www.CerealFacts.org

Cereal f.a.c.t.s.

Food Advertising to Children and Teens Score

Evaluating the Nutrition Quality and Marketing of Children's Cereals

RUDD CENTER FOR FOOD POLICY & OBESITY
Yale University

Support for this project was provided by grants from the Robert Wood Johnson Foundation and the Rudd Foundation.

Cereal FACTS:

Evaluating the nutrition quality and marketing of children's cereals

Authors:
Jennifer L. Harris, Ph.D., M.B.A.
Marlene B. Schwartz, Ph.D.
Kelly D. Brownell, Ph.D.
Vishnudas Sarda, M.B.B.S., M.P.H.
Megan E. Weinberg, M.A.
Sarah Speers
Jackie Thompson
Amy Ustjanauskas
Andrew Cheyne, M.A.
Eliana Bukofzer, M.P.H.
Lori Dorfman, Dr.PH.
Hannah Byrnes-Enoch

Rudd Center for Food Policy and Obesity
October, 2009

Acknowledgements

We would like to thank the following people for their assistance in collecting, coding and analyzing the data:
Amir Goren, Ph.D.
Jessee Leili-Jones
Carly Litzenberger
Julie McComish
Kathryn O'Shaughnessy
Doug Ranshaus
Warren Sethachutkul
Cozette Tran-Caffee, M.P.P.

We would also like to thank our steering committee and other advisors:
Frank J. Chaloupka, Ph.D.
William H. Dietz, M.D., Ph.D.
Steve Fajen
Thomas R. Frieden, M.D., M.P.H.*
Kipling J. Gallion, M.A.
Corinna Hawkes, Ph.D.
Shiriki Kumanyika, Ph.D., M.P.H.
Tim Lobstein, Ph.D.
Susan T. Mayne, Ph.D.
Lisa M. Powell, Ph.D.
Mike Rayner, Ph.D.
Mary Story, Ph.D., R.D.
Stephen Teret, J.D., M.P.H.
Ellen Wartella, Ph.D.
James G. Webster, Ph.D.
Jerome D. Williams, Ph.D.

*Dr. Frieden served on the steering committee prior to assuming his role at the C.D.C.

Thank you to our colleagues at the Rudd Center, especially Rebecca Oren, Andrea Wilson, Meredith St. John and Tricia Wynne. Finally, we thank the leadership and staff at the Robert Wood Johnson Foundation, with special thanks to the Childhood Obesity Team, including C. Tracy Orleans, Ph.D., Punam Ohri-Vachaspati, Ph.D., R.D., Stephanie Weiss, M.P.H., and David Adler.

Support for this project was provided by grants from the Robert Wood Johnson Foundation and the Rudd Foundation

List of Tables

Ranking Tables

List of Figures

Extensive marketing to children for foods of poor nutritional quality has been identified as a contributor to the obesity crisis. The food industry has responded, through the Children's Food and Beverage Advertising Initiative (CFBAI) sponsored by the Council of Better Business Bureaus, with pledges by most of the largest food marketers to reduce unhealthy marketing to children. The question raised by health advocates is whether self-regulatory actions such as these do in fact reduce the harm associated with unhealthy food marketing to children. Cereal FACTS addresses that question.

Ready-to-eat (RTE) cereals are the largest category of packaged food marketed directly to children; in 2006, cereal companies spent $229 million to target children and adolescents. In this report, we present the nutrient quality of cereals, evaluate the products marketed to children as compared to those marketed to adults, quantify young people's exposure to cereal marketing, and describe the marketing practices used to reach children and their parents.

We make a fundamental distinction between brands marketed directly to children (i.e., child brands); those marketed to parents and adults as appropriate to feed their children and/or families (i.e., family brands); and those marketed to adults for adult consumption only (i.e., adult brands). Due to their greater vulnerability to marketing influence, we begin with the assumption that products and messages used to market foods to youth must be held to a higher standard than those used to market to parents and adults.

We first evaluate the nutrient content of 277 RTE cereals offered by 13 companies in the United States and compare the quality of child, family and adult brands. To conduct this evaluation, we utilize an overall Nutrition Profiling Index (NPI) score based on the nutrient profiling system used in the United Kingdom to identify healthy foods that can be advertised to children on television.

To quantify cereal company marketing practices, we evaluated television advertising, marketing on the internet (including cereal company websites and advertising on other websites), and in-store marketing (including shelf space allocation, point-of-sale programs, and product packaging). These forms of marketing represent 97.5% of cereal companies' total youth marketing budgets. We utilized a variety of data sources and methods. To document young people's exposure to advertising for individual brands, we licensed syndicated media research data, including television ratings data from The Nielsen Company and comScore Media Metrix and Ad Metrix data to measure website and internet advertising exposure. To quantify in-store marketing practices, we commissioned an audit of a nationally representative sample of supermarkets across the United States. We supplement these exposure data with content analyses to examine the messages presented in television advertisements, child-targeted websites, banner advertising on youth-oriented websites, and cereal packages.

Cereal FACTS presents a comprehensive and independent science-based evaluation of cereal company marketing to children and adolescents in 2008 through early 2009: the period prior to and immediately following full implementation of cereal company CFBAI pledges.

Nutrition quality

In spite of their pledges to reduce unhealthy marketing to children, the large cereal companies continue to target children with their least healthy products. Child cereals contain 85% more sugar, 65% less fiber and 60% more sodium when compared to adult cereals. In fact, not one cereal that is marketed directly to children in the United States would be allowed to advertise to children on television in the United Kingdom. Only one, Cascadian Farm Clifford Crunch, would be eligible to be included in cereals offered through the USDA Women, Infants and Children (WIC) program. In addition, 42% contain potentially harmful artificial food dyes.

All companies do have more nutritious cereals in their portfolios, but these cereals are marketed only to adults. Even the more nutritious cereals promoted for child consumption (e.g., Kellogg Mini-Wheats, General Mills Kix and Quaker Life) are marketed to parents, not to children. In contrast, the majority of child and family cereals offered by the smaller companies (e.g., Kashi Mighty Bites, Barbara's Bakery Puffins and Annie's Bunnies) have significantly less sugar, more fiber and no food dyes. Clearly, children will eat these more nutritious options.

We also found that stated efforts by the larger cereal companies to improve the nutrition quality of their children's cereals have been inadequate. Although they have reformulated approximately two-thirds of their child and family products, these improvements have been minimal; in most cases, the equivalent of reducing sugar content from 3 ½ tsp to 3 tsp per serving. New cereal introductions and cereal brand extensions may provide a better indicator of companies' commitment to improve the nutrition quality of their product lines; however, these efforts again disappoint. Nutrition scores for new products introduced within the past two years indicate that the major cereal companies have not attempted to improve the nutrition quality of their product portfolio and thus expect to continue the status quo going forward.

Advertising spending and television advertising

Cereal companies spent $156 million in 2008 to promote child cereals in the media. General Mills and Kellogg dominate cereal advertising to children, spending 94% of this total on just 11 brands. According to first quarter 2009 numbers, total media spending for child and family cereal brands in 2009 is on track to remain consistent with 2008 spending. In contrast, Quaker spent less than $200,000 on its only child brand: Cap'n Crunch.

It appears that the CFBAI has not reduced the amount of cereal advertising to children on television. The average child in the U.S. continues to view 1.6 ads on television every day for products with cereal companies' poorest quality nutrient profile. According to first quarter 2009 numbers, some companies may have even increased their television advertising targeted to children. In addition, children see over five times as many of these ads as compared to adults; therefore, much of this exposure occurs when parents are not watching. Finally, children's cereal advertisements have little to do with food; cereals are typically represented as toys or play-things, playmates in exciting adventures, and even magical entities. The main purpose of child cereal ads appears to be to associate these poor quality products with positive emotional experiences, including having fun, being cool and winning acceptance by peers.

This analysis also presents disturbing news about exposure to cereal advertising by very young children. Although General Mills and Kellogg have pledged that they will not advertise to preschoolers directly, the average 2- to 5-year-old viewed more than 500 television ads for child cereals in 2008, and 89% of them were from General Mills and Kellogg. These children have no cognitive abilities to defend against advertising messages; therefore, advertising to them is inherently unfair and potentially harmful given the nutritional quality of the products promoted.

Finally, General Mills has by far the most child-targeted cereal advertising; they are responsible for almost 60% of all cereal advertisements seen by children. The products advertised most extensively (Cinnamon Toast Crunch, Honey Nut Cheerios, Lucky Charms, Cocoa Puffs and Trix) are all on their list of "better-for-you" foods that can be advertised to children; however, these products are all significantly "worse-for-you" than other cereals in the General Mills portfolio. Kellogg and Post also advertise their own least nutritious products directly to children. Compared to General Mills, however, they promote fewer products and invest less advertising per brand. Kellogg also advertises its lower sugar children's cereals (Rice Krispies and Frosted Mini-Wheats) to parents (instead of children) directly. Only Quaker has discontinued advertising directly to children on television.

Internet marketing

The majority of brands that advertise directly to children on television also maintain an extensive child-targeted marketing presence on the internet. Millsberry.com and Postopia.com are among the largest youth-targeted websites on the internet with content devoted to promoting their child brands. On Millsberry.com alone, an average of 767,000 young people spend 66 minutes per month on the site interacting with branded content for child cereals, including Trix, Lucky Charms and Honey Nut Cheerios. Postopia,com, Post's website that prominently features marketing for Fruity and Cocoa Pebbles and Honeycomb cereals, is also visited by 265,000 young people who spend more than 30 minutes on the site each month. Smaller child-targeted websites for Apple Jacks, Froot Loops, Reese's Puffs, Corn Pops, Frosted Flakes and Cookie Crisp also attract up to 80,000 young people each month with entertaining branded content. Only three websites (FrostedMiniWheats.com, Cheerios.com and Chex.com) included child-targeted web pages that did not promote cereals with high sugar content. However, these pages were contained within an adult-targeted website and did not generate enough visitors to measure.

The highly engaging and entertaining content that appears in these child-targeted cereal websites explains their popularity. Virtually all pages within the sites promote at least one child brand; therefore, they serve as powerful marketing devices. As found in television advertising, these sites represent cereal products primarily as a toy or plaything and attempt to associate the unhealthy products featured with fun and, in some cases, good health. Only one site (General Mills' Choosebreakfast.com) provided accurate health or nutrition information to children.

General Mills and Kellogg also use banner advertising on third party websites extensively to direct children to their own child-targeted websites. These banner ads are highly-engaging promotional devices designed to grab children's attention. Even when children do not click through to the cereal website, banner ads provide another form of brand advertising to increase affinity and desire for the advertised cereals. Almost three-quarters of these banner ads appeared on only four web publishers' sites: Gorilla Nation Kids (including Millsberry.com), Viacom (including Nick.com and Neopets.com), CartoonNetwork.com and Disney.com.

Reliable outside data sources are not yet available to track social media marketing; however, our survey of cereal presence on Facebook and MySpace demonstrates considerable viral marketing activity for many of these brands in social media. Company-sponsored fan pages on Facebook for Froot Loops, Frosted Flakes, Lucky Charms and Cocoa Puffs all have more than 10,000 fans each.

In-store marketing

These data also confirm that the large cereal companies place considerable resources behind in-store marketing and packaging to drive purchase of their child and family cereals. Child and family cereals comprise approximately one-half of the shelf space in the cereal aisle; but they are more likely to be stocked on the prime middle shelf and are disproportionately marketed with special in-store displays and promotions. In addition, the cereal box is crowded with child engagement and health messages to attract the attention of both children and parents. An average box of cereal from one of the large companies contains 1.4 child engagement and 2.0 health messages.

The in-store marketing analysis also reveals significant differences in marketing strategies of the major cereal companies. Whereas General Mills spends a disproportionate amount on advertising its child and family brands on television and has developed a significant child-targeted presence on the internet, Kellogg stands out in the supermarket with the greatest number of special displays and promotions. All four large cereal companies use child engagement messages extensively (averaging between 1.2 and 2.0 per box). Notably, General Mills also appears to speak to parents directly on their boxes, with an average of 3.2 health messages per box, including on their least nutritious child brands. Kellogg includes more promotions on its cereal boxes and Post highlights its gaming website most extensively.

Cereal FACTS Index

The cereal FACTS Index score combines nutrition quality and marketing exposure to assign one overall score for each child and family brand. Of the 43 child and family brands in our analysis, 24 had no advertising spending and low supermarket presence during the period we examined, therefore, we could not assign a marketing score to these brands. Of the 19 brands that were marketed during the time period of this study, only Kellogg Mini-Wheats received a healthy nutrition rating, therefore, it is the only brand to receive a high combined score.

The FACTS Index clearly highlights the 10 worst offenders. These brands all market extensively to children and parents, and all have low nutrition scores. The six worst brands belong to General Mills: Lucky Charms, Cinnamon Toast Crunch, Honey Nut Cheerios, Trix, Reeses's Puffs and Cocoa Puffs. Post follows with their Fruity and Cocoa Pebbles brand. Finally, Kellogg Frosted Flakes, Corn Pops and Froot Loops complete the worst offenders list. As demonstrated throughout this report, these cereals with the lowest nutrition quality market directly to children in high volumes on television, the internet and in the supermarket.

Conclusions

We found that cereal companies are in full compliance with their self-defined CFBAI pledges to reduce unhealthy marketing to children. And yet, we also found that that the amount of cereal marketing to children and the nutrition quality of children's cereals remain at unacceptable levels and have not objectively or meaningfully improved. This finding is unfortunate as RTE cereals have the potential to provide a convenient, economical and nutritious breakfast option for children. All the cereal companies already have healthier products that could be marketed to children.

Rather than promote their best products, however, the large cereal companies have instead chosen to aggressively market only their least nutritious products directly to children. Even children as young as two- to five-years-old are exposed to marketing messages for these cereals daily on television. Children are also exposed to substantial amounts of child-targeted marketing on the internet and in the supermarket, and much of the marketing on television and the internet occurs without parents' awareness. Most of these cereals contain high levels of sugar, and many contain artificial food dyes; the healthier cereals, quite literally, pale in comparison. In addition, with their implicit messages that these foods are fun and appropriate options for breakfast, the substantial marketing that cereal companies direct to children makes parents' efforts to encourage a healthy diet even more difficult.

Recommendations

Based on these findings, current food industry self-regulation does not protect young people from the unhealthy influence of cereal marketing and much stronger action is needed. First and foremost, cereals marketed to children must meet objective nutrition standards that have children's health as the aim. Foods marketed to children must be more, not less, nutritious than foods marketed to adults; and the standards should be established by the government and nutrition experts with no ties to the food companies.

In addition, the definition of children's advertising must incorporate all types of marketing to which children are exposed, including television advertising that appears in prime-time or other programming that is not viewed primarily by children, but does have large child audiences. Similarly, children are exposed to numerous forms of marketing that are not covered by current CFBAI pledges, notably promotions, in-store marketing and product packaging, that represent 29% of cereal company marketing expenditures. Without limits on all forms of marketing, it is conceivable that even complete bans on food advertising to children, as defined by the CFBAI, could be offset by increased promotion at the point-of-sale or other unregulated types of marketing.

A significant risk for the public health community and government is that regulations that dictate changes in industry practices will not improve diet or could even worsen it. This can happen if industry complies with specific regulations, but continues to find new, perhaps even more effective, ways to market their products. We believe that a performance-based approach to industry regulation that mandates outcomes (e.g., reduced consumption of sugar-sweetened cereals by young people) should be taken seriously. Given marketers' skill in developing new and creative practices to sell their products, one can argue that this approach is the only way to generate real reductions in the harm to children's health caused by food marketing. If the food industry wants to be a true partner in the fight against childhood obesity, food companies must also accept responsibility for the results of their actions.

In 2006 the Institute of Medicine (IOM) released a report on children's food marketing beginning with two words, "Marketing works."[1] Also in 2006, the World Health Organization (WHO) issued a report, noting that "…exposure to the commercial promotion of energy-dense, micronutrient-poor foods and beverages can adversely affect children's nutritional status."[2]

Both the IOM and WHO reports noted the dire state of children's food marketing and called for sweeping changes, but left open the possibility that food companies might be persuaded by good will, public pressure, or the threat of government regulation to change marketing practices. This sentiment is captured in the title of the IOM report, *Food Marketing to Children and Youth: Threat or Opportunity?*

Much has transpired since the release of the WHO and IOM reports. There have been many more research papers on food marketing,[3-7] reviews,[8, 9] and reports calling for change;[10-13] concerns with rising prevalence of childhood obesity have intensified, alarms have been raised about marketing in developing countries,[14, 15] and the food industry has engaged in a number of self-regulatory actions.[16] The question is whether appreciable changes have occurred and whether the current marketing landscape protects children from harm.

Aims and context

In 2008, the Rudd Center for Food Policy and Obesity at Yale University received a grant from the Robert Wood Johnson Foundation to study the amount and impact of food marketing directed at children and youth. The goal was to highlight both helpful and harmful industry practices by conducting objective, science-based evaluation of the marketing and nutrition footprint for specific companies and food products. Ready-to-eat (RTE) cereals are the first food category to be evaluated.

The following Cereal FACTS report quantifies the nutrient qualities of cereals marketed and not marketed to children and the full array of marketing practices used to promote these cereals to children and their parents. This information is synthesized into a FACTS Index that presents an overall nutrition and marketing score by brand and company.

The Index provides a means to evaluate current marketing practices and offers a metric against which future changes can be monitored. This analysis is the most extensive of its type ever undertaken. We incorporate the same media measurement data used by advertisers to quantify exposure to television and internet marketing; utilize additional quantitative studies to measure nutrition quality and in-store marketing practices; and conduct content analyses to evaluate the messages presented in television, internet and on-package marketing. We also present data on differential exposure by age and racial group. The objective is to provide a transparent, science-based evaluation of the amount and content of cereal marketing to which children and adolescents are exposed.

There are many potential interested parties. Our aim is to be sensitive to each while placing the health and well being of children at the forefront. Food, advertising, and media companies are heavily invested in these issues, but so are the public health community, parents, and of course children. In fact, every citizen has a stake because of the public costs of diseases related to poor diet. The health care costs for just obesity are estimated at $147 billion annually,[17] half of which are paid for by public funds through Medicare and Medicaid. To the extent poor diet compromises health, the promotion of unhealthy foods will be related to the quality of the nation's workforce, how students learn in schools, and even the number of eligible military recruits.

Why cereals?

Children are exposed to marketing for a great variety of foods, but cereals hold a special place:

- Cereal companies spend more money than any other packaged food category in marketing their products to children ($229 million in 2006).[18] Therefore, understanding the nutrition quality and marketing practices of cereal products is crucial.
- Earlier research from 2006 and 2007 demonstrated that cereals marketed to children are less healthy overall and have higher sugar content than those marketed to adults.[19]
- Children's exposure to cereal advertising on television also exceeds that for any other category and represents 25% of all food and beverage advertising seen by children.[20, 21]
- Cereal companies disproportionately advertise to children; children see twice as many television ads for cereals compared to adults.[22]
- Cereal companies sponsor large advergaming websites targeted to children and cereal ads appear frequently on children's websites.[23] Internet marketing has been studied far less extensively than television, but health advocates raise concerns about the significant amount of time young people spend interacting with advertising content online.[24, 25]
- In 2007, three of the four major cereal companies pledged to reduce marketing of less healthy cereals to children, offering an opportunity to examine the impact of industry self-regulation.

Food industry self-regulatory pledges

An important objective of this work is to provide information that might help evaluate the impact of industry self-regulation. Coinciding with declining public trust and a growing body of research questioning industry practices, food and beverage companies have responded as industries typically do by launching a series of highly publicized self-regulatory actions.[26] It is essential to know whether industry pledges have been kept and if they have, whether any benefit to public health has occurred.

Several industry pledges pertain to children's marketing and to food labeling:

- A 2006 agreement by the beverage industry to market and sell fewer sugar-sweetened beverages in schools.[27] This agreement was brokered by the Alliance for a Healthier Generation, a partnership between the Clinton Foundation and the American Heart Association, and the American Beverage Association.
- The 2007 Children's Food and Beverage Advertising Initiative (CFBAI) brokered by the Council of Better Business Bureaus, which as of October 1, 2009, involved 15 major companies (Burger King, Cadbury Adams, Campbell Soup, Coca-Cola, ConAgra Foods, General Mills, Hershey, Kellogg, Kraft, Mars, McDonald's, PepsiCo, Nestlé USA, Dannon, and Unilever USA).[28] The companies have agreed to market only "better-for-you" foods in media aimed at young children.
- An agreement made by Disney in 2006 and by Nickelodeon in 2007 to discontinue the use of their names and characters on unhealthy foods.[29, 30]
- The 2009 Smart Choices program in which a group of companies pledged to use a uniform symbol on products to designate healthier choices.[31]

For the purposes of this report, the CFBAI is most important. The 15 signatory companies pledged to "shift the mix of advertising messages directed to children under 12 to encourage healthier dietary choices and lifestyles." Of the large cereal companies, General Mills, Kellogg, and PepsiCo (owner of Quaker) had made pledges as of October 1, 2009, but Post (purchased by Ralcorp in 2008) had not. All pledges were scheduled to be fully implemented by January 1, 2009. The commitment is for 100% of advertising in measured media primarily directed to children under 12 to be for "better-for-you foods."[32] The companies also agreed to feature only "better-for-you" products on company-owned websites directed to children under 12 and in conjunction with licensed characters.

In the case of cereals, "better-for-you" criteria are nearly identical to those established through the Smart Choices program and are shown in **Table 1**.

Several potentially important loopholes exist in these industry pledges. First is that industry sets the nutrition criteria that it agrees to abide by. Lax criteria would permit most or all products to receive the "better-for-you" designation. Second

Table 1. CFBAI "better-for-you" criteria for cereals

Ingredient	Company	Criteria	What it means
Sugar	General Mills and Kellogg	≤ 12 g per serving	This "limit" permits up to 43% sugar content in a 28 g serving
	Pepsico (Quaker)	≤ 25% added kcal "Unless the product contains 10% DV of fiber or meets other criteria"	Effectively, PepsiCo does not have a sugar limit on cereals
Calories	General Mills and Kellogg	≤ 175-200 kcal per serving	Nearly all cereals fall under this calorie requirement
	PepsiCo	None	
Fat	General Mills	≤ 3g per serving	Nearly all cereals have less than 1% fat content
	Kellogg	No limit	
	PepsiCo	30% kcal	
Sodium	General Mills and Kellogg	≤ 230 mg	Allows up to 820 mg per 100 g of product (for a 28 g serving)
	PepsiCo	≤ 480 mg	Allows up to 1700 mg per 100 g of product (for a 28 g serving)
Positive Nutrients	General Mills Kellogg PepsiCo	All require positive nutrients, functional benefits or positive food groups (i.e., vitamins and minerals, fiber, protein, fruits, vegetables or low-fat dairy)	Nearly all cereals qualify because they are fortified with vitamins and minerals and/or contain small amounts of fiber or protein

is the definition of children's media. The industry defines advertising directed to children under 12 as programming where children are a majority of the audience. Only half of the food advertising that children see occurs on programming where children comprise half the audience or greater, so programs with vast numbers of youth viewers (e.g., *American Idol*) are not affected.[33]

Industry self-regulatory pledges are likely to play a major role in children's nutrition in the future. The extent of their positive or negative impact must be tested if the United States and other countries are to form judgments about whether industry actions are sufficient or whether intervention by legislators and regulatory agencies will be necessary.

On creating a transparent, open, and objective process

The data presented in our report and the algorithm upon which our Index is based are described in complete detail. The components of the report and Index are based on available science, the types of marketing data currently available, and strategic studies aimed at filling important gaps in information. The scope of the report and information to be collected were developed through detailed reviews of the literature and multiple discussions with experts in the field. A consultant meeting and a number of phone conferences were held with nutrition, marketing, and public health experts who serve on an advisory committee for this project.

We recognize that marketing methods are evolving at an unprecedented rate. What was once advertising only on Saturday morning cartoon television is now all-day children's programming and an exploding array of marketing practices based on advances in digital technology. Grave concerns have been raised about privacy, whether even adults fully understand when marketing is occurring, whether developmental vulnerabilities of children are being exploited, and whether parents can truly monitor what their children see.[34, 35] There is real risk that research on any technology may have limited value because the technology it examines will yield to another by the time the research is complete. It is important, therefore, to develop a means of testing total marketing exposure, a means flexible enough to accommodate new methods of marketing as they emerge.

No piece of scientific work is perfect, especially in its first iteration, and our Cereal FACTS report and Index are no exceptions. We have learned a great deal from previous work on complex rating systems, particularly the Environmental Performance Index pioneered by Esty and colleagues.[36, 37] It is simply not possible to quantify the full universe of each and every type of marketing and to evaluate them for their impact on children. We approach Cereal FACTS recognizing that new data will become available and that any rating system must be updated regularly. Therefore, feedback from interested parties will be invaluable in making the information and index as valid and accurate as possible. We invite feedback and plan to convene stakeholder meetings to solicit input on maximizing the value of the index.

The report and Index

In this report, we make a fundamental distinction between brands marketed directly to children (i.e., child brands); those marketed to parents and adults as appropriate to feed to their children and/or families (i.e., family brands); and those marketed to adults only for adult consumption (i.e., adult brands). We begin with the assumption that products and messages used to market foods to children and adolescents must be held to a higher standard than those marketed to parents and adults. Numerous studies confirm that children do not have the cognitive capacity to understand that marketing presents a potentially biased point of view until age seven or eight years, and that they do not automatically access their knowledge about marketing biases until age 14 years.[38, 39] Adolescents are also highly susceptible to influence from food marketing as their capabilities to control their impulses and forgo short-term rewards for long-term benefits are still developing.[40] In addition, marketing can play an influential role as adolescents establish their own individual identity.[41, 42] We also examine evidence of marketing that disproportionately reaches African American and Hispanic youth. These populations face some of the highest risks of obesity and obesity-related diseases and therefore the nutritional quality of foods targeted to these groups warrants close attention.[43, 44]

We first evaluate the nutrition quality of 277 RTE cereals offered by 13 companies in the United States, and compare the quality of child, family and adult brands. We then present data on all advertising spending and volume of television and internet advertising, focusing on child and family brands. These data include advertising spending and television ratings data from The Nielsen Company (Nielsen) and internet data from comScore. Through these syndicated sources, we document young people's exposure to advertising for individual brands, including differential exposure by age and racial group. We supplement this exposure data with content analyses of television ads, child-targeted websites, and banner ads on other youth-oriented websites, as well as a survey of cereal presence in social media, to evaluate the messages and techniques commonly used to market cereals to children. To quantify in-store marketing practices for child, family and adult brands, we present results from an audit of a nationally representative sample of supermarkets that documents shelf space allocation and placement and special displays and promotions by brand and company, as well as a content analysis of marketing messages on cereal packaging. Finally, we consolidate these data into a Cereal FACTS Index

to quantify and compare the overall nutrition quality and marketing practices for brands and companies that promote their cereals to children and parents.

The remainder of the report is organized into three sections: 1) Methods details the data sources, procedures and calculations used to collect and analyze the data; 2) Results presents the detailed findings from each of these analyses; and 3) Discussion presents overall conclusions, implications and recommendations for further improvements to cereal products and marketing practices. We provide further information on cereal nutrition and marketing practices by brand on our interactive website: www.cerealfacts.org.

Overview

We utilized a variety of data sources and methods to provide the most comprehensive analysis possible of the ready-to-eat cereal market in the United States. Through publicly available data, we thoroughly document and evaluate common marketing practices used to promote the majority of widely-available cereal products, including television advertising, company websites, internet advertising on third party websites, social media, product packaging and shelf space allocation and promotions in the supermarket.

Methods include analyzing the nutrition quality of cereal products; purchasing media exposure and spending data from syndicated sources (i.e., The Nielsen Company [Nielsen] and comScore); commissioning an audit of cereal distribution and promotion in supermarkets across the country; and conducting content analyses of television advertisements, child-targeted company websites, internet banner advertising, and product packaging. We augment these analyses with information searches on company websites, monitoring the business and consumer press, and numerous visits to the supermarket. Finally, we combine the available data to calculate the Cereal Food Advertising to Children and Teens Score (FACTS) Index. The FACTS Index provides an overall evaluation of the quality and quantity of cereal marketing by brand. These methods are described in detail in the following sections.

We did not have access to food industry proprietary documents, including privately-commissioned market research, media or marketing plans or other strategic documents; therefore, we do not attempt to interpret the cereal companies' goals or objectives for their marketing practices. Rather, we provide comprehensive and transparent documentation of a) the nutrition quality of cereal products; b) the extent of children's and adolescents' exposure to cereal marketing, in numerous forms; and c) the content of the marketing messages. We also evaluate the products and marketing practices targeted to young people as compared to those targeted to adults and compare the products and marketing practices of different cereal companies and brands.

Scope of the analysis

To obtain a full list of ready-to-eat (RTE) cereal products to include in our analysis, we first compiled a list of all products stocked in the cereal and natural food aisles of a large, local supermarket, as well as products listed on websites for the large cereal companies and a list of cereals obtained from The Nielsen Company (Industry Classification Code = F122). We then excluded any hot cereals (e.g., oatmeal or Cream of Wheat), any products targeted to small specialized segments of the population (e.g., baby cereals or diabetic products), and any cereal branded products that are not traditional RTE cereals (e.g., Kellogg cereal straws or any type of cereal bar). We also excluded generic cereals, such as store brands or Malt-o-Meal cereals, from the analysis.

The data reflect cereal product formulations as of May 31, 2009 and the marketing practices used to promote cereals from January 1, 2008 through May 31, 2009. Specific time frames examined for each type of data are described in the methods sections. We chose this time frame to assess nutrition and marketing practices *following* implementation of food industry pledges to improve product nutrition and advertising targeted to children in connection with the Children's Food and Beverage Advertising Initiative.[1] All pledges were scheduled to be implemented during 2008 with full implementation by January 1, 2009.[2] Cereal products and marketing practices continue to evolve; therefore, the information presented in this report does not include new products or product reformulations, website redesigns, new advertising campaigns or other marketing programs introduced after May 31, 2009.

To simplify data analysis, we utilized several criteria to categorize cereals. We first assigned a company and brand designation to each cereal:

- **Company** refers to the company that is listed on the package (e.g., General Mills or Kellogg). In most cases, the company listed on the package is the same as the cereal brand's parent company, with a few exceptions. In 2008, Ralcorp acquired Post Cereals from Kraft Foods; these cereals are listed under the Post company. In addition, Quaker cereals is a division of PepsiCo, Kellogg Company owns Kashi and General Mills owns Cascadian Farm. Packaging for these cereals includes few or no mentions of the parent company; therefore, we categorize them as separate companies.
- **Brand** references the marketing unit for each cereal. For most cereals, the brand is clear from the name of the cereal (e.g., Berry Berry Kix, Honey Kix and Kix are all different versions of the Kix brand). In some cases, however, marketing practices differed significantly between products with the same brand name. In those instances, marketing practices determined the brand designation. For example, Honey Nut Cheerios markets extensively to children directly, but other types of Cheerios are marketed exclusively to adults. Therefore, we designated Honey Nut Cheerios and Cheerios (excluding Honey Nut) as two separate brands. In other instances, the names of the cereals differ somewhat, but they are marketed under the same campaign (e.g., Rice Krispies and Cocoa Krispies). In those cases, we assigned the cereals to one brand (i.e., Rice and Cocoa Krispies).
- **Cereal** identifies the specific variety of the cereal. In cases where one variety of the cereal has the same name as the brand (e.g., the Lucky Charms brand includes both Lucky Charms and Lucky Charms Chocolate), we identify the

cereal as Lucky Charms (regular) and the brand as Lucky Charms.

We also categorized the brands as either child, family or adult brands according to the marketing practices we documented:

- **Child** brands include any brands for which we found marketing that spoke directly to children. To determine this classification, we first examined the brand's television advertising. If children were exposed to significantly more advertisements for the brand than were adults and/or the advertising message appealed specifically to children, the brand was designated as a child-targeted brand. If the brand did not advertise on television during our analysis period, we examined the product website to determine whether it was designed only for children to access on their own (i.e., not together with their parents). Finally, any products that included a popular children's licensed character or celebrity in the name of the cereal were designated as child-targeted cereals (e.g., Clifford Crunch or Hannah Montana cereal).
- **Family** brands include any brands for which we found any marketing mention that indicated the brand was appropriate to serve to children, excluding those identified as child brands. In a few cases, television advertising for these brands addressed parents directly with reasons to feed the product to their children (e.g., Kellogg's Rice Krispies and Frosted Mini-Wheats). For most products, however, wording on the company website or child features on the packaging (e.g., games and puzzles or cartoon characters) provided evidence that child consumption was suggested. We also designated products as family brands if we did not find evidence of child-targeted marketing after January 1, 2008, even if they had been advertised directly to children in the past (e.g., Count Chocula or Mini-Swirlz cereals).
- **Adult** brands include all other brands. These products contained no mention in any of their marketing materials to indicate that children should or would want to consume these cereals.

The purpose of this report is to document the products and marketing practices used to promote cereals for child and adolescent consumption. Therefore, although we collected data for all child, family and adult cereals, the analyses focus on nutrition and marketing practices of child and family brands.

Nutrition quality

The nutrient information from each cereal's nutrition facts label provided the data to evaluate the nutrition quality of cereals on our list. All nutrient information reflects product formulations as of May 31, 2009. Given that many of these products were reformulated during 2008 to improve their nutrition quality, our decision to conduct the analysis using more recent nutrition data provides the most positive evaluation of cereal nutrition quality. These data do not, however, reflect cereal reformulations that occurred after May 31, 2009.

We used a number of methods to evaluate cereal nutrition quality. Our primary evaluation tool, the Nutrition Profiling Index (NPI) score, is based on the nutrition rating system established by Rayner and colleagues for the Food Standards Agency in the United Kingdom.[3] In addition, we examined the sugar, fiber, saturated fat and sodium content separately to highlight differences between individual nutrients within the NPI score; identified whether the products contain artificial food dyes or artificial sweeteners; and evaluated the cereals according to other established criteria for nutrition quality. Finally, we evaluated cereal companies' commitment to improve product nutrition by examining changes in the nutrition quality of individual cereals that occurred after 2006, as well as the nutrition quality of new cereals and cereal brand extensions introduced after January 1, 2007. The following describes each of these methods and criteria in more detail.

NPI score

The NPI score is adapted from the Nutrient Profiling model (NP) currently used by the United Kingdom Office of Communications (OFCOM) to identify nutritious foods that are appropriate to advertise to children on television.[4] The model has also been approved by Food Standards Australia New Zealand to identify products that are permitted to utilize health claims in their marketing.[5] The NP model provides one overall nutrition score for a product based on total calories and proportion of both healthy and unhealthy nutrients and specific food groups or items, including saturated fat, sugar, fiber, protein, sodium, and unprocessed fruit, nut and vegetable content.

The NP model has several advantages over other nutrient profiling systems. The model was developed by nutrition researchers at the University of Oxford independent of food industry funding, its development and scoring method are publicly documented and transparent, and it has been validated to reflect the judgment of professional nutritionists.[6] It also produces a continuous score that provides a relative evaluation of products, in contrast to threshold models that simply classify foods as "good" or "bad". 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 discouraging companies from adding vitamins and minerals to inherently unhealthy products as has occurred in some recently introduced products (e.g., Jelly Belly Sport jelly beans with carbs, electrolytes and vitamins B & C, or Diet Coke Plus with niacin, vitamins B6 & B12, zinc and magnesium). Appendix A provides a detailed description of the model design, scoring method, and benefits.

The interpretation of the original scores produced by the NP model are not intuitively obvious to the lay person because the original model is reverse scored (i.e., a higher score indicates a product of worse nutritional quality) and range from +34 to –15. In addition, a score of 3 points or lower identifies healthy foods that are allowed to be advertised to children in the United Kingdom. For the purpose of these analyses, we created an NP Index (NPI) score using the following formula: NPI score = (-2) * NP score + 70. This recalculation produces a score from 0 (poorest nutritional quality) to 100 (highest nutritional quality) that is easier to interpret and compare.

Additional nutrient quality measures

To provide more detailed information about specific healthy and unhealthy nutrients in each cereal, we also calculated the proportion of cereal content from sugar, fiber and fat (i.e., g of the nutrient divided by g per serving) and mg of sodium per 100 g of cereal. These standardized measures allow comparisons between products of differing serving sizes. In addition to these nutrients, we also examined product ingredient lists on the nutrition facts labels to determine whether the cereals contain artificial sweeteners (aspartame, acesulfame potassium, saccharin or sucralose) or artificial food dyes. Although these ingredients are allowed by the FDA, some parents may not wish to feed their children unnecessary chemicals. In addition, research, although not entirely consistent, has shown a relationship between food dyes and hyperactivity in children.[7] Consumer pressure in Britain has led several food companies to discontinue the use of food dyes in products there, but this has not yet occurred in the United States. Therefore, we also indicate whether products contain artificial sweeteners or food dyes.

In addition, we evaluated the cereals according to other established nutrition criteria, including WIC guidelines, United Kingdom guidelines for advertising to children and products approved by the Better Business Bureau (BBB) for CFBAI participating companies.

- **Women, Infants and Children (WIC) guidelines.** The Food and Nutrition Service of the USDA offers grants to states to provide supplemental foods to low-income pregnant and breastfeeding women, infants and children under age five years.[8] Each state establishes its own list of products that can be included in their WIC food package; however, the USDA has determined that all cereals included in the package "must contain ≤ 21.2 g sucrose and other sugars per 100 g dry cereal (≤ 6 g per dry oz)". This measure indicates whether the cereals in our analysis meet this sugar cut-off and would be eligible to include in states' WIC package.
- **United Kingdom guidelines for advertising to children.** We also identified cereals included in our analysis that could be advertised to children on television in the United Kingdom.[9] OFCOM only allows food products with an NP score of 3 or lower to be advertised on children's television programs or during programs with a disproportionate number of children under 16 years old. This score translates to an NPI score over 62 according to our revised model.
- **BBB-approved products.** Finally, we indicate cereals that CFBAI participants have identified as "better-for-you" foods that meet their nutrition standards and can be included in advertising primarily directed to children under 12 years old in the United States.[10] Only products offered by participating companies (i.e., General Mills, Kellogg and Quaker) were evaluated under this criterion.

Changes in nutrition quality

Finally, we evaluated cereal companies' commitment to improving the nutrition quality of their products with two measures: reformulations of pre-existing cereals and nutrition quality of new cereals and other products introduced under the cereal brands.

- **Cereal reformulations.** This measure quantifies changes in nutrition quality for existing cereals. We used information from the nutrition facts label from our previous paper on the nutrition quality of children's cereals.[11] These data were collected in February 2006 and included information on 108 General Mills, Kellogg, Post and Quaker cereals. We then calculated NPI scores for the cereals included in the prior analysis using information from both the 2006 and May 2009 nutrition facts labels. The difference in these scores provides the change in nutrition quality measure: a positive value indicates improvement and a negative value indicates a decline in nutrition quality.
- **New cereal and other cereal-branded product introductions.** We used Datamonitor's Product Launch Analytics database to identify new cereal products introduced in the United States from January 2007 to August 2009.[12] We also searched for product introductions under each brand name for all the cereals on our master list, including ready-to-eat cereals and cereal branded extensions (e.g., Kellogg cereal straws). Both new cereals and other types of products introduced under a cereal brand name provide an indicator of the brands' commitment to improving the nutrition quality of their product line. We identified 126 cereals and 122 cereal brand extensions that were introduced during this period. We then searched company websites and product packaging to collect the nutrition facts labels, and this information was used to calculate the NPI score. Data were not available for 14 new cereals and 20 brand extensions. Powdered drink mixes were also excluded due to difficulties in calculating the nutrition score. We then calculated average new cereal and other cereal-branded products NPI scores for each cereal brand.

Marketing practices

According to the Federal Trade Commission report on food marketing to children and adolescents, cereal companies spent 97.5% of their youth marketing budgets in 2006 on television, internet, product packaging and point-of-sale programs.[13] Although many food companies also market extensively on radio and in digital media, cereal companies spent very little on those media. Cereal companies do advertise in magazines; however, those efforts are targeted primarily at adults. Therefore, in this analysis, we chose to focus our data collection on television advertising, internet marketing (including company-owned websites, advertising on third party websites, and social media), and point-of-sale marketing (including shelf space allocation and special displays and promotions).

Media advertising

To measure cereal company advertising practices in traditional measured media we licensed data from The Nielsen Company (Nielsen) for advertising spending in all measured media and exposure to television advertising by age group and ethnicity, and conducted a content analysis of the messages presented in television advertisements. These data provide a complete picture of cereal company advertising spending and television advertising from January 1, 2008 through March 31, 2009.

Advertising spending and television advertising exposure

Nielsen tracks total media spending in 18 different media including television, radio, magazines, newspaper, free standing insert (FSI) coupons, and outdoor advertising. We licensed these data for all products in our list of RTE cereals for the 15-month period. These data provide a measure of all **advertising spending**.

To measure exposure to cereal advertising, we licensed gross rating points (GRP) data from Nielsen for the same period and products. GRPs measure the total audience delivered by a brand's media schedule. It is expressed as a percentage of the population that is exposed to each commercial over a specified period of time across all types of television programming. They 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.[14] GRPs, therefore, provide an objective outside assessment of advertising exposure. In addition, GRPs can be used to measure advertisements delivered to a specific audience, e.g., specific age and other demographic groups (also known as target rating points or TRPs) and provide a "per capita" measure to examine relative exposure among groups. For example, if a cereal product had 2000 GRPs in 2008 for 2- to 11-year-olds and 1000 GRPs for 18- to 49-year-olds, then we can conclude that children saw twice as many ads for that brand in 2008 as compared to adults.

The GRP measure differs from the measure used to evaluate food industry compliance with their CFBAI pledges. As discussed, the pledges apply only to advertising in children's television programming as defined by audience composition (i.e., programs in which 25 to 50% of the audience are under age 12); approximately one-half of all advertisements viewed by children under 12 years old occur during children's programming.[15] In contrast, GRPs measure children's total exposure to advertising during all types of television programming. Therefore, evaluating GRPs will determine whether participating companies actually reduce television advertising to this age group, or simply shift advertising from children's television to other types of programming viewed by large numbers of children.

In the television advertising analyses, we first identified GRPs in 2008 and Q1 2009 for the following demographic groups: ages 2-5 years, 6-11 years, 12-17 years, and 18-49 years. These data combine exposure to national (network, cable and syndicated) and local (i.e., spot) television. In addition, we identified GRPs for African American youth (2-17 years) for national television. Nielsen does not provide spot market GRPs for African Americans at the individual level; however, only 2.4% of cereal advertising occurred in spot market television during the period examined.[16] Therefore, these data reflect virtually all African American youth exposure to television cereal advertising. Nielsen has only recently begun to report GRPs for Hispanic demographic groups; therefore, we do not present total advertising exposure for Hispanics. As a proxy, we provide GRP data for advertising that occurred on Spanish-language television.

Nielsen calculates GRPs as the sum total 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 times 100. For an audience not trained in advertising measurement, GRPs may be difficult to interpret. Therefore, we also use GRP data to calculate the following television advertising measures:

Average advertising exposure. This measure is calculated by dividing total GRPs for a demographic group during a specific time period by 100. It provides a measure of ads viewed by the average individual in that demographic group during the time period measured. For example, if Nielsen reports 2000 GRPs for 2- to 11-year-olds for a specific product in 2008, we can conclude that the average 2- to 11-year-old viewed 200 ads for that product in 2008.

Targeted GRP ratios. 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 demographic groups. We report the following targeted GRP ratios:

- Child to adult targeted ratio = GRPs for 2-11 years/GRPs for 18-49 years
- Teen to adult targeted ratio = GRPs for 12-17 years/GRPs for 18-49 years
- African American to all youth ratio = GRPs for African American 2-17 years/GRPs for all 2-17 years. This measure uses only national GRPs.

A targeted ratio greater than 1.0 indicates that the average person in the group of interest (i.e., the child in the child to adult ratio) viewed more advertisements than the average person in the comparison group (i.e., the adult), and a targeted ratio under 1.0 indicates that they viewed fewer ads. For example, a child to adult targeted ratio of 2.0 indicates that children viewed twice as many ads as adults viewed. If this ratio is greater than the relative difference in the amount of television viewed by each group, we can conclude that the advertiser has designed a media plan to reach this specific demographic group more often than would naturally occur.

Television advertising content analysis

We also conducted a content analysis of the messages and other advertising techniques presented in cereal company television advertisements. We utilized the AdScope database from TNS Media Intelligence to obtain digital copies of all cereal advertisements aired on United States television from July 1, 2007 through March 31, 2009.[17] This search identified 308 advertisements. We then removed ads for cereals not included in this analysis (e.g., hot cereals or diabetic cereals) and duplicate advertisements. Duplicates included :15 second shortened versions of :30 second ads, as well as ads with the same creative execution but somewhat different endings. This list was cross-referenced with the Nielsen database to identify advertisements that appeared on television from January 1, 2008 to March 31, 2009.

To develop a comprehensive coding manual, we first developed a list of potential items used in prior food advertising content analyses.[18-20] Researchers then viewed a sample of the cereal advertisements to identify additional items of interest to include in the coding manual, including advertising techniques, perceived target for the ads, and explicit and implicit product claims and offers. Two coders were trained to review the advertisements and code them for all items in the manual. The project manager and two coders fine-tuned the manual by first coding 10 ads during each of two pre-test sessions. After each session, the coders and project manager met to review the items and coding procedures and identify any areas of confusion or dispute. After making revisions to the initial manual based on these discussions, pilot testing was conducted on a random sample of 30 advertisements. Cohen's Kappa was used to measure inter-rater reliability. The coders and project managers then met to discuss items with low reliability and to finalize the coding manual.

The final coding manual included six main categories:

- **Identifying information**, including the company, brand and cereal name and tagline.
- **Actors in the ad**, including age and ethnicity of human actors, celebrities, animated characters, and cereal as **more than food**; and **perceived target audience** (i.e., children, parents or other adults).
- **Explicit promotions**, including give-aways and sweepstakes, promotional tie-ins with third parties, and directions to website URLs.
- **Product descriptions**, including nutrient content and other information about the product itself (e.g., taste, shape, value, etc.).
- **Product promise**, or what the product will do for the consumer. Promises include health and other physical benefits (e.g., mental performance or weight control) and emotional benefits (e.g., fun, cool, family bonding).
- **Eating behaviors**, either portrayed or discussed. Behaviors include depictions of other healthy or unhealthy foods, time and place of consumption (if any), and other suggested behaviors (e.g., part of a balanced breakfast or cooking together).

All advertisements were randomly assigned to one of the two coders, with 25% of the ads assigned to both coders for reliability testing. Coding occurred over a five-week period with periodic meetings between the coders and project manager to address questions or difficulties. Cohen's Kappas were used to measure inter-coder reliability for the overlapping ads. Final inter-coder reliability was good. Kappa values ranged from .55 to 1.00 and the majority of items receiving ratings over .80. There was one outlier of .38 for "cool"; implicit claims such as this were more difficult to agree upon.

Internet marketing

We examined three types of youth-targeted marketing on the internet: company-sponsored websites, banner advertising on other (i.e., third party) websites and social media marketing. We also conducted content analyses of child-targeted websites and banner advertising.

Company-sponsored websites

We began with a list of 26 branded websites generated from all cereals available at a major grocery store chain between October 2008 and March 2009, supplemented with internet searches for any websites sponsored by cereal brands on

our list that did not have a URL listed on the package. For the purposes of this study, a website is defined as all pages containing the same stem URL. For example, Millsberry.com is the website of interest, and Millsberry.com/_____ are secondary pages contained within the site.

We then eliminated all branded sites without any pages designed for young people to access directly. A website was determined *not* to be youth-oriented if it predominantly had instructions for mothers, contained only recipes, had no games or Flash animation, was generally text-oriented, or a combination of the above. For example, CapnCrunch.com, though colorful, was determined not to be a child-targeted website because it contained messages addressed to parents (e.g. "help your family live a healthy lifestyle," had product information but no games, no Flash animation, and contained photographs of children with their mothers). It is important to note that Quaker introduced a Cap'n Crunch advergaming website directly targeted to children in April 2009; however, because this website was introduced after the time period of interest, it is not included in this analysis. Websites that included child-targeted pages within a primarily adult website were also included in this analysis.

We obtained data on exposure to these websites from the comScore Media Metrix Key Measures Report.[21] comScore maintains the largest existing audience measurement panel and captures the internet behavior of a representative panel of approximately one million users in the United States.[22] They collect data at both the household and individual level using Session Assignment Technology, which can identify computer users without requiring them to log in. Companies participating with comScore have beacons placed on their web content and advertisements. As a result, we were able to identify which websites and advertisements individual users were exposed to, and examine exposure for both children and adults in the same household. comScore uses these panel data to extrapolate their findings to the total population. Their Media Metrix database provides internet exposure data by month for any websites visited by at least 30 of their panel members in a given month. If the number of panel visitors is large enough in a given month, comScore also provides an estimate of total unique visitors in the United States, visits per month, minutes spent on the website per visit and pages viewed. In addition, Media Metrix provides exposure information by visitor age and ethnicity for larger volume websites.

We first searched the comScore Media Metrix database to identify the youth-targeted cereal websites for which exposure data were available from January 2008 through March 2009. The volume of visitors was large enough to obtain exposure data for ten of these websites.

For each month during this period, we collected the following data for available cereal websites: total unique visitors, total visits, average minutes per visit, and average visits per unique visitor. In addition, when the website traffic was high enough in a given month, we also collected these measures separately for children ages 2 to 11 years, 12 to 17 years, 2 to 17 years, and African American youth ages 2 to 17 years. During the period examined, data were not available from comScore for Hispanic visitors. We also collected data for adults ages 18 to 49 years and total unique visitors to the internet overall for each age and demographic group as comparison groups.

For each website in our analysis, we report the following website exposure measures:

- **Average unique visitors per month** for 2- to 11-year-olds, 12- to 17-year-olds and African American 2- to 17-year-olds. This measure was calculated by adding total unique visitors reported each month from January 2008 through March 2009 for each demographic group divided by the number of months for which these data were available for each website.
- **Average visits per month**[23] and **average minutes per visit** for each unique visitor. Monthly numbers, as reported by comScore, were averaged by the number of months for which data were available for each website. comScore only reports these data for the larger demographic groups. If separate data were not available for the specific demographic group in a given month, we used the information for the next largest demographic group. For example, if data were not available for 2- to 11-year-olds specifically, we report the data for 2- to 17-year-olds or, in a few cases, ages 2+.
- **Targeted visitor ratios** were calculated for children versus adults, teens versus adults and African American versus all youth. To determine these ratios, we first calculated **percent of internet visitors exposed** to the website for each demographic group (ages 2-11 years, 12-17 years, 2-17 years, 18-49 years, and African Americans 2-17 years) for each month. This number was calculated by dividing the number of unique visitors to the website in a given month (for the specific demographic group) by the number of unique visitors to the total internet for the same month and demographic group. The percent of unique visitors was then multiplied by the **average number of visits** to the website in that month for the demographic group to provide an average number of visits to the website for all internet users in that group. This measure takes into account both the reach of the website to the population of interest and the frequency the specific population visited the website in a given month. This per capita measure of exposure was then used to calculate the targeted visitor ratios.

  Child to adult and **teen to adult visitor ratios** were calculated by summing the monthly average number of visits for children or teens and dividing this number by the sum of the average number of visits for adults.

African American to all youth ratio was calculated by summing the monthly average number of visits for African American 2- to 17-year-olds and dividing this number by the sum of the average number of visits for all youth ages 2 to 17 years.

Website content analysis

During March 2009, we collected all website pages to be coded in this analysis. Each page was recorded as a video if there was movement on the page or the activity on the page required clicking the mouse; if the page was static, it was recorded as a PDF.

We developed a codebook with questions about online marketing techniques based on categories described in previous analyses of children's websites,[24, 25] digital marketing techniques,[26] and online advergames.[27, 28] We added further questions based on our observations both from a pilot exploration of the websites under study and from two child-oriented websites for different products [FruitGushers.com, Myslurp.com]. Finally, we incorporated questions from the codebook of the television advertisement content analysis.

On each site we coded for content according to a variety of features. We assessed all nutrition and health claims made regarding the branded cereals. **Nutrition claims** refer to statements about properties of the cereals themselves, such as "has whole grains." By contrast, **health claims** directly state health benefits from consuming the product, such as "builds strong bones." We established whether the cereal was portrayed as **more than food**, such as being used as an object or piece of equipment in an advergame. We noted all **promotions**, for both online and offline prizes, as well as any **licensed characters**, such as the Flintstones, used to promote a cereal.

We further catalogued three types of techniques found only online:

- **Branded engagement techniques** are devices that use the online medium to attract and keep visitors on a website. These include content such as online videos or advergames that feature the company logo, spokes-characters (e.g. Tony the Tiger), licensed third-party characters (e.g. the Flintstones), or the product itself.
- **Web engagement techniques** refer to engagement devices that keep the user interacting with the page longer, such as the ability to download items or to design a digital alter ego, or avatar.
- **Behavioral targeting techniques** refer to any method by which a company collects information about a website user, such as a poll, quiz, or user registration.

Finally, we tracked all **advertising identifications**, including labels on specific sections of a page marking it as an advertisement or a generic label in the corner of a page saying that the whole page is an advertisement or may contain advertisements.

Two coders tested the coding instrument on two food websites (MySlurp.com and FruitGushers.com) and refined the instrument to address discrepancies. The two coders then coded two websites included in this study (FrootLoops.com and LuckyCharms.com) and made final changes to the coding instrument to clarify unclear questions. Finally, these coders assessed the content of all websites under consideration. Values for Scott's *pi* intercoder reliability statistic for these questions ranged between .80 and 1, confirming reliability among coders.

Advertising on third party websites

Data for exposure to cereal brand advertising on third party websites (i.e., websites sponsored by other companies) were extracted from the comScore Ad Metrix Advertiser Report.[29] comScore Ad Metrix monitors the same panel of users as comScore Media Metrix, but additionally tracks any advertisements that are fully loaded onto a user'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 ties the advertisement to the unique user viewing it, the third party website where the advertisement was viewed, and the company sponsoring the advertisement. In addition, Ad Metrix captures copies of the actual ads.

comScore began reporting these data by product category in October 2008; therefore, we were able to obtain information for the six months from October through March 2009. During this time period, Ad Metrix did not report demographic information about the individuals who were exposed to these advertisements; therefore, we cannot differentiate between exposure by any specific age group (including children or adolescents).

comScore's Cereal and Breakfast Product Dictionary was used to determine the advertisements of interest. For each month, comScore reported data for any cereal product in the dictionary with at least ten raw ad views on the total internet or on a specific publisher site. In addition to these cereal products, we also collected data for Millsberry.com and Postopia.com. Measures available from comScore for each month include **total display ad views** (i.e., the number of advertisements fully downloaded and viewed on publisher websites), **advertising exposed unique visitors** (i.e., the number of different individuals exposed to advertisements on a publisher website), and **average frequency of ad views** by cereal advertiser. This information is available for the total internet and for individual publisher websites.

As we could not separate ads viewed by young people from those viewed by adults, we identified the websites on which the advertising appeared that were disproportionately

targeted to youth (i.e., youth websites). We defined a **youth website** as a website that met one of two conditions: 1) it was identified by comScore as an entertainment website for youth ages 2 to 17 years during the period examined, or 2) the proportion of visitors ages 2 to 17 years to the website exceeded the total percent of 2- to 17-year-old visitors to the internet in the given month.

We only examined child brands in this analysis as we could not conclusively differentiate between ads viewed by young people versus adults. As these child brands are primarily targeted to children, we assume that advertising on the internet, especially those placed on youth websites, will also be viewed disproportionately by young people. From the comScore data, we calculated the following measures for each child cereal brand for which banner advertising was found:

- **Average monthly unique viewers**[30] was calculated by taking an average of the monthly unique viewers of a given brand's advertisements from October 2008 through March 2009.
- **Average number of ads viewed per month** was calculated by taking an average of the average frequency of ad views by viewer for the cereal brand each month from October 2008 through March 2009.
- **Percent ad views on youth websites** was calculated by dividing the cereal brand's total display ad views that appeared on youth-targeted websites by their total display ad views that appeared on all websites during the six-month period from October 2008 through March 2009.

Banner advertising content analysis

In addition to measuring the volume of advertisements for child cereals on third party websites, we also conducted a content analysis to examine the messages commonly presented in those ads. These types of ads typically appear as banner advertising in a sidebar or "banner" on a webpage. The purpose of such ads is to increase brand awareness for the advertised product and to direct viewers to the advertiser's website.

Copies of the most widely viewed banner advertisements identified in the third party advertising exposure analysis were acquired through the comScore Ad Metrix Advertiser Report. The sample included the three most frequently viewed banner advertisements per month for each cereal brand (including Millsberry.com and Postopia,com) from October 2008 through March 2009. A total of 66 banner ads were identified. We then selected the ads for child brands (including Millsberry.com and Postopia.com) and eliminated duplicate ads. Duplicate ads were defined as ads with the same graphics and headline, but that included small variations (e.g., ads that differed only by size or orientation [vertical vs. horizontal bar] or that had the same graphics but slight variations in text).

The television advertising and website coding manuals were adapted to create the coding manual for the banner ads with items that were not relevant to banner advertising removed. The final banner advertising coding manual included the following categories: 1) general information about the company, brand, and target audience; 2) use of cereal as more than food; 3) animated characters; 4) engagement techniques, including Flash animation, video, links to games or games in the ad itself, and behavioral targeting; 5) use of advertising disclaimers; and 6) main point of the ad. The main point of the banner ad was coded as either promotion or giveaway; cereal shape or flavor; game, video or website; or product claim.

The banner ads were randomly assigned to two coders with a 50% overlap to assess inter-rater reliability. Kappa values ranged from .52 to 1.00, which is considered moderate to very good agreement.

Social media marketing

Reliable data to assess the reach of social media marketing is not available as of yet; however, we felt that it was important to survey cereal company activities in this domain. Use of social media, including social networking websites, has become an increasingly viable method of advertising for food companies. The interactive nature of such websites increases consumer engagement with brands, creating an environment conducive to contests, giveaways, and other traditional marketing techniques while providing a space for user-generated content.[31]

Recent interest in social networking has focused on Twitter, the fastest-growing social networking website as of May 2009, and Facebook, the most widely used global social networking website.[32] Twitter, a micro-blogging site, is restricted to 140-word updates, while Facebook allows users to create profiles that include photos, information about the user, and options to post status updates and leave comments and notes for other users. MySpace, which shares many characteristics with Facebook, maintains a significant market share despite losing ground to both Facebook and Twitter. Measuring social media marketing is notoriously difficult; Twitter, Facebook, and MySpace each include means to count the number of people choosing to affiliate themselves with a given product (i.e., fans, friends or members), but these numbers change often as individuals add or remove themselves and as groups or fan pages are added or deleted.

For this analysis, we examined the 43 child and family brands on our list and first searched Facebook and MySpace for each brand (e.g., General Mills Cheerios). Results pertaining to individual cereal varieties (e.g., Strawberry Frosted Mini-Wheats) were not included. Search terms consisted of cereal name (e.g., Life) followed by use of cereal name plus company (e.g., Quaker Life) and cereal name plus the word 'cereal' (e.g., Life cereal) when necessary to differentiate from

other uses of the name (e.g. Life the game). Based on the nature of the service, only cereal companies were searched on Twitter, in September 2009. For each cereal brand, details of Facebook fan pages, Facebook groups, MySpace groups, and MySpace profiles were collected during June 2009.

- **Facebook fan pages** can be created only by an "authorized representative of the subject of the page" and they may be used to "promote a business or other commercial, political, or charitable organization or endeavor (including non-profit organizations, political campaigns, bands, and celebrities)"[33] Facebook fan pages for cereals, therefore, must be established by a representative of the cereal company and are likely designed for marketing purposes. For each brand, we recorded the number of Facebook fan pages and the number of fans of each page.
- **MySpace profiles** were searched and those with a name that was readily identifiable as a cereal (e.g.,. "Cocoa Puffs" or "Cocoapuffs") and a recognizable image of the cereal as a profile picture were identified. MySpace profiles may be established by any member, but are often used to promote bands, products, etc. A subset of product-focused profiles was identified. These profiles contained content that focused on the product in question, either presented as "written" by an anthropomorphized cereal or cereal mascot, or by focusing on a liking or craving for the cereal. Results for each brand were recorded until all profiles had been examined or 20 profiles were identified.
- **Facebook groups** and **MySpace groups** can be created by any individual with a specific interest. Although the majority of cereal groups were not likely established by a cereal company, they do provide an indicator of interest in the product and a source of viral marketing. For these groups, the founding member can select whether the group will be open for any member to join or limit membership to a pre-determined group (i.e. by invitation from the group's administrator only). Only open groups and English-language groups were included in these data. We first recorded the total number of search results for each cereal, and then identified the name and number of members for groups that clearly referred in some way to the cereal (e.g. "Waffle Crisp addicts" or "We love the Kellogg's Raisin Bran Crunch commercials") until all groups were examined up to a maximum of 20.
- Finally, we searched Twitter for cereal company names to identify companies with a Twitter presence. Cereal company websites were also examined for links or mentions of company presence on Twitter. We included users who self-identified as being associated with the company and who had tweeted at least once.

In-store marketing

To examine marketing practices in the supermarket, we commissioned an audit of shelf space allocation and in-store promotions in a large nationally representative sample of supermarkets in the United States. In addition, we conducted inventories of marketing on cereal packages in a large local supermarket at three different times.

Supermarket audit

The supermarket audit was conducted in two parts. The first part measured the allocation of shelf space in the cereal aisle(s) of a nationally representative sample of 400 supermarkets. A series of follow-up audits conducted in a smaller group of stores for four consecutive weeks examined additional displays and promotions for cereals. These analyses provide a comprehensive picture of the cereal selection in supermarket chains across the country. In addition, they quantify the amount and types of in-store marketing for all cereals so as to better understand cereal marketing within the supermarket environment.

A market research firm was hired to oversee and conduct in-person audits of RTE cereals in supermarkets across the country. The research firm specializes in retail research conducted through a nationwide network of trained, experienced field personnel in major metropolitan areas. They maintain a comprehensive quality control program to ensure the collection of accurate data, which includes data checking, calculation checks and store rechecks when necessary. A nationally representative sample of 400 stores located in 18 metropolitan areas was included in the main audit. The markets were Baltimore, Boston, Chicago, Cleveland, Dallas, Detroit, Kansas City, Los Angeles, Miami, Orlando, Philadelphia, Phoenix, Pittsburgh, San Francisco, Seattle and St. Louis. The sample included stores from large supermarkets and grocery store chains within each market, as well as Wal-Mart because of its sizeable volume of grocery product sales. Excluded from the sample were other mass merchandisers (besides Wal-Mart) and convenience and drug stores. The primary audit was conducted during the week of May 18, 2009 between Monday and Friday (week 1). During the following four weeks (weeks 2 to 5), from May 25 to June 15, 2009, one weekly promotional check was conducted in 87 supermarkets in the same 18 metropolitan areas between Monday and Wednesday. This smaller group of stores was condensed from the original audit sample by selecting one store per chain within each market.

Field personnel in each market received detailed instructions and a comprehensive survey instrument to conduct the store audits. The audit instrument tracked 277 RTE cereals, including all known brands and flavors for the major cereal manufacturers (General Mills, Kellogg, Post, Quaker, Kashi and Cascadian Farm) as well as children's natural cereals

(e.g., Annie's and EnviroKidz). Store and generic variations of popular brands were also tracked.

In the primary audit (week 1), field personnel first indicated whether the cereal was stocked in the primary cereal aisle or in a separate location in the store (e.g., the natural foods aisle). For all these cereals, coders then recorded both the shelf or shelves on which the cereal was located (top, middle, bottom) and the number of **shelf facings**. A facing was defined as any package front pointing toward the customer, including those boxes physically touching the shelf as well as any stacked on top. For example, if one cereal was displayed three boxes across and two boxes high, it was recorded as six facings (i.e., the fronts of six boxes were seen). Boxes stacked behind the front cereal package were not counted. If the top, bottom or side panels of the package were facing the customer they were not counted. The packages did not have to be at the front of the shelf in order to be counted and prepackaged cereal (i.e. value packs with multiple boxes) were counted as one facing.

In the promotional audits (weeks 2 to 5), the field reps documented any additional cereal displays and promotional materials that were present anywhere within the store. Additional cereal displays were classified as being either 1) in-aisle display, 2) end-cap display or 3) any other cereal display. An **in-aisle display** was defined as a free-standing manufacturer or case display located within an aisle; in-aisle displays usually contain a limited amount of the product. An **end-cap display** is structurally similar to an in-aisle display but is located at either end of an aisle. Any displays located elsewhere, such as at the store entrance or exit, were coded as an "other" cereal display.

Promotional materials for cereals found in the store were placed into one of four groups: 1) **shelf coupon machines** placed within the aisle that dispense manufacturer coupons, 2) **special price signage** in the aisle that display sale prices or special bargains; these can be either store or manufacturer generated, 3) **shelf danglers** in the aisle: signs that hang from a shelf calling the shopper's attention to a particular item, or 4) any other in-store promotional material, including promotional materials that did not fit into the first three categories, such as a floor graphic or an advertisement on a shopping cart. The first three types of promotions are the shelf point-of-purchase materials used most commonly by the cereal category in supermarkets (POPAI 2001).[34]

Product packaging analysis

We also conducted a comprehensive audit of marketing messages presented on cereal packaging. For this analysis, researchers surveyed the main cereal and natural food aisles of a large suburban supermarket on three separate visits in September and December 2008 and March 2009. A team of four to five investigators conducted each of the audits.

Researchers recorded information for each different package for each cereal. If a cereal had more than one package design, data for each package were coded separately. Packages that differed in size, but displayed the same images and messages on the package were counted as a single box. A detailed product inventory instrument was used to record all items of interest that appeared on each package.

Investigators examined each unique cereal box and first recorded general information including cereal name, aisle and shelf, and then inspected the package for marketing features in three categories: child engagement messages, health messages and URLs.

- **Child engagement messages** included messages designed to attract a child's attention and/or encourage them to interact with the product. These include promotions and other child features.

  A **promotion** was defined as any mention or tie-in to any character, personality, group, or product separate from the cereal company. Investigators recorded a short description of the promotion and noted the promotion type and partner for all promotions found anywhere on the package. Promotion types were categorized as one of the following: giveaways of free or discounted items; licensed characters present on the packaging; celebrity endorsements, either direct or indirect; or other types, which included sweepstakes or donations to charities. Promotion partners (i.e., the group, company, or product being promoted on the cereal box) were categorized as one of the following: commercial television, public television, movie, toy, video or computer game, sports, charity, music, other entertainment, and other general partners (most often diet websites).

  Child features were defined as features designed to appeal directly to children, including games or child-targeted activities, such as puzzles, mazes, or other interactive illustrations; and brand characters, including any generally-recognizable characters intrinsically tied to the identity of the brand.

- **Health messages.** Due to the large number of health and ingredient claims on cereal boxes, we recorded only those that were on the front of the box and readable or recognizable at arm's length (i.e., those that might reasonably draw the consumer's attention). We divided health and ingredient claims and labels into two types.

  Ingredient claims reference the product's macro- or micronutrients, including whole grain, fats, sugars, vitamins/minerals, calcium, and fiber, as well as mentions of "natural," "organic," or "no additives or preservatives". Specific ingredients listed within a separately recorded health label (e.g. "nutrition highlights" panels on General Mills or Kellogg's cereals) were not counted in this category.

Health claims describe the product's health outcome benefits, overall healthfulness, or role in a healthy lifestyle (e.g. "lower your cholesterol," "heart healthy"). Health claims include functional benefits related to certain ingredients (i.e., health claims regulated by the FDA) and unregulated claims that suggest health benefits.

- Researchers recorded all **URLs** (website addresses) found on the package, excluding only those found on the nutrition panel itself (these tend to be in very small typeface). URLs sponsored by the cereal company were categorized according to the information and features of their website: general URLs direct users to the company's or brand's main website; health URLs specifically highlight health information about the company's cereals; fun/games URLs offer games or entertainment for consumers (primarily children); and other URLs that did not fit into any of the previous categories. URLs belonging to promotion partners were recorded separately.

Cereal FACTS Index

The Cereal FACTS Index synthesizes the nutrition and marketing exposure information presented in this report to provide one overall score for each child and family brand. The score provides a means to evaluate and compare current marketing practices and a metric against which future changes can be monitored. Appendix B provides a more detailed description of the data and calculations used to compute the final Index. **Figure 1** provides a pictorial depiction of this process.

Index components

The Index is computed by multiplying the **nutrition multiplier** with the **marketing exposure** for the brand.

- The **nutrition multiplier** measures the positive or negative overall nutrition quality of the brand. This number is

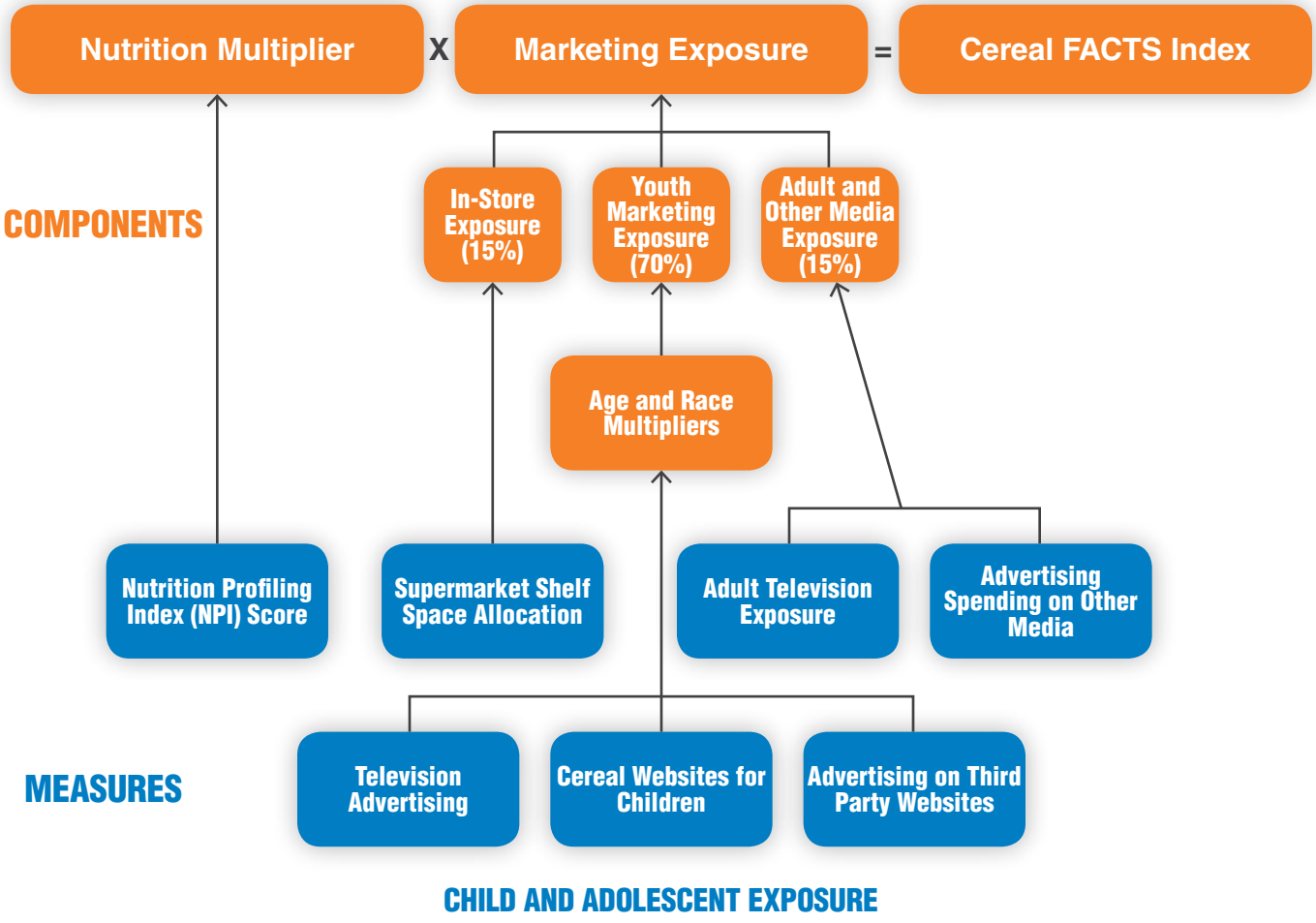


Figure 1: Calculating the Cereal FACTS index

derived from the NPI score. Brands with an overall healthy nutrition profile (i.e., over 62) receive a positive multiplier, whereas brands with an overall unhealthy nutrition profile (i.e., under 62) receive a negative multiplier. When multiplied by the marketing exposure score, brands with a positive overall score are contributing positively to young people's nutrition environment, whereas brands with a negative score contribute negatively to the environment.

The **marketing exposure** score includes three components:

- **In-store exposure** measures the amount of shelf space allocated to each cereal brand in the supermarket. In-store exposure influences parents' decision to buy a cereal brand directly, as well as by attracting children's attention and triggering them to "pester" parents to buy the product. As this exposure occurs on a weekly, as opposed to daily basis for media exposure, we have weighted in-store marketing as 15% of the marketing exposure score.
- **Adult and other media exposure** measures the amount of marketing to which parents are exposed on television and in other media (including magazines and radio). Marketing affects adults, as well as children, and likely has a significant influence on the cereals that parents choose to serve their children; however, adults are better able to defend against marketing influence than children and adolescents. Therefore, we have weighted adult exposure as 15% of the marketing score.
- **Youth marketing exposure** measures the amount of marketing to which children and adolescents are exposed on television, cereal company websites for children, and cereal advertising on third party websites. We posit that young people's exposure to marketing messages in the media has the most direct effect on their attitudes and desire to consume cereal brands; therefore, this component contributes 70% of the marketing score.

Nutrition and marketing score measures

The following describes each of the measures that contribute to the nutrition and marketing scores.

- The **nutrition multiplier** is derived from the NPI score for the brand. If a brand has more than one cereal, the brand NPI score is a weighted average (according to % of shelf facings in the supermarket) of all cereals in the brand. Using the NPI cut-off for foods that can be advertised to children on television in the United Kingdom as the threshold for "healthy" foods, any score over 62 contributes positively to the Index and any score under 62 contributes negatively (a score of 62 is neutral). The positive or negative nutrition multiplier is computed by subtracting 62 from the NPI score. Therefore, a product with a good NPI score (e.g., 85) will receive a positive nutrition score (+23), whereas a product with a poor NPI score (e.g., 35) will receive a negative nutrition score (-27).
- **Supermarket shelf space allocation**, is the percent of facings in the cereal aisle(s) allocated to each brand according to our supermarket audit. This number provides the in-store exposure measure.

Adult and other media exposure includes two measures: adult television exposure and advertising spending on other media.

- **Adult television exposure** is measured by total GRPs for adults, ages 18 to 49 years, for national (i.e., network, cable and syndicated programming) and local (i.e., spot) television for each brand from January 1, 2008 through March 31, 2009. Television advertising comprised 90% of advertising spending for cereal brands;[35] therefore, adult television exposure contributes 90% of the adult exposure measure. These data were licensed from Nielsen.
- **Advertising spending on other media** includes spending in non-television media, including magazines, radio, newspaper, FSI coupons and outdoor advertising by brand from January 1, 2008 through March 31, 2009. Other advertising spending contributes 10% of the adult exposure measure. Data were licensed from Nielsen.
- These two measures were standardized and then weighted (90% for television exposure and 10% for other advertising spending) to produce the adult and other media exposure measure.

Youth marketing exposure includes measures of child and adolescent exposure to television, cereal company websites and advertising on third party websites.

- **Television advertising exposure** is measured by total GRPs for national and spot television for each brand from January 1, 2008 through March 31, 2009. GRPs were licensed from Nielsen for each of the following age and demographic groups: ages 2 to 5 years, ages 6 to 11 years, and ages 12 to 17 years (national and local programming); African American ages 2 to 17 years (national programming); and ages 2 to 17 on Spanish-language programming.
- **Cereal website exposure.** To provide a comparable measure to television exposure, we calculated a GRP-equivalent for website exposure using comScore Media Metrix Key Reports data. Separate GRP equivalents were calculated for children (ages 2-11 years), adolescents (ages 12-17 years) and African American youth (ages 2-17 years). As nearly all pages on cereal websites contain branded content that exposes visitors to involving advertising messages, we assumed that 30 seconds spent on a cereal website was equivalent to exposure to one :30 second television ad. For example, if a visitor spent 15 minutes on a website, we assumed that visit was equivalent to viewing 30 television ads. Data were collected for exposure from January 1, 2008 through March 31, 2009. Appendix B provides a detailed

description of the calculation used to compute GRP equivalents for website exposure.

- **Banner advertising exposure.** We also computed a GRP-equivalent measure for banner ads that appeared on third party websites using comScore Ad Metrix Advertiser Report data. As exposure information was not available for individual demographic groups, this number includes one total exposure number for ads for child cereals that appeared on youth websites. In addition, banner advertising data were available only for the 6-month period from October 2008 through March 2009. Appendix B provides a detailed description of the calculation used to compute GRP equivalents for banner ad exposure.
- **Age and race/ethnicity multipliers.** We then applied age and racial and ethnic multipliers to the exposure numbers for children and African American and Hispanic youth to adjust for their increased risk from unhealthy advertising influence.
  - Preschool-age child exposure (i.e., 2- to 5-year-olds, available only for television advertising) was multiplied by 5. Children this age do not have the cognitive ability to understand the persuasive intent of advertising, therefore advertising seen by this age group is inherently harmful.[36, 37]
  - Child exposure (ages 6-11 for television and ages 2-11 for website exposure) was multiplied by 2. Children this age do not have the ability to automatically access information about the persuasive intent of advertising when viewing the ads and, therefore, require additional protection from unhealthy influence.[38]
  - Specific exposure for African American youth (ages 2-17 years) and exposure by youth (ages 2-17 years) on Spanish-language television were also included as separate items in the final score, in effect, doubling the exposure for these more at-risk populations.
- The final **youth marketing exposure** component was calculated as follows:

  TV ad exposure: (5*(GRPs 2-6 years) + 2*(GRPs 2-11 years) + (GRPs 12-17 years) + (GRPs African American 2-17 years) + (GRPs Spanish-language 2-17 years)

  + Website exposure: (2*(GRP-equiv. 2-11 years) + (GRP-equiv. 12-17 years) + (GRP-equiv. African American 2-17 years)

  + Banner ad exposure: (GRP-equiv. for ads viewed on youth websites)

Combining the components

To combine the three marketing score components, we first standardized the results for the individual components and then calculated a weighted average according to the assigned component weightings. We then multiplied the positive or negative nutrition multiplier by the combined marketing exposure score to produce an overall nutrition and marketing score. Finally, we distributed the resulting scores from 0 (worst overall combined nutrition/marketing score) to 100 (best overall score) to produce the final score. For a complete description of all the calculations, please refer to Appendix B.

Overview of cereal market

Definitions	Cereal market
Company	Company name indicated on the cereal package, including companies or divisions owned by a separate parent company (e.g., Quaker and Kashi are listed as separate companies).
Brand	Marketing unit for a family of cereals (e.g., Cocoa Puffs (regular) and Cocoa Puffs Combos belong to the Cocoa Puffs brand).
Cereal	Individual cereal or variety (e.g., Cocoa Puffs (regular) and Cocoa Puffs Combos are listed as separate cereals).
Child brand	A brand that is marketed directly to children.
Family brand	A brand that is not marketed directly to children, but is suggested for child or family consumption in any marketing materials, including television, websites and/or product packaging.
Adult Brand	A brand that is only marketed to adults for adult consumption and/or contains no marketing references to child or family consumption.

The following analysis includes data for 13 companies, 115 brands and 277 cereals, excluding data for store or other generic brands. General Mills had 25 brands, followed by Kellogg with 24 and Post with 12. These three companies comprise 53% of all brands and 61% of all cereals examined. Barbara's Bakery, Cascadian Farm (owned by General Mills), Kashi (owned by Kellogg), Nature's Path and Quaker also had five or more cereal brands each. We also included several companies with only one or two brands each that were stocked in more than 5% of supermarkets: Annie's, Newman's Own, Peace Cereal, Uncle Sam and Weetabix. Finally, we included Dorset cereals and Nestle in our analysis, although they were stocked in 4% or fewer supermarkets.[1] Appendix C provides the complete list of companies, brands and cereals examined.

We identified 19 brands marketed directly to children (i.e., child brands) and 27 family brands (see **Table 2**). General Mills promotes the most child and family brands, followed by Kellogg and Post. Cascadian Farm, Quaker, Nature's Path, Kashi, Barbara's Bakery, and Annie's also offered at least one child and/or family brand each. The majority of cereals (58%) were marketed only to adults for adult consumption.

Most child brands were classified as such because they were advertised directly to children on television in 2008; however, two additional brands qualified for their child-targeted websites (Nature's Path EnviroKidz Organic and Quaker Cap'n Crunch) and four brands because of licensed characters or child celebrities in their names (General Mills Dora the Explorer, Kellogg Disney High School Musical and Hannah Montana cereals, and Cascadian Farm Clifford Crunch).

Only two family brands qualified as family brands due to television advertising directed toward parents (Kellogg Rice or Cocoa Krispies and Mini-Wheats). The remaining qualified because their adult-targeted websites suggested that the cereal is for family or child consumption or due to children's features on the product package (e.g., puzzles, games or cartoon characters). Several of the family cereals had been marketed directly to children prior to 2008 (e.g., General Mills Boo Berry and Count Chocula or Kellogg Honey Smacks and Smorz); however, we found no evidence of more recent child-directed marketing and therefore classified them as family cereals.

Table 2. Child and Family Brands

Company	Child brands	Family brands
General Mills	Cinnamon Toast Crunch Cocoa Puffs Cookie Crisp Dora the Explorer Honey Nut Cheerios Lucky Charms Reese's Puffs Trix	Boo Berry* Cheerios (excluding Honey Nut) Chex Count Chocula Franken Berry* Golden Grahams Kaboom* Kix
Kellogg	Apple Jacks Corn Pops Disney High School Musical Froot Loops Frosted Flakes Hannah Montana	Cookie Crunch Honey Smacks Mini-Swirlz Mini-Wheats Rice or Cocoa Krispies Smorz
Post	Honeycomb Fruity or Cocoa Pebbles	Alpha Bits Golden Crisp Raisin Bran Waffle Crisp
Cascadian Farm	Clifford Crunch	Cinnamon Crunch Honey Nut O's Purely O's
Quaker	Cap'n Crunch	Life
Nature's Path	EnviroKidz Organic	
Kashi		Honey Sunshine Mighty Bites
Barbara's Bakery		Organic Wild Puffs Puffins
Annie's		Bunnies

*Brands stocked in fewer than 5% of stores that were not advertised after January 1, 2008. These products may be discontinued or offered seasonally.

Cereal nutrition quality

Definitions	Cereal nutrition quality
Nutrition Profiling Index (NPI) score	A measure of overall nutrition quality that takes into account both positive and negative nutrients in foods. Scores range from 0 (very poor) to 100 (excellent). This scoring system is based on a system developed by researchers in the United Kingdom for use in the Office of Communication's (OFCOM) guidelines to prohibit junk food advertising to children.
Women, Infants and Children (WIC) guidelines	Guidelines established by the USDA to specify products that individual states may include in their supplemental food packages for mothers, infants and children under 5 years.[2] WIC-approved cereals must contain no more than 22.1% of total weight in sugar.
United Kingdom	The United Kingdom allows television advertising to children only for food products with an NPI score over 62. In advertising guidelines this report, we use this criterion to define healthy cereals as those with an NPI score over 62.
Better Business Bureau	Criteria established by individual companies who participate in the Children's Food and Beverage Advertising (BBB) approved products Initiative (CFBAI) to designate "better-for-you" products that they can advertise to children under 12 years old.
Food dyes	Synthetic dyes commonly added to food products. These types of dyes may be linked to hyperactivity in children.
Cereal reformulation	Revisions made to the nutrition content of existing cereals after February 1, 2006.
Cereal product introductions	New cereal products introduced after January 1, 2007.
Cereal brand extensions	New products introduced after January 1, 2007 that contain the name of a cereal brand on another type of food product (e.g., cereal straws or snack bars).

Using information on the nutrition facts label, we calculated the NPI score for all cereals on our list. In the following nutrition analysis, we excluded any cereals stocked in fewer than 5% of supermarket shelves to eliminate those that are likely to be discontinued or stocked seasonally. In addition, we do not report fat content as the majority of cereals contain less than 1 g per serving. Appendix C provides detailed nutrition information for all cereals in our inventory.

The nutrition quality of cereals varied widely, from a very good NPI score of 82 (Kellogg Unfrosted Mini-Wheats and Post Original Shredded Wheat) to a very low 30 (Kellogg Chocolate Peanut Butter Corn Pops and Quaker Cap'n Crunch with Crunch Berries). Unfortunately, as found in prior research,[3, 4] the nutrition quality of children's cereals continues to be significantly worse than other cereals (see **Table 3**). This analysis expands on prior studies and demonstrates that the nutrition quality of cereals marketed directly to children (i.e., child cereals) is also significantly worse than those marketed to parents to serve to their children (i.e., family cereals).

The lower overall nutrition score for child cereals is largely due to added sugar. The sugar content of cereals marketed directly to children averages 35% and ranges from 20% to 53%. In contrast, the average adult cereal contains only 20% added sugar. Child cereals also have higher sodium and lower fiber content than adult cereals. In fact, most cereals marketed directly to children contain little or no fiber: 5% of total content, on average, or less than 1.5 g per 28 g serving. The average 28 g serving of child-targeted cereal, therefore, contains the equivalent of 2 ½ tsp of added sugar and the fiber equivalent of less than ½ a banana.

Table 3. Nutrition content of child, family and adult cereals

	NPI score	Sugar content	Fiber content	Sodium (mg per 100 g)
Child	42 [b,c]	35% [b,c]	5.1% [c]	553 [c]
Family	50 [a, c]	25% [a, c]	7.1% [c]	509 [c]
Adult	58 [a, b]	20% [a, b]	10.6% [a, b]	348 [a, b]

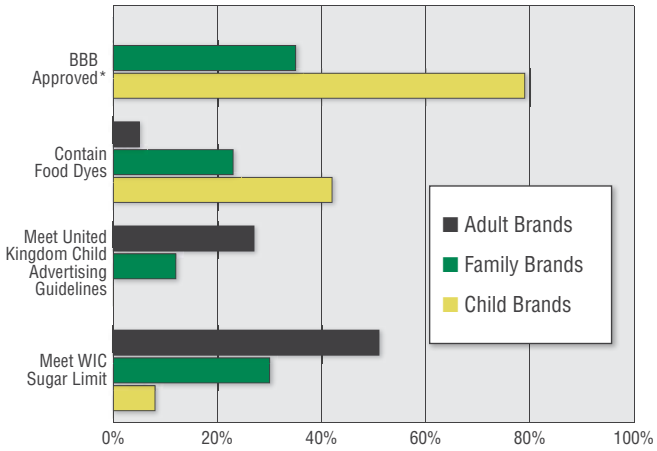
[a] Significantly different from child cereals
[b] Significantly different from family cereals
[c] Significantly different from adult cereals

The nutrition quality of family cereals falls between that of child and adult cereals: family cereals score significantly worse on overall nutrition and contain more sugar, less fiber and more sodium as compared to adult cereals. These cereals are, however, significantly more nutritious than the cereals marketed directly to children. Therefore, cereal companies market their least nutritious cereals directly to children, whereas healthier cereals that they have determined to be appropriate for child consumption are marketed to parents. Unfortunately, the most nutritious cereals are promoted only for adult consumption.

According to other criteria, cereals marketed to children also compare unfavorably to family and adult cereals (see **Figure 2**). Only 8% of child cereals meet the sugar limit to be

eligible for the WIC program, not one would be allowed on children's television advertising in the United Kingdom, and 42% contain food dyes. In spite of their poor nutrition quality, 79% of child cereals and 35% of family cereals offered by companies who participate in the CFBAI are included on companies' list of better-for-you foods that can be advertised to children.[5] In fact, these companies' better-for-you cereals had significantly *more sugar* (33% vs. 28%) as compared to their other products that are not approved for advertising to children, t(119) = 4.0, p < .001; and significantly *less fiber* (4.9% vs. 5.8%), t(119) = 2.4, p = .02.

Figure 2. Additional nutrition criteria for child, family and adult cereals



*Includes only cereals from CFBAI participants as of May 31, 2009 (General Mills, Kellogg and Quaker)

Nutrition quality by company and brand

Ranking Table 1 ranks all child and family brands by average brand NPI score. Only three child brands rated in the ten best for nutrition quality: Kellogg Hannah Montana, Cascadian Farm Clifford Crunch and Nature's Path EnviroKidz Organic cereals. Interestingly, two of these cereals have licensing agreements with entertainment companies. In contrast, child cereals comprise 8 of the 10 worst cereals, with General Mills Reese's Puffs at the bottom. The two family cereals in the bottom 10 (General Mills Golden Grahams and Kellogg Smorz) had been marketed to children directly in the past, but they have not been advertised since 2007.

Child and family brands from the smaller companies (i.e., Annie's, Barbara's Bakery, Cascadian Farm, Kashi and Nature's Path) have the best overall nutrition quality (see **Table 4**). Their cereals contain 22% sugar and 9% fiber, on average, and no food dyes. Kellogg, General Mills and Quaker also offer at least one more nutritious product among their child and family cereals. For example, Kellogg offers the only child or family cereal that would be allowed to be advertised to children in the United Kingdom (Mini-Wheats).

Table 4. Nutrition quality comparison of child and family cereals by company

	NPI score	Sugar content	Fiber content	Sodium (mg per 100 g)
General Mills	44	29%	5.6%	645
Kellogg	49	32%	5.1%	401
Post	43	35%	7.8%	538
Quaker	44	32%	5.0%	602
Other companies	52	22%	9.3%	525

Unfortunately, five out of nine varieties of Mini-Wheats also contain food dyes and artificial sweeteners that are not captured in the NPI score. In addition, one-quarter of General Mills' child and family cereals do meet the WIC guidelines (i.e., some varieties of Cheerios, Chex and Kix); as well as two of three Quaker Life cereals. Post cereals also contain more fiber as compared to the other large cereal company brands.

Unfortunately, as discussed earlier, these healthier cereals are marketed primarily to parents, not to children. In fact, of the 41 cereals we examined that are included on the lists of "better-for-you foods" that can be marketed to children (from General Mills, Kellogg and Quaker)[6], 76% had a low NPI score under 50, and over one-third scored under 40 (see **Table 5**). As discussed earlier, only Kellogg Mini-Wheats cereals scored over 62 and would be allowed to be marketed to children in the United Kingdom. Kellogg cereals are more likely to be approved to be marketed to children under the CFBAI, but this is likely due to a different marketing strategy. General Mills and Quaker only include cereals on their "better-for-you list" that are marketed directly to children, whereas Kellogg includes cereals marketed both to children and parents.

Improvements in nutrition quality

This analysis reflects improvements in nutrition quality due to product reformulations implemented as part of companies' CFBAI pledges to market healthier choices to children.[7] Since 2006 (and prior to May 31, 2009), 57% of child cereals and 65% of family cereals offered by the four largest cereal companies have been reformulated. Unfortunately, these reformulations improved the overall nutrition quality of all companies' existing cereals by only 2 to 5% (see **Figures 3 and 4**). Improvements resulted primarily from reducing added sugar from 13-15 g per serving to 12 g (i.e., the added sugar limit established by most CFBAI participants). In effect, added sugar in one serving of most child cereals went from 3 ½ tsp to 3 tsp. We did find some more positive developments in reformulations of a few individual cereals. For example, the overall nutrition quality of Quaker Cap'n Crunch improved by 18% and Post Fruity and Cocoa Pebbles improved by 14%, the result of additional fiber content.

Table 5. Nutrition scores for cereals approved as better-for-you under the CFBAI

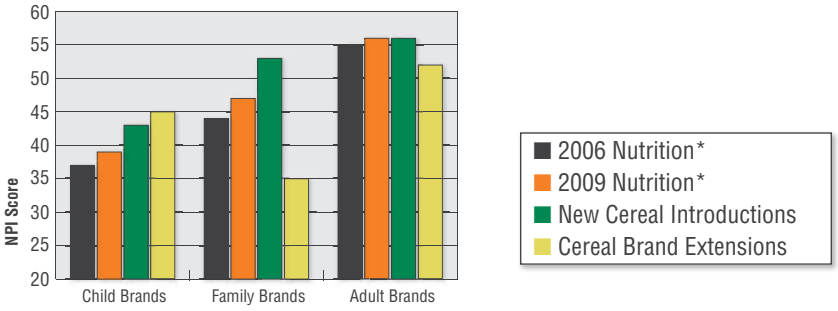
NPI Score	Kellogg	General Mills	Quaker
Over 62	Mini-Wheats: Unfrosted / bite size Mini-Wheats: Frosted / big bite Mini-Wheats: Frosted / bite size Mini-Wheats: Frosted Blueberry Muffin Mini-Wheats: Frosted Cinnamon Streusel Mini-Wheats: Frosted Strawberry Delight Mini-Wheats: Little Bites / Honey Nut		
50-62	Mini-Wheats: Little Bites / Chocolate Rice Krispies Jumbo Multi-Grain Hannah Montana		
40-49	Frosted Flakes Gold Frosted Flakes / Reduced Sugar Disney High School Musical Eggo: Maple Syrup Mini-Swirlz Rice Krispies (Regular) Froot Loops / Reduced Sugar Frosted Flakes (Regular) Apple Jacks (Regular) Cookie Crunch Cocoa Krispies (Regular) Rice Krispies Strawberries	Honey Nut Cheerios Cocoa Puffs Combos Cookie Crisp (Regular)	Cap'n Crunch
Under 40	Froot Loops Fruity Golden Bars Froot Loops (Regular) Froot Loops Smoothie Froot Loops Starberries Rice Krispies Treats Corn Pops (Regular) Rice Krispies Frosted	Cocoa Puffs (Regular) Trix Cinnamon Toast Crunch (Regular) Berry Lucky Charms Lucky Charms (Regular) Chocolate Lucky Charms Reese's Puffs	Cap'n Crunch Crunch Berries

We also reviewed 112 new cereals and 102 brand extensions for 48 different cereal brands. It may be difficult for cereal companies to reformulate existing products to improve their nutrition quality without alienating loyal customers who are satisfied with the taste and nutrition of the cereals they buy. Cereal companies do not have those constraints, however, when they introduce new cereals and cereal-branded product extensions. Therefore, these new product introductions may provide a better indicator of companies' commitment to improve the nutrition quality of their overall product lines.

New cereals and cereal-branded product extensions introduced after January 1, 2007 did show greater improvement in nutrition quality from 2006, as compared to reformulations. Overall nutrition scores for newly introduced child and family cereals, as well as those of child brand product extensions, improved by 16 to 20% over average NPI scores for child and family cereals in 2006. The nutrition quality of product extensions for family brands, however, declined by 20%.

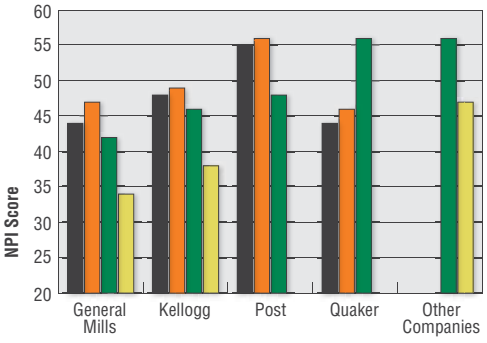
Further examination of differences by company in the nutrition quality of new product introductions, however, indicates that the improvement in overall nutrition for new cereals and cereal-branded products was due almost exclusively to new products introduced by smaller cereal companies (see **Figure 4**). New child and family cereals introduced

Figure 3. Nutrition quality improvements for child, family and adult cereals



*Cereals included in the 2006 analysis (N=108)

Figure 4. Nutrition quality improvements for child and family cereals by company



by General Mills, Kellogg and Post are of poorer nutritional quality than their existing cereals, and brand extensions by General Mills and Kellogg are considerably worse.

Nutrition quality overview

These findings are very disappointing. In spite of pledges by cereal companies to reduce marketing of unhealthy products to children, they all continue to target children with their most unhealthy products. In fact, not one cereal that is marketed directly to children would be allowed in advertising to children on television in the United Kingdom, and only one, Cascadian Farm Clifford Crunch, is eligible to be included in cereals offered through the WIC program. Sugar is a primary ingredient in most cereals marketed directly to children and 42% also contain potentially harmful food dyes. All companies do have much healthier cereals in their product portfolios, but these cereals are marketed only to adults. Even their more nutritious children's cereals (e.g., Kellogg Frosted Mini-Wheats, General Mills Kix and Quaker Life) are marketed to parents, not to children. In addition, the majority of child and family cereals offered by the smaller companies (e.g., Kashi Mighty Bites, Barbara's Bakery Puffins and Annie's Bunnies) have significantly less sugar, more fiber and no food dyes; obviously children will eat these more nutritious options.

Stated efforts by the larger cereal companies to improve the nutrition quality of their children's cereals have also been inadequate. Although they have reformulated the majority of child and family products, these improvements have been minimal; in most cases, the equivalent of reducing sugar content from 3 ½ tsp to 3 tsp per serving. New cereal introductions and cereal brand extensions may provide a better indicator of companies' commitment to improve the nutrition quality of their product lines; however, these efforts again disappoint. Nutrition scores for new products introduced within the past two years indicate that the major cereal companies have not attempted to improve the nutrition quality of their product portfolio and thus expect to continue the status quo going forward.

Cereal marketing practices

Although cereal companies continue to target children with their least nutritious products, the marketing landscape could improve if they reduced the amount of marketing they direct to children for these unhealthy products and/or conveyed the message in their advertising that these unhealthy foods are a special treat that should only be consumed occasionally. Therefore, to understand the scope and potential impact of recent cereal company marketing practices, we examined young people's exposure to different forms of marketing as well as the content of the messages presented in that marketing. Appendix D summarizes the marketing data we collected for each cereal and brand.

In the following discussion of cereal company marketing practices, we first present total advertising spending in measured media and then provide detailed analyses of cereal marketing on television, the internet and in the supermarket. We present differences between marketing practices for child, family and adult brands, as well as differences by company. We also describe specific marketing practices used to promote child and family brands.

Media advertising

Advertising spending

Definitions	Advertising spending
Advertising spending	Amount spent on all measured media, including television, magazines, radio, newspapers, free standing insert coupons and outdoor advertising. Data were licensed from The Nielsen Company.

A total of 53 cereal brands advertised in any measured medium during the 15-month period from January 2008 through March 2009. Across all media, companies spent $628.5 million in 2008 to advertise cereal products and $143.7 million during the first quarter of 2009 (see **Table 6**).[8] Cereal companies spent approximately one-half (53%) of their advertising budgets on child and family brands combined (25% on child brands and 28% on family brands).[9] In addition, they spent over $50 million on company-level advertising during this period to promote all their cereals (e.g., General Mills ads for "Big G" cereals).

Table 6. Total advertising spending for child, family and adult brands and companies

	Advertised brands	Advertising Spending: 2008 ($000)	Q1 2009 ($000)
Child	15	$156,267	$38,811
Family	7	$168,738	$45,985
Adult	31	$255,024	$54,702
Company-level	7	$48,528	$3,977

© The Nielsen Company

Both General Mills and Kellogg spent on average $26 million to advertise each of its child and family brands (see **Table 7**). With the most brands in its portfolio, General Mills spent over $260 million during the period examined, and Kellogg spent $160 million. Post and Quaker spent significantly less overall on their two brands, but they also spent 75% less per brand as compared to General Mills and Kellogg. Of

Table 7. Total advertising spending for child and family brands by company (excluding company-level advertising)

		Advertising spending		Spending per brand
	Advertised brands	2008 ($000)	Q1 2009 ($000)	($000)
General Mills	10	$189,358	$47,063	$26.2
Kellogg	6	$113,685	$34,253	$26.5
Post	2	$9,758	$2,471	$6.6
Quaker	2	$11,548	$467	$6.3
Other companies	2	$655	$541	$1.1

© The Nielsen Company

the smaller cereal companies, only Barbara's Bakery and Nature's Path advertised their family brands. Their spending represented less than 0.5% of the total in 2008, and they did not advertise in the first quarter of 2009.

As **Table 7** shows advertising spending in first quarter 2009 indicates that cereal companies are on track to spend a similar amount on their child brands in 2009 ($155.2 million) compared to 2008, somewhat more on their family brands ($183.9 million annualized), and slightly less on their adult brands ($218.8 million annualized). In addition, according to first quarter numbers, Kellogg appears to be increasing advertising spending by 21% in 2009 ($137.0 million annualized); whereas General Mills may be decreasing spending slightly ($188.2 million). Quaker spending has decreased significantly (to an annualized $1.9 million, a decline of 90%) and Post spending in 2009 remains level with 2008 ($9,884).

Ranking Table 2 presents advertising spending for each child and family cereal brand. The top three brands (General Mills Honey Nut Cheerios and Cheerios (Excluding Honey Nut) and Kellogg Mini-Wheats) spent $229 million, or more than half of all advertising spending during the period examined. General Mills spent more to market only one child brand (Honey Nut Cheerios) than Kellogg spent on all of its child brands combined. In contrast, Kellogg spent relatively more on its family brands, including $60 million on Mini-Wheats and $38 million on Rice and Cocoa Krispies. Other child cereals with spending over $10 million include Kellogg Frosted Flakes and Corn Pops and General Mills Cinnamon Toast Crunch and Lucky Charms.

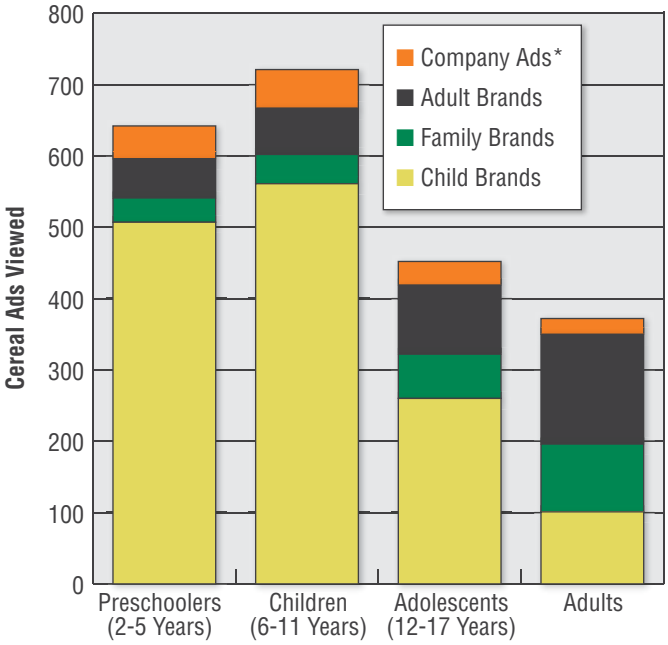
Overall then, General Mills and Kellogg dominate cereal advertising in measured media with 93% of all advertising spending to promote child and family cereals. Not only do these two companies promote more brands, they also spend more per brand than others. According to first quarter 2009 numbers, total media spending for child and family cereal brands in 2009 is on track to remain consistent with 2008 spending.

Television advertising exposure

Definitions	Television advertising exposure
Gross Rating Points (GRPs)	Measure of the per capita number of television advertisements viewed by a specific demographic group over a period of time across all types of programming. GRPs divided by 100 provide the number of ads viewed by the average individual in the demographic group for the period examined. GRPs for specific demographic groups are also known as target rating points (TRPs). Data were licensed from The Nielsen Company.
Average advertising exposure	GRPs divided by 100. Provides a measure of the number of ads viewed by the average individual during the time period measured.
Spanish-language television	Television programming presented in Spanish (e.g., Univision or Telemundo).
Targeted ratio: Children to adults	GRPs for 2- to 11-year-olds divided by GRPs for 18- to 49-year-olds. Provides a measure of relative exposure of children to adults.
Targeted ratio: Teens to adults	GRPs for 12- to 17-year-olds divided by GRPs for 18- to 49-year-olds. Provides a measure of relative exposure of teens to adults.
Targeted ratio: African American to all 2- to 17-year-olds	GRPs for African American 2- to 17-year-olds divided by GRPs for all 2- to 17-year-olds. Provides a measure of relative exposure of African American to all youth.

Television remains the most widely used medium to promote cereals to children and teens: 62% of total marketing spending and 90% of all media spending.[10] From 2008 through March 2009, 34 cereal brands advertised on television, including 13 child and 8 family brands.[11] The average child (ages 6 to 11 years) viewed 721 television ads for cereals in 2008; almost 2 per day (see **Figure 5**). The average preschooler viewed only 11% fewer ads: 642 in 2008. Adolescents viewed more than one cereal ad per day (452 per year), but these numbers are considerably lower than the number of ads viewed by children. By contrast, the average adult viewed only 372 cereal ads.

Figure 5. Exposure to child, family and adult cereal television advertising in 2008, by age



* General Mills and Kellogg
© The Nielsen Company

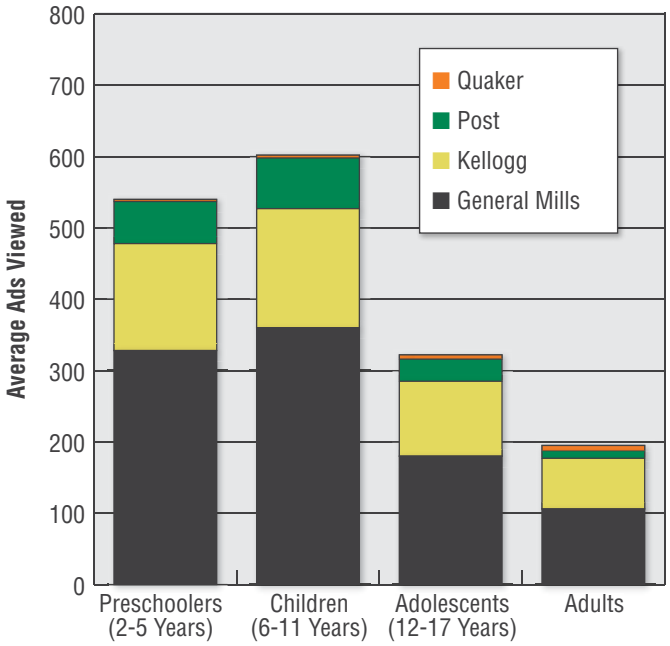
The majority of ads seen by preschoolers and children were for child cereals (78-79%). Children also saw 5.4 times as many ads for child cereals than did adults. In contrast, children saw approximately 100 family and adult cereal ads per year, but adults saw over twice as many of these ads. These data confirm that the child cereals in our analysis are marketed primarily to children and that family and adult brands are marketed primarily to adults. Children were also exposed to company advertising that promoted a variety of cereal products in one ad. Interestingly, they saw 2.3 times as many of these ads as compared to adults.

Although adolescents saw 37% fewer cereal ads overall compared to children, they did see more ads for family and adult brands. Compared to adults, they saw 160% more child cereal ads and 30 to 40% fewer ads for family and adult cereals.

Advertising by individual companies

General Mills dominates advertising to children on television with 60% of all children's exposure to cereal advertising (**Figure 6**). General Mills also appears to disproportionately target its child and family brand advertising to children versus adults. Children viewed 3.6 times as many General Mills ads compared to adults, whereas they viewed only 2.4 times as many Kellogg ads. In spite of lower overall advertising to children, Post had the highest child to adult targeted ratio: children saw almost 7 times as many Post ads compared to adults. Only Quaker did not disproportionately advertise their child and family cereals to children; children saw 50% the number of Quaker ads versus adults.

Figure 6. Young people's exposure to child and family brand advertising (excluding corporate advertising) by company in 2008



© The Nielsen Company

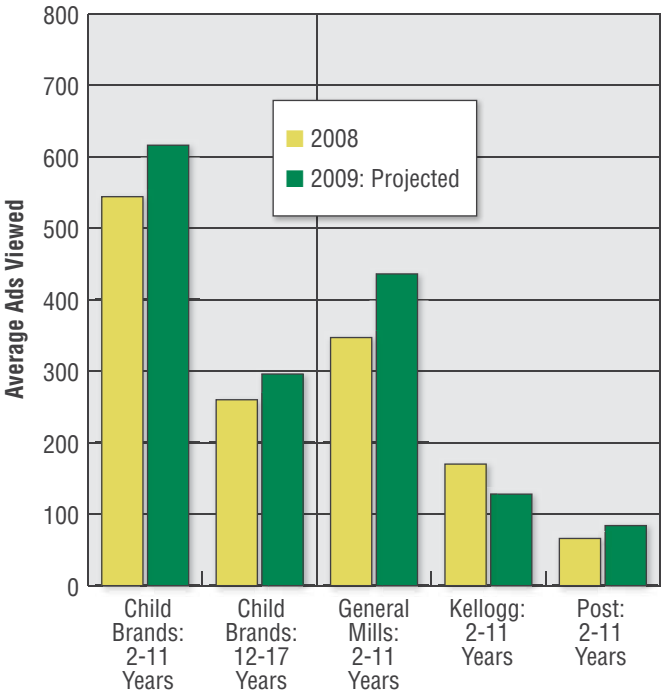
The number of cereal advertisements viewed by preschoolers is disturbing. Children under age seven or eight years do not possess the cognitive abilities to understand the persuasive intent of advertising, and therefore have no ability to defend against its influence.[12, 13] However, in 2008, preschoolers saw 1.5 cereal ads *every day*. In fact, General Mills[14] and Kellogg[15] have pledged that they will not advertise during programming predominately viewed by preschoolers, but 89% of the cereal ads viewed by preschoolers were for General Mills or Kellogg cereals.

2009 television advertising

Given that the CFBAI pledges were not scheduled to be fully implemented until January 1, 2009, it is also important

to assess changes in cereal advertising to children from 2008 to 2009. We calculated annualized 2009 advertising volume according to first quarter 2009 numbers. Although, as reported earlier, first quarter 2009 advertising spending indicates that cereal companies' total media budgets will remain flat in 2009 versus 2008, television advertising to young people is on track to rise by 14 to 19% for child brands (see **Figure 7**). In contrast, annualized 2009 advertising for adult cereals shows a decline over 2008 numbers. Both General Mills and Post show a large increase in advertising to young people according to their first quarter 2009 numbers: General Mills by 19 to 25% and Post by 14 to 30%. In contrast, young people's exposure to Kellogg advertising remained flat and Quaker did not advertise at all.

Figure 7. Young people's exposure to television advertising: 2008 vs. 2009 Projected



© The Nielsen Company

Advertising to racial and ethnic minority youth

We found little evidence that cereal companies disproportionately targeted racial and ethnic minority youth with their advertising placements (see **Table 8**). African American youth did see 26% more television ads for cereals in 2008 as compared to all youth; however, this overexposure can be attributed to 38% higher overall levels of television viewing.[16] Young people saw only 25 television ads per year on Spanish-language television.

Television advertising by brand

Ranking Table 3 provides detailed exposure data for child and family brands from January 1, 2008 through March 31, 2009. Five General Mills brands (Cinnamon Toast Crunch, Honey Nut Cheerios, Lucky Charms, Cocoa Puffs and Trix) comprised 48% of all cereal advertising seen by 2- to 11-year-olds. The top ten brands (also including Kellogg Frosted Flakes, Post Fruity and Cocoa Pebbles, General Mills Reese's Puffs, Kellogg Corn Pops and Kellogg Froot Loops) represent 80% of all cereal ads viewed by children. Children saw over 7 times as many ads for Lucky Charms, Cocoa Puffs, Fruity or Cocoa Pebbles, Reese's Puffs and Cookie Crisp as did adults. Only three child and family brands advertised on Spanish-language television during this period: General Mills Cheerios (Honey Nut and all other) and Kellogg Frosted Flakes.

In summary, General Mills, Kellogg and Post advertised 13 child brands on television from January 1, 2008 through March 31, 2009, and these cereals represented over three-quarters of all cereal ads viewed by children. Unfortunately, these cereals are also among the least nutritious cereal products offered by these companies. General Mills is by far the largest cereal advertiser to children on television, with 60% of all cereal advertising viewed by children for only six General Mills brands.

Even more troubling, in spite of its CFBAI pledge to reduce unhealthy food marketing to children (scheduled to be fully implemented by January 1, 2009), General Mills appears

Table 8. Exposure to television advertising for child, family and adult cereals in 2008 among African American youth and youth on Spanish-language television

	Average ad exposure: African Americans 2-17 years	GRP targeted ratio: African American to all 2-17 years	Average ad exposure: Spanish-language television for 2-17 years
Child	518	1.2	15
Family	60	1.5	3
Adult	105	1.5	7
Company-level	54	1.3	4

© The Nielsen Company

to have *increased* the total amount of cereal advertising targeted to children in 2009. Similarly, both General Mills and Kellogg have pledged that they will not advertise to preschoolers, but the average 2- to 5-year-old viewed 474 ads for their cereals in 2008. Post also appears to have increased advertising for children's cereals in 2009. Only Quaker substantially reduced its television advertising to children in 2008 and 2009, and Quaker did not advertise its Cap'n Crunch brand on television during this period.

Television advertising content

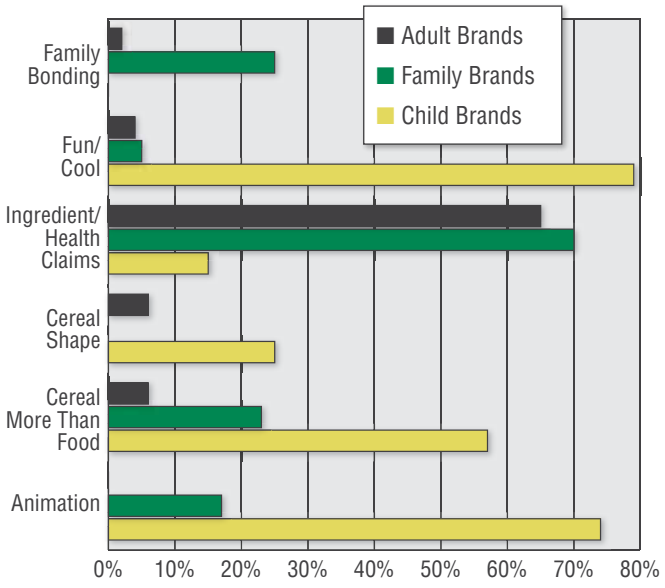
Key definitions	Television advertising content
Animation	Includes animated brand characters (e.g. Tony the Tiger), licensed characters (e.g., Nickelodeon or Disney characters licensed for use from a third party) and other non-branded animated characters, as well as other uses of animation in the advertisement.
Cereal as more than food	When the cereal pieces are portrayed as a play-thing or for use in something other than consumption (e.g., cereal pieces become a rollercoaster ride or a character in the ad).
Ingredient and health claims	Includes descriptions of product nutrients or ingredients (e.g., whole grains, low fat, vitamins, calcium, fiber, or "natural" ingredients) and/or health benefit claims (i.e., the cereal is "healthy;" reduces the risk of disease; lowers cholesterol or blood pressure; improves bodily functions such as digestion; improves physical or mental performance; and/or promotes weight control).
Emotional benefits: Child-targeted	Implicit claims that associate the cereal with fun, cool and peer acceptance.
Emotional benefits: Family bonding	Implicit claims that associate the cereal with family love, bonding, or togetherness.
Games URL	The advertisement directs the viewer (either verbally or in writing on-screen) to an advergaming website.
Target audience	The type of viewer to which the advertisement appears to be appealing, as indicated by the text in the ad or the person consuming the cereal.

In addition to documenting the volume of television advertising targeted to children, we also examined the messages portrayed in those ads. Although 98% of television food advertisements seen by children promote products of poor nutritional quality[17] and children viewed television advertisements for the least nutritious cereals in 2007,[18] the actual messages presented in those advertisements could determine whether they have a positive or negative influence on children's eating habits. For example, if an advertisement for an unhealthy product indicates that the food is a special treat that should only be consumed on certain occasions, the influence could be positive. Unfortunately, past research indicates the contrary; the majority of children's food advertising has traditionally associated unhealthy products with fun and happiness and portrays unhealthy food consumption behaviors.[19] Therefore, understanding both the volume of advertising and the messages presented is required to appropriately evaluate progress in improving children's nutritional environment.

To assess the messages presented in television advertising for cereals, we analyzed the content of 175 unique television advertisements that aired from January 1, 2008 through March 31, 2009, including 61 ads for 13 child cereal brands, 66 ads for 7 family brands, and 48 ads for 13 adult brands. **Figure 8** presents the most common features of child, family (including company ads) and adult cereal advertisements and differences between the different types of ads.

We found clear differences between advertising techniques and messages used in child, family and adult cereals. Not surprisingly, three-quarters of ads for child cereals used animation, whereas no adult ads used that technique. More surprising were distinct differences between how cereal products were portrayed in the advertisements. Over half of

Figure 8. Differences in television advertising content for child, family and adult cereal brands.



all ads for child cereals represented the cereal as much more than food. In these ads, cereals had magical powers, were the building blocks of thrill-rides, and even transformed into walking, talking animated characters. The few ads for child cereals that did present actual characteristics of the product focused on its shape (e.g., Corn Pops' "unique shape" or Lucky Charms' hourglass-shaped marshmallow piece) and not on features associated with its qualities as a food. In contrast, most family and adult cereal ads discussed healthy features of the cereal, including its nutritious ingredients and/or the health benefits of consuming the cereal.

Emotional appeals were also used extensively in advertising for child cereals, with the majority of ads conveying the message to children that consuming these products is fun, cool and/or promotes peer acceptance. A family bonding appeal also appeared in ads for some family cereals. In contrast, adult cereal ads primarily focused on feeling good as a result of the health benefits of the product (e.g., lowering your cholesterol or losing weight). Humor was also commonly used in adult and family cereal ads (38 and 32% of ads).

We also examined the consumption messages commonly presented in the cereal advertisements. Cereal ads commonly depicted the cereal being consumed; however, the actual behaviors presented differed significantly for child and adult cereals. Approximately two-thirds of ads for both adult and child cereals showed cereal being consumed, compared to only 39% of family ads. Ads for adult and family cereals were twice as likely to present the product being consumed at a table or meal, whereas only 16% of the eating behaviors presented in ads for child cereals occurred at a meal or table.

Ads for adult and family cereals made no mention of eating the cereal as part of a balanced breakfast, however, ads for child cereals included this suggestion 71% of the time. Family cereal advertising also depicted cooking or eating together as a family, whereas those for child and adults cereals did not.

Finally, we quantified the number of ads that provided information about the company website. Family and adult cereals were more likely to advertise the company URL in the television ad (30% and 31%); but 18% of child cereal ads directed the viewer to the product's advergame website URL.

Differences by brand and company

We also examined differences in television advertising content by brand and company for the child and family cereals. Although we had used child to adult GRP targeting ratios to identify child cereals (i.e., cereals for which children saw relatively more ads as compared to adults), the content analysis did identify two child brands that also appeared to target adults in some of their ads. Among the ads for Honey Nut Cheerios, 60% appealed directly to adults, and 40% of Cinnamon Toast Crunch ads also appealed to adults. Not surprisingly, these brands also have lower child to adult targeted ratios as compared to the other brands (2.4 and 4.0 compared to 6.0 to 7.1 for most other child cereal brands). Therefore, we removed the Honey Nut Cheerios and Cinnamon Toast Crunch ads targeted to adults from the following analysis of ads by brand.

Table 9 presents the messages and techniques commonly used in child-targeted ads for child cereals. This analysis

Table 9. Television advertising content by brand for ads targeted to children.

		Number of child-targeted ads	Animation	Cereal as more than food	Cereal shape	Ingredient and/or health claims	Fun, cool, peer acceptence	Food consumed at meal or table
Kellogg	Frosted Flakes	11	82%	0%	0%	18%	91%	18%
Kellogg	Corn Pops	5	40%	80%	40%	0%	60%	0%
General Mills	Honey Nut Cheerios	2	100%	50%	0%	0%	100%	0%
General Mills	Cinnamon Toast Crunch	3	0%	33%	67%	0%	67%	0%
Kellogg	Trix	5	80%	100%	20%	20%	80%	20%
Post	Fruity or Cocoa Pebbles	5	100%	80%	40%	0%	100%	40%
General Mills	Lucky Charms	5	100%	100%	80%	20%	80%	0%
General Mills	Cocoa Puffs	4	100%	75%	0%	25%	75%	0%
Kellogg	Apple Jacks	4	100%	50%	25%	0%	100%	N/A
Kellogg	Froot Loops	5	100%	100%	20%	0%	100%	0%
Post	Honeycomb	3	0%	0%	0%	0%	67%	33%
General Mills	Reese's Puffs	2	0%	100%	0%	0%	100%	50%
General Mills	Cookie Crisp	2	100%	50%	50%	50%	100%	100%

"Cocoa-lossal chocolatey taste."

"Keep your kids full and focused."

"A yogurty treasure!"

"Childhood is calling."

demonstrates surprising consistencies between cereal advertisements targeted to children. Only three brands did not use animation in their ads (Cinnamon Toast Crunch, Honeycomb and Reese's Puffs), and only two (Frosted Flakes and Honeycomb) did not represent the cereal as more than food. All brands communicated that the product was fun, cool and/or promoted peer acceptance in at least two-thirds of their ads. A small number of ads (approximately one each for five of the brands) presented ingredient and/or health claims in their ads targeted to children. Unfortunately, none of the cereals advertised to children are nutritious. Of the 13 child brands in this analysis, only six presented the food being consumed at a meal or table (Apple Jacks never presented the cereal being consumed).

We did find a difference between companies in their presentation of games URLs in the ads. All Kellogg brands presented the URL for an advergame website in at least one of their ads. In contrast, only General Mills Cocoa Puffs and Trix presented a games website URL in any of their ads, and Post did not include the URL for their games website.

Although most family brands were identified as such because the company website indicates that the products are for children or families, the majority of television ads for these brands promoted adult consumption only. Only Kellogg Mini-Wheats and Rice Krispies and Quaker Life specifically addressed parents and encouraged child consumption in the majority of their ads (see **Table 10**). The most common messages presented in these ads were ingredient and/or health claims (primarily in ads targeted to adults) and family bonding (in ads targeted to parents). Post Raisin Bran and General Mills Chex only had one ad each, and these ads had a somewhat different message. The Post Raisin Bran ad was a vintage ad that promoted the amount of raisins in each box. The Chex ad focused on convenience and ease of preparation.

Finally, although we found no evidence that cereal companies specifically target racial and ethnic minorities when placing their advertising, we did find evidence of racial targeting in the advertising content of one child cereal. African Americans have been shown to be more responsive

Table 10. Television advertising content for family brands*

		Number of ads	Targeted to parents	Ingredient and/or health claims	Family bonding
General Mills	Cheerios (excluding Honey Nut)	24	4%	100%	8%
Kellogg	Rice or Cocoa Krispies	11	100%	0%	91%
Kellogg	Mini-Wheats	7	86%	100%	0%
Quaker	Life	4	100%	25%	75%
Barbara's Bakery	Puffins	3	33%	100%	0%
Post	Raisin Bran	1	0%	0%	0%
General Mills	Chex	1	0%	0%	0%

*Does not include company-level advertisments.

to advertising that presents actors of their own race,[20] and advertisements for Reese's Puffs only included African American actors. In contrast, other ads typically showed a range of racial and ethnic minorities when groups of children appeared. Reese's Puffs, therefore, appears to design its ads to appeal specifically to African American children. Unfortunately, Reese's Puffs also has the poorest nutritional quality of all the brands in our analysis.

In summary, television advertising for cereals targeted to children has very little to do with food. The main purpose of the ads appears to be to associate these products with positive emotions that are likely to appeal to this age group: fun, being cool and fitting in. In addition, these advertisements typically present the product more as a toy or companion, as opposed to something to eat. Similarly, they commonly promote the shape of the product and/or present it doing something that food cannot do. These same techniques are used consistently by all companies who advertise directly to children. In contrast, Kellogg and Quaker market several of their family cereals to parents with a message about family bonding (Rice or Cocoa Krispies and Life) and improving their children's mental performance (Mini-Wheats). All other family cereals are primarily advertised to adults for adult consumption, with a message about nutrition and/or health.

Television advertising overview

Cereal advertising to children on television appears to have changed very little as a result of the CFBAI. The average child in the United States continues to view 1.6 cereal ads on television *every day*, and all of the cereals advertised to them directly are among the worst quality cereals produced by cereal manufacturers. The large cereal companies, as well as all of the smaller companies, do have more nutritious children's products in their portfolios; however, most of these products are advertised much less extensively, if at all, and only to adults. Children's cereal advertisements have little to do with food; their main purpose appears to be to associate these poor quality products with fun, being cool and peer acceptance. In addition, much of this exposure is likely to occur without parents' awareness. Children see over five times as many of these ads as adults see and the products advertised to them have significantly more sugar, sodium and food dyes and significantly less fiber. Not surprisingly then, parents believe that their children see far fewer ads for cereals: approximately one ad per week.[21]

This analysis also presents unfortunate news about the potential impact of cereal television advertising and companies' pledges to improve their marketing practices. In addition to the elementary-school-age children that companies say they are marketing to, almost equal numbers of very young children are also being exposed to these advertisements. These children have no cognitive abilities to defend against advertising messages;[22, 23] therefore, advertising to them is inherently unfair and potentially extremely harmful given the nutritional quality of the products. It also appears that the overall number of cereal advertisements viewed by children will not decline due to the CFBAI. According to first quarter 2009 numbers, some companies have even increased the amount of cereal advertising targeted to children.

Finally, General Mills had by far the most cereal advertising to children: almost 60% of all cereal advertisements seen by children. The products advertised most extensively (Cinnamon Toast Crunch, Honey Nut Cheerios, Lucky Charms, Cocoa Puffs and Trix) are all on their list of "better-for-you" foods that can be advertised to children; however, these products are all significantly "worse for you" than other cereals in their portfolio. Kellogg and Post also advertise their least nutritious products directly to children; however, they promote fewer products and at lower levels. Kellogg also advertises its lower sugar children's cereals (Rice Krispies and Frosted Mini-Wheats) to parents directly. Only Quaker has discontinued advertising directly to children on television.

Internet marketing

Television remains the primary advertising medium used by cereal companies to promote their brands to children and adolescents. In 2006, only 6.0% of their youth advertising budgets were devoted to websites and other forms of internet marketing, totaling $14.2 million.[24] Digital media are far less expensive than traditional forms of advertising, however, and we found several brands that aggressively use a variety of digital marketing practices to advertise to children and adolescents, including child-targeted websites, banner advertising on other (i.e., third party) websites, and social media marketing. Given the highly entertaining and interactive content of child-targeted websites, and the fact that no regulations limit the amount or types of marketing that can be directed to young people via the internet, health researchers have become increasingly concerned about digital marketing practices.[25, 26]

Child-targeted websites

We identified 17 branded cereal websites with content targeted to young people. These sites were sponsored by General Mills, Kellogg and Post, and included two sites specifically targeted to children that featured multiple brands from one company, 11 child-targeted sites for individual cereal brands, three adult-targeted websites with some child content, and one additional unbranded site for children by General Mills (see **Table 11**). Of the 17 websites with child-targeted content, ten had enough website traffic to obtain exposure data from comScore.

Table 11. Cereal company websites with content targeted to young people

Company	Website	Main audience	Products featured	comScore data available
General Mills	Millsberry.com	Children	Multiple brands	Yes
Post	Postopia.com	Children	Multiple brands	Yes
General Mills	CookieCrisp.com	Children	One brand	Yes
General Mills	ReesesPuffs.com	Children	One brand	Yes
General Mills	CuckooShow.com (Cocoa Puffs)	Children	One brand	No
General Mills	HoneyNutCheerios.com	Children	One brand	No
General Mills	LuckyCharms.com	Children	One brand	No
General Mills	SillyRabbit.com (Trix)	Children	One brand	No
Kellogg	AppleJacks.com	Children	One brand	Yes
Kellogg	CornPops.com	Children	One brand	Yes
Kellogg	FrootLoops.com	Children	One brand	Yes
Kellogg	FrostedFlakes.com	Children	One brand	Yes
Post	Beeboy.com (Honeycomb)	Children	One brand	No
General Mills	Cheerios.com	Adult	One brand	Yes
General Mills	Chex.com	Adult	One brand	Yes
Kellogg	FrostedMiniWheats.com	Adult	One brand	No
General Mills	Choosebreakfast.com	Children	Unbranded	No

Website exposure

Definitions	Website exposure*
Average unique visitors per month: 2-11 years; 12-17 years; African American 2-17 years	Average number of individuals (in each demographic group) visiting the website each month from January 2008 through March 2009.
Average visits per month[27]	Average number of times each unique visitor (in each demographic group) visited the website each month from January 2008 through March 2009.
Average minutes per visit	Average number of minutes each visitor (in each demographic group) spent on the website each time he or she visited from January 2008 through March 2009.
Targeted visitor ratios: Child to adult; Teen to adult; African American to all youth	Provides the relative proportion of children and teens who visited the website as compared to the proportion of adult visitors and the relative proportion of African American 2- to 17-year-olds as compared to all 2- to 17-year-olds. For example, if the child to adult ratio for a website was 2.0, then children were twice as likely to visit the website compared to adults.

*Data retrieved from comScore Media Metrix Key Measures Report

Ranking Table 4 provides total unique child and adolescent visitors, average visits per month and average minutes per visit for cereal websites with child-targeted content for the period from January 2008 through March 2009.

The numbers are astonishing. The two cereal multi-brand websites are major internet destinations for children and adolescents. Every month, on average, 767,000 young people spent a total of 66.4 minutes engaged in General Mills' Millsberry.com. Fewer young people visited Post's multi-brand website, but the numbers are still considerable. On average, 265,000 visited Postopia.com every month and spent 30.4 minutes on the website. Many of the General Mills child brands (Cocoa Puffs, Cookie Crisp, Honey Nut

Table 12. Targeted visitor ratios for websites with child-targeted content

Company	Website	Child to adult	Teen to adult	African American to all youth
Post	Postopia.com	2.7	1.4	1.0
Kellogg	FrootLoops.com	2.4	0.8	2.2
Kellogg	CornPops.com	2.3	1.0	1.4
General Mills	ReesesPuffs.com	2.1	1.3	2.7
General Mills	Millsberry.com	1.7	1.7	2.5
Kellogg	AppleJacks.com	1.7	1.0	1.9
General Mills	CookieCrisp.com	1.3	0.8	4.2
Kellogg	FrostedFlakes.com	1.2	0.4	5.9
General Mills	Cheerios.com	0.9	0.5	1.8
General Mills	Chex.com	0.4	0.7	3.3

*Ratios calculated as described in Methods using data from comScore Media Metrix Key Measures Report, (January 2008 – March 2009).

Cheerios, Lucky Charms, Reese's Puffs and Trix) also have their own child-targeted websites, but only two (Reese's Puffs and Cookie Crisp) had enough visitors to report during the period examined. In addition, Post has a separate, relatively low volume, website for its Honeycomb brand (Beeboy.com).

Kellogg appears to follow a different internet marketing strategy for its child-targeted brands. In place of one very large multi-brand website, Kellogg maintains separate moderately large websites for four of its child brands (Apple Jacks, Corn Pops, Froot Loops and Frosted Flakes). These sites averaged approximately 47,000 child and teen visitors each month and visitors spent a total of 12.1 minutes on the sites.

In contrast, the number of young people visiting General Mills' adult-targeted websites with some child content (Cheerios.com and Chex.com) was low: an average of 21,000 visitors each month spending 5.3 minutes in total. In addition, children and adolescents were less likely to visit these sites as compared to adults. The volume of traffic to General Mills' nutrition website (Choosebreakfast.com) was too low to report.

Age and racial targeting. The proportion of child to adult and teen to adult visitors to these websites confirm that they appeal primarily to children younger than 12 years (see **Table 12**). The targeted ratios by age range from 2.7 for Postopia.com (i.e., children were almost 3 times as likely to visit the site as compared to adults) to 0.4 for Chex.com. Interestingly, only Millsberry.com appears to be a popular destination for adolescents; teens were twice as likely to visit the site as compared to adults. For a few of the sites (FrootLoops.com, CookieCrisp.com, FrostedFlakes.com, Cheerios.com and Chex.com) teens visited relatively less often than did adults.

In addition to their primary appeal to young people, nearly all the child-targeted sites also appear to appeal disproportionately to African American youth. FrostedFlakes.com, CookieCrisp.com, Millsberry.com, and ReesesPuffs.com were all visited 2.5 to 6 times as often by African American 2- to 17-year-olds, as compared to all young people in that age group. In contrast, African American youth visited Postopia at a similar rate as all youth. As African American youth spend a comparable amount of time playing internet games as compared to their white counterparts,[28] many of the cereal sites appear to disproportionately appeal to this at-risk population.

Website content analysis

Definitions	Website content analysis
Ingredient or health claims	*Ingredient claims* refer to statements about properties of the cereals themselves, such as "Has whole grains." *Health claims* directly state health benefits from consuming the product, such as "Builds strong bones."
Cereal as more than food	When the cereal pieces are portrayed as a play-thing or for use in something other than consumption (e.g., an advergame that is played using cereal pieces).
Promotions or licensed characters	*Online* promotions include cross-promotions such as the presence of Flintstone characters, and sweepstakes for online prizes. *Offline* promotions include sweepstakes redeemable for offline prizes, and incentives to purchase an offline product (usually a specific cereal) to gain access to special online content.
Brand engagement techniques	*Engagement techniques* are branded and unbranded devices that utilize the medium of the internet to attract and keep visitors on a website. *Brand engagement techniques* refer to any of these devices that specifically keep users engaged with the brand. Examples include the brand logo, spokes-characters [e.g. Tony the Tiger], licensed characters [e.g. the Flintstones], or the product itself.
Web engagement techniques	*Web engagement techniques* refer to engagement devices that keep the user interacting with the page longer, such as the ability to download items or design a digital alter ego, or avatar.
Behavioral targeting	Any method by which a company collects information about a website user, such as a poll, quiz, or user registration.
Advertising identification	Refers either to labels on specific sections of a page marking it as an advertisement or to a generic label in the corner of a page saying that the whole page is an advertisement or may contain advertisements.

In the website content analysis, we examined a total of 452 unique, child-oriented pages from the 17 cereal websites that contained child-targeted content. Not surprisingly given the amount of time young people spend on these sites, Millsberry.com had the most child-targeted pages on its website (167), followed by Postopia.com with 112 pages. Although these two sites are sponsored by General Mills and Post, they prominently feature only a few child cereal brands. At Millsberry.com, branded content for Trix, Lucky Charms and Honey Nut Cheerios appeared on 79 to 82% of all pages (132 to 137 pages each). Reese's Puffs also appeared on 9% of pages and Cinnamon Toast Crunch on 7%. At Postopia.com, branded content for Honeycomb appeared on 97% of pages and Fruity and Cocoa Pebbles appeared on 100%. The number of child-targeted pages on other sites ranged from 1 to 31, with branded content on most.

Table 13 provides a summary of the content of cereal websites' child-targeted pages, including health and nutrition claims, representing the cereal as more than food, promotions and licensed characters, brand and web engagement techniques, and behavioral targeting.

Ingredient and health claims. Six of the 17 sites carried ingredient or health claims. The majority of these statements promoted a cereal as having whole grains (27 pages), while others promoted vitamins or minerals (8), calcium (8), or fiber (3). Two sites—FrostedFlakes.com and FrostedMiniWheats.com —went beyond touting a cereal's ingredients to suggest health benefits from consuming the product. Most of these health claims referred to enhanced mental performance (8 pages), while others suggested that eating the cereal would enhance physical capabilities (3) or build stronger bones (1). Of the cereals promoting health claims to children on their websites, only Frosted Mini-Wheats would qualify as healthy according to the NPI model. All other cereals scored low on the NPI model (46 or lower) and contain a minimum of 9 g of sugar per serving (31 – 41% of total content). Three-quarters of all nutrition claims, and 45% of health claims, were graphically integrated into a website, as opposed to text-only statements.

The Frosted Flakes site, for instance, advises kids that, "Just like you need to refuel in the morning, you also need to refuel before you lace up your shoes and hit the track, trail, field or court. Enjoy Kellogg's Frosted Flakes cereal with milk, and you'll be ready to do your best." In the Reese's Puffs skiing game on the Millsberry website, the user sees images touting the "whole grains" in the cereal while associating that ingredient claim with the General Mills brand logo.

Three websites (AppleJacks.com, FrootLoops.com, and ReesesPuffs.com) did present a message that would periodically (usually after a period of 15 minutes) alert children to take a physical activity break from spending time online although children could easily override this notice and continue playing. Only one website (Choosebreakfast.com by General Mills) did not included branded products and

Table 13. Child-targeted website content analysis

		Ingredient or health claims	Cereal more than food	Promotions or licensed characters	Brand engagement		Web engagement		Behavioral targeting	
	Total number of pages	% of pages	% of pages	% of pages	% of pages	# per page	% of pages	# per page	% of pages	Ad ID
Millsberry.com	167	3%	3%	2%	6%	1.7	25%	3.5	22%	Yes
Postopia.com	112	1%	34%	97%	61%	1.8	78%	6.0	73%	Yes
FrootLoops.com	31	0%	39%	29%	42%	3.9	52%	4.3	3%	Yes
LuckyCharms.com	24	0%	67%	21%	75%	3.3	79%	4.8	71%	Yes
SillyRabbit.com (Trix)	22	37%	14%	32%	32%	2.4	55%	2.6	55%	Yes
FrostedFlakes.com	20	10%	0%	30%	0%		35%	1.6	0%	No
FrostedMiniWheats.com	15	87%	7%	0%	13%	2.0	20%	2.3	27%	No
AppleJacks.com	13	0%	38%	0%	54%	3.0	100%	2.3	8%	Yes
ReesesPuffs.com	10	50%	0%	33%	20%	3.0	70%	1.7	90%	Yes
Beeboy.com (Honeycomb)	9	0%	11%	0%	22%	2.0	44%	2.5	0%	No
HoneyNutCheerios.com	5	0%	60%	0%	80%	3.0	80%	5.0	60%	Yes
Cheerios.com	4	0%	0%	0%	0%		50%	1.0	0%	No
Chex.com	4	0%	0%	75%	0%		50%	1.0	75%	No
CuckooShow.com (Cocoa Puffs)	4	0%	25%	0%	75%	2.3	100%	2.3	0%	Yes
CookieCrisp.com	2	0%	50%	0%	100%	3.0	100%	3.0	0%	Yes

Froot Loops' activity break screen.

Enjoy a healthy snack before the game

Reese's Puffs with whole grain

primarily offered a nutrition education message to encourage kids to "choose breakfast."

Entertainment content. As found in the television advertising content analysis, the majority of websites for child brands also commonly represent the cereal itself as more than food, typically by incorporating the cereal into the game as either a piece of equipment, playmate, or an object used in the course of the game. For example, in a game on Millsberry.com called Fruity Cheerios Bumper Boats, the characters in the game use Fruity Cheerios pieces as their bumper boats in an attempt to bump other players outside of the designated play space; or children are invited to play a racing game with Apple Jacks' "CinnaMon" and "Apple" characters.

Not surprisingly, given the considerable time that young people spend on these websites, the most common features on all pages were devices designed to keep children engaged and interacting with the content, including promotions,

licensed characters and brand and web engagement techniques. In addition, the majority of sites included behavioral targeting devices on many website pages. **Table 14** summarizes the techniques found on these sites.

General Mills websites stood out for the most intrusive and at times misleading content, including claims touting the cereals' nutritional benefits. As in their television advertising, Reese's Puffs also utilized African American characters almost exclusively on its website and appeared to target its message specifically to African American children. General Mills also employed the widest range of behavioral targeting techniques to gather information about children and teens that use its sites. In spite of extensive branding on all their websites, only seven of General Mills' ten sites included a warning that the site may contain advertising.

Kellogg's websites made extensive use of branded engagement techniques. For example, Kellogg's sites frequently included interactive games that featured brand identifiers, such as spokes-characters, logos, packaging,

African American character on ReesesPuffs.com.

"Win Cash" promotion on SillyRabbit.com.

Ride with Apple Jacks "Cinnamon" and "Apple" characters

Ride the Fruity Cheerios bumper boats.

and the branded cereal itself. Kellogg's websites did have some positive features. As discussed, they presented periodic physical activity messages, and the Frosted Flakes site stood out for its focus on physical activity, even though that message was embedded within the cereal's promotion. Two of Kellogg's three websites for child brands included a warning that the site contains advertising content.

Despite having only two sites, Post was the most aggressive at targeting children online. Postopia.com in particular stood apart with more than twice as many games as any other site and the highest number of brand identifiers per page. For instance, the Flintstones cartoon characters were featured on nearly all pages to promote Fruity and Cocoa Pebbles. Post also encouraged consumption, by requiring codes from cereal boxes to access special features of the sites. Postopia.com did indicate that the site contained advertising content.

Table 14. Interactive content on child-targeted web pages as of March, 2008.[29]

Millsberry.com	This website stood out as the most interactive. It was the sole site that created a virtual world in which users could design an avatar and explore the Millsberry "city" online. The site is designed to produce extremely lengthy stays in this branded environment. For example, when the user plays games on the site, he or she earns "Millsbucks" currency that can be used to buy branded grocery store items—including General Mills' cereals—for the user's avatar. The site also had the most complete set of behavioral targeting techniques. These included personal information gathered upon site registration, as well as the encouragement for children to ask their friends to register so they could send Millsberry messages to one another on the site. Trix, Lucky Charms and Honey Nut Cheerios were each prominently featured on the majority of pages, and Reese's Puffs, Cocoa Puffs and Cinnamon Toast Crunch were each featured on 3 to 9% of the pages.
Postopia.com	This site had the most games, 83 in total, of which 68 (82%) included branded content. Moreover, most of these games encouraged children to eat the product by requiring a code from the product package to gain extra advantages in the games. The site was also thoroughly branded with Flintstones characters promoting cereal products on almost every page.
LuckyCharms.com	The site was well integrated as the user could watch "webisodes" to learn about Lucky and his trials and tribulations and then use the information to win games on other parts of the site.
FrootLoops.com	This website engaged users through extensive use of interactive techniques such as games and "webisodes". The site was also thoroughly branded through the heavy display of logos and spokes-characters.
FrostedMiniWheats.com	The site made exaggerated health claims about Frosted Mini-Wheats' ability to improve children's attentiveness. These claims caught the attention of the FTC, which on April 20, 2009, ruled that the claims were false and illegal.
Sillyrabbit.com (Trix)	This graphic-intensive site included an array of techniques to engage children, such as branded games and videos. The site also contained a variety of methods to further target its users, including sweepstakes and a "Tell a friend" feature that required users to input their personal information.
AppleJacks.com	The site had a high level of integration, telling a story about the travels of the product's spokes-characters across multiple pages of the site. This narrative connected these different pages, including through videos about the spokes-characters' travails. The site also included interactive games, though these were not integrated into the travel story.
Beeboy.com (Honeycomb)	This website was well integrated, telling a story about its branded spokes-character across individual web pages. The story seemed especially child-targeted, as it was about the coming-of-age of the "Beeboy" spokes-character.
ReesesPuffs.com	This website drew on the "cool" cache of the hip-hop genre to market the product to youth. It also allowed for a highly personalized experience, as users could design and name an avatar, and create a song to be downloaded to his or her computer. The majority of animated characters on this website appeared to be African American.
CornPops.com	This site was large despite being only 1 page, as the single page contained a series of videos that unfolded in a "choose your own adventure" format designed to maintain children's attention for an extended period of time.
HoneyNutCheerios. com	While this site included branded games and made regular use of its branded spokes-character "Buzz," it was small and modest when compared to the larger, more interactive, child-targeted cereal websites.
CuckooShow.com (Cocoa Puffs)	This site was relatively simple, and lacked integration across web pages. It did include, however, strategies to engage children, such as branded games.
Chex.com	Overall, this site targeted adults, but the child-oriented section included an aggressive cross-promotion with NASCAR, requiring children to register for the site, including divulging their location and email address—intimate information about its young customers—before they were allowed to vote for their favorite NASCAR driver.
CookieCrisp.com	This small site did contain one branded game, but was far less engaging and interactive than the game experience on other sites.
Cheerios.com	The majority of the site targeted adults, The child-oriented section introduced the Honey Nut Cheerios spokes-character, Buzz. This introduction was static, including pictures and text, and lacked interactive features such as a games or videos.
FrostedFlakes.com	While clearly dedicated to promoting the branded product, the site did so by focusing on physical activity, with links to non-profit youth sports organizations such as Pop Warner football.

Banner advertising on third party websites

Definitions	Banner advertising exposure*
Third party websites	Sites that present advertising from other companies on their web pages.
Banner advertising	Advertising that appears on third party websites as rich media (SWF files) and traditional image based ads (JPEG and GIF files). Banner ads usually appear in a sidebar or "banner" on a webpage. Text, video and html-based ads are not included.
Average monthly unique viewers[30]	Average number of unique viewers exposed to a brand's banner advertisements each month from October 2008 through March 2009.
Average number of ads viewed per month[31]	Average number of banner advertisements viewed each month by each unique viewer from October 2008 through March 2009.
Youth websites	Entertainment websites for youth ages 2 to 17 years (as defined by comScore) or websites with a percentage of 2- to 17-year-old visitors that exceeds the percentage of 2- to 17-year-olds on the total internet.
% ad views on youth websites	The percentage of a brand's banner advertisements that appeared on youth websites as compared to all websites from October 2008 through March 2009.

*Data retrieved from comScore Ad Metrix Advertiser Report

The volume of banner advertising for child brands from October 2008 through March 2009 confirms that cereal companies use advertising on third party websites extensively to drive traffic to their child-targeted websites. We found banner advertising promoting seven of the eight child-targeted websites for which we obtained exposure data, as well as for the three child brands promoted most extensively on Millsberry.com (Trix, Lucky Charms and Honey Nut Cheerios) (see **Ranking Table 5**).

General Mills placed by far the most banner ads to promote their child brands. In the average month examined, over 11 million viewers saw more than ten ads each for Millsberry.com;

Trix advertising on Millsberry.com

Table 15. Top 10 web publishers with advertising for child cereal brands

Websites	Average number of ads viewed per month (000)
Gorilla Nation Kids websites (Including Millsberry.com and KidzWorld.com)	61,725.4
Viacom Digital websites (Including NeoPets.com, Nick.com, AddictingGames.com, and NickJr.com)	44,625.9
CartoonNetwork.com	40,418.4
Disney Online websites	24,195.1
MiniClip.com	10,248.8
Pearson Education websites (Including FunBrain.com)	2,163.3
Betawave Partners websites - Partial list (Including Tagged.com)	1,711.8
Kaboose Family websites	904.1
4kids Entertainment websites (Including 4Kids.TV)	506.5
StarWars.com	318.6

*Data retrieved from comScore Ad Metrix Advertiser Report (October 2008 - March 2009).

more than 90% of these ads appeared on youth websites. Extensive advertising on youth websites for Lucky Charms, Trix and Honey Nut Cheerios also directed viewers to Millsberry.com; and over 4 million viewers saw nearly 14 ads each for Reese's Puffs every month. Over 80% of banner ads for Kellogg Froot Loops also appeared on youth websites. In contrast, ads for Kellogg Apple Jacks, Corn Pops and Frosted

Flakes appeared predominately on non-youth websites. Overall, Post had very little banner advertising.

Table 15 lists the top ten web publishers in which these banner ads appeared. These websites accepted approximately 80% of all child cereal advertising, and three-fourths of all advertising appeared on websites from only four web publishers. Not only is Millsberry by far the most visited cereal website targeted to children, it also accepts the most third party advertising. In effect, children who visit Millsberry are exposed to twice the amount of marketing, through the interactive content on the site as well as through banner advertising placed on the site. Websites for the top children's media venues (Viacom, CartoonNetwork and Disney) rank second, third and fourth on the list of web publishers in which advertising for child cereals appears. Interestingly, Disney does not accept outside advertising on their television programming, yet they ranked fourth in placements of cereal banner advertising on the internet.

Banner advertising content analysis

Definitions	Banner advertising content analysis
Target audience	The type of viewer to which the ad appeals most directly, as indicated by the text and/or creative content
Animated characters	Includes animated spokes-characters (e.g., Buzz the Bee), licensed characters (e.g., Pebbles from the Flintstones) or other cartoon figures
Cereal as more than food	When cereal pieces themselves become a play-thing or are used to portray something other than consumption
Engagement techniques	Includes Flash animation, video or a link to video; out-of-border design (i.e., content from the banner ad emerges from the ad onto another part of the web page); game in the ad or a link to a game on another website; poll or quiz in the ad or a link to a poll or quiz on another website; promotion information; and/or behavioral targeting devices (i.e., collecting information about the viewer).
Main point of ad	Banner ads were coded for one of three main points: *Game or game website* when the viewer played a game on the ad or is directed to another game site; *giveaway or promotion* when the ad promoted a toy, free sample or other type of promotion; or *product claim*, including when the ad promoted a feature of the product itself, including ingredients, shape or taste.

We coded a total of 29 unique banner advertisements for child cereals that appeared from October 2008 through March 2009. Of those ads, only three (75% of the Frosted Flakes ads) did not include content targeted to children.

In spite of their small size, the majority of cereal banner ads are highly creative and engaging with numerous devices to grab the attention of visitors to third party websites (see **Table 16**). Overall, 97% of ads targeted to a child audience used at least one engagement technique, and 40% included three or more engagement techniques in a single ad. For example, a General Mills Trix ad entices children to enter a "kids-only" Trix world using vibrant colors and an abundance of flash animation. A rollercoaster car enters the ad from outside its borders onto a giant track made of Trix cereal. In another

Animated banner ad for SillyRabbit.com

"Ad" identifier on Apple Jacks banner ad

Table 16. Content analysis of banner advertising for child brands (in order of amount of exposure)

		# of ads	Target audience	Animated characters	Cereal as more than food	Average # of engagement techniques	Main point of ads
General Mills	Millsberry	5	Children	40%	0%	2.0	Game, game website
General Mills	Reese's Puffs	2	Children	50%	0%	2.5	Game
General Mills	Lucky Charms	2	Children	100%	100%	2.5	Game
General Mills	Trix	1	Children	100%	100%	2.0	Game website
General Mills	Honey Nut Cheerios	2	Children	100%	50%	3.5	Game
Kellogg	Apple Jacks	4	Children	100%	75%	2.3	Game
Kellogg	Froot Loops	2	Children	100%	100%	3.0	Cereal shape
Kellogg	Corn Pops	3	Children	67%	33%	2.3	Game
Post	Pebbles (Postopia)	1	Children	100%	100%	3.0	Product claim
Post	Honeycomb (Postopia)	2	Children	50%	50%	0.5	Giveaway, cereal shape
Kellogg	Frosted Flakes	4	Children: 25% Parents: 75%	25%	0%	2.3	Child audience: Game Parent audience: Product claim
General Mills	Cinnamon Toast Crunch	1	Children	100%	100%	2.0	Cereal flavor

highly engaging ad, Kellogg Froot Loops cereal beckons children to play a game of "catch the treasure" within the ad itself. Cereal pieces shaped like golden pirate's booty float across the ad and outside its borders as Toucan Sam and his nephews rush to catch them "before they're gone".

The main point of the majority (72%) of child-targeted banner ads was to engage the viewer in a game, either presenting the game on the ad itself or sending the viewer directly to the brand's advergame site. As found in the television advertising and website content analyses, banner ads for child brands also extensively represented the cereal as more than food, and the majority presented animated characters in the ads. Only banner ads for Kellogg Apple Jacks included a mention that it was an ad, but that mention appeared only as the word "ad" in small type in the upper right hand corner.

Social media

Definitions	Social media
Facebook fan pages	These pages can be created only by an "authorized representative of the subject of the page" and, therefore, must be sponsored by the cereal company or someone hired by the company.
MySpace profiles	These profiles may be established by any member, but are often used to promote bands, products, etc. Product-focused profiles contain content that focuses on the product in question (e.g., content was "written" by an anthropomorphized cereal or cereal mascot or focused on a liking or craving for the cereal)
Facebook and MySpace groups	These groups can be created by any individual with a specific interest. Although the majority of cereal groups were not likely established by the cereal company, they do provide an indicator of interest in the product and provide viral marketing for the company.
Twitter	Companies with a presence on Twitter post updates by a representative of the company.

Finally, our search of Facebook and MySpace revealed that many of the child and family brands in our analysis had a significant social media presence. **Table 17** lists all child and family brands with at least one Facebook fan page: 22 in total. Facebook fan pages must be administered by an authorized representative of the product; therefore, these

Frosted Flakes Facebook fan page

pages are likely intended as a marketing device. Kellogg Froot Loops had the highest social media presence, with five fan pages totaling over 25,000 fans. Frosted Flakes followed with 3 fan pages totaling nearly 20,000 fans. Lucky Charms and Cocoa Puffs each had over 12,000 fans, and Cheerios, Trix, and Cap'n Crunch had over 5,000 fans. Interestingly, not all fan pages included links to corporate websites. In contrast, we found only 14 brands with a product-focused MySpace profile.

Although Facebook and MySpace groups are initiated and maintained by members, not the cereal companies directly, we found over 3,400 groups dedicated to child and family cereal brands. In fact, all child and family cereals, with the exception of General Mills Dora the Explorer and Kellogg's Hannah Montana and Cookie Crunch, had one or more Facebook groups. Golden Grahams and Lucky Charms had the largest presence, with an average of more than

Table 17: Social media presence for child and family brands

		Facebook Fan Pages		Facebook Groups		MySpace Groups	
Company	**Brand**	**# of pages (with link to company URL)**	**# of Fans**	**Total # of groups**	**Av'g # of members per group***	**Total # of groups**	**Av'g # of members per group***
Kellogg	Froot Loops	5 (1)	25,316	193	103	41	63
Kellogg	Frosted Flakes	3 (2)	19,739	114	28	77	47
General Mills	Lucky Charms	5 (1)	13,239	500+	153	244	55
General Mills	Cocoa Puffs	1	12,433	108	30	72	21
General Mills	Cheerios	4 (2)	7,539	412	82	194	57
Quaker	Cap'n Crunch	1 (1)	5,347	138	62	34	18
General Mills	Trix	4 (1)	5,150	108	127	22	48
Post	Fruity or Cocoa Pebbles	2	3,474	136	39	72	22
General Mills	Honey Nut Cheerios	1	3,033	42	46	19	26
General Mills	Golden Grahams	2	1,573	74	124	6	0
General Mills	Cookie Crisp	1	1,449	42	23	21	16
General Mills	Reese's Puffs	2 (1)	928	12	23	0	0
Kellogg	Apple Jacks	2 (1)	925	33	40	33	15
Kellogg	Rice Krispies	1	784	148	34	46	11
General Mills	Boo Berry	1 (1)	484	23	38	16	82
Kellogg	Frosted Mini-Wheats	1 (1)	481	24	36	10	11
Quaker	Life	2	477	81	26	9	14
Post	Waffle Crisp	1	292	11	31	2	0
General Mills	Cinnamon Toast Crunch	3	262	129	65	35	42
Post	Honeycomb	1	197	52	24	0	0
Post	Alpha Bits	1	59	6	25	0	0
Kellogg	Corn Pops	1	37	67	41	19	29

*For brands with more than 20 groups, includes results for the first 20 qualified groups reviewed

Lowest Nutrition Scores:	
34	**Reese's Puffs**
36	**Corn Pops**
36	**Lucky Charms**
36	Golden Grahams
37	Cap'n Crunch
37	Cinnamon Toast Crunch
38	**Fruity and Cocoa Pebbles**
38	Smorz
38	**Froot Loops**
38	**Trix**

Most Television Advertising:	
1	Cinnamon Toast Crunch
2	Honey Nut Cheerios
3	**Lucky Charms**
4	Cocoa Puffs
5	**Trix**
6	Frosted Flakes
7	**Fruity and Cocoa Pebbles**
8	**Reese's Puffs**
9	**Corn Pops**
10	**Froot Loops**

Most Internet Marketing:	
1	**Trix**
2	**Lucky Charms**
3	Honey Nut Cheerios
4	**Fruity and Cocoa Pebbles**
5	Honeycomb
6	**Reese's Puffs**
7	Apple Jacks
8	**Froot Loops**
9	**Corn Pops**
10	Frosted Flakes

Figure 9. Brands scoring lowest in nutrition and marketed most to children on television and the internet

150 members each in the groups examined. Cereal brands were less represented in MySpace groups; however Lucky Charms and Cheerios each had approximately 200 groups with an average of 50 members per group. We cannot determine how much of the cereal presence in these groups is promoted or sponsored by the cereal companies; however, they do represent a significant source of viral marketing for the cereal brands.

In contrast, cereal company presence on Twitter was small. Post had no discernable presence. The only user from Kellogg was identified as their United Kingdom press office, and a Foodservice Operator Specialist was the sole representative of General Mills. Quaker did have a regularly updated presence, with users identifying as the company's PR team and company president.

Internet marketing overview

In summary, the majority of brands that advertise directly to children on television also maintain an extensive child-targeted marketing presence on the internet. Millsberry.com and Postopia.com are among the largest youth-targeted websites on the internet and the average young visitor spends 60 and 30 minutes (respectively) interacting with branded content on these sites each month. Kellogg's child-targeted websites (AppleJacks.com, FrootLoops.com, CornPops.com and FrostedFlakes.com) and the smaller General Mills websites (ReesesPuffs.com and CookieCrisp.com) have lower traffic and usage, but still generate enough visitors to appear among the most often viewed websites in comScore. Only three websites (FrostedMiniWheats.com, Cheerios.com and Chex.com) included child-targeted web pages that did not promote cereals with high sugar content. However, these pages were contained within an adult-targeted website and did not generate enough visitors to measure exposure in comScore.

All the brands marketed heavily to children on the internet had poor NPI scores of 46 or lower. Six of the ten brands marketed most heavily on the internet also appear on the top ten lists for brands with the most television advertising to children and the poorest nutrition scores: General Mills Trix, Lucky Charms, and Reese's Puffs; Post Fruity and Cocoa Pebbles; and Kellogg Froot Loops and Corn Pops (see **Figure 9**).

The highly engaging and entertaining content that appears in these child-targeted cereal websites explains their popularity. Virtually all pages within the sites promote at least one child brand; therefore, these websites serve as powerful marketing devices. As found in television advertising, these sites represent cereal products primarily as toys or playthings and attempt to associate the featured products with fun and, in some cases, good health. Only one site (General Mills' Choosebreakfast.com) provided accurate health or nutrition information to children.

General Mills and Kellogg also use banner advertising extensively to direct children to their child-targeted websites. These banner ads are highly engaging promotional devices designed to grab children's attention. Even when children do not click through to the cereal website, banner ads provide another form of brand advertising to increase affinity and desire for the advertised cereals.[32] Almost three-quarters of these banner ads appeared on only four web publishers' sites: Gorilla Nation Kids (including Millsberry.com), Viacom (including Nick.com and Neopets.com), CartoonNetwork.com and Disney Online.

Reliable outside data sources are not yet available to track social media marketing; however, our survey of cereal presence on Facebook and MySpace demonstrates considerable viral marketing activity for many of these brands in social media, including company-sponsored pages such as Facebook fan pages.

In-store marketing

The supermarket environment also provides a powerful marketing tool for cereal companies to target young people. In 2006, they spent $14.3 million on packaging and in-store marketing to reach children and adolescents at the point of sale, or 6.0% of their youth-targeted marketing expenses (second only to television advertising).[33] In addition, cereal companies spent $56.3 million, or 24.6% of their youth marketing budgets, on premiums and other traditional types of promotions (e.g., cross-licensing agreements with third parties and celebrity endorsements) that appear prominently on product packaging.

In-store marketing also reaches parents at the crucial time they make their final purchase decision. Techniques such as price promotions, special displays and health messages on the box convey subtle cues that encourage impulsive purchase behaviors[34] as well as influence the relative value of products as they choose between different alternatives.[35, 36] We examined three of the most commonly used in-store marketing tools in our analysis: shelf space allocation and placement, in-store displays and promotions, and product packaging (including child engagement and health messages).

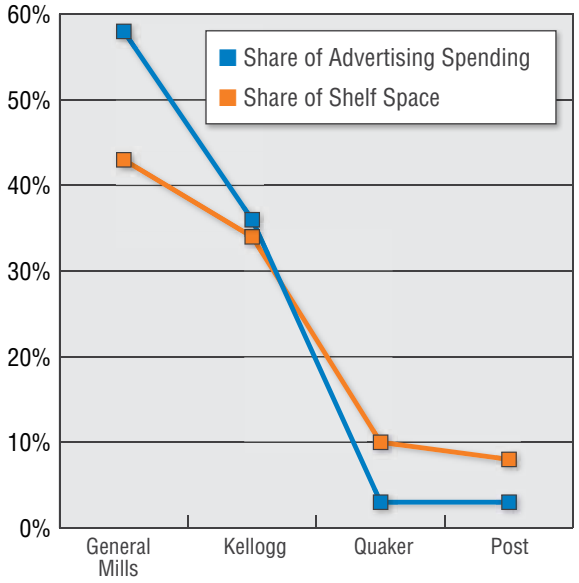
Supermarket shelf space allocation and placement

Definitions	Supermarket shelf space allocation
Facing	Any package front facing the customer, including boxes physically touching the shelf and any stacked on top.
Middle shelf	The most prominent location on the supermarket shelf. Products placed on the middle shelf appear at eye-level for most shoppers, including children sitting in the shopping cart.

During our supermarket audits, coders recorded the number of facings and shelf placement for 277 cereals. Approximately 50% of the cereal aisle (including the main cereal and natural food aisles) was devoted to child and family brands. As found in the advertising spending analysis, the top four cereal companies (General Mills, Kellogg, Post and Quaker) also dominated the shelf, with 70% of all facings devoted to their brands. Store brands received 18% of the shelf, and less than 13% was allocated to all other companies combined. Kellogg had the highest share of shelf with over 28% of all supermarket cereal facings. The distribution of shelf space was even more skewed when examining child and family brands only, with 94% allocated to the top four companies. Cereals from these companies, as well as Kashi brands, were stocked in virtually all supermarkets, while the smaller brands were stocked in 70% of supermarkets or fewer. **Ranking Table 6** presents shelf space allocation and ranking for all child and family brands.

A comparison of shelf space allocation to percent of total advertising spending by company for child and family brands reveals that General Mills outspent its competitors on advertising relative to its presence in the supermarket (see **Figure 10**). Advertising spending by General Mills was 58% of total spending for child and family brands, far more than its 43% share of the supermarket shelf for these brands.

Figure 10. Relative share of advertising and shelf space for child and family brands



Kellogg's shares of spending and shelf space were both approximately one-third; whereas Quaker and Post spent far less on advertising relative to their share of the shelf. These numbers indicate that General Mills relies heavily on brand awareness and image to drive sales of its child and family brands in the supermarket.

The middle shelf is the most coveted location in the supermarket as products stocked here appear at eye-level for most adults, as well as for children sitting in a shopping cart. Sales are highest for products with the most shelf space

Supermarket shelf space allocation

Table 18. Cereals most often stocked on the middle shelves in the supermarket.*

Company	Cereal	% of stores stocking on middle shelves**	% of stores stocking
Kellogg	Frosted Mini-Wheats Maple & Brown Sugar	88.3%	79.3%
Kellogg	Frosted Mini-Wheats Strawberry Delight	87.2%	93.8%
Kellogg	Frosted Mini-Wheats Blueberry Muffin	86.6%	89.5%
General Mills	Cookie Crisp	83.2%	93.8%
Cascadian Farm	Purely O's	81.3%	30.8%
Quaker	Cinnamon Life	80.0%	94.0%
Kellogg	Cookie Crunch	80.0%	32.5%
Kellogg	Frosted Mini-Wheats Cinnamon Streusel	79.7%	71.5%
General Mills	Reese's Puffs	79.5%	93.0%
General Mills	Cocoa Puffs Combos	79.1%	71.8%
General Mills	Trix	78.9%	94.0%
Kellogg	Mini-Wheats Little Bites Chocolate	78.8%	79.5%
General Mills	Cocoa Puffs	78.7%	96.0%
Kellogg	Mini-Wheats Little Bites Honey Nut	77.9%	79.3%
Kellogg	Cocoa Krispies	77.7%	89.8%
General Mills	Cinnamon Toast Crunch	77.1%	95.3%
Barbara's Bakery	Puffins	76.9%	56.3%

*Ranking based on cereals found in over 25% of stores
**Percentage based on stores that stocked the cereal

and those that are stocked on the middle shelf, compared to those located on the lowest and highest shelves. Therefore, shelf location provides another in-store marketing strategy for companies to increase sales of their products. **Table 18** lists all the top child and family brands found on the middle shelf of 50% or more of the stores in which they were stocked (including only products stocked in more than 25% of stores). Kellogg and General Mills dominate the middle shelf. Eight Kellogg cereals were prominently featured on the middle shelf, including six Mini-Wheats cereals. General Mills featured six cereals prominently on the middle shelf, including five of their child brands (Reese's Puffs, Cocoa Puffs, Cookie Crisp, Trix and Cinnamon Toast Crunch). Only one Quaker cereal (Life) and no Post cereals appeared prominently on the middle shelf.

In-store displays and promotions

Definitions	In-store displays and promotions
In-store display	Additional location(s) in a store, aside from the cereal aisle shelves, where cereals are located for purchase; includes in-aisle and end-cap displays.
In-store promotion	Any marketing material, aside from product packaging, located within a store; includes shelf coupon machines, special price signage, and shelf danglers (primarily short-term pricing promotions).

Designed to generate a limited time sales boost, special promotions and displays for cereal products appeared frequently in the supermarket during the 4-week period of our audit (see **Table 19**). Nearly 100% of stores offered some type of promotion for child, family and adult cereals; but child and family brands were more likely to appear in special displays. Kellogg used in-store marketing more often than other companies: 75% of stores had additional displays for

In-store promotion: Coupon machine

In-store end cap display

Kellogg cereals and 100% had Kellogg promotions. General Mills was close behind with in-store displays in 68% of stores and promotions in 92%. The smaller cereal companies had the lowest in-store marketing presence.

Ranking Table 7 presents the ranking of in-store marketing programs by child and family brands. Kellogg used in-store marketing extensively for its child brands. Over the four weeks we examined, Frosted Flakes, Froot Loops, Corn Pops and Apple Jacks each had 3 to 4 promotions in over 75% of supermarkets and 2 displays each in 45% or more of supermarkets. Regular Cheerios was the only General Mills child or family cereal with displays in over 50% of stores; however, Cinnamon Toast Crunch, Honey Nut Cheerios, Golden Grahams and Cocoa Puffs were featured in promotions in more than 65% of stores. In contrast, Kashi, Cascadian Farm, Barbara's Bakery, Nature's Path and Annie's cereals had virtually no in-store displays and were featured in promotions in 25% or less of all stores.

Table 19. In-store marketing by child, family and adult brands and company.

	# of brands	# of cereals	Stores with in-store displays	Stores with in-store promotions
By Cereal Target				
Child Cereals	19	47	83.9%	100.0%
Family Cereals	27	71	82.8%	97.7%
Adult Cereals	69	159	70.1%	98.9%
By Company				
Kellogg	25	70	74.7%	100.0%
General Mills	24	60	67.8%	92.0%
Post	12	39	40.2%	81.6%
Quaker	5	13	43.7%	78.2%
Kashi	15	23	21.8%	72.4%
Cascadian Farm	10	13	10.3%	44.8%
Nature's Path	10	19	9.2%	33.3%
Barbara's Bakery	6	14	5.7%	26.4%
Annie's	1	5	0.0%	5.8%

Product packaging

Definitions	Product packaging
Child engagement message	Message designed to attract a child's attention and/or encourage them to interact with the product. These messages include promotions, child features and games URLs.
Promotion	Any mention or tie-in found on the cereal package to a product or service offered by a different company, including third party licensed characters, celebrities or athletes, television shows or movies, charities, toys and games.
Child feature	Feature on the cereal box that appeal specifically to children, including games or other activities, such as puzzles, mazes, or other interactive illustrations; and brand spokes-characters
Games URL	A URL (i.e., internet address) for a website offering games or entertainment (i.e., an advergaming site)
Health message	Message designed to convey information about the nutrition of the product and/or associate the product with good health. Health messages included ingredient claims, health claims and health URLs.
Ingredient claim	Easily readable label or claim that appears on the front of the package and references specific macro- or micronutrients in the product, including whole grain, fats, sugars, vitamins/minerals, calcium, fiber, or the labels "natural" or "organic"
Health claim	Easily readable label or claim that appears on the front of the package and describes the product's health outcome benefits, overall healthfulness, or role in a healthy lifestyle (e.g., "lower your cholesterol" or "heart healthy").
Health URL	A URL for a website that highlights health information about the company's cereals

During three in-store coding sessions, we surveyed a total of 563 different boxes for 197 different cereals. Adult cereals had the highest number of different boxes (60% of the total), followed by family cereals (23%) and child cereals (17%). The following analysis presents data for the child engagement and health messages that appeared on the cereal boxes in our survey.

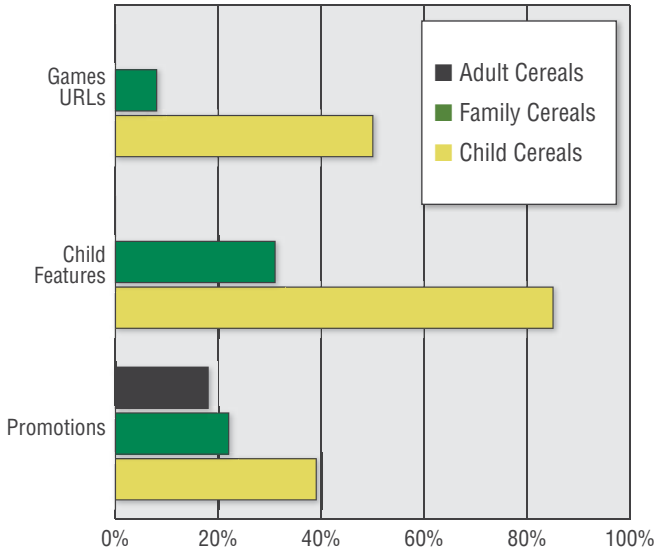
Child engagement messages

Not surprisingly, cereal boxes for child brands included the most child engagement messages: an average of 2.2 messages per box, compared to 0.6 on family cereals and 0.2 on adult cereals (see **Figure 11**). Child features were the most common child engagement message; 85% of child cereals included 1.6 child features each on average. In addition, 50% of boxes for child brands highlighted an advergame URL on the box, and over one-third featured some type of promotion.

Ranking Table 8 presents the ranking of child engagement messages by brand. All companies used child features extensively on their boxes for child and family brands. General Mills Trix had by far the most engagement messages, with 3.4 per box. Four additional General Mills child brands and one child brand each from the other large cereal companies also ranked in the top eight, each with 2.0 or more messages on the box. In contrast, 14 family brands from a variety of companies averaged 1.0 or fewer child engagement messages on the box.

These results confirm that the large cereal companies use product packaging extensively to market directly to children. General Mills' child cereals included the most child engagement messages overall, but Kellogg packages included the most promotions. Examples of Kellogg promotions include Disney toys and a Disney vacation sweepstakes, free DVDs, and the movie, "Kung Fu Panda" featured on boxes of Corn Pops, Froot Loops, and Frosted Mini-Wheats. General Mills cereals also carried promotions for the movie, "Madagascar: Escape 2 Africa," as well as cash card giveaways inside boxes of Trix, Honey Nut Cheerios, and other brands.

Figure 11. Child engagement messages on cereal boxes



Free camera and Disney vacation promotion

Win cash promotion and ingredient claims

Movie promotion, ingredient and health claims

General Mills, Post and Quaker all promote their gaming websites extensively on packaging for child brands. The Postopia.com website URL appeared on 75% of Post boxes. Both General Mills and Quaker also featured a games URL on 40 to 50% of boxes; whereas Kellogg featured a games URL on only 12% of boxes, all for websites specific to the brand (e.g. AppleJacks.com on boxes of Apple Jacks).

Health messages

Health messages were also featured prominently on cereal boxes for child, family and adult brands. These messages appeared more often on family brands: on average, 2.4 messages per box for family brands, compared to 1.8 on child brands and 1.9 on adult brands (see **Table 20**). Ingredient claims made up the majority of health messages on the box, with an average of 2.0 claims appearing on two-thirds or more of all boxes. Approximately half of all boxes for child and family brands also included a health URL. Health claims appeared on 15% of family and adult cereal boxes and only 7% of child cereal boxes.

Ranking Table 9 presents rankings of health messages by brand. Two natural food brands featured the most health messages on their boxes: Organic Wild Puffs from Barbara's Bakery and Annie's Bunnies had 5.0 and 4.2 claims each. Among the large cereal companies, boxes for General Mills' child and family cereals were again the most crowded with health messages. Virtually all their boxes (98%) boasted two or more claims, and 89% included a health URL. All boxes for General Mills child cereals made ingredient claims, with an average of 2.1 per box, including "calcium and vitamin D" and "whole grain guaranteed". Post and Quaker also featured ingredient claims on 42% to 50% of boxes, with an average of 2.2 and 1.6 claims each. Quaker boxes featured the most health claims, found on 39% of boxes.

General Mills' child and family cereals do not score higher than brands from other large cereal companies in overall

Table 20. Health messages on cereal boxes

	Ingredient claims		Health claims		Health URLs
	% of boxes	# per box	% of boxes	# per box	% of boxes
Child cereals	64%	2.0	7%	1.3	46%
Family cereals	79%	2.3	15%	1.0	46%
Adult cereals	79%	2.0	15%	1.1	19%
Child and family cereals by company					
General Mills	98%	2.1	17%	1.1	89%
Kellogg	28%	1.3	2%	1.0	28%
Post	42%	2.2	8%	1.0	8%
Quaker	50%	1.6	39%	1.0	0%
Others	98%	2.8	3%	1.0	0%

nutrition quality; however, the number of health claims on their boxes likely gives consumers that inaccurate impression. For instance, a box of General Mills' Strawberry Chex featured ingredient claims for whole grain, low sugar, calcium, vitamins and minerals, and natural flavoring; in contrast, boxes of Quaker Life, which received a higher nutrition score, mentioned only whole grain, and Kellogg Frosted Flakes, with an identical nutrition score, featured no health messages at all.

In-store marketing overview

These data confirm that the large cereal companies place considerable resources behind in-store marketing and packaging to drive purchase of their child and family cereals. Child and family cereals comprise approximately one-half of the shelf space in the cereal aisle; but they are more likely to be stocked on the prime middle shelf and are disproportionately marketed with special in-store displays and promotions. In addition, the cereal box is crowded with child engagement and health messages to attract the attention of both children and parents. The average box of cereal from one of the large companies contains 1.4 child engagement and 2.0 health messages each.

The in-store marketing analysis also reveals significant differences in marketing strategies of the major cereal companies. Whereas General Mills spends a disproportionate amount on advertising its child and family brands on television and has developed a significant child-targeted presence on the internet, Kellogg stands out in the supermarket with the most special displays and promotions. All four large cereal companies use child engagement messages extensively (averaging between 1.2 and 2.0 per box), but General Mills appears to speak to parents directly on their boxes as well, with an average of 3.2 health messages per box, including on their least nutritious child brands. Kellogg also includes the most promotions on its cereal boxes and Post highlights its gaming website most extensively.

Cereal FACTS Index

Definitions	FACTS Index
FACTS index	Provides one score that combines both nutrition quality and marketing exposure score for each brand. Scores range from 0 (worst) to 100 (best).
Marketing exposure component	Combined score for exposure to cereal marketing, including youth marketing exposure (70% of total), adult and other media exposure (15%) and in-store exposure (15%). This score ranges from 0 (lowest) to 100 (highest).
Nutrition multiplier	Positive or negative measure of overall nutrition quality. Derived from the Nutrition Profiling Index (NPI) score using a cut-off of over 62 to identify healthy foods.

The Cereal FACTS Index consolidates the nutrition and marketing information presented in this report into one overall score for each child and family brand. This score provides a means to quantify and compare the overall nutrition quality and marketing practices for brands that promote their cereals to children and parents. In addition, it provides a measure to monitor and assess changes in cereal marketing practices and nutrition quality in the future.

Of the 43 child and family brands in our analysis, 19 had no advertising spending and low supermarket presence during the period we examined. Therefore, we could not assign a marketing score to these brands. They are listed on **Table 21** in order of overall nutrition.

Ranking Table 10 provides the brand ranking by FACTS Index and lists the marketing exposure score and nutrition multiplier used to calculate the combined score. This ranking includes the 24 brands with advertising or a moderate to high supermarket presence.

Only Kellogg Mini-Wheats received a healthy nutrition rating; therefore, it is the only brand to receive a high combined score. Three additional brands received scores over 60 (Life, Chex and Cap'n Crunch). Although these brands had poor to good overall nutrition quality, they scored relatively high on the Index due to low marketing exposure numbers. These brands demonstrate that products of low nutritional quality can improve their overall scores by reducing marketing, especially to young people. The middle range of brands in the ranking achieved scores over 50 for one of two reasons: they had either somewhat better nutrition scores (e.g., Cheerios or Honeycomb) or somewhat lower marketing exposure numbers (e.g., Cookie Crisp or Apple Jacks).

The FACTS Index clearly highlights the ten worst offenders. These brands all market extensively to children and parents, and all have low nutrition scores. The six worst brands belong to General Mills: Lucky Charms, Cinnamon Toast Crunch, Honey Nut Cheerios, Trix, Reeses's Puffs and Cocoa Puffs. Post follows with their Fruity and Cocoa Pebbles brand. Finally, Kellogg Frosted Flakes, Corn Pops and Froot Loops complete the worst offenders list. As demonstrated throughout this report, these least healthy cereals market directly to children in high volumes on television, the internet and in the supermarket.

Table 21. Child and family cereals with no significant marketing activity

Better

Nutrition Profiling Index (NPI) Score	Company	Cereal
58	Barbara's Bakery	Organic Wild Puffs
56	Kashi	Mighty Bites
56	Kashi	Honey Sunshine
54	Cascadian Farm	Clifford Crunch
54	Kellogg	Hannah Montana Cereal
53	General Mills	Kix
51	Barbara's Bakery	Puffins
51	Annie's	Bunnies
51	Nature's Path	EnviroKidz Organic
50	General Mills	Dora the Explorer
50	Cascadian Farm	Cinnamon Crunch
48	Post	Raisin Bran
46	Cascadian Farm	Purely O's
46	Post	Alpha Bits
46	Post	Golden Crisp
46	Kellogg	Honey Smacks
44	Kellogg	MINI-Swirlz
44	Post	Waffle Crisp
44	Cascadian Farm	Honey Nut O's
42	Kellogg	Disney High School Musical
40	Kellogg	Cookie Crunch
38	General Mills	Count Chocula
38	Kellogg	Smorz
36	General Mills	Golden Grahams

Worse

Figure 12: Cereal FACTS worst offenders.

The bottom-line finding of this report is not new; cereal companies aggressively market their least nutritious cereals directly to children.

Almost 40 years ago, Robert Choate, a self-described "citizen lobbyist," testified at a 1970 hearing of a United States Senate Commerce Subcommittee that cereal companies deliberately use every tactic possible to sell cereals with no redeeming nutritional value to children.[1] He concluded that most breakfast cereals were no healthier than "candy bars or gin." Mr. Choate testified again in 1972 with research showing that many children's breakfast cereals would not support life, even when supplemented with a "complete" vitamin and mineral mixture.[2] These cereals included such still-popular varieties as Apple Jacks, Trix and Sugar Pops (now called Corn Pops). Mr. Choate also addressed the use of premiums, toy tie-ins, and hero testimonials in selling food to children. He concluded that food marketing to children is in no way based on the nutritional value of foods, and takes unfair advantage of child psychology and lack of nutritional knowledge.

The cereal industry responded by criticizing Mr. Choate and his methods and claiming that large amounts of sugar were required to tempt children to eat.[3] Within three years, most children's breakfast cereals had been reformulated to add vitamins and minerals while maintaining their high sugar content.[4]

What has changed today is the growing health crisis caused by alarming rates of overweight young people in the U.S. and around the world. Today more than one-third of children and adolescents in the United States are overweight or obese: triple the rates seen in 1970.[5] As a result, they may be the first generation to live a shorter life than their parents.[6] Health authorities have pointed to the extensive marketing for foods high in sugar, fat and sodium directed at youth as contributing to the crisis.[7-9]

The United States food industry has responded to these concerns with the Children's Food and Beverage Advertising Initiative (CFBAI) through which companies have pledged to reduce the marketing of unhealthy products to children.[10] The question is whether industry's self-regulatory efforts such as the CFBAI are good faith efforts to create real change or a public relations tool meant to offset criticism and forestall government action.[11]

The purpose of this report is to provide an independent science-based evaluation of cereal company marketing to children and adolescents in 2008 and early 2009: the period just prior to and immediately following full implementation of cereal company CFBAI pledges. We openly present our methods, data and analysis and invite feedback to make the information as valid and accurate as possible. Our aim is to provide a tool to assess the impact of company pledges on actual marketing practices and evaluate future changes as they occur.

The following discussion summarizes our findings and provides recommendations for future actions to reduce the harm associated with the substantial amounts of marketing for cereal products of poor nutritional quality that young people encounter daily.

The better news

We undertook this research to document both the good and bad of cereal company marketing practices, and we did find some positive news.

Nutrition quality

All cereal companies have healthier products in their portfolios that they could choose to market to children. Although Kellogg Mini-Wheats was the only family brand to score over 62 (i.e., the NPI cut-off score established in the United Kingdom to identify healthy foods that can be advertised to children), several child and family brands do have good overall NPI scores of 50 or higher. For example, many of General Mills' varieties of Cheerios and Kix, as well as Quaker Life, all scored in the 50s for overall nutrition quality. Several of General Mills' Cascadian Farm and Kellogg's Kashi family cereals also received scores over 50, as well as the majority of cereals offered by smaller companies, including Barbara's Bakery, Annie's and Nature's Path. These cereals could be reformulated to improve their nutrition score and meet the United Kingdom nutrient standard for advertising to children.

Unfortunately, the large cereal companies have chosen to market only their least healthy cereals to children directly. Child cereals (i.e., those marketed directly to children) scored an average 42 NPI score for overall nutrition quality, significantly lower than the 50 average score for family cereals and 58 for adult cereals. In addition, compared to adult cereals, child cereals contain 85% more sugar, 65% less fiber and 60% more sodium. Children rarely see marketing for the more nutritious cereals that companies promote to parents as good for children and/or families.

In another potentially positive development, we found that the large companies reformulated almost two-thirds of their child and family cereals from 2006 through May 31, 2009; but these reformulations improved overall nutrition scores by only 4 to 5% on average. The majority of changes involved reducing sugar content from previous levels of 13 to 15 g per serving down to 12 g (i.e., the limit set by most companies in their CFBAI pledges). The net effect of this change was to reduce sugar from 3 ½ tsp per serving to 3 tsp per serving; several child cereals continue to contain 12 g of sugar in one 28 g serving, or 43% of their total content. A few cereals did significantly increase their fiber content to improve scores by 14% or more (including Quaker Cap'n Crunch, Post Fruity and Cocoa Pebbles and, more recently, Kellogg Apple Jacks

and Froot Loops). These cereals continue to score poorly, however, due to high sugar content.

Cereal companies might argue that they would alienate loyal customers by making abrupt changes to improve the nutrition quality of existing cereals. Therefore, we also examined the nutrition quality of new cereal introductions and other cereal branded products (e.g., cereal "straws" and bars) introduced after 2006. Here again, we did find some good news. The seven new cereals introduced by Quaker and the smaller companies averaged a good NPI score of 56. In contrast, the new products introduced by General Mills, Kellogg and Post all averaged lower NPI scores when compared to their existing cereals in 2006. These findings suggest that the large cereal companies have not taken meaningful steps to improve the overall nutrition quality of their cereal product portfolios.

Marketing practices

We found even fewer positive developments in cereal company marketing practices, and again, much of the better news is tempered by qualifications. For example, Quaker did not advertise its Cap'n Crunch brand at all in 2008 or early 2009; this is good news as Cap'n Crunch falls near the bottom of all cereals in nutrition quality and had been advertised heavily in the past. PepsiCo (the parent company of Quaker) can be applauded for making such a substantial move. However, in April 2009, Quaker launched a new highly interactive Cap'n Crunch website targeting children with advergames and other branded content at "Crunch Island" (www.capncrunch.com). The website is now promoted on Cap'n Crunch cereal boxes and includes features that must be "unlocked" by codes found on the boxes. A few additional brands with low nutrition scores that had been advertised to children in the past also had no advertising during the period we examined, including General Mills Count Chocula and Golden Grahams and Kellogg Honey Smacks and Smorz. These cereals continue to appear on shelves in the majority of supermarkets, however; and we documented in-store marketing for all of them.

General Mills in particular makes numerous ingredient and health claims for all of its cereals, including those of poor nutritional quality. Boxes of Reese's Puffs (the brand with the worst nutrition score), Lucky Charms and Cookie Crisp, for example, contain an average of three to four claims each. General Mills has also invested considerable marketing resources behind its "whole grain guarantee" and, together with the "calcium and Vitamin D" banner that appears on most of its child cereals, may create an unwarranted healthy product impression. We believe that the other large cereal companies should be commended for restraining from this potentially misleading practice, although in June 2009, Kellogg introduced the claim that Rice and Cocoa Krispies help support children's immunity due to the vitamins and minerals they contain. Although their lawyers support the accuracy of this claim,[12] it is an open question whether these messages accurately communicate the overall nutrition quality of these cereals.

The bad news

Cereal companies continue to target children with products of poor nutritional quality. Not one brand marketed directly to children achieves an NPI score higher than 62, the score required to advertise to children on television in the United Kingdom, and more than one-third score 40 or below. In addition, sugar comprises one-third or more of the content of the average child cereal; only one child cereal (Cascadian Farm Clifford Crunch) has a sugar content below 22% and would be allowed to be included in the USDA WIC food package for low income mothers and children. Finally, 42% of child cereals contain artificial food dyes; these dyes have come under increasing scrutiny for possible links to hyperactivity in children.[13] Truly nutritious foods, quite literally, pale in comparison.

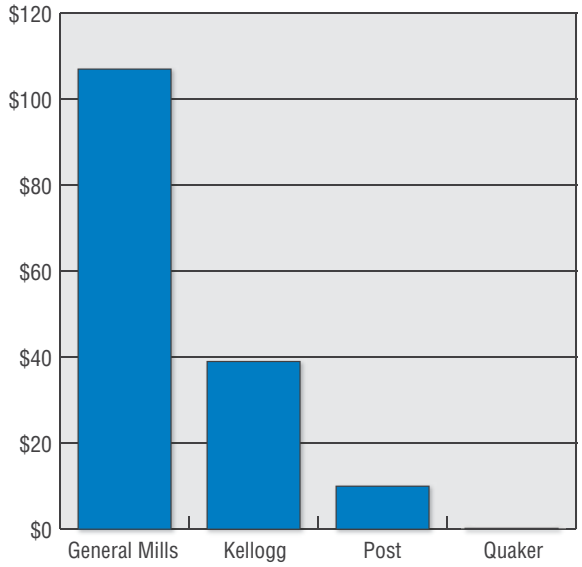
Young people's exposure to cereal marketing

Cereal companies also continue to aggressively market many of these nutritionally poor products to children. During the time period included in our exposure analyses (January 1, 2008 to March 31, 2009), only 14 of the 19 child cereals advertised their products, but they spent over $156 million in 2008 to do so. General Mills spent by far the most on its seven brands ($107 million in total), followed by Kellogg (with four brands) and Post (with two brands). Quaker spent the least (under $200,000). (See **Figure 12**)

The majority of this advertising occurred on television. The average child in the U.S. sees over 500 television ads for child cereals every year: almost 7,000 in total by the time they are 18 years old. It is hard to imagine that these persistent messages do not impact children's attitudes and beliefs about nutrition and foods that are appropriate to eat for breakfast. It would be difficult to quantify the number of times a parent would have to say "no" in response to this advertising barrage if he or she did not wish to serve these cereals.

General Mills and Kellogg have pledged that they will not advertise during programming predominately viewed by preschoolers;[14, 15] however, the average 2- to 5-year-old also viewed over 500 television ads for child cereals in 2008, 89% of them for General Mills and Kellogg products. In total, preschoolers viewed 642 ads for all types of cereals (including family, adult and company-level ads). We do not suggest that General Mills and Kellogg have not complied with their pledges. In fact, we know of no television programming that is predominately viewed by

Figure 12. Advertising spending on child brands in 2008



©The Nielsen Company

preschoolers that would accept their advertising. However, this example clearly illustrates that it is not enough to refrain from advertising on preschool television shows; preschoolers are also exposed to advertising on the shows that older children watch. To protect these very young children, companies must use objective measures of actual exposure to advertising to guide their marketing practices.

This finding about high levels of exposure to cereal advertising by very young children is disturbing. Children of this age cannot comprehend the persuasive intent of advertising and, therefore, have no cognitive ability to defend against advertising messages.[16, 17] In fact, both the American Psychological Association[18] and the American Academy of Pediatrics[19] have recommended bans on any form of advertising to children under the age of 7 or 8 years. These numbers also illustrate the importance that cereal companies have placed on reaching children as early as possible, before they are capable of critically evaluating the messages communicated in the advertising.

Finally, children's exposure to marketing on the internet is extraordinary. At Millsberry.com alone, an average of 767,000 young people visited 2.8 times per month and stayed on the website for 23.7 minutes each time. As nearly all pages contained branded content for General Mills cereals (including Trix, Lucky Charms and Honey Nut Cheerios), this exposure is equivalent to more than 66 minutes of advertising, or 133 :30 second ads, per month. These numbers confirm fears of public health advocates that the internet provides a means for companies to market their products to children with virtually no restrictions.[20, 21] Postopia.com, Post's website that prominently features marketing for Fruity and Cocoa Pebbles and Honeycomb cereals, is also visited by 265,000 young people who spend over 30 minutes at the site each month. Smaller child-targeted websites for Apple Jacks, Froot Loops, Reese's Puffs, Corn Pops, Frosted Flakes and Cookie Crisp also attract up to 80,000 young people each month with entertaining branded content.

Messages used in marketing for children's cereals

In addition to documenting young people's exposure to cereal marketing, we also quantified the messages commonly conveyed in cereal marketing. This message was surprisingly consistent across all brands that market to children directly and across all forms of marketing: these cereals are fun and entertaining. These themes have been documented in previous content analyses of children's television food advertising;[22-24] however, we demonstrate that the same message also predominates on cereal company websites, banner advertising that directs young people to these websites, and on the cereal boxes themselves. The average child cereal box contains 2.2 child engagement messages, including games and puzzles, brand spokes-characters, promotions and directions to an advergame URL.

Consumer behavior and psychology researchers have demonstrated how repeated associations between a product and positive emotions (e.g., fun and entertainment) transfers to positive feelings and attitudes about the product itself.[25, 26] In addition, this research shows that attitudes formed through these types of implicit processes become extraordinarily difficult to override. Marketers have described these emotional appeals targeted to children as "brand imprinting," or creating "product identities that penetrate our limbic brain."[27]

Related to marketing appeals that associate child brands with positive emotions, we also document how brands typically represent their products in marketing to children. Marketing for child cereals consistently communicates that these products have very little in common with real food. On television and the internet, cereals have magical powers, transform into amusement park rides or game pieces, or become playmates in exciting adventures. Even advertising that promotes actual features of the product to children typically describes its fun shape or color, not its food-related characteristics. These messages further reinforce associations between children's cereals and positive emotions that will remain through adolescence and beyond. It is therefore not surprising that Froot Loops, Frosted Flakes, Lucky Charms and Cocoa Puffs all have more than 10,000 fans on Facebook, a popular social media site for teens.

Parents and cereal company marketing

We hope that our research provides parents with useful information about the breakfast cereals their children ask

for, as well as those they choose to purchase. This research highlights two key findings that we believe will be most important to parents. The first is the extraordinary efforts that cereal companies take to communicate directly to their children, often without parents' knowledge. The second is the extent to which many cereal companies use nutrition and health claims as a marketing tool and how these claims often have no relationship to the actual nutrition quality of the products.

In 2008, we conducted a public opinion poll to ask parents about food marketing to children, and we found that parents were not aware of how much food marketing their children view.[28] Parents did know that cereals are marketed to their children relatively more often than other types of foods. Cereal is the second most widely advertised food category to children (behind fast food);[29, 30] and in our poll, parents believed that cereals placed third, behind fast food and soft drinks. However, parents were not aware of the overall volume of food advertising to which their children were exposed. For example, they believed that their children saw only one to three television advertisements per day for all types of foods; whereas children see almost two ads per day for cereals alone. This gap is not surprising as our research also shows that children view over five times as many ads for child cereals as do adults (including the time they spent viewing with their child).

Marketing that occurs on the internet appears to be the least well understood by parents. In our poll, parents believed that their children saw food advertising on the internet less than once per week. Similarly, another poll of parents and children showed that parents believed their children spent two hours per month online, whereas children reported spending 20 hours online per month.[31] We too were surprised by the level of marketing that occurs on cereal company websites and the amount of advertising placed on other children's websites (e.g., Nickelodeon.com, CartoonNetwork.com and DisneyOnline.com) to direct children to cereal websites. We hope these findings will help parents better understand how to protect their children against unwanted marketing influence.

In addition to marketing directly to children, cereal companies also market to parents on television and at the supermarket. We did find that the large cereal companies used different strategies to convince parents to buy child and family cereals. Kellogg and Quaker marketed to parents directly on television with emotional messages about family bonding (Rice and Cocoa Krispies and Life) and claims that the cereal will help their child do well in school (Mini-Wheats); however, none of the other brands advertised to parents directly with messages about feeding their children.

Child brands also invest considerable amounts of marketing to reach parents in the supermarket. Kellogg used special displays and in-store promotions somewhat more often than other companies, averaging 33.3 promotions per store and 9.5 special displays over the 4-week period examined. In contrast, General Mills relied more on nutrition and health claims on the box to appeal to parents, averaging 3.0 claims per box on all their child and family cereals. Unfortunately, these claims had little relationship to the actual nutrition quality of these cereals: the most claims were found on their least healthy cereals (including 3.8 on Lucky Charms boxes, 3.5 on Golden Grahams, and 3.3. on Reese's Puffs). In contrast, Quaker cereals had 1.2 claims per box, Post had 1.1 and Kellogg had 0.7.

It appears, then, that cereal company pledges to reduce unhealthy marketing to children have had little real impact on their actual marketing practices. General Mills, Kellogg and Post continue to aggressively market their least nutritious cereals directly to children on television, the internet and product packaging. In addition, health messages and promotions in the supermarket provide an added push to encourage parents to purchase the cereals that these companies persuade their children to ask for.

Recommendations

We found no evidence that cereal companies were not in full compliance with their CFBAI pledges. And yet, we also found no evidence that cereal marketing to children or the nutrition quality of the cereals marketed has improved.

Cereals can provide a convenient, economical and nutritious breakfast option for children, and all the cereal companies do have healthier products that could be marketed to children. Unfortunately, the large cereal companies have instead chosen to market only their least nutritious products directly to children. These cereals all meet industry-defined "better-for-you" standards, and therefore, cereal companies comply with their CFBAI pledges while continuing to market to children with virtually no restrictions. Much stronger action is needed to protect young people from the unhealthy influence of cereal and other forms of food marketing.

An industry suffering from negative public relations and the specter of government intervention engages in a predictable set of responses, among them the launch of self-regulatory actions. Typically positioned as an effort to benefit the public good, industry argues that it can police itself and hence no government measures are necessary. There is a long history of this phenomenon in industries like alcohol and tobacco, and now food.[32] The question is whether these will in fact benefit children or instead insure business as usual for the companies. There should be great concern with this possibility given the abject failure of self-regulation in other industries, particularly tobacco.[33] This argues for establishing stricter criteria that industry must meet in order for self-regulation to be taken seriously, as described by Sharma and colleagues.[34]

First and foremost, foods marketed to children must meet objective nutrition standards that have children's health as the aim. When industry is involved in developing their own nutrition standards, the resulting standards are unacceptable to the public.[35] The list of unhealthy cereals marketed to children may be somewhat shorter than in the past, but the brands marketed directly to children on television and the internet are the same high sugar products that have been marketed to children for years. Although these cereals are better for you than a chocolate donut, they are not healthy choices for breakfast. The substantial marketing that cereal companies direct toward children makes parents' efforts to encourage a healthy diet even more difficult. We do not object to marketing to children per se, but the foods that are marketed to them must be held to higher standards. They should be more, not less, nutritious than the foods marketed to adults; and the standards should be established by the government and nutrition experts with no ties to the food industry.

Similarly, the definition of marketing must incorporate all types of marketing to which children are exposed. The fact that preschoolers view nearly as many television ads for cereals as do older children, in spite of pledges by Kellogg and General Mills that they will not advertise to preschoolers directly, highlights a significant shortcoming of the CFBAI pledges. Similarly, all participating CFBAI companies have pledged that they will not advertise unhealthy products in programming "primarily directed to children under 12," defined as media in which children under 12 years constitute more than 25 to 50% of the audience. However, over 50% of the television food advertising seen by children occurs during other types of programming where they are not the primary audience.[36] Therefore, even companies who pledge that they will not advertise to children at all can continue to reach them through advertising placed in prime-time or other programming with large child audiences.

Finally, the pledges only apply to advertising that appears on television, radio, print and the internet; however, these types of marketing represent only 57% of food industry expenditures on marketing to children and adolescents.[37] As shown in this report, cereal companies also market extensively to both children and parents in the supermarket and on the product package itself. Without limits on all forms of marketing, it is conceivable that even complete bans on food advertising to children, as defined in the CFBAI, could be offset by increased promotion at the point-of-sale or other unregulated types of marketing.

Practices vs. Performance: Avoiding a Trap

Another risk for the public health community and government is that regulations that dictate changes in industry practices will not improve diet or could even worsen it. This can happen if industry complies with specific regulations, but continues to find other, perhaps even more effective, ways to market their products. We believe this should be the default assumption. If for instance, industry agrees, as it has, to remove some sugared beverages from schools, will it move its marketing efforts to other arenas such as internet marketing or point of purchase promotions in stores near schools? It is possible, perhaps likely, that some of these other marketing practices will be more effective than the ones sacrificed and that consumption of the products will actually increase.

In this report we highlight industry practices that we believe should be changed. Our hope is that legislative and regulatory authorities will take action so that these practices do change, but it is essential that negative consequences, some anticipated and some not, be avoided. How might this be done?

One approach is to anticipate industry reactions and to account for these in legislative and regulatory actions. However, this approach assumes that such reactions can be anticipated and that it is possible to foresee marketing advances such as changes in digital technology.

An alternative approach proposed by Sugarman is "performance-based regulation."[38, 39] He questions whether government is in the position to mandate the optimal industry actions or can anticipate how industry would work around regulations. With performance-based regulation, an *outcome* would be mandated and then industry would decide which practices to change. As an example, reduced consumption of highly sugared cereals by young people could be the outcome. Government could declare, and/or industry could just commit, that youth consumption of such cereals would decrease by 20% in each of the first three years of a law or agreement. Industry would change its marketing, packaging, pricing and other activities to accomplish this mandate. Cereal makers could instead promote their more nutritious cereals to children and parents and thus retain profitability.

We believe this approach should be taken seriously. Certainly it would be a more rapid way to create change, as the goal is change itself, not compliance with a set of practices that industry has established for itself. Given marketers' skill in developing new and creative practices to sell their products, one can argue that performance-based regulations are the only way to generate real reductions in the harm to children's health caused by food marketing. If the food industry wants to be a true partner in the fight against childhood obesity, food companies must also be responsible for the results of their actions.

Introduction

1. Institute of Medicine (2006). *Food Marketing to Children and Youth: Threat or Opportunity?* Washington, D.C.: National Academies Press.
2. World Health Organization (2006). *Marketing of Food and Non-Alcoholic Beverages to Children*. Geneva: World Health Organization.
3. Harris, J.L., Bargh, J.A., & Brownell, K.D. (2009). Priming effects of television food advertising on eating behavior. *Health Psychology*, 28, 404-13.
4. Robinson, T.N., Borzekowski, D.L., Matheson, D.M., & Kraemer, H.C. (2007). Effects of fast food branding on young children's taste preferences. *Archives of Pediatric and Adolescent Medicine*, 161, 792-7.
5. Powell, L.M., Szczypka, G., Chaloupka, F.J., & Braunschweig, C.L. (2007). Nutritional content of television food advertisements seen by children and adolescents in the United States. *Pediatrics*, 120, 576-83.
6. Grier, S.A. & Kumanyika, S.K. (2008). The context for choice: health implications of targeted food and beverage marketing to African Americans. *American Journal of Public Health*, 98, 1616-29.
7. Alvy, L.M. & Calvert, S.L. (2008). Food marketing on popular children's web sites: a content analysis. *Journal of the American Dietetic Association*, 108, 710-3.
8. Harris, J.L., Pomeranz, J.L., Lobstein, T. & Brownell, K.D. (2009). A crisis in the marketplace: how food marketing contributes to childhood obesity and what can be done. *Annual Review of Public Health*, 30, 211-25.
9. Hawkes, C. (2007). Regulating and litigating in the public interest: regulating food marketing to young people worldwide: trends and policy drivers. *American Journal of Public Health*, 97, 1962-73.
10. Swinburn, B., Sacks, G., Lobstein, T., et al. (2008). The 'Sydney Principles' for reducing the commercial promotion of foods and beverages to children. *Public Health Nutrition*, 11, 881-6.
11. Consumers International (2008). *Recommendations for an International Code of Marketing of Foods and Non-Alcoholic Beverages to Children*. http://www.consumersinternational.org/shared_asp_files/GFSR.asp?NodeID=97478
12. Consumers International (2009). *Left Wanting More: Food Company Policies on Marketing to Children*. http://www.junkfoodgeneration.org/documents/Left_wanting_more.pdf
13. Federal Trade Commission (2008). *Marketing Food to Children and Adolescents: A Review of Industry Expenditures, Activities, and Self-Regulation*. http://www.ftc.gov/os/2008/07/P064504foodmktingreport.pdf
14. Hawkes, C. (2008). Agro-food industry growth and obesity in China: what role for regulating food advertising and promotion and nutrition labelling? *Obesity Review*, 9(s1), 151-61.
15. Consumers International (2008). *The Junk Food Trap: Marketing Unhealthy Food to Children in Asia Pacific*. http://www.consumersinternational.org/files/98027/FileName/TheJunkFoodTrapwebversion.pdf
16. Sharma, L.L., Teret, S.P. & Brownell, K.D. (2009). The food industry and self-regulation: Standards to promote success and avoid public health failures. *American Journal of Public Health*, in press.
17. Finkelstein, E.A., Trogdon, J.G., Cohen, J.W. & Dietz, W. (2009). Annual Medical Spending Attributable To Obesity: Payer- And Service-Specific Estimates. *Health Affairs*, 28, 822-831.
18. Federal Trade Commission (2008).
19. Weinberg, M.E., Harris, J.L., Schwartz, M.B., Ross, C., Ostroff, J. & Brownell, K.D. (2009) Trends in television food advertising: Progress in reducing unhealthy marketing to young people? under review.
20. Ibid.
21. Schwartz, M., Ross, C., Harris, J.L., Siegel, M., Ostroff, J. & Brownell, K.D. (2009) Breakfast cereal industry pledges to self-regulate advertising to youth: Will they improve the marketing landscape? under review.
22. Ibid.
23. Alvy & Calvert (2008).
24. Schwartz, M.B., Vartanian, L.R., Wharton, C.M. & Brownell, K.D. (2008). Examining the nutritional quality of breakfast cereals marketed to children. *Journal of the American Dietetic Association*, 108, 702-5.
25. American Beverage Association (2006). School Beverage Guidelines. http://www.schoolbeverages.org/guidelines/guidelines-specifics/download.aspx?id=113
26. Sharma, Teret, & Brownell (2009).
27. American Beverage Association (2006).
28. Council of Better Business Bureaus (2007) Children's Food and Beverage Advertising Initiative. http://www.bbb.org/us/children-food-beverage-advertising-initiative/
29. The Walt Disney Company (2006, October 16). The Walt Disney Company announces new food guidelines to promote healthier kids' diets [Press Release]. http://corporate.disney.go.com/news/corporate/2006/2006_1016_food_guidelines.html
30. Zarghami, C. (2007, August 15) Letter from President of Nickelodeon to Chairman Markey of the U. S. House of Representatives Subcommittee on Telecommunications and the Internet, Committee on Energy and Commerce. http://markey.house.gov/docs/telecomm/Nickelodeon%20licensing.pdf
31. Smart Choices Program (2009) Smart Choices Program: Helping Guide Smart Food and Beverage Choices. http://smartchoicesprogram.com
32. Kolish, E.D. & Peeler, C.L. (2008). *Changing the landscape of food and beverage advertising: The children's food and beverage advertising initiative in action*. Council of Better Business Bureaus. http://www.bbb.org/us/storage/16/documents/CFBAI/ChildrenF&BInit_Sept21.pdf
33. Chester, J. (2007). *Digital destiny: New media and the future of democracy*. New York: New Press.
34. Harris, et al. (2009).
35. Chester (2007).
36. Esty, D.C. (2009). *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage*. Hoboken, N.J.: John Wiley & Sons.
37. Yale Center for Environmental Law & Policy CfIESINCU (2009). Environmental Performance Index. http://epi.yale.edu/Home
38. John, D.R. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. *Journal of Consumer Research*, 26, 183-213.
39. Kunkel, D., Wilcox, B.L., Cantor, J., Palmer, E., Linn, S., & Dowrick, P. (2004). *Report of the APA task force on advertising and children*. www.apa.org/releases/childrenads.pdf
40. Leslie, F.M., Levine, L.J., Loughlin, S.E. & Pechmann, C. (2009). *Adolescents' psychological and neurobiological development: Implications for digital marketing*. Memo prepared for the second NPLAN/BMSG meeting on digital media and marketing to children. Berkeley Media Studies Group.

41. Harris, J.H., Brownell, K.D. & Bargh, J.A. (2009). The food marketing defense model: Integrating psychological research to protect youth and inform public policy. *Social Issues and Policy Review*, in press.

42. Montgomery, K.C. & Chester, J. (2009). Interactive food and beverage marketing: Targeting adolescents in the digital age. *Journal of Adolescent Health*, in press.

43. Grier & Kumanyika (2008).

44. Ogden, C.L., Carroll, M.D., Curtin, L.R., McDowell, M.A., Tabak, C.J., & Flegal, K.M. (2006). Prevalence of overweight and obesity in the United States, 1999-2004. *Journal of the American Medical Association*, 295, 1549-1555.

Methods

1. General Mills, Kellogg Company and Pepsico (Quaker) currently participate in the CFBAI as of October 1, 2009.

2. Kolish, E.D. & Peeler, C.L. (2008). *Changing the landscape of food and beverage advertising: The children's food and beverage advertising initiative in action.* Council of Better Business Bureaus. http://www.bbb.org/us/storage/16/documents/CFBAI/ChildrenF&BInit_Sept21.pdf

3. Food Standards Agency (2007). Nutrient profiling. http://www.food.gov.uk/healthiereating/advertisingtochildren/nutlab/

4. OFCOM (2007). Television advertising of food and drink products to children. Final statement. www.ofcom.org.uk/consult/condocs/foodads_new/statement/statement.pdf

5. Food Standards Australia New Zealand (2008). http://www.foodstandards.gov.au/foodmatters/healthnutritionandrelatedclaims/

6. Scarborough, P., Rayner, M., Stockley, L. & Black, A. (2007). Nutrition professionals' perception of the "healthiness" of individual foods, *Public Health Nutrition*, 10, 346-353.

7. Jacobson, M.F. & Schardt, D. (1999). Diet, ADHD & behavior: A quarter-century review. Updated 2009. www.cspinet.org/new/pdf/dyesreschbk.pdf

8. Food and Nutrition Service, USDA (2007). WIC food packages. www.fns.usda.gov/wic/benefitsandservices/foodpkg.htm

9. OFCOM (2007)

10. CBBB (2009). BBB Children's Food and Beverage Advertising Initiative: Food and beverage products that meet participants' approved nutrition standards. http://www.bbb.org/us/storage/0/Shared%20Documents/Aug_Product_List_final1.pdf

11. Schwartz, M. B., Vartanian, L. R., Wharton, C. M. & Brownell, K. D. (2008). Examining the nutritional quality of breakfast cereals marketed to children. *Journal of the American Dietetic Assocication*, 108, 702-5.

12. Datamonitor (2009). http://www.productscan.com/

13. Federal Trade Commission [FTC] (2008). *Marketing food to children and adolescents. A review of industry expenditures, activities and self-regulation.* http://www.ftc.gov/os/2008/07/P064504foodmktingreport.pdf

14. The Nielsen Company (2009). Nielsen Monitor Plus AdViews. www.nielsenmedia.com

15. FTC (2007). *Children's exposure to TV advertising in 1977 and 2004*. http://www.ftc.gov/os/2007/06/cabecolor.pdf

16. The Nielsen Company (2009)

17. TNS Media Intelligence (2009). Adscope. http://www.tns-mi.com/prodadscope.htm

18. Reece, B.B., Rifon, N.J. & Rodriguez, K. (1999). Selling food to children. Is fun part of a balanced breakfast? In L.C. Machlin & L. Carlson (Eds.), *Advertising to children: Concepts and controversies* (189-208). Thousand Oaks, CA: Sage Publications.

19. Warren, R., LeBlanc Wicks, J., Wicks, R.H., Fosu, I., & Chung, D. (2007). Food and Beverage Advertising to Children on U.S. Television: Did National Food Advertisers Respond? *Journalism and Mass Communication Quarterly*; 84(4); 795-810.

20. Warren, R., Wicks, R.H., LeBlanc Wicks, J., Fosu, I., & Chung, D. (2008). Food and Beverage Advertising on U.S. Television: A Comparison of Child-Targeted Versus General Audience Commercials. *Journal of Broadcasting & Electronic Media*; 52(2); 231-246.

21. comScore (2009). Media Metrix Suite. http://comscore.com/About_comScore/Methodology/Media_Metrix_360_Hybrid_Measurement

22. comScore (2009). U.S. Client Newsletter. http://www.comscore.com/Newsletter/2009/August/US_Client_Newsletter

23. The data used for average visits per month is comScore Media Metrix Key Measures Report's data for the measure: Average Visits per Visitor.

24. Moore, E.S. (2006) *It's Child's Play: Advergaming and the Online marketing of Food to Children.* Kaiser Family Foundation.

25. Lingas, E.O., Dorfman, L., Bukofzer, E. (2009). Nutrition Content of Food and Beverage Products on Web Sites Popular With Children. *American Journal of Public Health*. 99(7):1-6.

26. Chester, J. & Montgomery, K. (2007). *Interactive Food and Beverage Marketing: Targeting Children and Youth in the Digital Age*. Berkeley Media Studies Group. www.digitalads.org

27. Lee, M., Choi, Y., Quilliam, E.T., Cole, R.T. (2009). Playing With Food: Content Analysis of Food Advergames. *The Journal of Consumer Affairs*. 43(1):129-154;

28. Moore, E.S. & Rideout, V.J. (2007) The Online Marketing of Food to Children: Is It Just Fun and Games? *Journal of Public Policy and Marketing*. 26(2)202-220.

29. comScore (2009). http://comscore.net/Products_Services/Product_Index/Ad_Metrix

30. The data used for monthly unique viewers is comScore Ad Metrix Advertiser Report's data for the measure: Advertising Exposed Unique Visitors.

31. Montgomery, K.C. & Chester, J. (2009). Interactive Food and Beverage Marketing: Targeting Adolescents in the Digital Age. *Journal of Adolescent Health*, 45(3) S18-S29.

32. Nielsen Social Media QuickTake: May 2009. http://blog.nielsen.com/nielsenwire/wp-content/uploads/2009/06/nielsen_pr_090619.pdf

33. Facebook (2009). Facebook Pages Guidelines. http://www.facebook.com/terms_pages.php

34. Point-Of-Purchase Advertising International (2001). P-O-P Measures Up: Learnings from the supermarket class of trade.

35. The Nielsen Company (2009)

36. John, D.R. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. *Journal of Consumer Research*, 26, 183-213.

37. Kunkel, D., Wilcox, B.L., Cantor, J., Palmer, E., Linn, S., & Dowrick, P. (2004). *Report of the APA task force on advertising and children*. www.apa.org/releases/childrenads.pdf

38. John (1999)

Results

1. Dorset cereals had been included in the original list because they were stocked in the local supermarket. Nestle cereals had been included because they were advertised in 2008.
2. Food and Nutrition Service, USDA (2007). WIC food packages. www.fns.usda.gov/wic/benefitsandservices/foodpkg.htm
3. Schwartz, M. B., Vartanian, L. R., Wharton, C. M. & Brownell, K. D. (2008). Examining the nutritional quality of breakfast cereals marketed to children. *Journal of the American Dietetic Association*, 108, 702-5.
4. Schwartz, M., Ross, C., Harris, J. L., Siegel, M., Ostroff, J. & Brownell, K. D. (2009) Breakfast cereal industry pledges to self-regulate advertising to youth: Will they improve the marketing landscape? under review.
5. CBBB (2009). BBB Children's Food and Beverage Advertising Initiative: Food and Beverage products that meet Participants' Approved Nutrition Standards. http://www.bbb.org/us/storage/0/Shared%20Documents/Aug_Product_List_final1.pdf
6. CBBB (2009)
7. Kolish, E.D. & Peeler, C.L. (2008). *Changing the landscape of food and beverage advertising: The children's food and beverage advertising initiative in action*. Council of Better Business Bureaus. http://www.bbb.org/us/storage/16/documents/CFBAI/ChildrenF&BInit_Sept21.pdf
8. The Nielsen Company (2009). Ratings and other data contained herein are the copyrighted property of The Nielsen Company, Inc. Unauthorized use of this copyrighted material is expressly prohibited. Violators may be subject to criminal and civil penalties under Federal Law (17 USC 101 et seq.). All rights reserved.
9. The remainder was spent on company-level advertising.
10. Federal Trade Commission (2008). *Marketing Food to Children and Adolescents: A Review of Industry Expenditures, Activities, and Self-Regulation*. http://www.ftc.gov/os/2008/07/P064504foodmktingreport.pdf
11. The Nielsen Company (2009)
12. John, D.R. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. *Journal of Consumer Research*, 26, 183-213.
13. Kunkel, D., Wilcox, B.L., Cantor, J., Palmer, E., Linn, S. & Dowrick, P. (2004). *Report of the APA task force on advertising and children*. www.apa.org/releases/childrenads.pdf
14. BBB (2009). www.bbb.org/us/children-advertising-initiative/General-Mills
15. BBB (2009). www.bbb.org/us/children-advertising-initiative/Kellogg
16. The Nielsen Company (2009)
17. Powell, L. M., Szczypka, G., Chaloupka, F. J., & Braunschweig C.L. (2007). Nutritional content of television food advertisements seen by children and adolescents in the United States. *Pediatrics*, 120, 576-83.
18. Schwartz et al. (2009)
19. Reece, B.B., Rifon, N.J. & Rodriguez, K. (1999). Selling food to children. Is fun part of a balanced breakfast? In L.C. Machlin & L. Carlson (Eds.), *Advertising to children: Concepts and controversies* (189-208). Thousand Oaks, CA: Sage Publications.
20. Appiah, O. (2004). Effects of ethnic identification on web browsers' attitudes toward and navigational patterns on race-targeted sites. *Communication Research*, 31, 312-337.
21. Speers, S., Harris, J., Goren, A., Schwartz, M. & Brownell, K. (2009). *Public Perceptions of Food Marketing to Youth: Results of the Rudd Center Public Opinion Poll*. www.yaleruddcenter.org
22. John, D.R. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. *Journal of Consumer Research*, 26, 183-213.
23. Kunkel, D., Wilcox, B.L., Cantor, J., Palmer, E., Linn, S., & Dowrick, P. (2004). *Report of the APA task force on advertising and children*. www.apa.org/releases/childrenads.pdf.
24. FTC (2008)
25. Moore, E.S., & Rideout V.J. (2007). The Online Marketing of Food to Children: Is It Just Fun and Games? *Journal of Public Policy and Marketing*. 2007;26(2)202-220.
26. Chester, J. & Montgomery, K. (2007). *Interactive Food and Beverage Marketing: Targeting Children and Youth in the Digital Age*. Berkeley Media Studies Group. www.digitalads.org
27. The data used for average visits per month is comScore Media Metrix Key Measures Report's data for the measure: Average Visits per Visitor.
28. Kaiser Family Foundation (2005). Generation M: Media in the Lives of 8-18 Year Olds. www.kff.org/entmedia/7251.cfm
29. These summaries describe the child-targeted cereal websites as of March 31, 2009. Since that time, Quaker Cap'n Crunch has launched a new children's gaming website, AppleJacks.com integrated their games into the travel story, and CornPops.com now has a multiple-page website.
30. The data used for monthly unique viewers is comScore Ad Metrix Advertiser Report's data for the measure: Advertising Exposed Unique Visitors.
31. The data used for average number of ads viewed per month is comScore Ad Metrix Advertiser Report's data for the measure: Average Frequency.
32. Moore & Rideout. (2007).
33. FTC (2008)
34. Underhill, P. (2008). *Why we buy: The science of shopping*. NY: Simon & Schuster.
35. Dijksterhuis, A., Smith, P.K., van Baaren, R.W. & Wigboldus, D.H.J. (2005). The unconscious consumer: Effects of environment on consumer behavior. *Journal of Consumer Psychology*, 15, 193-202.
36. Simonson, I. (2005). In defense of consciousness: The role of conscious and unconscious inputs in consumer choice. *Journal of Consumer Psychology*, 15, 211-217.
37. Peter, JP, Olson, JC & Grunet, KG. (1999). *Consumer behaviour and marketing strategy: European edition*. London: McGraw-Hill

Discussion

1. Martin, D. (2009 May 13). R. B. Choate Jr., Food Lobbyist, Dies at 84. *The New York Times*, p. A29
2. Council on Children, Media, and Merchandising. (1972). "Too Stuffed for Supper" – Testimony Before the Senate Commerce Committee, Subcommittee on the Consumer. Washington, D.C.; Choate. Retrieved June 15, 2009 from ERIC database.
3. Martin (2009).

4. Congress of the U.S., Senate Select Committee on Nutrition and Human Needs. (1973). Hearings before the Select Committee on Nutrition and Human Needs of the United States Senate, Ninety-Third Congress, First Session. Nutrition Education - 1973. Parts 3,4 and 5 - TV advertising of food to children. Washington, D.C., March 5,6, and 12, 1973. Washington, D.C.: U.S. Government Printing Office.
5. Ogden, C.L., Carroll, M.D., Curtin, L.R., McDowell, M.A., Tabak, C.J. & Flegal, K.M. (2006). Prevalence of overweight and obesity in the United States, 1999-2004. *JAMA*, 295, 1549-1555.
6. Olshanksy, S.J., Passaro, D.J., Hershow, R.C., Layden, J., Carnes, B.A., Brody, J., Hayflick, L., Butler, R.N., Allison, D.B. & Ludwig, D.S. (2005). A potential decline in the life expectancy in the United States in the 21st century. *The New England Journal of Medicine*, 352, 1138-1145.
7. Harris, J.L., Pomeranz, J.L., Lobstein, T. & Brownell, K.D. (2009). A crisis in the marketplace: How food marketing contributes to childhood obesity and what can be done. *Annual Review of Public Health*, 30, 211-225.
8. Institute of Medicine [IOM] (2006). National Academy of Sciences, Committee on Food Marketing and the Diets of Children and Youth. *Food marketing to children and youth: Threat or opportunity?* Washington, DC: National Academies Press.
9. Hastings, G., Stead, M., McDermott, L., Forsyth, A., MacKintosh, A. et al. (2003). *Review of Research on the Effects of Food Promotion to Children*. Glasgow, JK: Center for Social Marketing, University of Strathclyde.
10. Kolish, E.D. & Peeler, C.L. (2008). Changing the landscape of food and beverage advertising: The children's food and beverage advertising initiative in action. Council of Better Business Bureaus. www.bbb.org/us/storage/16/documents/CFBAI/ChildrenF&BInit_Sept21.pdf
11. Sharma, L.L., Teret, S.P. & Brownell, K.D. (2009). The food industry and self-regulation: Standards to promote success and avoid public health failures. *American Journal of Public Health*, in press.
12. Wang, S. (2009 July 29). Rice Krispies complete with snap, crackle and immunity. *The Wall Street Journal*, wsj.com.
13. Jacobson, M.F. & Schardt, D. (1999). Diet, ADHD & behavior: A quarter-century review. Updated 2009. www.cspi.org/new/pdf/dyereschbk.pdf
14. BBB (2009). www.bbb.org/us/children-advertising-initiative/General-Mills
15. BBB (2009). www.bbb.org/us/children-advertising-initiative/Kellogg
16. John, D.R. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. *Journal of Consumer Research*, 26, 183-213.
17. Kunkel, D., Wilcox, BL., Cantor, J., Palmer, E., Linn, S. & Dowrick, P. (2004). *Report of the APA task force on advertising and children*. www.apa.org/releases/childrenads.pdf
18. Ibid.
19. Shifrin, D. (2005). Remarks at Federal Trade Commission Workshop, "Perspectives on Marketing, Self-Regulation and Childhood Obesity," July 14-15, 2005, Washington, DC. www.saap.org/advocacy/washing/dr_%20Shifrin_remarks.htm.
20. Moore, E.S. & Rideout, V.J. (2007). The online marketing of food to children: Is it just fun and games? *Journal of Public Policy and Marketing*, 26, 202-220.
21. Chester, J. & Montgomery, K. (2008). Interactive food and beverage marketing: Targeting children and youth in the digital age. www.digitalads.org
22. Reece, B.B., Rifon, N.J. & Rodriguez, K. (1999). Selling food to children. Is fun part of a balanced breakfast? In L.C. Machlin & L. Carlson (Eds.), Advertising to children: Concepts and controversies (189-208). Thousand Oaks, CA: Sage Publications.
23. Warren , R., LeBlanc Wicks J., Wicks, R.H., Fosu, I., & Chung, D. (2007). Food and beverage advertising to children on U.S. television. Did national food advertisers respond? *Journalism and Mass Communication Quarterly*, 84, 795-810.
24. Warren, R., Wicks, R.H., LeBlanc Wicks, J., Fosu, I., & Chung, D. (2008). Food and beverage advertising on U.S. television: A comparison of child-targeted versus general audience commercials. *Journal of Broadcasting & Electronic Media*, 52, 231-246.
25. Cohen, J.B., Pham, M.T. & Andrade, E.B. (2008). The nature and role of affect in consumer behavior. In C.P. Haugtvedt, P.M. Herr & F.R. Kardes (Eds.), *Handbook of Consumer Psychology* (pp. 297-348). NY: Lawrence Erlbaum Associates.
26. Harris, J.L., Brownell, K.B., & Bargh, J.A. (2009). The food marketing defense model: Psychological research to protect youth and inform public policy. *Social Issues and Policy Review*, in press.
27. Urbick, B. (2008). Making a big impression on kids. *Brand Strategy*, 224, 46-47.
28. Speers, S., Harris, J., Goren, A., Schwartz, M. & Brownell, K. (2009). *Public Perceptions of Food Marketing to Youth: Results of the Rudd Center Public Opinion Poll*, May 2008. www.yaleruddcenter.org
29. Federal Trade Commission [FTC] (2008). Marketing Food to Children and Adolescents: A review of industry expenditures, activities and self-regulation. www.ftc.gov.
30. Powell, L.M., Szczpka, G., Chaloupka, F.J., & Braunschweig, C.L. (2007). Nutritional content of television advertisements seen by children and adolescents. *Pediatrics*, 120, 576-583.
31. Symantec (2008). *Norton Online Living Report*. www.symantec.com
32. Sharma et al. (2009)
33. Brownell, K.D., & Warner, K.E. (2009). The perils of ignoring history: Big tobacco played dirty and millions died. How similar is big food? *Milbank Quarterly*, 87, 259-294.
34. Sharma et al. (2009)
35. Neuman, W. (2009 September 5). For your health, Froot Loops. *The New York Times*. www.nytimes.com
36. Federal Trade Commission (2007). *Children's Exposure to TV Advertising in 1977 and 2004*. www.ftc.gov
37. FTC (2008)
38. Sugarman, S.D. (2009a). Salt, high blood pressure, and performance-based regulation. *Regulation & Governance*. 3, 84-102.
39. Sugarman, S.D. (2009b). No more business as usual: Enticing companies to sharply lower the public health and medical care costs of the products they sell. *Public Health*, 123, 275-279.

Brand Nutrition Ranking by overall nutrition profile

(Nutrition Profile Index [NPI] score)

Includes all child and family brands stocked in more than 5% of supermarkets in May 2009

Best

RANK	Company	Brand	Target	# of Varieties	NPI Score*	Sugar Content	Food Dyes
1	Kellogg	Mini-Wheats	Family	9	72.0	2-23%	44%
2	Barbara's Bakery	Organic Wild Puffs	Family	4	58.0	23%	0%
3	Kashi	Mighty Bites	Family	1	56.0	15%	0%
3 (tie)	Kashi	Honey Sunshine	Family	1	56.0	20%	0%
5	Cascadian Farm	Clifford Crunch	Child	1	54.0	20%	0%
5 (tie)	Kellogg	Hannah Montana	Child	1	54.0	30%	0%
7	General Mills	Kix	Family	3	52.8	10-31%	33%
7 (tie)	Quaker	Life	Family	3	52.8	19-25%	100%
9	General Mills	Cheerios (excluding Honey Nut)	Family	10	51.6	4-40%	10%
10	Barbara's Bakery	Puffins	Family	4	51.4	19-20%	0%
11	Annie's	Bunnies	Family	5	50.8	7-30%	0%
11 (tie)	Nature's Path	EnviroKidz Organic	Child	5	50.8	20-37%	0%
13	General Mills	Dora the Explorer	Child	1	50.0	22%	0%
13 (tie)	Cascadian Farm	Cinnamon Crunch	Family	1	50.0	30%	0%
15	Post	Raisin Bran	Family	1	48.0	32%	0%
16	Kellogg	Honey Smacks	Family	1	46.0	56%	0%
16 (tie)	Cascadian Farm	Purely O's	Family	1	46.0	3%	0%
16 (tie)	Post	Alpha Bits	Family	1	46.0	36%	0%
16 (tie)	Post	Golden Crisp	Family	1	46.0	52%	0%
16 (tie)	Post	Honeycomb	Child	1	46.0	31%	100%
21	General Mills	Chex	Family	8	44.2	7-28%	25%
22	Kellogg	Mini-Swirlz	Family	1	44.0	40%	100%
22 (tie)	Cascadian Farm	Honey Nut O's	Family	1	44.0	27%	0%
22 (tie)	General Mills	Honey Nut Cheerios	Child	1	44.0	32%	0%
22 (tie)	Post	Waffle Crisp	Family	1	44.0	40%	0%
26	Kellogg	Rice or Cocoa Krispies	Family	7	43.6	12-40%	0%
27	Kellogg	Frosted Flakes	Child	3	42.6	26-37%	0%
28	Kellogg	Disney High School Musical	Child	1	42.0	31%	100%
29	Kellogg	Apple Jacks	Child	1	40.0	43%	100%
29 (tie)	Kellogg	Cookie Crunch	Family	1	40.0	40%	100%
31	General Mills	Cookie Crisp	Child	2	39.6	39-42%	0%
32	General Mills	Cocoa Puffs	Child	2	38.6	41-44%	0%

continued

Brand Nutrition continued

RANK	Company	Brand	Target	# of Varieties	NPI Score*	Sugar Content	Food Dyes
33	General Mills	Count Chocula	Family	1	38.0	44%	100%
33 (tie)	General Mills	Trix	Child	1	38.0	38%	100%
33 (tie)	Kellogg	Froot Loops	Child	6	38.0	31-53%	100%
33 (tie)	Kellogg	Smorz	Family	1	38.0	43%	100%
33 (tie)	Post	Fruity or Cocoa Pebbles	Child	2	38.0	37%	50%
38	General Mills	Cinnamon Toast Crunch	Child	2	36.6	7-32%	0%
38 (tie)	Quaker	Cap'n Crunch	Child	3	36.6	33-46%	67%
40	General Mills	Lucky Charms	Child	2	36.0	41-43%	100%
40 (tie)	General Mills	Golden Grahams	Family	1	36.0	35%	0%
42	Kellogg	Corn Pops	Child	2	35.8	37-41%	0%
43	General Mills	Reese's Puffs	Child	1	34.0	41%	100%

Worst

Company Nutrition Ranking

1	Kashi	2	56.0	15-20%	0%
2	Barbara's Bakery	8	53.4	23%	0%
3	Kellogg	34	51.6	2-56%	41%
4	Annie's	5	50.8	7-27%	0%
4 (tie)	Nature's Path	5	50.8	20-37%	0%
6	Cascadian Farm	4	47.4	20-30%	0%
7	Quaker	6	44.0	19-46%	83%
8	General Mills	35	43.4	4-44%	26%
8 (tie)	Post	7	43.4	30-52%	25%

*Analysis of nutrition content on 5/31/09

Brand and company scores include an average of all cereals in the brand or company, weighted by share of shelf

Advertising Spending

Ranking by total advertising spending*

Includes total spending in all measured media for child and family brands for the 15-month period from January 2008 through March 2009

Most

RANK	Company	Brand	Advertising spending (000)
1	General Mills	Cheerios (excluding Honey Nut)	$95,350.0
2	General Mills	Honey Nut Cheerios	$74,714.2
3	Kellogg	Mini-Wheats	$59,232.0
4	Kellogg	Rice or Cocoa Krispies	$37,791.2
5	Kellogg	Frosted Flakes	$26,102.1
6	General Mills	Cinnamon Toast Crunch	$16,134.7
7	General Mills	Lucky Charms	$12,189.6
8	Quaker	Life	$11,520.2
9	General Mills	Chex	$9,560.0
10	Kellogg	Corn Pops	$9,289.5
11	General Mills	Cocoa Puffs	$8,836.2
12	Kellogg	Froot Loops	$8,605.9
13	General Mills	Trix	$7,836.1
14	Post	Fruity or Cocoa Pebbles	$7,554.6
15	General Mills	Reese's Puffs	$7,208.0
16	Kellogg	Apple Jacks	$6,915.0
17	Post	Honeycomb	$4,674.8
18	General Mills	Cookie Crisp	$4,489.1
19	Barbara's Bakery	Puffins	$944.7
20	Quaker	Cap'n Crunch	$278.1
21	Nature's Path	EnviroKidz Organic	$251.5
22	General Mills	Kix	$103.0

Least

RANK	Company	Advertising spending (000)
1	General Mills	$261,892.1
2	Kellogg	$159,214.0
3	Quaker	$13,187.2
4	Post	$12,606.8
5	Nature's Path	$1,109.5
6	Barbara's Bakery	$1,029.3

*Includes spending in 18 different media including television, magazines, radio, newspapers, free standing insert coupons and outdoor advertising

© The Nielsen Company

Television Advertising Exposure

Ranking by ads viewed for children (ages 2-11 years) combined

Includes average number of advertisements viewed for child and family brands during the 15-month period from January 2008 through March 2009

Most

Least

			AVERAGE NUMBER OF ADS VIEWED				
RANK	Company	Brand	Children 2-5 years	Children 6-11 years	Teens 12-17 years	Ratio of child to adult viewers	Ratio of teen to adult viewers
1	General Mills	Cinnamon Toast Crunch	75	82	39	4.0	2.0
2	General Mills	Honey Nut Cheerios	73	80	43	2.4	1.4
3	General Mills	Lucky Charms	71	78	33	7.1	3.1
4	General Mills	Cocoa Puffs	63	68	29	7.1	3.1
5	General Mills	Trix	55	58	25	7.0	3.0
6	Kellogg	Frosted Flakes	53	58	28	3.7	1.9
7	Post	Fruity or Cocoa Pebbles	46	54	23	7.0	3.2
8	General Mills	Company Ads	46	54	34	2.4	1.6
9	General Mills	Reese's Puffs	47	52	22	7.1	3.1
10	Kellogg	Corn Pops	39	44	27	4.7	3.0
11	Kellogg	Froot Loops	40	43	18	6.4	2.8
12	Post	Honeycomb	33	40	18	6.3	3.1
13	Kellogg	Apple Jacks	32	35	15	6.5	2.9
14	General Mills	Cookie Crisp	31	34	14	7.1	3.1
15	General Mills	Cheerios (excluding Honey Nut)	15	19	27	0.4	0.6
16	Kellogg	Company Ads	16	18	10	2.4	1.4
17	Kellogg	Mini-Wheats	13	17	27	0.4	0.7
18	Kellogg	Rice or Cocoa Krispies	11	13	20	0.4	0.7
19	Quaker	Life	3	4	6	0.5	0.8
20	General Mills	Chex	0	1	1	0.3	0.5
21	Barbara's Bakery	Puffins	<1	<1	<1	0.2	0.3

		AVERAGE NUMBER OF ADS VIEWED				
RANK	Company	Children 2-5 years	Children 6-11 years	Teens 12-17 years	Ratio of child to adult viewers	Ratio of teen to adult viewers
1	General Mills	477	525	267	3.2	1.7
2	Kellogg	205	227	145	1.9	1.3
3	Post	79	94	41	6.7	3.2
4	Quaker	3	4	6	0.5	0.8
5	Barbara's Bakery	<1	<1	<1	0.2	0.3

© The Nielsen Company

Child-Targeted Website Exposure

Ranking by average total visits per month by 2- to 17-year-olds*

Includes data for visits to websites with child-targeted content from January 2008 through March 2009

Most

Least

RANK	Company	Website	AVERAGE UNIQUE VISITORS PER MONTH 2-11 Years (000)	12-17 Years (000)	Average Visits per Month	Average Minutes per Visit
1	General Mills	Millsberry.com	386.8	380.2	2.8	23.7
2	Post	Postopia.com	154.4	110.3	2.0	15.2
3	Kellogg	AppleJacks.com	44.7	32.4	1.2	3.2
4	Kellogg	FrootLoops.com	42.7	17.2	1.3	1.6
5	General Mills	ReesesPuffs.com	27.0	17.7	1.1	3.6
6	Kellogg	CornPops.com	21.4	11.1	1.1	2.2
7	Kellogg	FrostedFlakes.com	12.1	5.2	1.2	3.1
8	General Mills	Cheerios.com	14.7	9.4	1.2	1.8
9	General Mills	CookieCrisp.com	11.8	8.0	1.2	1.3
10	General Mills	Chex.com	5.9	11.3	1.2	2.6

*Data retrieved from comScore Media Metrix Key Measures Report

Banner Advertising Exposure

Ranking by total number of banner ads viewed on youth websites*

Includes data for banner ads viewed for child brands from October 2008 through March 2009

Most

Least

RANK	Company	Brand	Average monthly unique viewers (000)	Average number of ads viewed per month	% ad views on youth websites
1	General Mills	Millsberry	11,720	10.4	91%
2	General Mills	Reese's Puffs	4,382	13.8	83%
3	General Mills	Lucky Charms	7,369	3.9	87%
4	General Mills	Trix	3,918	3.1	89%
5	General Mills	Honey Nut Cheerios	2,757	3.6	93%
6	Kellogg	Apple Jacks	6,508	2.9	46%
7	Kellogg	Froot Loops	3,072	2.6	81%
8	Kellogg	Corn Pops	4,641	2.6	36%
9	Post	Postopia	775	2.9	34%
10	Kellogg	Frosted Flakes	3,061	2.4	9%

*Data retrieved from comScore Ad Metrix Advertiser Report
* Ranking based on Total number of banner ads viewed on youth websites as custom defined by Jennifer Harris (Average monthly unique viewers * Average number of ads viewed per month * % ad views on youth websites).

Supermarket Shelf Space

Ranking by overall share of total shelf facings*

Includes all child and family brands stocked in more than 5% of supermarkets in May 2009

Most

RANK	Company	Brand	% of Total Shelf Facings	% of Stores Stocking**	Average Facings Per Store
1	General Mills	Cheerios (excluding Honey Nut)	5.51%	98%	24.3
2	Kellogg	Mini-Wheats	3.90%	94%	19.3
3	Kellogg	Frosted Flakes	2.56%	98%	12.5
4	Kellogg	Rice or Cocoa Krispies	2.50%	97%	15.0
5	General Mills	Chex	2.24%	91%	13.3
6	Quaker	Cap'n Crunch	2.17%	94%	8.9
7	Quaker	Life	2.10%	96%	8.7
8	Kellogg	Froot Loops	1.94%	96%	14.4
9	General Mills	Honey Nut Cheerios	1.93%	96%	7.5
10	Post	Fruity or Cocoa Pebbles	1.58%	98%	6.0
11	General Mills	Cinnamon Toast Crunch	1.47%	95%	7.7
12	Kellogg	Corn Pops	1.43%	97%	7.6
13	General Mills	Lucky Charms	1.38%	97%	6.6
14	General Mills	Kix	1.36%	95%	7.3
15	Kellogg	Apple Jacks	1.27%	96%	4.8
16	General Mills	Cocoa Puffs	1.22%	96%	5.2
17	General Mills	Trix	0.97%	94%	3.8
18	General Mills	Cookie Crisp	0.84%	94%	4.8
19	General Mills	Golden Grahams	0.83%	92%	3.3
20	General Mills	Reese's Puffs	0.81%	93%	3.3
21	Post	Honeycomb	0.69%	92%	2.7
22	Barbara's Bakery	Puffins	0.64%	56%	4.2
23	Post	Raisin Bran	0.62%	80%	2.9
24	Nature's Path	EnviroKidz Organic	0.61%	41%	7.3
25	Kellogg	Honey Smacks	0.55%	85%	2.4
26	Annie's	Bunnies	0.25%	29%	6.6
26 (tie)	Post	Golden Crisp	0.25%	53%	1.7
28	Kashi	Honey Sunshine	0.23%	56%	1.5
29	Cascadian Farm	Honey Nut O's	0.21%	49%	1.6
30	Post	Alpha Bits	0.19%	44%	1.6
31	Kellogg	Hannah Montana	0.18%	44%	1.5
32	Cascadian Farm	Cinnamon Crunch	0.14%	35%	1.5
33	Kellogg	Cookie Crunch	0.13%	33%	1.5
34	Kellogg	Disney High School Musical	0.12%	31%	1.4
34 (tie)	Cascadian Farm	Purely O's	0.12%	31%	1.4

continued

Supermarket Shelf Space continued

RANK	Company	Brand	% of Total Shelf Facings	% of Stores Stocking**	Average Facings Per Store
36	Barbara's Bakery	Organic Wild Puffs	0.11%	14%	5.5
37	Kellogg	Smorz	0.10%	16%	2.2
38	Post	Waffle Crisp	0.08%	18%	1.6
39	Cascadian Farm	Clifford Crunch	0.06%	17%	1.4
39 (tie)	General Mills	Dora the Explorer	0.06%	12%	2.0
41	General Mills	Count Chocula	0.04%	11%	1.5
41 (tie)	Kellogg	Mini-Swirlz	0.04%	6%	2.7
43	Kashi	Mighty Bites	0.03%	8%	1.6

Least

RANK	Company	% of Total Shelf Facings	% of Stores Stocking**	Average Facings Per Store
1	General Mills	18.7%	100%	69.1
2	Kellogg	14.7%	100%	54.5
3	Quaker	4.3%	100%	15.8
4	Post	3.4%	100%	12.6
5	Barbara's Bakery	0.8%	62%	6.5
6	Nature's Path	0.6%	62%	4.7
7	Cascadian Farm	0.5%	71%	3.5
8	Kashi	0.3%	98%	1.7
9	Annie's	0.3%	34%	3.1

*From a sample of 400 supermarkets in 18 major markets

**For cereal brands with more than one variety, the variety stocked in the greatest percent of stores was used

Supermarket In-Store Marketing

Ranking by overall in-store marketing (displays and promotions combined)*

Includes all child and family brands stocked in more than 5% of supermarkets from May to June 2009

Most

RANK	Company	Brand	% Stores w/ Display	Avg # Displays Per Store	% Stores w/ Promotion	Avg # Promotions Per Store
1	Kellogg	Frosted Flakes	55%	2.0	94%	4.0
2	Kellogg	Froot Loops	57%	2.0	90%	3.8
3	Kellogg	Apple Jacks	52%	1.7	79%	3.3
4	Kellogg	Corn Pops	45%	1.9	86%	3.1
5	General Mills	Cheerios (excluding Honey Nut)	56%	2.6	86%	9.1
6	Kellogg	Mini-Wheats	28%	5.1	83%	15.6
7	Kellogg	Rice or Cocoa Krispies	45%	2.6	82%	5.8
8	General Mills	Cinnamon Toast Crunch	33%	1.6	68%	3.0
9	General Mills	Honey Nut Cheerios	39%	1.7	70%	2.8
10	Quaker	Cap'n Crunch	28%	4.3	68%	7.9
11	General Mills	Golden Grahams	33%	1.6	67%	2.6
12	General Mills	Cocoa Puffs	25%	2.5	66%	3.9
13	Quaker	Life	32%	3.5	66%	8.1
14	General Mills	Cookie Crisp	23%	1.1	61%	2.9
15	Kellogg	Honey Smacks	11%	1.3	62%	2.4
16	General Mills	Trix	30%	1.9	60%	2.7
17	General Mills	Chex	20%	3.0	60%	10.2
18	General Mills	Lucky Charms	23%	1.6	60%	2.7
19	Post	Fruity or Cocoa Pebbles	21%	2.2	55%	5.3
20	General Mills	Kix	15%	1.5	51%	4.1
21	Post	Raisin Bran	18%	2.0	47%	2.8
22	General Mills	Reese's Puffs	11%	1.1	45%	2.5
23	Post	Honeycomb	18%	1.4	44%	2.6
24	Kashi	Honey Sunshine	0%	0.0	33%	2.7
25	Post	Golden Crisp	5%	1.0	28%	2.6
26	Cascadian Farm	Honey Nut O's	5%	2.3	23%	3.3
27	Barbara's Bakery	Puffins	5%	2.3	18%	2.9
28	Kellogg	Cookie Crunch	1%	3.0	16%	1.6
29	Nature's Path	EnviroKidz Organic	6%	5.2	15%	2.8
30	Post	Alpha Bits	2%	1.0	15%	2.1
31	Cascadian Farm	Cinnamon Crunch	1%	3.0	13%	2.6
32	Kellogg	Hannah Montana	2%	1.0	15%	2.5
33	Kellogg	Disney High School Musical	1%	1.0	14%	2.9

continued

Supermarket In-Store Marketing continued

RANK	Company	Brand	% Stores w/ Display	Avg # Displays Per Store	% Stores w/ Promotion	Avg # Promotions Per Store
34	Cascadian Farm	Purely O's	2%	2.0	14%	2.8
35	Kellogg	Smorz	1%	1.0	13%	2.1
36	Post	Waffle Crisp	2%	1.0	10%	1.8
37	Barbara's Bakery	Organic Wild Puffs	0%	0.0	10%	3.1
38	Annie's	Bunnies	0%	0.0	6%	4.2
39	Cascadian Farm	Clifford Crunch	0%	0.0	6%	2.4
39 (tie)	General Mills	Count Chocula	0%	0.0	6%	2.4
41	Kellogg	Mini-Swirlz	0%	0.0	5%	1.3
42	General Mills	Dora the Explorer	0%	0.0	3%	1.0
43	Kashi	Mighty Bites	0%	0.0	3%	2.0

Least

RANK	Company	% Stores w/ Display	Avg. # Displays Per Store	% Stores w/ Promotion	Avg. # Promotions Per Store
1	Kellogg	71%	9.5	99%	33.3
2	General Mills	68%	9.0	92%	35.1
3	Quaker	41%	5.6	75%	14.2
4	Post	30%	3.9	62%	10.6
5	Kashi	0%	0.0	33%	2.9
6	Nature's Path	6%	5.2	15%	2.8
7	Cascadian Farm	5%	4.0	25%	6.5
8	Barbara's Bakery	5%	3.0	24%	5.8
9	Annie's	0%	0.0	6%	4.2

*From a sample of 87 supermarkets in 18 major markets

On-Package Child Engagement Features

Ranking by number of child engagement features per box*

Includes packaging for all child and family brands found in the supermarket from October 2008 through March 2009

Most

RANK	Company	Brand	Average number of features per box
1	General Mills	Trix	3.4
2	General Mills	Lucky Charms	3.0
2 (tie)	Post	Fruity or Cocoa Pebbles	3.0
4	General Mills	Cocoa Puffs	2.8
5	Quaker	Cap'n Crunch	2.4
6	Kellogg	Froot Loops	2.4
7	General Mills	Honey Nut Cheerios	2.4
8	General Mills	Cookie Crisp	2.3
9	Cascadian Farm	Clifford Crunch	2.0
9 (tie)	Cascadian Farm	Cinnamon Crunch	2.0
9 (tie)	Kellogg	Cookie Crunch	2.0
9 (tie)	Post	Honeycomb	2.0
13	Kellogg	Frosted Flakes	1.8
14	General Mills	Golden Grahams	1.8
15	Nature's Path	EnviroKidz Organic	1.7
16	Kellogg	Apple Jacks	1.7
17	General Mills	Cinnamon Toast Crunch	1.5
18	General Mills	Reese's Puffs	1.5
19	Kellogg	Rice or Cocoa Krispies	1.4
20	Kellogg	Corn Pops	1.2
21	Barbara's Bakery	Organic Wild Puffs	1.0
21 (tie)	Kashi	Mighty Bites	1.0
21 (tie)	Kellogg	Honey Smacks	1.0
24	Annie's	Bunnies	0.8
25	General Mills	Kix	0.8
26	Kellogg	Mini-Wheats	0.7
27	Barbara's Bakery	Puffins	0.6
28	General Mills	Cheerios (excluding Honey Nut)	0.6
29	General Mills	Chex	0.1
30	Quaker	Life	0.0
30 (tie)	Cascadian Farm	Honey Nut O's	0.0
30 (tie)	Cascadian Farm	Purely O's	0.0
30 (tie)	Kashi	Honey Sunshine	0.0
30 (tie)	Post	Raisin Bran	0.0

Least

RANK	Company	Average number of features per box
1	Post	2.0
2	Nature's Path	1.7
3	Kellogg	1.4
4	General Mills	1.4
5	Quaker	1.2
6	Annie's	0.8
7	Kashi	0.7
8	Barbara's Bakery	0.6
9	Cascadian Farm	0.4

*Child engagement features include puzzles, games and cartoon characters on the box, promotions and advergames URLs

On-Package Child Health and Ingredient Claims

Ranking by average number of health and ingredient claims per box*

Includes packaging for all child and family brands found in the supermarket from October 2008 through March 2009

Most

RANK	Company	Brand	Average claims per box
1	Barbara's Bakery	Organic Wild Puffs	5.0
2	Annie's	Bunnies	4.2
3	General Mills	Lucky Charms	3.8
4	General Mills	Honey Nut Cheerios	3.7
5	General Mills	Golden Grahams	3.5
5 (tie)	General Mills	Cinnamon Toast Crunch	3.5
7	General Mills	Cheerios (excluding Honey Nut)	3.3
8	General Mills	Reese's Puffs	3.3
9	General Mills	Cookie Crisp	3.0
10	General Mills	Trix	2.9
10 (tie)	General Mills	Kix	2.9
12	General Mills	Cocoa Puffs	2.8
13	General Mills	Chex	2.6
14	Kashi	Mighty Bites	2.5
14 (tie)	Nature's Path	EnviroKidz Organic	2.5
16	Quaker	Life	2.3
16 (tie)	Post	Raisin Bran	2.3
18	Barbara's Bakery	Puffins	2.3
19	Cascadian Farm	Cinnamon Crunch	2.0
19 (tie)	Cascadian Farm	Purely O's	2.0
19 (tie)	Kashi	Honey Sunshine	2.0
22	Cascadian Farm	Honey Nut O's	1.7
23	Kellogg	Mini-Wheats	1.1
24	Cascadian Farm	Clifford Crunch	1.0
25	Kellogg	Froot Loops	0.9
26	Kellogg	Frosted Flakes	0.7
27	Kellogg	Honey Smacks	0.7
27 (tie)	Post	Fruity or Cocoa Pebbles	0.7
27 (tie)	Post	Honeycomb	0.7
30	Kellogg	Rice or Cocoa Krispies	0.4
31	Kellogg	Apple Jacks	0.3
31 (tie)	Kellogg	Corn Pops	0.3
33	Quaker	Cap'n Crunch	0.0
33 (tie)	Kellogg	Cookie Crunch	0.0

Least

RANK	Company	Average claims per box
1	Annie's	4.2
2	General Mills	3.2
3	Barbara's Bakery	2.6
4	Nature's Path	2.5
5	Kashi	2.3
6	Cascadian Farm	1.7
7	Quaker	1.2
8	Post	1.1
9	Kellogg	0.7

*Includes ingredient claims, health claims and health-related URLs

FACTS Index Ranking by combined nutrition quality and marketing exposure

Best

FACTS Index	Company	Brand	Marketing Exposure*	Nutrition Multiplier**
90	Kellogg	Mini-Wheats	45	10
70	Quaker	Life	17	-9
68	General Mills	Chex	11	-18
67	Quaker	Cap'n Crunch	9	-25
58	Post	Honeycomb	33	-16
56	General Mills	Cheerios (excluding Honey Nut)	56	-10
54	Kellogg	Rice and Cocoa Krispies	34	-18
54	General Mills	Cookie Crisp	28	-22
52	Kellogg	Apple Jacks	32	-22
43	Kellogg	Froot Loops	41	-24
40	Kellogg	Corn Pops	40	-26
38	Kellogg	Frosted Flakes	57	-19
38	Post	Fruity and Cocoa Pebbles	47	-24
32	General Mills	Cocoa Puffs	55	-23
32	General Mills	Reese's Puffs	46	-28
19	General Mills	Trix	69	-24
16	General Mills	Honey Nut Cheerios	99	-18
14	General Mills	Cinnamon Toast Crunch	72	-26
0	General Mills	Lucky Charms	87	-26

Worst

*Marketing Exposure is a combined measure of all types of exposure to cereal marketing. The measure ranges from 0 (least) to 100 (most).

**Nutrition Multiplier is a measure of overall nutrition quality derived from the Nutrition Profiling Index score.

The UK Ofcom Nutrient Profiling (NP) Model

Defining 'healthy' and 'unhealthy' foods and drinks for TV advertising to children

Mike Rayner, Peter Scarborough, British Heart Foundation Health Promotion Research Group, Department of Public Health, University of Oxford

Tim Lobstein, International Obesity Task Force, London

Consumer groups and public health organisations have called for bans on the advertising of 'unhealthy' food to children for several decades. The definition of 'unhealthy' has been a topic of considerable argument. Food companies have resisted having any products described as 'unhealthy' but have gradually developed a number of different schemes which define products they believe are 'healthy' (or at least 'healthier') and appropriate for advertising to children. Health and consumer groups have called for a single scheme - or 'nutrient profiling model' - consistent with international recommendations for preventing chronic disease and with national food-based dietary guidelines. A simple system which could be applied to all products and with a clearly defined cut-off for defining which foods are not suitable for advertising to children would be ideal.

What sort of nutrient profiling model?

There are a number of technical questions which need to be considered:

- Which nutrients should be included?
- Should the profiling criteria differ according to the type of food being profiled, or should all foods be assessed using the same criteria?
- What is the reference amount: for example, should foods be compared per 100g, per 100 kcal or per portion or serving?
- Should the final result be presented as a single figure or as a set of figures relating to different aspects of the nutritional quality of the food?

The answers to these questions depend on the purpose of the nutrient profiling model. If the requirement is simply to define the presence of 'high' or 'low' levels of nutrients, then the methodological questions are fairly easily answered, and indeed nutrient profiling in this sense has been widely accepted for national and international legislation. Codex Alimentarius and various other bodies have defined threshold values for making 'high' and 'low' claims for nutrients in food products, per unit of food, and include specific requirements for presenting information on which a nutrient-related claim is made. A similar approach is used for claims which make comparisons such as a 'higher' or 'lower' level of a nutrient relative to similar foods.

An extension of these principles is to combine several different nutrients into a single score which can be used to show that a product is nutritionally better than another, similar one. For example, a manufacturer or retailer may promote a 'healthy eating' range, or a government or public health body may endorse a labelling scheme to identify 'better for you' products. Several schemes to identify healthier options within classes of foods are already available, such as the US manufacturers' *Smart Choices* programme (http://www.smartchoicesprogram.com/nutrition.html) and the Swedish Keyhole labelling scheme (http://www.slv.se/upload/nfa/documents/food_regulations/Keyhole_2005_9.pdf).

In 2007 a review of nutrient profiling models commissioned by the UK Food Standards Agency identified over 40 different schemes (http://www.food.gov.uk/healthiereating/advertisingtochildren/nutlab/nutprofilereview/nutprofilelitupdatedec07). More schemes have been developed since then. They vary considerably in the nutrients they consider (ranging from just a few to over 20) and whether they use different criteria according to the type of food being profiled or whether all foods are assessed using the same criteria. The *Smart Choices* scheme has different criteria for 19 different food categories, the *Keyhole* scheme has 26 food categories, and one scheme – used for the Australian Heart Foundation Tick Program (http://www.heartfoundation.org.au/sites/tick/Pages/default.aspx) has different criteria for more than 70 food categories. The schemes also vary in the reference amounts they are based upon, and in the measurement criteria they use to score the different aspects of nutritional quality.

For the purposes of defining foods suitable for advertising to children, the nutrient profiling model needs to be relatively simple to understand and to apply. An ideal model uses easily-available information, it should take into account 'positive' elements (e.g. micronutrients, fruit, vegetables and dietary fibre) and 'negative' elements (e.g. saturated fats, salt/sodium and added sugars) and it should provide a single answer which lies on a single scale that runs from 'healthy' to 'unhealthy'.

The UK model

The UK regulator for broadcast media is the Office of Communications, usually called Ofcom, and in anticipation of new regulations to control advertising to children, it requested advice on how to profile the nutrients in foods in

order to judge their suitability for advertising to children. In response, the UK Food Standards Agency commissioned the British Heart Foundation Health Promotion Research Group at Oxford University to carry out a research programme to develop a nutrient profiling model. The development of the model has been well-documented elsewhere (http://www.food.gov.uk/foodlabelling/researchandreports/nutrientprofiles). The model was formally passed to Ofcom at the end of 2005 and has subsequently been incorporated into a regulation (http://www.ofcom.org.uk/consult/condocs/foodads_new/statement). This prohibits advertising of specified food and beverages during children's programmes and programmes for which children under the age of 16 years form a disproportionate part of the audience.

In the development of the model, various prototypes were compared with each other and with a set of foods categorised for their compliance with healthy eating guidelines. This was first done relatively informally by a small 'expert group' consisting of academic nutritionists and representatives from industry, consumer organisations and public health bodies, but then more formally using an on-line survey of professional nutritionists in the UK. The survey asked the nutritionists to assess 40 foods for their 'healthiness'. The 40 foods were randomly drawn from 120 different food products representative of the UK diet. The professionals' ratings were compared with the ratings obtained from the prototype models (http://www.food.gov.uk/multimedia/pdfs/npreportsept05.pdf).

The best prototype model showed a close correlation with the professional ratings of $r = 0.80$ (95% CI 0.73-0.86). In this model, a single score based on a set of 'negative' indicators (energy, saturated fat, sugars and sodium) is counter-balanced by a score based on 'positive' indicators (protein, fibre and 'fruit, vegetables and nuts'). The protein score was found to be a good indicator of a range of micronutrients that would otherwise merit inclusion in the model. All measurement criteria were per 100 grams. The final model included various refinements to allow for some anomalous foods: in particular, the protein score was disallowed if the score for 'fruit, vegetables and nuts' was too low.

The model generates a final single score which determines whether the food can be advertised to children. Two threshold levels were set: one threshold for all food products and another for beverages.

Note that the model uses a 100g measure rather than actual serving size. This is justified on the basis that the model is designed to measure the nutritional quality of the food regardless of the way it is eaten. Using a 'per serving' approach would have been possible but to do so introduces several difficulties, not least of which is the fact that serving sizes and consumption patterns are an individual matter and cannot be standardised, especially across different age groups.

Early prototypes of the model gave a score for added sugars (technically non-milk extrinsic sugars), but this was later replaced with a score for total sugar, a move which received substantial support from food manufacturers who said they faced technical difficulties in analysing added sugars and that information on total sugars is a requirement of UK (based on European) food labelling legislation. The contribution of foods high in natural sugars to a balanced diet is addressed through the inclusion of criteria for protein (in which dairy products usually score well) and for fruit and vegetables.

Early prototypes also gave scores for calcium, iron and n-3 poly-unsaturated fatty acids. These were later replaced with a score for protein, primarily to make scoring foods easier (protein levels are required by food labelling legislation but calcium, iron and n-3 polyunsaturated fatty acid levels are not) but also because prototype models which gave a score for protein rather than the other three nutrients gave similar results.

Subsequent to the adoption of the model the British Heart Foundation Health Promotion Research Group have further investigated the validity of the model - and in particular have shown that people in the UK who have less healthy diets consume more of their calories in the form of foods defined as less healthy by the model.

The model was developed for the regulation of food advertising in the UK, and was tested on a range of foods in UK national databases. For use outside the UK the model should be assessed using relevant national food databases, and for international use it should be assessed on a broad range of products from different national cuisines.

Added value and further applications of nutrient profiling

A clear result of using nutrient profiling as a means of assessing eligibility for marketing is that the profiling scheme becomes a driver for product reformulation. Processed foods that fail to meet the criteria permitting their advertising to children might benefit from reformulation, enabling the manufacturer to continue to advertise them. For example, most breakfast cereals promoted on children's television are high in sugar, and some are also high in salt. It is hoped that the controls in marketing may stimulate manufacturers to produce products that are lower in sugar and salt, thereby avoiding the advertising restrictions.

Although developed for restrictions on marketing through broadcast media, the model also has the potential to be used as the basis for developing regulations for non-broadcast advertising and promotion – for example for product placements in films or for internet advertising.

Nutrient profiling models could clearly support a wide range of public health initiatives. They are already used extensively as the basis of food labelling schemes. Note however that the front-of-pack 'traffic light' labelling scheme recommended for use by the UK Food Standards Agency uses a different nutrient profiling scheme than the one that has been developed for restrictions on marketing of foods to children. The three 'traffic light' colours indicate high, medium and low levels, for each of four nutrients: fat, saturated fats, sugars and salt/sodium. Nutrient profiling could also be used to support labelling in catering outlets, where, for example, traffic light signalling could help customers select healthier items from menus in advance of ordering their food.

In order to prevent poor quality foods from being promoted with health claims on the basis of a single 'good' ingredient, nutrient profiling can be used to decide if a food is sufficiently 'healthy' to be allowed to carry a health claim. The government body responsible for health claims regulation in Australia and New Zealand (Food Standards Australia New Zealand) has adapted the UK Ofcom model for assessing whether foods should be allowed to carry health claims. Their site includes a calculator that returns a score from the model (http://www.foodstandards.gov.au/foodmatters/healthnutritionandrelatedclaims/nutrientprofilingcal3499.cfm). The European Commission is also in the process of developing a nutrient profiling scheme that would define which foods may carry a permitted nutrition or health claim.

The use of nutrient profiling can be extended to contractual relationships: for example the quality criteria for products supplied for school meal services and institutional catering in the workplace. The health sector, armed service, prisons and elderly care could include nutritional profiling standards, which in turn could be used for contract compliance and for health impact assessments of meal service policies.

Fiscal policies designed to benefit public health may, if they are considered appropriate, also benefit from using nutrient profiling as an assessment tool. One criticism made of the suggestion to impose a tax on foods such as soft drinks and snack foods is the difficulty of administering the tax because of the problem of defining what constitutes a soft drink, a snack food, etc. Nutrient profiling provides a method for categorising foods for taxation or subsidy. A taxation system based on nutrient profiling would also encourage manufacturers to reformulate their recipes and adjust their product portfolio.

The UK Ofcom nutrient profiling model in detail

The model provides a single score for any given food product, based on calculating the number of points for 'negative' nutrients which can be offset by points for 'positive' nutrients. Points are allocated on the basis of the nutritional content in 100g of a food or drink.

There are three steps to working out the overall score for the food or drink.

1. Calculate the total 'A' points

A maximum of ten points can be awarded for each ingredient (energy, saturated fat, sugar and sodium). The total 'A' points are the sum of the points scored for each ingredient.

Total 'A' points = [points for energy] + [points for saturated fat] + [points for sugars] + [points for sodium]

Points	Energy (kJ)	Sat Fat (g)	Total Sugar (g)	Sodium (mg)
0	≤ 335	≤ 1	≤ 4.5	≤ 90
1	>335	>1	>4.5	>90
2	>670	>2	>9	>180
3	>1005	>3	>13.5	>270
4	>1340	>4	>18	>360
5	>1675	>5	>22.5	>450
6	>2010	>6	>27	>540
7	>2345	>7	>31	>630
8	>2680	>8	>36	>720
9	>3015	>9	>40	>810
10	>3350	>10	>45	>900

If a food or drink scores 11 or more 'A' points then it cannot score points for protein unless it also scores 5 points for fruit, vegetables and nuts.

2. Calculate the total 'C' points

A maximum of five points can be awarded for each ingredient. The total 'C' points are the sum of the points for each ingredient (note that you should choose one or other of the dietary fibre columns according to how the fibre content of the food or beverage was calculated).

Total 'C' points = [points for fruit, vegetables and nut content] + [points for fibre (either NSP or AOAC)] + [points for protein]

NB. Guidance on scoring fruit, vegetables and nut content is available from the Food Standards Agency (http://www.foodstandards.gov.uk/multimedia/pdfs/nutprofpguide.pdf).

Points	Fruit, Veg & Nuts (%)	NSP Fibre (g)	or AOAC Fibre (g)	Protein (mg)
0	≤ 40	≤ 0.7	≤ 0.9	≤ 1.6
1	>40	>0.7	>0.9	>1.6
2	>60	>1.4	>1.9	>3.2
3	-	>2.1	>2.8	>4.8
4	-	>2.8	>3.7	>6.4
5	>80	>3.5	>4.7	>8.0

3. Calculate the overall score

If a food scores less than 11 'A' points then the overall score is calculated as follows:

Overall score = [total 'A' points] minus [total 'C' points].

If a food scores 11 or more 'A' points but scores 5 points for fruit, vegetables and nuts then the overall score is calculated as follows:

Overall score = [total 'A' points] minus [total 'C' points]

If a food scores 11 or more 'A' points but also scores less than 5 points for fruit, vegetables and nuts then the overall score is calculated without reference to the protein value, as follows:

Overall score = [total 'A' points] minus [fibre points + fruit, vegetables and nuts points only]

The model can be adjusted to take account of changes in public health nutritional policy. Within the model any threshold can be defined according to the judgment of the policy makers and their scientific advisers. For the purposes of the advertising controls introduced in the United Kingdom:

a **food** is classified as 'less healthy' where it scores **4 points or more**, and

a **drink** is classified as 'less healthy' where it scores **1 point or more**.

Frequently asked questions

There are a number of frequently asked questions about how to use the model to calculate scores for products. One of the most frequently asked questions is: 'What counts as a food and what as a drink?' For the purpose of the model a drink is defined as 'any liquid food, excluding oils, soups, condiments (vinegar, salad cream etc.) and dressings.'

Answers to other questions such as 'Should scores be calculated for products as eaten or as sold?', 'How do you calculate the scores for foods where nutritional information is provided by volume rather than weight?' and worked examples are available in technical advice provided by the Food Standards Agency (http://www.food.gov.uk/multimedia/pdfs/techguidenutprofiling.pdf).

The model can be adjusted so that points for foods and drinks fall on a scale from 1 to 100 where 1 is the least healthy and 100 is the most healthy product using a simple formula: NUTRITION PROFILING INDEX SCORE = (-2)*OLD SCORE + 70

The table below gives an indication of how the model categorises foods.

Examples of foods that can and cannot be advertised according to the UK Ofcom nutrient profiling model

Foods that can be advertised (points <4 for foods; <1 for drinks)	**Foods that cannot be advertised (score ≥4 for foods; score ≥1 for drinks)**
Wholemeal and white bread	Potato crisps including low fat
Muesli and wheat biscuit cereal with no added sugar	Most breakfast cereals
Fresh fruit	Cheddar cheese, half and full fat
Most nuts	Butter and margarine
Takeaway salads with no dressing or croutons	Most sausages and burgers
Most brands of baked beans	Raisins and sultanas
Some brands of baked oven chips	Cookies
Some brands of chicken nuggets	Confectionary
Fish fingers	French fries
Chicken breast	Peanut butter
Unsweetened fruit juice	Mayonnaise, reduced and full calorie
Skimmed, semi-skimmed and whole milk	Most pizzas
Diet cola	Sweetened milkshakes
	Cola and other carbonated sweetened drinks

Note that some of these classifications depend on the particular recipe for the product.

Source: Annex II of Rayner M, Scarborough P, Boxer A, Stockley L. Nutrient profiles: Development of final model. London: Food Standards Agency, 2005. (http://www.food.gov.uk/multimedia/pdfs/nutprofr.pdf)

Annotated reading list about the UK Ofcom nutrient profile model

The history of the model.

These reports describe the development of the UK Ofcom nutrient profiling model.

1. Rayner M, Scarborough P, Stockley L. Nutrient Profiles: Options for definitions for use in relation to food promotion and children's diets. London: Food Standards Agency, 2004. http://www.food.gov.uk/multimedia/pdfs/nutrientprofilingfullreport.pdf
2. Stockley L. Report on a scientific workshop to assess the Food Standards Agency's proposed approach to nutrient profiling. London: Food Standards Agency, 2005. http://www.food.gov.uk/multimedia/pdfs/nutprofworkshop250205.pdf
3. Rayner M, Scarborough P, Stockley L, Boxer A. Nutrient Profiles: Further refinement and testing of model SSCg3d. London: Food Standards Agency, 2005. http://www.food.gov.uk/multimedia/pdfs/npreportsept05.pdf
4. Rayner M, Scarborough P, Boxer A, Stockley L. Nutrient profiles: Development of final model. London: Food Standards Agency, 2005. http://www.food.gov.uk/multimedia/pdfs/nutprofr.pdf

The model was agreed at a board meeting of the UK Food Standards Agency held on 13th October 2005. See the minutes of this meeting. http://www.food.gov.uk/aboutus/ourboard/boardmeetings/boardmeetings2005/boardmeeting101305/boardminutes131005

Ofcom agreed to use the model in February 2007. See Office of communications. Television Advertising of Food and Drink Products to Children Final statement. London: Ofcom, 2007. http://www.ofcom.org.uk/consult/condocs/foodads_new/statement/statement.pdf

In 2007 the UK Food Standards Agency set up an Independent Review Panel to assess 'the effectiveness of the nutrient profiling model at differentiating foods on the basis of their nutrient composition'. As part of that review the BHF Health Promotion Research Group was commissioned to carry out a review of nutrient profiling models. See:

5. Stockley L, Rayner M, Kaur A . Nutrient profiles for use in relation to food promotion and children's diet: Update of 2004 literature review. London: Food Standards Agency, 2008. http://www.food.gov.uk/healthiereating/advertisingtochildren/nutlab/nutprofilereview/nutprofilelitupdatedec07

The Independent Review Panel finished its work in March 2009. See the report of their review for a board meeting of the UK Food Standards Agency of 25th March 2009. http://www.food.gov.uk/multimedia/pdfs/board/fsa090306v2.pdf

At this meeting the UK Food Standards Agency accepted the finding of the Independent Review Panel 'that the nutrient profiling model was generally scientifically robust and fit for purpose' and considered that there was no need to modify the model for the time being. See the minutes of this meeting. http://www.food.gov.uk/multimedia/pdfs/board/boardmins090325.pdf

Papers on the model published in peer-reviewed journals

Meanwhile the BHF Health Promotion Research Group has published a series of papers relating to the development of the model and its validation. These publications include the following:

6. Rayner M, Scarborough P, Williams C. The origin of Guideline Daily Amounts and the Food Standards Agency's guidance on what counts as 'a lot' and 'a little'. *Public Heath Nutrition* 2003: 7 (4); 549-556.
7. Scarborough P, Rayner M, Stockley L. Developing nutrient profile models: a systematic approach. *Public Health Nutrition* 2007: 10; 330-336.
8. Scarborough P, Rayner M, Stockley , Black A. Nutrition professionals' perception of the 'healthiness' of individual foods, *Public Health Nutrition* 2007: 10; 346-353.
9. Scarborough P, Boxer A, Rayner M, Stockley L. Testing nutrient profile models using data from a survey of nutrition professionals, *Public Health Nutrition* 2007: 10; 337-345.
10. Arambepola C, Scarborough M, Rayner M. Validating a nutrient profile model, *Public Health Nutrition* 2008: 11; 371–378.
11. Arambepola C, Scarborough P, Boxer A, Rayner M. Defining 'low in fat' and 'high in fat' when applied to a food. *Public Health Nutrition* 2009: 12: 341-350.

And other papers have discussed the model including:

Azais-Braesco, V, Goffi, C, Labouze, E. Nutrient profiling: comparison and critical analysis of existing systems. *Public Health Nutrition* 2006; 9(5): 613–622.

Lobstein T, Davies S. Defining and labelling 'healthy' and 'unhealthy' food. *Public Health Nutrition* 2009: 12; 331-340.

Calculation of Cereal FACTS Index

The Cereal FACTS Index synthesizes the nutrition and marketing exposure information presented in this report to provide one overall score for each child and family brand.

Individual Components and Measures

A. Nutrition Multiplier: NPI Score

B. In-store Marketing Exposure: % of Total Shelf Facings

C. Adult Marketing Exposure:

1. Advertising Spending Without TV*
2. TV GRPs 18-49 Years*

D. Youth Marketing Exposure:

1. TV GRPs 2-5 Years*
2. TV GRPs 6-11 Years*
3. TV GRPs 12-17 Years*
4. TV GRPs African American 2-17 Years*
5. TV GRPs Spanish Language 2-17 Years*
6. Website GRP Equivalent: 2-11 Years**
7. Website GRP Equivalent: 12-17 Years**
8. Website GRP Equivalent: African American 2-17 Years**
9. Third Party Advertising GRP Equivalent***

Procedure

1. To award positive points for marketing cereals with good overall nutrition quality and negative points for marketing cereals with poor nutrition quality, we subtracted 62 from the NPI score to produce a positive or negative Nutrition Multiplier.

   A1 = NPI Score - 62

2. To combine the three marketing score components, we first standardized the results for the individual components.

   a) For In-store Marketing Exposure, we calculated *z* scores for % of Total Shelf Facings:

   B1 = *z* (% of Total Shelf Facings)

   b) For Adult Marketing Exposure, we calculated separate *z* scores for both Advertising Spending Without TV and TV GRPs 18-49 Years. We then calculated a weighted average according to total television advertising spending (90%) versus all other advertising spending (10%).

   C1 = (0.1 * *z*(Advertising Spending Without TV) + (0.9 * *z*(TV GRPs 18-49 Years))

   c) For Youth Marketing Exposure, we first multiplied the youth GRP measures by the appropriate age multipliers. We then summed all youth GRP measures. Finally, we calculated the *z* score for the resulting sum of GRPs.

   D1 =

   z {TV GRPs 2-5 Years * 5

   + TV GRPs 6-11 Years * 2

   + TV GRPs 12-17 Years

   + TV GRPs African American 12-17 Years

   + TV GRPs Spanish Language 2-17 Years

   + Website GRP Equivalents: 2-11 Years * 2

   + Website GRP Equivalents: 12-17 Years

   + Website GRP Equivalents: African American 2-17 Years

   + Third Party Advertising GRP Equivalents}

3. We then added the number required to bring the lowest resulting *z* score to zero in each of the above standardized marketing score components (B1, C1 and D1) to achieve a score that ranged from 0 and higher.

   B2 = B1 + .89

   C2 = C1 + .55

   D2 = D1 + .63

4. We then calculated a weighted average Marketing Exposure score according to the assigned component weightings.

   EWtd = (B2*.15) + (C2*.15) + (D2*.7)

5. We then multiplied the Nutrition Multiplier by the Marketing Exposure score to produce an overall nutrition and marketing score.

   F = EWtd * A1

6. Finally, we indexed the resulting scores to produce an Index from 0 (worst overall combined nutrition/marketing score) to 100 (best overall score), with 75 equivalent to a neutral score of 0.

   Index = 2*F + 75

* The Nielsen Company (2009)
**comScore Media Metrix Key Measures Report
***comScore Ad Metrix Advertiser Report

Calculating GRP Equivalents

To combine comparable exposure numbers for television and the internet, we calculated GRP equivalents for young people's exposure to cereal company websites and advertising on third party websites (i.e., % of young people exposed X number of times exposed X 100). To provide a comparable time period to the television exposure data, we calculated GRP equivalents over 15 months.

Website GRP Equivalent calculation

Measures from comScore Media Metrix Key Reports:

- Total Unique Visitors to the website for each month (u_c)
- Average Visits per Visitor for each month (v)
- Average Minutes per Visit to the website for each month (m)
- Total Number of Months for which data are available (n)
- Total Unique Visitors to the Internet for each month (u_i)

1. We first divided the Total Unique Visitors to the website for each month by Total Unique Visitors to the Internet for the same month. We then multiplied this quotient by the Average Visits per Visitor to the website in the same month and multiplied the resulting number by 100. This number is the Reach X Visits for one month (RV).

   RV = u_c*v*100/ u_i

2. We then calculated the Average Reach X Visits (ARV) for all available months and multiplied the average monthly number by 15 to create a 15-month total (TRV).

   ARV = sum (RV)/n

   TRV = 15*ARV

3. We then converted the Average Minutes per Visit to the website to :30 sec TV Ad Equivalents (TAE). For example, if the average visit to the website lasted 15 minutes, those 15 minutes spent on the website were equivalent to 30 :30 sec television ads. We then multiplied TRV by TV Ad Equivalents to create the final 15-month Website GRP Equivalent.

   TAE = m*2

   Website GRP Equivalent = TRV*TAE

4. Finally, for Millsberry.com and Postopia.com, we allocated the Website GRP Equivalents to individual brands according to the percentage of pages that mentioned the brand.

   - Allocations for Millsberry.com: Reeses Puffs (9.0%), Trix (82.0%), Lucky Charms (79.6%), Honey Nut Cheerios (79.0%) and Cinnamon Toast Crunch (7.2%)
   - Allocations for Postopia.com: Fruity and Cocoa Pebbles (100%) and Honeycomb (97.3%).

Third Party Advertising GRP Equivalent calculation

Measures from comScore Ad Metrix Advertising Report:

- Total Number of Ad Views on youth websites for each month (ad_yw)
- Total Number of Months for which data are available (n)
- Average number of Unique Visitors to the Internet (avg_u_i)

1. We first calculated the total Number of Ad Views for each child cereal brand that appeared on youth websites, and created a monthly average according to the Number of Months that data that were available (AAV).

   AAV = sum (ad_yw)/n

2. We then multiplied the monthly average times 15 to create a 15-month total (TAV).

   TAV = 15*AAV

3. We then divided TAV by the Average number of Unique Visitors to the Internet, ages 2-11, for the 15-month time period and multiplied the quotient by 100 for the Third Party Advertising GRP Equivalent.

   Third Party Advertising GRP Equivalent = TAV / avg_u_i

4. Finally, for Millsberry.com and Postopia.com, we allocated the Third Party Advertising GRP Equivalents to individual brands according to the percentage of pages that mentioned the brand.

   Allocations for Millsberry.com: Reeses Puffs (9.0%), Trix (82.0%), Lucky Charms (79.6%), Honey Nut Cheerios (79.0%) and Cinnamon Toast Crunch (7.2%)

   Allocations for Postopia.com: Fruity and Cocoa Pebbles (100%) and Honeycomb (97.3%).

		Nutrition Component	In-store Marketing Exposure	Adult Marketing Exposure	Youth Marketing Exposure									
					Television advertising*						Cereal websites for children**			Advertising on third party websites***
Company	Brand	NPI Score	% of Total Shelf Facings	Advertising Spending Without TV	TV GRPs 18-49 Years	TV GRPs 2-5 Years	TV GRPs 6-11 Years	TV GRPs 12-17 Years	TV GRPs African American 2-17 Years	TV GRPs Spanish-language 2-17 Years	Website GRP Equivalent: 2-11 Years	Website GRP Equivalent: 12-17 Years	Website GRP Equivalent: African American 2-17 Years	Third Party Advertising GRP Equivalent
General Mills	Lucky Charms	36	1.38%	2782	1066	7110	7828	3306	6890	0	3325	3175	8671	9636
General Mills	Cinnamon Toast Crunch	37	1.47%	1959	1959	7538	8169	3945	7584	0	300	286	782	665
General Mills	Honey Nut Cheerios	44	1.93%	975	3186	7343	7992	4333	7450	1182	3300	3151	8606	8066
General Mills	Trix	38	0.97%	567	814	5470	5827	2471	5161	0	3425	3271	8932	7597
General Mills	Reese's Puffs	34	0.81%	1054	706	4748	5168	2185	4584	0	391	371	1011	3399
General Mills	Cocoa Puffs	39	1.22%	74	927	6291	6801	2868	6050	0	0	0	0	0
Post	Fruity or Cocoa Pebbles	38	1.58%	319	722	4557	5397	2309	4796	0	872	373	661	104
Kellogg	Frosted Flakes	43	2.56%	2610	1493	5288	5782	2840	5669	488	8	3	19	66
Kellogg	Corn Pops	36	1.43%	453	906	3882	4441	2668	4624	0	10	4	9	463
Kellogg	Froot Loops	38	1.94%	923	646	3957	4271	1807	3947	0	16	5	21	589
Kellogg	Apple Jacks	40	1.27%	1164	513	3162	3471	1474	3196	0	33	20	46	802
General Mills	Cookie Crisp	40	0.84%	900	462	3099	3389	1418	3008	0	3	2	10	0
Kellogg	Rice or Cocoa krispies	44	2.50%	3148	3031	1135	1308	2038	2347	0	6	6	4	0
General Mills	Cheerios (excluding Honey Nut)	52	5.27%	4421	4568	1528	1873	2677	2042	391	5	3	5	0
Post	Honeycomb	46	0.69%	283	587	3297	4005	1815	3513	0	849	363	643	101
Quaker	Cap'n Crunch	37	2.17%	278	0	0	0	0	0	0	0	0	0	0
General Mills	Chex	44	2.24%	2914	165	40	54	74	0		3	5	10	0
Quaker	Life	53	2.10%	4811	839	334	423	645	630	0	0	0	0	0
General Mills	Golden Grahams	36	0.83%	0	0	0	0	0	0	0	0	0	0	0
General Mills	Kix	53	1.36%	103	0	0	0	0	0	0	0	0	0	0
Kellogg	Honey Smacks	46	0.55%	0	0	0	0	0	0	0	0	0	0	0
Post	Raisin Bran	48	0.62%	0	0	0	0	0	0	0	0	0	0	0
Barbara's Bakery	Puffins	52	0.64%	72	23	4	5	6	0	0	0	0	0	0
Nature's Path	Envirokidz organic	51	0.61%	251	0	0	0	0	0	0	0	0	0	0
Post	Golden Crisp	46	0.25%	0	0	0	0	0	0	0	0	0	0	0
Cascadian Farm	Honey Nut O's	44	0.21%	0	0	0	0	0	0	0	0	0	0	0
Annie's	Bunnies	51	0.28%	0	0	0	0	0	0	0	0	0	0	0
Post	Alpha Bits	46	0.19%	0	0	0	0	0	0	0	0	0	0	0
Kellogg	Cookie Crunch	40	0.13%	0	0	0	0	0	0	0	0	0	0	0
Kellogg	Disney High School Musical	44	0.12%	0	0	0	0	0	0	0	0	0	0	0
Kellogg	Smorz	38	0.10%	0	0	0	0	0	0	0	0	0	0	0
Cascadian Farm	Purely O's	46	0.12%	0	0	0	0	0	0	0	0	0	0	0

continued

		Nutrition Component	In-store Marketing Exposure	Adult Marketing Exposure	Youth Marketing Exposure									
					Television advertising*						Cereal websites for children**			Advertising on third party websites***
Company	Brand	NPI Score	% of Total Shelf Facings	Advertising Spending Without TV	TV GRPs 18-49 Years	TV GRPs 2-5 Years	TV GRPs 6-11 Years	TV GRPs 12-17 Years	TV GRPs African American 2-17 Years	TV GRPs Spanish-language 2-17 Years	Website GRP Equivalent: 2-11 Years	Website GRP Equivalent: 12-17 Years	Website GRP Equivalent: African American 2-17 Years	Third Party Advertising GRP Equivalent
Cascadian Farm	Cinnamon Crunch	50	0.14%	0	0	0	0	0	0	0	0	0	0	0
Kashi	Honey Sunshine	56	0.23%	0	0	0	0	0	0	0	0	0	0	0
Kellogg	Hannah Montana	54	0.18%	0	0	0	0	0	0	0	0	0	0	0
Post	Waffle Crisp	44	0.08%	0	0	0	0	0	0	0	0	0	0	0
Barbara's Bakery	Organic Wild Puffs	58	0.11%	0	0	0	0	0	0	0	0	0	0	0
General Mills	Dora the Explorer	50	0.06%	0	0	0	0	0	0	0	0	0	0	0
Cascadian Farm	Clifford Crunch	54	0.06%	0	0	0	0	0	0	0	0	0	0	0
Kashi	Mighty bites	56	0.03%	0	0	0	0	0	0	0	0	0	0	0
Kellogg	MINI-Swirlz	44	0.04%	0	0	0	0	0	0	0	0	0	0	0
General Mills	Count Chocula	38	0.04%	0	0	0	0	0	0	0	0	0	0	0
Kellogg	Mini-Wheats	72	3.21%	10859	4006	1270	1666	2685	2964	0	0	0	0	0
General Mills	Millsberry*										4175	3987	10888	9260
Post	Postopia*										872	373	661	104

Notes

Millsberry Numbers were allocated to Reeses Puffs (9.0%), Trix (82.0%), Lucky charms (79.6%), Honey nut cheerios (79.0%) and Cinnamon Toast crunch (7.2%)

Postopia Numbers were allocated to Fruity or Cocoa Pebbles (100%) and Honeycomb (97.3%)

*©The Nielsen Company

**Calculated using data from comScore Media Metrix Key Measures Report

***Calculated using data from comScore Ad Metrix Advertisers Report

						Nutrition Information							Change in Nutrition Quality			
Company	Brand	Cereal	Target Market	% of Stores Stocking	Approved by CBBB	NPI Score (5/31/09)	Sugar (% of g)	Fiber (% of g)	Sodium (mg per 100 g)	Artificial Sweeteners	Food Dyes	Former NPI Score (2/1/06)	Change in Score	New Cereals	Brand Extensions
Annie's	Bunnies			33.5%										50	
Annie's	Bunnies	Bunny Love	Family	10.5%		58	6.7%	10.0%	600	No	No				
Annie's	Bunnies	Chocolate and Vanilla Bunnies	Family	11.3%		46	25.0%	3.1%	594	No	No				
Annie's	Bunnies	Cinna Bunnies	Family	15.0%		46	26.7%	3.3%	600	No	No				
Annie's	Bunnies	Fruity Bunnies	Family	12.0%		46	30.0%	3.3%	533	No	No				
Annie's	Bunnies	Honey Bunnies	Family	29.0%		54	21.9%	6.3%	500	No	No				
Barbara's Bakery				61.8%										60.6	
Barbara's Bakery	Organic Wild Puffs													58	
Barbara's Bakery	Organic Wild Puffs	Cocoa Graham	Family	3.0%		58	23.3%	10.0%	267	No	No				
Barbara's Bakery	Organic Wild Puffs	Crunchy Cocoa	Family	6.0%		58	23.3%	10.0%	267	No	No				
Barbara's Bakery	Organic Wild Puffs	Fruit Medley	Family	13.5%		58	23.3%	10.0%	267	No	No				
Barbara's Bakery	Organic Wild Puffs	Honey	Family	7.8%		58	23.3%	10.0%	267	No	No				
Barbara's Bakery	Puffins			56.3%										68	
Barbara's Bakery	Puffins	Cinnamon	Family			54	20.0%	20.0%	500	No	No				
Barbara's Bakery	Puffins	Honey Rice	Family			56	20.0%	6.7%	417	No	No				
Barbara's Bakery	Puffins	Peanut Butter	Family			46	20.0%	6.7%	767	No	No				
Barbara's Bakery	Puffins	Original	Family			50	18.5%	18.5%	704	No	No				
Barbara's Bakery	Shredded Oats			47.8%										50	
Barbara's Bakery	Shredded Oats	Cinnamon Crunch	Adult			50	27.3%	7.3%	400	No	No				
Barbara's Bakery	Shredded Oats	Vanilla Almond	Adult			52	27.3%	7.3%	382	No	No				
Barbara's Bakery	Shredded Oats	Original	Adult			72	5.2%	8.6%	448	No	No				
Barbara's Bakery	Shredded Spoonfuls	Multigrain	Adult	45.8%		54	15.6%	12.5%	625	No	No				
Barbara's Bakery	Shredded Wheat		Adult	34.5%		82	0.0%	12.5%	0	No	No				
Barbara's Bakery	Ultima Organic		Adult	29.8%										66	
Barbara's Bakery	Ultima Organic	Flax and Granola	Adult			58	16.4%	9.1%	436	No	No				
Barbara's Bakery	Ultima Organic	High Fiber	Adult			70	16.7%	26.7%	433	No	No				
Cascadian Farm				70.5%										56.34	37.6
Cascadian Farm	Cinnamon Crunch		Family	35.3%		50	29.6%	11.1%	389	No	No			50	
Cascadian Farm	Clifford Crunch		Child	17.0%		54	20.0%	16.7%	533	No	No				
Cascadian Farm	Fiber Right	Honey Clusters	Adult	34.3%		58	22.6%	17.0%	255	No	No				
Cascadian Farm	Granola			54.8%										53.34	
Cascadian Farm	Granola	Cinnamon Raisin	Adult			50	29.1%	5.5%	364	No	No				
Cascadian Farm	Granola	Fruit & Nut	Adult			54	26.9%	5.8%	183	No	No				
Cascadian Farm	Granola	Maple Brown Sugar	Adult			54	25.5%	5.5%	291	No	No				
Cascadian Farm	Granola	Oats & Honey	Adult			54	23.6%	5.5%	218	No	No				
Cascadian Farm	Hearty Morning		Adult	30.8%		48									
Cascadian Farm	Honey Nut O's		Family	48.5%		44	26.7%	6.7%	833	No	No				
Cascadian Farm	Multi-Grain Squares		Adult	49.8%		70	13.3%	6.7%	383	No	No				

continued

						Nutrition Information						Change in Nutrition Quality			
Company	Brand	Cereal	Target Market	% of Stores Stocking	Approved by CBBB	NPI Score (5/31/09)	Sugar (% of g)	Fiber (% of g)	Sodium (mg per 100 g)	Artificial Sweeteners	Food Dyes	Former NPI Score (2/1/06)	Change in Score	New Cereals	Brand Extensions
Cascadian Farm	Purely O's		Family	26.8%		46	3.3%	10.0%	933	No	No				
Cascadian Farm	Raisin Bran		Adult	38.5%		50	25.5%	10.9%	618	No	No				
Cascadian Farm	Vanilla almond crunch		Adult	26.3%		48	31.4%	5.9%	412	No	No				
Dorset cereals	Dorset cereals			4.3%										60	
Dorset cereals	Dorset cereals	Berries & Cherries	Adult			54	41.8%	5.5%	9	No	No				
Dorset cereals	Dorset cereals	Fruit Nut & Fiber	Adult			52	27.3%	9.1%	36	No	No				
Dorset cereals	Dorset cereals	Simply Delicious Muesli	Adult			76	12.7%	7.3%	27	No	No				
Dorset cereals	Dorset cereals	Super Cranberry Cherry Almond	Adult			58	30.9%	7.3%	164	No	No				
General Mills				100.0%										47.24	46.22
General Mills	Basic 4		Adult	81.5%		50	25.5%	5.5%	582	No	No	50	0		
General Mills	Boo Berry		Family	0.8%		40	36.4%	3.0%	576	No	Yes	34	6		
General Mills	Cheerios: Honey Nut		Child	95.5%	Yes	44	32.1%	7.1%	679	No	No	44	0		
General Mills	Cheerios													46	
General Mills	Cheerios	Apple Cinnamon	Family	81.8%		44	40.0%	3.3%	400	No	No	40	4		
General Mills	Cheerios	Banana Nut	Family	91.3%		42	32.1%	3.6%	571	No	No				
General Mills	Cheerios	Berry Burst	Family	27.3%		48	29.6%	7.4%	630	No	No	44	4		
General Mills	Cheerios	Frosted	Family	84.0%		46	35.7%	7.1%	607	No	No				
General Mills	Cheerios	Fruity	Family	77.5%		48	33.3%	7.4%	500	No	Yes				
General Mills	Cheerios	Multigrain	Family	91.0%		50	20.7%	10.3%	690	No	No	50	0		
General Mills	Cheerios	Oat Cluster Crunch/ Crunch	Family	80.3%		50	29.6%	7.4%	500	No	No				
General Mills	Cheerios	(Regular)	Family	98.3%		58	3.6%	10.7%	679	No	No	58	0		
General Mills	Cheerios	Yogurt Burst (all)		54.8%											
General Mills	Cheerios	Yogurt Burst Strawberry	Family			46	30.0%	6.7%	600	No	No	36	10		
General Mills	Cheerios	Yogurt Burst Vanilla	Family			46	30.0%	6.7%	600	No	No	36	10		
General Mills	Chex													36	43.34
General Mills	Chex	Chocolate	Family	60.3%		46	25.0%	3.1%	750	No	No				
General Mills	Chex	Cinnamon	Family	69.3%		38	26.7%	0.0%	633	No	Yes				
General Mills	Chex	Corn	Family	83.8%		44	9.7%	3.2%	935	No	No	44	0		
General Mills	Chex	Honey Nut	Family	38.8%		42	28.1%	3.1%	719	No	No	32	10		
General Mills	Chex	Multi-Bran	Family	20.3%		50	21.3%	12.8%	660	No	No	50	0		
General Mills	Chex	Rice	Family	91.0%		42	7.4%	0.0%	926	No	No	44	-2		
General Mills	Chex	Strawberry	Family	33.8%		42	25.8%	3.2%	645	No	Yes				
General Mills	Chex	Wheat	Family	84.3%		52	10.6%	10.6%	723	No	No	50	2		

continued

						Nutrition Information						Change in Nutrition Quality			
Company	Brand	Cereal	Target Market	% of Stores Stocking	Approved by CBBB	NPI Score (5/31/09)	Sugar (% of g)	Fiber (% of g)	Sodium (mg per 100 g)	Artificial Sweeteners	Food Dyes	Former NPI Score (2/1/06)	Change in Score	New Cereals	Brand Extensions
General Mills	Cinnamon Toast Crunch	Reduced Sugar	Child	6.3%		58	6.7%	10.0%	567	sucralose	No	58	0		
General Mills	Cinnamon Toast Crunch	(Regular)	Child	95.3%	Yes	36	32.3%	3.2%	710	No	No	36	0		
General Mills	Cocoa Puffs													44	
General Mills	Cocoa Puffs	combos	Child	71.8%	Yes	40	40.7%	3.7%	593	No	No				
General Mills	Cocoa Puffs	(Regular)	Child	96.0%	Yes	38	44.4%	3.7%	556	No	No	36	2		
General Mills	Cookie Crisp														
General Mills	Cookie Crisp	Double Chocolate	Child	17.3%		36	38.7%	3.2%	452	No	No				
General Mills	Cookie Crisp	(Regular)	Child	93.8%	Yes	40	42.3%	3.8%	577	No	No	36	4		
General Mills	Count Chocula		Family	10.8%		38	44.4%	3.7%	593	No	Yes	34	4		
General Mills	Country Cornflakes		Adult	2.8%		44	9.1%	3.0%	909	No	No	46	-2		
General Mills	Curves			3.3%										53.34	54
General Mills	Curves	Fruit & Nut Crunch	Adult			54	20.4%	10.2%	490	No	No				
General Mills	Curves	Honey Crunch	Adult			54	17.0%	9.4%	547	No	No				
General Mills	Curves	Whole Grain Crunch	Adult			52	14.8%	7.4%	667	No	No				
General Mills	Dora the Explorer		Child	11.8%		50	22.2%	11.1%	667	No	No				
General Mills	Fiber One			97.0%										45.34	51.76
General Mills	Fiber One	Caramel Delight	Adult			34	20.0%	18.0%	520	No	No				
General Mills	Fiber One	Frosted Shredded Wheat	Adult			74	20.0%	15.0%	317	Sucralose	No				
General Mills	Fiber One	Honey Clusters	Adult			70	11.5%	25.0%	538	No	No	70	0		
General Mills	Fiber One	Original (Bran)	Adult			78	0.0%	46.7%	350	Aspartame	No	78	0		
General Mills	Fiber One	Raisin Bran Clusters	Adult			54	23.6%	20.0%	473	No	No				
General Mills	Franken Berry		Family	1.0%		54	36.4%	3.0%	576	No	Yes	26	28		
General Mills	Golden Grahams		Family	92.3%		36	35.5%	3.2%	871	No	No	32	4		24
General Mills	Kaboom		Family	2.5%		50	18.8%	12.5%	656	No	Yes	44	6		
General Mills	Kix													50	
General Mills	Kix	Berry Berry	Family	11.0%		48	30.8%	3.8%	692	No	Yes	44	4		
General Mills	Kix	Honey	Family	65.5%		50	18.2%	9.1%	697	No	No				
General Mills	Kix	(Regular)	Family	95.0%		54	10.0%	10.0%	700	No	No	46	8		
General Mills	Lucky Charms													36	
General Mills	Lucky Charms	Berry	Child	2.0%	Yes	36	41.4%	3.4%	655			38	-2		
General Mills	Lucky Charms	(Regular)	Child	97.0%	Yes	36	40.7%	3.7%	704	No	Yes	34	2		
General Mills	Lucky Charms	Chocolate	Child	12.3%	Yes	36	42.9%	3.6%	571	No	Yes	36	0		
General Mills	Nature Valley													54	40.88
General Mills	Nature Valley	Oats & Honey	Adult	0.5%		52	27.6%	6.9%	379	No	No				
General Mills	Nature Valley	Vanilla Nut	Adult	0.3%		54	30.0%	6.0%	360	No	No				
General Mills	Oatmeal Crisp			67.3%											

continued

						Nutrition Information						Change in Nutrition Quality			
Company	Brand	Cereal	Target Market	% of Stores Stocking	Approved by CBBB	NPI Score (5/31/09)	Sugar (% of g)	Fiber (% of g)	Sodium (mg per 100 g)	Artificial Sweeteners	Food Dyes	Former NPI Score (2/1/06)	Change in Score	New Cereals	Brand Extensions
General Mills	Oatmeal Crisp	Crunchy Almond	Adult			58	26.7%	6.7%	217	No	No	48	10		
General Mills	Oatmeal Crisp	Hearty Raisin	Adult			56	32.3%	6.5%	218	No	No	50	6		
General Mills	Raisin Nut Bran		Adult	79.0%		48	28.6%	10.2%	469	No	No	50	-2		
General Mills	Reese's Puffs		Child	93.0%	Yes	34	41.4%	3.4%	621	No	Yes	34	0		
General Mills	Total													52.4	
General Mills	Total	Cinnamon Crunch	Adult	84.0%		58	17.6%	7.8%	392	No	No				
General Mills	Total	Cranberry Crunch	Adult	29.0%		50	27.6%	6.9%	397	No	No				
General Mills	Total	Honey Clusters	Adult	19.0%		50	27.1%	6.3%	479	No	No	48	2		
General Mills	Total	Raisin Bran	Adult	83.5%		52	32.1%	9.4%	434	No	No	52	0		
General Mills	Total	Whole Grain	Adult	95.5%		52	16.7%	10.0%	633	No	No	52	0		
General Mills	Trix		Child	94.0%	Yes	38	37.5%	3.1%	563	No	Yes	34	4		
General Mills	Wheaties		Adult	90.5%		52	14.8%	11.1%	704	No	No	52	0		
Kashi				98.3%											56.2
Kashi	Granola			47.3%										57	
Kashi	Granola	Cocoa Beach	Adult			54	20.0%	10.9%	218	No	No				
Kashi	Granola	Mountain Medley Granola	Adult			58	21.8%	10.9%	200	No	No				
Kashi	Granola	Orchard Spice	Adult			58	20.0%	10.9%	236	No	No				
Kashi	Granola	Summer Berry	Adult			70	16.4%	10.9%	236	No	No				
Kashi	Shredded Wheat Type			53.5%										76	
Kashi	Shredded Wheat Type	Autumn wheat	Adult			78	13.0%	11.1%	0	No	No				
Kashi	Shredded Wheat Type	Cinnamon Harvest	Adult			74	16.7%	9.3%	0	No	No				
Kashi	Shredded Wheat Type	Island Vanilla	Adult			50	33.3%	22.2%	0	No	No				
Kashi	Flakes	7 Whole Grains Flakes	Adult	31.0%		72	10.0%	12.0%	300	No	No				
Kashi	GoLean		Adult	80.0%		78	11.5%	19.2%	163	No	No				49.6
Kashi	GoLean Crunch!			87.3%											
Kashi	GoLean Crunch!	Honey Almond Flax	Adult			58	22.6%	15.1%	264	No	No				
Kashi	GoLean Crunch!	Original	Adult			70	24.5%	15.1%	179	No	No				
Kashi	Good Friends			53.5%											
Kashi	Good Friends	Cinna Raisin Crunch	Adult			58	26.0%	16.0%	210	No	No				
Kashi	Good Friends	Original	Adult			72	17.0%	22.6%	245	No	No				
Kashi	Heart to Heart			89.0%										64	61
Kashi	Heart to Heart	Honey Toasted Oat	Adult			70	15.2%	15.2%	273	No	No				
Kashi	Heart to Heart	Oat Flakes & Wild Blueberry Clusters	Adult			58	23.6%	7.3%	236	No	No				
Kashi	Honey Puffs	7 Whole Grains Honey Puffs	Adult	44.8%		74	20.0%	6.7%	0	No	No				
Kashi	Honey Sunshine		Family	56.3%		56	20.0%	20.0%	450	No	No			56	
Kashi	Mighty bites		Family	8.3%		56	15.2%	9.1%	485	No	No				
Kashi	Nuggets	7 Whole Grains Nuggets	Adult	17.5%		72	5.2%	12.1%	448	No	No				

continued

						Nutrition Information						Change in Nutrition Quality			
Company	Brand	Cereal	Target Market	% of Stores Stocking	Approved by CBBB	NPI Score (5/31/09)	Sugar (% of g)	Fiber (% of g)	Sodium (mg per 100 g)	Artificial Sweeteners	Food Dyes	Former NPI Score (2/1/06)	Change in Score	New Cereals	Brand Extensions
Kashi	Puffs	7 Whole Grains Puffs	Adult	37.0%		82	0.0%	5.3%	0	No	No				
Kashi	Strawberry Fields		Adult	59.8%		44	28.1%	3.1%	625	No	No				
Kashi	Kashi U		Adult	46.8%		44	18.2%	12.7%	227	No	No			70	
Kashi	Vive	Probiotic Digestive Wellness	Adult	45.5%			18.2%	21.8%	182	No	No				
Kellogg				100.0%										49.66	50.96
Kellogg	All-Bran			93.8%										58	57.56
Kellogg	All-Bran	Bran Buds	Adult			52	26.7%	43.3%	667	No	No	52	0		
Kellogg	All-Bran	Complete Wheat Flakes	Adult			52	17.2%	17.2%	724	No	No				
Kellogg	All-Bran	Extra Fiber	Adult			76	0.0%	50.0%	462	No	No	76	0		
Kellogg	All-Bran	Original	Adult			72	19.4%	32.3%	258	No	No	72	0		
Kellogg	All-Bran	Strawberry Medley	Adult			58	18.2%	18.2%	418	Sucralose	Yes				
Kellogg	All-Bran	Yogurt Bites	Adult			56	12.5%	17.9%	429	Sucralose	No	56	0		
Kellogg	Apple Jacks														
Kellogg	Apple Jacks	Criss Crossed	Child	4.3%											
Kellogg	Apple Jacks	(Regular)	Child	96.3%	Yes	40	42.9%	3.6%	482	No	Yes	38	2		
Kellogg	Cookie Crunch		Family	32.5%	Yes	40	40.0%	3.3%	567	No	Yes			40	
Kellogg	Corn Flakes			96.0%		52	7.1%	3.6%	714	No	No	52	0	46	
Kellogg	Corn Pops (or Pops)		Child							No	No			30	
Kellogg	Corn Pops (or Pops)	Chocolate Peanut Butter	Child	8.0%		30	37.0%	3.7%	778	No	No				
Kellogg	Corn Pops (or Pops)	(Regular)	Child	96.5%	Yes	36	41.4%	0.0%	379	No	No	40	-4		
Kellogg	Cracklin Oat Bran		Adult	75.5%		40	30.6%	12.2%	306	No	No	40	0		
Kellogg	Crispix		Adult	90.3%		48	10.3%	3.4%	759	No	No	48	0		
Kellogg	Disney High School Musical		Child	31.3%	Yes	44	31.0%	3.4%	586	No	Yes			44	
Kellogg	Eggo Cereal						39.4%	6.1%	394	No	Yes				
Kellogg	Eggo Cereal	Cinnamon Toast	Adult	1.5%		40	39.4%	6.1%	394	No	Yes				
Kellogg	Eggo Cereal	Maple Syrup	Adult	18.3%	Yes	44	38.7%	6.5%	484	No	Yes	44	0		
Kellogg	Extra		Adult	1.5%											
Kellogg	Extra Pasion		Adult	0.8%											
Kellogg	Froot Loops													40	42
Kellogg	Froot Loops	Darkberries	Child	0.3%	Yes										
Kellogg	Froot Loops	Double Lemony Loot	Child	4.5%	Yes										
Kellogg	Froot Loops	Fruity Golden Bars	Child	48.3%	Yes	38	41.0%	3.0%	465	No	Yes				
Kellogg	Froot Loops	Marshmallows	Child	15.0%		38	53.3%	3.3%	367	No	Yes	36	2		
Kellogg	Froot Loops	Reduced Sugar	Child	9.0%	Yes	42	31.3%	3.1%	563	No	Yes	42	0		
Kellogg	Froot Loops	(Regular)	Child	96.3%	Yes	38	41.4%	3.4%	466	No	Yes	36	2		
Kellogg	Froot Loops	Smoothie	Child	10.8%	Yes	38	39.3%	3.6%	429	No	Yes				

continued

						Nutrition Information						Change in Nutrition Quality			
Company	Brand	Cereal	Target Market	% of Stores Stocking	Approved by CBBB	NPI Score (5/31/09)	Sugar (% of g)	Fiber (% of g)	Sodium (mg per 100 g)	Artificial Sweeteners	Food Dyes	Former NPI Score (2/1/06)	Change in Score	New Cereals	Brand Extensions
Kellogg	Froot Loops	Starberries	Child	1.0%	Yes	38									
Kellogg	Frosted Flakes													46	
Kellogg	Frosted Flakes	Gold	Child	44.3%	Yes	46	32.3%	9.7%	613	No	No				
Kellogg	Frosted Flakes	Reduced Sugar	Child	23.8%	Yes	46	25.8%	3.2%	581	No	No	46	0		
Kellogg	Frosted Flakes	(Regular)	Child	98.3%	Yes	42	36.7%	3.3%	467	No	No	42	0		
Kellogg	Hannah Montana		Child	43.5%	Yes	54	30.0%	3.3%	133	No	No				
Kellogg	Honey Smacks		Family	85.3%		46	55.6%	3.7%	185	No	No	44	2		
Kellogg	Low Fat Granola														
Kellogg	Low Fat Granola	With Raisins	Adult	17.8%		54	30.0%	5.0%	250	No	No	54	0		
Kellogg	Low Fat Granola	Without Raisins	Adult	13.5%		54	28.6%	6.1%	224	No	No	54	0		
Kellogg	MINI-Swirlz		Family	5.5%	Yes	44	40.0%	3.3%	383	No	Yes	42	2		
Kellogg	Mini-Wheats													66.5	
Kellogg	Mini-Wheats	Frosted/ Big Bite	Family	52.8%	Yes	74	19.6%	9.8%	10	No	No				
Kellogg	Mini-Wheats	Frosted/ Bite Size	Family	92.0%	Yes	74	20.3%	10.2%	8	No	No	74	0		
Kellogg	Mini-Wheats	Frosted/ Blueberry Muffin	Family	89.5%	Yes	70	23.1%	9.6%	0	Sorbitol	Yes				
Kellogg	Mini-Wheats	Frosted/ Cinnamon Streusel	Family	71.5%	Yes	70	23.1%	9.6%	0	No	Yes				
Kellogg	Mini-Wheats	Frosted/ Maple & Brown Sugar	Family	79.3%		70	25.0%	9.6%	0	Sorbitol	No				
Kellogg	Mini-Wheats	Frosted/ Strawberry Delight	Family	93.8%	Yes	70	23.1%	9.6%	0	Sorbitol	Yes				
Kellogg	Mini-Wheats	Unfrosted/ Bite Size	Family	15.8%	Yes	82	1.7%	10.2%	17	No	No				
Kellogg	Mini-Wheats	Little Bites: Chocolate	Family	79.5%	Yes	56	21.8%	10.9%	491	Sorbitol	No				
Kellogg	Mini-Wheats	Little Bites: Honey Nut	Family	79.3%	Yes	70	21.8%	10.9%	364	Sorbitol	Yes				
Kellogg	Mueslix		Adult	30.8%		54	30.9%	7.3%	309	No	No	54	0		
Kellogg	Product 19		Adult	53.8%		50	13.3%	3.3%	700	No	No	50	0		
Kellogg	Raisin Bran													46	
Kellogg	Raisin Bran	Crunch	Adult	93.0%		48	37.7%	7.5%	396	No	No	48	0		
Kellogg	Raisin Bran	Extra	Adult	66.0%		46	23.2%	12.5%	625	No	No				
Kellogg	Raisin Bran	(Regular)	Adult	97.8%		46	32.2%	11.9%	593	No	No	46	0		
Kellogg	Rice or Cocoa Krispies													56	30
Kellogg	Rice or Cocoa Krispies	Cocoa Krispies (All)	Family												42
Kellogg	Rice or Cocoa Krispies	Cocoa Krispies Choconilla	Family	14.5%		34	40.0%	0.0%	533	No	No				
Kellogg	Rice or Cocoa Krispies	Cocoa Krispies (Regular)	Family	89.8%	Yes	40	38.7%	3.2%	516	No	No	34	6		
Kellogg	Rice or Cocoa Krispies	Rice Krispies Frosted	Family	7.3%	Yes	32	40.0%	0.0%	433	No	No				
Kellogg	Rice or Cocoa Krispies	Rice Krispies Jumbo Multi-Grain	Family	50.3%	Yes	56	29.6%	11.1%	630	No	No				

continued

						Nutrition Information						Change in Nutrition Quality			
Company	Brand	Cereal	Target Market	% of Stores Stocking	Approved by CBBB	NPI Score (5/31/09)	Sugar (% of g)	Fiber (% of g)	Sodium (mg per 100 g)	Artificial Sweeteners	Food Dyes	Former NPI Score (2/1/06)	Change in Score	New Cereals	Brand Extensions
Kellogg	Rice or Cocoa Krispies	Rice Krispies Treats	Family	6.5%	Yes	38	30.0%	0.0%	567	No	No	36	2		
Kellogg	Rice or Cocoa Krispies	Rice Krispies (Regular)	Family	97.0%	Yes	44	12.1%	0.0%	667	No	No	38	6		
Kellogg	Rice or Cocoa Krispies	Rice Krispies Strawberries	Family	5.8%	Yes	40	30.0%	0.0%	500	No	No				
Kellogg	Smart Start			87.8%										65	
Kellogg	Smart Start	Cinnamon Raisin	Adult			56	29.4%	7.8%	225	No	No				
Kellogg	Smart Start	Maple & Brown Sugar	Adult			56	28.3%	8.3%	233	No	No	56	0		
Kellogg	Smart Start	Original Antioxidants	Adult			48	28.0%	6.0%	560	No	Yes	48	0		
Kellogg	Smart Start	Strawberry Oat Bites	Adult			74	12.7%	10.9%	236	Sucralose	Yes				
Kellogg	Smart Start	Toasted Oat	Adult			56	28.3%	8.3%	233	No	No	56	0		
Kellogg	Smorz		Family	16.3%		38	43.3%	3.3%	467	No	Yes	38	0		
Kellogg	Special K													42	49.38
Kellogg	Special K	Blueberry	Adult	90.5%		48	25.9%	3.7%	630	No	Yes				
Kellogg	Special K	Chocolatey Delight	Adult	84.0%		32	29.0%	3.2%	581	No	No				
Kellogg	Special K	Cinnamon Pecan	Adult	90.0%		46	23.3%	3.3%	600	No	No				
Kellogg	Special K	Fruit + Yogurt	Adult	92.8%		44	34.4%	3.1%	422	No	Yes	44	0		
Kellogg	Special K	Protein Plus	Adult	75.0%		70	24.1%	17.2%	379	Sucralose	No	72	-2		
Kellogg	Special K	Red Berries	Adult	97.3%		40	29.0%	3.2%	710	No	No	40	0		
Kellogg	Special K	(Regular)	Adult	99.3%		50	12.9%	3.2%	710	No	No	50	0		
Kellogg	Special K	Vanilla Almond	Adult	90.8%		46	30.0%	3.3%	533	No	No	46	0		
Nestle	Fitness	Honey & Almond	Adult	1.3%		38	28.7%	8.7%	833	No	No				
Newman's Own	Sweet Enough			16.5%											
Newman's Own	Sweet Enough	Flake n Strawberry	Adult			54	26.6%	6.7%	433	No	No				
Newman's Own	Sweet Enough	Honey Flax Flakes	Adult			58	26.6%	13.3%	267	No	No				
Newman's Own	Sweet Enough	Honey Nut Os	Adult			50	23.3%	6.7%	567	No	No				
Newman's Own	Sweet Enough	Wheat Puffs	Adult			56	29.6%	3.7%	167	No	No				
Nature's Path				61.8%										56.74	47
Nature's Path	EnviroKidz Organic													54	47
Nature's Path	EnviroKidz Organic	Amazon Frosted Flakes	Child	14.8%		56	20.0%	6.7%	383	No	No				
Nature's Path	EnviroKidz Organic	Gorilla Munch	Child	41.0%		54	26.7%	6.7%	367	No	No				
Nature's Path	EnviroKidz Organic	Koala Crisp	Child	35.3%		44	36.7%	6.7%	333	No	No				
Nature's Path	EnviroKidz Organic	Leapin Lemurs	Child	20.3%		54	26.7%	6.7%	383	No	No				
Nature's Path	EnviroKidz Organic	Peanut Butter Panda Puffs	Child	32.8%		50	23.3%	6.7%	433	No	No				
Nature's Path	EnviroKidz Organic	Penguin Puffs	Child	3.8%		54	26.7%	6.7%	450	No	No				
Nature's Path	Flax Plus													56	
Nature's Path	Flax Plus	Multibran	Adult			58	13.3%	16.7%	450	No	No				
Nature's Path	Flax Plus	Red Berry Crunch	Adult			58	18.2%	12.7%	309	No	No				

continued

						Nutrition Information						Change in Nutrition Quality			
Company	Brand	Cereal	Target Market	% of Stores Stocking	Approved by CBBB	NPI Score (5/31/09)	Sugar (% of g)	Fiber (% of g)	Sodium (mg per 100 g)	Artificial Sweeteners	Food Dyes	Former NPI Score (2/1/06)	Change in Score	New Cereals	Brand Extensions
Nature's Path	Heritage Heirloom	Whole Grains	Adult			70	13.3%	16.7%	433	No	No				
Nature's Path	Honey'd Corn Flakes		Adult			58	13.3%	6.7%	467	No	No				
Nature's Path	Optimum														
Nature's Path	Optimum	Blueberry Cinnamon	Adult			70	16.4%	9.1%	418	No	No				
Nature's Path	Optimum	Power Breakfast	Adult			56	21.8%	18.2%	382	No	No				
Nature's Path	Optimum	Rebound- Banana Flax Almond	Adult			70	16.4%	9.1%	255	No	No				
Nature's Path	Optimum	Slim	Adult			56	12.7%	16.4%	527	No	No				
Nature's Path	Organic Corn Flakes		Adult			56	10.0%	6.7%	550	No	No				
Nature's Path	Pumpkin Flax Plus Granola		Adult			58	18.2%	9.1%	82	No	No				
Nature's Path	Pumpkin Raisin Crunch		Adult			58	23.6%	12.7%	273	No	No				
Nature's Path	Smart Bran		Adult			58	20.0%	43.3%	433	No	No			58	
Nature's Path	Synergy 8 Whole Grains		Adult			78	13.3%	16.7%	0	No	No				
Post				100.0%										53.66	
Post	Alpha Bits		Family	43.5%		46	35.7%	7.1%	571	No	No	70	-24	46	
Post	Bran Flakes		Adult	25.0%		50	16.7%	16.7%	733	No	No	50	0		
Post	Golden Crisp		Family	52.5%		46	51.9%	3.7%	93	No	No	44	2		
Post	Grape Nuts			92.0%											
Post	Grape Nuts	Flakes	Adult			58	13.8%	10.3%	379	No	No	58	0		
Post	Grape Nuts	(Regular)	Adult			70	6.9%	12.1%	500	No	No	70	0		
Post	Grape Nuts	Trail Mix Crunch	Adult												
Post	Honey Bunches of Oats													54	
Post	Honey Bunches of Oats	Honey Roasted	Adult	96.3%		54	20.0%	6.7%	500	No	No	50	4		
Post	Honey Bunches of Oats	with Almonds	Adult	93.8%		52	18.8%	6.3%	469	No	No	52	0		
Post	Honey Bunches of Oats	with Cinnamon Clusters	Adult	62.8%		54	20.0%	6.7%	500	No	No				
Post	Honey Bunches of Oats	with Real Chocolate Clusters	Adult	41.5%		52	23.3%	6.7%	500	No	No				
Post	Honey Bunches of Oats	with Real Peaches	Adult	57.0%		54	25.8%	6.5%	435	No	No	50	4		
Post	Honey Bunches of Oats	with Real Strawberries	Adult	69.5%		52	25.8%	6.5%	452	No	No	48	4		
Post	Honey Bunches of Oats	with Vanillla Clusters	Adult	39.0%		54	19.6%	7.1%	304	No	No				
Post	Honey Bunches of Oats	Just Bunches (all)	Adult	66.3%											

continued

						Nutrition Information						Change in Nutrition Quality			
Company	Brand	Cereal	Target Market	% of Stores Stocking	Approved by CBBB	NPI Score (5/31/09)	Sugar (% of g)	Fiber (% of g)	Sodium (mg per 100 g)	Artificial Sweeteners	Food Dyes	Former NPI Score (2/1/06)	Change in Score	New Cereals	Brand Extensions
Post	Honey Bunches of Oats	Just Bunches Caramel	Adult			56	24.6%	7.0%	158	No	No				
Post	Honey Bunches of Oats	Honey Roasted	Adult			58	24.6%	7.0%	140	No	No				
Post	Honey Comb													51	
Post	Honey Comb	Chocolate	Child	3.5%		48	30.0%	6.7%	367	No	No				
Post	Honey Comb	(Regular)	Child	92.3%		46	31.3%	6.3%	563	No	Yes	36	10		
Post	Fruity or Cocoa Pebbles														
Post	Fruity or Cocoa Pebbles	Bam Bam Berry	Child	1.5%		44	26.7%	6.7%	600						
Post	Fruity or Cocoa Pebbles	Cocoa	Child	94.8%		38	36.7%	10.0%	600	No	No	24	14		
Post	Fruity or Cocoa Pebbles	Dino Smores	Child	3.3%											
Post	Fruity or Cocoa Pebbles	Fruity	Child	98.0%		38	36.7%	10.0%	600	No	Yes	24	14		
Post	Raisin Bran		Family	80.0%		48	32.2%	13.6%	508	No	No	48	0		
Post	Selects Great Grains			90.5%										56.66	
Post	Selects Great Grains	Apple Caramel Pecan Crunch	Adult			56	18.9%	9.4%	415	No	No				
Post	Selects Great Grains	Banana Nut Crunch	Adult			54	20.3%	6.8%	390	No	No	54	0		
Post	Selects Great Grains	Blueberry Morning	Adult			46	29.1%	3.6%	509	No	No	54	-8		
Post	Selects Great Grains	Cranberry Almond Crunch	Adult			58	25.5%	5.9%	225	No	No	56	2		
Post	Selects Great Grains	Crunchy Pecans	Adult			58	17.3%	7.7%	288	No	No	54	4		
Post	Selects Great Grains	Maple Pecan Crunch	Adult			48	25.0%	5.8%	288	No	No	50	-2		
Post	Selects Great Grains	Raisin Date Pecan	Adult			58	25.9%	7.4%	241	No	No	56	2		
Post	Shredded Wheat														
Post	Shredded Wheat	Original	Adult	80.8%		82	0.0%	12.8%	0	No	No	82	0		
Post	Shredded Wheat	Spoon Size: Frosted	Adult	40.3%		70	23.1%	9.6%	0	No	No	70	0		
Post	Shredded Wheat	Spoon Size: Honey Nut	Adult	55.0%		68	23.1%	9.6%	135	No	No	70	-2		
Post	Shredded Wheat	Spoon Size: Original	Adult	59.8%		82	0.0%	12.2%	0	No	No	82	0		
Post	Shredded Wheat	Spoon Size: Real Strawberries	Adult	3.3%											
Post	Shredded Wheat	Spoon Size: Wheat 'n Bran	Adult	67.3%		82	1.7%	13.6%	0	No	No	82	0		
Post	Trail Mix crunch			59.5%										56	
Post	Trail Mix crunch	Cranberry Vanilla	Adult			56	25.0%	8.3%	281	No	No				
Post	Trail Mix crunch	Maple nut and Brown Sugar	Adult			54	18.8%	8.3%	458	No	No				
Post	Trail Mix crunch	Raisin and Almond	Adult			56	20.8%	10.4%	438	No	No				
Post	Waffle Crisp		Family	18.0%		44	40.0%	3.3%	383	No	No	42	2		

continued

						Nutrition Information						Change in Nutrition Quality			
Company	Brand	Cereal	Target Market	% of Stores Stocking	Approved by CBBB	NPI Score (5/31/09)	Sugar (% of g)	Fiber (% of g)	Sodium (mg per 100 g)	Artificial Sweeteners	Food Dyes	Former NPI Score (2/1/06)	Change in Score	New Cereals	Brand Extensions
Peace cereal	Peace cereal			20.8%										60	
Peace cereal	Peace cereal	French Vanilla Granola	Adult			56	27.3%	5.5%	127	No	No				
Peace cereal	Peace cereal	Ginger Hemp Granola	Adult			70	16.4%	7.3%	191	No	No				
Peace cereal	Peace cereal	Golden Honey Granola	Adult			76	18.2%	7.3%	218	No	No				
Peace cereal	Peace cereal	Mango Passion	Adult			46	18.2%	3.6%	582	No	No				
Peace cereal	Peace cereal	Maple Pecan	Adult			54	20.0%	5.5%	400	No	No				
Peace cereal	Peace cereal	Raspberry Ginger	Adult			54	21.8%	5.5%	400	No	No				
Peace cereal	Peace cereal	Vanilla Almond	Adult			52	16.3%	3.6%	727	No	No				
Peace cereal	Peace cereal	Wild Berry Crisp	Adult			40	21.8%	1.8%	127	No	No				
Quaker				100.0%										56	56.9
Quaker	Cap'n Crunch														
Quaker	Cap'n Crunch	Choco Crunch	Child	2.0%		44	37.0%	11.1%	500						
Quaker	Cap'n Crunch	Peanut Butter Crunch	Child	82.3%		32	33.3%	3.7%	741	No	No	40	-8		
Quaker	Cap'n Crunch	with Crunchberries	Child	90.8%	Yes	30	46.2%	3.8%	692	No	Yes	30	0		
Quaker	Cap'n Crunch	(Regular)	Child	94.3%	Yes	44	44.4%	3.7%	741	No	Yes	26	18		
Quaker	Life													56	
Quaker	Life	Cinnamon	Family	94.0%		52	25.0%	6.3%	469	No	Yes	52	0		
Quaker	Life	Maple & Brown Sugar	Family	73.5%		52	25.0%	6.3%	469	No	Yes				
Quaker	Life	(Regular)	Family	96.0%		54	18.8%	6.3%	500	No	Yes	54	0		
Quaker	Natural Granola			68.8%		50									
Quaker	Natural Granola	Oats & Honey	Adult			46	25.0%	6.3%	52	No	No	44	2		
Quaker	Natural Granola	Oats & Honey & Raisins	Adult			46	29.4%	5.9%	49	No	No	46	0		
Quaker	Oat Bran Cold Cereal		Adult	23.8%		58	15.8%	10.5%	368	No	No				
Quaker	Oatmeal Squares			86.8%										56	
Quaker	Oatmeal Squares	Brown Sugar	Adult			54	18.2%	9.1%	455	No	Yes	54	0		
Quaker	Oatmeal Squares	Cinnamon	Adult			56	21.7%	8.3%	433	No	No	54	2		
Quaker	Oatmeal Squares	Golden Maple	Adult			56	21.4%	7.1%	429	No	Yes				
Uncle Sam	Uncle Sam		Adult	48.0%		78	1.8%	18.2%	245	No	No				
Weetabix	Alpen	Swiss Muesli	Adult	18.5%		74	20.0%	7.3%	54	No	No				
Weetabix	Weetabix		Adult	39.8%		74	5.7%	11.4%	371	No	No				

"Notes: Data are listed at either the company, brand or cereal level. "
"If no brand or cereal is included in the row, data apply to the company level. "
"If no cereal is included in the row, data apply to the brand level. "
All other data apply to the cereal level

Advertising, Television and Internet Marketing Data

Company	Brand	Cereal	Advertising spending	Television advertising: Exposure data	Television advertising: Content analysis	Company website: Exposure data	Child-targeted website: Content analysis	Advertising on third party websites: Exposure data	Advertising on third party websites: Content analysis	Social Media
Annie's	Bunnies									
Barbara's Bakery	Organic Wild Puffs									
Barbara's Bakery	Puffins		X	X	X					
Barbara's Bakery	Shredded Oats		X							
Barbara's Bakery	Shredded Wheat		X							
Barbara's Bakery	Ultima Organic		X							
Cascadian Farm	Cinnamon Crunch									
Cascadian Farm	Clifford Crunch									
Cascadian Farm	Granola	Cinnamon Raisin	X							
Cascadian Farm	Granola	Fruit & Nut	X	X						
Cascadian Farm	Honey Nut O's									
Cascadian Farm	Purely O's									
General Mills	Company		X	X	X	X				
General Mills	Boo Berry									X
General Mills	Honey Nut Cheerios		X	X	X		X	X	X	X
General Mills	Cheerios					X	X	X	X	
General Mills	Cheerios	Fruity	X							
General Mills	Cheerios	Multigrain	X	X	X					
General Mills	Cheerios	Oat Cluster Crunch	X	X	X					
General Mills	Cheerios	(Regular)	X	X	X				X	X
General Mills	Chex		X	X	X	X	X	X	X	
General Mills	Chex	Chocolate	X							
General Mills	Chex	Cinnamon	X							
General Mills	Chex	Corn	X							
General Mills	Chex	Strawberry	X							
General Mills	Cinnamon Toast Crunch	(Regular)	X	X	X					X
General Mills	Cocoa Puffs	combos	X	X	X					
General Mills	Cocoa Puffs	(Regular)	X	X	X		X			X
General Mills	Cookie Crisp					X	X			
General Mills	Cookie Crisp	(Regular)	X	X	X					X
General Mills	Count Chocula				X					
General Mills	Curves		X							
General Mills	Curves	Honey Crunch	X	X	X					
General Mills	Curves	Whole Grain Crunch	X							
General Mills	Dora the Explorer									
General Mills	Fiber One					X		X	X	

continued

Company	Brand	Cereal	Advertising spending	Television advertising: Exposure data	Television advertising: Content analysis	Company website: Exposure data	Child-targeted website: Content analysis	Advertising on third party websites: Exposure data	Advertising on third party websites: Content analysis	Social Media
General Mills	Fiber One	Caramel Delight	X							
General Mills	Fiber One	Frosted Shredded Wheat	X	X	X					
General Mills	Fiber One	Honey Clusters	X	X	X					
General Mills	Fiber One	Original (bran)	X	X						
General Mills	Franken Berry				X					
General Mills	Golden Grahams									X
General Mills	Kaboom									
General Mills	Kix	Honey	X							
General Mills	Kix	(Regular)	X							
General Mills	Lucky Charms	(Regular)	X	X	X		X	X	X	X
General Mills	Nature Valley			X	X					
General Mills	Oatmeal Crisp		X							
General Mills	Oatmeal Crisp	Hearty Raisin	X	X	X					
General Mills	Reese's Puffs		X	X	X	X	X	X	X	X
General Mills	Total		X	X	X	X		X	X	
General Mills	Total	Cinnamon Crunch	X	X	X					
General Mills	Total	Cranberry Crunch	X	X	X					
General Mills	Total	Whole Grain	X							
General Mills	Trix		X	X	X		X	X	X	X
General Mills	Wheaties		X					X	X	
General Mills	Millsberry					X	X	X		
Kashi	Company		X	X	X	X		X	X	
Kashi	Granola	Cocoa Beach			X					
Kashi	Granola	Mt Medley	X	X	X					
Kashi	GoLean		X							
Kashi	GoLean Crunch!		X	X						
Kashi	Honey Sunshine									
Kashi	Mighty Bites									
Kellogg	Company		X	X	X	X			X	
Kellogg	All-Bran				X			X	X	
Kellogg	All-Bran	Extra Fiber	X	X						
Kellogg	All-Bran	Original	X	X						
Kellogg	All-Bran	Strawberry Medley	X	X	X					
Kellogg	Apple Jacks	Criss Crossed	X	X	X					
Kellogg	Apple Jacks	(Regular)	X	X	X	X	X	X	X	X
Kellogg	Cocoa and Rice Krispies	Cocoa Krispies	X	X	X			X	X	
Kellogg	Cocoa and Rice Krispies	Jumbo Multi-Grain	X	X	X					

continued

Company	Brand	Cereal	Advertising spending	Television advertising: Exposure data	Television advertising: Content analysis	Company website: Exposure data	Child-targeted website: Content analysis	Advertising on third party websites: Exposure data	Advertising on third party websites: Content analysis	Social Media
Kellogg	Cocoa and Rice Krispies	Rice Krispies Treats	X							
Kellogg	Cocoa and Rice Krispies	(Regular)	X	X		X		X	X	X
Kellogg	Cocoa and Rice Krispies	Strawberries	X	X	X					
Kellogg	Cookie Crunch									
Kellogg	Corn Flakes		X	X						
Kellogg	Corn Pops	(Regular)	X	X	X	X	X	X	X	X
Kellogg	Crispix									
Kellogg	Disney High School Musical									
Kellogg	Eggo Cereal									
Kellogg	Extra		X	X						
Kellogg	Extra Pasion		X	X						
Kellogg	Froot Loops	Darkberries	X	X	X					
Kellogg	Froot Loops	Double Lemony Loot	X	X	X					
Kellogg	Froot Loops	Fruity Golden Bars	X	X	X					
Kellogg	Froot Loops	(Regular)	X	X		X	X	X	X	X
Kellogg	Froot Loops	Smoothie			X					
Kellogg	Frosted Flakes	Gold	X	X	X					
Kellogg	Frosted Flakes	(Regular)	X	X	X	X	X	X	X	X
Kellogg	Hannah Montana									
Kellogg	Honey Smacks									
Kellogg	MINI-Swirlz									
Kellogg	Mini-Wheats	Frosted/ Bite Size	X	X	X		X	X	X	X
Kellogg	Mini-Wheats	Frosted/ Blueberry Muffin	X							
Kellogg	Mini-Wheats	Frosted/ Cinnamon Streusel	X							
Kellogg	Mini-Wheats	Frosted/ Maple & Brown Sugar	X	X						
Kellogg	Mini-Wheats	Frosted/ Strawberry Delight	X							
Kellogg	Mini-Wheats	Little Bites	X	X	X					
Kellogg	Raisin Bran	Crunch	X	X	X					
Kellogg	Raisin Bran	Extra	X	X	X					
Kellogg	Raisin Bran	(Regular)	X	X	X			X		
Kellogg	Smart Start	Maple & Brown Sugar	X	X	X					
Kellogg	Smart Start	Original Antioxidants	X	X	X			X	X	
Kellogg	Smart Start	Strawberry Oat Bites	X	X	X					
Kellogg	Smorz									
Kellogg	Special K	Blueberry	X	X	X					
Kellogg	Special K	Chocolatey Delight	X	X	X					
Kellogg	Special K	Cinnamon Pecan	X	X	X					

continued

Company	Brand	Cereal	Advertising spending	Television advertising: Exposure data	Television advertising: Content analysis	Company website: Exposure data	Child-targeted website: Content analysis	Advertising on third party websites: Exposure data	Advertising on third party websites: Content analysis	Social Media
Kellogg	Special K	Red Berries	X							
Kellogg	Special K	(Regular)	X	X	X	X		X	X	
Kellogg	Special K	Vanilla Almond	X							
Nestle	Fitness		X	X						
Newman's Own	Sweet Enough		X							
Nature's Path	Company		X	X	X					
Nature's Path	Envirokidz organic		X							
Nature's Path	Flax Plus		X							
Nature's Path	Heritage Heirloom whole grains		X							
Nature's Path	Optimum		X							
Nature's Path	Optimum	Power Breakfast	X							
Nature's Path	Pumpkin Flax Plus Granola		X							
Nature's Path	Pumpkin Raisin Crunch		X							
Nature's Path	Smart Bran		X							
Post	Company		X			X				
Post	Alpha Bits									X
Post	Golden Crisp									
Post	Grape Nuts	(Regular)	X		X					
Post	Grape Nuts	Trail Mix Crunch	X	X						
Post	Honey Bunches of Oats	Honey Roasted	X	X	X			X	X	
Post	Honey Bunches of Oats	with Real Chocolate Clusters	X							
Post	Honey Bunches of Oats	Just Bunches	X	X	X				X	
Post	Honeycomb	Chocolate	X	X	X					
Post	Honeycomb	(Regular)	X	X	X		X		X	X
Post	Pebbles	Cocoa	X	X	X				X	X
Post	Pebbles	Fruity	X	X	X					
Post	Raisin Bran				X				X	
Post	Selects Great Grains		X							
Post	Selects Great Grains	Apple Caramel Pecan Crunch	X							
Post	Shredded Wheat		X							
Post	Shredded Wheat	Original	X							
Post	Shredded Wheat	Spoon Size: Frosted	X							
Post	Shredded Wheat	Spoon Size: Honey Nut	X							
Post	Shredded Wheat	Spoon Size: Original	X							
Post	Shredded Wheat	Spoon Size: Real Strawberries	X							
Post	Trail Mix crunch		X	X	X					

continued

Company	Brand	Cereal	Advertising spending	Television advertising: Exposure data	Television advertising: Content analysis	Company website: Exposure data	Child-targeted website: Content analysis	Advertising on third party websites: Exposure data	Advertising on third party websites: Content analysis	Social Media
Post	Waffle Crisp									X
Post	Postopia					X	X	X		
Quaker	Company		X		X	X				
Quaker	Cap'n Crunch	(Regular)	X							X
Quaker	Life	Cinnamon	X							
Quaker	Life	Maple & Brown Sugar	X							
Quaker	Life	(Regular)	X	X	X					X
Quaker	Oatmeal Squares		X		X					