

We used a variety of data sources to assess food advertising to children in 2016, measure improvements and other changes since the Children's Food and Beverage Advertising Initiative (CFBAI) was implemented in 2007, and quantify progress and the continued impact of limitations in industry voluntary pledges to improve food advertising to children.

In this report we measure the extent of children's exposure to food, beverage, and restaurant advertising using syndicated market research data from Nielsen, comScore, and Unmetric. When data were available, we compare 2016 results to 2007 and two intermediary years (2010 and 2013). Furthermore, we compare results for preschoolers (2-5 years), children (6-11 years), and young teens (12-14 years). We also assess the nutritional quality of products offered by CFBAI company brands in 2017. Specific methods are detailed in the sections below.

We did not have access to food industry proprietary documents, including privately commissioned market research, media, and marketing plans or other strategic documents. Therefore, we do not attempt to interpret companies' goals or objectives for their marketing practices. Rather, we provide transparent documentation of food, beverage, and restaurant (i.e., food-related) advertising, including advertising spending in measured media, TV advertising exposure, and marketing in digital media including company websites, display advertising on third-party websites, and social media.

As the purpose of this report is to evaluate industry self-regulation on its stated goal to advertise only healthier dietary choices in child-directed advertising, we do not address other forms of marketing to children, such as in-store promotions, product packaging, in-school marketing, and sponsorships, not currently covered by the CFBAI. However, we do include advertising by food, beverage, and restaurant companies that did not participate in the CFBAI, as well as CFBAI participants, to identify opportunities to broaden participation in the Initiative. Similarly, we evaluate the extent of children's exposure to advertising that may not specifically target children, but that children nevertheless view frequently, including ads on all types of TV programming, children's visits to food company websites, banner advertising on third-party websites, and social media advertising.

## Food-related advertising and data sources

Our analyses of food-related advertising include: 1) Advertising spending in all media, including TV advertising, in 2007, 2010, 2013, and 2016; 2) TV advertising exposure by age group, including exposure to ads on children's TV programming, in 2007, 2010, 2013, and 2016; 3) Advertising on third-party websites in 2016, including kids' websites and

social media sites; 4) Child and teen visits to food, beverage and restaurant company websites in 2016; and 5) Popularity and activity on food company-sponsored social media pages in 2016, including Facebook, Twitter, Instagram, and YouTube. These analyses use syndicated market research data from Nielsen (advertising spending and exposure to TV advertising), comScore (visits to company websites and advertising on third-party websites), and Unmetric (food company-sponsored social media pages).

## Nielsen data

We licensed Nielsen data to identify all food-related companies with advertising spending in any type of media from 2007 to 2016, including all companies in Nielsen's "Foods & Food Products" (F100), and "Confect., Snacks & Soft Drinks" (F200) product classification codes (PCC). We used Nielsen's "Restaurants, Hotel Dining & Night Clubs" (G330) PCC to identify restaurant companies with advertising spending in the aforementioned time period. Nielsen also provided brand level advertising spending for each brand owned and advertised by the companies of interest. For the same companies, brands, and time periods, we also licensed Nielsen data to quantify the total number of advertisements viewed by different age groups of children and adults.

In most cases, we used the company and brand names reported by Nielsen, with some modifications. For restaurant chains owned by a larger company (e.g., Yum! Brands owns KFC, Pizza Hut, and Taco Bell; DineEquity owns Applebee's and Chili's) we report the restaurant chain as the company. In addition, we define brand as the main marketing unit for each product. Nielsen sometimes reports different varieties of the same brand as separate brands. In those instances, we combined data for the Nielsen brands and report them as one brand. For example, we report General Mills' Cinnamon Toast Crunch and French Toast Crunch together as Cinnamon/French Toast Crunch brand; regular Cheerios and Honey Nut Cheerios are reported as Cheerios brand; Betty Crocker Fruit by the Foot, Fruit Gushers, and Fruit Roll-Ups are reported as Betty Crocker Fruit Snacks; and Post Foods' Cocoa Pebbles and Fruity Pebbles Cereal are reported as Pebbles.

## Advertising spending

Nielsen tracks total advertising spending in 17 different media, including national (network, cable, and syndicated) and local (spot) TV, Spanish-language TV, internet, radio, magazines, newspapers, free standing insert coupons (FSIs), and outdoor advertising. **Total advertising spending** includes advertising expenditures in these 17 measured media. We report **English-language TV spending**, which includes spending on all national (network, cable, and syndicated) TV. We also report advertising spending on individual media, including Spanish-language TV, radio, outdoor advertising, and national magazines, if the company or brand spent less than 80% of its total advertising on TV advertising. **Spanish-language TV**

**advertising** includes advertising placed on Spanish cable and broadcast TV networks (e.g., Univision, Telemundo).

### TV viewing times

We licensed TV viewing data from Nielsen to calculate average **TV viewing times** for preschoolers (ages 2-5), children (ages 6-11), young teens (ages 12-14), and adults (ages 18-49). This measure provides the average hours of TV viewed by individuals in each age group, which includes TV programming viewed on broadcast, cable, syndicated, and spot networks. We used TV viewing time data to measure relative TV viewing between youth age groups versus adults. These numbers were calculated by dividing TV viewing time for preschoolers (2-5 years), children (6-11 years), or young teens (12-14 years) by TV viewing time for adults (18-49 years). In 2016, the difference in TV viewing time for preschoolers versus adults was 0.94 (i.e. preschoolers viewed 6% less TV than adults), and 0.74 and 0.63 for children-to-adults and young teens-to-adults, respectively. Differences in TV viewing time between groups are compared to differences in exposure to TV advertising between groups.

### TV advertising exposure

To measure exposure to TV advertising, we licensed gross rating points (GRP) data from Nielsen. GRPs measure the total audience delivered by a brand's media schedule, expressed as a percentage of the population that was exposed to each commercial over a specified period of time across all types of TV programming. GRPs are the advertising industry's standard measure to assess audience exposure to advertising campaigns, and Nielsen is the most widely used source for these data.<sup>4</sup> GRPs, therefore, provide an objective assessment of advertising exposure. In addition, GRPs can be used to measure advertisements delivered to a specific audience, or targeting a specific age group or other demographic trait (also known as target rating points or TRPs), and provide a per capita measure to examine relative exposure between groups. For example, if a brand had 2,000 GRPs in 2016 for children and 1,000 GRPs for adults, then we can conclude that on average children saw twice as many ads for that brand in 2016 compared with adults.

We obtained GRP data from 2007 to 2016, for preschoolers (ages 2-5), children (ages 6-11), young teens (ages 12-14), and adults (ages 18-49). In some analyses, we also examined preschoolers and children (ages 2-11) combined. These data provide total exposure to advertising on national (network, cable, and syndicated) TV. We did not obtain GRP data for local (i.e., spot market) TV as spot market data were not available for all age groups.

Nielsen calculates GRPs as the sum of all advertising exposures for all individuals within a demographic group, including multiple exposures for individuals (i.e., gross impressions), divided by the size of the population, and multiplied by 100. GRPs can be difficult to interpret, so we also use GRP data to calculate the following TV advertising measures:

**Average number of TV ads viewed** is calculated by dividing total GRPs for a specific age group during a specific time period by 100. It provides a measure of ads viewed by individuals in that age group during the time period measured. For example, if Nielsen reports 2,000 GRPs for children for a brand in 2016, we can conclude that on average all children viewed 20 ads for that brand in 2016.

As GRPs provide a per capita measure of advertising exposure for specific demographic groups, we also used GRPs to measure relative exposure to advertising between youth age groups versus adults. **Targeted ratios** are calculated by dividing GRPs for preschoolers (2-5 years), children (6-11 years), or young teens (12-14 years) by GRPs for adults (18-49 years)

A targeted ratio greater than the difference in TV viewing time between age groups indicates that persons in the group of interest viewed more TV ads for a particular brand than would be expected given differences in amount of TV they watched (i.e., someone who watches more TV would be expected to view more TV ads). For example, a brand with a targeted ratio for children that was higher than the ratio of TV viewing for children versus adults would indicate that the brand may have targeted children by placing its advertising in TV programming that they were more likely to watch (e.g., children's TV).

We also obtained GRP data by TV network distributor for children's programming only. Nielsen classifies **children's TV** as the following program types: child day animation, child day-live, child evening, child multi-weekly, and child news-information. We also identified a subset of children's TV programming for which preschoolers were the primary audience. **Preschool TV** networks included BabyTV, Nickjr., and Sprout. For all brands and companies included in our analysis, we report children's exposure to TV advertising on children's TV separately and as a percentage of total TV ad exposure.

In addition, we used Nielsen GRP data to identify **top-50 brands**, which included the 50 brands with the most TV advertisements viewed by preschoolers and children combined (ages 2-11) in 2016. GRP data for top-50 brands was also obtained for young teens (ages 12-14) and adults (ages 18-49) to examine relative exposure between groups. Top-50 brands from non-CFBAI companies were included in our analysis of non-participating (i.e. non-CFBAI) companies.

### comScore data

comScore provided data on food marketing that occurs on the internet, including banner ads placed by food companies on third-party websites and visits to food companies' own websites. comScore captures the internet behavior of a representative panel of about 350,000 users in the United States.<sup>5</sup> comScore provides data for websites visited on personal computers by at least 30 panel members in a given quarter, but does not provide visits on mobile devices for youth under age 18. It is the nation's largest existing internet

audience measurement panel. The firm collects data at both the household and individual level using Session Assignment Technology, which can identify computer users without requiring them to log in. The company uses these panel data to extrapolate its findings to the total U.S. population. Companies participating with comScore can also have census tags placed on their web content and advertisements to further refine audience estimates.

### Banner advertising on third-party websites

Data for exposure to food-related **banner advertisements** on third-party websites (i.e. ads placed on websites sponsored by other companies, such as Nick.com, Facebook.com, and YouTube.com, to attract visitors to the advertiser's own website) were extracted from the comScore Ad Metrix Advertiser Report.<sup>6</sup> comScore measures image-based banner advertisements embedded in third-party websites that are completely downloaded and viewable on a panel member's web browser. Ad Metrix, therefore, measures individual exposure to banner ads presented in rich media (SWF files) and traditional image-based ads (JPEG and GIF files). It does not capture text, video, or html-based ads. Ad Metrix also identifies the unique user viewing the advertisement, the third-party website on which the advertisement was viewed, and the company sponsoring the advertisement.

Banner ad impressions were collected from Ad Metrix for January through December 2016. The Product Dictionary from comScore was used to determine all banner advertisements placed by the companies in our analysis. comScore provides **banner ad impressions** (i.e., the number of times a banner ad was viewed) for brands, websites, and promotions (e.g., My Coke Rewards) in its dictionary that were viewed at least ten times by comScore panel members on the internet or on a specific third-party site. However, comScore does not provide demographic information about panel members who viewed the ads.

Total banner ad impressions on kids' websites in 2016 was extracted from comScore. We used comScore's definition of **kids' websites** (i.e., sites designated as Family & Youth – Kids). These sites include sites where 70% of the content was for kids. The proportion of ads viewed on kids' websites was calculated by dividing the total banner ad impressions for the company, brand, or promotion on kids' websites by the total banner ad impressions that appeared on all websites from January through December 2016.

Although comScore does not allow us to determine the age of individuals who viewed banner ads, advertising on kids' websites is likely to be aimed at child viewers. We also used the comScore Key Measures Report<sup>7</sup> to extract the average number of unique visitors to individual third-party kids' websites for January through December 2016. For each website, we calculated the proportion of total unique visitors who were children by dividing the average number of child (2-12 years) visitors<sup>8</sup> by total unique visitors (2+ years) to the same website.<sup>9</sup>

We also measured the total banner ad impressions on **social media sites** (Facebook and YouTube) in 2016. The proportion of ads viewed on Facebook and YouTube was calculated by dividing total banner ad impressions for the company, brand, or promotion on each social media website by the total banner ad impressions that appeared on all websites from January through December 2016.

### Visits to food company websites

To identify **food company websites**, we obtained a list of websites for the companies in our analysis that existed during January through December 2016 from comScore Media Metrix. For the purposes of this analysis, a website is defined as all pages containing the same stem URL. For example, McDonalds.com is the website of interest, while <https://www.mcdonalds.com/us/en-us/deals.html> is an example of a secondary page contained within the site.

We obtained data on visitors to these websites from comScore Media Metrix Key Measures Report, including visits by children (ages 2-12) and teens (ages 13-17).<sup>10</sup> The Media Metrix database provides internet exposure data for any websites that were visited by at least 31 comScore panel members in a given quarter.<sup>11</sup> Media Metrix also provides exposure information by visitor age for higher volume websites.

For each quarter during the January through December 2016 period, we used the Media Metrix Key Measures Report to collect total unique visitors for available food company websites. In addition, when enough website traffic was recorded in a given quarter we collected these measures separately for children (2-12 years), teens (13-17 years), and the total internet audience (2+ years). We excluded non-U.S. URLs, websites promoting other types of products (e.g., household cleaners, beauty products), and corporate websites.

For each website in our analysis, we report the **average monthly unique visitors** who were children (2-12 years) or teens (13-17 years). This measure was calculated by adding average total unique visitors per month (reported quarterly by comScore, from January through December 2016) for each age group divided by four (for four quarters). If an individual website did not have comScore data for four quarters, average monthly unique viewers was calculated based on the number of monthly viewers for the quarters provided divided by four.

For each website, we also calculated the **% of total unique visitors** who were children and teens by dividing the average number of unique child (2-12 years) and teen (13-17 years) visitors<sup>12</sup> by total unique visitors (2+ years) to the same website.<sup>13</sup>

### Unmetric data

In this analysis, we measured popularity and activity of company-sponsored social media accounts in 2016 using syndicated market research data from Unmetric. Unmetric is a web-based analytic software company that monitors and collects branded

social media content from over 100,000 brands.<sup>14</sup> We examined four social media platforms that are popular with children and teens: Facebook, Twitter, Instagram, and YouTube.<sup>15</sup>

Researchers entered the name of all companies and brands analyzed in this report into the Unmetric database to identify all social media accounts that were active on Facebook, Twitter, Instagram, and YouTube during January-December 2016. We then identified the primary U.S. account for each company or brand for analysis, excluding: 1) promotional accounts or accounts created for specific audiences (e.g. “Little Caesars Pizza Kit Fundraising Program” or “General Mills Cereal Coupons”); and 2) social media accounts in a language other than English or based outside the United States, with the exception of worldwide accounts that were the only ones available for the company or brand.

Finally, we conducted additional manual searches of social media platforms using the company and the brand as keywords to check for missing or incomplete data. If they identified an account that was active in 2016 but data were not available from Unmetric, the account name only is reported.

The following measures were obtained from the Unmetric database:

- **Facebook fans.** The number of users who “liked” the company’s or brand’s Facebook page as of December 31, 2016.
- **Facebook posts.** The total number of unique posts that the company or brand shared on its Facebook page in 2016.
- **Twitter followers.** The number of users who “followed” the company or brand on Twitter as of December 31, 2016.
- **Tweets.** The total number of tweets (excluding retweets and replies to users) posted by the company or brand on Twitter in 2016.
- **Instagram followers.** The number of users who “followed” the company or brand on Instagram as of December 31, 2016.
- **Instagram posts.** The total number of unique posts, such as images or videos, that the company or brand shared on its Instagram page in 2016.
- **YouTube video views.** The total number of views for the videos uploaded in 2016. A view is counted after a user has watched a video for approximately 30 seconds.
- **Uploaded YouTube videos.** The total number of new videos uploaded by the company or brand to its YouTube channel in 2016.

If an account was not active for the full-year 2016, the number of Facebook and Instagram posts and tweets were prorated to provide full-year equivalents. In addition, researchers identified all active social media accounts for individual brands and companies, and calculated the mean number of social media platforms per account. Medians and ranges were also calculated for each social media measure.

## Companies and brands in the analyses

To evaluate the companies and brands with food-related advertising directed to children, we used the list of all food, beverage, and restaurant companies with advertising spending in 2016 obtained from Nielsen. We first identified **CFBAI companies** that participated in the CFBAI as of July 2016, according to the program website.<sup>16</sup> Within CFBAI companies, we further differentiated between **CFBAI companies with child-directed advertising** – those that have pledged to advertise only healthier dietary choices to children – from **CFBAI companies that did not engage in child-directed advertising** – those that pledged to not engage in child-directed advertising (for any of their products) as of January 2017.<sup>17</sup> We also identified **CCAI companies** that belonged to the Children’s Confection Advertising Initiative (CCAI) as of January 1, 2017 according to the program website.<sup>18</sup>

We then identified all brands from CFBAI companies with advertising spending in 2016. Using the CFBAI published list of products that may be in child-directed advertising as of July 2016,<sup>19</sup> we differentiated CFBAI company brands into two categories: 1) **CFBAI listed brands** included brands with at least one individual product that participants indicated may be the subject of child-directed advertising; and 2) **CFBAI non-listed brands** included all other brands from CFBAI companies. There were no products from these brands on the CFBAI published list of products.

We also categorized CFBAI company brands into **CFBAI top-50 brands**, which included brands that ranked among the 50 brands advertised most to children on TV in 2016, and **CFBAI less-advertised brands**, for all other CFBAI company brands with advertising spending in 2016. CFBAI top-50 brands and CFBAI less-advertised brands include both listed and non-listed brands.

Given the large number of food-related companies that did not participate in CFBAI or CCAI, we also identified subsets of **non-participating companies** with food, beverage, or restaurant brands for further analysis. **Non-participating top-50 companies** included all food, beverage, and restaurant companies that did not belong to the CFBAI or CCAI and had at least one top-50 brand in 2016 (i.e., one of the 50 brands with the highest number of TV advertisements viewed by 2- to 11-year-olds). A subset of non-participating top-50 companies was examined, **non-participating companies with child-directed brands**, which included companies with at least one brand that directed advertising to children in 2016, as evidenced by advertising on children’s TV and ratios of ads viewed by children versus adults greater than 0.74 (i.e., the difference in amount of time spent watching TV by children vs. adults).

Finally, we identified a subset of non-participating companies that advertised products in healthier food and beverage categories to children: **non-participating companies with healthy brands**. These companies had at least one brand in

the fruit, vegetable, dairy, plain water, or nut categories, and children (ages 2-11) saw on average 10 or more TV ads for the company in 2016.

## Nutrition information

We collected nutrition information for all packaged food and drink products offered by CFBAI listed brands, as well as products offered CFBAI non-listed brands that ranked among the top-50 most advertised to children under 12 in 2016. This analysis excluded fast food kids' meals from McDonald's and Burger King (the two participating fast food restaurants). We compiled a list of all products offered by the selected brands and collected nutrient and ingredient information between May and July 2017.<sup>20</sup> Additionally, we identified all products from CFBAI company brands that were included on the list of products that may be advertised to children published by the CFBAI in January 2017.<sup>21</sup>

When information for specific products was not available on company websites, we searched for the products at grocery and convenience stores in the Hartford, Connecticut area. If the products were not available at local stores, we called the companies at least two times to obtain nutrition and ingredient information. Based on these calls, we identified products that had been discontinued as of May 2017. These products are not included in our analysis. In some cases, nutrition information for products not available on company websites was obtained from the CFBAI pledge product information posted on the CFBAI program website.<sup>22</sup>

Complete nutrient content and ingredient lists for most products were available on company or brand websites, with the exception of The Kraft Heinz Company brands which were not available online for all products. Kraft representatives on the customer service phone number explained that the company's products are continually modified and the product package is the only reliable source of nutrition information. We were able to collect nutrition information for most Kraft Heinz brands from product packaging in local stores. However, none of the listed Lunchable products were available locally. For those products, colleagues in other states found the products and provided us with the nutrition information.

The nutrition information for packaged food and drinks in these analyses are reported per serving size as stated on products' nutrition facts panels. We also identified specific ingredients and the order they were listed on the nutrition facts panels.

The following nutrition content measures are reported by brand and category:

- **Nutrition information** refers to serving size (g), calories (kcal), total fat (g), saturated fat (g), total sugar (g), sodium (mg), fiber (g), and protein (g) per serving as provided on the product nutrition facts panel. Medians and ranges are reported.

- **Ingredient information** refers to the presence or absence of specific components of a product as indicated on the ingredient list on the nutrition facts panel.
- **Main ingredient** describes any ingredient listed as one of the first five components of a product as indicated on the ingredient list of the nutrition facts panel.
- Products with **added sugars** include products with any type of added sugar listed in the nutrition facts panel, including syrups (agave, corn, cane, brown rice, glucose, and high fructose corn), sugar, dextrose, sucrose, lactose, fructose, and honey. Grams of added sugars are not specified in the nutrition labels, therefore only total sugar content is reported in this analysis.
- Products with **non-nutritive sweeteners** include products with any type of sweetener that does not contribute a significant amount of calories, including acesulfame-K (Sweet One), aspartame (NeutraSweet), sucralose (Splenda), and stevia.

## Evaluation of nutritional quality

We used three nutrition standards to evaluate the nutritional quality of the food and drinks included in this report. We compared the nutrients and ingredients in each product to the CFBAI category-specific uniform nutrition criteria, the United States Department of Agriculture (USDA) Smart Snacks nutrition standards, and the Nutrition Profiling Index (NPI) score.<sup>23</sup>

The CFBAI category-specific uniform nutrition criteria and Smart Snacks nutrition standards set specific nutrition requirements that differ by food and beverage category. Both establish limits for the amount of energy, saturated fat, sodium, and sugar permitted for products in different categories and also set nutrient requirements or ingredients to encourage (e.g. ½ serving of whole grain, have vegetable as first ingredient). The NPI scoring system uses a nutrient profiling model to provide an overall nutrition score that ranges from 0 to 100. The model evaluates total calories and composition of both nutrients to limit and nutrients and food groups to encourage per 100g of product.

## CFBAI category-specific uniform nutrition criteria and Smart Snacks nutrition standards

In 2011, the CFBAI introduced the **CFBAI category-specific uniform nutrition criteria** to identify products that may be in child-directed advertising. These standards were to be fully implemented by 2013.<sup>24</sup> The CFBAI conducted a review of the Dietary Guidelines for Americans 2010, third-party nutrition standards, and public health concerns to develop these criteria. Prior to 2011, each participating company had developed its own nutrition criteria for products that may be advertised to children.<sup>25</sup> The CFBAI category-specific uniform nutrition criteria classify food and drinks into 10

main product categories, one of which has 4 subcategories, and each category or subcategory has its own nutrition standards. CFBAI nutrition criteria specify four nutrients to limit (calories, saturated fat, sodium, and total sugars) and nutrition components to encourage (e.g. 1 cup of dairy, 10% daily value of any essential nutrient) that vary by product category. Sugar-free mints and gum, fruit products without added sugars, vegetable products without added fats, and low sodium, water, and “low calorie” beverages are exempt from the nutrient criteria.

**Smart Snacks nutrition standards** were developed as part of the Healthy, Hunger-Free Kids Act passed by Congress in 2010. The USDA was directed to update nutrition standards for competitive foods sold in schools. Competitive foods are defined by the Centers for Disease Control and Prevention (CDC) as “foods sold or available in schools outside of federally reimbursable school meals programs.”<sup>26</sup> The Smart Snacks standards apply to foods sold in schools a la carte (in a cafeteria or dining hall), in a school store, and in vending machines during the school day.<sup>27</sup> The final regulations, often referred to as “Smart Snacks,” went into effect in the 2014-15 school year.

Existing Smart Snacks standards specify six nutrients to limit: calories, sodium, total fat, saturated fat, trans fat, and total sugar. The standards set limits for total calories and sodium in a serving as packaged for sale, limits on total fat and saturated fat as a maximum percentage of total calories, and limits on sugar as a maximum percentage by weight. To qualify as Smart Snacks, products must contain 0 grams of trans fat (i.e., < 0.5 g per serving). Smart Snacks must also meet at least one of four criteria for nutrients to promote: they must be “whole grain-rich”; the first ingredient must be a fruit or vegetable; they must contain at least ¼ cup of fruit or vegetable; and/or they must contain at least 10% of the daily value of either calcium, potassium, vitamin D, or fiber.<sup>28</sup> The Smart Snacks standards also grant exceptions for canned and frozen fruits with no added ingredients and those that are packed in 100% juice, light syrup, or extra light syrup.<sup>29</sup> Exceptions to saturated fat and fat limits are also granted for nuts and low-fat cheese products.

**Tables A1** and **A2** compare the CFBAI category-specific uniform nutrition criteria to the Smart Snacks standards for specific categories. The Smart Snacks snack item category encompasses four CFBAI food categories (i.e. yogurts; cheese; grain, vegetable products, and items not in other

**Table A1.** Comparison of CFBAI category-specific uniform nutrition criteria and Smart Snacks nutrition standards for nutrients to limit

| CFBAI category-specific uniform nutrition criteria                     |                |               |                   |             |                  | USDA Smart Snacks nutrition standards |                |               |                        |             |  |
|--|----------------|---------------|-------------------|-------------|------------------|---------------------------------------|----------------|---------------|------------------------|-------------|--|
| Food category  | Serving size** | Energy (kcal) | Saturated fat (g) | Sodium (mg) | Total sugars (g) | Food category                         | Energy (kcal)  | Saturated fat | Total fat              | Sodium (mg) | Sugar                                  |
| Juices*  | LSS            | ≤ 160         | 0                 | ≤ 140       | No added sugars  | Juices*                               | n/a            | n/a           | n/a                    | n/a         | n/a                                    |
| Yogurts and yogurt-type products                                       | 6 oz           | ≤ 170         | ≤ 2               | ≤ 140       | ≤ 23             | Snack items                           | ≤ 200 calories | ≤ 10% kcal    | of total calories      | ≤ 200       | ≤35% weight from total sugars in foods |
| Cheese and cheese products***  | LSS            | ≤ 80          | ≤ 3               | ≤ 110       | ≤ 2              |                                       |                |               |                        |             |  |
| Grain, fruit and vegetable products, and items not in other categories | LSS            | ≤ 150         | ≤ 1.5             | ≤ 290       | ≤ 10             |                                       |                |               |                        |             |  |
|  | LSS            | >150 - 200    | ≤ 2               | ≤ 360       | ≤ 12             |                                       |                |               |                        |             |  |
| Seeds, nuts and nut butters and spreads***                             | 1 oz or 2 tbsp | ≤ 220         | ≤ 3.5             | ≤ 240       | ≤ 4              | Meal items                            | ≤ 350 calories | ≤ 10% kcal    | ≤35% of total calories | ≤ 480       | ≤35% weight from total sugars in foods |
| Mixed dishes   | LSS            | ≤ 280         | ≤2.5              | ≤ 540       | ≤ 10             |                                       |                |               |                        |             |  |
| Main dishes and entrées  | LSS            | ≤ 350         | ≤ 10% kcal        | ≤ 600       | ≤ 15             |                                       |                |               |                        |             |  |
| Small meals  | LSS            | ≤ 450         | ≤ 10% kcal        | ≤ 600       | ≤ 17 / 12        |                                       |                |               |                        |             |  |
| Meals (entrée) and other items including a beverage                    | Meal           | ≤ 600         | ≤ 10% kcal        | ≤ 740       | ≤ 20 / 15        |                                       |                |               |                        |             |  |

\* Includes 100% fruit juice and fruit juice with water added

\*\* LSS = listed serving size

\*\*\* Cheese and nuts are exempt from total fat and saturated fat limits

Source: CFBAI category-specific nutrition criteria<sup>31</sup> and Smart Snacks nutrition standards<sup>32</sup>

**Table A2.** Comparison of CFBAI uniform category-specific nutrition criteria and Smart Snacks nutrition standards for ingredients to encourage

| CFBAI category-specific uniform nutrition criteria                     |                |   | USDA Smart Snacks nutrition standards |  |
|--|----------------|---|---------------------------------------|--|
| Food category  | Serving size** | Requirements  | Food category                         | Requirements   |
| Juices*  | LSS            | ≥ ½ c F/V juices  | Juices*                               | ≤ 8 oz   |
| Yogurts and yogurt-type products                                       | 6 oz           | ≥ ½ c dairy and ≥ 10% DV calcium  | Snack items                           | Products must be whole grain-rich; have as the first ingredient a fruit, vegetable, dairy product or protein food; or be a combination food that contains at least 1/4 cup of fruit or vegetable or contain 10% of the Daily Value (DV) of a nutrient of public health concern in the 2010 Dietary Guidelines for Americans (calcium, potassium, vitamin D or dietary fiber) |
| Cheese and cheese products   | LSS            | ≥ ½ c dairy equivalent (provides ≥ 10% DV calcium)  |                                       |  |
| Grain, fruit and vegetable products, and items not in other categories | LSS            | ≥ ½ serving of F/V/D/WG or ≥ 10% DV of any essential nutrient                                   |                                       |  |
| Seeds, nuts and nut butters and spreads                                | 1 oz or 2 tbsp | ≥ 1 oz protein equivalent   |                                       |  |
| Mixed dishes   | LSS            | ≥ ½ serving of F/V/D/WG or ≥ 10% DV of two essential nutrients                                  | Meal items                            |  |
| Main dishes and entrees  | LSS            | ≥ 1 serving of F/V/D/WG or ≥ ½ serving of F/V/D/WG and ≥ 10% DV of two essential nutrients      |                                       |  |
| Small meals  | LSS            | ≥ 1½ servings of F/V/D/WG or ≥ 1 serving of F/V/D/WG and ≥ 10% DV of three essential nutrients  |                                       |  |
| Meals (entree) and other items including a beverage                    | Meal           | ≥ 2 servings of F/V/D/WG or ≥ 1½ servings of F/V/D/WG and ≥ 10% DV of three essential nutrients |                                       |  |

\* Includes 100% fruit juice or vegetable and fruit/vegetable juice with water added

\*\*LSS = listed serving size

Source: CFBAI category-specific nutrition criteria<sup>33</sup> and Smart Snacks nutrition standards<sup>34</sup>

categories; and nut butters). The Smart Snacks meal item category encompasses four CFBAI food categories (i.e. mixed dishes, main dishes and entrees, small meals and meals).

### Applying the CFBAI and Smart Snacks nutrition criteria

To apply the CFBAI nutrition criteria, we first classified products into the appropriate CFBAI food categories, using the notes section of the White Paper on CFBAI's Category-specific Uniform Nutrition Criteria as a guide.<sup>30</sup> However, was not readily apparent how to classify products in the "grain, fruit and vegetable products and items not in other categories" into category's two subcategories for different RACC sizes. In addition, correct assignment of products to the mixed dishes, main dishes and entrees, small meals, or meals categories was sometimes difficult to determine. When we could not determine the appropriate CFBAI product category, we looked at the specific company pledges to determine if the company indicated the category. Lastly, if those documents did not provide enough information to classify products, we compared the nutrition information of the listed products to the nutrition standards and assumed that listed products belonged to the category for which they

met the nutrition criteria. Subsequently, we compared the nutrition information from all the products included in this analysis and we determined which products exceeded the CFBAI nutrients to limit. We took a conservative approach and did not exclude any products that did not meet the CFBAI nutrition components to encourage.

In determining advertised products that meet the Smart Snacks standards, we examined the nutrients-to-limit criteria for calories, sodium, total fat, saturated fat, and total sugar. We estimated the nutrients-to-promote using the order of ingredients in the nutrition facts panel. For example, we assumed that products that listed whole grain flour before flour from refined grains would qualify as whole-grain rich. Products granted exemptions to the nutrients-to-limit criteria (e.g., reduced fat cheese, nuts, and some fruit) were also granted exemptions in this report.

The nutrition information for Kraft Macaroni & Cheese products posed a particular issue for the CFBAI and Smart Snacks standards. The nutrition facts panel provided weight and nutrition information for the uncooked macaroni and unprepared cheese sauce mix as well as for the prepared mix. However, preparation instructions for different varieties varied in the amount and type of milk and butter or margarine

specified, and nutrition information for the prepared product did not always match the type of butter or milk specified. For example, one variety prepared using 2 tablespoons of butter and 3 tablespoons of 1% lowfat milk reported that 1 cup contained 13 g of total fat, while another variety prepared with 4 tablespoons of margarine and one-quarter cup of milk (unspecified fat content) also contained 13g of total fat. Therefore, to standardize the preparation of Kraft Macaroni & Cheese Blue Box products, we used the instructions from Blue Box “Cars,” which matched the nutrients listed on Kraft’s CFBAI pledge for one prepared cup of Kraft Macaroni & Cheese.<sup>35</sup> The package used 2 tablespoons of margarine and 3 tablespoons of 1% milk to prepare. Based on that product’s nutrition panel, we added 30 calories, 3 grams of fat, 2 grams of saturated fat, 10 milligrams of sodium, 1 gram of total sugar, and 2 grams of protein (i.e., the difference between the unprepared and prepared nutrition information) to the nutrition information reported on the nutrition facts panel for the uncooked macaroni and unprepared cheese sauce for all Blue Box products. The preparation instructions for all Deluxe and Microwaveable varieties did not vary, so we used the reported nutrition information for those products.

### NPI score

The **NPI score** is based on the nutrition rating system established by University of Oxford researchers for the Food Standards Agency in the United Kingdom.<sup>36</sup> Their Nutrient Profiling model (NPM) is currently used by the U.K. Office of Communications (OFCOM) to identify nutritious foods that can be advertised to children on TV.<sup>37</sup> The model also has been approved by Food Standards Australia New Zealand to identify products that are permitted to use health claims in their marketing.<sup>38</sup> The NPM provides one score for each product based on total calories and composition of both nutrients to limit (i.e., saturated fat, sugar, and sodium) and nutrients and food groups to encourage (i.e., fiber, protein, and unprocessed fruit, nut, and vegetable content).

The NPM has several advantages over other nutrient profiling systems. Researchers developed the model independently of food industry funding; its development and scoring method is publicly documented and transparent; and it has been validated to reflect the judgment of professional nutritionists.<sup>39</sup>

The model also produces a continuous score that provides a relative evaluation of products, in contrast to threshold models that classify foods as “healthy” or “unhealthy.” In addition, the model includes only nutrients that are reasonable and well-justified based on existing nutrition science. In particular, the model does not award points for micronutrient fortification, thereby not rewarding vitamins and minerals added to inherently unhealthy products.

However, it is difficult to interpret the original scores produced by the NPM as it is reverse scored (i.e., a higher score indicates a product of worse nutritional quality). Scores range from +34 (worst) to –15 (best), with a score of 3 points or lower identifying healthy foods that can be advertised on children’s TV programs or during programs with a disproportionate number of viewers under 16 years old in the United Kingdom. Therefore, we created a Nutrient Profiling Index (NPI) score using the following formula:  $NPI\ score = (-2) * NPM\ score + 70$ . For example, a relatively nutritious food with an NPM score of -3 would receive an NPI score of 76 ( $-2 * -3 + 70$ ). This recalculation produces a score from 0 (poorest nutritional quality) to 100 (highest nutritional quality) that is easier to interpret and compare.

We calculated the NPI score for all food and drink products in our analysis. To identify packaged food products with a healthy nutrient composition, we used the cut-offs established by the U.K. OFCOM to identify healthy products.<sup>40</sup> A NPM score <4 translates to a revised NPI score of 64 or higher to qualify as a healthy food product that can be advertised to children on TV; while a NPM score of <1 translates to a revised NPI score of 70 or higher to qualify as a healthy drink that can be advertised to children on TV.

For nearly all products examined, the nutrition facts panel provided the necessary nutrition information to calculate the NPI score. However, the nutrition facts panel for Kraft Macaroni & Cheese did not list the weight of the prepared serving size. To calculate the weight for the NPI score, we measured and cooked the “Original” flavor for each of the three Kraft Macaroni and Cheese varieties (Blue Box, Deluxe, and Microwaveable) according to package instructions to determine the weight of the cooked macaroni with reconstituted sauce.