

We used a variety of data sources and methods to provide a comprehensive analysis of food and drink products intended for babies and toddlers in the United States. Through publicly available data, we document and evaluate the nutrient content of baby and toddler food, infant formula, toddler milk, and nutritional supplements for children under age 3 and the marketing practices used to promote these products in 2015. We also document changes in advertising compared with 2011 whenever possible.

Our analyses include evaluation of the nutrition content and nutritional quality of baby and toddler food and drink products; marketing messages on product packages and other packaging issues; advertising spending in all media, TV advertising exposure (primarily viewed by women), and messages and other content of magazine and TV advertisements; marketing in digital media, including visits to company websites, display advertising on third-party websites, and marketing in social media on social media platforms, YouTube, and “mom blogs;” and targeted marketing of baby and toddler food and drinks to Hispanic and black parents.

We did not have access to food industry proprietary documents, including privately commissioned market research, media, and marketing plans or other strategic documents. Therefore, we do not attempt to interpret companies’ goals or objectives for their marketing practices. Rather, we provide transparent documentation of: 1) the nutrient content of baby and toddler food and drink marketing to parents; 2) the amount of advertising in traditional and digital media and the messages used to promote these products on packages and in the media, including marketing targeted to Hispanic and black parents; and 3) changes in advertising that occurred from 2011 to 2015.

Scope of the analysis

We define baby and toddler food and drinks as products that companies indicate are specifically intended for babies or children under age 3. Five product categories are included in the analysis: baby food, toddler food, infant formula, toddler milk, and nutritional supplement. This analysis does not include baby juice, refrigerated yogurt, or cereal products. We also exclude specialty formulas intended for infants or toddlers with specific dietary needs (e.g. pre-term infants or protein allergies) and products designed to be added to other food or drinks (e.g., “mix-ins”).

We used Nielsen data to identify brands from companies with \$100,000 or more in total advertising spending on baby and toddler food and drinks in 2015. These brands are included in the market and nutrition analyses.

We assigned a company, brand, variety, category and sub-category designation to all baby and toddler food and drink products offered by the advertised brands as previously identified.

Company refers to the company that owns the brand, as listed on the product package or the official brand website.

Brand refers to the main marketing unit for each product. In most cases, we use the brand names designated by Nielsen. However, we designate separate brands for products identified by the company as being made specifically for baby or toddler consumption. For example, Happy Family is separated into Happy Baby and Happy Tot, and Gerber Graduates is a separate brand of toddler food. However, Gerber brand offered varieties for both babies and toddlers, so some of its products are included in the baby food category, while others are in the toddler food category.

In most cases, we also designate **varieties** within brands to identify a subset of products that differ substantially in stage, nutritional quality, packaging type, or other features (e.g., organic vs. natural fruit puree).

- Most baby food brands differentiate their products by **stage**, indicating the appropriate age to serve the products in the product name or on the official brand website (e.g. Beech-Nut Stage 1 for babies at 4 months, Gerber 1st Foods for babies that are “supported sitters”). Each stage is listed as a separate variety.
- Other varieties differ by types of ingredients or other product characteristics. For example, Beech-Nut includes Classics, Naturals, and Organic versions of its baby food. As a result, Beech-Nut varieties include Stage 1, Classics; Stage 1, Naturals; and Stage 1, Organic; as well as Stage 2 and Stage 3 varieties of each.

Product refers to each specific flavor or modification of a brand or variety.

The following **categories** are used to describe the baby and toddler food and drinks in our analysis:

- **Baby food** includes food products that companies indicate are specifically intended for infants younger than 12 months.
- **Toddler food** includes food products that companies indicate are intended for children 1 to 3 years old.
- **Infant formula**, referred to by the Federal Food, Drug, and Cosmetic Act (FFDCA) as “a food which purports to be or is represented for special dietary use solely as a food for infants by reason of its simulation of human milk or its suitability as a complete or partial substitute for human milk.”¹
- **Toddler milk** includes powdered milk drink supplements with nutrients or formulations specifically for toddlers 1 to 3 years old, as indicated on the product package and/or the official brand website.

- **Transition formula** is a sub-category of toddler milk that brands have specified as appropriate for both babies younger than 12 months and for older children, as indicated on the product package and/or the official brand website (e.g., Enfagrow Toddler Transitions for children 9-18 months). These products use the nutrition facts panel for infant formula.
- **Nutritional supplement** includes products identified as containing a "dietary ingredient" that enhances the diet and nutritional value of the products for children under 3 years old and that are consumed alone as a food or meal. We do not include supplements that are added to other foods (e.g., mix-ins).

In some analyses, we also use the following **sub-categories** to describe the type of baby food or toddler food according to the texture and/or ingredients in the product:

- **Pureed single food group** refers to fruits and vegetables ground, pressed, blended, or sieved to the consistency of a soft creamy paste or thick liquid. For this analysis, fruits and vegetables are considered as one food group.
- **Pureed mixed food** refers to fruits, vegetables, and other ingredients ground, pressed, blended, or sieved to the consistency of a soft creamy paste or thick liquid. These products consist mainly of fruits and vegetables plus grain or dairy products.
- **Textured mixed food** refers to food ground, pressed, or blended to the consistency of a thick puree with lumps or small pieces that require very little chewing. These products also consist mainly of fruits and vegetables plus grain or dairy products.
- **Bitesize food and meals** include products with pieces of food small enough to be eaten in one mouthful and that require chewing (e.g., fruit or vegetable cubes, small pasta pieces), typically served as finger foods for babies.
- **Grain-based snacks** include foods with grains as the main ingredients that are typically consumed on their own outside of main meals, require minimal preparation, and are easily portable.
- **Fruit-based snacks** include foods with fruit as the main ingredients that are customarily consumed on their own outside of main meals, require minimal preparation, and are easily portable.

Nutritional content

We compiled nutrition information for the baby and toddler food and drink brands in our analysis from company or brand websites from May to June 2016. Researchers called companies' customer service lines when nutrition and/or ingredient information was unavailable online. We were able to retrieve nutrition information for all brands analyzed through one of these methods.

The nutrition information for baby and toddler food and drinks is reported per serving size as stated on products' nutrition facts panels. We also identify the specific ingredients listed on the nutrition facts panels. The nutrition for products in each category are evaluated separately due to significant differences in nutritional content by category.

The following measures for nutrition content are reported by brand, as well as by variety when there were notable differences between products within a brand:

- **Nutrition information** refers to serving size (g), calories (kcal), fat (g), saturated fat (g), sugar (g), sodium (mg), fiber (g), and protein (g) per serving as provided on the product nutrition facts panel. Medians and ranges are reported for baby and toddler food and drink brands and varieties.
- **Ingredient information** refers to the presence or absence of specific components of a product as indicated on the ingredient list on the nutrition facts panel.
- **Main ingredient** describes any ingredient listed as one of the first five components of a product as indicated on the ingredient list of the nutrition facts panel.
- Products with **added sweeteners** include products with any type of added sugar listed in the nutrition facts panel, including syrups (agave, corn, cane, brown rice, glucose, and high fructose corn), sugar, dextrose, sucrose, lactose, fructose, and honey. Grams of added sugars are not specified in the nutrition labels, therefore amounts are not reported in this analysis.

Nutritional Profiling Index (NPI) score

The NPI score is based on the nutrition rating system established by University of Oxford researchers for the Food Standards Agency in the United Kingdom.² Their Nutrient Profiling model (NPM) is currently used by the U.K. Office of Communications (OFCOM) to identify nutritious foods that can be advertised to children on TV.³ Additionally, the model has been approved by Food Standards Australia New Zealand to identify products that are permitted to use health claims in their marketing.⁴ The NPM provides one score for a product based on total calories and composition of both nutrients to limit (e.g., saturated fat, sugar, and sodium) and nutrients and food groups to encourage (e.g., fiber, protein, and unprocessed fruit, nut, and vegetable content).

The NPM has several advantages over other nutrient profiling systems. Researchers developed the model without food industry funding; and its development and scoring method is publicly documented and transparent. Further, it has been validated to reflect the judgment of professional nutritionists.⁵ The model also produces a continuous score that provides a relative evaluation of products, in contrast to threshold models that simply classify foods as "healthy" or "unhealthy." In addition, the model includes only nutrients that are reasonable and well-justified based on existing nutrition science. In particular, the model does not award points for

micronutrient fortification, thereby not rewarding vitamins and minerals added to inherently unhealthy products.

However, it is difficult to interpret the original scores produced by the NPM as it is reverse scored (i.e., a higher score indicates a product of worse nutritional quality). Scores range from +34 (worst) to -15 (best). Therefore, we created a Nutrient Profiling Index (NPI) score using the following formula: $NPI \text{ score} = (-2) * NPM \text{ score} + 70$. For example, a relatively nutritious food with an NPM score of -3 would receive an NPI score of 76 $(-2 * -3 + 70)$. This recalculation produces a score from 0 (poorest nutritional quality) to 100 (highest nutritional quality) that is easier to interpret and compare.

We calculated the NPI score for all baby and toddler food, toddler milk, and nutritional supplement products in our analysis. To identify baby and toddler food with a healthy nutrient composition, we used the cut-offs established by OFCOM in the United Kingdom to identify healthy products that can be advertised on children's TV programs or during programs with a disproportionate number of viewers younger than 16 years old.⁶ An NPM score of 3 or lower translates to a revised NPI score of 64 or higher to qualify as a nutritious food product that can be advertised to children on TV. Drink products must have an NPI score of 70 or higher to qualify as nutritious. We did not score infant formula, as the NPI scoring model gives higher values to products with greater protein and fiber, which are nutrients that should be provided to infants in limited amounts.

Additionally, we identified a subset of the most nutritious food products with an NPI score of 76 or higher, which was the median NPI score for all baby food products with a healthy NPI score.

Product packaging

In this section, we analyze the marketing messages appearing on product packages and other issues regarding packaging of baby and toddler food and drinks, including concerns about baby and toddler food products in pouch packaging, mismatches between product names and ingredients in the products, and potential consumer confusion over the difference between infant formula and toddler milk.

Messages on product packages

In the content analysis of the marketing messages that appear on baby and toddler food and drink product packaging, researchers used a coding manual adapted from previous analyses of on-package marketing for other food categories, including sugary drinks⁷ and candy.⁸ Researchers visited local supermarkets to take pictures of baby and toddler food and drink packages for pilot coding. After coders conducted a preliminary assessment of the marketing messages on the product packages, inconsistencies were discussed and the coding manual was modified to clarify discrepancies

and include additional marketing messages that appeared frequently on these packages. The final codebook included the following types of messages:

- **Nutrition-related** messages involve any explicit information about product nutrition, including ingredients, vitamins and nutrients, and the absence of unwanted ingredients:
 - **Ingredients** describe messages about the product's ingredients, including the quality of the product ingredients, their source (e.g., "farm-fresh/farm-grown"), references to servings of a food group (e.g., fruit, vegetable, protein), organic, natural, and real descriptions (e.g., made with "real" yogurt).
 - **Vitamins and nutrients** include mentions describing the product as nutritious or nourishing (including any words with the root "nutri," such as "nutrient rich") and mentions of specific vitamins and nutrients, including DHA, Omega-3 or 9, vitamin D, calcium, lutein, iron, fiber, protein, and other vitamins.
 - **Absence** messages describe the lack of potentially unwanted ingredients in the product or its package, such as no artificial flavors, colors, or preservatives; unsweetened, unsalted, no added starch, gluten-free, BPA-free packaging, non-GMO; and references to minimal processing.
- **Child development** messages convey benefits to children's development and/or health from consuming the product, including supporting brain/cognitive development, physical development (including growth and motor coordination), and eating development (such as promoting chewing, product texture and small pieces, good for picky eaters, and promoting a fruit or vegetable); eye health; digestive health (gassiness, colic, lactose intolerance); and less crying or better sleep.
- **Convenience** includes messages that the product is easy to prepare or ready-to-eat, good for on-the-go, and easy to clean up.
- **Child appeal** messages indicate that the product appeals to children, including brand characters, cartoon images, and direct claims that children will like the taste or will enjoy the product in other ways (e.g., fun to eat).
- **Promotions** describes other types of marketing strategies, including endorsement by scientific studies or an authority (e.g., "scientifically proven," "recommended by pediatricians"), trust and novelty appeals (e.g., "trusted by moms," "new/improved," "goodness," and "good for your baby"), and tie-ins with other brands (e.g., "made with Enfamil milk") or causes.
- Specific product **disclaimers** include statements referencing breastmilk and indications that the consumer should consult with a pediatrician.

- **Spanish-language** indicates packages with one or two lines of information in Spanish (e.g., a phone line “en español”), as well as more detailed product information and/or product use instructions in Spanish.

Using the list of products obtained for the nutrition analysis (described earlier), researchers selected every third product within each variety of each brand for coding. If a variety included fewer than four products, all products on the list were included. The most available package type that could be compared across different brands was selected for coding. If products were available in multiple forms of packaging with similar messages, the larger package type was coded. The following **package types** were coded by category and sub-category:

- Baby and toddler food (pureed single food group, pureed mixed foods, textured mixed foods, and bitesize food and meals): Jars, single-serving pouches, pack of two tubs (e.g., 2.5-oz, 4-oz, and 5-oz), and trays.
- Baby and toddler food (grain-based and fruit-based snacks): Packets, cans, bottles, and boxes.
- Infant formula and toddler milk: Large cans (e.g., 20-oz).
- Nutritional supplement: Multipack of six bottles.

Researchers collected the data by surveying product packages in two large supermarkets in Hartford and West Hartford, Connecticut in June 2016. Six researchers conducted in-store surveys in pairs to ensure that all messages were recorded. If a selected product was not available, another product of the same variety with similar ingredients and packaging was coded instead. As infant formula and toddler milk products were not stocked on the supermarket shelves (they are often kept in a locked display), researchers took pictures of the packages for coding. Two researchers analyzed the images and coded all claims. Researchers recorded the existence of each type of message and the specific messages. They also wrote in any additional messages that were not included on the coding form, such as “Certified organic by CCOF.” All messages were recorded regardless of their location on the package, excluding messages on the nutrition facts panel.

Duplicates of packages coded in both stores were removed from the analysis. In addition to analyzing on-package messages by brand and variety, we combined them to report averages by category and sub-category. Ingredients, vitamins and nutrients, and absence messages were coded separately and combined for total nutrition-related messages per package. The proportions of packages containing any of each type of message and the average number appearing on packages with the message are reported.

Special issues in product packaging

We conducted additional packaging analyses to evaluate issues that have been raised about baby and toddler food and drink products.

We classify products according to three main types of baby and toddler food packaging:

- **Jars** are mostly used for pureed or textured foods. Caregivers must use a spoon to feed the child.
- **Pouches** are mostly used for pureed or textured foods and enable the child to self-feed by using a sucking motion.
- **Packet, can, tub or trays** are used for bitesize food and meals, and grain-based and fruit-based snacks. These products are typically designed for self-feeding.

We also compared the names of 371 baby and toddler food products and their main ingredients (defined as the first five ingredients listed on the product’s nutrition facts panel) to determine whether the product names accurately conveyed their ingredients. We identified three levels of agreement between product names and main ingredients:

- **Level 1:** Product name matches ALL main ingredients.
- **Level 2:** Product name omits main ingredients OR includes ingredients present in small amounts.
- **Level 3:** Product name omits most of the main ingredients AND includes ingredients present in small amounts.

Finally, we compared infant formula and toddler milk products for the same brands, including colors and branding on the package, age range (in months) as indicated on the product package and/or the official brand website, and the price-per-ounce for each product. The regular price-per-ounce was obtained from the Babies “R” Us website,⁹ disregarding sales or special temporary pricing.

Traditional media

To analyze advertising spending and TV advertising exposure, we licensed data from Nielsen for 2011 to 2015 for all brands and brand varieties of products in Nielsen’s “Infant foods” category (PCC F124). We also include brand varieties in Nielsen’s “Milk” (PCC F131) and “Nutritional Supplement” (PCC D215) categories that meet our definitions of toddler milk and nutritional supplements for children.

All advertised brand varieties (as identified by Nielsen) are categorized by product category, company, and brand. We report these results at the category, company, brand, and variety levels. Our brand analyses focus on companies with \$100,000 or more in advertising spending in 2015, but company results include all brands that meet our definition of baby food, toddler food, toddler milk, infant formula, or nutritional supplement. In some sections, we also include brands with little or no advertising in 2015, but with notable marketing in previous years.

Advertising spending

Nielsen tracks total advertising spending in 17 different media, including national (network, cable, and syndicated) and local

(spot) TV, Spanish-language TV, internet, radio, magazines, newspapers, free standing insert coupons (FSIs), and outdoor advertising. Our measure of **total advertising spending** includes advertising expenditures in all 17 measured media provided by Nielsen. **TV spending** includes spending just on TV, including all national (network, cable, and syndicated), local, and Spanish-language TV.

To identify advertising spending on TV targeted to black and Hispanic viewers, we used targeted network distributor filters predefined by Nielsen for black-targeted TV and Spanish-language TV.

- **Black-targeted TV** includes cable TV providers (Black Entertainment Television [BET], Centric, NBA TV, VH1, and TV One [TV1]) and syndicated TV (Badami Productions and Central City Productions).
- **Spanish-language TV** includes network TV stations (Azteca, Estrella TV, MundoMax, MTV Tr3s [MT3], Telemundo, Unimas, and Univision) and cable TV providers (DSC Familia, Discovery En Espanol, ESPN Deportes, Fox Deportes, Galavision, GOL TV, MTV Tr3s [TR3S], Univision Deportes, and NBC Universo).

TV advertising exposure

To measure exposure to TV advertising, we also licensed gross rating points (GRP) data from Nielsen for the aforementioned time period and categories. GRPs measure the total audience delivered by a brand's media schedule, expressed as a percentage of the population that was exposed to each commercial over a specified period of time across all types of TV programming. GRPs are the advertising industry's standard measure to assess audience exposure to advertising campaigns, and Nielsen is the most widely used source for these data.¹⁰ GRPs, therefore, provide an objective assessment of advertising exposure. In addition, GRPs can be used to measure advertisements delivered to a specific audience, targeting a specific age group or other demographic characteristic (also known as target rating points or TRPs), and provide a per capita measure to examine relative exposure between groups. For example, if a baby food brand had 2,000 GRPs in 2015 for women and 1,000 GRPs for men, then we can conclude that women saw twice as many ads for that brand in 2015 compared with men.

In the TV advertising analyses, we obtained 2011 through 2015 GRP data for women and men 18 to 49 years old. These data provide total exposure to national (network, cable, and syndicated) and local (spot market) TV combined. We also obtained GRPs for advertising viewed by black and white women and men 18 to 49 years on national TV only, as Nielsen does not provide spot market GRPs by viewers' race at the individual level. To assess exposure by Hispanic women and men ages 18 to 49 to Spanish-language advertising, we provide GRP data for advertising that occurred on Spanish-language TV.

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

- **Average advertising exposure** 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 individuals in that demographic group during the time period measured. For example, if Nielsen reports 2,000 GRPs for women for a brand in 2015, we can conclude that on average all women viewed 20 ads for that brand in 2015.
- **Targeted 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:
 - **Women:men targeted ratio** = GRPs for women (18-49 years)/GRPs for men (18-49 years)
 - **Black:white targeted ratio** = GRPs for black adults (18-49 years)/GRPs for white adults (18-49 years)

A targeted ratio greater than 1.0 indicates that on average persons in the group of interest (women or black adults) viewed more advertisements than persons in the comparison group, (men or white adults). A targeted ratio of less than 1.0 indicates that the person in the group of interest viewed fewer ads.

TV advertising content analysis

We conducted a content analysis to evaluate the messages and marketing techniques used in advertisements that appeared on TV, online videos, and magazines. Using the AdScope database from Kantar Media, we obtained digital copies of all baby and toddler food advertisements from 10 brands that aired nationally in the United States from January 1, 2012 through December 31, 2015. Researchers viewed each ad and removed duplicates, including 15-second shortened versions of 30-second ads and ads for brands not included in the content analysis (e.g., baby food from Parent's Choice).

We used the coding manual developed for previous studies as the basis for the coding manual for the present study.¹¹ Three coders were trained to review the advertisements and code them for all items in the manual. Two coders analyzed the English-language ads and one coder analyzed both English- and Spanish-language ads. All coders participated in several pre-test group sessions, during which the project manager and coders evaluated 10 to 15 food advertisements during each session. Following these sessions, the project manager resolved coder disputes and revised and finalized the coding manual.

The final coding manual included six main types of messages:

- **Main selling point** describes the general focus of the ad or the product being sold, including specific product(s), promotion(s) (e.g., coupon, cause or contest), or the brand overall. Only one main selling point was coded.
- **Features of the product** includes any specific feature of the product communicated in the ad. Specific features coded include, **new/improved** if the ad discussed a new product or an improvement to an old one; **nutrition** for claims about the nutrition or nutrients in the product; **organic** if the ad mentioned organic ingredients or organic formulation (this was NOT included if organics was part of the brand's name); **natural** for ads with the words "natural," "real," "pure," or similar words to describe the food; **taste** for messages about the flavor or texture of the product; **scientific formula** for language about the product being "clinically proven" or based on "scientific studies;" **supplement** for claims about "filling the gaps" in a child's nutrition; **convenience** for mentions about being easy to prepare or portable; **satisfies children** for descriptions of soothing the child or satisfying picky eaters; **taste/approved by children** for references that the product has been tested by children or children love the product; and **servings of food group/vitamins** for mentions that the product provides a particular portion of an ingredient (e.g., "25% of the DV of calcium").
- **Benefits** describe messages that communicate any direct benefit to children from consuming the product. Specific benefits coded include, **digestive health** for messages about digestion, regularity, or colic; **physical development** for messages about enhancing growth or reaching a "milestone" like grasping; **mental performance** for implications that the product helps children's mental ability; **crying** if the product promises to reduce crying; **chewing** for messages that the product helps children's ability to chew; and **happiness** if the ad portrayed a happier child and/or parent. Pediatrician recommended is categorized as a separate type of benefit.
- **Indirect associations** describe implicit messages and indirect attributes of the product implied in the ad. Specific indirect associations coded include, **education** when the ad portrayed or suggested a connection to school or college; **fear appeals** to parents' worries about their children, such as nutrients missing in their diet; **humor** for ads with comedic elements (obvious or subtle), irony, or sarcasm; **family bonding** for depictions of families spending quality time together; **bonding with peers** for depictions of parents together and/or parents accepted by other parents; **nutrition experts** if the ad portrayed the companies as experts in child feeding; **parent/child conflict** for portrayals of disagreements between parent and child; **inspirational message** showing motivational aspects of child-rearing; and **help children learn** describing children reaching milestones like learning vocabulary

Reliability testing was conducted using a sample of 26 magazine ads and 15 TV/online video ads from the final inventory. Each coder coded the same subset of ads. Given the relatively small number of total ads in this content analysis, percent agreement was used to measure inter-rater reliability. For magazine ads, values ranged from 69% to 100% agreement. For TV/online video ads, percent agreement ranged from 56% to 100% agreement with 93% of the items receiving over 80% agreement. Items with lower than 60% agreement were discussed and redefined for clarity prior to moving forward with the final coding. The remaining advertisements were randomly assigned to the three coders, with one Spanish-speaking researcher coding all Spanish ads. Final coding occurred over a five-week period.

Digital media marketing

We document three types of marketing to adults on the internet: visitors to company websites, display advertising placed on other (i.e., third-party) websites, and earned mentions in social media and blogs.

Food company website exposure

To identify company websites, we obtained a list of websites from comScore Media Metrix for the companies in our analysis with data available during January through December 2015. For the purposes of this analysis, a **website** is defined as all pages containing the same stem URL. For example, Gerber.com is the website of interest, and www.gerber.com/products/baby-food is an example of a secondary page contained within the site. Websites were excluded if the home page did not predominantly feature baby or toddler food or drink products, either depicted visually or included in a product list. Non-consumer websites (e.g., a site designed for medical professionals) and corporate sites for investors were also excluded.

We obtained data on exposure to these websites from comScore Media Metrix Key Measures Report.¹² The company captures the internet behavior of a representative panel of about 350,000 users in the United States.¹³ It is the nation's largest existing internet audience measurement panel. The firm collects data at both the household and individual level using Session Assignment Technology, which can identify computer users without requiring them to log into an account. The company uses these panel data to extrapolate its findings to the total U.S. population. Companies participating with comScore can also have census tags placed on their web content and advertisements to further refine audience estimates. Using the comScore panel, we identified individuals' exposure to company websites, including exposure for both men and women. The Media Metrix database provides internet exposure data for all websites visited by at least 30 of their panel members in a given quarter.¹⁴ Media Metrix also provides exposure information by visitor age, gender, ethnicity, and race for higher volume websites.

For each quarter during the January through December 2015 period, we used the Media Metrix Key Measures Report to collect the following data for available websites: total unique visitors, total visits, average minutes-per-visit, and average visits per unique visitor. When enough website traffic was recorded in a given quarter, we also collected these measures separately for black and Hispanic visitors.

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

- **Average unique visitors per month** for white, black, and Hispanic women and men (18-49 years). This measure was calculated by adding average total unique visitors per month (reported quarterly by comScore, from January through December 2015) for each demographic group and dividing by four (to reflect four quarters).
- **Average visits-per-month, average pages-per-visit, and average time spent (min) per visit** for each unique visitor. Average monthly numbers (reported quarterly by comScore, from January through December 2015) were divided by the number of quarters for which data were available for each website. These numbers are reported for all adult visitors.

For each of the demographic groups with data, we also report a **targeted index**, which measures the extent to which visitors in that demographic group are over- or underrepresented among all visitors to a website compared to total internet visitors. Targeted indices greater than 100 signify that the demographic group is overrepresented on a website; and targeted indices less than 100 signify that it is underrepresented. For example, if 40% of black adults visited Gerber.com, but 20% of all other adults visited the site, the black adult targeted index for Gerber.com would be 200.

- **Women:men targeted index** was calculated by dividing the proportion of adult women (18-49 years) visiting the website by the proportion of adult men visiting the website. First, the percent of men or women who visited the website was obtained by averaging the number of monthly unique men and women visitors to the website for the four quarters of 2015 and dividing that number by the total number of men or women who visited all sites on the internet in 2015. The percent of women visiting the website was then divided by the percent of men visiting the website and multiplied by 100 to get the targeted index.
- **Black:white** and **Hispanic:non-Hispanic targeted indices** were calculated by dividing the proportion of black or Hispanic adult (18-49 years) visitors to the website by the proportion of white or non-Hispanic adult visitors to the website. First, the percent of black or Hispanic adults who visited the website was obtained by averaging the number of monthly unique black or Hispanic visitors to the website for the four quarters of 2015 and dividing that number by the total number of black or Hispanic adults who visited all sites on the internet in 2015. The same calculations were repeated for all white or non-Hispanic adults visiting the website during the four quarters of 2015. The percent of black or Hispanic

adults visiting the website was then divided by the percent of white or non-Hispanic adult visitors to the website and multiplied by 100 to get the targeted index. Targeted indices of women to men were also calculated for black and Hispanic adults.

Display advertising on third-party websites

Data for exposure to baby and toddler food and drink brand advertising on third-party websites (i.e., websites sponsored by other companies) were extracted from the comScore Ad Metrix Advertiser Report.¹⁵ comScore Ad Metrix monitors the same panel of users as comScore Media Metrix but tracks advertisements that are completely downloaded and viewable on a user's web browser. Ad Metrix measures individual exposure to display ads presented in rich media (SWF) and traditional image-based ads (JPEG and GIF). It does not capture text, video, or html-based ads. Ad Metrix also identifies the unique user viewing the advertisement, the third-party website on which the advertisement was viewed, and the company sponsoring the advertisement.

Third-party website data were collected for January through December 2015. During the time period of our analysis, Ad Metrix did not report demographic information about viewers of these advertisements. Consequently, we cannot differentiate between exposure by any specific demographic group, including Hispanic or black adults.

The Product Dictionary from comScore was used to identify the display advertisements for the baby and toddler food companies in our analysis. comScore provides display ad data for companies and websites in its dictionary that were viewed at least ten times by comScore panel members on the internet or on a specific publisher site. Ad Metrix captures copies of the actual display ads (i.e., creatives) that appeared on third-party websites. Researchers reviewed the creatives to identify companies that advertised baby and toddler foods and examined the display advertisements to determine the proportion of ads promoting baby and toddler foods. Companies with more than 50% of their ads promoting baby and toddler food products are included in the analysis. All other companies were excluded.

Measures available from comScore for each month include total display ads viewed (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 ads viewed per unique visitor by advertisers. This information is available for the total internet and for individual publisher (i.e., third-party) websites. The Key Measures Report was used to extract the average number of unique visitors to third-party websites.¹⁶

- **Average unique visitors per month**¹⁷ was calculated by adding the number of unique visitors exposed to advertising for a brand or promotion reported monthly from January through December 2015 and dividing by 12.

- **Average number of ads viewed per viewer per month** was calculated by averaging the number of ads viewed per viewer for the brand or promotion for each month from January through December 2015.

We also analyzed the placement of display advertisements on three types of websites where these ads appeared most often. **Family & youth-parenting** sites are categorized by comScore and include sites with resources and guidance on a number of topics involved with raising children. We identify third-party websites as **retailers** if the website primarily sells products to consumers. We define **social media** websites as sites in which individuals share or network with others on an online platform. The total ads viewed on each type of website and individual website was calculated from comScore as well as the number of ads placed on individual websites and website types by each brand included in the analysis.

Social media marketing

Finally, we measure companies' marketing for baby and toddler food and drink brands on the most popular social media platforms. We also examine brand activity on mom blogs.

We identified available social media accounts sponsored by baby and toddler food companies in various ways. First, we identified all social media links listed on company websites for the baby and toddler food and drink brands in our analysis. Of note, not all brands maintained separate websites. Many companies included multiple brands on the same website (e.g., Enfamil.com included both Enfamil and Enfagrow brands, Gerber.com included Gerber baby food, Gerber Graduates, and Gerber Good Start brands). We then searched within five popular social media platforms using the company and brand as keywords: Facebook, Twitter, Instagram, Pinterest and YouTube. We excluded: 1) pages that were not created or managed by the brand or company (e.g., Facebook community pages); 2) pages for non-U.S. users or with the majority of content in a foreign language; and 3) brands with fewer than 50,000 followers on any social media platform. Our search identified social media accounts that included multiple brands. For example, on Facebook, Instagram, Pinterest, and YouTube, the "Gerber" account included posts about Gerber baby food, Gerber Graduates toddler food, and Gerber Good Start infant formula. Similarly, "Enfamil" social media pages featured posts for Enfamil infant formula and Enfagrow toddler milk.

In August 2016, researchers recorded the following for each account identified above:

- **Likes for Facebook** accounts. Each brand's Facebook page lists the number of people who like the page and a link to invite users' friends to "like this Page." When the brand posts new content, a notification may appear on the "newsfeed" (i.e., Facebook home page) of individuals who like the brand.

- **Followers on Twitter, Instagram, and Pinterest.** Twitter, Instagram, and Pinterest pages list the number of followers for each account. Individuals can choose to "follow" brand accounts. Followers receive copies of a brand's new posts or notification new content was added to the brand page.

- **Views on YouTube** channels. YouTube enables companies to upload and share videos for the public to view. Brands maintain their own YouTube channels with playlists of available videos. Playlists are groups of videos organized by theme. Anyone can watch the videos online, but users can also "subscribe" to a channel and receive alerts whenever the company posts a new video. YouTube reports the number of views of its uploaded videos.

We conducted a qualitative review of the content of these social media accounts to identify brands promoted in posts, engagement devices used (e.g., requesting users to share photos or stories, providing a link to the brand's website or other social media, encouraging users to utilize the experts the brand provides), and content of videos available for users to view (appearing on Facebook and YouTube).

We also examined **posts** about the brands in our analysis that appeared on **mom blogs**. Mom blog posts describe entries in words and/or pictures that appear on a mom blogger's site and include the name of the brands in our analysis. Posts may contain links to other posts where the brand is mentioned (e.g., hashtags), a brand's website, or a brand's social media pages (e.g., Facebook, Twitter, Instagram). Some mom blogs report 300,000 or more page views per month (e.g., DearCrissy.com and RageAgainstTheMinivan.com).

We used Meltwater to identify posts from mom bloggers appearing from January 1 through December 31, 2015. Meltwater is a web-based media intelligence platform that monitors news media, online publications, and social media.¹⁸ We utilized the social media database to search mom blogs for relevant brand and company keywords. Meltwater's platform monitors thousands of mom blogs, including the top-50 U.S. mom bloggers in 2014.¹⁹

First, we identified 19 keywords found in mom blogs to use in the Meltwater search (e.g., mom*, baby, review, contest, sample). Of note, we also included the search term "dad" to collect posts by dad bloggers, but none of the dad blogs identified met the criteria for inclusion in our analysis. We searched Meltwater's social media blog database for these keywords, along with company and brand names that appeared in blogs posted from January 1 to December 31, 2015. The initial search returned millions of hits, including many unrelated posts such as news about stock prices and other stories or references to names not related to the brands in our analysis (e.g., "Gerber" is also a popular surname and part of the name of a life insurance company). To remove unrelated blog posts, specific eliminating words were used in subsequent searches, such as NYSE, NASDAQ, invest*, earning, insurance, and theft. After refining the search terms and eliminating duplicates, the search returned 2,247 blog posts for the brands in our analysis.

Researchers then reviewed each post and removed irrelevant posts not detected by Meltwater's program (e.g., additional duplicates, business news, non-U.S. based blogs, unrelated company activities, and references to adult consumption of brands), obtaining 1,375 posts for analysis. The researchers then coded each blog post that mentioned a baby or toddler food or drink brand as one of the following types:

- **Use/like/discuss** posts contain mentions of a brand that the mom blogger uses and/or likes, but do not appear to be sponsored by a brand. For example, mom bloggers described the products her baby consumes, best brand for traveling, and in some cases her choice for addressing her baby's specific needs (e.g., acid reflux, illness). None of these posts contained disclaimers on the same page as the mention to indicate the post is sponsored by a company.
- **Loyalty program endorsement** posts discuss how parents can save money on specific products by participating in loyalty programs, including Amazon Family (formerly Amazon Mom), Enfamil Family Beginnings, and Similac StrongMoms. None of these endorsements contained disclaimers on the same page as the endorsement to indicate that the post was sponsored.
- **Mom coupon blogger** posts list or link to a manufacturer or retailer or indicate where the brand is sold at a reduced price. Sometimes these posts referred to a single brand, but more often the brand was included in a list of various products (including other types of products) under "good deals" or "on sale this week." The majority of these posts did not contain disclaimers to indicate the post was sponsored, but clicking on other links on the page (i.e., about this blog) often revealed the blogger's support from brands. For

example, one blogger reported that she receives a small compensation when visitors click on an affiliate link. Posts with coupon links and those endorsing a loyalty program are coded as a loyalty program endorsement.

- **Sponsored post or product review** includes posts in which the blogger indicates that she has received direct compensation, such as free items or monetary payment from a company in return for posting information related to a brand or writing a review of a product. The majority of these posts contain disclaimers to comply with Federal Trade Commission (FTC) rules.²⁰ To arrange this transaction, companies may contact a blogger directly or utilize a business that connects brands with bloggers (e.g., BzzzAgent.com, InfluenceCentral.com, Influenster.com, TapInfluence.com, and SavvySassyMoms.com).²¹
- **Unique campaign** posts mention 2015 brand-sponsored videos or contests. Some of these posts had disclaimers indicating the blogger received compensation from the brand.
- **Other** posts could not be categorized as one of the types listed above.

The Rudd Center report entitled "Nutrition and marketing of baby and toddler food and drinks" is an independent publication and has not been authorized, sponsored, or otherwise approved by the companies cited within this report, including: Abbott, Campbell Soup Company, The Hain Celestial Group Inc., Hero AG, Mead Johnson Nutrition, Nurture Inc., or Walmart.

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