

Children's Cereals: Sugar by the Pound

**ENVIRONMENTAL
WORKING GROUP**

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The Environmental Working Group is the nation’s most effective environmental health research and advocacy organization. Our mission is to conduct original, game-changing research that inspires people, businesses and governments to take action to protect human health and the environment. With your help – and with the help of hundreds of organizations with whom we partner – we are creating a healthier and cleaner environment for the next generation and beyond.

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Children's Cereals: Sugar by the Pound

Executive Summary

A comprehensive analysis by the Environmental Working Group of 1,556 cereals, including 181 marketed for children, shows that most pack in so much sugar that someone eating an average serving of a typical children's cereal would consume more than 10 pounds of sugar a year from that source alone. And even though researchers have found that children are happy to eat low-sugar cereals, the supermarket cereal aisle offers few such products – and children's cereals with cartoon characters on the box are among the most highly sweetened of all.

EWG also re-reviewed a smaller sample of 84 popular children's cereals that it had previously evaluated in 2011. This analysis found that while a handful of manufacturers lowered the sugar content of 11 cereals in that sample, the vast majority are still too sweet to be healthy, averaging two teaspoons per serving. One cereal added even more sugar. Not one of the 10 most sweetened cereals on [EWG's 2011 list](#) lowered its sugar content.

Researchers used EWG's comprehensive food database – which is due out this fall – to determine the sugar content in each cereal. The EWG food database is being built on data gathered by FoodEssentials, a company that compiles details about the ingredients in foods sold in American supermarkets. Rankings were calculated by comparing the total sugar content by weight with guidelines issued by federal health agencies and other organizations.

Cereals can provide important nutrients that children need during critical times of growth and development – without all the added sugar. Unsweetened whole-grain hot cereals such as oatmeal with fruit on top are a much healthier choice, providing a rich source of naturally occurring vitamins and minerals and no empty calories. The reality, however, is that hot cereals can be less convenient



for busy families – although there are many ways to work around this – making the lack of low-sugar cold cereals all the more problematic.

EWG's analysis shows that of all cereals, those that have cartoon characters on the box indicating they are marketed directly to children are the most heavily loaded with added sugar, making them a significant source of empty calories. A typical serving can contain as much sugar as three Chips Ahoy! or two Keebler Fudge Stripe cookies. EWG found that on average, 34 percent of the calories in children's cereals come from sugar. For two-thirds of these cereals, a single serving contains more than a third of what experts recommend children consume in an entire day. For 40 cereals, a single serving exceeds 60 percent of the daily amount of sugar suggested by health agencies and organizations. Some contain as many as six different types of sweeteners.

Although the cereal aisle in a typical supermarket looks as if it's full of choices, EWG found that there are very few low-sugar options – especially among cereals marketed for children. Of the 181 that EWG examined, not one was free of added sugars.

EWG also found evidence that promotional labeling on cereal boxes is designed to distract consumers

from focusing on the unhealthy sugar content by making claims that the product provides important nutrients, such as “Excellent Source of Vitamin D” or “Good Source of Fiber.” The labels on seven of the 10 most heavily sugared children’s cereals in EWG’s 2011 cereal report currently feature a marketing claim promoting their nutrient content.

The Food and Drug Administration has not yet set a limit on the amount of added sugars allowed in products that make nutritional claims, nor does the agency include a percent Daily Value for sugar on the Nutrition Facts panel required on food products to help inform consumers how much sugar is too much. For saturated fat, it does both.

In contrast, the Department of Health and Human Services and the Department of Agriculture provided authoritative guidance in the 2010 Dietary Guidelines for Americans, recommending that solid fats and added sugar together should constitute no more than about 5-to-15 percent of total calorie intake (USDA and DHHS 2010). Currently, Americans consume 22 teaspoons of sugar a day on average, which amounts to 16 percent of total calorie intake from added sugars alone (NCI 2010; USDA and DHHS 2010). The World Health Organization, the leading international authority on public health, has said since 2003 that sugars should make up less than 10 percent of total energy intake (WHO 2003).

Earlier this year (March 2014), the FDA proposed listing added sugar content in the Nutrition Facts panel (FDA 2014a). This would be a step in the right direction, bringing the required labeling in line with the US Dietary Guidelines and providing consumers with the information they need to reduce sugar consumption. However, the proposed regulations do not update the serving sizes for cereals (FDA 2014b). FDA’s own data show that the average American eats *30 percent more* than the amount used to set the labeled serving sizes for the most popular category of cold cereals. This means that on average, people consume even more sugar than the labels would indicate (FDA 2014b).

Cereals are not the only source of added sugar in the American diet, of course. Sugars are added

everywhere – from beverages to bread, tomato sauce and salad dressings – contributing to growing waistlines, decayed teeth and a multitude of obesity-related diseases. The USDA itself calls sugar “the number one food additive” (USDA 2003).

EWG’s Recommendations

For policy makers

- FDA should finalize the addition of “added sugars” to the Nutrition Facts panel.
- FDA should only allow promotional labels that make nutritional claims or use the word “healthy” on products that are low in added sugars.
- FDA should update the cereal serving sizes cited on Nutrition Facts labels to accurately reflect the larger amounts that Americans actually eat.
- FDA should commission a new study by the Institute of Medicine of the harmful health effects of consuming high amounts of added sugar and seek further guidance on whether setting a Daily Value for sugar would be justified.

For manufacturers

- Companies should lower the sugar content of their cereals.
- Companies should not make nutrient content claims or use the word “healthy” on products that are high in added sugars.
- The Children’s Food and Beverage Advertising Initiative, the food industry’s voluntary self-regulation program, should require participants to add no more than 6 grams of sugar per serving in products advertised to children. This is the limit set by the government’s supplemental nutrition program for Women, Infants and Children.
- Companies should not market high sugar cereals containing 6 grams of sugar or more per serving to children.

For parents

- Reduce sugar consumption from all sources and seek out foods without added sugars.
- Read the Nutrition Facts labels carefully and choose cereals with the lowest sugar content. Look for cereals that are low-sugar [no more than a teaspoon (4 grams) per serving] or moderately sweetened [less than 1½ teaspoons (6 grams) per serving].
- Prepare breakfast from scratch as often as possible; add fruit for fiber, potassium and other essential vitamins and minerals.
- Check out [EWG's Healthy Breakfast Tips](#) for great ideas on making healthy and sustaining breakfasts.
- Speak out. Use your buying dollars and your words to tell cereal manufacturers you want more low-sugar choices for you and your family.

Children's Cereals: Sugar by the Pound

Full Report

1. Cereals Contain Far More Sugar Than Experts Recommend

Most scientists and health agencies agree that children and adults should limit their sugar intake. But many Americans consume much more than recommended (NCI 2010). The average 6-to-11-year-old American boy consumes 22 teaspoons of added sugar every day, and the average girl of that age consumes 18 teaspoons (Ervin 2012). This means that many children are consuming double or even triple the recommended maximum – about seven teaspoons. And many scientists believe the currently recommended limit is too high.

Cold cereals are one of the high-sugar foods in the American diet. EWG's new analysis of 1,556 cereals on the U.S. market shows clearly that many children's cereals are as sweet as cookies and should not be considered a part of healthy breakfast.

Among EWG's findings:

- 92 percent of cold cereals in the US come pre-loaded with added sugars.
- Every single cereal marketed to children contains added sugar. On average, children's cereals have more than 40 percent more sugars than adult cereals, and twice the sugar of oatmeal.
- Children's cereals and granolas have the most sugar, packing in more than 2 ½ teaspoons per serving on average, more than two Keebler Fudge Stripe cookies.
- For 40 cereals, a single serving exceeds 60 percent of the daily amount of sugar suggested by health agencies and organizations. Because the serving sizes on cereal labels are



unrealistically small, many children eat multiple “servings” in a single sitting.

- A child eating one serving per day of a children's cereal containing the average amount of sugar would consume nearly 1,000 teaspoons of sugar in a year.
- 97 percent of the most common class of cold cereals have labels that underestimate the amount of cereal people actually eat, according to FDA's analysis of food consumption data. Because the serving sizes on cereal labels are unrealistically small, many Americans eat more than one “serving” in a single sitting.

Cereals: As sweet as cookies

EWG divided the 1,556 cereals it analyzed into eight categories. They were first classified into two major groupings: hot and cold. Hot cereals include grits, oatmeal, instant oatmeal, hot wheat cereals and others. Cold cereals were further classified as granolas or other cold cereals.

TABLE 1

GRANOLAS AND KIDS' CEREALS ARE THE MOST SUGARY

Cereal Type	Average sugar content per serving* (teaspoons)	Average sugar content per serving* (grams)	Average percent sugar by weight
All Cold Cereals	2.2	9.0	23 %
Granola**	2.7	10.7	22 %
Children's Cereals	2.6	10.4	34 %
Family Cereals	2.3	9.2	26 %
Adult Cereals	1.8	7.3	18 %
All Hot Cereals	1.4	5.7	12 %
Instant Oatmeal	2.0	8.1	19 %
Oatmeal	1.2	4.6	7 %
Other Hot Cereals (Cream of Wheat, Oat Bran, etc.)	0.9	3.7	8 %
Grits	Less than a ¼ teaspoon	0.1	0.5 %
All Cereals	2.0	7.9	20 %

* Manufacturer's labeled serving size using common household measure (3/4 cup, 1 cup, 24 biscuits, etc.).

** Granolas often contain more fiber and are heavier compared to other cold cereals. Therefore, although granolas have highest sugar content per serving, they are lower in percentage of sugar by weight.

EWG then examined the packaging of all 858 non-granola cold cereals to further categorize them according to their likely marketing audience. Any box front displaying an animated character or a promotion for one was classified as being marketed to children. Packaging displaying a picture of a child, a family, prizes or games was classified as being marketed to families. All others were classified as marketed to adults. A cereal's classification can change as manufacturers launch new promotions. For example, although plain Cheerios cereal is generally considered a cereal intended for all family members, the Cheerios package examined at the time of this analysis displayed a promotion for a LeapFrog SpongeBob game, meeting EWG's criteria for cereals marketed directly to children. (See Appendix 1)

EWG's analysis focused on the total sugar content of each cereal by weight and compared sugar content with the guidelines issued by several authoritative health agencies and organizations.

One good benchmark for a moderately sweetened cereal is the limit of 1½ teaspoons (6 grams) of sugar per one-ounce serving set by the government's supplemental nutrition program for Women, Infants and Children. Only cereals containing no more than that amount – less than 21 percent sugar by weight – are eligible to be bought through the program (USDA 2014).

EWG, however, believes that only cereals that contain *one* teaspoon or less (4 grams) of added sugar per serving should be considered low-sugar.

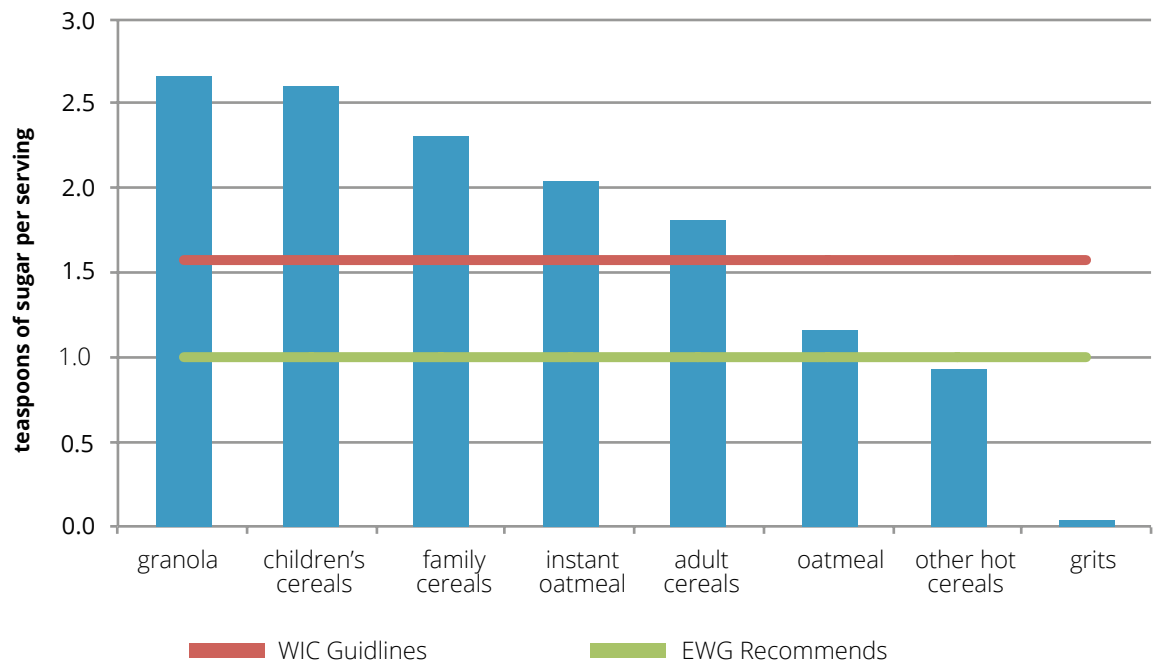
EWG chose 10 percent of calories as a second benchmark for what constitutes an excessive amount of added sugar from all sources. This is the midpoint of the recommended 5-to-15 percent range recommended by the government's 2010 Dietary Guidelines for Americans for both added sugars and solid fats. The Dietary Guidelines are jointly issued by the Department of Agriculture (USDA) and the Department

of Health and Human Services every five years (USDA and DHHS 2010). The 10 percent limit for added sugar also represents the consensus view of the World Health Organization and Food and Agriculture Organization, agencies of the United Nations (WHO 2003; WHO 2014).

Consuming 10 percent of calories from added sugars corresponds to eating about 12 teaspoons of sugar a day for an adult and 7 teaspoons for an 8-year-old child. As recently as the 1980s, Americans on average consumed 13 teaspoons a day (Glinsmann 1986; Wang 2013).

Many scientists, however, believe that 10 percent of calories may be too much sugar for a healthy diet. Earlier this year (March 2014), the WHO published a draft guideline stating that reducing sugar to less than 5 percent of total calorie intake per day would have additional public health benefits (WHO 2014). The American Heart Association's consensus is for just four teaspoons of added sugar a day for children, which also corresponds to a limit of 5 percent of calories. For adults, the American Heart Association

CHART 1 CHILDREN'S CEREALS, GRANOLAS ARE THE MOST SUGARY



recommends no more than 100-150 calories a day from added sugars, which is significantly less than 10 percent of a 2,000 calorie daily diet (Johnson 2009). Additionally, research using nationally representative National Health and Nutrition Examination Survey data has shown that as sugar consumption increases above 5-10 percent of calories, an individual's intake of other valuable nutrients drops (Marriott 2010). Americans who eat the most added sugar consume 40 percent less calcium, fiber, potassium, vitamin C, E and other important nutrients than those who consume the least (Marriott 2010).

EWG found that for 98 cereals, a single serving exceeded the American Heart Association's recommended daily sugar limit for children.

On average, EWG's analysis found, cereals contain two teaspoons of sugar per serving (see Table 1). Granolas, often advertised as healthier alternatives, actually have the most sugar per serving. Children's cereals on average contain more than 2½ teaspoons of sugar per serving. This is comparable to three Chips Ahoy! or two Keebler Fudge Stripe cookies.

Added sugars are everywhere in the cereal aisle

EWG’s analysis shows that 92 percent of cold cereals come pre-loaded with added sugar. Not a single children’s cereal is unsweetened. Some cereals contain as many as six different types of added sweeteners, including sugar mixed with corn syrup, honey, dextrose or high fructose corn syrup.

Some people like to control how much sugar they consume in their cereal, and others, like those living with diabetes, must. But finding a cereal without

added sugar is a feat, and coming up with one that has *zero sugar* is even more difficult. In a marketplace of more than 1,000 cold cereals, EWG found just 47 with no sugar at all. Among them are three family cereals, 43 adult cereals, one granola – but not a single children’s option.

Hall of Shame cereals

To underscore the unhealthy levels of added sugars in many cereals, EWG created a “Hall of Shame” of 12 products that are more than 50 percent sugar by weight. Of all 1,556 cereals EWG analyzed,

TABLE 2

SOME CEREALS ARE MORE THAN 50 PERCENT SUGAR BY WEIGHT

Cereal	Percent sugar by weight	Grams of sugar per labeled serving	Percent of recommended daily sugar intake per serving (children)*
National Brands			
Kellogg’s Honey Smacks	56%	15	50%
Malt-O-Meal Golden Puffs	56%	15	50%
Mom’s Best Cereals Honey-Ful Wheat	56%	15	50%
Malt-O-Meal Berry Colossal Crunch with Marshmallows	53%	16	53%
Post Golden Crisp	52%	14	47%
Grace Instant Green Banana Porridge	51%	28	93%
Blanchard & Blanchard Granola	51%	29	97%
Store Brands			
Lieber’s Cocoa Frosted Flakes	88%	50	167%
Lieber’s Honey Ringee Os	67%	38	127%
Food Lion Sugar Frosted Wheat Puffs	56%	15	50%
Krasdale Fruity Circles	53%	17	57%
Safeway Kitchens Silly Circles	53%	17	57%

*Based on recommended daily sugar intake of 10 percent of total calories.

the most highly sweetened were those marketed to children and their families. Among them, 10 are marketed to children and families. One granola and one hot cereal also found a place in the Hall of Shame (Table 2).

Among cereals that have a sugar content of 50 percent or more (Table 2), six use three-quarters of a cup or 27 grams as the labeled serving size. The list includes Kellogg’s Honey Smacks, Malt-O-Meal Golden Puffs, Post Golden Crisp and others. A recent FDA analysis of the cereal amounts people actually eat found that the median amount eaten at a sitting is 39 grams for this category of cereals (FDA 2014b). Calculating the amount of sugar from these products using a realistic portion size indicates a person choosing those cereals for breakfast or a snack ingests 1½ teaspoons more sugar than is indicated on the label.

The unrealistically small serving sizes used on the Nutrition Facts label make sugar amounts appear to

be less of a concern. For hundreds of cold cereals EWG analyzed, the listed amount is smaller than what FDA found people eat in one sitting.

Adult cereals are less sugary, but many still have too much

On the whole, adult cereals tend to make better cold cereal choices. Still, the average adult cereal is 18 percent sugar by weight, much higher than most hot cereals except instant oatmeal.

For kids, sugar instead of good nutrition

EWG’s analysis found that 78 percent of children’s cereals contain more than two teaspoons of sugar in a single serving – more than a quarter of the daily limit for an 8-year-old. 10 cereals managed to pack in more sugar than a Hostess Twinkie.

TABLE 3
THE 13 MOST SUGARY CHILDREN’S CEREALS

Cereals, ranked by percent sugar by weight within national and store brand categories	Percent sugar by weight	Grams of sugar per serving	Percent of recommended daily sugar intake (children)*
National Brands			
Kellogg’s Honey Smacks	56%	15	50%
Malt-O-Meal Golden Puffs	56%	15	50%
Post Golden Crisp	52%	14	47%
Kellogg’s Apple Jacks with Marshmallows	50%	14	47%
Kellogg’s Froot Loops with Marshmallows	48%	14	47%
Store Brands			
Food Lion Sugar Frosted Wheat Puffs	56%	15	50%
Krasdale Fruity Circles	53%	17	57%
Safeway Kitchens Silly Circles	53%	17	57%
Food Club Honey Puffed Wheat	50%	17	57%
Key Food Apple Wheels Cereal	48%	16	53%
Shur Saving Apple Whirls	48%	16	53%
Safeway Kitchens Apple Orbits	48%	16	53%
Essential Everyday Golden Corn Nuggets	48%	15	50%

*Based on 1 labeled serving size and recommended daily sugar intake of 10 percent of total calories.

TABLE 4

THE 10 LEAST SUGARY CHILDREN'S CEREALS CONTAINING ONE TEASPOON OR LESS OF SUGAR PER SERVING

Cereals, ranked by percent sugar by weight within national and store brand categories	Percent sugar by weight	Grams of sugar per serving	Percent of recommended daily sugar intake (children)*
National Brands			
Kellogg's Rice Krispies, Gluten-Free	3%	1	3%
General Mills Cheerios	4%	1	3%
Post 123 Sesame Street, C Is For Cereal	4%	1	3%
Kellogg's Corn Flakes	11%	3	10%
Kellogg's Rice Krispies	12%	4	13%
Kellogg's Crispix Cereal	14%	4	13%
Store Brands			
Springfield Corn Flakes Cereal	7%	2	7%
Valu Time Crisp Rice Cereal	9%	3	10%
Roundy's Crispy Rice	12%	4	13%
Shop Rite Scrunchy Crispy Rice	12%	4	13%

*Based on 1 labeled serving size, and a recommended daily sugar intake of 10% of total calories.

On average, children's cereals were 34 percent sugar by weight, a result that is consistent with previous research from the Yale University Rudd Center for Food Policy and Obesity (Harris 2009). EWG found that more than 60 percent of children's cereals contain a spoonful or more of sugar in every three spoonfuls of cereal. A $\frac{3}{4}$ -cup serving of the children's cereal with the highest sugar content by weight, such as Food Lion Sugar Frosted Wheat Puffs, Kellogg's Honey Smacks or Malt-O-Meal Golden Puffs (Table 3), gives an 8-year-old half the recommended daily amount of sugar.

Only a dozen children's cereals contained a teaspoon of sugar or less per serving. Less than one in four children's cereals contained fewer than 2 teaspoons of sugar per serving.

Only 10 children's cereals (Table 4) meet EWG's criteria for low-sugar – containing one teaspoon (4 grams) or less per serving.

Nutrition claims are a distraction

EWG found that promotional labeling on cereal boxes frequently makes claims that the products provide important nutrients – such as “Excellent Source of Vitamin D” or “Good Source of Fiber” – making it less likely that consumers will focus on the unhealthy sugar content.

The labels on seven of the 10 most heavily sugared children's cereals in EWG's 2011 cereal report and eleven of the 13 most sugary children's cereals in this analysis (Table 5) currently feature a claim promoting nutrient content.

The FDA requires products that exceed a certain level of saturated fat or sodium (salt) to include a disclosure statement on the label if the packaging makes a nutrient content claim (FDA 2013). It does not set a similar limit for sugar content. The FDA needs to take action and stop allowing products with excessive amounts of sugar to tout their positive attributes.

TABLE 5:

MANUFACTURERS PROMOTE NUTRIENT CONTENT IN THE MOST SUGARY CHILDREN'S CEREALS

Cereals, ranked by percent sugar by weight within national and store brand categories	Percent sugar by weight	Nutrient Content Claim
National Brands		
Kellogg's Honey Smacks	56%	Good Source of Vitamin D
Malt-O-Meal Golden Puffs	56%	11 Vitamins & Minerals
Post Golden Crisp	52%	Excellent Source of Six B Vitamins
Kellogg's Apple Jacks with Marshmallows	50%	None
Kellogg's Froot Loops with Marshmallows	48%	Good Source of Vitamin D
Store Brands		
Food Lion Sugar Frosted Wheat Puffs	56%	11 Essential Vitamins & Minerals
Krasdale Fruity Circles	53%	Excellent Source of 9 Vitamins & Minerals
Safeway Kitchens Silly Circles	53%	Excellent Source of 9 Vitamins and Minerals
Food Club Honey Puffed Wheat	50%	N/A*
Key Food Apple Wheels Cereal	48%	Excellent Source of 9 Vitamins & Minerals
Shur Saving Apple Whirls	48%	Good Source 12 Vitamins & Minerals; Excellent Source Iron; Excellent Source Vitamin C
Safeway Kitchens Apple Orbits	48%	Excellent Source of 9 Vitamins and Minerals
Essential Everyday Golden Corn Nuggets	48%	Excellent Source of 7 Vitamins

*Information not available.

Industry cites misleading, flawed studies

According to the 2007-2008 National Health and Nutrition Examination Survey conducted by the Centers for Disease Control and Prevention, 46 percent of 2-to-6-year-olds consume a ready-to-eat cereal on any given day (Ford 2013). A 2003 study found that over a two-week period, 90 percent of 4-to-12-year-olds had eaten a ready-to-eat cereal (Albertson 2003).

Not surprisingly, breakfast cereals are the fifth highest source of added sugars in the diet of children under 8, after sugary drinks, cookies, candy and ice cream (Reedy and Krebs-Smith 2010; Slining and Popkin 2013). But some parents don't realize

that cereal is a significant contributor to high sugar consumption in children.

Scientists funded by the food industry have reported that eating cereal is associated with lower body weight (Affenito 2013; Albertson 2003; Albertson 2011; Balvin Frantzen 2013; General Mills 2011). Indeed, children who eat breakfast on a consistent basis tend to have a lower body mass index (BMI) than children who skip breakfast altogether (Rampersaud 2005). However, not all studies found this association to be significant after controlling for energy intake, physical activity and parental education (Affenito 2005; Sampson 1995).

However, the studies that industry likes to cite don't tell the whole story. While some studies separate high- and low-sugar cereals (Albertson

2011), others lump low-sugar hot cereals and sugary cold cereals together (Barton 2005). Another methodological flaw is comparing cereal eaters to non-cereal eaters but not distinguishing them from children who skip breakfast, who have higher BMIs (Albertson 2003).

In contrast, a study conducted by scientists from Louisiana State University and the USDA looked at the data from the 1999-2002 National Health and Nutrition Examination Survey and found that children who ate cereals with more than 6 grams of sugar per serving cereals had lower fiber intake and higher average BMIs than those who ate cereals containing less than 6 grams of sugar per serving (O'Neil 2012). A study from the United Kingdom found that children who ate high-sugar breakfasts had more behavior and attention problems at school (Benton 2007).

Other studies have suggested that sugar can be habit-forming and encourage overeating (Avena 2008; Garber and Lustig 2011; Ludwig 1999; Sclafani 2013). A 2011 study by Yale University researchers found that children given a low-sugar cereal for breakfast ate about 30 grams, while those who got a high-sugar cereal ate nearly twice as much (Harris 2011a). When the children were also provided with sugar and fresh fruit, those given low-sugar cereals were more likely to put both sugar and fresh fruit on the cereal but still managed to consume half as much added sugar as those given a high-sugar cereal (Harris 2011a).

Research clearly demonstrates that breakfast is an important meal and should not be skipped. Cereals can be part of a healthy breakfast, and whole-grain, low-sugar cereals are a great way to start the day. Highly sweetened cereals with empty calories and low fiber intake are clearly less

desirable choices and have been linked to difficulty concentrating and rotten teeth (Cinar and Murtomaa 2009; Dye 2004; Marriott 2010).

“Breakfast cereals are the fifth highest source of added sugars in the diet of children under 8, after sugary drinks, cookies, candy and ice cream.”

Better choices

In all, EWG found just 47 cold cereals and 155 hot cereals that contain no sugar at all. Since there are so few unsweetened cereals on the market, the next best bet is to buy low-sugar cereals. EWG found that 30 percent of those it analyzed qualified as low-sugar – containing less than 1 teaspoon (4 grams) of sugar per serving.

The majority of low-sugar cereals are hot cereals such as oatmeal, cream of wheat or grits. The reality, however, is that hot cereals are less convenient for busy households, which makes the lack of low-sugar cold cereals all the more problematic. EWG's analysis showed that only 18 percent of cold cereals are low-sugar. EWG found just 12 low-sugar children's cereals and nine low-sugar granolas.

However, sugar is just one factor to consider in preparing a good breakfast. It's also important to look for whole-grain options (three or more grams of fiber per serving) and lower-sodium (salt) foods.

Later this year, EWG will release a comprehensive, first-of-its-kind food database that will look deeply at the nutritional value of foods sold in supermarkets as well as their potential health concerns and degree of processing. The database will provide information to shoppers looking for better choices in every aisle in American supermarkets, including the cereal aisle.



Hot cereals offer the most low-sugar and unsweetened options

The convenience of cold cereals is a decisive factor in the eyes of many busy households, but whole-grain hot cereals such as oatmeal provide a much healthier breakfast choice. They provide a rich source of naturally occurring vitamins and minerals and, when unsweetened, no empty calories. Moreover, a 2012 analysis by EWG of government data found that on average, a bowl of hot cereal such as oatmeal costs half as much as a bowl of cold cereal (EWG 2012).

As a group, oatmeal, cream of wheat, grits and other hot cereals offer the greatest selection of zero sugar and low-sugar options. Thirty-one percent of hot cereals contain no sugar at all. Instant oatmeals are the exception. They average 75 percent more sugar than regular cooked oatmeal. Fewer than one in five have no sugar, and nearly 60 percent contain more than two teaspoons of sugar per serving.

2. Sugar In Children's Cereals: Limited Progress

A uniquely American invention, ready-to-eat cereals first appeared during the Civil War as whole-grain products with no added sugar. People who wanted a sweeter breakfast would add sugar or honey themselves. These original cereals did not sell very well, however, until the industry figured out that making cereals sweet would make them more appealing to children and boost sales. Once sweetened cereals reached the market and cartoon characters were added to the packaging, they became the food that American children eat for breakfast (Gitlin and Ellis 2012).

They also became the focus of controversy over sugar content, nutritional quality and marketing, prompting calls for lower sugar content in cereals marketed to children. In response, some cereals were reformulated. In 2012, a study by the Yale University Rudd Center for Food Policy and Obesity found that from 2009 to 2012, the average sugar

content in children's cereals had decreased from 36 percent to 33 percent (Harris 2012). "Overall sodium and sugar reductions were statistically significant," wrote the authors of the study, titled "Cereal FACTS 2012: Limited progress in the nutrition quality and marketing of children's cereals."

EWG considers any decrease in the added sugars in children's cereals a step in the right direction, but in the context of the World Health Organization recommendation of no more than 10 percent of calories added sugar, the improvement has been slight.

In 2006, food and beverage companies established the Children's Food and Beverage Advertising Initiative, promoting it as a "part of the solution to the complex problem of childhood obesity by using advertising to help promote healthier dietary choices and lifestyles for children" (CFBAI 2010). For the first seven years, the program called for voluntary self-regulation without establishing uniform nutrition criteria, allowing participating companies to set their own nutrition standards for products they wanted to advertise to children. The Initiative began enforcing uniform nutrition criteria only at the very end of 2013.

Four cereal manufacturers and 24 cereal products participate in the industry Initiative, even though these companies have more than 127 cereals designed for children and families on the market. Of the 24 cereals that meet the uniform nutrition criteria, 15 contain more than 30 percent sugar by weight. Only 4 cereals in the Initiative meet the sugar guideline of less than 21 percent sugar used by the government's supplemental nutrition program for Women, Infants and Children (USDA 2014).

Under these criteria, companies are free to market to children, through packaging, TV and other means, any cereal containing 2½ teaspoons (10 grams) or less sugar per serving (CFBAI 2011). Since many of the cereals enrolled in the industry's Initiative have small serving sizes of 27 grams, the industry considers it appropriate to advertise to children cereals that are up to 37 percent sugar by weight, a target that is difficult to reconcile with the Initiative's stated goal to be "part of the solution" for childhood obesity and to "promote healthier dietary choices."

TABLE 6

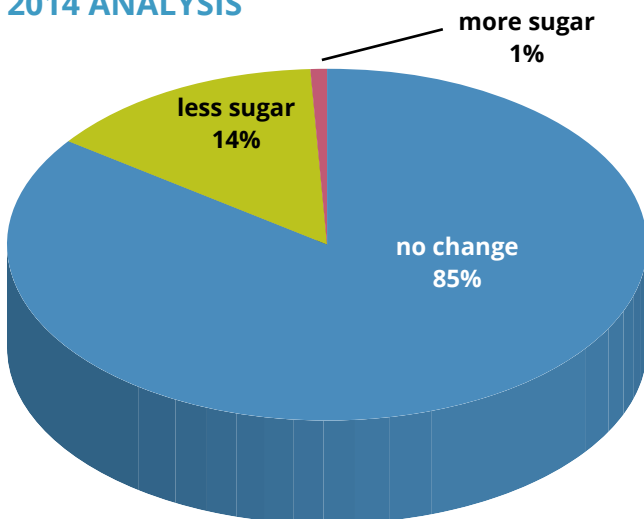
NO CEREAL ON EWG'S 2011 TEN WORST LIST REDUCED SUGAR CONTENT

Cereal	Sugar (g) per serving, 2011	Sugar (g) per serving, 2014
Kellogg's Honey Smacks	15	SAME
Post Golden Crisp	14	SAME
Kellogg's Froot Loops Marshmallow	14	SAME
Quaker Oats Cap'n Crunch's OOPS! All Berries	15	SAME
Quaker Oats Cap'n Crunch Original	12	SAME
Quaker Oats Oh!s	12	SAME
Kellogg's Smorz	13	SAME
Kellogg's Apple Jacks	12	SAME
Quaker Oats Cap'n Crunch's Crunch Berries	11	SAME
Kellogg's Froot Loops Original	12	SAME

In 2011, EWG analyzed 84 children's cereals on store shelves. The new analysis of 181 children's cereals is based on a comprehensive database that was not available to EWG in 2011. As part of the project, EWG researchers re-reviewed the 84 products in the 2011 report and found that overall, they remain grossly over-sugared. In 2011, the average children's cereal was 29 percent sugar, and even though some of those products have been reformulated, the average today is still 29 percent. Not a single cereal on EWG's 10 Worst Children's Cereals from 2011 has lowered its sugar content (Table 6).

Of the 77 cereals analyzed in 2011 that EWG found were still on the market in 2013, the sugar content

FIGURE 1
CHANGES IN SUGAR CONTENT: 2011 VS. 2014 ANALYSIS



remained the same or increased in 66 cereals. Of the 11 that were reformulated to contain less sugar per serving, 10 lowered the content by just one gram – a quarter of a teaspoon (Appendix 2).

The most improved cereal in EWG's analysis – Post's Fruity Pebbles – reduced its sugar content very slightly, from 37 percent to 33 percent sugar. This decrease is similar to the results of the 2012 cereal market study by the Yale University Rudd Center researchers (Harris 2012). With 33 percent sugar content, children eating this cereal would still consume one spoonful of sugar for every three spoonfuls of cereal (Bachman 2012). But because this sugar amount is less than the industry's self-set bar of 10 grams per serving, cereal manufacturers can tout such cereals as “contributing to a healthy diet” and advertise them to children.

For the entire set of 77 cereals that EWG analyzed in 2011 and again in this study, the average sugar content dropped only an average of one-twentieth of a teaspoon per serving – from 9.35 grams to 9.22 grams – minimal progress in light of the health effects associated with overconsumption of sugar.

Industry can and should do more

There has been some progress reducing sugar in children's cereals over the past three years, but

the overwhelming majority of children's cereals are still too high in sugar, even though research has shown that children will happily eat low-sugar cereals. Progress is stalling under industry's voluntary measures. The Children's Food and Beverage Advertising Initiative should update its uniform nutrition criteria for cereals to lower the sugar limit per serving from 10 grams to the more appropriate limit of 6 grams.

3. Flawed And Outdated FDA Rules Put Children At Risk

Overall, Americans gulp down an average of 152 pounds of sugar apiece each year from all sources, contributing to the ongoing obesity epidemic (USDA 2003).

Health professionals and especially dentists have known for years that sugar is harmful to teeth. From baby tooth decay in children who are put to bed with bottles to the dentures used by many elders, sugar is associated with cavities and tooth decay. The American Dental Association declares that "increased sugar in the diet increases the risk of decay" and encourages Americans to "keep added sugars in your diet to a minimum" (ADA 2013).

Sugar consumption has also been linked to cardiovascular disease (Malik 2010; de Koning 2012; Welsh 2011). Earlier this year, a study conducted by scientists from the Centers for Disease Control and Prevention and several U.S. universities reported that people who consume more than 10 percent of calories from added sugar (the current WHO limit) had a greater risk of mortality from cardiovascular disease compared to people who ingested less (Yang 2014).

Added sugars add calories without contributing important and under-consumed nutrients such as fiber and potassium. Over time, this can either cause under-nutrition – by sacrificing nutrient-rich foods in order to keep overall calories down – or over-nutrition and obesity. The 2010 federal Dietary Guidelines recommend limits on empty calories for

both added sugars and solid fats, but they stop short of providing explicit guidance on just how much sugar **alone** is too much.

FDA's proposed rules need to go further

Two months ago (March 2014), the FDA proposed revisions to the Nutrition Facts label that would raise standard serving sizes of some products (FDA 2014b). The FDA also proposed adding a new line to the panel to show a product's added sugar content (FDA 2014a).

EWG applauds the Obama administration and the FDA for taking these positive steps, which would bring the Nutrition Facts panel in line with the 2010 US Dietary Guidelines for Americans, draw consumers' attention to the importance of minimizing added sugar and provide them with the information they need to reduce their added sugar intake.

The 2010 federal Guidelines advised consumers to "cut back on foods and drinks with added sugars... use the Nutrition Facts label to choose breakfast cereals and other packaged foods with less total sugars, and use the ingredients list to choose foods with little or no added sugars" (USDA and DHHS 2010). If FDA's 2014 proposal is implemented, it will finally have given consumers the tools they need to follow this advice.

However, the current proposals are still insufficient to adequately protect children's health from consuming too much sugar. The FDA must also update serving sizes for cereal to accurately reflect how Americans actually eat and create limits on added sugar for products that use nutritional claims.

FDA should restrict nutrient claims for high-sugar products

Although much has changed in nutrition science in the last 16 years, it has been that long since the FDA updated its regulations for products that make nutritional claims on the packaging (FDA 1998). The agency's rules are outdated and fail to ensure that consumers get crucial information.

Today, 95 percent of children's cereals make a nutrition claim, and many tout their whole-grain, fiber, vitamin or mineral content with labels such as "Good Source of Vitamin D" (Harris 2009). But even though the Dietary Guidelines for Americans declared four years ago people should "reduce the intake of calories from [both] solid fats and added sugars," the FDA has set no sugar limit for products that display nutrient content claims or are labeled "healthy" – as it does for saturated fat, sodium, cholesterol and total fat (USDA and DHHS 2010).

Research has shown that nutrition claims on packaging do influence how consumers perceive the overall healthfulness of foods (Drewnowski 2010). One recent study of parents of school-age children found that half were more willing to buy a cereal that carried a nutrition claim, even though the cereals were of below average nutritional quality (Harris 2011b). The authors wrote that these nutrition-related claims "have the potential to mislead a significant portion of consumers." Other experts on food labeling have come to the same conclusion. Jennifer Pomeranz, a professor of law and public health at Temple University, wrote last year in the *American Journal of Law and Medicine* that, "Perhaps the most problematic result of these lax regulations is that products high in added sugar carry a wide variety of nutrient content claims, which misleadingly convey healthfulness in an otherwise unhealthy product" (Pomeranz 2013).

Nutrition claims on food packaging are essentially a form of regulated advertising, since the FDA permits only certain specific "nutrient content claims" and prescribes how they can be presented (FDA 2013). To "prevent the claim from being misleading," the agency requires that nutrient content claims be accompanied by a disclosure statement "to call the consumer's attention to one or more nutrients in the food that may increase the risk of a disease or health-related condition" if certain constituents of the food, such as saturated fat, exceed a specified level (FDA 2013). The FDA's rules provide that "if a nutrient content claim is made, the label must provide the consumer with the facts that bear on the advantages asserted by the claim and with sufficient information to understand

how the product fits into a total dietary regime" (FDA 1993).

Under the current regulations, Kellogg's Froot Loops with Marshmallows, which is 48 percent sugar, meets the FDA's definition of "healthy." It also carries the nutrient content claim, "Good Source of Fiber," on the front of the package. That makes it more likely that to parents will fail to note that sugar is the first ingredient on the Nutrition Facts label, or that the cereal contains 3½ teaspoons of added sugar (14 grams) and unhealthy trans fats. (See Table 5 for additional examples of high sugar cereals that carry nutrient content claims.)

The FDA should take action to limit the amount of added sugars permissible in any product that makes claims about health, reducing disease risk or providing essential nutrients.

FDA should seek updated guidance from the Institute of Medicine

Twelve years ago, the Institute of Medicine, a branch of the National Academies of sciences, studied the issue of added sugars in food and concluded:

"there is insufficient evidence to set an upper limit for total or added sugars. Although a UL [Tolerable Upper Intake Level] is not set for sugars, a maximal intake level of 25 percent or less of energy from added sugars is suggested based on the decreased intake of some micronutrients of American subpopulations exceeding this level" (IOM 2002).

In its 2002 assessment of sugar intake, however, the Institute of Medicine committee failed to control for total energy intake, a key part of defining a healthy diet (Barr and Johnson 2005; Forshee and Storey 2004; Marriott 2010). This flawed methodology resulted in a very high allowance for sugar intake that exceeded the amounts recommended by other scientific bodies at the time and since.

Four years ago, the government's authoritative 2010 Dietary Guidelines for Americans reviewed the most recent science and concluded that "for

most people, no more than about 5 to 15 percent of calories from both solid fats and added sugars can be reasonably accommodated... to meet nutrient needs within calorie limits” (USDA and DHHS 2010). Many other new studies have underscored the harmful health effects of consuming too much sugar (Basu 2013; InterAct Consortium 2013; Moynihan and Kelly 2014; Yang 2014).

The Nutrition Facts panel required on food packaging, however, still provides no guidance on how much sugar people can consume as part of a healthy diet. The content of the panel is regulated by the FDA, which calculates the “percent Daily Value” for major nutrients, advising shoppers on how much of the recommended consumption of that nutrient the product provides. The agency has set these Daily Values for many nutrients, vitamins and minerals, including others that should be limited such as saturated fat and sodium. To date, however, the agency has not established one for sugar, even though the agency acknowledges that “there continues to be strong scientific evidence linking total sugars intake with dental caries” (FDA 2014a).

THERE IS NO PERCENT DAILY VALUE FOR SUGAR ON THE NUTRITION FACTS PANEL

Amount Per Serving	
Calories 250	Calories from Fat 110
% Daily Value*	
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 1.5g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	

In justifying its decision not to set a percent Daily Value for total or added sugars, the FDA has pointed out that the Institute of Medicine’s 2002 report did not set a “Tolerable Upper Intake Level” for sugar (FDA 2014a).

Only recently (March 2014) did the agency propose a revision to the Nutrition Facts panel, saying that it had “tentatively conclude[d] that the declaration of added sugars is required to assist consumers in maintaining healthy dietary practices” (FDA 2014a).

In light of the considerable new evidence, the FDA should commission the Institute of Medicine to do a new study of the harmful health effects of high sugar consumption and determine a reasonable, science-based limit for added sugars. Given the new evidence available since 2002, the Institute, in turn, should revisit its earlier determination that there is not enough evidence to set an upper limit for added sugars.

The FDA should then re-evaluate whether to provide specific guidance to consumers by displaying a percent Daily Value for sugar on the Nutrition Facts label.

Some have suggested that adding a percent Daily Value for sugar would give consumers the mistaken impression that they need to seek out added sugars in order to meet a Daily Value, rather than simply minimizing their intake. While there is inevitably some potential for mixed messages, consumers have for years been using the percent Daily Values to limit their consumption of other unhealthy ingredients, such as saturated fat and sodium. It is reasonable to assume, therefore, that listing a percent Daily Value for added sugar should have similar results – especially if the FDA were to adopt its alternative proposal to have the Nutrition Facts panel explicitly identify which nutrients to “avoid too much” and those to “get enough” of (FDA 2014a).

Serving sizes do not reflect the dietary habits of Americans

Revising the standard “serving size” on the Nutrition Facts panel for the most common type of cold cereals may also help Americans reduce the amount of sugar they consume.

Many children eat more than a single serving of cereal daily because manufacturers list unrealistically small serving sizes. Many cereals list a serving size of 30 grams, corresponding to ¾ cup or 1 cup, but a 2011 food industry study found that for children and adolescents, the average amount eaten in a meal is

42-to-62 grams – about twice as much (Albertson 2011). Another study found that children who eat high-sugar cereals consume almost twice as much cereal as those who eat low-sugar cereals (35 grams versus 61 grams) (Harris 2011a).

The FDA has proposed to increase the serving size for many foods, but not for breakfast cereals. The agency's declared rationale for changing serving sizes is based on whether amounts actually consumed at a single sitting are at least 25 percent greater than the serving sizes set by the FDA in 1993 (FDA 2014b). FDA analysis has shown that for some cereals, such as light-density plain puffed cereal grains (such as puffed rice) and heavy-density cereals (such as granola or shredded wheat), the amounts typically eaten are similar to the labeled serving sizes. But for the most common cold cereals such as Bran Flakes, Corn Flakes or Froot Loops – which weigh 20-to-43 grams per cup – the FDA data reveal that the average American eats 39 grams, 30 percent more than the current serving size of 30 grams (FDA 2014b). For these cereals, the 30 percent difference between the amount eaten and standard serving sizes exceeds FDA's 25 percent bar for updating serving sizes.

In addition, the FDA data shows that at least 10 percent of Americans eat up to 2.6-times more of this type of cereal at a sitting than the serving size on the label (FDA 2014b). This corresponds to tens of millions of adults and children who are consuming more sugar than the label suggests.

In failing to update the reference amount for the most commonly eaten medium-density cereals, the FDA has failed to follow its own rules. Consumption patterns have changed significantly, and it's past time to increase the serving sizes on Nutrition Facts labels for these products.

4. EWG's Recommendations

For policy makers

- FDA should finalize the addition of “added sugars” to the Nutrition Facts panel.
- FDA should only allow promotional labels that make nutritional claims or use the word “healthy” on products that are low in added sugars.
- FDA should update the cereal serving sizes cited on Nutrition Facts labels to accurately reflect the larger amounts that Americans actually eat.
- FDA should commission a new study by the Institute of Medicine of the harmful health effects of consuming high amounts of added sugar and seek further guidance on whether setting a Daily Value for sugar would be justified.

For manufacturers

- Companies should lower the sugar content of their cereals.
- Companies should not make nutrient content claims or use the word “healthy” on products that are high in added sugars.
- The Children's Food and Beverage Advertising Initiative, the food industry's voluntary self-regulation program, should require participants to add no more than 6 grams of sugar per serving in products advertised to children. This is the limit set by the government's supplemental nutrition program for Women, Infants and Children.

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- Companies should not market high sugar cereals containing 6 grams of sugar or more per serving to children.

For parents

- Reduce sugar consumption from all sources and seek out foods without added sugars.
- Read the Nutrition Facts labels carefully and choose cereals with the lowest sugar content. Look for cereals that are low-sugar [no more than a teaspoon (4 grams) per serving] or moderately sweetened [less than 1½ teaspoons (6 grams) per serving].
- Prepare breakfast from scratch as often as possible; add fruit for fiber, potassium and other essential vitamins and minerals.
- Check out [EWG's Healthy Breakfast Tips](#) for great ideas on making healthy and sustaining breakfasts.
- Speak out. Use your buying dollars and your words to tell cereal manufacturers you want more low-sugar choices for you and your family.

APPENDIX 1: METHODOLOGY

Building on EWG'S 2011 analysis of 84 children's cereals, EWG researchers investigated the sugar content of the 1,556 cereals in EWG's new food database to produce the most comprehensive published analysis to date. EWG's food database, scheduled to be unveiled later this year, will be the first of its kind – looking deeply at the nutritional value of foods sold in supermarkets as well as their potential health hazards and degree of processing.

EWG's analysis was performed on data gathered by FoodEssentials, a company that compiles details about the foods sold in American supermarkets. EWG also reviewed manufacturers' websites for data confirmation and to fill in additional nutrition information. The cereal package label information from FoodEssentials was gathered between Sept. 15, 2012 and March 13, 2014 and represents a snapshot of the market over that period. For 86 percent of the cereals, data was collected in 2013 and reflects

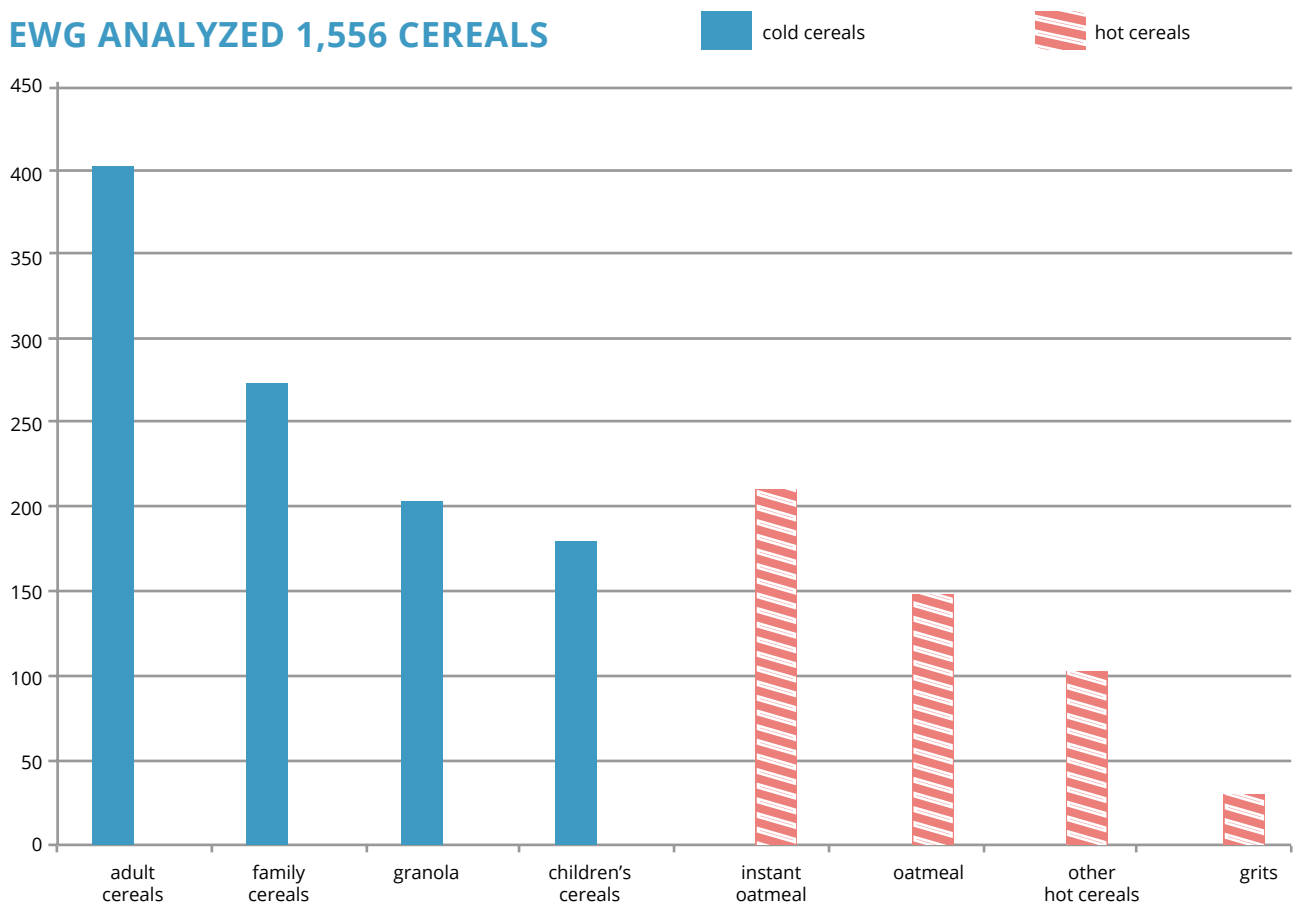
primarily the product formulations during that year.

EWG recognizes that the marketplace is constantly changing as food processors reformulate, discontinue and introduce products. The list of products in this report represents an extensive look at the cereals recently available in stores but may not be comprehensive. Shoppers must read package labels to know for certain the specific formulation of the product they contemplate buying.

EWG divided the 1,556 cereals listed by FoodEssentials into eight categories. They were first classified into two major groupings: 1,062 hot and 494 cold. Hot cereals include grits, oatmeal, instant oatmeal, hot wheat cereals and others. Cold cereals were further classified as granolas or other cold cereals.

EWG then examined the packaging of all 858 non-granola cold cereals to further categorize them

EWG ANALYZED 1,556 CEREALS



according to their likely marketing audience. Any box front displaying an animated character or a promotion for one was classified as being marketed to children. We did not examine manufacturers' websites or consider television, radio, print, internet or digital advertising or in-store promotions. Packaging displaying a picture of a child, a family, prizes or games was classified as being marketed to families. All others were classified as marketed to adults. EWG identified 204 granolas, 181 children's cereals, 274 family cereals and 403 adult cereal products.

A cereal's classification can change as manufacturers launch new promotions. For example, although plain Cheerios cereal is generally considered a cereal intended for all family members, the Cheerios package examined at the time of this analysis displayed a promotion for a LeapFrog SpongeBob game, meeting EWG's criteria for cereals marketed directly to children.

EWG analyzed the total sugar content of each cereal by weight and compared it with guidelines issued by several authoritative health agencies and organizations.

EWG also compared the nutrition data for the formulations used its 2011 report (EWG 2011) to the data collected by FoodEssentials. For cereals in the 2011 analysis that were not available in Food Essentials data for 2012-14, EWG obtained nutrition information directly from manufacturers' websites. Seven products were found to be temporarily sold cereals or had been discontinued.

APPENDIX 2

Cereals ranked by grams of sugar per labeled serving, 2014 and 2011 reports

Cereal	Grams of sugar per labeled serving, 2014 ¹	Grams of sugar per labeled serving, 2011 ²
Honey Smacks	15	15
Cap'n Crunch's OOPS! All Berries	15	15
Cocoa Krispies	15	15
Golden Crisp	14	14
Froot Loops Marshmallow	14	14
Wheaties Fuel	14	14
Honey Nut Clusters	14	14
Smorz	13	13
Cap'n Crunch Original	12	12
Oh!s	12	12
Apple Jacks	12	12
Froot Loops Original	12	12
Frosted Krispies	12	12
Waffle Crisp	12	12
Frosted Mini-Wheats Cinnamon Streusel	12	12
Frosted Mini-Wheats Blueberry Muffin	12	12
Frosted Mini-Wheats Strawberry Delight	12	12
Frosted Mini-Wheats Little Bites Chocolate	12	12
Frosted Mini-Wheats Maple & Brown Sugar	12	13
Frosted Mini-Wheats Big Bite	12	10
Cap'n Crunch's Crunch Berries	11	11
Cap'n Crunch's Chocolatey Crunch	11	11
Frosted Flakes Original	11	11
Frosted Mini-Wheats Bite-Size	11	12
Frosted Mini-Wheats Little Bites Original	11	12
Cocoa Puffs Original	10	10
Lucky Charms Original	10	10
Marshmallow Pebbles	10	10
Chocolate Lucky Charms	10	10
Alpha-Bits	10	10
Reese's Puffs	10	10
Cocoa Pebbles	10	11
Apple Cinnamon Cheerios	10	10
Golden Grahams	10	10
Trix	10	10
Corn Pops	10	10
Honeycomb Original	10	10
Frosted Mini-Wheats Touch of Fruit in the Middle Mixed Berry	10	10
Cookie Crisp Original	9	9
Chocolate Cheerios	9	9
Fruity Cheerios	9	9

Cocoa Puffs Brownie Crunch	9	9
Sprinkle Cookie Crisp	9	9
Cap'n Crunch's Peanut Butter Crunch	9	9
Frosted Cheerios	9	9
Count Chocula	9	10
Fruity Pebbles	9	11
Banana Nut Cheerios	9	9
Honey Nut Cheerios	9	9
Yogurt Burst Cheerios Strawberry	9	9
Rice Krispies Treats	9	9
Cinnamon Toast Crunch	9	10
Honey Nut Chex	9	9
Cinnamon Burst Cheerios	9	9
Boo Berry	9	10
Franken Berry	9	10
Cinnamon Chex	8	8
Chocolate Chex	8	8
Life Cinnamon	8	8
Life Maple & Brown Sugar	8	8
Frosted Flakes Reduced Sugar	7	8
Berry Berry Kix	7	7
Dora the Explorer	6	6
Crunchy Corn Bran (changed name to Corn Bran Crunch - 2014)	6	6
Multi-Grain Cheerios	6	6
King Vitamin	6	6
Life Original	6	6
Honey Kix	6	6
Chex Wheat	5	5
Wheaties	4	4
Rice Krispies Original	4	4
Kix Original	3	3
Corn Chex	3	3
Rice Chex	2	2
Cheerios Original	1	1
Rice Krispies Gluten Free	1	1
Mini-Wheats Unfrosted Bite-Size	0	1

1. The label information from FoodEssentials was gathered between Sept. 15, 2012 and March 13, 2014 and represents a snapshot of the market. For 86 percent of these cereals, data was collected in 2013 and represents primarily 2013 formulations.

2. EWG's 2011 report on cereals was released in December 2011 based on data from manufacturers' websites collected in 2011.

REFERENCES

1. ADA (American Dental Association). 2013. Nutrition: The Basics. Available: <http://www.mouthhealthy.org/en/nutrition/> [Accessed March 20, 2014].
2. Affenito SG, Thompson DR, Barton BA, Franko DL, Daniels SR, Obarzanek E, Schreiber GB, Striegel-Moore RH. 2005. Breakfast consumption by African-American and white adolescent girls correlates positively with calcium and fiber intake and negatively with body mass index. *J Am Diet Assoc.* 105(6): 938-45.
3. Affenito SG, Thompson D, Dorazio A, Albertson AM, Loew A, Holschuh NM. 2013. Ready-to-eat cereal consumption and the School Breakfast Program: relationship to nutrient intake and weight. *J Sch Health.* 83(1): 28-35.
4. Albertson AM, Anderson GH, Crockett SJ, Goebel MT. 2003. Ready-to-eat cereal consumption: its relationship with BMI and nutrient intake of children aged 4 to 12 years. *J Am Diet Assoc.* 103(12): 1613-9.
5. Albertson AM, Thompson DR, Franko DL, Holschuh NM. 2011. Weight indicators and nutrient intake in children and adolescents do not vary by sugar content in ready-to-eat cereal: results from National Health and Nutrition Examination Survey 2001-2006. *Nutr Res.* 31(3): 229-36.
6. Avena NM, Rada P, Hoebel BG. 2008. Evidence for sugar addiction: behavioral and neurochemical effects of intermittent, excessive sugar intake. *Neurosci Biobehav Rev.* 32(1): 20-39.
7. Bachman K. 2012. Pebbles Boulders, Alpha Bits Now Safer for Children Kids cereals cut the sugar. *Ad Week* October 23, 2012. Available: <http://www.adweek.com/news/advertising-branding/pebbles-boulders-alpha-bits-now-safer-children-144707> [Accessed March 20, 2014].
8. Balvin Frantzen L, Treviño RP, Echon RM, Garcia-Dominic O, DiMarco N. 2013. Association between frequency of ready-to-eat cereal consumption, nutrient intakes, and body mass index in fourth- to sixth-grade low-income minority children. *J Acad Nutr Diet.* 113(4): 511-9.
9. Barr SI, Johnson RK. 2005. Effect of added sugars on dietary quality. *J Nutr.* 135(5): 1336.
10. Barton BA, Eldridge AL, Thompson D, Affenito SG, Striegel-Moore RH, Franko DL, Albertson AM, Crockett SJ. 2005. The relationship of breakfast and cereal consumption to nutrient intake and body mass index: the National Heart, Lung, and Blood Institute Growth and Health Study. *J Am Diet Assoc.* 105(9): 1383-9.
11. Basu S, Yoffe P, Hills N, Lustig RH. 2013. The relationship of sugar to population-level diabetes prevalence: an econometric analysis of repeated cross-sectional data. *PLoS One.* 8(2): e57873.
12. Benton D, Maconie A, Williams C. 2007. The influence of the glycaemic load of breakfast on the behaviour of children in school. *Physiol Behav.* 92(4): 717-24.
13. CFBAI (Children's Food And Beverage Advertising Initiative). 2010. BBB Children's Food and Beverage Advertising Initiative Program Summary. Available: <http://www.bbb.org/us/storage/0/Shared%20Documents/BBB%20CFBAI%20Program%20Summary%20Fact%20Sheet-final.pdf> [Accessed March 20, 2014].
14. CFBAI (Children's Food And Beverage Advertising Initiative). 2011. Category-Specific Uniform Nutrition Criteria. Available: <http://www.bbb.org/us/storage/16/documents/cfbai/CFBAI-Category-Specific-Uniform-Nutrition-Criteria.pdf> [Accessed March 20, 2014].
15. Cinar AB, Murtomaa H. 2009. A holistic food labelling strategy for preventing obesity and dental caries. *Obes Rev.* 10(3): 357-61.
16. de Koning L, Malik VS, Kellogg MD, Rimm EB, Willett WC, Hu FB. 2012. Sweetened beverage consumption, incident coronary heart disease, and biomarkers of risk in men. *Circulation.* 125(14): 1735-1741.
17. Drewnowski A, Moskowitz H, Reisner M, Krieger B. 2010. Testing Consumer Perception Of Nutrient Content Claims Using Conjoint Analysis. *Public Health Nutrition.* 13(5): 688-94.
18. Dye BA, Shenkin JD, Ogden CL, Marshall TA, Levy SM, Kanellis MJ. 2004. The relationship between healthful eating practices and dental caries in children aged 2-5 years in the United States, 1988-1994. *J Am Dent Assoc.* 135(1): 55-66.
19. Ervin RB, Kit BK, Carroll MD, Ogden CL. 2012. Consumption of added sugar among U.S. children and adolescents, 2005-2008. NCHS data brief no 87. Hyattsville, MD: National Center for Health Statistics. Available: <http://www.cdc.gov/nchs/data/databriefs/db87.htm> [Accessed March 20, 2014].
20. EWG (Environmental Working Group). 2011. Sugar in Children's Cereals. Available: http://www.ewg.org/report/sugar_in_childrens_cereals [Accessed March 20, 2014].
21. EWG (Environmental Working Group). 2012. Good Food on a Tight Budget. Available: <http://www.ewg.org/release/good-food-tight-budget-ewg-s-new-easy-use-guide> [Accessed March 20, 2014].
22. FDA (Food and Drug Administration). 1993. Food Labeling; Nutrient Content Claims – General Principles, Petitions, Definition of Terms; Definitions of Nutrient

- Content Claims for the Fat, Fatty Acid, and Cholesterol Content of Food. Fed. Reg. Vol 58, No. 3, 2302 – 2426, January 6, 1993.
23. FDA (Food and Drug Administration). 1998. Food Labeling; Nutrient Content Claims – General Provisions. Fed. Reg. Vol 63, No. 94, 26978 – 26980, May 15, 1998.
 24. FDA (Food and Drug Administration). 2013. Guidance for Industry: A Food Labeling Guide. Available: <http://www.fda.gov/FoodLabelingGuide> [Accessed April 1, 2014].
 25. FDA (Food and Drug Administration). 2014a. Food Labeling: Revision of the Nutrition and Supplement Facts Labels. Fed. Reg. Vol 79, No. 41, 11879 -11987, March 3, 2014.
 26. FDA (Food and Drug Administration). 2014b. Food Labeling: Serving Sizes of Foods That Can Reasonably Be Consumed at One-Eating Occasion; Dual-Column Labeling; Updating, Modifying, and Establishing Certain Reference Amounts Customarily Consumed; Serving Size for Breath Mints; and Technical Amendments. Fed. Reg. Vol 79, No. 41, 11990 - 12029, March 3, 2014.
 27. Ford CN, Slining MM, Popkin BM. 2013. Trends in dietary intake among US 2- to 6-year-old children, 1989-2008. *J Acad Nutr Diet.* 113(1): 35-42.
 28. Forshee RA, Storey ML. 2004. Controversy and statistical issues in the use of nutrient densities in assessing diet quality. *J Nutr.* 134(10): 2733-7.
 29. Garber AK, Lustig RH. 2011. Is fast food addictive? *Curr Drug Abuse Rev.* 4(3): 146-62.
 30. General Mills. 2011. Benefits of Cereal. Available: http://generalmills.com/~media/Files/benefits_cereal_2011_12.ashx [Accessed April 1, 2014].
 31. Gitlin M and Ellis T. 2012. *The Great American Cereal Book: How Breakfast Got Its Crunch.* Abrams Image (publisher).
 32. Glinsmann WH, Irausquin H, Park YK. 1986. Evaluation of health aspects of sugars contained in carbohydrate sweeteners. Report of Sugars Task Force, Center for Food Safety and Applied Nutrition, Food and Drug Administration. *J Nutr.* 116(11 Suppl): S1-216.
 33. Harris JL, Schwartz MB, Brownell KD, Sarda V, Weinberg ME, Speers S, Thompson J, Ustjanauskas A, Cheyne A, Bukofzer E, Dorfman L, Byrnes-Enoch H. 2009. Cereal FACTS: evaluating the nutrition quality and marketing of children's cereals. Available: http://www.cerealfacts.org/media/Cereal_FACTS_Report.pdf [Accessed April 1, 2014].
 34. Harris JL, Schwartz MB, Ustjanauskas A, Ohri-Vachaspati P, Brownell KD. 2011a. Effects of serving high-sugar cereals on children's breakfast-eating behavior. *Pediatrics.* 127(1): 71-6.
 35. Harris JL, Thompson JM, Schwartz MB, Brownell KD. 2011b. Nutrition-related claims on children's cereals: what do they mean to parents and do they influence willingness to buy? *Public Health Nutr.* 14(12): 2207-12.
 36. Harris JL, Schwartz MB, Brownell KD, Sarda V, Dembek C, Munsell C, Shin C, Ustjanauskas A, Weinberg M. 2012. Cereal FACTS 2012: Limited progress in the nutrition quality and marketing of children's cereals. Available: <http://www.rwjf.org/content/dam/farm/reports/reports/2012/rwjf73206> [Accessed April 1, 2014].
 37. InterAct consortium. 2013. Consumption of sweet beverages and type 2 diabetes incidence in European adults: results from EPIC-InterAct. *Diabetologia.* 56(7): 1520-30.
IOM (Institute of Medicine). 2002. Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids. Available: <http://www.nap.edu/openbook.php?isbn=0309085373> [Accessed April 1, 2014].
 38. Johnson RK, Appel LJ, Brands M, Howard BV, Lefevre M, Lustig RH, Sacks F, Steffen LM, Wylie-Rosett J; American Heart Association Nutrition Committee of the Council on Nutrition, Physical Activity, and Metabolism and the Council on Epidemiology and Prevention. 2009. Dietary sugars intake and cardiovascular health: a scientific statement from the American Heart Association. *Circulation.* 120(11): 1011-20.
 39. Ludwig DS, Majzoub JA, Al-Zahrani A, Dallal GE, Blanco I, Roberts SB. 1999. High glycemic index foods, overeating, and obesity. *Pediatrics.* 103(3): E26.
 40. Malik VS, Popkin BM, Bray GA, Després JP, Hu FB. 2010. Sugar-sweetened beverages, obesity, type 2 diabetes mellitus, and cardiovascular disease risk. *Circulation.* 121(11): 1356-1364.
 41. Marriott BP, Olsho L, Hadden L, Connor P. 2010. Intake of added sugars and selected nutrients in the United States, National Health and Nutrition Examination Survey (NHANES) 2003-2006. *Crit Rev Food Sci Nutr.* 50(3): 228-58.
 42. Moynihan PJ, Kelly SA. 2014. Effect on caries of restricting sugars intake: systematic review to inform WHO guidelines. *J Dent Res.* 93(1): 8-18.
NCI (National Cancer Institute). 2010. Usual intake of added sugars. In: Usual Dietary Intakes: Food Intakes, US Population 2001-04. November 2008. Available: <http://riskfactor.cancer.gov/diet/usualintakes/added sugars>.

- [html](#) [Accessed April 9, 2014].
43. O'Neil CE, Zhanovec M, Nicklas TA, Cho SS. 2012. Presweetened and Nonpresweetened Ready-to-Eat Cereals at Breakfast Are Associated With Improved Nutrient Intake but Not With Increased Body Weight of Children and Adolescents: NHANES 1999-2002. *Amer J of Lifestyle Med.* 6(1): 63-74.
 44. Pomeranz JL. 2013. A comprehensive strategy to overhaul FDA authority for misleading food labels. *Am J Law Med.* 39(4): 617-47.
 45. Rampersaud GC, Pereira MA, Girard BL, Adams J, Metz J. 2005. Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents. *J Am Diet Assoc.* 105(5): 743-60.
 46. Reedy J, Krebs-Smith SM. 2010. Dietary sources of energy, solid fats, and added sugars among children and adolescents in the United States. *J Am Diet Assoc.* 110(10): 1477-84.
 47. Sampson AE, Dixit S, Meyers AF, Houser R Jr. 1995. The nutritional impact of breakfast consumption on the diets of inner-city African-American elementary school children. *J Natl Med Assoc.* 87(3): 195-202.
 48. Sclafani A. 2013. Gut-brain nutrient signaling. Appetition vs. satiation. *Appetite.* 71: 454-8.
 49. Slining MM, Popkin BM. 2013. Trends in intakes and sources of solid fats and added sugars among U.S. children and adolescents: 1994-2010. *Pediatr Obes.* 8(4): 307-24.
 50. USDA (United States Department of Agriculture). 2003. Agricultural Fact Book. Available: <http://www.usda.gov/documents/usda-factbook-2001-2002.pdf> [Accessed March 30, 2014].
 51. USDA (United States Department of Agriculture). 2014. Special Supplemental Nutrition Program for Women, Infants and Children (WIC): Revisions in the WIC Food Packages. *Fed. Reg.* Vol 79, No. 42, 12274 - 12300, March 4, 2014. Available: http://www.fns.usda.gov/sites/default/files/03-04-14_WIC-Food-Packages-Final-Rule.pdf [Accessed April 6, 2014].
 52. USDA and DHHS (United States Department of Agriculture and Department of Health and Human Services). 2010. Dietary Guidelines for Americans, 2010. Available: <http://www.cnpp.usda.gov/dietaryguidelines.htm> [Accessed March 30, 2014].
 53. Wang H, Steffen LM, Zhou X, Harnack L, Luepker RV. 2013. Consistency between increasing trends in added-sugar intake and body mass index among adults: the Minnesota Heart Survey, 1980-1982 to 2007-2009. *Am J Public Health.* 103(3): 501-7.
 54. Welsh JA, Sharma A, Cunningham SA, Vos MB. 2011. Consumption of added sugars and indicators of cardiovascular disease risk among US adolescents. *Circulation.* 123(3): 249-57.
 55. WHO (World Health Organization). 2003. Diet, nutrition and the prevention of chronic diseases: Report of a Joint WHO/FAO Expert Consultation. WHO Technical Report Series, No. 916. Available: http://whqlibdoc.who.int/trs/WHO_TRS_916.pdf [Accessed March 30, 2014].
 56. WHO (World Health Organization). 2014. Draft guidelines on free sugars released for public consultation, 5 March 2014. Sugars intake for adults and children. Available: <http://www.who.int/mediacentre/news/notes/2014/consultation-sugar-guideline/en/> [Accessed March 21, 2014].
 57. Yang Q, Zhang Z, Gregg EW, Flanders WD, Merritt R, Hu FB. 2014. Added Sugar Intake and Cardiovascular Diseases Mortality Among US Adults. *JAMA Intern Med.* 174(4): 516-24.