

# Calorie Postings in Chain Restaurants in a Low-Income Urban Neighborhood: Measuring Practical Utility and Policy Compliance

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## Abstract

Current strategies for combating obesity include recent federal legislation mandating calorie count postings in chain restaurants. This study describes the current practice of menu board calorie postings in a low-income urban neighborhood, identifies the extent to which current practice complies with existing policy, and evaluates the practical utility of menu boards to consumers. We conclude that although most postings were legally compliant, they did not demonstrate utility. Menu postings for individual servings are easily understood, but complex math skills are needed to interpret meals designed to serve more than one person. In some items, calories doubled depending on flavor and the calorie posting did not give enough information to make healthier selections. We identified specific strategies to improve practical utility and provide recommendations for policy implementation.

## Keywords

Legislative health policy; Obesity; Point-of-purchase calorie postings; Fast-food

## Background

The primary risk factors for overweight and obesity in the general population are overconsumption of calories and physical inactivity. [1, 2] Americans now consume an estimated one third of their total calories [3] and spend almost half their annual food dollars on foods prepared outside the home. [4] Consumers, however, are generally unaware of, or inaccurately estimate, the number of calories in restaurant foods. In one survey adults underestimated the calorie content of take-out food by nearly half, with an average error of almost 650 calories per item. [5]

To provide consumers with relevant facts about food choices in restaurants so that they can make informed and healthier selections, a menu labeling provision was included in the Affordable Care Act section 4205 and passed into law in March 2010. This provision requires restaurants with 20 or more locations to provide calorie data and additional nutritional information for menu items

and self-service foods. Based on this recently enacted legislation and subsequent publication in the Federal Register April 6, 2011, the Food and Drug Administration (FDA) is currently accepting recommendations to guide chain restaurants in how best to post calorie counts on menu boards. Although the FDA has been thorough and thoughtful in the solicitation and consideration of stakeholder comments, it remains a problematic challenge, because published research to date has produced inconsistent findings about the ideal format and overall efficacy of calorie postings in restaurants. [2, 5, 6–18]

For example, two recent studies in adjoining counties in Washington State produced inconclusive results. Pulos and Leng [17] evaluated the calorie content of meals ordered before and after menu labeling laws were instituted in Pierce County (population 814,600), revealing significant differences in food purchasing behavior with a reduction in calories purchased after the menu-posting legislation. In contrast, Finkelstein et al. [13] repeated a similar study in adjacent King County (population 1,933,400) and found no difference.

There are several plausible explanations for such discrepancies. It is possible that not all restaurants are in compliance with current regulations, that restaurants are in compliance but their calorie postings are not in a form that can be used by consumers, or that some consumers choose not to use the postings to guide purchasing behavior.

We undertook an evaluation of the current compliance with FDA guidelines and the practical utility of calorie posting in fast-food menu boards in Harlem, New York. Harlem is an urban inner city community of low socioeconomic status in New York City where there has been a standard menu labeling law since 2006. New York's law included some, but not all, of the new federal requirements.

## **Aims**

The aims of this study were to: (1) describe the current practice of menu board calorie postings of national restaurant chains in a low-income urban neighborhood, (2) identify the extent to which current practice complies with existing regulations, and (3) evaluate the practical utility of menu boards to consumers.

## **Methods**

First, we reviewed the Federal Register and the related FDA guidelines. [19] Table 1 summarizes the legislation and the FDA guidelines, or pending action if guidelines are not yet available.

Table 1 Federal regulations and FDA guidelines for menu labeling in chain restaurants:

<b>Federal regulation for menu board displays</b>	<b>FDA guideline</b>	<b>Effective date</b>
1. The number of calories should be posted in close proximity to each standard food item	Disclose the number of calories in each standard menu item	Enacted 07 July 2010

2. The nutritional information should be provided upon request	Provide a “prominent, clear, and conspicuous” statement on about the availability of the written nutrition information	Enacted 07 July 2010
3. A prominent, succinct statement concerning suggested daily calorie intake should be displayed	The following language should appear on menu boards: “A 2,000 calorie diet is used as the basis for general nutritional advice; however, individual calorie needs may vary”	Enacted 06 April 2011
4. The calories should be posted in the context of a total daily diet. e.g., this item has 1,000 calories, which is one half the total daily recommended calories for an adult	Proposed consideration: develop requirements for a statement that puts the calorie information in the context of a total daily caloric intake	FDA must establish guidelines to operationalize
5. A standard method should be determined for menu items that come in different flavors, varieties, or combinations	Proposed consideration: means, ranges, averages, or other methods are under consideration	FDA must establish guidelines to operationalize

We then developed a measure of “practical utility.” Since the intent of the legislation is to provide customers with information they can use to make healthier and lower calorie food choices, we defined practical utility by the ability to use the information available on the menu board to calculate (1) what constitutes a single serving and (2) the number of calories in a single serving. We combined the FDA guidelines and this measure of practical utility to develop a seven-item menu-rating tool. The tool was validated by three of the authors (EC, EL, and CA), by independently rating a series of menu boards and comparing the results. Discrepancies were discussed and logic rules were developed.

To sample current practice in a low-income urban neighborhood, we selected Harlem, New York. We defined the geographic boundaries of Harlem using zip code maps. The area surveyed included the seven zip codes representing Harlem (10026, 10027, 10029, 10030, 10035, 10037, and 10039). We designated four areas within each zip code that were approximately ten city blocks long and three avenues wide. These designated areas created a total of 28 different maps covering the entire Harlem neighborhood.

To collect the data, volunteers equipped with digital cameras worked in pairs and canvassed each designated area block by block to identify national restaurant outlets. Inclusion criteria for restaurants were that the chain met the federal requirement for mandatory menu postings, i.e., 20 or more outlets. Individual food items were rated by scoring “yes” if the item met the FDA mandated criteria or our measure of practical utility and “no” if they did not.

## Results

A total of 70 menus and menu boards from 12 restaurant chains were photographed, and 200 food items were rated. Of the five FDA recommendations, two have established guidelines for implementation; three are awaiting implementation guidelines and are therefore not yet enforced nationally. Table 2 summarizes the FDA or utility indicator and the percentage of restaurants that met the requirement.

Table 2 Evaluation tool for menu board based on FDA guidelines, regulations, and practical utility (N = 200 menu items):

<b>Origin of indicator</b>	<b>Regulation, guideline, or utility item</b>	<b>Percentage of items that met FDA-approved guidelines or recommendations</b>
FDA	1. Calories for items are displayed in proximity to food items on the menu board	93% (186 out of 200)
FDA [a]	2. Menu board contains a statement that written nutritional information is available on request	0% (0 out of 200)
FDA [a]	3. Menu board contains a succinct statement regarding suggested caloric intake	0% (0 out of 200)
FDA [a]	4. Menu board contains a statement that puts the calories in context of total requirements	0% (0 out of 200)
FDA	5. Menu board provides nutrient content for standard menu items that come in different flavors, varieties, or combinations but are listed as a single menu item	80% (160 out of 200) provided ranges. But the ranges did not provide enough information to determine the calories per serving
Practical utility	6. Menu board provides sufficient information to determine a single serving	47% total percent for indicator included both single serving and multiserving foods: (a) 98% if item is single serving; (b) 0% if the item is a multiserving
Practical utility	7. Information is provided on how to order in the upper and lower range of a food item	0%

[a] Pending FDA rulings on implementation, not yet enforced

The photographs revealed six different categories of food offerings on menu boards:

(1) Single-serving items which did not vary in flavor or preparation (30 out of 200, Figure 1)



FIGURE 1. Examples of calorie postings of single-serving items.

(2) Single-serving items which varied in flavor or preparation and where such variation affected calorie counts (50 out of 200, Figure 2)



FIGURE 2. Single-serving items where variation in preparation changes the caloric count of a single serving.

(3) Combination meals and children's meals which varied with toppings, sides, or in preparation and were designed to be eaten by one person (even though in some combinations the meals exceeded the 2,000-calorie daily calorie level; 55 out of 200)

(4) Side orders or desserts which could be ordered individually or as part of combination meals (25 out of 200)

(5) Multiserving items such as buckets of chicken and whole pizzas (40 out of 200; Figures 3 and 4, respectively)

		Calories		Calories
<b>6 Pcs.</b> 1 Lg. Side	12.99	1,200-4,250	<b>9.99</b> <small>Chicken Only</small>	630-2,940
<b>8 Pcs.</b> 2 Lg. Sides & 4 Biscuits	18.99	1,620-6,180	<b>12.99</b> <small>Chicken Only</small>	840-3,920
<b>12 Pcs.</b> 3 Lg. Sides & 6 Biscuits	26.99	2,430-9,270	<b>18.99</b> <small>Chicken Only</small>	1,260-5,880
<b>16 Pcs.</b> 4 Lg. Sides & 8 Biscuits	33.99	3,240-12,360	<b>23.99</b> <small>Chicken Only</small>	1,680-7,840
<b>Variety Bucket</b> 2 Lg. Sides & 4 Biscuits	17.99	2,200-5,860	<b>11.87</b> <small>Chicken Only</small>	1,420-3,600
<small>Extra charge for breast pc. substitution or corn (where available).</small>				
<b>Individual Meals</b>				
				Calories
<b>1 Pc. Breast</b>	6.17			390-1,190
<b>2 Pc. Drumstick &amp; Thigh</b>	5.99			420-1,240
<b>2 Pc. Breast &amp; Wing</b>	6.99			470-1,340
<b>3 Pc. Drumsticks &amp; Thigh</b>	6.99			490-1,620
<b>3 Pc. Breasts &amp; Wing</b>	8.59			550-1,830
<b>4 Pc. Drumsticks &amp; Thighs</b>	8.89			490-2,220

FIGURE 3. Calorie ranges for multiserving buckets of chicken.

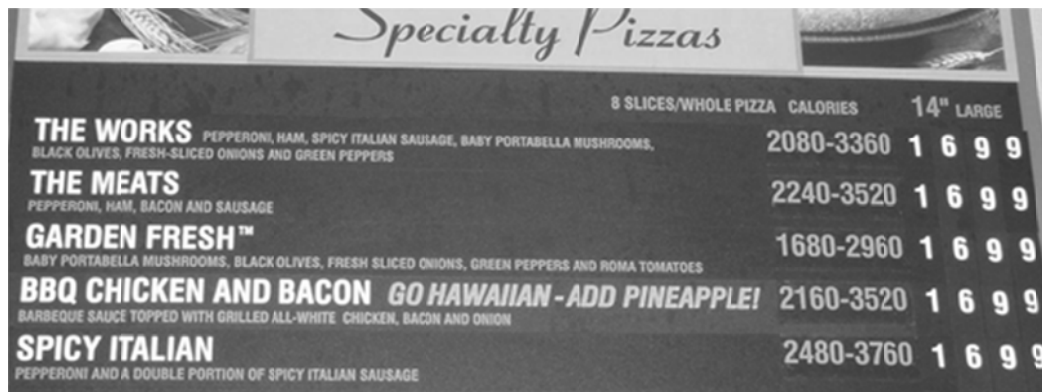


FIGURE 4. Calorie ranges for pizza with different toppings.

(6) Additions such as pizza toppings (e.g. sausage), condiments (e.g., mayonnaise), and sandwich options (e.g., sweet peppers; 0 out of 200)

The majority of the items on the menu board were combination meals rather than individual items, and that ratio was represented in our sample. Table 3 excerpts a sample of our data: the menu item, utility of the posting, calories, price, the calories/cost ratio (expressed as calories per dollar cost of the food), and the approximate percentage of a 2,000-calorie daily diet represented by a serving of the item (where a serving size and calorie value calculation could be performed).

Table 3 Menu item, utility, calories, price, caloric ratio, and approximate percent of daily caloric requirement of sample items of chain restaurants:

Menu item	Utility (ability to calculate a number of calories in a single serving)	Calories	Price	Caloric ratio	Approximate percent of daily requirement
Sausage burrito	Yes	300	\$1.00	300	6
Hash brown	Yes	100	\$1.00	100	1
Triple midwest burger with cheese	Yes	1,270	\$3.99	318	70
Triple midwest burger with cheese combo meal	Yes	3,910	\$6.39	611	200
Whipped drink: Blue	No	Small 140–330; Medium	\$2.99; \$3.59; \$4.29	47–110; 58–136; 63–153	12; 25; 30

raspberry, coffee, Mountain Dew; vanilla bean, strawberry, orange		210–490; Large 270–650			
Garlic parmesan breadsticks	Yes	1,650	\$4.99	330	75
Little bucket parfait	No	230–390	\$1.69	136–230	12.5
9-piece chicken nugget meal		720–1,370	\$5.99	120–229	30–75
Filet fish	No	760–1,090	\$6.19	122–177	30–50
Foot-long hero sandwich combo	No	500–2,080	\$7.50	67–277	50–100
Kids meal	No	400–700	\$4.60	86–152	25–30
Cheeseburger (double burger)	No	140	\$0.19	737	27–42
Mashed potatoes	No	15–260	\$1.59	194–163	12.5
Large garden fresh vegetarian pizza	No	1,680–2,960	\$16.99	99–174	Unable to determine
Large BBQ chicken, bacon, pineapple pizza	No	2,160–3,520	\$16.99	128–207	Unable to determine
16-piece bucket chicken and sides	No	3,240–12,360	\$33.99	135–515	Unable to determine

With regard to the FDA regulations and guideline indicators, 93% of menu boards had postings of calories or calorie ranges in proximity to food items (186 out of 200). For indicators 2, 3, and 4, none of the menu boards that we photographed contained statements about written information being available, suggested daily calorie intake, or put the calories in a context of daily total requirements. This is understandable since the law has been passed but is not yet being enforced



statewide as restaurants are awaiting recommendations for implementation from the FDA. Some of this information is available on the package in which the food is served, making it available to the consumer after the purchase of the item. The majority of the items we evaluated were combination and multiserving meals (155 out of 200).

In measuring practical utility when the item represented a single serving which did not vary in flavor, we were able to determine the calories in the item 96% (29 out of 30) of the time. When we could not determine the calorie count, it was because calories were not posted for the item. When the item was meant to serve more than one person, the total calories would be divided by the number of servings to determine the number of calories in a serving. All of the multiserving items had ranges posted for calorie counts; none had a serving size indicated. Therefore, there was insufficient detail to determine the calorie content since both numbers are needed for this equation. Nutrient content for the standard menu items offered in different flavors, varieties, or combinations was similarly posted in ranges and again, the necessary information was not included to allow for accurate calculation or estimation of calorie counts.

## **Discussion**

Most restaurants have posted calorie counts, but in the majority of cases, there was insufficient information to make use of them at the point of purchase. Further, it was increasingly difficult to calculate calories per meal when the posting included anything more than an individual unit of measure. Calorie counts became more challenging as the food items became more complex, especially combination meals and multiserving items which represented the largest percentage of items we recorded. These required several mathematical and nutritional calculations which might be more challenging among low socioeconomic groups in urban areas where fast-food chain restaurants tend to be most concentrated. For example, a 16 piece bucket of chicken was listed as 3,240–12,360 calories, but the menu board did not contain enough information to determine a serving size, e.g., how many pieces of chicken (two or three). Similarly, a hero combo meal ranged from 500 to 2,080, a calorie range of over 400%, but no information was provided on how a consumer would order within the lower range of this menu item. Specialty pizzas were offered in wide ranges (Figure 4), without a clear explanation of what it was that varied the range since it was based on a standard set of toppings and standard size.

Calorie counts were not necessarily intuitive. For example, vegetable toppings for pizza are generally considered to be a healthier choice with fewer calories than meat such as ham, however the calorie ranges for “vegetable” items varied widely. For example, when we compared the garden fresh vegetarian pizza to the BBQ chicken, bacon, and pineapple pizza, the vegetarian had a calorie range in which the higher end exceeded the lower end listed for the BBQ chicken, bacon, and pineapple pizza (Table 3).

The calorie counts for food items doubled by flavor in some cases. For example, a large whipped shake was posted at 270–650 calories with choices of coffee, vanilla bean, Tropicana orange, blue raspberry, Mountain Dew, and strawberry. But there was no way to determine which flavor had the most or the least calories. In trying to interpret this posting, we accessed the website [20] for the restaurant and searched for the nutritional information. We determined that the vanilla bean had the most calories and was not the stated 650 calories but was in fact 860 calories; the

coffee flavor had 800 calories (which was similarly above the top of the range posted), strawberry 610 calories, Tropicana orange 470 calories, blue raspberry 480 calories, and Mountain Dew was the lowest at 390 calories. No drink listed on the website met the lower end of the range at 270 calories. Hence, when calories were posted in a range, they were not necessarily intuitive, could not be calculated, and were inconsistent with amounts posted online. If such postings are to have utility, they must be simple, accurate, and offer all the information necessary in order to make a healthy decision about the food or drink.

Moreover, we discerned subtle coercion regarding pricing and calorie counts. According to a New York Times article in 2008, [21] individuals with limited incomes may select calorie-dense foods which provide more calories for the dollar. For this reason, we calculated a calorie/cost ratio. Large-size items and increased portions are available for a small cost. For example, a children's meal cheeseburger becomes a double cheeseburger for only 19 cents, increasing the calorie count by 140 calories. Although the calorie index range for the individual meal is 86–152, the index for additions like this one can be much higher. In this example the calorie index range for the value-added cheeseburger is 737 ( $140/0.19$ ). When posting higher calorie items in a standard preparation limited funds, this would be an attractive option, but this children's meal now provides 42% of the recommended calories for an adult (2,000) and greater than 50% of the 1,500-daily calorie range for children, in a single meal. Similarly, in several establishments, meals advertised as individual servings were in excess of 2,000 calories, providing the consumer with more calories in that meal than are recommended for the day.

In single-serving menu items meant to be consumed by one person when calories did not vary with flavor or preparation, it was relatively easy to determine the calorie count. This is consistent with the findings of Dumanovsky et al. [14] that restaurants such as Dunkin Donuts and Starbucks (which tend toward individual servings) had a higher percentage of customers who used posted calorie information, whereas Papa John's and Domino's had lower rates of use. This may also explain some of the variation in published studies. For example, among studies that showed calorie postings had a positive impact, [5, 6–8, 10–12, 15–18, 22] 11 studies involved actual or simulated table service restaurants, cafeteria menus, or fast-food restaurants that served primarily single-serving portions, such as Au Bon Pain. Of four studies reporting negative results, [2, 13, 14, 23] three were from fast-food restaurants and one was in a cafeteria. Hence, it appears that consumers' responses to calorie posting may differ when menu items are packaged as an individual serving or family-style or multiserving meal. Additionally, single-serving postings do not require mathematical computations, which may be difficult to perform in fast-food restaurants where a line forms behind the consumer while ordering.

This study was limited to one urban community and did not focus on actual food purchasing behavior but rather on the posted menu boards from chain restaurants. Harlem, like many urban communities, has more fast-food chains than sit-down chain restaurants and our study included only one sit-down chain restaurant.

## **Conclusions and Policy Implications**

As further legislation is developed, we support the FDA in their commitment to having menu boards that are useful at all levels of literacy. In low-income communities with a high density of chain restaurants, and where educational attainment of consumers may be low, simplifying calorie postings and minimizing the math required to calculate calories would increase menu board utility.

The FDA is currently soliciting suggestions on the clearest way to post calories for combination meals, multiserving menu items, and items where the calorie count varies with the flavor. There are five options currently being considered: (1) single average value, (2) ranges, (3) means, (4) medians, and (5) hybrid models. Based on our study, we would recommend the hybrid model. In this model, postings would depend on how wide the range is, if there are two or more items in the range, and how many calories the selection has overall. In low-calorie selections which do not vary by more than 20% from the top to the bottom of the range, they could be posted as a median. With higher calorie items in a standard preparation, this study would support (1) additional menu information and (2) a system of slash marks. In the slash marks system, a chicken sandwich, grilled or fried, would be listed as 330/600 rather than the range 330–600. This study would also strongly support the listing of the single base item in a standard preparation, for example a cheese taco with lettuce and tomatoes, and the listing of individual added toppings and their calorie counts. This system has been considered but is not currently supported by the FDA. Our findings would promote the use of such a system. The current working document is available for public review and comments at <http://edocket.access.gpo.gov/2011/2011-7940.htm>. The FDA has been open and responsive to continuing dialogue from interested stakeholders. We join the FDA in their efforts to identify the most useful methods for calorie postings for consumers at all levels of literacy.

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