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The Prevalence of the "Natural" Claim on Food Product Packaging

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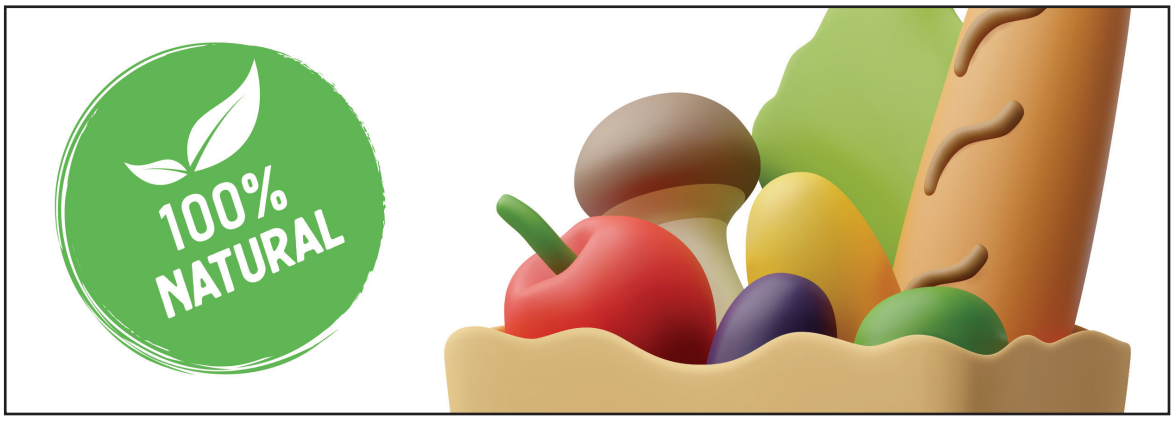

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Abstract

U.S. food suppliers make claims about their production processes on food packaging that highlight attributes some consumers want while charging a higher price than for unlabeled products. Some labels use such claims as "USDA Organic" and "raised without antibiotics," which require different and more expensive production techniques than conventional agriculture. However, food suppliers can use the label that claims the food is "natural" at a relatively low cost because regulatory agencies treat the claim as meaning nothing artificial was added and the product was minimally processed. Numerous consumer food choice studies concluded that consumers equate the natural label on food with healthier food choices and more costly production practices that signify environmental stewardship. Informed by these previous studies' findings, the authors of this report estimate the frequency with which food suppliers make the natural claim on food packaging labels. Estimates are based on scanner data and comprehensive label data. Across all foods in 2018, 16.3 percent of retail food expenditures and 16.9 percent of all items purchased (unit sales) were for foods labeled natural, whereas 11.0 percent of Universal Product Codes (UPC) in stores were labeled natural on the packaging. Expenditures for food labeled natural were larger than expenditures for foods labeled USDA Organic. Natural labels were found predominately on processed products. For example, 95.6 percent of expenditures for vitamins and meal supplements were for products labeled natural, compared with 0.5 percent of expenditures for potatoes.

Keywords: natural food, label claims, market shares, scanner data, comprehensive label data, U.S. food consumers

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The Prevalence of the "Natural" Claim on Food Product Packaging

Introduction

Studies of consumers' perceptions and behavior have demonstrated that many consumers treat food and beverage products labeled "natural" as more healthful and environmentally beneficial than products without such label claims. The implications of these findings are that consumers are assigning health and production attributes to foods labeled natural even though those foods may not possess the attributed qualities. These misconceptions may influence consumers' food choices. The economic problem raised by natural labels is that consumers could be paying extra for product attributes they are not receiving while producers of products with those attributes lose sales. As a consequence, any health and environmental stewardship benefits that might have been realized from consumers choosing products that matched their preferences could be lost.

The magnitude of the economic problem depends on how often consumers make a purchase based on a misinterpretation of the label. Understanding consumers' decision processes is difficult, but the frequency with which consumers see natural labels can be estimated. If a relatively large number of food products label their packaging with the claim, then consumers are likely to encounter the claim frequently as they shop for groceries. If repetition makes a claim more compelling for consumers, frequently seeing the natural claim might increase consumers' interest in foods labeled natural and increase the misalignment between consumers' intended food purchase qualities and actual purchase qualities.

This report estimated the size of the market for foods labeled natural. Estimates were made for the share of all foods sold at retail, major food groups, and component foods. Researchers at USDA's Economic Research Service (ERS) found that the frequency with which foods are labeled natural varies by food group. For example, 95.6 percent of vitamin and supplement expenditures were for products labeled natural, and 0.5 percent of expenditures for potatoes were for products labeled natural.

What Do Regulatory Authorities Say the "Natural" Claim Means?

USDA's Food Safety and Inspection Service (FSIS) is responsible for ensuring that meat, poultry, catfish, and egg products are safe and properly labeled and packaged (USDA, FSIS, no date). Natural claims (e.g., "all natural," "100% natural," "made with natural ingredients") are not defined in USDA, FSIS regulations but are one of many special claims made on labels that USDA, FSIS must approve prior to food being sold (USDA, FSIS, 2005). Supporting documentation for the special statement or claim must be included as part of the labeling record (USDA, FSIS, 2020). USDA, FSIS allows a natural claim so food suppliers can highlight their use of natural flavoring and minimal processing of meat, not to indicate how the animal was raised. Artificial ingredients or colors cannot be added during processing, and the processing method cannot fundamentally alter the product (USDA, FSIS, 2008).

The U.S. Food and Drug Administration (FDA) regulates all foods and food ingredients introduced into or offered for sale in interstate commerce, except for meat, poultry, certain processed egg products, and catfish, which are regulated by USDA. FDA has not established a regulatory definition or standards to use the natural claim. However, the agency has operated under the longstanding policy that natural means nothing artificial or synthetic has been added to a food product (FDA, 2018).

Neither the FDA's nor USDA's policy decisions address the health benefits or farm production methods consumers might attribute to natural-labeled foods. The definitions do not address human health, the use of synthetic pesticides, genetically modified organisms, hormones, or antibiotics in crop and livestock production. The definitions stand in contrast to the National Organic Program (NOP), a Federal regulatory program that develops and enforces consistent national standards for organically produced agricultural products sold in the United States. NOP also accredits third-party organizations to certify that farms and businesses meet the national organic standards (USDA, AMS, no date).

Evidence That Consumers Attribute Too Many Beneficial Qualities to Natural Labels

Most research regarding natural labels has been conducted as consumer perception studies and through experimental markets—i.e., transactions made in a laboratory setting, sometimes for hypothetical products, not arm's-length cash transactions. Often such studies require significant time commitments from respondents, so it has been difficult to construct a panel large enough to yield precise aggregate answers that are representative of the domestic U.S. economy. However, the existing studies have been remarkably consistent in identifying that most consumers mistakenly assign health and environmental stewardship attributes to natural-labeled food.

Skubisz (2017) constructed an online panel to ask 615 respondents about their perceptions of natural-labeled foods. The study examined whether respondents thought foods labeled "natural" were healthier. Aside from the label, comparisons were made among otherwise identical foods. The highlighted finding indicated respondents incorrectly believed that natural-labeled foods had 18 percent fewer calories across a variety of foods.

Abrams et al. (2010) recruited 15 people for 2 focus groups wherein respondents were asked detailed and structured questions about their understanding and attitudes toward USDA organic and natural label claims. Although the results cannot be generalized, the authors found that consumers are skeptical and distrustful of natural claims, yet many believed that meat products labeled as "all natural" meant no antibiotics nor hormones were used to raise the animals, which is not a correct attribute. Some respondents also believed the label meant animals were raised free range, which is also not correct as a natural label claim.

Thibault et al. (2022) administered a survey to 1,000 U.S. grocery shoppers asking about food purchases with environmental stewardship- and animal welfare-related label claims. The study's results showed 86 percent of respondents reported purchasing at least one such product in the past 12 months, and 89 percent of those reported doing so because they believed the label indicated better-than-standard animal welfare. In addition, 78 percent paid more for the label because the consumers believed the label indicated higher environmental stewardship production practices. The natural label was among the reported label claims that researchers asked about in the distributed survey. Thibault et al. (2022) found that 59 percent of consumers who reported purchasing animal welfare-certified products also reported purchasing natural-labeled foods because they believed it represented improved animal welfare standards, which it does not.

Gifford and Bernard (2011) used surveys and experimental auctions to estimate consumers' willingness to pay (WTP) for chicken labeled USDA Organic and labeled natural through 8 sessions of 20–25 participants. They found that before receiving additional information, about two-thirds of participants equated the attributes of USDA Organic products with those of natural-labeled products. Onken et al. (2011) also documented generally higher WTP for natural-labeled foods relative to organic label claims in an experiment in 5 Mid-Atlantic States with a 39.6 percent response rate to a survey mailed to 5,000 people. Butler and Vossler (2018) found consumers included in the study (125 participants) were willing to pay 20 percent more, on average, for natural-labeled products. McFadden and Huffman (2017) tested the impact of information treatments on WTP with 102 participants. They distinguished food labeled as organic, natural, and unlabeled conventional foods. One finding was that providing consumers with industry information about natural-labeled foods increased consumers' WTP for organic-labeled foods—accurate product information leads to choices that align with preferences.

Kuchler et al. (2020) examined whether consumers' confusion over the meanings of the USDA Organic and natural labels influenced aggregate retail food expenditures. The researchers used high-frequency Google Trends data on the volume of online searches for "organic food" and "natural food" as indicators of consumer interest in organic and natural food. Results showed that web searches for both terms helped predict retail purchases. If U.S. consumers were aware of differences implied by the two label claims, searches for natural food would be uncorrelated with decisions to purchase organic products. These results that used market data are consistent with results from experimental market studies and suggest that consumers view the two claims as related or even identical.

Oberholtzer et al. (2006) examined the market for food labeled USDA Organic in the first years following the 2002 implementation of USDA's organic program. The researchers argued it is unsurprising that most U.S. consumers failed to understand the difference between the natural label and other label claims. Using the natural label for meat began in the 1990s before there was a USDA Organic label or standards to meet label requirements. Initially, the majority of the retail sales of USDA Organic poultry, for example, were made in natural food stores. And retail sales of meat labeled USDA Organic first expanded in natural food stores. So, Oberholtzer et al. (2006) argued that the interaction of food labels and marketing channels could have made it difficult for U.S. consumers to understand distinctions among products and, as a result, natural-labeled products compete with products labeled as USDA Organic.

Data and Methods

To estimate the retail market shares of natural-labeled products, the authors of this report used proprietary IRI InfoScan retail scanner data and Label Insight (acquired later by NielsenIQ) data. IRI InfoScan retail scanner data comprise a dataset of retail food sales, whereas Label Insight provides a dataset of product attributes. Product information from both IRI and Label Insight were combined to identify food products with natural label claims, and InfoScan sales data were used to estimate the shares of sales, shares of units sold, and shares of Universal Product Codes (UPCs) that were labeled as natural. Calculations were made for all food and major food groups, which are defined by USDA's Economic Research Service (ERS) Food Purchase Groups (Muth et al., 2022). The data and food definitions were from 2018, which was the most recent year available at the time of this report's publication. Relying on 2018 data provided a snapshot of the retail food market a year before food supply disruptions caused by the Coronavirus (COVID-19) pandemic.

InfoScan data contain weekly product-level sales data and cover a large share of the U.S. retail food market. In 2018, InfoScan contained data from over 55,000 retail food establishments, including grocery, mass merchandiser (i.e., large stores that sell more than just food), convenience, club, dollar, drug, and U.S. Department of Defense commissary stores. Muth et al. (2016) and Levin et al. (2018) estimated that InfoScan covered about 55 percent of retail food and alcohol sales and 51 percent of retail food sales, respectively, compared with the U.S. Department of Commerce, Bureau of the Census 2012 Economic Census, which covered all stores.

InfoScan includes weekly revenue and quantities for packaged food products with UPCs and random weight perishable products. Random weight products are fresh foods sold by the pound or count, such as bulk produce and store-packed meat and bakery items. Sales data in InfoScan are available at the UPC or individual product level, which allow analyses based on detailed product characteristics. InfoScan data capture sales of all products sold at participating retailers—about 584,000 unique food products in 2018—which is an advantage of InfoScan over representative household surveys that capture a subset of products purchased by surveyed households.

The downside of IRI data is that the data are drawn from a convenience—not necessarily a representative—sample of stores and do not include survey weights to calculate a representative market share of products. Nevertheless, this report's results from calculations, which were computed using the unweighted estimates drawn from InfoScan data, have been similar to calculations made using a representative survey of household food purchases—the other major approach to collecting sales data (for more information about using store and household data, see the appendix).

In addition to revenue and quantities, the IRI data contain basic product information for all products in their sales data, such as product description, brand, manufacturer, category, and size. The data contain nutrition and package claims information, including a variable for natural label claims, for a majority of products. IRI prioritizes products with higher sales volumes for full coding of nutrition and claims data. Products without claims data represented a small share of sales volume in 2018.

Label Insight codes package information into thousands of product attributes, including variables for "all natural" and "contains naturally sourced flavor" labels. Label Insight compiles product information using different sources and methods than IRI. As of 2018, Label Insight identified an additional 10,524 products with a natural label claim beyond the 53,848 products that were coded as natural in the IRI data. Product information from Label Insight was merged with IRI by UPC to provide a more comprehensive inventory of product and label claims information.

Food items with any natural label claim in either InfoScan, Label Insight, or both datasets were categorized as bearing a natural label claim. Across both datasets, there were four indicators used to categorize foods as making the natural label claim:

- InfoScan: "All Natural"/"100% Natural"
- InfoScan: "Other Natural Claim"
- Label Insight: "All Natural"
- Label Insight: "Contains Naturally Sourced Flavor"

These are indicators of product claims being made, not product names like Natural Cheese or elements of a product's ingredients list like natural flavorings.

The authors aggregated dollar sales, quantities, and counts of UPCs across all stores in the InfoScan data and calculated the shares attributed to products with and without natural labels. Sales of random weight and perishable products were included in the totals to capture the most complete picture of the retail food market, although natural claims are most typically found on pre-packaged products. A total of 64,372 UPCs, representing 11.0 percent of food products sold across all IRI stores in 2018, included a natural claim on the product packaging (table 1).[1]

Results

The quantitative work in this report addressed the question: What share of grocery purchases bear the natural-label claim? There are several ways the share could be characterized or computed. Here are the results from three ways of describing the share:

- Dollar expenditures
- Units purchased
- Count of UPCs

Table 1 shows the three share estimates for all foods and for items categorized into seven major food groups. Across all foods, 16.3 percent of retail expenditures were for natural-labeled foods, 16.9 percent of all items purchased (unit sales) were for natural-labeled foods, and 11.0 percent of UPCs in stores carried the natural claim on packaging.

Results showed natural claims are not distributed uniformly across food categories. The dairy food group had the highest frequency of natural claims. For dairy foods, 27.7 percent of expenditures were for natural-labeled foods, 32.3 percent of dairy unit items purchased were for natural-labeled foods, and 21.3 percent of UPCs in stores carried the natural claim on packaging.

Table 2 shows the three share estimates for products categorized into 34 more detailed groupings. Vitamins and meal supplements, a component of "Other foods" in table 1, had the largest shares among food group components. For vitamins and meal supplements, 95.6 percent of expenditures were for natural-labeled products, 94.3 percent of unit sales were labeled natural, and 53.2 percent of UPCs carried the natural claim on packaging.

Baby food comprised the second largest share on the basis of expenditures and unit sales. Baby food is also included in the "Other foods" category in table 1. On the basis of expenditures and UPCs, chicken, turkey, and game birds were the largest share of meat and protein foods with natural labels. In the dairy food group, cheese was labeled as natural on 30.2 percent of expenditures, 34.4 percent of unit sales, and 21.7 percent of UPCs. Food groups that are primarily random weight and perishable products are at the low end of calculations (e.g., less than 1 percent of potatoes were labeled natural). But all the classes of foods showed positive label frequencies.

[1] Of the 11.0 percent of UPCs with a natural claim (table 1), 1.8 percent were identified as Label Insight data, 6.8 percent were identified as IRI data, and 2.4 percent of UPCs were in both datasets.

Economic theory would suggest that financial returns guide the decision of food suppliers to apply the natural label to product packaging. Thus, the differences in shares shown in table 2 mostly reflect differences in retail demands. The regulatory costs incurred from making the natural claim are small compared with the costs of meeting the USDA Organic standards or the policy requirement of making the "raised without antibiotics" claim on food packaging. It is unlikely that the costs of applying the natural claim would differ across food groups. Consequently, if there are differences in returns across foods, the source of these differences must be on the demand side of the market rather than the production side. It must be that the claim is more compelling to consumers shopping for vitamins, for example, than to consumers shopping for potatoes.

The shares calculated in this report do not ultimately indicate whether the market for natural-labeled food is large or small. However, the shares can be used to make comparisons with the organic food market. USDA does not have official statistics on U.S. organic retail sales, but the information is available from industry sources (USDA, ERS, 2022a). U.S. organic food product sales totaled an estimated $44.9 billion in 2018, according to the Nutrition Business Journal (2021). In 2018, total U.S. food sales for food consumed at home amounted to $799.9 billion (USDA, ERS, 2022b). Thus, the share of food expenditures for natural-labeled food (16.3 percent) was two to three times larger than the share of USDA Organic-labeled food (5.6 percent) calculated using other well-recognized statistics.

Table 1
Market shares of food with natural front-of-package label claims by food group, 2018

Food group	Food group shares labeled "natural"		
	Dollar expenditure shares (percent)	Units purchased shares (percent)	UPC count shares (percent)
Grains	8.7	7.6	7.4
Vegetables	5.4	5.3	5.3
Fruit	5.9	3.4	8.2
Dairy	27.7	32.3	21.3
Meat and protein foods	16.2	14.4	13.5
Prepared meals, sides, and salads	11.2	11.9	8.6
Other foods	19.9	25.1	11.5
All foods	**16.3**	**16.9**	**11.0**

Note: Food products labeled "natural" were flagged in both datasets. Universal Product Codes (UPCs) flagged in either the IRI or Label Insight dataset were treated as making the natural claim. UPCs were mapped to IRI InfoScan data using USDA, Economic Research Service's (ERS) Food Purchase Groups to calculate shares by food group.

Source: USDA, ERS calculations using IRI's 2018 InfoScan retail scanner data and Label Insight data.

Table 2

Market shares of food with natural front-of-package label claims by components of food group, 2018

Components of food groups	Food group shares labeled "natural"		
	Dollar expenditure shares (percent)	Units purchased shares (percent)	UPC count shares (percent)
Whole-grain breads, cereal, rice, pasta, and flours	18.7	17.9	16.3
Non-whole-grain breads, cereal, rice, pasta, and flours	7.3	6.5	6.4
Potatoes	0.5	0.4	0.5
Other starchy vegetables	16.6	13.6	9.4
Tomatoes	9.6	14.8	11.9
Other red and orange vegetables	3.8	2.6	2.6
Dark green vegetables	5.6	7.0	4.0
Beans, lentils, peas, and legumes	3.3	2.1	4.2
Other/mixed vegetables	4.2	4.2	4.8
Whole fruit	4.0	2.4	6.8
100% fruit and vegetable juices	16.1	15.6	15.8
Whole milk, yogurt, and cream	23.3	25.7	12.6
Reduced-fat, low-fat, and skim milk, cream, and yogurt	26.2	33.4	24.6
Cheese	30.2	34.4	21.7
Beef, pork, lamb, veal, and game	6.9	4.5	19.3
Chicken, turkey, and game birds	31.1	20.1	29.5
Fish and seafood	13.7	21.4	11.8
Nuts, nut butters, and seeds	14.9	15.4	10.8
Bacon, sausage, and lunch meats	17.7	15.9	13.9
Egg and egg substitutes	24.0	20.2	8.0
Tofu and meat substitutes	13.1	13.2	9.0
Ready-to-eat foods	7.5	10.8	4.2
Frozen/refrigerated ready-to-heat foods	12.8	10.9	9.7
Shelf-stable, ready-to-heat foods and soups	6.5	5.8	7.3
Shelf-stable meal kits	20.7	21.3	14.2
Fats, oils, and salad dressings	16.5	14.3	11.7
Gravies, sauces, condiments, and spices	16.2	15.5	9.4
Beverages	22.8	36.6	10.8
Desserts, sweets, and candies	20.1	20.6	12.0
Breakfast cereals	26.9	27.6	28.0
Savory snacks	9.1	9.5	12.5
Vitamins and meal supplements	95.6	94.3	53.2
Baby food	36.6	40.5	14.7
Infant formula	3.5	8.5	10.4

Note: Food products labeled "natural" were flagged in both datasets. Universal Product Codes (UPCs) flagged in either the IRI or Label Insight dataset were treated as making the natural claim. UPCs were mapped to IRI InfoScan data using USDA, Economic Research Service's (ERS) Food Purchase Groups to calculate shares by food group.

Source: USDA, ERS calculations using IRI's 2018 InfoScan retail scanner data Label Insight data.

Discussion

This study measured the frequency with which natural claims appear on food packaging across food categories. Although Federal requirements to use the natural claim are minimal, numerous studies have found consumers attribute a wide set of health and environmental stewardship benefits to foods labeled as natural.

U.S. consumers' misperceptions that products labeled natural are equivalent to products with well-defined label claims (e.g., USDA Organic) can have negative consequences. For example, a consumer might purchase a meat product labeled natural, thinking that it comes from an animal raised without antibiotics. But any food supplier making a raised without antibiotics claim incurs some costs related to the claim. When they cannot rely on antibiotics, farmers undertake numerous activities to reduce the likelihood of microbial infections in animals (Bowman et al., 2016). Beyond that, food suppliers must receive approval from USDA's FSIS to make the claim. Some suppliers do more to support the veracity of their label claim. For example, they may have their practices audited onsite, on a fee-for-service basis, by USDA, Agricultural Marketing Service's marketing Process Verified Program (PVP) or through other auditing services.

In sum, farmers and food retailers undertake some activities and incur some of the costs to make the raised without antibiotics claim. They are at a competitive disadvantage in the marketplace if consumers treat foods labeled natural as alike. Consumers may not be getting the health and environmental attributes they seek and are paying for, producers supplying those attributes may be losing sales, and the health or environmental benefits of the attribute may not be realized.

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Appendix

Similar Conclusions Result From Using IRI InfoScan Data or IRI Consumer Network Household Survey Data

The best data available for examining retail food choices continue to be imperfect. The IRI InfoScan data include all sales from a large but not complete set of stores. The alternative, the IRI Consumer Network, is a nationally representative household survey that includes sales from most stores. IRI's Consumer Network is based on a nonprobability sample and includes survey weights that allow for estimations of nationally representative statistics. The downside to these data is that even a large-scale household survey may be too small to adequately represent every food product that consumers purchase, and the voluntary nature of data collection raises questions about participants' commitment to reporting all purchases. To examine the robustness of this report's results, the authors repeated calculations for table 1 using the IRI Consumer Network household survey data instead of the IRI InfoScan data (table 1A).

Results were similar in the sense of characterizing the broad use of natural labels. From table 1, the InfoScan share for "All food" was 16.3 percent (expenditures), 16.9 percent (unit sales), and 11.0 percent (Universal Product Code (UPC) count). Alternatively, using the IRI Consumer Network household data, the share for "All food" was 15.0 percent (expenditures), 17.8 percent (unit sales), and 13.7 percent (UPC count). The rank ordering of shares remained the same for both datasets. Largely, the calculations were similar. The largest difference in share estimates was 2.7 percent for the UPC count.

For certain categories with a large share of fresh food items, such as fruit and vegetables, the share of natural-labeled products in the household estimates are higher than the retail estimates as measured by units and UPCs. The differences were at least partially due to a measurement issue in how fresh foods are collected in the household data. Households did not report actual quantities purchased for random weight items because panelists were instructed to report a quantity of one for all random weight purchases. Additionally, random weight items were reported in few aggregate product categories rather than by individual UPCs or price look-up (PLU) codes. Therefore, packaged products, which are more likely to have a natural label, may be overrepresented in the quantity and UPC measures for these fresh food categories in the household data. The InfoScan data capture more detailed product information and more accurate quantities for perishable and random weight items in comparison.

Table A.1
Market shares of food with natural front-of-package label claims by food group, 2018

Food group	Food group shares labeled "natural"		
	Dollar expenditure shares (percent)	Units purchased shares (percent)	UPC count shares (percent)
Grains	7.9	7.0	7.8
Vegetables	5.5	7.2	7.1
Fruit	6.4	6.5	11.3
Dairy	24.6	29.4	21.6
Meat and protein foods	11.9	13.6	14.9
Prepared meals, sides, and salads	10.1	11.6	9.4
Other foods	20.2	24.8	15.3
All foods	**15.0**	**17.8**	**13.7**

Note: Food products labeled "natural" were flagged in both datasets. Universal Product Codes (UPCs) flagged in either dataset were treated as making the natural claim. UPCs were mapped to IRI Consumer Network household survey data, using survey weights to calculate shares.

Source: USDA, Economic Research Service calculations based on IRI's 2018 Consumer Network household survey data and Label Insight data.