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Beverage marketing in retail outlets and The Balance Calories Initiative

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ABSTRACT

We quantified the placement and promotion of beverages in groceries, supermarket and convenience stores in the communities targeted by The Balance Calories Initiative, a campaign launched by the top three American beverage companies to help Americans reduce consumption of sugar from beverages by 20% by 2025. The companies promised to drive interest in low- and no-calorie beverages through promotional efforts such as product placement, featured merchandising, couponing and other incentives, with more intensive efforts in low-income communities in communities in Alabama, Mississippi, and Southern California. We also measured two comparison communities not specifically targeted by The Balance Calories Initiative, observing 69 retail outlets in 5 localities in 2016–2017.

We found that sugar-sweetened beverages (SSBs) were the most common beverage in all outlets, and the brands of the companies pledging changes in marketing strategies the most dominant. SSBs were placed in an average of 25 separate locations in groceries vs. 15 for low/no-calorie beverages and 11 for water. No differences were noted between East LA stores observed 2 years after the initiative vs. stores in the North Mississippi Delta, Montgomery or the comparison stores. Given prior evidence that exposure to point-of-sale displays influences purchases, reducing the number and location of displays of SSBs should be considered to reduce SSB consumption.

1. Introduction

Point-of-sale marketing, i.e., the sales strategies in place where product selection occurs, strongly influences what people buy (Rook, 1987). The food people buy is the most important determinant of diet and, ultimately, their risks for a variety of chronic diseases. Because in-store marketing is so important, industry attention to the conditions of the point-of-sale context has grown over the past few decades, while the relative investment in advertising outside the store has declined (Rivlin, 2016). Factors most closely associated with purchase choices include pricing (possibly the most potent factor) (Kotler and Keller, 2005), assortment (the number of different brands available) (Hoch et al., 1999), features (characteristics of the product that is being highlighted), displays (special racks or displays that make products more salient) (Hoyer, 1984), and promotion intensity (number of brands with a price discount) (Kotler and Keller, 2005; Hwang and Thomadsen, 2016). The presence of low-nutrient foods in most retail food outlets, especially sugar-sweetened beverages (SSBs), has been noted to be ubiquitous and their point-of-sale marketing strategies carefully designed and

structured by manufacturers (Miller et al., 2012; Adjoian et al., 2014). Manufacturers typically pay fees to ensure that their products are displayed in prominent locations (Klein and Wright, 2007).

Researchers have also found that nearly 80% of grocery store purchases are unplanned and made in front of the store shelf (Wästlund et al., 2015), and the number of unplanned purchases is closely related to product placement and promotion. Surprisingly, high-income groups tend to be most influenced by price discounts (Hwang and Thomadsen, 2016). Older individuals are more influenced by end-of-aisle displays, potentially because the products are more accessible in these locations. Low-income groups are more vulnerable to the impulse marketing of low-nutrient foods (Hwang and Thomadsen, 2016), in theory because they have a higher cognitive overload from daily stress and a pre-occupation with money, leaving them a lower capacity to make thoughtful decisions (Mullainathan and Shafir, 2013). The cognitive demand of making trade-offs to stay within a limited budget may also contribute (Wästlund et al., 2015; Wang et al., 2010).

As the U.S. obesity epidemic continues through its fourth decade, sugar-sweetened beverages (SSBs) have been clearly identified as drinks

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with no redeeming nutritional value. SSBs have strong associations with unwanted weight gain and chronic diseases like Type 2 diabetes and heart disease (Field et al., 2014; Lim et al., 2009; Malik et al., 2010; Malik et al., 2006; Curhan and Forman, 2010; Duffey et al., 2010). Acknowledging that SSBs contribute to the obesity epidemic, the top three beverage companies, Coca-Cola, PepsiCo and Dr. Pepper/Snapple Group joined together with the Alliance for a Healthier Generation (AHG) in 2015 for The Balance Calories Initiative (BCI), in which they pledged to develop a campaign to reduce by 20% the calories consumed from SSBs nationally by the year 2025 (Alliance for a Healthier Generation, 2014).

The main mechanism by which the three companies plan to stimulate a decline in SSB consumption is by increasing interest in and access to reduced-calorie beverage choices, bottled water, and no- and low-calorie beverages, to promote smaller-portion sizes (“mini-cans”), and to drive interest in these products through promotional efforts such as product placement, featured merchandising, couponing and other incentives. Moreover, they planned to implement more intensive efforts to reduce SSB consumption in the most vulnerable communities (Alliance for a Healthier Generation, 2014).

Several methods have been used to quantify how products are marketed in retail environments. Assessment tools have been used to document the presence or absence of certain types of foods in a retail outlets, price (Duran et al., 2015; Rimkus et al., 2013; Glanz et al., 2007; Izumi et al., 2012), and the promotional locations in which the products are made more salient (Miller et al., 2012; Adjoian et al., 2014). One study of beverage sales found that placing sodas on an end-aisle display generated sales equivalent to discounting the beverage by 22–62% of the price per volume (Nakamura et al., 2014). The check-out aisle in another prime location associated with impulse purchases (Miller et al., 2012), making the cost of the cash register real estate the most expensive in a store (Rivlin, 2016). Perimeter walls are salient spaces, as refrigerated products are placed there, given the access to electricity necessary for cooling. Special floor displays are also difficult to ignore in that they require a shopper to deviate from their path to navigate around them. A larger amount of shelf-space and repeated exposures to products in multiple locations (called “multi-placements”) increases the odds that the product will attract the shopper’s attention (Cox, 1970).

Our goal was to quantify the relative prominence and multi-placements of SSBs and low-nutrient foods associated with chronic disease to document the nudges consumers face and the scope of what the three beverages companies can alter at the point of purchase.

2. Methods

In 2015, the BCI began in low-income neighborhoods in New York City, Los Angeles, and the state of Arkansas. In 2016, the campaign was introduced to the North Mississippi Delta region and the city of Montgomery, Alabama. We selected these two newly targeted communities and added the previously targeted East Los Angeles and Boyle Heights, in Los Angeles, to study the campaign progress in predominantly Latino neighborhoods. We also included two non-BCI comparison communities for the South Delta and Montgomery, matched by population and socio-demographic composition: the North Delta of Mississippi and Birmingham, AL, respectively.

2.1. Sample

We created a complete list of grocery stores, supermarkets, convenience stores and restaurants in each intervention and comparison community. Outlet types were defined by the North American Industry Classification System (NAICS) as entered in InfoUSA, a database of all local businesses. We used a stratified sampling strategy to ensure representativeness of the selected sample, where strata were jointly defined by places (counties in Southern states, and East Los Angeles) and

store types (convenience stores, grocery stores, and supermarkets). In each stratum, we sampled between 1 and 4 outlets, depending on the available outlets in the stratum. Supermarkets and groceries were oversampled compared with convenience stores because they sell a much higher volume of beverages. A total of 26 retail outlets were selected in each community. In Birmingham and in the South Delta 2 outlets were replaced with nearby ones because the stores selected were out of business. In the North Delta 4 outlets were replaced for the same reason. In Montgomery, where 8 supermarkets were of the same chain, we substituted 3 of these for different chain outlets to get additional variety. However, only 12 outlets were visited in the North Delta and 8 supermarkets in East Los Angeles/Boyle Heights due to budgetary restrictions. This paper focuses on the 52 supermarket/grocery stores and 17 convenience stores observed in these five locations. This study was deemed exempt by the RAND Institutional Review Board given that no human subjects participated.

2.2. Food outlet display locations

We identified five different types of display locations in the stores: 1) end-aisle displays, 2) aisles, 3) special floor displays, 4) perimeter walls, and 5) cash register displays. End aisle displays included all displays that were at the end of the aisle, even if they were on separate racks adjacent to the end-aisle. Floor displays were defined as being not adjacent to the end-aisle, but in the middle of an aisle or placed against the shelving away from the end-aisle, allowing access on three or four sides. Perimeter walls included all displays at the front, back and sides of the store, and cash register displays included all the items that shoppers would encounter going through a cash register lane.

2.3. Observational assessment

In August 2016, local staff were trained over three days to systematically walk through each store to observe the presence and location of SSBs and junk food. SSBs were defined as all beverages with added sugar > 40 cal/serving, including flavored milk. We did not count 100% fruit juices with no added sugar as SSBs. Drink mixes were not included, if they were not ready to drink. Beverages with ≤ 40 cal/serving were classified as low/no-calorie, including flavored water (USDA, 2017). Water was defined as pure water, or sparkling water without any added flavoring. Observers were trained to recognize products from the Big Three (the companies implementing the BCI), by studying product lists and reviewing images of their logos and icons. Observers also studied products that were produced by other companies, including Nestle, Unilever, and other independent companies (“Non-Pledgers”) to facilitate classification. We also looked for any logos for the Balance Calorie Initiative and instances of coupons associated with beverages, sample tasting, or other incentives to purchase beverages. We also documented the prices of mini-cans, a 2-liter bottle, a 6 pack of 8 oz. bottles, and a 6 or 12 pack of 12 oz. cans of Coca-Cola.

In order to understand the salience of beverages relative to the salience of other low-nutrient products, we documented the placement of “junk food,” which was defined as salty snacks (e.g. chips) and crackers, ready-to-eat sweetened baked goods (e.g. cookies, cakes, including pop-tarts), sweet granola bars, frozen desserts, and candy.

Data collectors were trained in August 2016 by practicing in at least 4 outlets and comparing responses with the group to assess consistency and reliability. The assessment tool was comprised of a paper and pencil scoresheet, in which the observers would place a hashmark for every display type (for a denominator), and then another hashmark to describe whether the display included a specific beverage type, and another hashmark if the beverage was manufactured by the participating 3 beverage companies. (The scoresheet can be made available upon request.) After systematically and independently rotating through the store, a pair of data collectors compared their findings to develop a consensus. When there was significant disagreement, the observers

returned to the store to observe the displays together to resolve the issue. Convenience stores were observed in the same manner as grocery stores and supermarkets. The overall reliability of the assessment tool, checked by comparing reports of two independent observers in Birmingham and Montgomery, Alabama, was 0.96.

2.4. Analysis

We calculated the total number and percentage of displays that had SSBs, reduced calorie beverages, water, and junk food. We defined the total number of potential in-store exposures to beverages as the sum of all the displays of each beverage type in each of the 5 different store locations. In order to see what changes had occurred after 2 years of the campaign, we compared the Los Angeles outlets with those in the South. Because we found no differences between the BCI communities in the North Delta and Montgomery and the South Delta and Birmingham, we combined the sites in the Southern states and conducted standard one-sample descriptive statistics. We conducted two-sample z-tests on the percentage of displays with SSB for both the total number of potential in-store exposures and each type of locations separately. We adjusted p-values by the Bonferroni method in each comparison to avoid false significance.

3. Results

3.1. Community characteristics

Table 1 shows the socio-demographics of the communities being targeted by the BCI. The populations were largely low-income. In the South, the communities were predominantly African-American, while the communities in East Los Angeles and Boyle Heights were largely Hispanic.

3.2. Placement of SSBs

SSBs were the dominant beverages in stores in both intervention and comparison communities in the South, as well as in Los Angeles. Their placement was most frequent at cash register displays (Los Angeles 62%, South 67% of cash register displays) in grocery stores and on the perimeter walls in convenience stores (75% of walls), typically in the coolers that surround these store interiors.

Table 1
Characteristics of communities studied (*Communities targeted by Balance Calorie Initiative).

City	Population	Household	Households in poverty	% households in poverty	African American	% African American	Hispanic	% Hispanic	# of groceries and supermarkets observed	# convenience stores observed
Montgomery, AL	190,997	75,476	16,023	21.2%	110,273	57.7%	6199	3.2%	13	2
Birmingham, AL	207,138	87,402	24,969	28.6%	144,463	69.7%	7685	3.7%	15	2
Batesville, MS*	6823	2475	414	16.7%	3300	48.4%	0	0.0%	1	1
Clarksdale, MS*	15,577	5780	2062	35.7%	12,674	81.4%	0	0.0%	2	2
Tunica, MS*	4947	1848	632	34.2%	3835	77.5%	139	2.8%	2	1
Marks, MS*	1718	703	234	33.3%	1349	78.5%	0	0.0%	0	3
Greenwood MS	16,364	5900	2205	37.4%	10,766	65.8%	348	2.1%	7	2
Yazoo City, MS	12,806	4198	1873	44.6%	10,662	83.3%	77	0.6%	3	1
Belzoni, MS	4426	1374	509	37.0%	3673	83.0%	79	1.8%		
Humphreys County, MS	8984	3057	1080	35.3%	6743	75.1%	233	2.6%	1	2
Sharkey County, MS	4805	1769	412	23.3%	3426	71.3%	31	0.6%	0	1
East Los Angeles, CA	122,557	30,530	8163	26.7%	250	0.2%	119,290	97.3%	4	0
Boyle Heights, Los Angeles	73,908	18,495	6074	32.8%	449	0.6%	71,045	96.1%	4	2

3.3. Supermarkets/grocery stores (Table 2)

End-aisle displays had 85% more SSBs compared to low/no-calorie beverages and displayed SSBs at three times the rate of water. Although we counted the presence of any low/no-calorie beverage on an end-aisle display, the relative number of units was typically a fraction of the units of SSBs on the same display (see Fig. 1). The aisles had 56% more frequent displays of SSBs compared to low/no-calorie beverages and displayed SSBs nearly twice as often as water. SSBs showed up on special floor displays 2.5 times more than low/no-calorie beverages and 2.3 times more than water. The frequencies of SSBs, low/no-calorie beverages, and water at cash registers were, respectively, 67%, 52% and 48%. An average of 24% of end-aisles and 25% of all aisles had SSBs. The majority of SSB displays included brands of the BCI participants (70–97%). SSBs were found around the perimeter of the store (50% of walls had some SSBs). The potential exposures to SSBs were, on average, 25 separate locations per store.

3.4. Convenience stores

(Table 3) On convenience store end-aisle displays, SSBs were displayed seven times more frequently than low/no-calorie beverages and 3 times more often than water. Compared to displays of low/no-calorie beverages, the aisles had three times the frequency of SSBs and displayed SSBs 60% more often than water. SSB were displayed four times more than low/no-calorie beverages on floor displays, which also displayed SSBs three times more than water. The perimeter walls were more likely to display SSBs (72% more than low/no-calorie beverages and 92% more SSBs than water. An average of 29% of end-aisle displays, 34% of floor displays, and 64% of perimeter walls had SSBs, with convenience store cash registers having the lowest presence of SSBs. Among the SSBs, 59%–100% of displays were brands of BCI participating companies. Among the average of 21 total locations in a convenience store, about 5 (or nearly 25%) displayed SSBs.

3.5. Placement of low/no-calorie beverages

In all outlets, the promotion of SSBs exceeded the promotion of low/no-calorie beverages in terms of placement and salience. The only exception where the placement was relatively equivalent between low/no-calorie beverages and SSBs was at cash register displays, where at least one low/no-calorie beverage would be available (in 12% of cash register displays at convenience stores and 52% in grocery stores). The total potential independent exposures per store of reduced-calorie beverages was 15.

Table 2
Average # in-store locations (and percentage) where beverages are displayed in grocery stores.

	Avg. # displays in grocery stores (s.d.)		Percentage of grocery store displays with SSBs (s.d.)		Percentage of grocery store displays with low/no-cal (s.d.)		Percentage of grocery store displays with water (s.d.)	
	AL and MS N = 44	Los Angeles N = 8	AL and MS	Los Angeles	AL and MS	Los Angeles	AL and MS	Los Angeles
End-aisle displays	27.5 (14.4)	16.0 (8.4)	24% (11.7)	43% (10.5)	16% (10.0)	12% (7.8)	8% (8.3)	9% (4.1)
Aisles	23.6 (14.2)	15.3 (8.3)	25% (16.6)	26% (7.2)	16% (10.8)	15% (6.7)	13% (15.0)	14% (8.8)
Floor displays	29.4 (22.6)	47.1 (38.3)	16% (12.6)	14% (10.2)	7% (5.9)	3% (2.4)	7% (7.1)	3% (3.8)
Perimeter walls	4.1 (0.5)	4.0 (0.0)	50% (29.0)	72% (8.8)	37% (27.2)	44% (17.7)	24% (19.9)	34% (22.9)
Cash register displays	7.6 (6.7)	6.5 (4.4)	67% (28.3)	62% (40.8)	52% (34.2)	55% (37.6)	48% (30.3)	46% (32.5)
Potential in-store exposure (% of all displays)	92.1 (100%)	88.9	27%	28%	16%	12%	12%	9%

	Avg. # displays in grocery stores (s.d.)		Percentage of grocery store displays with SSBs brand of BCI participating company (s.d.)		Percentage of grocery store displays with low/no-cal brand of BCI participating company (s.d.)		Percentage of grocery store displays with water brand of BCI participating company (s.d.)	
	AL and MS N = 44	Los Angeles N = 8	AL and MS	Los Angeles	AL and MS	Los Angeles	AL and MS	Los Angeles
End-aisle displays	27.5 (14.4)	16.0 (8.4)	20% (10.1)	28% (6.3)	13% (9.2)	12% (6.9)	4% (4.6)	3% (4.3)
Aisles	23.6 (14.2)	15.3 (8.3)	18% (9.7)	20% (6.0)	14% (9.8)	14% (7.2)	7% (9.1)	4% (5.9)
Floor displays	29.4 (22.6)	47.1 (38.3)	12% (9.5)	8% (6.0)	5% (5.5)	2% (1.9)	4% (6.6)	1% (1.6)
Perimeter walls	4.1 (0.5)	4.0 (0.0)	35% (24.3)	53% (28.2)	20% (23.2)	34% (22.9)	13% (14.7)	22% (28.2)
Cash register displays	7.6 (6.7)	6.5 (4.4)	63% (31.6)	58% (38.0)	44% (37.7)	54% (35.9)	38% (31.9)	29% (27.2)
Potential in-store exposures	92.1	88.9	21%	19%	13%	11%	9%	4%



Fig. 1. Beverage Pyramid in East LA Supermarket. No-calorie beverages occupy half of 2 columns of 18 column display.

Table 3
Displays of beverages in convenience stores in Alabama and Mississippi Delta.

Convenience stores MS and AL N = 17	Average # of displays in convenience stores (s.d.)	Percentage of convenience store displays with SSBs (s.d.)	Percentage of convenience store displays with low/no cal beverages (s.d.)	Percentage of convenience store displays with water (s.d.)
End-aisle displays	7.0 (3.1)	29% (23.9)	4% (8.2)	11% (14.7)
Aisles	4.2 (2.2)	24% (28.3)	8% (11.2)	15% (27.1)
Floor displays	4.4 (4.1)	34% (28.8)	8% (15.9)	10% (13.8)
Perimeter walls	3.8 (1.0)	75% (52.4)	42% (29.9)	39% (18.2)
Cash register displays	1.7 (0.6)	12% (33.2)	12% (33.2)	12% (33.2)
Potential in-store exposures	21	33%	10%	14%

Convenience stores MS and AL N = 17	Average # of displays in convenience stores (s.d.)	Percentage of convenience store displays with SSBs brand of BCI participating company (s.d.)	Percentage of convenience store displays with low/no-cal brand of BCI participating company (s.d.)	Percentage of convenience store displays with water brand of BCI participating company (s.d.)
End-aisle displays	7.0 (3.1)	17% (16.6)	4% (8.2)	2% (6.1)
Aisles	4.2 (2.2)	13% (15.8)	3% (7.6)	11% (27.3)
Floor displays	4.4 (4.1)	28% (22.2)	8% (16.0)	2% (5.4)
Perimeter walls	3.8 (1.0)	64% (44.7)	34% (31.5)	27% (25.0)
Cash register displays	1.7 (0.6)	12% (33.2)	12% (33.2)	12% (33.2)
Potential in-store exposures	21	24%	5%	5%

3.6. Placement of water

Water was available in about 1/3 to 2/3 of the number of displays devoted to SSBs, with the best representation at cash registers (in 12% of cash register displays at convenience stores and 48% in grocery stores), as well as perimeter walls (39% of walls at convenience stores vs. 24% in grocery stores). Products from water companies not participating in BCI tended to dominate floor displays and end-aisles in convenience stores, and were roughly equal in number to BCI participating companies' brands of waters in grocery stores.

3.7. Presence of mini cans

We did not observe any mini-cans in convenience stores. Mini-cans were observed in grocery stores in both intervention and comparison communities, in roughly the same limited frequency: in 3% of end-aisle displays, 4% of aisle, 2% of cash register displays, and no perimeter walls (not shown in Tables). The mini-cans were predominantly brands of the three BCI participating companies.

3.8. Price of sodas

The 8-oz. glass bottles of Coca-Cola were the most expensive, ranging from \$4.58 to \$5.49 for 6 bottles (9.5–11.4 cents/oz.). Mini-cans were the next most expensive per ounce of beverage and, if on sale, they were as low as \$1.99 for six cans (7.5 oz./can), (4.4 cents/oz.) or three cases of 10 cans for \$10.00 (4.4 cents/oz.), but on average were \$2.95 for a 6-pack (6.6 cents/oz.) and \$3.49 for an 8-pack (5.8 cents/oz.). In contrast, in the South, the 2-liter bottles were as low as \$1.00 (1.5 cents/oz.) with a highest cost at \$1.99 (2.9 cents/oz.) [average \$1.51 (2.2 cents/oz.)]. In East LA, it was possible to buy a 2-liter bottle of Coca-Cola for \$0.99 and 7-Up for as low as \$0.89 (1.3 cents/oz.). A case of twelve 12 oz. cans of Coca-Cola ranged from \$2.75 to 5.99, (1.9–4.2 cents/oz.) with an average cost of \$4.21 (2.9 cents/oz.).

3.9. Presence of coupons

Coupons were observed only in the intervention community in one store, and promoted the sales of both 2-liter products and mini-cans. Two of the coupons offered a discount for buying a pizza or a 1-pound bag of pretzel with mini-cans. The third coupon offered 3 packs of mini-cans for the price of 2.

3.10. Placement of junk food

Displays of “junk food” were substantially more common than SSBs in the observed grocery stores with 40 independent exposures vs. 25 for SSBs. Junk food was about twice as prominent as SSBs on end-aisle displays [69% vs. 29% in convenience stores (data not shown) and 46% vs. 24% in grocery stores]. Junk food was more common than SSBs in all the other displays. Junk food was nearly universal at cash register displays (97% vs. 12% for SSBs in convenience stores; 91% vs. 67% for SSBs in groceries) (Table 4).

3.11. BCI logos

BCI logos were present in both intervention and comparison communities, mainly on the glass door of refrigerated coolers provided by one of the three BCI participating companies on perimeter walls (in convenience stores) and near cash registers (in grocery stores). Specifically, BCI logos were observed on 25% of perimeter walls of convenience stores (vs. 2% of grocery store walls) and 29% of cash register displays in grocery stores (vs. 6% in convenience stores).

Table 4
Junk food displays- supermarkets/groceries.

	Avg. # displays/store (s.d.)		Displays of junk food in grocery stores	
	South N = 44	Los Angeles N = 8	AL and MS Avg. % of displays with junk food (s.d.)	Los Angeles Avg. % of displays with junk food (s.d.)
End-aisle displays	27.5 (14.4)	16 (0.7)	46% (19.3)	55% (11.0)
Aisles	23.6 (14.2)	15.3 (8.3)	30% (14.0)	49% (10.8)
Floor displays	29.4 (22.6)	47.1 (38.3)	39% (17.0)	34% (28.7)
Perimeter walls	4.1 (0.5)	4.0 (0.0)	58% (31.5)	72% (20.9)
Cash register displays	7.6 (6.7)	6.5 (4.4)	91% (34.9)	98% (5.1)
Potential in-store exposures	92.1	88.9	43%	45%

4. Discussion

Currently, Coca-Cola, Pepsico, and Dr. Pepper/Snapple dominate beverages sold in all the stores we measured. Shoppers' potential exposure to SSBs significantly exceeds the potential exposures to reduced calorie beverages and water. Given that shelf space is typically purchased by manufacturers and manufacturers may supply planograms, which dictate how the products are placed on the shelves, the ability to change how the public is exposed to the beverages is largely in the hands of the BCI participating companies.

Pricing of the smaller portions was much higher per fluid oz. than for the large quantities so there is a lower incentive for consumers to switch to the smaller portions. Most stores had sales where several units would have to be purchased to get a discount. For example, the sale price on a 12-pack of sodas could only be redeemed if 3 cases were purchased. The financial incentives favor the purchase of large quantities in plastic or aluminum as well as disadvantage low-income families because of their more limited funds.

Although coupons can provide a financial incentive to purchase a product by offering a discount, two coupons seen required purchasing other low-nutrient foods—pretzels and pizzas. Ultimately, tying SSBs to other low-quality foods may exacerbate the problems of obesity, rather than to help alleviate it, if people merely shift their empty calories to junk food.

As dominant as SSBs are, the presence of junk foods was much higher, with 40 potential in-store exposures per visit in groceries and supermarkets vs. 25 for SSBs. These low-nutrient foods contribute substantially to the obesity epidemic (USDA, 2005). We did not document the manufacturers of the junk food, but it is likely that these items represent hundreds of different companies, in contrast to the three companies producing 87% of all the soft drinks in the U.S. (Statistica, 2017). Yet if the largest beverage companies were to reduce their in-store marketing, multiple other players could fill in the gaps, including store brands. In particular, the East LA stores featured a variety of imported sodas from Mexico, which were often displayed right next to the top 3 company brands. This speaks to the need to pursue broader campaigns that focus on all highly processed foods, regardless of manufacturer.

4.1. Limitations

There are several limitations to our study. First, our characterization of the in-store marketing environment is relatively crude, and we gave equal weight to the presence of items in locations regardless of the relative number of units of facings of a certain product. In some cases, products were displayed across entire aisles, and in others, they may have represented only one stock-keeping unit SKU (e.g. purified water in the baby food section, or one column of diet soda among 20 columns of SSBs). We did not have the capacity to measure the relative quantity of goods, only their presence or absence in the locations. Second, we observed the stores only once, so we do not have store-level longitudinal data showing an impact of The Balance Calories Initiative on the point of purchase displays. However, given so many similarities across the stores that either did not receive special attention and those who had been targeted two years earlier, it is doubtful that significant changes have occurred. Store staff also confirmed that they had not made any significant change to the displays. Nevertheless, it is relatively early in a 10-year campaign, and more changes may be forthcoming. Third, our sample sizes are relatively small, although we did observe at least one of the available supermarket chains in the selected communities.

The literature on in-store marketing confirms that the greater the presence of a product in a store, and the more attention it draws from consumers, the more likely it is going to be purchased (Hwang and Thomadsen, 2016; Nakamura et al., 2014; Pieters and Warlop, 1998; Pieters and Wedel, 2004; Gidlof et al., 2017). The phenomenon of

“mere-exposure” conditioning has shown that just seeing products fosters familiarity, which leads to a preference for these products (Zajonc, 2001). Moreover, placing these items in the most salient locations has an even greater impact on sales (Hwang and Thomadsen, 2016; Gidlof et al., 2017). These principles have been shown relevant in the area of tobacco: more prominent and accessible tobacco products improve attitudes towards tobacco and increases the likelihood of smoking (Setodji et al., 2018; Shadel et al., 2016).

5. Conclusion

Given the serious problems America faces in a growing epidemic of diet-related chronic disease closely associated with excess consumption of SSBs and junk food, serious thought should be given to constraining the point-of-sale marketing of these products. There is considerable evidence that limiting exposure to point-of-sale displays of tobacco is associated with a reduction of tobacco use, reduced tobacco use intentions, and with improved health consequences across the population (Carter et al., 2015; Nonnemaker et al., 2016; Siahpush et al., 2016a; Siahpush et al., 2016b). Experimentation with reducing the number and location of displays of low-nutrient food and beverages should be a priority in the efforts to address the obesity epidemic.

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Conflicts of interest

None to report.

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