 23.3% (14 of 60).

Brooklyn

Brooklyn comprises 44 neighborhoods with a total of 169 subway stations, the largest number of neighborhoods and stations of any borough in the City (Table 3). This borough also had the largest number of total advertisements (n = 3,100) and the largest number of advertisements for alcohol products (n = 42). Brooklyn had a comparatively large number of advertisements with violent content (n = 404), but fewer than in Manhattan (n = 425). Seven of the 44 neighborhoods had seven or more stations and 22 of the neighborhoods had 3 or fewer stations.

Table 1.3 - Frequencies of Subway Stations with and Without Any Advertisements, and Advertisements About Alcohol and Violent Content, and Frequencies and Rates of Advertisements about Alcohol and Violence, Brooklyn, New York City, 2017.

Neighborhood	Stations					Advertisements			Rate	
	Total	Ads	No Ad	Alc Ad	Vio Ad	Alc	Vio	Total	Alc	Vio
Bay Ridge	4	1	3	0	1	0	9	73	0	13.7
Bedford	4	2	2	2	2	3	20	96	1.5	10.2
Bensonhurst East	4	0	4	0	0	0	0	0	0	0
Bensonhurst West	9	0	9	0	0	0	0	0	0	0
Borough Park	4	0	4	0	0	0	0	0	0	0
Brighton Beach	2	0	2	0	0	0	0	0	0	0
Brooklyn Heights	3	0	3	0	0	0	0	0	0	0
Brownsville	7	0	7	0	0	0	0	0	0	0
Bushwick North	7	3	4	3	3	6	28	232	2.6	12.5
Bushwick South	7	2	5	2	2	3	21	130	2.3	16.2
Canarsie	1	0	1	0	0	0	0	0	0	0
Carroll Gardens	1	1	0	0	1	0	10	70	0	14.3
Clinton Hill	5	4	1	4	4	7	51	405	1.7	12.8
Crown Heights North	5	1	4	1	1	2	7	53	3.8	13.2
Crown Heights South	4	1	3	1	1	2	9	54	3.7	16.7
Cypress Hills-City Line	5	0	5	0	0	0	0	0	0	0
DUMBO-Vinegar Hill	10	1	9	0	1	0	4	18	0	22.2
East Flatbush-Farragut	1	1	0	1	1	1	10	69	1.4	14.5
East New York	10	0	10	0	0	0	0	0	0	0
East New York	2	0	2	0	0	0	0	0	0	0
East Williamsburg	4	3	1	1	3	1	20	161	0.6	12.4
Erasmus	1	1	0	1	1	1	10	58	1.7	17.2
Flatbush	6	1	5	0	1	0	4	25	0	16.0
Fort Greene	5	3	2	1	3	1	22	187	0.5	11.8
Gravesend	4	0	4	0	0	0	0	0	0	0
Greenpoint	2	2	0	0	2	0	27	321	0	8.4
Homecrest	1	0	1	0	0	0	0	0	0	0
Kensington	2	0	2	0	0	0	0	0	0	0
Madison	2	0	2	0	0	0	0	0	0	0
Midwood	3	0	3	0	0	0	0	0	0	0
North Side-South Side	3	2	1	1	2	2	13	114	1.8	11.4
Ocean Hill	4	2	2	2	2	2	21	159	1.3	13.2
Ocean Parkway South	3	0	3	0	0	0	0	0	0	0
Park Slope-Gowanus	8	4	4	1	4	1	36	231	0.4	15.6
Prospect Heights	1	1	0	1	1	2	11	66	3.0	16.7
Prospect Lefferts	5	3	2	3	3	3	27	155	1.9	17.4
Sheepshead Bay	2	0	2	0	0	0	0	0	0	0
Stuyvesant Heights	2	0	2	0	0	0	0	0	0	0
Sunset Park East	3	0	3	0	0	0	0	0	0	0
Sunset Park West	5	2	3	2	2	2	21	133	1.5	15.8
West Brighton	3	0	3	0	0	0	0	0	0	0
Williamsburg	2	0	2	0	0	0	0	0	0	0
Windsor Terrace	2	1	1	0	1	0	12	140	0	8.6
Park Cemetery-etc.	1	1	0	1	1	3	11	50	6.0	22.0
Total	169	43	126	28	43	42	404	3100		

Of the 44 neighborhoods in Brooklyn, 23 displayed advertisements. The 23 neighborhoods with advertisements comprised 43 stations, representing just over 25% of the 169 stations in Brooklyn.

Of the 3,100 advertisements, 42 (1.4%) were for alcohol products and 404 included violent content (13%). The 42 alcohol advertisements were observed in 17% of the total stations (28/169), which were located in 18 of the 44 neighborhoods. The 404 advertisements with violent content were observed in 43 of the 169 stations, which were located in 23 of the 44 neighborhoods.

Approximately one-half of the total number of advertisements (1537 of 3,100) was located in six neighborhoods, including Bushwick North (n = 232), Clinton Hill (n = 405), East Williamsburg (n = 161), Fort Greene (n = 187), Greenpoint (n = 321), and Park Slope-Gowanus (n = 231). While these neighborhoods comprised only ~18% of the total number of stations in Brooklyn (31 of 169), they included almost 40% of all the alcohol advertisements (16/42, 38%) and almost one-half of the violent advertisements (184/404, ~46%).

Manhattan

A total of 151 subway stations were observed in 28 social constructed neighborhoods located in the borough of Manhattan (Table 4). The number of stations across these neighborhoods varied from 1 (in Clinton, Lower East Side, Murray Hill Kips Bay, and Yorkville) to 22 (in Midtown-Midtown South).

Table 1.4 - Frequencies of Subway Stations with and without Any Advertisements, and Advertisements About Alcohol and Violent Content, and Frequencies and Rates of Advertisements about Alcohol and Violence, Manhattan, New York City, 2017.

Neighborhood	Stations			Advertisements			Rate			
	Total Ads	No Ad	Alc Ad	Vio Ad	Alc	Vio	Total	Alc	Vio	
Battery Park City Lower	14	4	10	0	3	0	33	165	0	20.0
Central Harlem North	4	2	2	2	2	5	18	146	3.4	12.3
Central Harlem South	5	4	1	3	3	4	27	162	2.5	16.7
Chinatown	5	1	4	1	1	1	12	72	1.4	16.7
Clinton	1	1	0	0	1	0	10	35	0	28.6
East Harlem North	2	0	2	0	0	0	0	0	0	0
East Harlem South	3	1	2	0	1	0	5	19	0	26.3
East Village	2	1	1	0	1	0	9	57	0	15.8
Gramercy	4	3	1	1	3	1	19	170	0.6	11.2
Hamilton Heights	3	1	2	1	1	4	12	119	3.4	10.1
Hudson Yards-Chelsea	10	3	7	1	3	1	32	168	0.6	19.0
Lenox Hill	2	0	2	0	0	0	0	0	0	0
Lincoln Square	4	2	2	1	0	1	0	33	3.6	0
Lower East Side	1	0	1	0	0	0	0	0	0	0
Manhattanville	2	1	1	1	1	2	8	56	1.1	15.4
Marble Hill-Inwood	4	0	4	0	0	0	0	0	0	0
Midtown-Midtown South	22	6	16	2	6	4	57	369	0	6.9
Morningside Heights	4	0	4	0	0	0	0	0	0	0
Murray Hill-Kips Bay	1	1	0	0	1	0	2	29	0	6.9
SoHo TriBeCa	17	6	11	1	5	1	39	251	0.4	15.5
Turtle Bay-East Midtown	3	1	2	0	1	0	3	20	0	15.0
Upper East Side	7	4	3	0	4	0	41	194	0	21.1
Upper West Side	5	3	2	0	3	0	27	141	0	19.1
Washington Heights North	5	1	4	1	1	2	13	116	1.7	11.2
Washington Heights South	5	1	4	1	1	2	10	108	1.9	9.3
West Village	9	2	7	1	2	2	14	78	2.6	17.9
Yorkville	1	0	1	0	0	0	0	0	0	0
Park-Cemetery-etc.	6	4	2	1	4	2	34	243	0.8	14.0
Totals	151	53	98	18	48	32	425	2751		

The majority of neighborhoods had one to five stations. A large proportion of stations in Manhattan were located in four neighborhoods: Battery Park City-Lower Manhattan (n = 14), Hudson Yards-Chelsea-Flat Iron-Union Square (n=10), Midtown-Midtown South (n = 22), SoHo-TriBeCa-Civic-Little Italy (n=17). The other 24 neighborhoods had a range between one and nine subway stations.

Of the 28 neighborhoods, 22 (79%) displayed advertisements on the subway platform. These advertisements were displayed on 53 of 151 (35%) stations. Four of the 28 neighborhoods accounted for almost 40% (1,057/2,751) of all the advertisements displayed in Manhattan. Two of these neighborhoods had a large number of stations, Midtown-Midtown South (n = 22 stations) and SoHo-TriBeCa-Civic-Little Italy (n = 17 stations). Among the 22 neighborhoods with advertisements, 14 (64%) displayed advertisements for alcohol. In contrast 21 of the 22 neighborhoods with advertisements included advertisements with violent content (> 95%).

Of the 151 stations in Manhattan, 18 displayed alcohol advertisements (12%) and 48 displayed advertisements with violent content (32%). Of the 32 alcohol advertisements in Manhattan, more than 40% (n = 13) were located in three neighborhoods (Central Harlem North-Polo Grounds; Central Harlem South, and Midtown-Midtown South). Of the 425 violent ads, more than two-thirds (290 of 425, 68.2%) were displayed in eight of the 28 neighborhoods, and three of these neighborhoods accounted for over 30% of the total number of advertisements with violent content (n = 137 of 425, 32.2%): Midtown-Midtown South (57 of 425, 13.4%); Upper East Side-Carnegie Hill (41 of 425, 9.6%); and SoHo-TriBeca-Civic Center-Little Italy (39 of 425, 9.2%).

Less than 1.2% (n = 32 of 2,751) of the total advertised images promoted in Manhattan were for alcohol, while more than 15% included violent content (425 of 2,751). In every neighborhood, compared with alcohol advertising, the prevalence of advertisements with violent content was always higher. With one exception (Lincoln Square), both the number and rate of advertisements with violent content was always

higher than the number and rate for alcohol products, respectively. Within neighborhoods with alcohol advertisements, the prevalence rate varied from less than 1% to 3.6%.

Within neighborhoods with violent advertisements, the prevalence rate varied from less than 7% to 28.6%.

Queens

There were 82 subway stations dispersed throughout the 24 socially constructed neighborhoods in Queens (Table 5). Of these 14 neighborhoods had three or fewer stations, with eight of the neighborhoods having between four and six stations and one neighborhood (Hunters Point-Sunnyside-West Maspeth) including 13 stations. Eleven of the 24 neighborhoods (~46%) included advertisements, representing 26 of the 82 stations (32%). Four of the 10 neighborhoods with any advertisements did not display any alcohol advertisements. In contrast, only one of the neighborhoods with any advertisements did not display advertisements with violent content, and this neighborhood included only one station (Park-Cemetery).

Among the 82 stations in Queens, 22% (n = 18) displayed alcohol advertisements and 30% (n = 25) displayed advertisements with violent content. Of the 18 stations in Queens with alcohol advertisements, eight (44%) were located in just two of the 24 neighborhoods (Astoria, n = 4) and Hunters Point-Sunnyside-West Maspeth (n = 4). While the latter comprised 13 stations, the former only included five stations.

Of the 1,834 advertisements observed in Queens, 32 (1.7%) were for alcohol products and 210 included violent content (11.5%). The rate of alcohol advertisements (# of alcohol advertisements in that neighborhood/total advertisements in that

neighborhoods) in the seven neighborhoods with such advertisements ranged from 1.6% to 5%. The range in the rate of advertisements with violent content in the 10 neighborhoods with such advertisements was 9% to 16%. In every neighborhood, compared with advertisements for alcohol products, both the absolute number and rate of advertisements with violent content was always greater.

Table 1.5 - Frequencies of Subway Stations with and Without Any Advertisements, and Advertisements About Alcohol and Violent Content, and Frequencies and Rates of Advertisements about Alcohol and Violence, Queens, New York City, 2017.

Neighborhood	Stations					Advertisements		Rate		
	Total Ads	No Ad	Alc Ad	Vio Ad	Alc	Vio	Total	Alc	Vio	
Astoria	5	5	0	4	5	8	37	267	3.0	13.9
Breezy Point-Belle Harbor	4	0	4	0	0	0	0	0	0	0
Briarwood-Jamaica Hills	1	0	1	0	0	0	0	0	0	0
Elmhurst	6	3	3	3	3	6	34	377	1.6	9.0
Far Rockaway-Bayswater	2	0	2	0	0	0	0	0	0	0
Flushing	1	0	1	0	0	0	0	0	0	0
Forest Hills	4	2	2	0	2	0	34	331	0	10.3
Hammels-Arverne	5	0	5	0	0	0	0	0	0	0
Hunters Point-Sunnyside	13	5	8	4	5	5	37	302	1.7	12.3
Jackson Heights	2	2	0	2	2	2	9	72	2.8	12.5
Jamaica	5	0	5	0	0	0	0	0	0	0
Kew Gardens	2	0	2	0	0	0	0	0	0	0
Lindenwood-Howard Beach	1	0	1	0	0	0	0	0	0	0
North Corona	2	2	0	2	2	5	16	100	5.0	16.0
Ozone Park	5	0	5	0	0	0	0	0	0	0
Queensbridge-Ravenswood	2	1	1	0	1	0	4	20	0	20.0
Rego Park	1	1	0	0	1	0	8	70	0	11.4
Richmond Hill	3	0	3	0	0	0	0	0	0	0
Ridgewood	5	1	4	1	1	2	11	79	2.5	13.9
South Ozone Park	3	0	3	0	0	0	0	0	0	0
Steinway	2	0	2	0	0	0	0	0	0	0
Woodhaven	3	0	3	0	0	0	0	0	0	0
Woodside	4	3	1	2	3	4	20	215	1.9	9.3
Park-Cemetery-etc.-Queens	1	1	0	0	0	0	0	1	0	0
Total	82	26	56	18	25	32	210	1834		

Of the 32 alcohol advertisements, 44% (n = 14) were observed in just two neighborhoods, eight in Astoria (observed in four of the five stations) and six in Elmhurst

(observed in three of the six stations; the other three stations did not have advertisements of any kind). More than two-thirds of the advertisements with violent content in Queens (n = 142) were displayed in four neighborhoods: Astoria (n = 37), Elmhurst (n = 34), Forest Hills (n = 34), and Hunters Point-Sunnyside-West Maspeth (n = 37).

There were five neighborhoods in which almost all of the advertisements in Queens were displayed: Astoria (n = 267), Elmhurst (n = 377), Forest Hills (n = 331), Hunters Point-Sunnyside-West Maspeth (n = 302), and Woodside (215). While these five neighborhoods comprised only 39% of the total stations in Queens (32 of 82), they displayed 81.4% of the total number of advertisements (n = 1492/1834), 72% of the total number of alcohol advertisements (23 of 32) and more than 77% of the total number of advertisements with violent content (n = 162 of 210).

Summary

Overall, violent advertisements were far more prevalent than alcohol advertisements among the 472 stations observed within the four boroughs. Only a small proportion of the total number of advertisements was for alcohol products, but one or more such advertisements were present in a considerable proportion of stations that included any type of advertising. There was considerable variability both between and within the boroughs with respect to the presence of advertising as well as the absolute number and rate of advertisements for alcohol and with violent content. The presence of any advertising as well as advertisements specifically for alcohol or with violent content appeared to be concentrated within some neighborhoods.

Content of Advertisements About Alcohol or Depicting Violence

Aim 2 of the Study involved description of the advertisements about alcohol or with violent content. The 129 advertisements about alcohol, including duplicates, were described solely on the basis of the product (or object) of interest using four categories, beer, spirits, wine, restaurants/clubs or public service (Table 1.6).

Table 1.6 - Frequencies and Percentages of Alcohol Advertisements, Including Duplicates, Observed in the New York City Subway System by Product/Service, 2017.

	N	%
Product Object		
Beer	84	65.1
Spirits	37	28.7
Wine	2	1.6
Restaurants/Bar Clubs	3	2.3
Public Service	3	2.3
Total	129	100

The 129 advertisements represent 15 unique images. Using this coding, almost two-thirds of the 129 advertisements about alcohol (n = 84, 65.1%) were for beer. Over 30% were for spirits, and the other three categories ranged between two or three of the 129 advertisements. The 15 unique advertisements were also described in a qualitative way (see Appendix A).

The 1154 advertisements that displayed violent content, including duplicates, represent 45 unique images. The majority of these advertisements were for television shows (636 of 1154, 55.1%), while almost 40% (n = 441) were for movies. Plays accounted for 77 of these total advertisements. Among the 472 stations observed, not a single public service advertisements related to violence prevention was observed on any NYC MTA subway platform.

Each of the 45 unique advertisements with violent content was coded with respect to the presence of particular attributes. Each of the following attributes was coded for each advertisement as present or absent: animation, guns, weapons other than guns, images of fighting/attacking, fear, anger/aggression, destruction, injured people, and words associated with aggression and violence. Three independent coders developed consensus about the presence of each attribute for each of the advertisements.

Table 1.7 - Frequencies and Percentages of Advertisements with Violent Content, Including Duplicates, Observed in the New York City Subway System by Product/Service, and Selected Aspects of Violent Imagery, 2017.

	N	% ¹
<u>Product Object</u>		
Movie	441	38.2
TV Show	636	55.1
Play	77	6.7
Public Service	0	0
Animation	304	26.3
Images of 1 or more guns	144	12.5
Weapons other than gun	437	37.9
Images of fighting/attacking	406	35.2
Images of fear	540	46.8
Images of anger/aggression	813	70.5
Images of destruction	227	19.7
Injured people	152	13.2
Words associated with aggression or violence	627	54.3

¹ Percentages based on total number of advertisements with violent content observed, n = 1154.

Images of anger and aggression were the most commonly observed category, which was present in over 70% of the advertisements (813 of 1154) (Table 1.7). The second most frequently observed category was words associated with aggression or violence (e.g., fear, pain, blood sucker, ass kicker). Images of fear were present in almost one-half of the advertisements (n = 540 of 1154). Of the 1154 advertisements with violent content, more than 1 in 4 depicted animation (304 of 1154, 26.3%). There were

144 of the advertisements that pictured guns (12.5%) and 437 (37.9%) that pictured weapons other than guns. These 45 unique advertisements portraying aggression and violence were also described in a qualitative way (see Appendix B)

Associations Between Racial, Ethnic and Income Characteristics of Station Location and Presence of Advertising

The final Aims of the study involved categorizing subway stations by racial and ethnic composition and economic characteristics in which they are located (Aim 3) and comparing differences in the prevalence of advertisements with alcohol and violent content (Aim 4). Aim 3 was accomplished using existing data from the American Community Survey. The census tract in which each station is located was identified and then racial, ethnic and income data for the respective census tracts were assigned to that station.

Examining variability in the prevalence of advertising about alcohol or with violent content involved several strategies. As a first step, the covariance among the racial and economic data and the outcome data was depicted in a correlation matrix (Table 1.8). The three outcome variables comprised the total number of any advertisements, total number of advertisements with violent content, total number of advertisements about alcohol. The racial characteristics in which each station was located was operationalized as the percent of the population that was, white, Black, Asian, and Hispanic, respectively. Economic data was operationalized as annual median income (rounded to the nearest thousand dollar). Due to missing data, there were 454 stations included in this analysis.

The total number of advertisements was positively associated with the number of advertisements about alcohol ($r = .68$) and with violent content ($r = .93$). There were no statistically significant bivariate associations between the total number of advertisements or the total number of advertisements with violent content and any of the race variables, with Hispanic ethnicity or with income. With respect to advertisements about alcohol, there were weak bivariate associations between the number of advertisements about alcohol and percentage white population ($r = -.11$), percentage Black population ($r = .09$), percentage Hispanic population ($r = .12$) and income ($r = .11$).

As expected, there were also statistically significant associations among the racial, ethnic and income data. For example, the percentage of white population was inversely associated with the percentage Black population ($r = -.71$), and percentage Hispanic population ($r = -.46$) and a positive association with income ($r = .64$). The percentage Black population was inversely associated with the percentage Asian population ($r = -.43$) and income ($r = -.43$). The percentage Asian population was inversely associated with the percentage Hispanic population ($r = -.30$) and positively (albeit weakly) associated with income ($r = .13$). The percentage of Hispanic population was inversely associated with income ($r = -.56$). Collectively, these associations reflect the racial segregation and income inequality that persists in New York City.

To examine if there were associations between the presence of any advertisements and racial, ethnic or income variables, logistic regression was conducted. All five independent variables were entered (percentage white, Black, Asian, Hispanic, and income) and the outcome variable was operationalized as the presence of any advertisement in the 454 stations. This analysis showed that there was no association

between the racial, ethnic and income data and the presence of advertisements at the 454 stations (Table 1.9). This analysis was then repeated to test for the presence of advertisements about alcohol or with violent content.

Table 1.8 - Bivariate Pearson Correlations Between Race, Ethnicity and Income among 454 Subway Stations in New York City, 2017.

	1	2	3	4	5	6	7	8
Total number of 1 alcohol ads	---							
Total number of 2 violent ads	.934***							
Total number of 3 alcohol ads	.680***	.619***						
4 Percent White	.034	.075	-.109*					
5 Percent Black	-.015	-.013	-.093*	-.706***				
6 Percent Asian	-.011	-.048	-.040	.012	-.432***			
7 Percent Hispanic	-.008	-.039	.121*	-.460***	.055	-.299***		
8 Median income ¹	.015	.065	-.106*	-.644**	-.429***	.132***	-.555***	

¹ rounded to nearest thousand

*p ≤ .05 **p ≤ .01 *** p ≤ .005

Table 1.9 - Logistic Regression Analysis and Odds Ratios for the Presence of any Advertisements within 454 Subway Stations as Predicted by Selected Race, Ethnic, and Income Variables.

	β	S.E.	Prob.	Odds
Predictors				
Percent White	.010	.012	.389	1.011
Percent Black	.008	.013	.529	1.008
Percent Asian	-.008	.015	.571	.992
Percent Hispanic	.011	.009	.263	1.011
Median Income	.006	.003	.089	1.006

The logistic regression analysis relevant to the presence of alcohol advertisements showed that there were associations with two variables, percentage of population that was Black, and percentage of the population that was Hispanic (Table 1.10). For every one

percentage increase in the Black population present in a locality there was a 1.04 times greater likelihood that advertisements about alcohol will be present. For every one percentage increase in the Hispanic population present in a locality there was a 1.028 times greater likelihood that advertisements about alcohol will be present. The logistic regression relevant to the presence of advertisements with violent content showed that there were no statistically significant associations (Table 1.11).

Table 1.10 - Logistic Regression Analysis and Odds Ratios for the Presence of any Advertisements about Alcohol within 454 Subway Stations as Predicted by Selected Race, Ethnic, and Income Variables.

	β	S.E.	Prob.	Odds
Predictors				
Percent White	.024	.014	.088	1.024
Percent Black	.039	.015	.011	1.040
Percent Asian	.029	.017	.092	1.029
Percent Hispanic	.028	.011	.012	1.028
Median Income	.001	.005	.842	1.001

Table 1.11 - Logistic Regression Analysis and Odds Ratios for the Presence of any Advertisements with Violent Content within 454 Subway Stations as Predicted by Selected Race, Ethnic, and Income Variables.

	β	S.E.	Prob.	Odds
Predictors				
Percent White	.011	.012	.387	1.011
Percent Black	.008	.014	.557	1.008
Percent Asian	-.009	.015	.564	.991
Percent Hispanic	.010	.010	.295	1.010
Median Income	.004	.003	.238	1.004

The logistic regression analysis shown in Table 1.10 was repeated using only the 134 stations that had any advertisements as well as complete racial/ethnic and income data, which revealed that there was still a significant association for the presence of alcohol advertisements by percentage Black population. Another analysis was also restricted to the 134 of the 454 stations with any advertisements. In these analyses, the 134 stations were grouped into quintiles based on the percentage White, Black, Asian,

Hispanic and by income (rounded to the nearest thousand), respectively, and the mean number of total advertisements, advertisements about alcohol and advertisements with violent content across the respective quintiles was compared with one-way analysis of variance.

Stations categorized according to the percentage white population was not associated with the total number of advertisements or the number of advertisements with violent content. There was a statistically significant linear trend across the quintiles showing that as the percentage of white population increased, the mean number of advertisements about alcohol declined: Lowest quintile = 1.19, second lowest = 1.47, middle = 1.07, second highest = .70, highest = .29, $F = 19.236$, $p < .000$). It should be noted that although this result would not be expected due to chance, the absolute differences in the mean number of advertisements about alcohol across the five quintiles was small.

When stations were categorized according to the percentage Black population there was no significant associations with the total number of advertisements or the number of advertisements with violent content. There was a statistically significant linear trend across the quintiles showing that as the percentage of black population increased, the mean number of advertisements about alcohol increased: Lowest quintile = .50, second lowest = .71, middle = .68, second highest = 1.23, highest = 1.31, $F = 11.179$, $p \leq .001$). Again, the absolute differences in the number of advertisements about alcohol across the five quintiles were small.

When stations were categorized according to the percentage Hispanic population there were no significant associations with the total number of advertisements or the

number of advertisements with violent content. There was a statistically significant linear trend across the quintiles showing that as the percentage of Hispanic population increased, the mean number of advertisements about alcohol increased: Lowest quintile = .75, second lowest = .59, middle = .59, second highest = 1.48, highest = 1.17, $F = 8.346$, $p \leq .005$). The absolute differences in the number of advertisements about alcohol across the five quintiles were small.

No statistically significant linear trends were observed when stations were categorized according to percentage of Asian population in relation to total number of advertisements, total number about alcohol, or total number with violent content.

When stations were categorized according to quintiles of annual income there were no significant associations with the total number of advertisements or the number of advertisements with violent content. There was a statistically significant linear trend across the quintiles showing that as income increased, the mean number of advertisements about alcohol decreased: Lowest quintile = 1.10, second lowest = 1.22, middle = 1.459, second highest = .75, highest = .28, $F = 12.164$, $p \leq .001$). The absolute differences in the number of advertisements about alcohol across the five quintiles were small.

Compared with the rate of stations with one or more alcohol advertisement in the lowest quintile of percent Black population, stations in the highest quintile of percent Black population had a rate that was more than 2.5 times greater (31.8 versus 80.8, see Table 12). There was a clear linear trend and dose-response gradient observed in the rate of stations with alcohol advertisements by quintile of percent Black population (X2

15.695, $p < .000$, see Table 1.12). This analysis was restricted to the 134 stations that had both any kind of advertisements and complete demographic data.

Table 1.12 - Presence of Advertisements about Alcohol within 134 Subway Stations Having Any Advertisements by Quintile of Percent Black Population.

	1 Low Quintile	2	3	4	5 High Quintile	Total
No Alcohol Ads	15 68.2%	20 57.1%	14 56.0%	8 30.8%	5 19.2%	62 46.3%
Alcohol Ads	7 31.8%	15 42.9%	11 44.0%	18 69.2%	21 80.8%	72 53.7%
Total	22	35	25	26	26	134

Chapter V - SUMMARY, DISCUSSION, & CONCLUSIONS

This is the first study to describe the nature and prevalence of advertising about alcohol and with violent content within the NYC subway system, the largest metropolitan transit system in the United States. Despite the widespread reach of communications disseminated within public transit systems throughout America, there has been very little research conducted to describe the ways in which advertising within this media channel shapes the physical, social and psychological environment in which people live. The conclusions from this study, outlined below, have implications for policy and citizen engagement in cultivating communities that foster caring and kindness rather than alcohol use, aggression and violence.

Summary of Findings and Main Conclusions

Almost 9,000 advertisements were documented in this study, and that is an underestimate since it does not include advertisements on kiosks. Of the 472 stations observed, advertisements were present in 143 (30.3%). While the population using the 143 stations with advertisements was not quantified, it is reasonable to conclude that large numbers of youth and adults are exposed to these images and messages on a regular basis. Advertisements about alcohol represented a small proportion (< 1.5%) of total advertisements. Nevertheless, advertisements for alcohol were present in 16.1% of the total stations and 53.1% of the stations with any advertisements. Thus, while the number

of total advertisements for alcohol products is comparatively small, their presence in over one-half of the stations with advertisements (76 of 143) suggests that the reach of these advertisements is high. The number of advertisements for alcohol observed in the Boston by Gentry et al. (2011) was greater than that observed here in NYC even though Boston is a much smaller city and the transit system there is much smaller than in NYC.

In contrast to the small number advertisements about alcohol, more than one of 10 advertisements observed had violent content. These kinds of advertisements were pervasive throughout every borough, were observed in almost 30% of all stations, and in over 95% of stations with advertisements. The primary objects of these advertisements were television shows and movies.

This is problematic for younger children when over half of television content depicts real life deadly forms of aggression and tragedies (Smith & Donnerstein, 1998; Strasburger et al., 2009).

Aggression and violence in both media and real life is pervasive in America in general and among youth in particular. For example, the Youth Risk Behavior Surveillance System (Frieden et al., 2016), an ongoing biennial survey of American high school students, showed that, during a 30-day period preceding the survey, over 16% carried a gun, knife, or club on at least one day, 6% were threatened or injured with a weapon on school property, and more than 5% did not go to school because of safety concerns; during a 12-month period preceding the survey, more than 20% were in a physical fight and more than 20% were bullied on school property (Frieden et al., 2016). Homicide is the third leading cause of death for youth aged 1-4 and 15-24 and the fourth leading cause of death for youth between the ages of 5 and 14 (Centers for Disease

Control and Prevention, 2017). While establishing the causal link between media violence and lived experience of youth will continue to be debated, it seems clear that exposing youth to images and words depicting fear, anger, guns and other weapons does not help cultivate a social and psychological environment epitomizing a kind and caring community.

There was not a single communication observed on the platforms that was related to violence prevention, conflict resolution, or community. This is unfortunate since communications on subway platforms provide an opportunity to reach many people with positive messages on a daily basis. While such communication may not generate advertising revenue, they can help cultivate a positive social and psychological climate.

This study demonstrated that advertisements are not evenly distributed throughout the NYC subway system. Citizens that live and grow in these unequal environments are likely to be affected in ways that influence their thoughts and feeling (Crone & Dahl, 2012; Patton et al., 2016; Viner et al., 2012). Alternatively, people may become so desensitized to these communications that they have no reaction because they are accepted as normal. Of the 472 stations observed, 143 contained advertisements. This was also observed with respect to advertisements about alcohol and with violent content. Thus, youth and adults using some stations are more likely to be exposed to advertising in general and with respect to alcohol and violence in particular. Taken together, exposures such as these impact neurologic synaptic pruning processes that are highly influential across the life span (Crone & Dahl, 2012; Goddings, 2015) Therefore, it is important that future research considers the powerful effects of the social environment, including how media advertisements, may influence adolescent development (Somerville, 2013).

A troubling finding from this study was that, compared with stations located in areas of the City with a low percentage of Black population, those located in areas with a high percentage of Black population, had a much higher proportion of stations with advertisements about alcohol. This finding is not consistent with Gentry et. al, (2011). In their study, which investigated alcohol advertisements across 113 subway and streetcar stations in Boston, they found that stations in low minority areas had more alcohol ads than stations in high minority areas (Gentry et al., 2011). It should be noted that comparisons are complicated by different operational definitions used to define such neighborhoods.

Most of the advertisements about alcohol were for beer. Beer is often the beverage of choice for youth (Siegel et al., 2016). The preponderance of beer advertisements is a concern given that the study by Grenard, Dent, & Stacy found a prospective association between exposure to alcohol advertisements and subsequent underage alcohol use (Grenard et al., 2013).

The 129 advertisements about alcohol included three occurrences of the same advertisement that was a public service announcement. This advertisement was related to the ‘vision zero’ campaign created recently to reduce pedestrian fatalities on the streets of NYC. On one hand, the presence of these three advertisements is a step in the right direction, it seems to fall far short in attaining the goals stated by Take Care of New York 2020, an initiative to improve health outcomes for all New Yorkers (NYC Department of Health and Mental Hygiene, 2018).

Of the 1154 advertisements with violent content, more than one in four (n = 304) contained animation. This is troubling since these kinds of images are likely to attract

attention from children, a tactic adopted by the tobacco industry with their use of “Joe Camel.” These repeated exposures may prove vital for a growing child that may utilize this information to advise behavior during problem-solving when resolving conflict (Huesmann, 1988a; Kremer & Hight, 2007).

Also troubling was the number of images of guns, which were present in 144 (12.5%) of the 1154 advertisements with violent content. Approximately, 70% (n = 813) of the violent products reviewed displayed images of anger and/or aggression while almost 40% (n = 437) highlighted weapons other than guns. The steadfast development of memorable cognitive scripts that may be formed as a result of constant exposure to violent content may contribute to forms of aggression expressed in social situations (Huesmann, 1988a). Given the magnitude and severity of gun violence in America, exposing youth and adults to such images is destructive. This further highlights the hypocrisy and mixed messages between transit advertising and the mayor’s neighborhood initiative to cure violence with an Anti-Gun Violence Crisis Management System, which is attempting to interrupt conflicts and change social norms in order to improve community health for New York citizens (NYC Department of Health and Mental Hygiene, 2018). These efforts outlined by the City may benefit from surveying citizens about the high risk associated with aggressive words or acts of violence displayed on advertisements in public spaces travelled by many citizens on a daily basis. A focus of the NYC Health Department is to stop the spread of violence (NYC Department of Health and Mental Hygiene, 2018). The findings of this research indicate a misalignment between that goal and the hundreds of noxious images that promote aggression and

violence on subway platforms traveled by thousands of New Yorkers, including children and adolescent, on a regular basis.

Limitations

The conclusions from this study must be interpreted with its limitations in mind. There were five main limitations, including the cross-sectional design, single data collector, new instrument used for coding attribute of the advertisements with violent content, incomplete or missing census data, and delimited scope of data collection. Each is outlined below.

The study applied a cross-sectional design to describe the extent of alcohol and violent media advertisements. This is a limitation since the placement of advertisements is changing on an ongoing basis and the results from this study are, therefore, not necessarily generalizable over time. However, previous studies and consultations with experts aided in the classification of the identified subway platform images (Jones et al., 2010; Padon et al., 2016; Siegel et al., 2016). Despite this limitation, this is the first study to describe such advertisements within the NYC subway system. Additional research is needed to verify the findings.

One coder (the Researcher) determined the what constituted an advertisement as either focused on alcohol or having violent content. If different individuals had conducted the initial coding, it is possible that some advertisements included may have been left out of the sample and others that were not included would have been counted. Two other individuals reviewed all of the advertisements with violent content and agreed that they warranted inclusion in the sample. Despite this potential limitation, it is believed that the

initial coding of advertisements regarding whether they focused on alcohol or included violent content was quite straightforward and the sample portrays an accurate representation of advertisements about alcohol and with violent content exhibited on the subway platforms of New York City.

The unique attribute coding applied to each of the 45 advertisements identified as having violent content was based on a coding scheme developed as part of this study. The attributes were conceptualized based on conversations among three individuals that viewed the advertisements. Despite consensus among these three individuals regarding the presence of each attribute within each advertisement, additional research examining the reliability and validity of this coding format would be useful.

The study relied upon US Census data to acquire demographic characteristics of NYC population at the census tract level. This public open data portal will sometimes return inadequate or missing information for a particular census tract (NYC Planning, 2018). In this study, even though 472 stations were observed, complete census data was only available for 454; 134 of the 143 census tracts where stations with advertising were located had complete census data. In addition, given the high mobility of the population and changes in housing such as gentrification, the extent to which these data are representative of the demography of the localities may be questioned. Nevertheless, the Census Bureau provides the best available data to describe the characteristics of the US population at different levels of geography and the most up-to-date data were used.

The data collected only consisted of advertisements located on the subway platforms. This level of data collection missed the opportunity to collect other areas displaying advertisements such as kiosks, turnstiles, and entry and exit points in the

subway. New York City represents an urban environment where many travel via the transit system. Therefore, the platforms provided an important life path point through which transit riders are exposed to communications on a daily basis as they wait for the train.

Implications for Policy and Citizen Engagement

The City of New York Mayor's office crafted a blueprint, Take Care New York 2020, designed to improve community health for everyone. This initiative was developed with the aim to tackle the top health priorities and make NYC more equitable. Over 1,000 community consultants from surrounding boroughs working with the Health Department reported the most urgent issues impacting their neighborhood. Every borough except Manhattan listed violence as a top priority for change. Given that so many of the subway stations observed in the study displayed images of guns, individuals fighting and attacking, and language associated with violence, it seems like this would be a good place to start changing the City's environment. During the course of this study, that is exactly what occurred with respect to alcohol advertising within the subway system. In October 2017, the board of the MTA banned advertisements for alcohol on buses, trains and station based on the idea that the advantages of discouraging underage drinking outweighed the loss of revenue (Ferré-Sadurní, 2017). Given the pervasive and tragic effects of aggression and violence on youth (and adults), the MTS board should extend their logic to advertising other forms of advertising. There is a need for New Yorkers to become engaged in this issue and take a stand about the kinds of images and communications that are exhibited in 'their' public spaces.

Advocates and grass-roots organizations have long recognized the proliferation of alcohol advertisements as a public health issue. Some studies have suggested that alcohol advertisements target low-income communities of color and younger consumers (Cohen et al., 2011; Siegel et al., 2011; Snyder, Milici, Slater, Sun, & Strizhakova, 2006; Verlegh, Franssen, & Kirmani, 2015). It was disturbing to find that, in the current study, compared with localities in the lowest quintile of percent Black population, those in the highest quintile had more than 2.5 times as many stations with one or more alcohol advertisements present (7 of 22 versus 21 of 26). While alcohol advertising has now been banned on the City's buses, trains and stations, this finding raises great concern about targeted advertising that warrants further investigation.

Entertainment consumed by citizens includes numerous genres, many of which include aggression and violence. Artists and producers clearly have the right to depict aggression and violence in television, movies and other forms. Some efforts have been made to restrict exposure of youth to such media, for example through ratings assigned to movies. Further, individuals choosing to watch a particular movie or television show are making a choice. With respect to transit advertising, this is not the case for commuters trying to get to and from their workplace or students traveling to and from school. Citizens are inundated with a plethora of images and words associated with entertainment prescribed as action, adventure, crime, drama, fantasy, horror, thriller, and war. Is this how we, as citizens, want to use our public spaces?

Citizens that engage with these screen time novelties may view the destructive, horrific and weapon imagery as form of unrealistic escapism or a form of entertainment. Do these forms of art imitating life possibly desensitize citizens to view real-life

scenarios with blood, guns, and even physical harm as normal behavior? Establishing cause-effect relationships is difficult, because behaviors such as violence have a multifactorial etiology. Nevertheless, various studies suggest that exposure to aggression or violence often translates into unfavorable outcomes (Huesmann, 1988b; Patton et al., 2016; Strasburger et al., 2009; Viner et al., 2012)

The build-up of media violence has been flossed into the American fabric as simple pleasures of cultural enjoyment. This magnetic appeal of perceived enjoyment creates a false illusion that decays and numbs the ability of citizens to recognize the harm associated with violent imagery. The factors that drive this phenomenon are multifactorial and deserve greater attention. Given what is known about the importance of the physical, psychological and social environment in shaping the lives of youth, additional attention is warranted regarding how the public transit spaces throughout America are used.

Recommendations for Future Research

Given its importance as a life path point through which so many people travel on a daily basis, it is surprising that there has not been more research about the kinds of communications that are present within the subway systems throughout America. Thus a general recommendation is that more research is needed to describe the kinds of communications that are present in this environment. In addition, the results of this study require replication both within NYC and within other locations. Some specific recommendations are outlined below.

While this study was cross-sectional, the appraisal of advertisements in public spaces warrants ongoing surveillance. The release of new products being advertised in these spaces change on a regular basis. Surveillance audits at multiple time points will help document the nature and extent of advertisements that reach tens of thousands of people in NYC alone each day.

The focus of this study was on advertisements for alcohol and with violent content. Additional research is needed to describe other products affecting health. For example, what is the prevalence of advertising for fast foods or sugar sweetened beverages? What is the prevalence of positive communications that promote physical activity or mental health?

The study design and methods developed for this study may be useful to others. For example, the findings from this study revealed different insights based on the unit of analysis (advertisements versus stations versus neighborhoods versus census tracts). The methods used here warrant consideration by researchers exploring transit advertising.

Research on how different kinds of advertisements influence human behavior remains unanswered. The application of a mixed method designs focused to examine how children and adults interpret advertisements warrants additional research. Longitudinal studies are needed to improve understanding about exposure to advertising and its effects on behavior and health.

Given the importance of social norms, research is needed to find ways of helping youth not consider violence as a normal or healthful way of life. Efforts are needed to explore different ways of achieving this. One suggestion is to develop and evaluate

efforts aimed at improving media literacy and helping youth recognize the strategies and tactics used by advertisers.

Research is needed to determine how citizens feel about the advertising in their public spaces. Toward this end, a public opinion poll with a probability sample of New Yorkers would be useful. Data collected from this kind of citizen opinion poll can help determine the extent to which there is public support to remove advertisements with violent content, and other health-compromising messages, from the transit system.

Research conducted on how citizens analyze and interpret entertainment of unhealthy advertisement images displayed in public transit is limited in scope. This area of research may benefit from content analysis that analyzes implicit and subtle messages. This level of alertness and educated discourse offers the potential to raise awareness among citizens about how these noxious images extend beyond entertainment.

Additional research is needed to improve methods. For example, it would be useful to demonstrate the reliability and validity of different coding schemes. In addition, research is needed to develop and test coding instruments for advertisements about different kinds of products. While there is some research on video and web-based advertisement, less is available for static images characteristic of print advertising. Further research with adolescents and/or adults, particularly using cognitive interviewing or other interviewing or other qualitative research techniques may improve the attribute coding mechanism for assessing media advertised products.

Future research may extend the scope of this work by surveying advertisements in other public spaces throughout NYC and in other cities. For example, areas of interest

might include bus stops, digital kiosks (LinkNYC), taxi and bus placards among others. Exploring advertising in other public spaces also warrants consideration.

The pervasive distribution of alcohol and violent media content identified in this study appeared more prominent in neighborhoods with a high proportion of Black citizens. Questions raised by this research are: Why are there more advertisements for alcohol in the Black community? Who is accountable for this?

Final Thoughts

This was the first study to document the prevalence of advertisements about alcohol or with violent content within the more than 450 stations of New York City subway system. Overall, exposure to alcohol and violent media content was pervasive. Do citizens want their public spaces and tax dollars supporting alcohol and violent media content? Do families want their children exposed to these media as they travel to and from school? Do the communications portrayed in the NYC subway system reflect the values and aspiration we have as residents? These are questions for elected officials and citizens to answer. There is a particular responsibility upon those responsible for promoting health to improve social and psychological environment of the transit system. To ignore this would be an important lost opportunity.

REFERENCES

- Andersen, S. L., & Teicher, M. H. (2004). Delayed effects of early stress on hippocampal development. *Neuropsychopharmacology*, *29*, 1988–1993. <https://doi.org/10.1038/sj.npp.1300528>
- Andersen, S. L., & Teicher, M. H. (2008). Stress, sensitive periods and maturational events in adolescent depression. *Trends Neurosci*, *31*, 183–191. <https://doi.org/10.1016/j.tins.2008.01.004>
- Anderson, P., De Bruijn, A., Angus, K., Gordon, R., & Hastings, G. (2009). Special issue: The message and the media: Impact of alcohol advertising and media exposure on adolescent alcohol use: A systematic review of longitudinal studies. *Alcohol and Alcoholism*, *44*, 229–243. <https://doi.org/10.1093/alcalc/agn115>
- Archer, D. (1994). American violence: How high and why. *Law Studies*, *19*, 12–20.
- Basch, C. H., Fullwood, M. D., & LeBlanc, M. (2016). Violence in Advertisements in New York City Subway Stations: A Pilot Study. *Journal of Community Health*, *41*(2), 387–391. <https://doi.org/10.1007/s10900-015-0108-z>
- Behrendt, S., Wittchen, H. U., Hofler, M., Lieb, R., & Beesdo, K. (2009). Transitions from first substance use to substance use disorders in adolescence: is early onset associated with a rapid escalation? *Drug Alcohol Depend*, *99*, 68–78. <https://doi.org/10.1016/j.drugalcdep.2008.06.014>
- Belson, W. A., & Belson, W. A. (1978). Television violence and the adolescent boy.
- Berkowitz, L. (1990). On the formation and regulation of anger and aggression: A cognitive-neoassociationistic analysis. *American Psychologist*, *45*, 494.
- Berman, M., Gladue, B., & Taylor, S. (1993). The effects of hormones, Type A behavior pattern, and provocation on aggression in men. *Motivation and Emotion*, *17*, 125–138.
- Birzniece, V., Backstrom, T., Johansson, I. M., Lindblad, C., Lundgren, P., Lofgren, M., ... Zhu, D. (2006). Neuroactive steroid effects on cognitive functions with a focus on the serotonin and GABA systems. *Brain Res Rev*, *51*, 212–239. <https://doi.org/10.1016/j.brainresrev.2005.11.001>
- Blocker, J. S. (1989). *American temperance movements: Cycles of reform*. Twayne Pub.
- Blocker, J. S., Fahey, D. M., & Tyrrell, I. R. (2003). *Alcohol and temperance in modern history: an international encyclopedia* (Vol. 1). ABC-CLIO.

- Bronfenbrenner, U. (1994). Ecological models of human development. *Readings on the Development of Children, 2*, 37–43.
- Brown, J. D., Halpern, C. T., & L'Engle, K. L. (2005). Mass media as a sexual super peer for early maturing girls. *J Adolesc Health, 36*, 420–427. <https://doi.org/10.1016/j.jadohealth.2004.06.003>
- Bureau, U. S. C. (2018). American FactFinder. Retrieved March 27, 2018, from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Burns, K., Burns, K., Novick, L., & Arkin, A. (2011). *Prohibition*. PBS Distribution.
- Bushman, B. J., & Geen, R. G. (1990). Role of cognitive-emotional mediators and individual differences in the effects of media violence on aggression. *Journal of Personality and Social Psychology, 58*, 156–163.
- Centers for Disease Control and Prevention. (2013). Alcohol Related Disease Impact (ARDI) application. Retrieved March 25, 2018, from www.cdc.gov/ARDI
- Centers for Disease Control and Prevention. (2017). Ten Leading Causes of Death and Injury. Retrieved March 22, 2018, from <https://www.cdc.gov/injury/wisqars/LeadingCauses.html>
- Cho, H., Shen, L., & Wilson, K. M. (2013). What makes a message real? The effects of perceived realism of alcohol- and drug-related messages on personal probability estimation. *Subst Use Misuse, 48*, 323–331. <https://doi.org/10.3109/10826084.2012.762528>
- Cohen, E. L., Caburnay, C. A., & Rodgers, S. (2011). Alcohol and tobacco advertising in black and general audience newspapers: targeting with message cues? *J Health Commun, 16*, 566–582. <https://doi.org/10.1080/10810730.2011.551990>
- Cohen-Gilbert, J. E., Sneider, J. T., Crowley, D. J., Rosso, I. M., Jensen, J. E., & Silveri, M. M. (2015). Impact of family history of alcoholism on glutamine/glutamate ratio in anterior cingulate cortex in substance-naive adolescents. *Dev Cogn Neurosci, 16*, 147–154. <https://doi.org/10.1016/j.dcn.2015.04.005>
- Collins, R. L., Ellickson, P. L., McCaffrey, D., & Hambarsoomians, K. (2007). Early adolescent exposure to alcohol advertising and its relationship to underage drinking. *J Adolesc Health, 40*, 527–534. <https://doi.org/10.1016/j.jadohealth.2007.01.002>
- Collins, R. L., Martino, S. C., Kovalchik, S. A., Becker, K. M., Shadel, W. G., & D'Amico, E. J. (2016). Alcohol advertising exposure among middle school-age youth: An assessment across all media and venues. *Journal of Studies on Alcohol and Drugs, 77*, 384–392. <https://doi.org/10.15288/jsad.2016.77.384>

- Criminal Justice Information Services Division. (2015). Table 38: Arrests by Age, 2015. Retrieved March 9, 2018, from https://ucr.fbi.gov/crime-in-the-u.s/2015/crime-in-the-u.s.-2015/tables/table-38/table_38_arrests_by_age_2015.xls
- Crone, E. A., & Dahl, R. E. (2012). Understanding adolescence as a period of social-affective engagement and goal flexibility. *Nat Rev Neurosci*, *13*, 636–650. <https://doi.org/10.1038/nrn3313>
- Dahlberg, L. L., & Mercy, J. A. (2009). History of violence as a public health problem. *Virtual Mentor*, *11*, 167.
- Davis, G. A. (1989). The Requisite Specificity of Alcoholic Beverage Warning Labels: A Decision Best Left for Congressional Determination. *Hofstra L. Rev.*, *18*, 943.
- Diener, E., & Woody, L. W. (1981). Television violence, conflict, realism, and action: A study in viewer liking. *Communication Research*, *8*, 281–306.
- Dodge, K. A., & Frame, C. L. (1982). Social cognitive biases and deficits in aggressive boys. *Child Development*, 620–635.
- Dominick, J. R., & Greenberg, B. S. (1972). Attitudes toward violence: The interaction of television exposure, family attitudes, and social class. *Television and Social Behavior*, *3*, 314–335.
- Ellickson, P. L., Collins, R. L., Hambarsoomians, K., & McCaffrey, D. F. (2005). Does alcohol advertising promote adolescent drinking? Results from a longitudinal assessment. *Addiction*, *100*, 235–246. <https://doi.org/10.1111/j.1360-0443.2005.00974.x>
- Eron, L. D., Huesmann, L. R., Lefkowitz, M. M., & Walder, L. O. (1972). Does television violence cause aggression? *American Psychologist*, *27*, 253.
- Fares, J. World development report 2007: development and the next generation (English), 1 § (2006).
- Federman, J. (1998). National Television Violence Study, Vol. 3. Santa Barbara, CA: University of California, Santa Barbara. *Center for Communication and Social Policy*.
- Ferré-Sadurní, L. (2017, October 25). M.T.A. Will Ban Alcohol Advertising on Buses and Subways. *The New York Times*. Retrieved from <https://www.nytimes.com/2017/10/25/nyregion/alcohol-advertising-mta-subway.html>

- Franklin, J. L. (1977). *Deliver Us From Evil: An Interpretation of American Prohibition*. By Norman H. Clark. (New York: Norton, 1976. 246 pp. Sources and index. \$10.95.). *The Journal of American History*, 64, 816–817.
- Frieden, T., Jaffe, H. W., Cono, J., Richards, C. L., & Iademarco, M. F. (2016). *Youth Risk Behavior Surveillance — United States, 2015* (Morbidity and Mortality Weekly Report No. Vol. 65/ No. 6). Centers for Disease Control and Prevention. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2015/ss6506_updated.pdf
- Fryer, P. (1963). *Mrs. Grundy: studies in English prudery*. Dobson.
- Fullwood, M. D., Basch, C. H., & LeBlanc, M. (2016). Implications for visually stimulating advertisements on NYC subway platforms. *Int J Adolesc Med Health*. <https://doi.org/10.1515/ijamh-2015-0112>
- Gentry, E., Poirier, K., Wilkinson, T., Nhean, S., Nyborn, J., & Siegel, M. (2011). Alcohol advertising at Boston subway stations: an assessment of exposure by race and socioeconomic status. *Am J Public Health*, 101, 1936–1941. <https://doi.org/10.2105/AJPH.2011.300159>
- Gibson, B. (2008). Can evaluative conditioning change attitudes toward mature brands? New evidence from the Implicit Association Test. *Journal of Consumer Research*, 35, 178–188.
- Gibson, B., Redker, C., & Zimmerman, I. (2014). Conscious and nonconscious effects of product placement: Brand recall and active persuasion knowledge affect brand attitudes and brand self-identification differently. *Psychology of Popular Media Culture*, 3, 19.
- Goddings, A. M. (2015). *The impact of puberty on adolescent brain development*. UCL (University College London).
- Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, 79, 701.
- Greenberg, B. S., & Gordon, T. F. (1972). Perceptions of violence in television programs: critics and the public. *Television and Social Behavior*, 1, 244–258.
- Grenard, J. L., Dent, C. W., & Stacy, A. W. (2013). Exposure to alcohol advertisements and teenage alcohol-related problems. *Pediatrics*, 131, e369-79. <https://doi.org/10.1542/peds.2012-1480>

- Guerra, N. G., Huesmann, L. R., Tolan, P. H., Van Acker, R., & Eron, L. D. (1995). Stressful events and individual beliefs as correlates of economic disadvantage and aggression among urban children. *Journal of Consulting and Clinical Psychology, 63*, 518.
- Hastings, G. (2009). "They'll drink bucket loads of the stuff": an analysis of internal alcohol industry advertising documents.
- Hearold, S. (1986). WITHDRAWN: A Synthesis of 1043 Effects of Television on Social Behavior. In G. Comstock (Ed.), *Public Communication and Behavior* (pp. 65–133). Academic Press. <https://doi.org/10.1016/B978-0-12-531956-0.50005-6>
- Housley, K. (1992). "Yours for the Oppressed": The Life of Jehiel C. Beman. *The Journal of Negro History, 77*, 17–29.
- Huesmann, L. R. (1986). Psychological processes promoting the relation between exposure to media violence and aggressive behavior by the viewer. *Journal of Social Issues, 42*, 125–139.
- Huesmann, L. R. (1988a). An information processing model for the development of aggression. *Aggressive Behavior, 14*, 13–24.
- Huesmann, L. R. (1988b). An information processing model for the development of aggression.
- Huesmann, L. R., & Eron, L. D. (1986). The Development of Aggression in American Children as a Consequence of Television Violence Viewing, στο Television and the Aggressive Child: A Cross-National Comparison,(ed.) LR. *Huesmann, LD. Eron*, 45–80.
- Huesmann, L. R., Lagerspetz, K., & Eron, L. D. (1984). Intervening variables in the TV violence–aggression relation: Evidence from two countries. *Developmental Psychology, 20*, 746.
- Huesmann, L. R., & Miller, L. S. (1994). Long-term effects of repeated exposure to media violence in childhood. In *Aggressive behavior* (pp. 153–186). Springer.
- Huesmann, L. R., Taylor, L. D., & Gentile, D. A. (2003). The case against the case against media violence. *Media Violence and Children, 107–130*.
- Huston, A. C., Donnerstein, E., Fairchild, H., Feshbach, N. D., Katz, P. A., Murray, J. P., ... Zuckerman, D. (1992). Big world, small screen. *University of Nebraska*.
- Jo, E., & Berkowitz, L. (1994). A priming effect analysis of media influences: An update.

- Jones, T., Cunningham, P. H., & Gallagher, K. (2010). Violence in advertising. *Journal of Advertising, 39*, 11–36.
- Jung, A. R., & Hovland, R. (2016). Targeting gender: A content analysis of alcohol advertising in magazines. *Health Marketing Quarterly, 33*, 221–238. <https://doi.org/10.1080/07359683.2016.1199210>
- Kantar Media. (2017). Alcohol Expenditures, 2015. Retrieved March 27, 2018, from <http://www.kantarmedia.com/us>
- Konijn, E. A., Nije Bijvank, M., & Bushman, B. J. (2007). I wish I were a warrior: the role of wishful identification in the effects of violent video games on aggression in adolescent boys. *Developmental Psychology, 43*, 1038.
- Krcmar, M., & Hight, A. (2007). The development of aggressive mental models in young children. *Media Psychology, 10*, 250–269.
- Kuntsche, E., Pickett, W., Overpeck, M., Craig, W., Boyce, W., & de Matos, M. G. (2006). Television viewing and forms of bullying among adolescents from eight countries. *Journal of Adolescent Health, 39*, 908–915.
- Lefkowitz, M. M., Eron, L. D., Walder, L. O., & Huesmann, L. R. (1971). *Television violence and child aggression: A follow-up study*. New York State Department of Mental Hygiene.
- Mart, S., & Blakemore, J. (2014). Alcohol Ads on public transit: Policies from major metropolitan areas in the United States. *World Medical and Health Policy, 6*, 280–291. <https://doi.org/10.1002/wmh3.100>
- Martino, S. C., Kovalchik, S. A., Collins, R. L., Becker, K. M., Shadel, W. G., & D'Amico, E. J. (2016). Ecological Momentary Assessment of the Association Between Exposure to Alcohol Advertising and Early Adolescents' Beliefs About Alcohol. *J Adolesc Health, 58*, 85–91. <https://doi.org/10.1016/j.jadohealth.2015.08.010>
- McIntyre, J. J., Teevan Jr, J. J., & Hartnagel, T. (1972). Television violence and deviant behavior. *Television and Social Behavior, 3*, 383–435.
- McLeod, J. M., Atkin, C. K., & Chaffee, S. H. (1972). Adolescents, parents, and television use: Self-report and other-report measures from the Wisconsin sample. *Television and Social Behavior, 3*, 239–313.
- Miles, D. R., & Carey, G. (1997). Genetic and environmental architecture on human aggression. American Psychological Association.

- Metropolitan Transportation Authority. (2018). mta.info | MTA Maps. Retrieved March 27, 2018, from http://web.mta.info/maps/neighborhood_maps.htm
- NASEM. (2017). Community Violence as a Population Health Issue: Proceedings of a Workshop | The National Academies Press. Retrieved March 30, 2018, from <https://www.nap.edu/download/23661>
- Nyborn, J. A., Wukitsch, K., Nhean, S., & Siegel, M. (2009). Alcohol advertising on Boston's Massachusetts Bay Transportation Authority transit system: an assessment of youths' and adults' exposure. *Am J Public Health, 99 Suppl 3*, S644-8. <https://doi.org/10.2105/AJPH.2008.149906>
- NYC Department of Health and Mental Hygiene. (2018). Take Care New York 2020. Retrieved March 15, 2018, from <https://www1.nyc.gov/site/doh/health/neighborhood-health/take-care-new-york-2020.page>
- NYC Planning. (2018). NYC Population: Geographic Reference. Retrieved March 30, 2018, from <https://www1.nyc.gov/site/planning/data-maps/nyc-population/geographic-reference.page>
- Office of Juvenile Justice and Delinquency Prevention. (2015, December 13). OJJDP Statistical Briefing Book. Retrieved from <https://www.ojjdp.gov/ojstatbb/crime/qa05101.asp?qaDate=2014>
- Ouffront media. (2017). New York Billboards | NYC Subway Ads | MTA Advertising. Retrieved March 27, 2018, from <https://www.outfrontmedia.com/whereweare/markets/pages/new-york-city.aspx>
- Outdoor Advertising Association of America. (2016). OUT OF HOME ADVERTISING UP 4.1% IN Q2 2016. Retrieved March 25, 2018, from <http://oaaa.org/StayConnected/NewsArticles/IndustryRevenue/tabid/322/id/4616/Default.aspx>
- Padon, A. A., Rimal, R. N., DeJong, W., Siegel, M., & Jernigan, D. (2016). Assessing Youth-Appealing Content in Alcohol Advertisements: Application of a Content Appealing to Youth (CAY) Index. *Health Communication*, 1–10. <https://doi.org/10.1080/10410236.2016.1250331>
- Pasch, K. E., & Velazquez, C. E. (2013). Alcohol Advertising and Underage Drinking. In *Interventions For Addiction* (pp. 917–923). Elsevier Inc.
- Patton, G. C., Coffey, C., Romaniuk, H., Mackinnon, A., Carlin, J. B., Degenhardt, L., ... Moran, P. (2014). The prognosis of common mental disorders in adolescents: a 14-year prospective cohort study. *Lancet*, 383, 1404–1411. [https://doi.org/10.1016/S0140-6736\(13\)62116-9](https://doi.org/10.1016/S0140-6736(13)62116-9)

- Patton, G. C., Sawyer, S. M., Santelli, J. S., Ross, D. A., Afifi, R., Allen, N. B., ... Viner, R. M. (2016). Our future: a Lancet commission on adolescent health and wellbeing. *Lancet*, *387*, 2423–2478. [https://doi.org/10.1016/S0140-6736\(16\)00579-1](https://doi.org/10.1016/S0140-6736(16)00579-1)
- Pechey, R., Burge, P., Mentzakis, E., Suhrcke, M., & Marteau, T. M. (2014). Public acceptability of population-level interventions to reduce alcohol consumption: A discrete choice experiment. *Social Science and Medicine*, *113*, 104–109. <https://doi.org/10.1016/j.socscimed.2014.05.010>
- Pennock, P. (2005). The evolution of U.S. temperance movements since repeal: a comparison of two campaigns to control alcoholic beverage marketing, 1950s and 1980s. *Soc Hist Alcohol Drugs*, *20*, 15–65.
- Resnick, M. D., Catalano, R. F., Sawyer, S. M., Viner, R., & Patton, G. C. (2012). Seizing the opportunities of adolescent health. *Lancet*, *379*, 1564–1567. [https://doi.org/10.1016/S0140-6736\(12\)60472-3](https://doi.org/10.1016/S0140-6736(12)60472-3)
- Rideout, V. (2015). The common sense census: Media use by tweens and teens. *Common Sense Media, San Francisco, CA*.
- Robichaud, M., & Debonnel, G. (2005). Oestrogen and testosterone modulate the firing activity of dorsal raphe nucleus serotonergic neurones in both male and female rats. *J Neuroendocrinol*, *17*, 179–185. <https://doi.org/10.1111/j.1365-2826.2005.01292.x>
- Robinson, J. P., & Bachman, J. G. (1972). Television viewing habits and aggression. *Television and Social Behavior*, *3*, 372–382.
- Romeo, R. D., & McEwen, B. S. (2006). Stress and the adolescent brain. *Ann N Y Acad Sci*, *1094*, 202–214. <https://doi.org/10.1196/annals.1376.022>
- Rorabaugh, W. J. (1981). *The alcoholic republic: An American tradition*. Oxford University Press.
- Ross, C. S., Ostroff, J., Siegel, M. B., DeJong, W., Naimi, T. S., & Jernigan, D. H. (2014). Youth alcohol brand consumption and exposure to brand advertising in magazines. *J Stud Alcohol Drugs*, *75*, 615–622.
- Sawyer, S. M., Afifi, R. A., Bearinger, L. H., Blakemore, S. J., Dick, B., Ezeh, A. C., & Patton, G. C. (2012). Adolescence: a foundation for future health. *Lancet*, *379*, 1630–1640. [https://doi.org/10.1016/S0140-6736\(12\)60072-5](https://doi.org/10.1016/S0140-6736(12)60072-5)

- Setodji, C. M., Martino, S. C., Scharf, D. M., & Shadel, W. G. (2014). Quantifying the Persistence of Pro-Smoking Media Effects on College Students' Smoking Risk. *Journal of Adolescent Health, 54*(4), 474–480. <https://doi.org/10.1016/j.jadohealth.2013.09.011>
- Siegel, M., DeJong, W., Naimi, T. S., Heeren, T., Rosenbloom, D. L., Ross, C., ... Jernigan, D. H. (2011). Alcohol Brand Preferences of Underage Youth: Results from a Pilot Survey among a National Sample. *Substance Abuse: Official Publication of the Association for Medical Education and Research in Substance Abuse, 32*(4), 191–201. <https://doi.org/10.1080/08897077.2011.601250>
- Siegel, M., Ross, C. S., Albers, A. B., DeJong, W., Charles King, I., Naimi, T. S., & Jernigan, D. H. (2016). The relationship between exposure to brand-specific alcohol advertising and brand-specific consumption among underage drinkers – United States, 2011–2012. *The American Journal of Drug and Alcohol Abuse, 42*(1), 4–14. <https://doi.org/10.3109/00952990.2015.1085542>
- Simon, M. (2008). Reducing youth exposure to alcohol ads: targeting public transit. *J Urban Health, 85*, 506–516. <https://doi.org/10.1007/s11524-008-9280-0>
- Sivolap, Y. P. (2015). [Maternal alcoholism and its impact on child health]. *Zh Nevrol Psikhiatr Im S S Korsakova, 115*, 133–136.
- Slater, M. D., Rouner, D., Murphy, K., Beauvais, F., Van Leuven, J., & Rodriguez, M. D. (1996). Male adolescents' reactions to TV beer advertisements: the effects of sports content and programming context. *J Stud Alcohol, 57*, 425–433.
- Smith, S. L., & Donnerstein, E. (1998). Harmful effects of exposure to media violence: Learning of aggression, emotional desensitization, and fear.
- Snyder, L. B., Milici, F. F., Slater, M., Sun, H., & Strizhakova, Y. (2006). Effects of alcohol advertising exposure on drinking among youth. *Arch Pediatr Adolesc Med, 160*, 18–24. <https://doi.org/10.1001/archpedi.160.1.18>
- Somerville, L. H. (2013). Special issue on the teenage brain: Sensitivity to social evaluation. *Curr Dir Psychol Sci, 22*, 121–127. <https://doi.org/10.1177/0963721413476512>
- Stacy, A. W., Zogg, J. B., Unger, J. B., & Dent, C. W. (2004). Exposure to televised alcohol ads and subsequent adolescent alcohol use. *Am J Health Behav, 28*, 498–509.
- Starcevic, V., & Aboujaoude, E. (2015). Cyberchondria, cyberbullying, cybersuicide, cybersex: “new” psychopathologies for the 21st century? *World Psychiatry, 14*, 97–100. <https://doi.org/10.1002/wps.20195>

- Steinberg, L. (2008). A Social Neuroscience Perspective on Adolescent Risk-Taking. *Dev Rev, 28*, 78–106. <https://doi.org/10.1016/j.dr.2007.08.002>
- Strasburger, V. C., Wilson, B. J., & Jordan, A. B. (2009). *Children, adolescents, and the media*. Sage.
- United States Department of Agriculture. (2015). 2015-2020 Dietary Guidelines - Appendix 9. Alcohol. Retrieved March 25, 2018, from <https://health.gov/dietaryguidelines/2015/guidelines/appendixes/>
- Verlegh, P. W. J., Franssen, M. L., & Kirmani, A. (2015). Persuasion in advertising: when does it work, and when does it not? *International Journal of Advertising, 34*(1), 3–5. <https://doi.org/10.1080/02650487.2014.994732>
- Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *Lancet, 379*, 1641–1652. [https://doi.org/10.1016/S0140-6736\(12\)60149-4](https://doi.org/10.1016/S0140-6736(12)60149-4)
- Wilcox, G. B., Kang, E. Y., & Chilek, L. A. (2015). Beer, wine, or spirits? Advertising's impact on four decades of category sales. *International Journal of Advertising, 34*, 641–657. <https://doi.org/10.1080/02650487.2015.1019961>
- Wind, Y. J., & Sharp, B. (2009). Advertising empirical generalizations: implications for research and action. *Journal of Advertising Research, 49*, 246–252.
- Zerhouni, O., Bègue, L., Duke, A. A., & Flaudias, V. (2016). Dynamic Exposure to Alcohol Advertising in a Sports Context Influences Implicit Attitudes. *Alcoholism: Clinical and Experimental Research, 40*, 422–428. <https://doi.org/10.1111/acer.12966>

Appendix A - Data Collection Train Route One for NYC MTA Transit System

- Start with 3 train at 110th toward 116, 125, 135, 145, 148
- Return to 2 train toward 96, 72, 42, 34, 14, Chambers, Park Place, Fulton, Wall St, Clark St, Borough Hall, Hoyt, Nevins, Barclays, Bergen, Grand Army, E. Pkwy, (2/5) = Franklin Av (split), (2/5) = President, (2/5) = Sterling, (2/5) = Winthrop, (2/5) = Church, (2/5) = Beverly, (2/5) = NewKirk, (2/5) = Flatbush
- Go back to Franklin and transfer to 3 train toward Nostrand, Kingston, Crown Hts, Sutter, Saratoga, Rockway, Junius, Penn Ave, Van Siclen, New lots,
- Go back to Barclays and transfer to Q-B train toward 7 Av, Prospect Park, Parkside, Church, Beverly, Cortelyou, NewKirk, Ave H, Ave J, Ave M, Kings Hwy, Ave U, Neck, Sheephead, Brighton beach, Ocean Pky, W. 8, Coney Island
- Go back to W. 8th and transfer to F train toward Neptune, Ave X, Ave U, King Hwy, Ave P, Ave N, Bay Pky, Ave I, 18 Ave, Ditmas, Church, Fort Ham, Prospect, 7Av, 4 Ave, Smith, Carroll, Bergen, Jay St., York, E. Broadway, Delancy, 2 Ave, Broad Lafayette
- At Broad Lafayette transfer to D train toward Grand, Barclays, 36 St., 9 Av, Ft. Ham, 50, 55, 62, 71, 79, 18 Av, 20 AV, Bay Pky, 25 Av, Bay 50, Coney Island
- At Coney Island transfer to N toward 86th, Ave U, King Hwy, Bay Pky, 20 Av, 18 AV, N. Utrecht, Ft. Ham, 8 AV, 59 ST
- At 59 St. transfer to R train toward Bay Ridge, 77, 86, 95

- Go back to 59 St on R toward 53, 45, 36, 25, Prospect, 4 Av, Barclays, DeKalb, Jay Metro, Court, WhiteHall, Rector, Cortlandt, City Hall, Canal, Prince, 8th, 14-Union Sq, 23, 28, 34, 42, 49, 57, 5 AV, Lex, Queens Plaza, 36, Steinway, 46, N. Blvd, 65, Jack Hts, Elm Hurst, Grand Av, Woodlawn, 63 Rego, 67, Forest Hills
- At Forest Hills transfer to E toward 75 AV, Kew Gardens, Briarwood, Van Wyck, Sutphin Blvd, Jamaica Ctr
- Go back to Briarwood and transfer to the F train toward Sutphin Blvd, Parsons, 169, 179,
- Go back to Briarwood and transfer to the E train toward Jackson Hts, Ct. Sq 23 St, Lex_53 St, 5 Av_53 St, 7 Av
- Go back to Lex_53 and transfer to the 6 train at 51 St, then transfer to the 4/5 train at Lex_59 St, 86, 125, 138, 149, 167, 170, Mt. Eden, 176, Burnside, 183, Fordham, Kingsbridge, Bedford, Mosholu, Woodlawn
- Go back to 149 Grand Concourse and transfer to the 5 train toward 3 AV_149, Jackson AV, Prospect AV, Intervale AV, Simpson St, Freeman, 174, W. Farms, E. 180
- At E. 180 continue on 5 train toward Morris Park, Pelham Pky, Gun Hill, Baychester, Eastchester Dyre
- Go back to E. 180 and transfer to the 2 train toward Bronx Park E, Pelham, Allerton, Burke, Gun Hill, 219, 225, 233, Nereid, Wakefield

- Ride the 2 train back to 125 transfer to M60 to D train at 125 toward 135, 145, 155, 161, 167, 170, 174-175, Tremont AV, 182-83, Fordham, Kingsbridge, Bedford, Norwood_205.
- Go back to 125 and transfer to the M3 bus or M60.

Appendix B - Data Collection Train Route Two for NYC MTA Transit System

- Start on **C train** at 116
- 110, 103, 96, 86, 81, 72, 59, 50, 42, 34, 23, 14, W 4, Spring, Canal, Chambers, Fulton, High, Jay Metro, Nevins, Lafayette, Clinton, Franklin, Nostrand, Kingston, Utica, Ralph, Rockaway, Broad Junction, Liberty, Van Siclen, Sheppard, Elucid, Grant, 80, 88, Rockaway Blvd (split), 104, 111, Ozone.
- **Go back to Rockaway Blvd**, Adueduct, Howard Beach, Broad, Beach 67, Beach 60, Beach 44, Beach 36, Beach 25, Far Rockaway.
- **Go back to Broadway Junction** and **take J train** toward Alabama Av, Van Siclen, Cleveland, Norwood, Crescent, Cypress, 75 St, 85 St, Woodhaven, 104, 111, 121, Sutphin Blvd, Jamaica Center.
- **Go back to Broadway Junction** and continue toward Chauncey, Halsey, Gates, Kosciuszko, Myrtle, Flushing, Lorimer, Hewes, Marcy
- **Go back to Broad Junction** and **take L train** to Atlantic Av, Sutter, Livonia, New lots, E. 105, Canarsie
- **Go back to Broad Junction** and **stay on L train** to Buschwick, Wilson, Halsey, Myrtle, DeKalb, Jefferson, Morgan, Montrose, Grand, Graham, Lorimer
- **At Lorimer transfer to G train** and proceed on Metropolitan, Broadway, Flushing, Myrtle, Bedford, Classon, Clinton, Fulton, Hoyt
- **Go Back to Metropolitan** and **continue on G train** to Nassau, Greenpoint, Hunters, 21 St., Court Sq.,

- **At Court Sq. transfer to the 7 train** and proceed to Queensboro Plaza, 33, 40, 46, 52, 61, 69, 74, 82, 90, Junction Blvd, 103, 111, Mets, Flushing
- **Go back to Queensboro Plaza** and **transfer to N-W** for 39 St., 36, Broadway, 30, Astoria, Ditmars
- **Go back to Queensboro Plaza** and **transfer to 7 train** for Hunters Point, Vernon, Grand Central, 5 AV, 42 Grand Central, Hudson Yards
- **Go back to Grand Central** and **take 6 train** to 51, 59, 68, 77, 86, 103, 110, 116, 125, 3 AV, Brook AV, Cypress, E. 143, E. 149, Longwood, Hunts Point, Whitlock, Elder, Morrison, St. Lawer, Parkchester, Castle Hill, Zerega, Westchester, Middletown, Buhre, Pelham
- **Go back to Grand Central** and **continue on 6 train** toward 33, 28, 23, 14, Astor, Bleeker, Spring, Canal, City Hall.
- **Go back to Grand Central** on **6 train** and **transfer to 7 train** and **transfer at Times Sq. 42nd** to the **1 train** toward 34, 28, 23, 18, 14, Christopher, Houston, Canal, Franklin, Chambers, Rector, South Ferry
- **Go Back to Times Square** and **continue on the 1 train** toward 50, 59, 66, 72, 79, 86, 96, 103, 110, 116, 125, 125, 137, 145, 157, 168, 181, 191, Dyckman, 207, 215, 225, 231, 238, 242.

Appendix C - Subjective Interpretations of Unique Advertisements

Vio001	A young woman is featured in the center of this advertisement for a television series. Behind her is a light gray transparent background with upside down crowns entangled with vines and roses. Behind the outline of the young women lies an image of a warrior skull with fangs rising underneath her waistline. On the ground, snakes arising from the ruffled roses in striking distance of human flesh while scorpions surround the head of the skull with exposed claws.
Vio002	This advertisement is for the youth movie, “Despicable me.” Two animated characters driving a shark faced speed car with spiked wheels. The Animated gold futuristic car with two characters driving toward despicable times. The character behind the wheel has a sinister look. The back of the vehicle carries a large dolphin speared headed missile. Each rear end of the vehicle bears metal extensions of pointed missiles with bulging red spear rockets aimed in the direction of bad times. The text reads “Let the bad times roll”.
Vio003	In this advertisement for the Netflix series, entitled “Orange is the New Black” a band of seven women are pictured in orange jump suits. Some of the ladies have crossed arms while others hold police clubs, long knives and handcuffs. All women stand aligned and ready to rumble. Their faces hold expressions that show that they are serious and not to be challenged.
Vio004	This advertisement for a television show, features a burning newspaper in close proximity to the male reader’s fingertips, while he is reading news about the country. The reader appears to be an unconcerned consumer of late night news, with raised eyebrow and bruised red lips.
Vio005	This advertisement is a promotion for a new television series that illustrates a worried woman in desperate need to utilize her fingernail claws to grab a gun for survival. The smeared traces of lipstick across the front of teeth accompanied with nail-biting offers clues of why women feel the urge to keep a firearm near. Young females may identify with the glossy pouty lips while young males could associate being violent or perceive the finger in the mouth as characteristics young females require for sexual advances.
Vio006	In this advertisement for a Netflix series, a popular African American male Marvel character is standing in front of a colorless city bridge. His shirt is pierced with multiple bullet holes in the chest and shoulder area of the body. The body is absent of blood or pain but is accompanied by a fierce facial expression.

Subjective Interpretations of Unique Advertisements	
Vio008	This television show advertisement highlights a group of individuals stranded on an island after experiencing airplane failure (shown in the background). The image demonstrates a strong presence of blood, isolation, pain, turmoil and torn clothing. Each group member conceals emotional hardship, while one uses a sharp spear to attack a wild bore in order to survive. The three females and five males caricature cartoon-like representation of goofy exaggerated faces perhaps meant to draw attention from children and adolescents that perceive the advertisement as a kid's show, but it is probably not.
Vio009	This advertisement for the premier of a new television show features three individuals with powerful eyes staring with intent to preach a message. Explosions hanging over their shoulders, with horizon filled eye-glasses illuminating dangerous lives. Silhouette characters are shown bleeding through the pinkish red background with guns.
Vio010	In this advertisement for a new television series, a young man is anxiously looking through a window at an upside-down street view nestled in mountains, with upside-down treetops peeking through the hazy mist. Three words are highlighted in capital letters: FEAR. HUMAN. NATURE.
Vio011	An advertisement for a television show features a stern faced male embossed behind buildings and forklift cranes digging into the powerful red background, with a church steeple behind him. A street is filled with a line of telephone line poles with human beings outlined in red with two guns blazing in the direction of the fierce man's bearded chin.
Vio012	In this advertisement for a new television series, two individuals are on stage searching for a laugh. On one side, the male leans his head back, looks up, holding his chin and pondering the microphone-noose that hangs over his head. On the other side, is a tightly gripped microphone-noose is held by a woman with a strong demeanor, hand on her hip, that represents no laughing matter is going on here.
Vio013	This advertisement for a Broadway play shows a group of mixed females and males with clenched jaws and fists digging sharp objects into the belly of a greyish sea animal.

Subjective Interpretations of Unique Advertisements	
Vio015	In this television advertisement, a serious looking young woman with bullet holes in her collar bone is shown staring at the viewer. The words “ass kicker” on a bright yellow background are shown to her right.
Vio016	This television show advertisement shows a man with mirage filled eyeglasses inhaling a cigarette as blood splatter oozes his blown off shoulder. The words in capital letters to his left read: “BLOOD SUCKER.” Blue silhouette guns cocked and aimed at the esophagus of the blood sucker man.
Vio017	This advertisement for a new drama series shows an individual sitting on a stool contemplating or waiting for a hanging noose microphone to stop him from dying. Opposite another frustrated man self-inflicting pain on himself while searching for more than a stool.
Vio020	This movie advertisement shows a city under siege by a large reptile-looking animal with sharp pointy spinal cord. In the background are buildings burning all across the city with dark and gloomy skies.
Vio021	This ad for a new drama series, shows two women flustered by the presence of a microphone and stage. One lady’s arms are crossed as if they have been persecuted like Jesus of Nazareth. The other woman portrays an individual at peace after acceptance of a microphone noose dangling above her head.
Vio022	In this movie advertisement a fierce and determined white male is shown with directed intent to kill an individual with a powerful handgun. The tightly gripped handgun with the trigger finger firmly pressed exposes a lens of a trained assassin.
Vio023	This movie advertisement shows a pair of eyes with flamed eyeballs overlooking a man consumed with worry. The greyish cheekbones display flesh engraved tattoo characters that display a dark horizon.
Vio024	This advertisement for a television series depicts a white and light blue background with a noose dangling from the sky. One man is shown who appears to be drained and awaiting his fate while another seems eager to interact with a microphone.
Vio025	This advertisement for a television show pictures an armed well-dressed white man clothed in machine gun bullets while hugging two semi-automatic assault rifles close to his heart. He is wearing a suit and black tie with a disarming personality. His assortment of guns in the clutch of each elbow includes a handgun with pointed toward his core.

Subjective Interpretations of Unique Advertisements	
Vio026	This movie advertisement shows two faces both with a distinct look of fury. One pale face with an eyeball filled with blood strains of lines. The other fierce clay paste face with two blood-shot gold and red lined eyeballs and stenciled anchors tattooed deeply in the cheekbone and chin. In between both of these faces emerges a futuristic alien-like cement covered creature with snake filled arms encapsulating a sharp spike.
Vio027	This advertisement for a new television series shows a young lady with outstretched arms with a noose microphone hanging above her dip-backed head. Another shown in the adjacent panel shows an individual laid out on the ground as in a crime scene with the weapon of choice resembling a scrambled designed hand gun microphone pointed toward the persons abdomen.
Vio028	This movie advertisement shows an animated recognizable character (Spiderman) soaring through the air being chased by a muscular robotic creature with flashes of fire streaming from his palms, feet, and chest area. The robotic futuristic character displays a laser-like determined eye focus on attacking the spider-man in front.
Vio029	In this movie advertisement, an orange colorized blue sky is the background with a strong woman kneeling and wondering in the wet sand in the foreground. The woman grips a long sword with a tight grip of force while holding a sharp edge shield
Vio030	This movie advertisement shows a determined king embracing a legendary sword close to his heart. His fists extremely tight around the top and base of the sword. The look in his eyes is serious and provokes fear.
Vio031	This advertisement for an off-Broadway play shows a group of young mixed females and males with street made weapons aggressively attached to their hands. Each participant uses all body parts to demonstrate a striking karate move with excessive force. The rhythm of the movement with these sticks, brooms, garbage can, and garbage can lids hold the potential to stomp an individual mercilessly.
Vio032	This movie advertisement shows a war battlefield in the background mixture of blue smoky grey clouds. Large cannon ball residue leaking into the atmospheric sky while warriors with sharp swords draw these weapons on the ground troops beneath them fighting to live. The attacking wolf head gear along with sparrow shoulder claws that opens up the arm pits for the character to expose a long killing sword. Sharp arrowhead is being pointed by a white male with massive war gear on and ready to release a wrath of bow and arrows into a wall of enemies. All of the other four characters are staring at the viewer.

Subjective Interpretations of Unique Advertisements	
Vio033	This advertisement contains no words. There is a close up of a half one-eyed face with etched stencil characteristics tattooed above and below the eye. The bridge of the nose is raised along with an unusual two eyeballs with distinct blood vessels of orange and yellowish color looking intently at an individual.
Vio034	In this movie advertisement, an animated boy character points a glowing sword with sharp edges toward the viewer. Behind him a big red nose fluffy bird animated character ready to slash his tightly gripped sword in the direction of potential enemies. Behind these two characters stands a tall smiling male animated figure with a sharp moose head helmet with a protruding sword, raising out over his shoulder.
Vio035	This movie advertisement shows two males, one in front of the other, both with guns. In the back is a big muscle bald-head man with both arms extended firing a powerful hand gun in each hand while bullets discharge from the two guns. In the front, underneath the big man's biceps stands a black male squeezing a black firearm in no particular direction.
Vio036	This PG-13 movie advertisement depicts the bloody outline of a human face in the shape of mechanical exposed tic toc clock. Blood red eyes drawn in a wheel barrel oval shape with detached eyeballs and levers, which make up a pointy nose. The base of the face drips layers of blood off the exposed chin area of the faceless human being while displaying some of his biological anatomy in an open watch time-piece.
Vio037	In this advertisement for a cable show, a black background surface exposing only half of an alien human like face with elf pointy ears and stained blue veins inside his eyeball is shown. The exposed side of his face is enflamed with ridges of lacerations all along and up toward the left side of his brain. The lifeless figure has devil horns rising from the top of his skull along with a miniature female exiting the side of his neck.
Vio038	This advertisement for a Broadway play shows a strong half masked faced of a white male clinging onto a rope with an intense stare to unwind fantasies for all those whom he comes into contact with. The well-dressed opera attire and pierced blood lips and raised phantom eyebrows appear fierce.

Subjective Interpretations of Unique Advertisements	
Vio039	This advertisement for a cable television show has a background of a house that is all up in flames through the window pane in the backdrop. A man and woman appear unfazed by the heat of the flame. The man's body language is firm while the woman appears afraid or unable to speak.
Vio040	In this movie advertisement, a galaxy background is shown with several flying explosive meteoroids bursting in the in air and on the ground. A group of guardians with animalistic and human-like characteristics hold futuristic guns and deadly spears. A raccoon holds an automatic barrel weapon pointed and ready to unleash a flurry of bullets.
Vio041	In this movie advertisement, a galaxy background is shown with several flying explosive meteoroids bursting in the in air and on the ground. A group of guardians with animalistic and human-like characteristics hold futuristic guns and deadly spears. A raccoon holds an automatic barrel weapon pointed and ready to unleash a flurry of bullets.
Vio042	This advertisement for an R rated movie shows rows of Black and White Americans running in rage toward one another with bald up fists, knives, guns, rifles, and extreme hatred. These acts of violence define an era in this nation's history fueled by freedom and hate.
Vio043	In this advertisement for a PG-13 movie, two white men hold double barrel hand guns with an intense look to pull the trigger. The shiny gold and silver-plated weapons appear ready to send an individual to meet their maker
Vio044	In this advertisement, the presence of red stars behind the eyes of a white shooter with a gun pointed directly toward you with intent to fight. The boiling red layered ink over laced the determined white face and strong two-handed loaded weapon grip portrays a life may be over and never forgotten.
Vio045	In this advertisement for a weekend television show a group of males and females standing on the steps of law and order. Civil looks determined to always fight, uphold law, and never settle while one of the females expose her deadly hand gun.
Vio046	This movie advertisement shows a hungry young innocent women draped in flames of fire. She is dressed in armor and maintains six lethal arrows spread across her reptile looking shoulder wing.
Vio047	This advertisement shows balloon squid shaped futuristic lighted flying machines overlooking a metropolis. In the middle of the city an explosion covers a colony of blocks. Broken glass and unlivable buildings are on the cusp of being under siege by alien machinery.

Subjective Interpretations of Unique Advertisements	
Alc001	In this advertisement for a Mexican beer, the bright red background with a centered chilled beer bottle and can wrapped in gold trimming suggest two is better than one. Both the bottle and can are labeled with the words “Victoria” implying victory is just a sip away. The presence of refreshing chilled bubbles provides a visual stimulus of a refreshing product. Red is a color that grabs and pulls you in. The words “La Chela Mas Chida” seems exotic, or exciting. Many innocent female adolescents may identify with the name “Victoria” and say “look, a beer named after me”.
Alc002	This advertisement for Tito’s Handmade vodka pictures a wood grain textured background displaying a handmade American vodka with approval from CNN and Spirit Journal. A gold spirits’ competition emblem along with wine enthusiast ratings higher than international vodka brands. Informative 40% alcohol per volume of vodka intended to savored responsibility is highlighted in small caps at the edge of the advertisement.
Alc003	The image for this advertisement shows a balcony terrace view overlooking the city of Barcelona through the eyes of a young lady holding a curious smile and a premium stylish liquor bottle. The slogan alludes to “something wonderful is about to happen.” before the celebration. Consumers of the product only need to believe that wonderful is near and about to happen.
Alc004	Nightlife inside of a casino with live musicians and colorful drinks are directed towards Asian American communities in this advertisement. The advertisement is actually for a casino, but urges the consumer to come and try different drinks. The choices resemble three curvy distinct alcoholic beverage glasses with ice cubes filled to the brim with a mixture of colors including blue Hawaiian, key lime and strawberry delight. Each glass is caressed with a unique garnish of fruit with either one or two straws awaiting a pair of lips to consume the tasty colorful alcoholic beverages.
Alc005	This advertisement that was sponsored by Samuel Adams brewery shows, an older man and younger woman sit at the bottom of the stands with a bottle of beer tightly grasped by the lady. The stands are wide-open with only these two in view. The male figure loosely hangs on to the microphone while keeping a firm tilt grip on the alcoholic beverage. Despite being in the ninth and close to rock bottom. The two appear to have found comfort in an alcoholic beverage.

Subjective Interpretations of Unique Advertisements	
Alc006	A foam-filled top followed by a pristine gold outlined in a tall beer glass with the words Heineken etched on the glass is the centerpiece of this advertisement. The slogan above the foam reminds the consumer that Heineken was found only in Amsterdam but now Americans can indulge in this fresh brewed beverage.
Alc007	In this advertisement, which was sponsored by New York City's "Vision Zero" project to reduce pedestrian fatalities caused by traffic crashes, the flash of lights is beamed directly on a bicyclist in the night. This dramatization of a drunk driver hitting a pedestrian resulted from others and the driver being unaware that one more drink can hurt and impact a multitude of lives. Vision zero is, in part, about stopping your friends from having too much to drink by cutting them off so they limit harm to themselves or others.
Alc008	In this variation of an advertisement for Victoria beer described above, a gold bracelet over the fiery bright colored illustrative red surface is shown with three versions of ice-cold beer beverage sizes. Each bubble sweat drenched beverage varies in size increment from 8 FL ounces to 32 FL ounces to 12 FL ounces. The tops of the open bottles present an image that aims to quench thirst despite being wrapped in red heat.
Alc010	An inviting sky with hands clenched with beers and dancing in the street is the focus of this advertisement for "presidente" beer. The sense of community among family and friends highlights good times whether one is located in their home country or afar. The vibrant scene showcases the fun available to those that lose themselves in the moment of loving one's country.
Alc011	In this third variation for "Victoria" beer, one tall alcoholic bottle and a beer can are featured on a red background layered with Mexican words. The presence of the thirst-quenching advertisement speaks directly to those that identify with being Mexican or Mexican-American.
Alc012	In this two panel "Smirnoff" vodka advertisement, a clear glossy white background boasts Smirnoff is the best for everyone and preferred over four more expensive vodkas. The red bedazzled bottle is fancy, curious and endorsed by the Huffington post.
Alc013	While this advertisement is for a restaurant, "Dallas BBQ," the words urge the viewer to cool off with colorful alcoholic beverages that illuminate rainbow colors that go well with ribs, chicken or steaks. Multiple locations in the four boroughs supply bottles or glasses with a layered nondescript alcoholic beverages promise to quench the thirst of a good meal.