



Price promotions for food and beverage products in a nationwide sample of food stores



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ABSTRACT

Food and beverage price promotions may be potential targets for public health initiatives but have not been well documented. We assessed prevalence and patterns of price promotions for food and beverage products in a nationwide sample of food stores by store type, product package size, and product healthfulness. We also assessed associations of price promotions with community characteristics and product prices. In-store data collected in 2010–2012 from 8959 food stores in 468 communities spanning 46 U.S. states were used. Differences in the prevalence of price promotions were tested across stores types, product varieties, and product package sizes. Multivariable regression analyses examined associations of presence of price promotions with community racial/ethnic and socioeconomic characteristics and with product prices. The prevalence of price promotions across all 44 products sampled was, on average, 13.4% in supermarkets (ranging from 9.1% for fresh fruits and vegetables to 18.2% for sugar-sweetened beverages), 4.5% in grocery stores (ranging from 2.5% for milk to 6.6% for breads and cereals), and 2.6% in limited service stores (ranging from 1.2% for fresh fruits and vegetables to 4.1% for breads and cereals). No differences were observed by community characteristics. Less-healthy versus more-healthy product varieties and larger versus smaller product package sizes generally had a higher prevalence of price promotion, particularly in supermarkets. On average, in supermarkets, price promotions were associated with 15.2% lower prices. The observed patterns of price promotions warrant more attention in public health food environment research and intervention.

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Introduction

Obesity and the consumption of unhealthy foods and beverages (FBs) remain highly prevalent and pose significant health risks (U.S. Department of Agriculture and U.S. Department of Health and Human Services, 2010; Institute of Medicine, 2012). Public health researchers and advocates have considered aspects of food environments as contributors to these health concerns. Pricing of sugar-sweetened beverages (SSBs) and foods high in sugar, fat, or sodium and low in nutritional value relative to more healthful options is of particular interest (Brownell et al., 2009; Story et al., 2008) given that consumer demand for FBs is responsive and inversely related to price (Cawley, 2004; Andreyeva et al., 2010; Powell and Chiqui, 2011; Powell et al., 2013a).

Strategies proposed and implemented in some settings include taxes on less-healthy FBs and subsidies for healthier products (Institute of Medicine, 2012; Brownell et al., 2009; Powell et al., 2013a; Agricultural Act of 2014 (FINI), 2014; Berkeley, Cal., 2014; Falbe et al., 2015).

Price promotions (i.e., temporary price reductions or discounts) advertised within stores, in circulars, or online by retailers or manufacturers, can build brand awareness, maintain or enhance brand familiarity, increase perceived value, and reinforce consumers' positive self-image as “bargain shoppers” (Desai and Talukdar, 2003; Sirohi et al., 1998; Yin and Dubinsky, 2004). Other motives for temporary discounts include the use of these products as “loss leaders” where some products may be priced below cost to “create buying excitement and urgency,” to draw customers who then do more shopping at the store for regularly priced items, to increase profits by driving up sales in certain categories, and as a direct form of competition to match promotions of local competitors (Volpe, 2013; Kotler and Armstrong, 2008; Gedenk et al., 2006). Temporary price reductions may also be used to clear excess inventory, particularly for perishable products.

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Price promotions may influence consumer purchasing patterns (Glanz et al., 2012; Dong and Leibtag, 2010; Chandon and Wansink, 2012), especially among low-income consumers using sales to economize (Leibtag and Kaufman, 2003). Not all promotions involve price reductions but those that do have become routine in supermarket retailing (Gedenk et al., 2006). Two studies in U.S. cities and one in the United Kingdom (U.K.) suggest that, on average, 30% to 40% of purchases made in supermarkets were price promoted (Walters and Jamil, 2002; Phipps et al., 2014; Trinh et al., 2012).

Price promotions for FBs may lead to stockpiling (buying earlier and/or more than usual) and consequent accelerated consumption, product/brand switching for different (substituted) products, or unplanned purchases (Chandon and Wansink, 2012; Phipps et al., 2014; Heilman et al., 2002; Hawkes, 2009; Bell et al., 1999). For public health, this is problematic when the price-promoted foods in question are high in sugar, fat, or sodium. While any relationship between what is put on sale and product healthfulness may be coincidental, limited research suggests that price promotions are applied more often to products at the less-healthy end of the spectrum (Cohen et al., 2014; Pollock et al., 2009; Adjoian et al., 2014; López and Seligman, 2014). Further, reports that marketing of some less-healthy FB products is more prevalent in racial/ethnic minority and/or low-income communities (Yancey et al., 2009; Powell et al., 2013b; Grier and Kumanyika, 2008; Kunkel et al., 2013; Powell et al., 2014a; Powell et al., 2012; Ohri-Vachaspati et al., 2015) raise the question of whether this also applies to FB price promotions in stores in these communities.

Drawing on a nationwide sample of supermarkets, grocery stores, and limited service food stores in the U.S., the objective of this study was to gain a better understanding of the patterns of FB product price promotions. We assessed the prevalence of FB price promotions by store type, product package size, and product healthfulness. We also assessed whether prevalence varied by community racial/ethnic and socioeconomic characteristics, and the extent to which promotions were associated with lower prices compared to prices of the same non-price-promoted products in our sample of stores.

Methods

Data and sampling

The data for this study were drawn from the Bridging the Gap Community Obesity Measures Project (BTG-COMP), which involved cross-sectional data collection in 2010, 2011, and 2012 in a nationwide total sample of stores in 468 communities (catchment areas) where a nationally representative sample of public middle and high school students reside in the continental U.S. Data on FB prices and presence of price promotions were collected via direct observation using the BTG Food Store Observation Form (BTG-FSOF) (Bridging the Gap, 2012), which has high reliability (Rimkus et al., 2013). Store lists were generated annually by combining and deduplicating business lists and stores were screened by telephone for eligibility (sold at a minimum snacks and drinks) and store type (supermarkets, grocery stores, and limited service stores). Stratified probability samples of food stores were selected from the store lists by store type for each community in each year. Additionally, given limitations cited in previous research regarding the validity of commercial business lists (Powell et al., 2011; Fleishhacker et al., 2013), data collectors identified and observed eligible food stores discovered in the field.

Based on this approach, 9226 food stores were identified as eligible, of which 267 (3%) were not assessed because field staff were asked to leave ($n = 222$), the store was temporarily inaccessible ($n = 18$), the store address was not found ($n = 16$), the store environment was not safe ($n = 3$), or other reasons ($n = 8$). Thus, our analytic sample included 8959 food stores from 468 communities of which 955 were supermarkets (carried fresh [uncooked, unprocessed, unfrozen] meat, had four or more cash registers, and at least two of three service counters [butcher, deli, or bakery]), 870 were grocery stores (carried fresh meat but not meeting supermarket criteria), and 7134 were limited service stores (carried no fresh meat; e.g., convenience stores, drug stores, and dollar stores). The store type definitions were based on Food Marketing Institute (Food Marketing Institute, 2014) descriptions and other studies (Connell et al., 2007; Farley et al.,

2009; Galvez et al., 2008) and have been consistently used by our study team (Zenk et al., 2014; Zenk et al., 2015; Rimkus et al., 2015).

Measures

Price promotions included any indication of a temporary price cut or discount (where the shelf or price tag denoted “sale,” “special,” “save,” “price cut,” “deal,” etc., or was a different color than other store tags, indicating the item was on sale) but did not include specification of “everyday low price” since these statements do not reflect temporary discounts.

Data on FB prices and the presence of a price promotion were collected for 44 FB items in each store in the following categories: fruits and vegetables (8 fresh, 2 canned, and 2 frozen products), meat (2 products), eggs, bread and cereal (2 products each), SSBs (9 products), non-SSBs (5 products), milk (4 products), and snacks and sweets (7 products) (see detailed description in the footnotes of Table 1). The BTG-FSOF included both less-healthy and more-healthy varieties of various products (e.g., high-sugar/low-sugar cereal, SSBs/non-SSBs, and whole/low-fat milk) and multiple package sizes (i.e., larger family-size [$\geq 1L$] versus smaller individual-size [$< 1L$] beverages and larger [≥ 3 oz] versus smaller [< 3 oz] snack packages).

For most products (such as beverages, cereal, canned/frozen fruits and vegetables, snacks, and sweets), data collectors recorded the price (i.e., the shelf price) and presence of a price promotion for a specified brand and package size/unit (a primary brand/size was specified with a secondary and in some cases a tertiary option if the first or second choice was not available) (Rimkus et al., 2013). For milk, bread, eggs, and ground beef, data collectors recorded prices and the presence of a price promotion for the lowest priced brand available for a given package size rather than the price of a specified brand. Price and price promotion data for the lowest priced family-size regular soda were also collected in addition to the data for branded soda. For fresh fruits and vegetables, which are often unbranded and/or sourced from local/regional suppliers, data collection on price and the presence of a price promotion for specified

Table 1

Prevalence of price promotions for food and beverage products, overall and by product category, by store type, 2010–2012

	Supermarkets	Grocery stores	Limited service stores
All food and beverage product items	13.4	4.5	2.6
<i>Fruits and vegetables</i>			
Fresh ^a	9.1	3.3	1.2
Canned/frozen ^b	13.9	5.0	2.4
<i>Beverages</i>			
Milk ^c	10.6	2.5	3.4
Sugar-sweetened beverages ^d	18.2	6.0	2.8
Non-sugar-sweetened beverages ^e	12.1	4.6	1.9
<i>Meat and eggs, or eggs only^f</i>	9.3	3.9	3.3
<i>Bread and cereals^g</i>	17.8	6.6	4.1
<i>Snacks and sweets^h</i>	14.6	4.8	2.0

Data are calculated as mean prevalence across all product items and by product category based on items noted below, by store type. See Tables 2 and 3 for samples sizes for each product.

^a Eight items: apples, bananas, oranges, grapes, carrots, tomatoes, broccoli, and lettuce.

^b Four items: canned tomatoes, canned green beans, frozen green beans without added sauce, and frozen corn without added sauce.

^c Four items: whole, 2%, 1%, and skim.

^d Nine items: family-size <50% juice drink, family-size ≤10% juice box/pouch, family-size regular soda (i.e., Coca-Cola or Pepsi), family-size least expensive regular soda, individual-size <50% juice drink, individual-size regular soda, individual-size regular energy drink, individual-size regular isotonic sports drink, and individual-size regular enhanced water.

^e Five items: family-size 100% orange juice, family-size diet soda, individual-size 100% orange juice, individual-size diet soda, and individual-size plain bottled water.

^f For supermarkets, 3 items: regular ground beef (≥20% fat), extra lean ground beef (≤10% fat), and eggs; for limited service stores, 1 item: eggs.

^g Four items: white bread, 100% whole wheat bread, higher sugar content cereal, and low sugar content cereal.

^h Seven items: smallest package salted regular potato chips, largest package salted regular potato chips, smallest package Flamin' Hot Cheetos®, largest package Flamin' Hot Cheetos®, snack cakes, cookies, and candy.

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