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Understanding IRI Household-Based and Store-Based Scanner Data

Mary K. Muth, Megan Sweitzer, Derick Brown, Kristen Capogrossi, Shawn Karns, David Levin, Abigail Okrent, Peter Siegel, and Chen Zhen

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Abstract

Commercial scanner data on retail food purchases are an integral resource for a broad range of food policy research. ERS has acquired proprietary household and retail scanner data from IRI, a market research firm, including novel data on nutrition information and health and wellness claims for a large number of products. This report provides a detailed description of the methodology, characteristics, and statistical properties of these datasets and summarizes the limitations and considerations for using these data for food economics research. The report shows that the IRI data are an extensive, complex data source and provides an introduction to the data for new users and important considerations for advanced users.

Keywords: IRI, Consumer Network, InfoScan, scanner data, food at home, FAH, food prices, food expenditures

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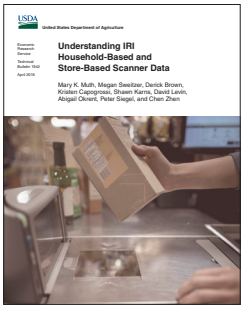

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What Is the Issue?

USDA's Economic Research Service (ERS) purchases proprietary household and retail scanner data that are an integral resource for many policy-relevant research projects. ERS obtained data for 2008-12 from IRI, a market research company, on household food purchases (called Consumer Network) and retail food sales (called InfoScan). While ERS has purchased and evaluated similar household data from other vendors, differences in how the data are processed by vendors could have implications for research programs at ERS. Additionally, ERS purchased comprehensive store-level scanner data and product dictionaries, including nutrition and health claims data, and little is known about the attributes of these data. To help users better understand the limitations of these data for food policy research, and in accordance with Office of Management and Budget specifications, this report documents the characteristics and examines the statistical properties of these datasets. This is the first in a series of ERS reports examining the statistical properties of the IRI datasets.

What Did the Study Find?

The IRI household and retail scanner data and associated files can be an extensive, impactful resource, but researchers should understand the complexity and different properties of these datasets. The Consumer Network household scanner data are derived from over 120,000 households who report what food products they purchased, when they shopped, and where they shopped. These households also report demographic information, and a subset of households report health and prescription drug information. The household purchase data can be linked to product characteristics (e.g., brand) and nutrition data, which gives a robust picture of the type of products households are purchasing. Researchers, however, should be aware of how well the household panel reflects the demographic makeup of the U.S. population and how the methods used to construct prices and demographic variables may affect analyses. In particular:

- The data include survey weights, which can be used to produce estimates for the total U.S. population. However, total U.S. expenditures reported by households in the weighted IRI data are less than those in other nationally representative datasets.
- Certain households are less likely to report purchases consistently, including households with heads under age 35, households in the lowest income bracket, and households with children. Hence, researchers should use caution in interpreting findings based on the data for certain population subgroups.

- The household demographics file for 2008-12 is a snapshot of household demographic characteristics as of 2012, and changes in demographic characteristics over the time period cannot be determined.
- For the majority of products, IRI assigns prices using InfoScan data collected from stores, so many prices may not represent the exact value a household paid for an item. In addition, researchers should subtract the value of coupons from prices paid by households to calculate net amounts paid.
- Quantities purchased are not available for random-weight items (i.e., products purchased by the pound or unit, rather than by the package), which limits the usefulness of the data in food economics research involving fresh fruits and vegetables, meats and cheeses, and bakery items.

The InfoScan retail scanner data cover a large portion of retail food sales in the United States and contain billions of transactions by outlet type (i.e., grocery, convenience, dollar, drug, liquor, mass merchandiser, and club stores) and market area. Like the Consumer Network data, the InfoScan data can also be linked to nutrition and product characteristics data, enabling researchers to examine sales of products with particular characteristics geographically as well as by outlet type. However, these data also have limitations researchers should consider when using them to conduct food economics analysis. In particular:

- The IRI data obtained by ERS are a subset of the total data in InfoScan due to restrictions from IRI and retailers on what data may be released. As a result, the retail store set is a subset of IRI's fully projected market tracking service, and survey weights are unavailable to produce nationally representative estimates.
- Some retailers release data for each individual store, while others release data for retailer-defined retail marketing areas. Because these geography-based aggregations vary by retailer, it can be difficult to examine geographic variation or conduct analyses by geographic area for certain retailers.
- Some retailers limit the release of data on private-label products to broad categories rather than individual Universal Product Codes (UPC), limiting the scope of analysis for research on private labels.

Lastly, the product dictionaries and nutrition and health claims data provide information about the items households are purchasing and retailers are selling. The product dictionaries give detailed descriptions of the products, including flavor, brand, style, and type for items with UPCs. The nutrition and claims data contain information on the Nutrition Facts panel and front-of-package health claims. However, researchers should note the following when using these datasets:

- Limited product information is available for random-weight perishable products, such as bulk or loose produce; uniform-weight perishable products, such as bagged produce; and private-label products from certain retailers.
- Only 41 percent of the UPC products in the retail store set have any nutrition and/or claims data; however, these products make up about 81 percent of total sales in the InfoScan data.
- IRI provides substantially better nutrition information coverage for private-label products than other commercial nutrition datasets; however, IRI's nutrition coverage is less for private-label UPC products than for branded UPC products.

How Was the Study Conducted?

Researchers from ERS and RTI International examined the contents of the IRI datasets, initial documentation provided by IRI, and documentation prepared by ERS. Detailed discussions were conducted with IRI, including discussions on a set of questions developed under the study, and additional documentation was obtained from IRI on specific questions. Researchers documented their findings, prepared summaries of the data, and compared certain components of the datasets with Government or commercial data sources.

Understanding IRI Household-Based and Store-Based Scanner Data

Introduction

For more than a decade, ERS has been using commercial food-purchase data collected through household panels and retail store scanners to develop data products for research and analyses on topics related to food policy. Because of the complexity of the data, it is important for researchers to understand the underlying data collection processes and statistical properties of the data to ensure they are used appropriately.

This report focuses on data provided by IRI, a market research firm, and includes household-based scanner data (called Consumer Network), retail point-of-sale scanner data (called InfoScan), and product information and nutrition- and label-claims data linked by Universal Product Code (UPC) to both datasets.[1] The Consumer Network data also include purchases for random-weight[2,3] or perishable products from a subset of the overall household panel. This report also touches briefly on two additional datasets: MedProfiler, an annual survey on health concerns, medical conditions, diet, and lifestyle offered to the households in the household panel; and RxPulse, purchase data for prescription medications.[4]

Overview of ERS Acquisition of Commercial Purchase Data

As a principal statistical agency of the Federal Government, ERS must meet Office of Management and Budget (OMB) guidelines to provide objective and credible economic statistics and intelligence based on sound and objective data. In compliance with OMB directives and standards, ERS should have documentation on sample construction and selection, data collection and construction procedures, and the statistical characteristics and properties of data used in its analyses.

The initial IRI data acquired by ERS cover the period 2008-12, but ERS plans to acquire annual updates for subsequent years.[5] Previously, ERS had acquired Homescan data from The Nielsen Company that spanned 12 years (1998-2010). Although both IRI and Nielsen receive household purchase data from the same National Consumer Panel (NCP) (IRI, 2015), this change in vendor could have implications for research programs at ERS because the vendors differ in the way they

[1]An earlier ERS report was developed based on The Nielsen Company's household-based scanner data (called Homescan) in 2007, shortly after ERS began using commercial food-purchase data (see Muth et al., 2007).

[2]Random-weight products are perishable products without a UPC that are typically sold in bulk or by unit. This category includes fresh meat, poultry, seafood, bakery, fruits, vegetables, cheese, cold cuts and lunch meat, prepared foods, coffee, and candy, nuts, and seeds.

[3]There are four types of random-weight data in the IRI datasets: store sales of random-weight items, household purchases of random-weight items, store-level product information for random-weight items, and household-level product information for random-weight items.

[4]IRI also provided a store dictionary dataset; however, examination of this data resource is outside the scope of this report.

[5]As of April 2016, data for 2008-14 were available for use.

organize and present the data. Furthermore, this is ERS's first purchase of comprehensive retail store-level scanner data for all food products, and the purchase includes novel data on nutrition information and health and wellness claims for a large number of UPC products.

Because of the differences between Consumer Network data and Homescan data and the novelty of the IRI nutrition data and store-level InfoScan data in food economics and nutrition policy research, this report includes (1) documentation of IRI sample selection, data collection, and weighting and variance estimation procedures and methodologies; and (2) an examination of the statistical properties of these proprietary data and their representativeness of the U.S. food market and the general population, as compared with other data sources.

This project reinforces ERS's commitment to scientific integrity by meeting OMB's statistical policy directives and guidelines related to statistical surveys. A thorough understanding of the data characteristics and properties will help one determine whether these data are suitable for testing certain study hypotheses and will assist with appropriate interpretation of empirical results. Furthermore, the findings could be useful to government or commercial entities whose data are documented or compared under this project in future data collection efforts.

This is the first in a series of reports examining the statistical properties of the IRI datasets. Future research will focus on comparing the IRI data to data from other sources to assess the coverage and to identify systematic differences across datasets. These efforts will include comparisons of the IRI household expenditure data, household health and medical information, retail store counts and sales data, and product nutrition information with comparable data from Government and commercial sources.

Intended Purposes of the Data for Food Policy Research

ERS conducts research to inform and enhance public and private decisionmaking on economic and policy issues related to food demand and supply. Food demand is motivated by a number of factors, including food prices, demographics, health concerns, and the food retail environment. Information on how these factors affect food purchasing behavior can aid in the effective design of food policy that addresses key nutrition and health concerns of the U.S. population. Similarly, agriculture and food industry stakeholders use economic and food policy-related information to aid in production decisions. Detailed and timely data on location, time, quantities, prices paid, and nutritional attributes of foods purchased by different population segments are beneficial for food policy research.

Research programs within government agencies and the academic community use household and retail scanner data to address food policy issues that cannot be addressed using publicly available data. Several studies have used household scanner data to evaluate the effects of policy-induced changes in prices on consumption of sugar-sweetened beverage purchases (Zhen et al., 2014; Finkelstein et al., 2013; Lin et al., 2011). Scanner data have also been used to evaluate the effects of store format on retail prices and healthfulness of purchases (Leibtag, 2006; Volpe and Okrent, 2013) and to examine the effects of food and nutrition assistance programs like the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and the Supplemental Nutrition Assistance Program (SNAP) on food choices of low-income populations (e.g., Andreyeva et al., 2012) and retailer competition (Oliveira et al., 2011).

The purpose of acquiring the IRI data is to enable ERS and collaborative institutions to continue providing indepth analysis and evaluation of the key components of food choices with implications

for the diet quality, safety, and health of Americans. In addition, the data enable ERS to disseminate market information to agriculture and food-marketing industry stakeholders, which aids in food-production decisions. The IRI data complement the use of existing publicly available datasets by providing detailed purchase, price, demographic, and store information to enhance food policy research.

Objectives and Approach to This Study

Researchers from ERS and RTI conducted this study by reviewing IRI's existing documentation of the data;[6] reviewing ERS's preliminary documentation of the data; conducting discussions with IRI over a period of several months, including detailed discussions on a set of questions developed under the study; obtaining additional documentation from IRI on specific questions; and examining the datasets and preparing summaries of the data. Researchers at ERS and RTI who are working with the data contributed insights based on their knowledge of the data.

The overall objectives of this study were to:

- Document IRI's sample selection, household and retailer recruitment, data collection procedures, and weighting and variance estimation methodologies and procedures;
- Summarize key attributes of the datasets;
- Compare summaries of the data with publicly available data and identify reasons for differences; and
- Provide suggestions and recommendations for researchers using the data to ensure appropriate use of the data.

[6]The IRI documentation included "Information Resources, Inc. Documentation: ERS Data Extract Project" dated March 24, 2014; "IRI Item Coding" dated May 2013; a document on multi-outlet reporting dated September 15, 2014; a document on defining "All Commodity Volume (ACV) dated August 2, 2013; "IRI Census Data Coverage/Information," which is undated; "Response to Coding Questions" dated February 11, 2015; and other written responses to lists of questions prepared by IRI in early 2015.

Household-Based Scanner Data: Consumer Network

IRI derives the Consumer Network data from the National Consumer Panel (NCP), which is an operational joint venture equally owned by IRI and The Nielsen Company (IRI, 2015) since 2009. Households are recruited to the NCP through multiple mechanisms and are provided incentives to record all of their UPC-based consumer product purchases, regardless of where purchased, with a handheld in-home scanning device (IRI, 2015). (See box "A Note About UPC Code Assignments.")

The primary Consumer Network datasets are the transactions data for each shopping trip made by the household. These datasets contain food and alcohol purchase information by UPC, including quantities, prices, discounts, and coupons that can be linked to a set of household demographic information such as household size, household income, age of household head, ethnicity, race, and presence of children. IRI assigns prices to each UPC-level transaction using its weekly point-of-sale data for the store chain or the outlet types, or it uses the price that households input during the reporting process if they shop at a store that is not represented in the IRI point-of-sale data.

All 2008-12 household transaction data are available in a table called Trip. These transactions (or Trip) data can be linked to the following:

- Demographics data file (by PANID),
- Product dictionary file for UPC branded products (by UPC),
- Product dictionary for nutrition information for UPC products (by UPC),
- Product dictionary for uniform-weight perishable products (by UPC),[7]
- Product dictionary for random-weight perishable products (by UPC).[8]

In addition, for households that participate, separate datasets on medical information obtained through an annual survey and prescription drug purchases can be linked to a household.

Overview of the Datasets

Table 1 provides a summary of the number of households in the Consumer Network, RxPulse, and MedProfiler datasets for the years available through 2012.[9] A portion of the Consumer Network panel, also reflected in table 1, enters random-weight purchases across 10 broad product categories (e.g., meat, bakery, fruits, and vegetables).

The Consumer Network panel includes over 120,000 households, with 46 to 52 percent of the households providing sufficient purchase data to be included in the static panel used for analyses from 2008 to 2012. The criteria for including households in the static panel are based on specific thresholds for expenditures based on household size and are described later in this report. However, the static panel households accounted for 70 to 80 percent of the transactions records in the dataset, thus reflecting that the households that are not in the static panel ("non-static" households) reported dramatically fewer purchases.

[7]Uniform-weight products are typically packaged, UPC-labeled items, such as produce enclosed in a bag or clamshell container.

[8]Random-weight products include bulk produce, fresh meat, poultry, seafood, deli items (meats, cheeses, and prepared foods), and in-store bakery items.

[9]As ERS obtains additional years of data, updated summaries of the data will be provided in appendixes or addendums to this report.

A Note About UPC Code Assignments

The assignment of Universal Product Codes (UPC) to manufacturers and retailers is overseen by GS1. UPC codes within the IRI data are 14 digits structured as follows:

- 2-digit system code
- 5-digit manufacturer code
- 5-digit item code
- 2-digit generation code

Random-weight products that are assigned a pseudo-UPC start with a system code of 20-26. Private-label products that are not released at the UPC level are also assigned a pseudo-UPC that starts with a system code of 66.

IRI assigns a new generation code each time a product discontinues sales and then reappears. When linking data across datasets, analysts may want to use the International Article Number (EAN) variable, which is the true UPC as assigned by the manufacturer, but also verify that the product description is the same.

An example of a breakdown of the UPC code 002400016230204 follows:

- 00 = system code
- 24000 = Del Monte
- 16302 = fresh cut regular salt level corn 15.25 ounces
- 04 = fourth generation of the UPC code for this product

The number of Consumer Network households that recorded random-weight purchases increased substantially from over 52,000 in 2008 to almost 79,000 in 2012. In 2012, households reporting random-weight purchases accounted for 63 percent of the entire household panel. However, the share of these households that provided sufficient purchase data to be included in the static random-weight panel was only 41 to 45 percent of households. The purchases by these households accounted for 66 to 78 percent of the random-weight transaction records in the dataset.

The RxPulse panel is an opt-in survey offered to the full National Consumer Panel on prescription drug purchases and included 18,000 to 24,000 households from 2008 to 2012. In 2012, the RxPulse panel accounted for 17 percent of the entire household panel, which likely reflects that many households do not purchase prescription drugs in any given year or they have privacy concerns about reporting prescription drug purchases. As with the other purchase datasets, approximately half of the households in the RxPulse panel provided sufficient purchase data to be included in the static panel, but these households accounted for a much larger portion of the transactions records than households not in the static panel.

Finally, the MedProfiler panel is an opt-in survey on medical conditions offered to all households in the NCP. About one-third of the NCP households had at least one member respond to the MedProfiler survey (from 39,000 to 49,000 households), with responses received from 95,000 to 123,000 individuals in those households from 2010 to 2012.[10]

Each shopping trip record can be linked to the retail chain and market in the InfoScan data described in section 3. However, it is not possible to link a shopping trip record to the specific store where the purchases were made, as panelists simply identify the retail chain and not a specific store location.

[10]A more comprehensive examination of the RxPulse and MedProfiler data will be provided in a future report.

Table 1

Number of households and transaction records in the static, nonstatic, and full IRI panel datasets, 2008-12

Dataset and year	No. of variables	Number of households			Static (%)	Number of transaction records[a]			Static (%)
		Static	Non-static	Total		Static	Nonstatic	Total	
Consumer Network									
2008	11	53,621	62,320	115,941	46	50,147,180	21,256,610	71,403,790	70
2009	11	62,689	58,360	121,049	52	58,556,525	14,293,502	72,850,027	80
2010	11	63,605	60,814	124,419	51	58,510,299	16,833,941	75,344,240	78
2011	11	64,348	59,466	123,814	52	59,418,664	12,809,018	72,227,682	82
2012	11	62,517	63,523	126,040	50	58,790,496	13,334,232	72,124,728	82
Random Weight									
2008	11	21,392	31,121	52,513	41	2,380,142	1,236,018	3,616,160	66
2009	11	26,583	33,198	59,781	44	3,042,174	1,011,929	4,054,103	75
2010	11	28,955	39,048	68,003	43	3,273,235	1,280,259	4,553,494	72
2011	11	32,657	39,143	71,800	45	3,732,700	1,029,054	4,761,754	78
2012	11	33,852	45,140	78,992	43	5,007,773	1,413,941	6,421,714	78
RxPulse									
2010	19	12,368	11,781	24,149	51	617,241	229,379	846,620	73
2011	19	10,887	7,146	18,033	60	557,886	142,022	699,908	80
2012	19	9,915	15,089	25,004	40	520,851	305,457	826,308	63
MedProfiler						Number of survey responses			
2010	99	26,014	12,736	38,750	67	59,704	35,231	94,935	63
2011	109	34,121	14,580	48,701	70	79,370	43,870	123,240	64
2012	110	28,661	10,990	39,651	72	64,994	31,662	96,656	67

[a]Transactions records for Consumer Network, Random Weight, and RxPulse represent the purchase of a single Universal Product Code or item. A transaction record for MedProfiler represents a survey response from a household member.
Source: Calculated by authors using data from IRI.

Each shopping trip record can be linked to the retail chain and market in the InfoScan data described in section 3. However, it is not possible to link a shopping trip record to the specific store where the purchases were made, as panelists simply identify the retail chain and not a specific store location.

Table 2 shows the demographic variables and code values for the households in the dataset. These variables include the demographic variables used for selecting households to the panel and for calculating projection factors in addition to other demographic variables. Each year, the NCP requests that households update their demographic information and conducts followups with households electronically, and then by phone, until they complete their updates. IRI estimates that approximately 75 percent of households overall update their demographic information on an annual basis (IRI, March 3, 2015). The percentages could be different for the households in the static panel versus those for the remaining households, but these estimates are not available from IRI.

In preparing the static datasets for 2008 through 2012, IRI included only the most recent values for the variables for household characteristics because its practice is to overwrite household variables as more recent data become available. Consequently, the demographics file contains a snapshot of household characteristics from 2012 or the last year each household reported demographic data, meaning it is not possible to track changes in household characteristics over time.[11]

[11]As ERS obtains additional years of data, the household characteristics for each subsequent year of data will be retained, enabling researchers to observe changes over time.

Table 2

Demographic data fields and codes in the Consumer Network data[a]

IRI field	Variable description	Code values
PANID	Household panel ID	9-digit code (Nielsen HHID variable with leading "9")
HEAD	Male or female head of household	1=male; 2=female
HHSIZE	Household size	1 = single member; 2 = two members; 3 = three members; 4 = four members; 5 = five members; 6 = six members; 7 = seven members; 8 = eight members+;
HHINC	Household income	1 = under $10,000; 2 = $10,000–$11,999; 3 = $12,000–$14,999; 4 = $15,000–$19,999; 5 = $20,000–$24,999; 6 = $25,000–$34,999; 7 = $35,000–$44,999; 8 = $45,000–$49,999; 9 = $50,000–$59,999; 10 = $60,000–$69,999; 11 = $70,000–$99,999; 12 = $100,000+
RACE	Race of household	1 = White; 2 = Black; 3 = Asian; 4 = other
HISP	Whether household is Hispanic	1 = Hispanic; 2 = non-Hispanic
AC	Age and presence of children in household	1 = under 6 only; 2 = 6-12 only; 3 = 13-17 only; 4 = under 6 and 6-12; 5 = under 6 and 13-17; 6 = 6-12 and 13-17; 7 = under 6 and 6-12 and 13-17; 8 = no children under 18
MEMBER_#_BIRTH	Birthdate for member # (up to seven members)	6-digit value
MEMBER_#_RELATIONSHIP	Relationship of member # to household head	3 = son; 4 = daughter; 5 = other
FEMALE_HEAD_BIRTH	Birth month and year of female head	6-digit value
FED	Female head education	1 = grade school; 2 = some high school; 3 = graduated high school; 4 = some college; 5 = graduated college; 6 = post graduate school; 7 = no female head; 9 = not available
FEMP	Female head employment	1 = less than 35 hours/week; 2 = 35 or more hours/week; 3 = homemaker/student; 4 = no female head
FOCC	Female head occupation	1 = professional; 2 = manager/administrator; 3 = clerical; 4 = sales; 5 = craftsman/foreman (skilled); 6 = machine operator; 7 = laborer; 8 = service workers and private household workers; 9 = no occupation; 10 = others; 11 = no female head

- continued

Table 2
Demographic data fields and codes in the Consumer Network data[a] (continued)

IRI field	Variable description	Code values
MALE_HEAD_BIRTH	Birth month and year of male head	6-digit value
MED	Male head education	Uses same coding as FED
MEMP	Male head employment	Uses same coding as FEMP
MOCC	Male head occupation	Uses same coding as FOCC
MARITAL	Marital status	1 = married; 2 = widowed; 3 = divorced/separated; 4 = single
RENTOWN	Whether household rents or owns	1 = owner; 2 = renter; 3 = other than rent/own home
HHTYPE	Life stage/cycle	1 = households with younger children; 2 = households with older children; 3 = young singles; 4 = older singles; 5 = young couples; 6 = older couples
CATS	Whether household has any cats	0 = no cat; 1 = cat owner
DOGS	Whether household has any dogs	0 = no dog; 1 = dog owner
STATE	State of residence	2-character code for State
STATE_COUNTY	State and county FIPS code of residence	5-digit FIPS code
ZIPCODE	ZIP Code of residence	5-digit ZIP Code
COUNTY_SIZE	Size code for the county	1 = County Code A (counties located in the 25 largest metropolitan areas); 2 = County Code B (counties that are not in A but with a population of 150,000 or more or in a metropolitan area with 150,000 or more); 3 = County Code C (counties that are not in A or B but have a population of 40,000 or more); 4 = County Code D (remaining counties)
REGION	Census region of residence	1 = Midwest (North Central); 2 = Northeast; 3 = South; and 4 = West
BLOCK_GROUP	Household Census block group	8-digit code for Census block group
MARKETID	IRI InfoScan market	2- or 3-digit code for 65 markets or 3-digit code for 8 other market areas
Projection factors	Annual projection factors for the total panel or specific subsets	Household-specific U.S. region and market projection factors for the total panel, random-weight panel, RxPulse panel, MedProfiler panel, and combinations of these panels

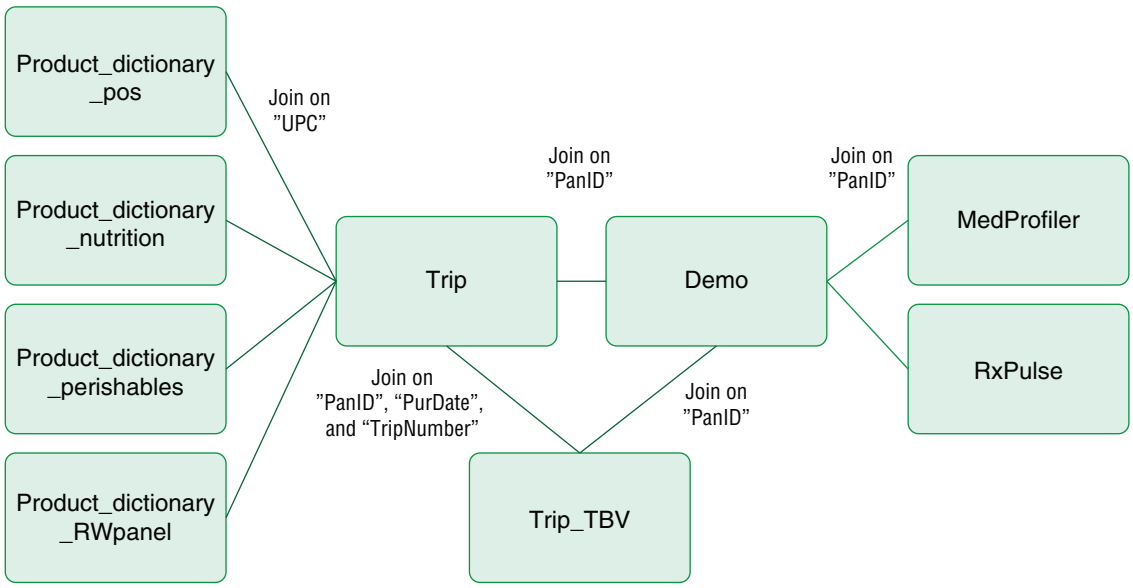
[a]Demographic data in Consumer Network for 2008-12 are for 2012 or the most recent year for which the household reported data.Source: Authors using data from IRI.

Figure 1 provides a visual of how to link the data from the Consumer Network to the product dictionaries. In the figure, the datasets are in the rectangles and each line describes how to join one dataset to another. Each shopping trip purchase for the household (Trip) can be linked to the household demographic information (Demo), health characteristics (MedProfiler), or prescription drug purchases (RxPulse) using household identification (ID) (PANID[12]). The variables in Trip include:

- Location information—name of retail chain (does not include specific store location), outlet code (e.g., grocery, drug, or other type of store), and market ID,
- Date information—month, day, year, and sequence of trip,
- Product information—UPC (or total market basket) and category,
- Quantity information—units purchased, product volume, and units of volume,
- Price and deal information—assigned as described below, and
- Projection factors—weights for the entire static panel and the random-weight static panel (for the year of the data).

Records of the sum of total purchases that each household reported for each trip are in Trip_TBV and can be linked to Trip using PANID, the purchase date (PURDATE), and trip number (TRIPNUMBER). The following section discusses Trip_TBV in more detail. Additionally, a section later in the report discusses the details on the files with product information and nutrition data at the UPC level, which can be linked to Consumer Network or InfoScan records using the UPC.

Figure 1
Linking the Consumer Network data and associated files



Source: USDA, Economic Research Service.

[12]In the text of this report, variable names from the datasets are indicated in all caps.

Household Recruitment and Selection and Creation of the Static Panel

As mentioned previously, the household purchase data are derived from the NCP, which is a joint venture between IRI and Nielsen that is governed by a board of IRI and Nielsen officers and an independent chief executive officer (IRI, March 24, 2014). Households are recruited to the panel through third-party vendors that provide online advertising, including display networks, blogs, email, social media, and independent sites. Households register through NCP's online recruitment site[13] and complete a detailed questionnaire on household demographics. According to IRI, less than 10 percent of households join through unsolicited signups and programs, such as "refer-a-friend" (IRI, March 3, 2015). In the past, some households were recruited by direct mail, but this approach is no longer used. Households receive incentives to participate in the panel in the form of sweepstakes entries or points that can be cashed in for rewards chosen from a catalogue of products.

Once households register for the panel, they are selected for membership through a process that IRI refers to as "stratified quota random sampling" (IRI, March 24, 2014). Under this process, households are selected based on their household characteristics to balance the panel to be representative of the U.S population in the 48 contiguous States; in other words, they are selected to meet quotas for each type of household. In the household panel, the household head is the primary shopper for the household. The following demographic criteria are used for selecting households:

- Household size (1, 2, 3-4, and 5+ persons),
- Age of household head (21-34, 35-44, 45-64, and 65+),
- Household annual income level (<$35,000; $35,000-$59,999; $60,000-$99,999; and $100,000+),
- Ethnicity of household head (Hispanic versus non-Hispanic),
- Race of household head (Black versus non-Black),
- Education level of female head of household (five levels),
- Education level of male head of household (five levels),
- Occupation (blue collar/uniformed, service occupation, white collar),
- Presence of children (no children versus children), and
- Census division (New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, and Pacific).

The U.S. data for these criteria are derived from the U.S. Census and obtained by the NCP from PopStats™. PopStats™ is a data product on population estimates provided to market research companies by Synergos Technologies, Inc.

A random selection of households that meet the criteria for the targeted group to balance the sample is selected from households that have registered for the NCP. Some types of households are more difficult to recruit, particularly those with a household head under age 35 and Hispanic households. Thus, the NCP targets recruitment through websites that focus more on those demographic groups.

[13]The recruitment website is https://www.ncponline.com/panel/US/EN/Login.htm.

Living accommodations are not considered in the selection process except that each household must have a unique mailing address (e.g., apartment or unit number). Thus, individuals living in institutions (e.g., nursing homes and mental health facilities) and dorms can be included in the sample.

After households are recruited, they are provided with scanning equipment and comprehensive instructions for scanning their purchases and transmitting their purchases on a weekly basis. The NCP communicates frequently with the panelists to provide support and respond to questions and provides additional resources on its website. Households are instructed to purchase all products as they normally would.

Because the quality and consistency of data reporting by the panelists varies, both IRI and Nielsen apply specific rules to determine whether a household's data may be included in the static dataset prepared each calendar year. IRI uses the following criteria:

- The household must have reported its purchases at least once every 4 weeks for 80 percent of the time periods, or 11 of the 13 four-week reporting periods during the year.
- The household must have reported a minimum average level of spending as follows:
    - $25 per week for 1-person households,
    - $35 per week for 2-person households, and
    - $45 per week for 3-or-more person households (IRI, March 24, 2014).

Table 3 displays the Census targets used by IRI and the weighted American Community Survey. The weighted population estimates from the American Community Survey are the most reliable estimates of the population by household size, race, ethnicity, income, age, and presence of children in 2012. The Consumer Network dataset includes projection factors (or weights) that weight the data to match the Census targets shown in the table in addition to other variables. In general, the estimates for the Census targets used by IRI are similar to those for the American Community Survey.

In comparing the static panel households with the Census targets or the American Community Survey, the static panel has:

- Fewer 1-person and more 2-person and 3-4 person households,
- Substantially fewer households with heads under the age of 35,
- Substantially fewer households in the lowest income bracket,
- Fewer Hispanic and Black households, and
- Substantially fewer households with children.

Some of the differences derive from differences in the composition of the panel as a whole, and some are from differences in the quality of reporting by households of different types. Even if the panel composition matched U.S. demographics perfectly, some types of households are less likely to be consistent data reporters.

Table 3
Comparison of weighted Consumer Network (CN) household demographics with the American Community Survey, 2012

Household characteristic	CN Census target	American Community Survey[a]
	Percent of households	
Household size		
1 person	26.1	32.8
2 person	32.4	31.0
3-4 person	30.7	27.3
5+ person	10.7	9.0
Age of household head		
<35 years	20.3	18.5
35–44 years	18.7	18.0
45–64 years	39.2	40.2
65+ years	21.9	23.3
Annual household income		
<$15,000	12.9	13.2
$15,000–$34,999	21.9	20.8
$35,000–$69,999	31.5	28.8
$70,000+	33.7	37.2
Ethnicity		
Non-Hispanic	88.5	85.1
Hispanic	11.5	14.9
Race		
Black	11.8	14.3
Non-Black	88.2	84.7
Presence of children		
Yes	33.9	32.9
No	66.1	67.1

[a]American Community Survey estimates were obtained through DataFerrett (http://www.census.gov/acs/www/data_documentation/data_ferrett_for_pums/).
Source: Calculated by authors using data from IRI and American Community Survey.

The projection factors help account for the differences between the composition of the static panel and the general population. However, data users should keep in mind that the households that report data of sufficient quality to be included in the static panel may have different purchasing behaviors than their nonstatic, or nonparticipating, counterparts. In addition, in some cases, the data are being projected from a relatively small pool of reporters (particularly for households with heads under age 35).[14]

[14]In future research, we plan to compare household food expenditures from the Consumer Network data to a government data source for expenditures to further examine how Consumer Network household food purchase patterns compare with those from a nationally representative survey.

Food Purchase Data Collection and Adjustments

As noted previously, households in the NCP are provided with scanning equipment (or they download a mobile application) and instructions for scanning their purchases throughout the week. They are also provided with extensive online support, and a support center is available to assist the panelists with problems and answer questions (IRI, March 24, 2014). Each time a household scans its purchases, the household also provides the name of the store where the items were purchased.

Households are instructed to scan the UPC or select from a list of nonbarcode items for all purchases for all types of shopping trips, including for items consumed on-the-go. Each household uses either the scanning device provided by the NCP for in-home use or a mobile application available through Google or Apple. For households that use the mobile application, all household members can scan items using their own devices. As of early 2015, IRI reports that approximately 17,000 households are using the mobile scanning option, while the remainder of the panel uses the in-home scanning device (IRI, March 3, 2015). In the ERS datasets, it is not possible to determine whether a household scans its purchases using the in-home device or a mobile application.

Data Recording Process for Products With UPCs

The UPC descriptions associated with the products are coded and maintained by a dictionary team at IRI using information from product images and information provided by retailers and manufacturers. UPCs are associated with branded products and private-label (or store brand) products. IRI also assigns generation codes when the product description for a product changes (e.g., a number such as 01 or 02). A product description may change if the UPC has been assigned to an entirely different product or—more typically—if there has been a change in the existing product, such as a change in the package size.

Quantities (UNITS). The number of units purchased for each UPC is recorded as the household scans its purchases. If analysts need the estimates of the total weight or volume of a product, the number of units can be multiplied by the field TOT_VOLUME (number of units of measure, e.g., ounces) for that UPC in the product dictionary.

Items that come packaged in a multipack with a barcode on the packaging (e.g., case of soda, rolls of paper towels) are recorded as the number of multipacks purchased (e.g., one 12-pack of soda). The size or count of the multipack can also be estimated using the field TOT_VOLUME in the product dictionary. If the product has no outside packaging (e.g., cans held together with plastic rings), the household scans the barcode on one of the items and records the total number of items contained in the multipack.

Prices (DOLLARSPAID). Many household purchases are assigned a price by IRI from the InfoScan point-of-sale data. This process relieves households of the burden of entering prices for each item purchased. Under this process, when households scan purchases, they enter the name of the store where they purchased the items. If the store is among the list of stores for which IRI and Nielsen receive point-of-sale data, the household does not enter a price. Instead, IRI assigns the average purchase price (including all sales) for the store chain and market area (e.g., Chicago, New York, or Tampa). If a chain-market area average is not available, IRI assigns the average purchase price, including all discounts, for the outlet or channel type (e.g., grocery store, mass merchandiser, or drug store) and market area. The majority of purchases (65 percent of transactions and 60 percent

of dollars based on ERS calculations) are assigned a price using the InfoScan point-of-sale data, but the proportions vary by store type.

If a household shops at a store for which InfoScan point-of-sale data are not available, it is instructed to enter the price paid for the item. IRI applies quality control checks to ensure that the household-entered price is within the range of the dictionary price for the product. The dictionary price is a long-term average price calculated by IRI for each UPC by outlet type at the national level. As a final option when a price cannot be assigned using the above methods, the dictionary price is assigned to the product. During the assignment process, some purchases may be temporarily assigned a zero price, but these cases should be resolved promptly after the data are reported.

In the Consumer Network dataset, the PRICESOURCE field indicates whether the price was assigned through point-of-sale data, entered by the household, or assigned from the price dictionary. Therefore, if relevant, an analyst could examine differences in prices for a UPC based on the source of the price for the product.

Coupons and sales (DEALS). When households scan an item, the in-home scanner asks if they received a deal on the item. If they select "yes," they are asked if the deal stemmed from one of the following:

- Store sale—deal offered by the particular store, such as a temporary price reduction or a loyalty card discount,
- Store coupon—use of a coupon specific to the particular store (household enters the value of the coupon),
- Manufacturer coupon—use of a coupon distributed by the product manufacturer (household enters the value of the coupon), and
- Other sale—other type of discount such as senior citizen or employee.

Note that because the market- and chain-level average prices assigned to purchases by IRI include store and other sales but exclude manufacturer coupons, which are the majority of coupons, analysts should subtract the value of COUPON from DOLLARSPAID to calculate a net price paid by household for each item.

Finally, households are asked to enter their total trip value at the end of the data transmission process. If any coupons or discounts were applied to the total transaction amount, the household is asked to enter the total value of purchases after all coupons or deals have been applied. An additional record of the total basket value of the household's purchases is generated for each trip; ERS maintains these records in an auxiliary table called Trip_TBV. These transaction records are denoted by a UPC value of "99999999999999" and contain the total value of all items purchased by trip, including both edible and nonedible items.

Data Recording Process for Random-Weight Products

For random-weight products without a UPC code, households choose from a list of products in the mobile application or scan a bar code on a reference card that accompanied the NCP-provided scanner to record the product type, enter the price paid, and indicate whether they received a deal on the purchase. Random-weight product categories cover meat, bakery, fruits, vegetables, cheese, cold cuts and lunch meat, prepared foods, coffee, and candy, nuts, and seeds (see table 4).[15]

Households do not enter the weights or amounts of the items purchased, and, thus, these need to be inferred based on the entered price and average prices for each type of product from other sources. (For example, an analyst could calculate the average price per pound for a similar UPC product and then divide the price entered by the household by the average price per pound to estimate the number of pounds of product purchased.)

Note that if a household shops at outlets such as farmers' markets or community-supported agriculture (CSA) operations, it could enter these purchases using the reference card. However, this option places a greater burden on the household than if it made its purchases at conventional stores because nonconventional food outlets typically do not provide itemized receipts. The degree of underreporting of these types of purchases is not known.

Table 4
Random-weight item categories and products

Category	Products	
Baked goods	Bagels Breads Brownies Croissants Cupcakes Danish Donuts/Crullers Holiday/Seasonal Muffins	Pastries Rolls Specialty desserts Cakes—Decorated/Special occasion, Nondecorated/Other Cookies—Chocolate chip, oatmeal raisin, sugar, assorted, other Pies—Fruit, cream, pumpkin, other Other baked goods
Candy, nuts, seeds	Candy, nuts, seeds	
Cheese (clerk or self-served)	American Blue cheese Brie Cheddar Gouda Jack Mozzarella	Muenster Parmesan Provolone Romano Swiss Other cheese
Coffee	Ground, whole bean	
Cold cuts and lunch meat (clerk or self-served)	Beef Bologna Chicken Ham	Pepperoni Salami Turkey Other cold cuts

[15]Prior to 2011, NCP households only recorded information for vegetables, fruit, and cheeses with no delineation by specific product and a very limited number of categories for cold cuts and deli meat and for meat, poultry, and seafood.

Table 4
Random-weight item categories and products - continued

Category	Products	
Fruits	Apple Avocado Banana Berries Cherries Grapes Grapefruit Melon	Orange Peach/Nectarine/Plum Pear Pineapple Prepared fresh fruit Other citrus Other fruit
Meat, poultry, seafood	Beef: Cubed, ground, roast, steak, other Pork: Chops, ham, ribs, roast, other pork Other meat: Hot dog, lamb, sausage, veal Chicken: Breast, cut up (mixed), ground, legs/drum sticks, thighs, whole, wing, other	Turkey: Breast, ground, whole, other Fish: Catfish, cod/scrod, salmon, tilapia, tuna, other Shellfish: Crab, scallops, shrimp, other All other meat, poultry, seafood
Prepared foods	Includes foods that do not need preparation or heating before eating	
Vegetables	Broccoli Cabbage Carrot Cauliflower Celery Cooking greens Corn Cucumber Eggplant Green beans (string) Lettuce Mushroom	Onion Peas Pepper Potato Radish Spinach Sprouts Squash/Pumpkin Tomato Zucchini Prepared fresh vegetables Other vegetable

Source: Authors using data from IRI.

Projection Factor Calculations

The projection factors in the Consumer Network data are analogous to weights used in analyzing survey data from a random sample of a population. Each household in the Consumer Network data represents other households in the population, and the projection factor indicates how many households are represented by the household. IRI uses the Iterative Proportional Fitting (IPF) method to calculate the projection factors based on geographic and demographic variables for the households in the static panel. IRI calculates a separate set of projection factors for the entire Consumer Network panel and for the random-weight portion of the panel. When using the data, analysts should multiply the household purchase quantities and expenditures by the projection factors to obtain estimates that represent the universe of households in the United States. For the random-weight portion of the panel, it is only possible to project expenditures due to the lack of quantity information collected about random-weight products. If a household in the dataset has a projection factor equal to zero, the household is not in the static panel and should be excluded from the analysis.

IRI obtains the values for the target demographic variables within geography from Census data acquired through PopStats^{TM}. The target demographic variables overlap with some of the variables used for selecting households for recruitment to the panel, except that education, occupation, and Census division are excluded from the list and county size and language preference are added to

the list. Target values for language preference are obtained from the American Community Survey because this variable is not available through PopStats. The two additional target demographic variables beyond those used for selecting households are as follows:

- County size (A: counties in the 25 largest U.S. metropolitan areas; B: counties not in A but with populations exceeding 150,000 or part of a metropolitan area exceeding 150,000; C: counties not in A or B and with populations between 40,000 and 150,000; D: all other size counties) and
- Language preference for Hispanic households (English preferred, Spanish preferred, bilingual).

To calculate the projection factors, the IPF procedure first forces the weighted sample totals of the levels of one variable to equal the population totals for that variable (Oh and Scheuren, 1983). Then it forces the weighted sample totals of the next variable to equal its population totals. The process continues for each of the demographic variables. Then, the procedure checks if the sum of the weights in all segments are within allowable error ranges compared to the Census targets. If not, the procedure iterates through another round of calculations and continues until the summed weights differ by no more than 1 percent to the Census targets. Weights are capped at a value of 20, so any weights initially above 20 are reduced to 20. The excess weight above 20 is redistributed to other households, such that the weight sums still match the Census targets.

The weighting process conducted by IRI is dynamic in that new weights are calculated for households for each new data delivery. Analysts can track households over time using the household ID variable, but each household has a new projection factor calculated for each data delivery. Currently, there is no projection factor that can be applied to a set of households that appear across time for conducting longitudinal analyses.

Note that an alternative approach to weighting could be to weight the product quantities to match some known target for a product, such as quantities shipped by the manufacturer. However, obtaining the target values and developing separate weights by product is a time-intensive and costly undertaking and involves use of proprietary data.[16] For analysts using the data, it is important to keep in mind that applying the projection factors to each household's purchases does not necessarily result in the weighted product sales quantities adding to the total available supply of a product; but this method provides a reasonable proxy.

IRI uses the negative binomial distribution to adjust the data for bias due to undercoverage or overcoverage of the population. While the ERS data do not contain these adjustments, IRI tries to reduce both coverage bias and nonresponse bias in the methodology used for recruitment, quality control, projection factors, reporting among panelists, and overall panel design.

Variance Estimation

IRI uses multiple methods for computing variances, including the binomial distribution, negative binomial distribution, and Taylor series, depending on the analyses. Taylor series linearization is a commonly practiced method that estimates the variance of a nonlinear estimate by approximating

[16]As part of the analyses conducted for its clients, IRI uses the Negative Binomial Distribution (NBD) method to align the reported purchases to point-of-sale targets from the store scanner data. NBD is a probability distribution that allows IRI to estimate how many purchase occasions that panelists may have under- or over-reported (IRI, March 24, 2015). It is not a weighting or projection method but is applied after the consumer panel data have been weighted using the IPF method. Most of the NBD estimates are not shareable due to the proprietary nature of the store scanner data totals.

the estimator with a linear function (Woodruff, 1971). Taylor series estimation is straightforward to use with the IRI data and requires analysis strata and analysis primary sampling units (PSUs) to approximate the sample design accounting for stratification and clustering of households. That is, the data records need to be grouped at two levels. The first level (PSU) is a group of households, and the second level (stratum) is a group of PSUs. For the IRI data, the analysis strata can be geography, such as Metropolitan Statistical Areas (MSAs), Census region or division, and/or county codes. Given that the household sample is not a statistical sample, the random groups method can be used to approximate the PSUs and account for clustering of households. Using the random groups method, analysis PSUs can be formed by randomly subsampling and grouping households within an analysis stratum.[17]

[17]Software packages that compute variance estimates accounting for the statistical design, including clustering, require that the analysis strata and PSUs are specified. For example, in SAS the VARMETHOD statement is set as TAYLOR, and STRATA and CLUSTER statements specify the analysis strata and PSUs, respectively. Similarly, in SUDAAN, the DESIGN statement is set as WR, and the NEST statement specifies both the analysis strata and PSUs.

Store-Based Scanner Data: InfoScan

IRI has agreements with retail establishments across the United States to provide weekly retail sales data (revenue and quantity) for products with UPCs and random-weight (or perishable) products. The types of stores covered include grocery, drug, convenience, mass merchandiser, club, dollar, and defense commissary stores. Some of the InfoScan data are provided to ERS at the store level, while others are provided at the retailer marketing area (RMA) level in cases where the retailers did not approve release of their data at the store level. The geographic areas for the RMAs are defined separately by each retailer. The stores that approved release of their data at the RMA level but not at the store level include CVS, Kroger, Safeway, Publix, Long's, Weis, Walmart, and Sam's.

The primary datasets include aggregate weekly sales quantities and prices by UPC code for branded and, in some cases, private-label (store-brand) products. Separate files provide store-level or RMA-level data for the following:

- Branded and private-label UPC products,
- Private-label products at the brand/category level[18] (for a small number of specific retailers), and
- Random-weight and uniform-weight perishable products.[19]

The sales data files can be linked to files that contain information on store attributes and product characteristics, including nutritional content. However, the depth of coverage is somewhat limited for private-label and random- and uniform-weight perishable products.

Overview of the Datasets

Table 5 provides a summary of the number of stores by type of store (also called retail channel) for the store-level and RMA-level data for UPC-level and random-weight products, as well as the total number of records included in the InfoScan datasets obtained by ERS for 2008-12. Each record represents one UPC per store per week. The UPC-level data include branded and private-label products except that the private-label products are an aggregate at the brand/category level in some cases.

As shown in table 5a for store-level data, the total number of available stores represented in the UPC-level portion ranges from almost 37,000 in 2008 to over 41,000 in 2012 across retail channels—convenience, defense commissary/exchanges, dollar, drug, grocery, liquor, and mass merchandisers/club stores. In 2008, only grocery stores and mass merchandisers/club stores are represented in the random-weight data, but after 2008, dollar and drug stores are also represented.[20] After 2008, the vast majority of the grocery, mass merchandiser/club, dollar, and drug stores that provide UPC-level data also provided random-weight data.

As shown in table 5b for RMA-level data, the total number of stores represented in the UPC-level portion ranges from more than 13,000 in 2008 to more than 18,000 in subsequent years. The RMA

[18]Most private-label data are available at the UPC level in the point-of-sale transaction files. However, certain retailers aggregate private-label data to a brand/category level that is less detailed than UPC-level data.

[19]Uniform-weight products are typically packaged, UPC-labeled items, such as produce enclosed in a bag or a clamshell container. Random-weight products include bulk produce, fresh meat, poultry, seafood, deli items (meats, cheeses, and prepared foods), and in-store bakery items.

[20]Most of the random-weight purchases for dollar and drug stores are for fruits and vegetables.

information table is static, so the number of stores for each RMA remains the same for each year with the exception of mass merchandisers, which were not included in the data in 2008. RMA definitions apply to drug, grocery, liquor, defense commissary/exchanges (few stores), and mass merchandisers, and, thus, other types of stores are not represented in the data. Virtually all stores represented in the RMA-level data provide both UPC-level and random-weight data. (See box "Example of Retailer RMA Definitions.")

Table 5c shows the total number of stores including both store-level and RMA-level data. Thus, nearly 60,000 stores providing UPC-level data and nearly 40,000 stores providing random-weight data are represented in the data.

Retailer information by store and RMA, which includes retailer hierarchy, channel, store address, and latitude and longitude coordinates, is included in the store_info and RMA_info files that link with the retail transaction data sets (see fig. 2a).

The IRI data include what IRI refers to as a "census" component and a sample component. IRI "census" stores are those that have agreed to provide sales data for all of their stores. The remaining stores are a statistically representative sample for which IRI randomly selects stores and establishes an agreement with the retailer to obtain data for those selected stores. In some cases, IRI may provide scanners to smaller stores to allow for data collection and reporting. All of the data obtained by ERS are from the "census" component of the InfoScan data, and IRI does not sell its proprietary sample component. As a result, the IRI data obtained by ERS are a subset of the total data in InfoScan and reflect an unprojected subset of IRI's Infoscan market track reporting services.

In the primary UPC datasets, branded products are detailed by UPC code, but private-label products are sometimes aggregated to the brand/category level. More than 28 retailers have agreed to provide private-label data in the ERS data. Most of these retailers provide private-label data at the UPC level, and those data are included in the primary point-of-sale (POS) and dictionary files. A few of these retailers provide separate private-label products at the brand/category level: Target at the store level and Safeway and Kroger at the RMA level.[21] IRI assigns these products UPC codes that begin with a system code of 66, and the sales records and product information for these items are contained in separate private-label data files (see fig. 2b). According to IRI, the private-label market across all consumer packaged goods is approximately $120 billion in annual sales, which is just

Example of Retailer RMA Definitions

An example of how one retailer's retailer marketing area (RMA) definition differs from that of another retailer can be observed by comparing the Kroger Fry's RMA with the Safeway Phoenix Division RMA. The former includes 9 of the 15 counties in Arizona, while the latter includes 14 of the 15 counties in Arizona plus 1 county in New Mexico. Within InfoScan, both store-level retailers and RMA-level retailers report weekly prices and quantities at the UPC level. However RMA-level retailers report aggregate prices and quantities sold at all stores within the RMA. While the number and location of store outlets within an RMA are included in the InfoScan data, it is not possible to definitively attribute any portion of the aggregate prices and quantities of a UPC to any specific store outlet within an RMA.

[21]Most of the random-weight purchases for dollar and drug stores are for fruits and vegetables.

Table 5a

Number of stores and records in the IRI InfoScan store-level datasets, 2008-12[a]

Year		Table name	No. of variables	Number of stores (store-level) by retail channel								Number of records (store-level)	
				Conve-nience	Defense com-missary/ exchanges	Dollar	Drug	Grocery	Liquor	Mass mer-chandis-er/ club	Total	Total records	Mean records/ week
2008	POS	pos_ store	6	6,372	259	7,364	11,998	7,478	251	2,999	36,721	5,826,107,633	112,040,531
	RW	rw_ store	7	0	0	0	0	6,115	0	1,049	7,164	248,137,342	4,771,872
	All			6,372	259	7,364	11,998	7,479	251	3,001	36,724	6,074,244,975	116,812,403
2009	POS	pos_ store	6	8,529	255	7,392	12,276	7,434	269	3,058	39,213	5,978,354,678	114,968,359
	RW	rw_ store	7	0	0	7,384	6,459	6,437	0	1,755	22,035	292,643,227	5,627,754
	All			8,529	255	7,392	12,276	7,436	269	3,058	39,215	6,270,997,905	120,596,114
2010	POS	pos_ store	6	9,416	254	7,538	12,375	7,381	290	3,074	40,328	6,064,526,614	116,625,512
	RW	rw_ store	7	0	0	6,984	11,807	6,601	0	1,756	27,148	295,950,284	5,691,352
	All			9,416	254	7,538	12,375	7,382	290	3,075	40,330	6,360,476,898	122,316,863
2011	POS	pos_ store	6	9,579	514	7,808	12,414	7,164	318	3,109	40,906	6,239,915,654	119,998,378
	RW	rw_ store	7	0	0	2,036	7,754	6,606	0	1,772	18,168	303,300,017	5,832,693
	All			9,579	514	7,808	12,414	7,165	318	3,109	40,907	6,543,215,671	125,831,071
2012	POS	pos_ store	6	9,613	515	8,237	12,497	7,098	341	3,140	41,441	6,524,936,333	123,112,006
	RW	rw_ store	7	0	0	1,282	12,176	6,720	0	1,786	21,964	312,057,127	5,887,870
	All			9,613	515	8,237	12,497	7,100	341	3,140	41,443	6,836,993,460	128,999,877

Table 5b

Number of stores and records in the IRI InfoScan RMA-level datasets, 2008-12 (continued)

Year		File name	No. of variables	Number of stores (RMA) by retail channel							Number of records (RMA)		
				Conve-nience	Defense com-missary/ exchanges	Dollar	Drug	Grocery	Liquor	Mass mer-chan-diser/ club	Total	Total records	Mean records/ week
2008	POS	pos_ rma	6	0	10	0	7,341	5,732	487	0	13,570	87,288,807	1,678,631
	RW	rw_ rma	7	0	0	0	0	5,743	0	0	5,743	12,410,147	238,657
	All			0	10	0	7,341	5,743	487	0	13,581	99,698,954	1,917,288
2009	POS	pos_ rma	6	0	10	0	7,341	5,743	464	4,521	18,079	107,296,998	2,063,404
	RW	rw_ rma	7	0	0	0	7,341	5,743	0	4,485	17,569	14,572,000	280,231
	All			0	10	0	7,341	5,743	464	4,521	18,079	121,868,998	2,343,635
2010	POS	pos_ rma	6	0	10	0	7,358	5,743	464	4,521	18,096	107,620,290	2,069,621
	RW	rw_ rma	7	0	0	0	7,341	5,743	0	4,485	17,569	14,989,382	288,257
	All			0	10	0	7,358	5,743	464	4,521	18,096	122,609,672	2,357,878
2011	POS	pos_ rma	6	0	10	0	7,358	5,743	464	4,521	18,096	110,635,290	2,127,602
	RW	rw_ rma	7	0	0	0	7,341	5,743	0	4,485	17,569	15,441,976	296,961
	All			0	10	0	7,358	5,743	464	4,521	18,096	126,077,266	2,424,563
2012	POS	pos_ rma	6	0	10	0	7,358	5,743	464	4,521	18,096	117,511,434	2,217,197
	RW	rw_ rma	7	0	0	0	7,341	5,743	0	4,485	17,569	15,873,382	299,498
	All			0	10	0	7,358	5,743	464	4,521	18,096	133,384,816	2,516,695

Table 5c

Number of stores and records in the IRI InfoScan combined datasets, 2008-12 (continued)

Year	File name	No. of variables	Number of stores (total IRI) by retail channel							Number of records (total IRI)		
			Convenience	Defense commissary	Dollar	Drug	Grocery	Liquor	Mass merchandiser/ club	Total	Total records	Mean records/ Week
2008	POS		6,372	269	7,364	19,339	13,210	738	2,999	50,291	5,913,396,440	113,719,162
	RW		0	0	0	0	11,858	0	1,049	12,907	260,547,489	5,010,529
	All		6,372	269	7,364	19,339	13,222	738	3,001	50,305	6,173,943,929	118,729,691
2009	POS		8,529	265	7,392	19,617	13,177	733	7,579	57,292	6,085,651,676	117,031,763
	RW		0	0	7,384	13,800	12,180	0	6,240	39,604	307,215,227	5,907,985
	All		8,529	265	7,392	19,617	13,179	733	7,579	57,294	6,392,866,903	122,939,748
2010	POS		9,416	264	7,538	19,733	13,124	754	7,595	58,424	6,172,146,904	118,695,133
	RW		0	0	6,984	19,148	12,344	0	6,241	44,717	310,939,666	5,979,609
	All		9,416	264	7,538	19,733	13,125	754	7,596	58,426	6,483,086,570	124,674,742
2011	POS		9,579	524	7,808	19,772	12,907	782	7,630	59,002	6,350,550,944	122,125,980
	RW		0	0	2,036	15,095	12,349	0	6,257	35,737	318,741,993	6,129,654
	All		9,579	524	7,808	19,772	12,908	782	7,630	59,003	6,669,292,937	128,255,633
2012	POS		9,613	525	8,237	19,855	12,841	805	7,661	59,537	6,642,447,767	125,329,203
	RW		0	0	1,282	19,517	12,463	0	6,271	39,533	327,930,509	6,187,368
	All		9,613	525	8,237	19,855	12,843	805	7,661	59,539	6,970,378,276	131,516,571

Note: A record represents the nonzero sales of one Universal Product Code per store per IRI week.

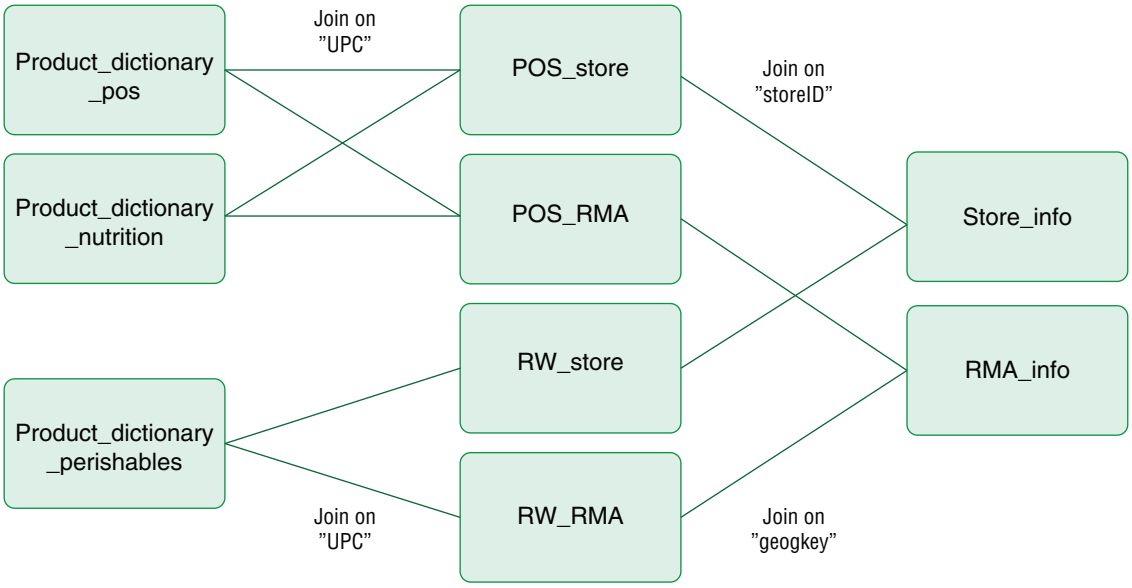
RMA = Retailer Marketing Area.

[a]Counts based on an unprojected subset of stores from IRI's Infoscan market tracking services.

Source: Calculated by authors using data from IRI.

Figure 2a

Linking point-of-sale (POS) and perishable (RW) data to product dictionaries and store and retail market area (RMA) information



Source: USDA, Economic Research Service.

under 17 percent of all consumer packaged goods sales. However, an accurate estimate of the percentage of private-label products included in the ERS data is not available because of restrictions on the data for the total private-label market.

The data fields in each of the InfoScan files for the store-level and RMA-level data for branded, private-label, and perishable products include:

- UPC code,
- Store ID for store-level or geography key for RMA-level data,[22]
- Week of the data,
- Number of units sold (expressed in pounds or counts for perishable products), and
- Total revenue in dollars and cents.

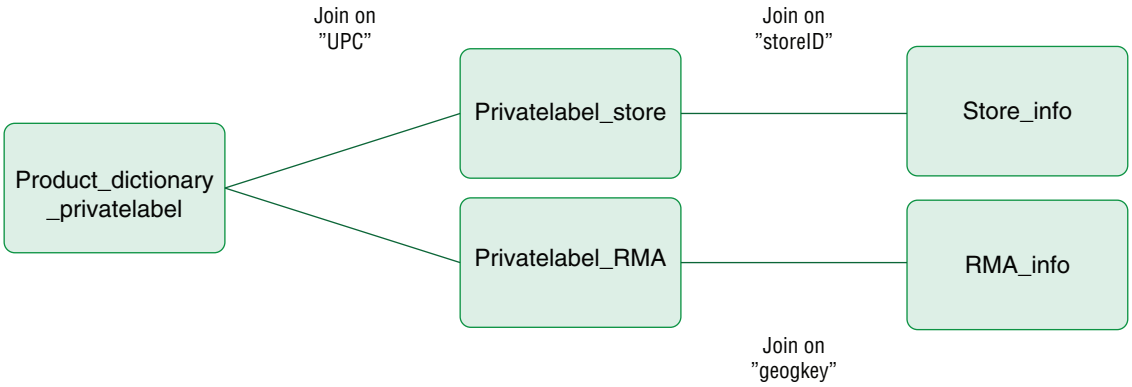
Figures 2a and 2b show how to link InfoScan files (both perishable and point-of-sale) as well as the private-label data to the product dictionaries. In particular, these data can be linked to store and product information as follows:

- Store information for all retailers (by store ID code for store-level retailers and by geography key for RMA-level retailers),
- Product dictionary file for UPC-branded products (by UPC),

[22]Most of the random-weight purchases for dollar and drug stores are for fruits and vegetables.

Figure 2b

Linking brand/category-level private-label data to the product dictionary and store and retail market area (RMA) information



Source: USDA, Economic Research Service.

- Product dictionary file for private-label products for Target, Kroger, and Safeway (by pseudo-UPC),
- Product dictionary file for random-weight and uniform-weight perishable products (by UPC or pseudo-UPC), and
- Product dictionary for nutrition information for UPC products (by UPC).

The product dictionaries for UPC-branded and private-label products contain characteristics of the product ranging from brand to label information, which we describe in more detail later in the report. For perishable products, IRI's Freshlook solution assigns a pseudo-UPC that provides detail on the type of product, form of product, and number of units or the volume in pounds.

Store Recruitment and Sampling

IRI maintains an exhaustive database of all retail stores in each retail channel along with relevant attributes for the stores. For the "census" retailers, IRI maintains information on the stores as part of its weekly data collection process. For the remainder of the retailers, IRI uses multiple retailer files and industry sources to create a total universe of stores by channel. The data purchased by ERS include only the "census" retailers, and, thus, sampling is not relevant for the data. For use in its other data reporting and analysis, IRI selects a sample of retailers by geographic region. Independent stores are grouped together for sampling.[23]

[23]Although ERS does not currently acquire data from the "noncensus" stores, we provide an explanation of the sampling process for these stores for future reference. To select the sample of stores, IRI first sets a sampling fraction (e.g., 10 percent), which dictates the probability of selection when applied to the population size of a stratum. Strata are defined by a combination of retailer and geography, which means that chains are selected and then stores within chains. Strata associated with a retailer or geography for which data can be released are set with a higher sampling fraction than those that cannot be released but only feed into higher level reporting. Within a stratum, stores are randomly selected using systematic sampling. With systematic sampling, the data are sorted based on selected variables, and then every nth store is selected, where n is the total number of stores divided by the sample size.

Table 6 provides an overview of the different types of retailers, definition of the retail channel, and coverage of the sales represented in the data received by ERS.[24] Stores in Alaska, Hawaii, and Puerto Rico are excluded across grocery, drug, and mass merchandisers, and stores in Hawaii and Puerto Rico are excluded across Walmart, club stores, dollar stores, and defense commissary stores. All sizes of stores are included, with the exception of grocery stores, which must have $2 million or more in annual sales to be included in the IRI sample.

Table 6
Overview of retail outlets included in InfoScan datasets

Outlet type	Definition of outlet type	Coverage in data received by ERS
Grocery stores	Grocery stores with $2 million or more in annual grocery sales (IRI estimates 33,000+ stores)[a]	All stores that provide complete sales data to IRI (representing approximately 74 percent of ACV[b]) except the store chain HEB; some stores only release data at the RMA level
Drug stores	Chain and independent drug stores (IRI estimates 42,000+ stores)	All stores that provide complete sales data to IRI (representing approximately 93 percent of ACV for all products except prescription drugs[b]); some stores only release data at the RMA level
Convenience stores with scanning capability	Chain and independent convenience stores with scanning capability (IRI estimates 150,000+ stores)	All stores that provide complete sales data to IRI (approximately 14 percent of ACV for all products except gasolineb)
Mass merchandisers (excluding Walmart)	Mass merchandiser chains	Target, Shopko, and Kmart
Walmart	All Walmart store formats, including supercenters, traditional, and neighborhood markets	All stores starting in 2009 (RMA level only)
Club stores	Membership stores	Sam's Club (starting in 2009; RMA level only)
Dollar stores	Dollar store chains	Family Dollar and Fred's
Defense commissary stores and exchanges	Stores operated in the continental United States by the Defense Commissary Agency (DeCA)	NEXCOM and DeCA stores (representing approximately 45 percent of the ACV[b])

[a]Grocery stores with less than $2 million in annual grocery sales represent approximately 4 percent of total sales volume.
[b]ACV = all commodity volume. ACV includes all scanned and nonscanned food and nonfood items (e.g., health and beauty products) and services (e.g., floral department, video rental, and photo development) but excludes items such as gasoline, prescription drugs, furniture, appliances, and sporting equipment. The percentage of ACV is the percentage of the sales volume across all consumer products sold for the stores for a particular outlet type represented in the data relative to the total U.S. sales volume as estimated by IRI. RMA = Retailer Marketing Area.
Source: Authors using data from IRI.

The counts included in the datasets have remained relatively constant over the time period of the data received by ERS. However, some of the convenience retailers moved from sample-based to "census"-based in 2009, thus, increasing the count of convenience stores in the data.

Table 7 shows a comparison of the number of stores by retail channel between the InfoScan data obtained by ERS and Census Bureau data by North American Industry Classification System (NAICS) code in 2012. Not all retail channels are represented in the RMA-level data (i.e., convenience stores, dollar stores, and for the most part, defense commissary/exchanges). For the grocery

[24]ERS also received limited data on liquor store sales, but a discussion of these data is outside the scope of the report.

store counts by NAICS from the Census Bureau, we included stores with over $2.5 million in annual sales to approximate the definition that IRI uses for the stores it includes in InfoScan ($2 million or more in annual sales). These stores account for less than half the total number of grocery stores because of the large number of small-scale grocery stores across the country. The total coverage of the InfoScan data obtained by ERS can be approximated by summing the percentages for store-detail and RMA data. In particular, the percentages of drug stores and grocery stores included in the data represent about 45 percent of stores compared to Census. The coverage of mass merchandiser/club stores in IRI appears to exceed the number compared to Census, but this is likely due to differences in the definitions of the categories. Overall, the estimated coverage is about 41 percent of stores compared to Census.

Because many stores represented in table 7 are smaller format stores and have relatively low sales volumes, a comparison of food and alcohol sales volumes provides a potentially more useful estimate of coverage of the InfoScan data than does store counts. Table 8 shows the comparison of total sales volumes for food and alcohol between the InfoScan data obtained by ERS and Census Bureau data for 2012 for the same categories as in table 7. Approximately half of food and alcohol purchases at grocery stores are covered in the data for 2012. Coverage of sales at mass merchandisers/club stores is higher at almost 80 percent, largely influenced by the inclusion of Walmart, while coverage of sales at convenience stores, dollar stores, and liquor stores is much lower. The coverage of sales from drug stores appears to exceed the Census estimates, but this is likely due to differences in the definitions of the categories. Overall, the estimated coverage of food and alcohol sales is 55 percent compared to Census.[25]

[25]In future work, we plan to compare the stores and sales in the InfoScan data with Census data, as well as proprietary data including TDLinx and National Establishment Time-Series by Walls and Associates, to examine InfoScan coverage relative to other extensive retail data sources.

Table 7

Comparison of number of stores in the InfoScan data with Census Bureau data, 2012[a]

Type of store	NAICS code	InfoScan (store-detail)	InfoScan (RMA)	Census Bureau[b]	InfoScan (store-detail)	InfoScan (RMA)	Total InfoScan
		Number of stores	Number of stores	Number of stores	Percent of Census stores	Percent of Census stores	Percent of Census stores
Convenience	44512	9,613	0	26,531[c]	36.2	0.0	36.2
Defense commissary and exchanges[d]	Not applicable	515	10	--	--	--	--
Dollar	45299	8,237	0	35,980	22.9	0.0	22.9
Drug	44611	12,497	7,358	43,353	28.8	17.0	45.8
Grocery	44511	7,100	5,743	28,201[e]	25.2	20.4	45.5
Liquor	44531	341	464	32,643	1.0	1.4	2.5
Mass merchandiser/Club	45291	3,140	4,521	5,116	61.4	88.4	149.7
Total		41,443	18,096	145,293	28.5	12.4	41.0

NAICS = North American Industry Classification System.

[a]Counts are based on an unprojected subset of stores from IRI's InfoScan market tracking services.

[b]Preliminary estimates of establishment numbers (stores) were obtained from the 2012 Economic Census, Industry Series Preliminary Product Line Statistics (www.factfinder.census.gov), with the exception of grocery stores.

[c]The store count for convenience stores does not include gasoline stations with convenience stores.

[d]The Census Bureau does not provide data for defense commissaries.

[e]The grocery store count was obtained from 2007 Economic Census, Retail Trade: Subject Series – Estab and Firm Size: Summary Statistics by Sales Size of Firms for the United States (www.factfinder.census.gov) and excludes stores with annual sales below $2.5 million to better align with the definition of grocery stores included in InfoScan ($2 million or more in sales).

Source: Calculated by authors using data from IRI and the Census Bureau.

Table 8

Comparison of total UPC and random-weight food sales in the InfoScan data with total sales in Census Bureau data, 2012[a]

Type of store	NAICS code	InfoScan (store-detail)	InfoScan (RMA)	Census Bureau	InfoScan (store-detail)	InfoScan (RMA)	Total InfoScan
		Total food and alcohol sales ($1,000s)	Total food and alcohol sales ($1,000s)	Food and alcohol sales ($1,000s)[b]	Percent of Census sales	Percent of Census sales	Percent of Census sales
Convenience	44512	5,551,479	0	15,929,925	34.8	Not applicable	34.8
Defense commissary/ exchanges[c]	Not applicable	3,917,769	208,277	Not applicable	Not applicable	Not applicable	Not applicable
Dollar	45299	2,604,033	0	13,839,717	18.8	Not applicable	18.8
Drug	44611	8,223,619	5,992,284	11,950,180	68.8	50.1	119.0
Grocery	44511	104,433,106	102,671,090	411,641,954	25.4	24.9	50.3
Liquor	44531	960,521	1,800,915	40,651,077	2.4	4.4	6.8
Mass merchandiser/ Club	45291	14,041,239	109,483,594	157,013,948	8.9	69.7	78.7
Total		139,731,766	220,156,160	651,026,801	21.5	33.8	55.3

NAICS = North American Industry Classification System.

[a]Sales are based on an unprojected subset of stores from IRI's InfoScan market tracking services.

[b]Preliminary estimates of sales were obtained from the 2012 Economic Census, Industry Series Preliminary Product Line Statistics (factfinder.census.gov), for the following product codes: *20100* Groceries and other food items for human consumption off premises. *21100* Meals, unpackaged snacks, sandwiches, unpackaged ice cream and yogurt, bakery items, other food items, and nonalcoholic beverages for immediate consumption. *20140* Packaged liquor, wine, and beer.

[c]The Census Bureau does not report separate estimates for defense commissaries.

Source: Calculated by authors using data from IRI and the Census Bureau.

Food Purchase Data Collection and Adjustments

IRI receives weekly food purchase data from retailers that include data for products with UPCs and for random-weight or perishable products.[26] IRI conducts several data quality checks as data are received to eliminate duplicates, compare aggregate sales measures to recent trends by store, and compare UPC-level sales to recent trends within stores. For some products, IRI verifies the purchase data against shipments data from manufacturers (i.e., beer, carbonated beverages, and salty snack categories). In addition to conducting quality control checks on the scanner data, IRI also conducts field audits to validate that the data files received from the stores match the electronic files at the store location.

Data Collection Process for Products With UPCs

As new UPCs enter the market, IRI obtains product image scans and then codes the information from the packages and adds it to its dictionary database. IRI obtains the product images, which

[26]Some stores provide data on a daily basis, and IRI aggregates the data to a weekly basis.

includes the front and back of the product, from manufacturers and retailers. IRI also then categorizes the food within its product categorization. IRI adds approximately 3 million new items across all consumer packaged goods to its dictionary database on an annual basis (IRI, March 24, 2014). Details on the nutrition information and product claims included in IRI's dictionary database is provided later in the report.

Retailers aggregate individual transactions and provide the data to IRI at the UPC level. Most retailers report the total units sold and the total dollars, although a few report total units sold and price. Note that the total dollars includes discounts obtained through the use of loyalty cards and other sales. During data collection, IRI checks the reported prices against its dictionary price to identify and correct errors in data reporting.

Although data are reported to IRI at the individual UPC level, given restrictions on data release, data for private-label products are provided to ERS for selected retailers only. More than 28 retailers that provide UPC-level data release the data for private-label products. Kroger, Safeway, and Target release private-label data at the brand/category level rather than at the disaggregate UPC level, but other retailers release private-label data at the UPC level.[27] When private-label data are released only at the brand/category level, size (weight or volume) information is not available, and, thus, unit prices cannot be calculated.

Quantities (UNITS). Quantities represent the number of items scanned by UPC code. If analysts need estimates of the total weight or volume of products, the number of units can be multiplied by the value in the volume (i.e., number of units of measure) field in the data. However, for private-label products that are aggregated to the brand/category level, the total weight or volume cannot be calculated because each record contains multiple sizes. For multipack packaging, retailers are often not able to provide defined unit measures; IRI searches for inconsistent price and volume combinations to identify these cases and then recalculates the volume. Note that when working with units of measure for liquid products, ounces typically represent fluid ounces, which is a measure of volume, rather than weight.[28]

Prices (CENTS). IRI calculates a weighted-average price for each UPC by dividing the total dollars by the total units sold reported by retailers. The total dollars are net of discounts applied through sales and loyalty cards, and, thus, the weighted average price is net of these discounts. The weighted average price does not reflect discounts from coupons. To calculate unit prices (e.g., price per ounce), the weighted average price can be divided by value in the volume field.

Data Collection Process for Random-Weight and Uniform-Weight Perishable Products

IRI FreshLook solution obtains and reports perishable product data. The perishable product file includes data for both uniform-weight perishable products and random-weight perishable products. Uniform-weight products, such as UPC-labeled produce enclosed in a bag or a clamshell container, are coded using a similar process to that used for other UPC-labeled items.

[27]The retailers providing private-label data at the brand/category level vary slightly in subsequent years of data.

[28]USDA's National Nutrient Database for Standard Reference provides density measures to convert liquid volumes to weights based on the type of product.

Random-weight products include bagged or bulk produce, fresh meat and seafood, deli items (meats, cheeses, and prepared foods), and in-store bakery items. For these products, IRI collects data from retailers from two sources:

- Products with price look-up (PLU) codes—For these products, the cashier enters the PLU code and weighs the product during checkout. Most often, these are fruits and vegetables.
- Products that are pre-weighed and labeled at the store—These products are scanned at the register, and the price and weight are recorded.

Each retailer assigns its own UPC codes to random-weight products; therefore, IRI must keep track of the retailer that is using each code. Also, the retailer can change the product associated with a UPC at any time; therefore, IRI matches the product descriptions by UPC against its existing dictionary to identify new items. When new items are identified, IRI codes the items for addition to the product dictionary. The assigned UPCs for these products begin with a system code of 20-26.

Table 9 provides a list of the types of products, number of categories and subcategories, and other coded attributes for random-weight and perishable products (IRI, March 24, 2014). Data on random-weight and perishable product sales are available for dollar stores, drug stores, grocery stores, mass merchandisers, and club stores.[29] However, not all stores in these retail channels provide random-weight data.

Table 9
Perishables product categories and coding

Type of product	No. of categories	No. of subcategories	Other coded attributes
Fresh produce	85	557	Package type, organic, preparation type
Fresh meat	14	147	Cut, bone-in versus boneless, form, process type, and preparation type
Deli cheese	116	0	Health attributes
Deli meat	14	127	Flavors, health attributes, kosher
Deli prepared	15	149	Type (e.g., entree/pasta/ravioli)
In-store bakery	19	198	Type (e.g., cookies/regular/sugar)

Source: Calculated by authors using data from IRI.

Quantities. Retailers provide quantities for random-weight products as pounds or number of items (referred to as "eaches"). Some retailers provide either type of quantity in a single field, while others have separate fields for pounds and eaches. For those retailers that provide quantity in a single field, IRI determines the type of measure used by applying an algorithm based on how the retailer typically sells the product and using a price range check. For quantities recorded as eaches, IRI applies the typical weight of each item using a standard conversion factor for each type of fruit or vegetable (i.e., see "Perishables_Conversion_Factors_Counts_to_Pound.xls"). The typical weights have been developed over time using store audits of weights, Internet sources, and interpolation across other products (IRI, March 24, 2014). Some types of produce, such as apples and squash, have conversion factors for several different varieties, while others, such as coconuts and jicama, have a single conversion factor.

[29]In 2008, data on random-weight sales were provided only for grocery stores and mass merchandisers.

Projection Factor Calculations

Projection factors (or weights) are not included in the data purchased by ERS. However, IRI has a method of creating projection factors that projects the store scanner data to the sales volume of total consumer packaged goods (CPG) by geographic region. IRI uses a proprietary projection algorithm called Store Matrix to create projection factors in which all commodity volume (ACV) estimates serve as target values. The ACV estimates are generated using a model developed by IRI based on point-of-sale data, Census Bureau's Retail Trade Survey, financial reports, and industry sources.

In applying this method, the rows of the matrix represent each store in the population, and the columns represent each store ("census" or "noncensus") in the sample. An algorithm assigns each store in the population to a store in the sample that is most similar, and then the ACV of the sample store is assigned to the store in the population based on a similarity calculation.

Variance Estimation

For the subset of store data obtained by ERS, variance calculation is not applicable because the data represent a census of the available stores rather than a sample; thus, there is no sampling error. However, if ERS obtains data from the sample portion of the stores in the future, it would be necessary to calculate variances of the estimates accounting for the sample design. When calculating variances for the analyses it conducts for other purposes, IRI uses a jackknife method.

Product Information, Nutrition Data, and Product Claims Data

As noted earlier, IRI provided a set of product dictionaries that contain details of food product attributes and that can be linked by UPC to the Consumer Network or InfoScan data. This section summarizes the product dictionary files, describes their linkages to the transaction files, and compares IRI's nutrition coverage with that of other commercial data sources.

Overview of the Contents of the Product Dictionary Files

IRI delivered the majority of the UPC product information in a master product dictionary containing 1 million UPCs and almost 300 variables. ERS cleansed and reorganized this information into two smaller, more-manageable files: product_dictionary_pos and product_dictionary_nutrition. The file product_dictionary_master, containing the original set of variables from IRI, is available to researchers but is not updated by ERS and is not recommended for use due to its size.

Product_dictionary_pos is the main point-of-sale dictionary for both the InfoScan and Consumer Network data. It contains basic descriptors for UPC food products, including product category hierarchy (i.e., department ID, aisle, category), company hierarchy (i.e., parent, manufacturer, brand), and characteristics of the product itself (i.e., UPC description, style, type). See table 10 for the complete list of variables. Product_dictionary_nutrition contains nutrition information and claims for many UPCs, including information from the Nutrition Facts panel, ranges for several nutrients, and health and wellness claims on the packaging. Further examination of the nutrition file is covered later in the report.

IRI also delivered three additional dictionaries for specialized types of products: product_dictionary_perishables, product_dictionary_rwpanel, and product_dictionary_privatelabel. The perishables dictionary contains product information for uniform-weight and random-weight perishable items such as produce and meat. These items have more limited product information, as shown in table 10. This dictionary links with all perishable items in the InfoScan data (contained in rw_store and rw_rma) and uniform-weight perishable products in the trip file.

Product_dictionary_rwpanel contains random-weight products purchased by the household panel. As noted in the discussion about the Consumer Network panel, households record random-weight products at an aggregated product level (e.g., apples, chicken breast) with very limited type information and no size variables.

Finally, as detailed in the section on InfoScan, a set of retailers delivers private-label data at the brand/category level. Product_dictionary_privatelabel contains product information for private-label items from these retailers, and IRI assigns these products a UPC beginning with "66." Private-label product information from other retailers is reported at the UPC level and is contained in the POS dictionary.

Table 10
Overview of the IRI dictionary files

Dictionary file	Total active food UPCs (2008–12)	Linked transaction files	Variables
Product_dictionary_pos	806,357	Pos_store (InfoScan) Pos_rma (InfoScan) Trip (Consumer Network)	• UPC • UPC description • EAN (International Article Number) • Flavor • Launch year • Aisle • Brand • Department ID • Manufacturer • Parent • Product • UPC_2 • Week moved • Number of nutrients from Nutrition Facts panel • Number of nutrients with ranges • Number of claims variables • Number of nutrition claims variables • Number of flavor variables • Number of other descriptor variables • Number of style descriptor variables • Number of type variables • Flag for duplicate EAN • Brand type • Style • Style codes • Other • Other codes • Type • Type codes • Total units • Total volume • Flag for imputed category • Category
Product_dictionary_nutrition	636,673	Pos_store (InfoScan) Pos_rma (InfoScan) Trip (Consumer Network)	• See table 11
Product_dictionary_perishables	43,267	Rw_store (InfoScan) Rw_rma (InfoScan) Trip (Consumer Network)	• UPC • Department ID • Category • Product • Variety • Claims • Other style • Type • Total units • Total volume

Table 10
Overview of the IRI dictionary files - continued

Dictionary file	Total active food UPCs (2008–12)	Linked transaction files	Variables
Product_dictionary_rwpanel	175	Trip (Consumer Network)	• UPC • Department ID • Category • Product
Product_dictionary_private-label	551	Privatelabel_store (InfoScan) Privatelabel_rma (InfoScan)	• UPC • Department • Aisle • Category • UPC description • Manufacturer • Parent • Brand • Brand type

Source: Calculated by authors using data from IRI.

The IRI dictionary files contain all products active in the Consumer Network or InfoScan data from 2008 to 2012. This means that the dictionary data must be matched to the other datasets to determine which UPCs are active in a particular year. Prior to 2013, it was not feasible to determine whether products have been reformulated or relabeled over time because only the most recent product attributes are included in the dataset.[30] However, the dataset includes variables that can help discern when the UPC became available on product shelves (imputed by IRI) and the most recent week in which sales were reported for the UPC that may be useful in some analyses.

Overview of the Contents of the Nutrition Product Dictionary

The product dictionary information for nutrition attributes provides product claims on the front of the package and nutrition values on the back of the package for food products. In the past, product claims and nutrition data had to be linked to purchase data using other commercial sources such as Gladson, Mintel, and DataMonitor. The availability of nutrition and product claim variables within the IRI data eases the ability to conduct analyses that rely on these data.

Table 11 provides an overview of the types of variables included in the nutrition dataset. The nutrition values are expressed in amounts and percentage daily value (%DV), depending on how the information is presented on the Nutrition Facts panel.[31] The product claims data, which are generally obtained from the front of the package, are coded by category of claim with different levels of the claim. These claims may be either nutrient-content claims, such as "no," "low," or "less" of a nutrient or component, or functional claims. Functional claims refer to health claims that relate a nutrient or component to promoting or maintaining health or reducing disease (e.g., "studies show that diets low in salt help to maintain a healthy heart"). In addition to these claims, the data contain variables containing long strings of other types of nutrition claims (e.g., fat grams or juice percentage) and other more general types of claims (e.g., natural or kosher).

[30]ERS will maintain annual versions of the dictionaries from 2013 forward.

[31]The percentage daily values are relative to the Daily Reference Values established by the U.S Food and Drug Administration for a 2,000-calorie-per-day diet.

Table 11

Overview of key nutrition and product claims variables in the IRI nutrition data

Location of information	Type of information	Variables
Nutrition Facts panel	Numeric values for serving size information	• Serving size (and units) • Servings per container
Nutrition Facts panel	Numeric values for nutrients	• Calories • Calories from fat • Total fat • Saturated fat • Trans fat • Polyunsaturated fat • Monounsaturated fat • Cholesterol • Total carbohydrates • Protein • Dietary fiber • Sugars • Protein • Other carbohydrates • Potassium • Sodium • Vitamin A • Vitamin C • Calcium • Iron
Nutrition Facts panel	Daily value percentage for nutrients	• Total fat • Saturated fat • Cholesterol • Total carbohydrates • Dietary fiber • Sugars • Protein • Other carbohydrates • Potassium • Sodium • Vitamin A • Vitamin C • Calcium • Iron • Copper • Folic acid • Magnesium • Niacin • Pantothenic acid • Phosphorus • Riboflavin • Thiamin • Vitamin B12 • Vitamin B6 • Vitamin D • Vitamin E • Zinc

Table 11
Overview of key nutrition and product claims variables in the IRI nutrition data - continued

Location of information	Type of information	Variables
Nutrition Facts panel	Categorical variables for ranges of nutrients per serving	• Calories • Calories from fat • Total fat (g) • Saturated fat (g) • Trans fat (g) • Cholesterol (mg) • Dietary fiber (g) • Sugar (g) • Sodium (mg) • Vitamin C (%DV) • Vitamin E (%DV)
Front of package	Nutrient or other content claims	• Calories—no, low, less, functional, or other claim • Cholesterol—no, low, functional, or other claim • Fat—no, low, less, functional, or other claim • Saturated fat—no, low, less, functional, or other claim • Trans fat—no, other claim • Fiber—more, high, source of, functional, or other claim • Sugar—no, no added, unsweetened, low, less, other claim • Salt—no, no added, unsalted, low, less, functional, or other claim • Sodium—no, very low, low, less, functional, or other claim • Calcium—high, more, source of, other claim • Whole grain—100 percent, high, source of, other claim
Front of package	Organic claims	• Organic-100 percent, made with organic ingredients, certified organic, other claim

Source: Authors using data from IRI.

Table 12 provides a comparison of the coverage of the IRI nutrition data (with at least one field of nutrition data) with Consumer Network and InfoScan data in 2012. In some cases, the nutrition data may not be complete, but it is difficult to determine whether a record is complete because of variations in how nutrition data are displayed on package labels.[32]

According to IRI, nutrition data are coded only for edible food and beverage products with significant sales volume; therefore, the intention is to cover a large portion of sales rather than a large number of UPCs. For the data received for 2012 and earlier years, nutrition data are provided for over 635,000 active UPC codes. Approximately 48 percent of the UPCs in the Consumer Network data and 41 percent of the UPCs in the InfoScan data match to the nutrition data.[33] In terms of sales, the percentage coverage of the IRI nutrition data is substantially higher, at 78 percent of sales in Consumer Network and 81 percent of sales in InfoScan.

[32]More than 98 percent of the nutrition data records have values for 12 or more fields, and 78 percent of the records have values for 24 or more fields.

[33]It may be possible to increase the match rate by identifying additional UPCs for different package sizes of products included in the nutrition data.

Table 12
IRI nutrition data coverage with Consumer Network and InfoScan for UPCs active in 2012

Dataset	Total food UPCs[a]	Number of UPCs matched with nutrition data	Percent of UPCs matched with nutrition data	Percent of sales represented in nutrition data
Nutrition data	308,317	—	—	—
Consumer Network	420,002	201,542	48.0	78.2
InfoScan	463,748	187,925	40.5	80.7

Note: Not all nutrition data UPCs are active because IRI does not remove UPCs without sales data.
[a]The UPC count does not include random-weight or perishable-product codes.
Source: Calculated by authors using data from IRI.

Table 13 shows a summary comparison of the IRI nutrition data against an alternative nutrition dataset from Gladson (www.gladson.com) for branded and private-label products in 2012.[34] The number of branded UPCs that appear only in Gladson exceed the number that appear only in IRI by approximately 10,000 UPCs, but the number of private-label UPCs that appear only in IRI exceed the number that appear only in Gladson by about 50,000 UPCs. Thus, Gladson provides somewhat better coverage in total for branded products than IRI, but IRI provides substantially better coverage for private-label products. Note that these differences are based only on UPC counts and not sales volumes represented by the UPCs.

Tables in the appendix provide a more detailed comparison of IRI and Gladson nutrition data coverage by product category. To conduct this comparison, we first matched the UPCs in the Gladson data with the UPCs in the IRI nutrition data. We then aligned Gladson product categories with the IRI product categories through a manual matching process. For example, the IRI category cake/cupcake/pie was aligned with portions of the following Gladson categories: baking, dessert, kosher, Mexican, and snack cake. Thus, the comparisons by product category should be considered approximate.

Table 13
Summary of overlapping UPCs between IRI and Gladson nutrition data for UPCs active in 2012[a]

IRI product category	IRI only	Gladson only	Both IRI and Gladson
Branded UPCs	53,543	63,465	56,461
Private-label UPCs	68,009	11,283	21,536

[a]Counts based on an unprojected subset of stores from IRI's InfoScan market tracking services.
Source: Calculated by authors using data from IRI and Gladson.

The results of these comparisons suggest that supplementing the IRI nutrition data with Gladson nutrition data can help increase overall coverage of the nutrition data, but analysts will need to carefully construct a combined dataset because the fields provided differ across the two sources. It may be more important to consider supplementing the data in cases where the product categories appear to have substantially different coverage across the datasets (i.e., a large number of UPCs in the "only" columns and a small number in the "both" column).[35]

[34]Gladson focuses on providing data on product contents and does not provide sales data. Therefore, Gladson data can be used as a supplement to household- and store-based scanner data but not as a substitute.

[35]In future work, we plan to estimate hedonic price equations to better understand whether differences in the coverage of products and the data values between IRI and Gladson lead to differences in results of analyses that rely on these data. The results should indicate whether certain nutrient information or labeling claims are associated with product prices and help determine whether the two different sources of data are comparable.

Nutrition Data Collection and Preparation Process

As mentioned previously, for new UPCs entering the market, IRI obtains product image scans and then codes the information from the package and adds it to its dictionary database. As part of coding the information on the package, IRI includes nutrition information and product claims in its dictionary database. The addition of nutrition information and product claims is a relatively new part of the IRI coding process.

IRI aims to add information on a particular UPC to its data dictionary after the product is scanned 50 times. IRI adds approximately 3 million new items across all consumer packaged goods, including food products, to its dictionary database on an annual basis (IRI, March 24, 2014). Its goal is to capture nutritional and claim information for food and beverage products representing 95 percent of its respective category dollar sales volume. IRI updates the information for a product when a new image of the product becomes available or a significant change in the item description is detected. For example, if a retailer changes the weight information in the item description for a product, IRI flags the UPC for review and update of the product data.

IRI obtains information for coding products from package flats provided by clients (manufacturers and retailers) and product images obtained from IRI's field force, IRI's clients, third-party vendors, and websites. To include nutrition data, IRI must have an image of all sides of the package. Otherwise, it includes only the main product attributes from the front of the package. The image for the product is stored in a database, and coding attributes are entered through visual examination of the image. When coding claims, IRI focuses on keywords included on the front of the package.

Considerations in Using IRI Data for Policy Analysis

Based on the examination of the data described earlier, we provide broad guidance and considerations for using the data for policy analysis. In some cases, it is important for analysts to understand a particular aspect of the data that affects the types of research for which the data are most suitable. In other cases, analysts may need to ensure the analysis methods account for or adjust for the characteristics of the data. As is always the case in reporting the results of any analysis, it is important to state clearly any limitations that arise due to the nature of the data and any approaches taken to address the limitations (for previous work evaluating the Nielsen Homescan data, see Einav et al., 2009).

Household-Based Scanner Data: Consumer Network

The Consumer Network data provide detailed food purchase, price, and demographic data for a large panel of households in the United States. The UPC-coded purchases made by each household can be linked to information about product characteristics (e.g., brand, manufacturer, flavor, organic versus non-organic), store attributes, and nutrition information (i.e., Nutrition Facts panel, and health claims), providing a much more granular picture of what Americans are purchasing. This enables researchers to address food policy-related issues that could not be addressed using publicly available household purchase data. However, when working with Consumer Network data, analysts may need to consider the following:

Households represented in the data. Analysts should understand that certain types of households are less likely to report purchases consistently enough to be included in the static panel. This is particularly true for younger households, lower income households, and households with children. Although weights are provided to weight the data to ensure that the distribution of household demographics reflects the make-up of the U.S. population, it is likely that households that report regularly enough to be included in the static panel have different attitudes toward diet and health than does the general population (see Muth et al., 2013). These differences in attitudes could influence purchase behaviors.

Household demographic data availability. The household demographic data received by ERS for the first purchase of data for 2008-12 represents the demographic characteristics in 2012, and, thus, changes in the demographic characteristics cannot be determined. IRI overwrites the demographic variables with each annual update such that prior values cannot be retrieved. In future updates, ERS will retain the annual values of the demographic characteristics.

Assignment of prices to individual purchases. The price represented in the data for most purchases is not the same as the price that the household actually paid but instead represents an average price for a broad geographic area and particular retail chain. In cases where a household uses a coupon or obtains another type of deal, analysts should adjust the prices paid by subtracting the value of coupons to calculate the net price paid. However, it should be noted that store coupons are already accounted for in the average price. Thus, some degree of double counting may occur when applying coupon values to an individual household's purchases.

Quantities of random-weight foods. Because households record total price paid but not quantities of random-weight foods, analysts must conduct additional calculations to develop estimates of the quantities. One such approach is to calculate average price per pound (or other units) for each

random-weight food from the InfoScan data and then divide the total price paid in the Consumer Network data by the calculated average price to obtain an estimate of the total pounds (or other units). However, this method has not been tested by the authors, and further research is needed to determine the validity of such estimates.

Store information. When recording purchases, households report the name of the retailer chain or store type but do not record the specific store location. Therefore, it is not possible to match the household and retail data directly by individual store.

Weighting for calculating quantities. The weights (projection factors) in the dataset are developed based on achieving specific demographic targets across the households in the static dataset. Thus, weights are not developed with the idea of aligning total purchases to known national totals. This means that when the weights are applied to the data to estimate total regional or national purchases of foods, the weighted total is not necessarily the true total amount. However, applying the weights as provided is still the most effective approach to developing mean and total estimates.

Weighting in regression models. The decision about whether to weight the data when estimating econometric models is not settled. Although most statisticians would advocate for estimating weighted regressions, many economists tend to disagree (see Solon et al., 2015). However, statisticians and econometricians do agree that clustering should be accounted for in estimating the variance-covariance matrix for the coefficients.

Store-Based Scanner Data: InfoScan

The InfoScan data contain aggregate weekly quantities sold and prices by UPC code for branded and, in some cases, random-weight and private-label (store brand) products. Billions of transactions across the country are recorded for grocery, drug, convenience, mass merchandiser, club, dollar, and defense commissary stores. Like the Consumer Network data, these data can be linked to information on store and product characteristics, providing a rich picture of the food retailing environment. When working with InfoScan data, analysts may need to consider the following issues:

Stores represented in the data. Although the InfoScan data capture a large number of stores and a large portion of sales volumes, they are not designed to capture sales from many smaller, independent stores. These stores often have different product selection and pricing strategies than larger stores, and lower income households may be more likely to shop at these types of stores. Thus, some types of analyses that are of interest might not be appropriate for InfoScan data. For example, it is likely not possible to analyze purchase behaviors in stores with majority WIC (Special Supplemental Program for Women, Infants, and Children) sales or WIC-only stores (approximately 1,000 stores in the United States), which tend to be small but follow very different strategies than larger grocery stores.

Private-label product data. For many types of packaged products, a substantial portion of the UPCs are private-label rather than branded products. In the InfoScan data, the data for private-label products are not as complete as those for branded products because of limitations on what retailers have approved for release by IRI. In some cases, retailers have not agreed to release any data on private-label product sales. In other cases, the data are aggregated in such a way that it is not possible to calculate unit prices (e.g., a record in the dataset might represent UPCs of different sizes, and, thus, the total ounces cannot be calculated for determining a price per ounce).

Random-weight data. The random-weight data included in InfoScan data are limited because they are only released for certain stores and have somewhat limited product information. In addition, the units for random-weight products are recorded as a weight or a count; thus, analysts must determine the units for each product type included in an analysis.

Projection factors (or weights). Projection factors or weights are not provided with the InfoScan data; therefore, it is not possible to calculate nationally representative estimates. Thus, analyses of the data are only representative of the subset of stores reflected in the data.

Nutrition and Product Claims Data

The nutrition and product claims data enable researchers to gain additional insight into U.S. food purchasing behavior and the food retailing environment. These data will allow researchers to determine the underlying mechanisms behind food choice and diet quality. When working with nutrition and product claims data, analysts may need to consider the following issues.

Year of the data. For data prior to 2013, it is not possible to determine if the product nutrition or product claims data are current or when they were last updated. It is possible this affects only a small number of products due to the way IRI assigns generation codes to denote changes in product UPCs, but it may limit some types of analyses that focus on changes in product attributes over time. However, moving forward, ERS will maintain separate data for each subsequent year of the data, which will facilitate analyses that track changes over time.

Extrapolation for missing UPC-level information. Although the nutrition and product claims data cover a large portion of UPCs (and an even larger portion of sales volumes), many UPCs do not have nutrition or product claims data. It may be possible to extrapolate the existing data to cover other UPCs if other package sizes are included in the data. In those cases, the nutrition values per serving should be the same, and one could assume that the product claims would also be the same. In addition, if analysts have access to the Gladson Nutrition Database, the nutrition values and product claims could be appended to either the Consumer Network or InfoScan data if not provided by IRI. In this case, analysts would have to ensure that the units are the same between the datasets.

Private-label products. Many fewer private-label products have nutrition or product claims data than do branded products. Thus, analyses that may wish to focus on differences between branded and private-label products or that are intended to be representative of the entire market may be limited or infeasible.

Interpretation of missing values in nutrition data. When using the nutrition data, analysts should note that many of the fields appear to be missing simply because the value was not listed on the label. However, a missing value in most cases should be recoded to zero. In particular, when a nutrient does not appear on a product label because it is an optional nutrient to be listed for that product, it can safely be assumed to be zero.

Standardization of nutrition values based on serving size. In analyzing nutrition data, analysts may need to standardize nutrient values to account for differences in serving sizes. Specifically, if the serving size is different between products, such as ½ cup for one product and 1 cup for another product, then nutrient values should be converted so that the serving sizes are the same across products. Furthermore, if one product's 1-cup serving is x grams and another's is y grams, analysts should consider converting the nutrient values so that the serving size weights are equivalent.

Conclusion

The IRI household and retail scanner data are a valuable resource for conducting food economics research. Their vast size, scope, and level of detail allow users to gain unique insights into consumer food-purchase behaviors that have implications for food and nutrition research. Despite the limitations outlined in this report, these data are among the most extensive data sources used for food economics analysis and complement existing publicly available data sources.

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Appendix:
Changes to Subsequent Data Deliveries

ERS purchased IRI data for 2008-14 and plans to purchase data for 2015. The analysis in this report covers the initial delivery of the data, which includes data for 2008-12. In subsequent years, the data made available to ERS and third-party agreement researchers has evolved, with changes in format and availability of information. This appendix documents changes to the data between 2013 and 2015, which are not covered earlier in this report.

Table Organization

The data for 2008-12 were provided to ERS in one delivery. As such, these data are stored in a set of tables each encompassing 5 years of data. Distinct years can be identified using the variable for IRI week. Data for subsequent years are contained in separate annual files.

Consumer Network Data

Household demographics: The household demographics table for 2008-12 is a snapshot of household demographic characteristics as of 2012, and, thus, changes in demographic characteristics over this period cannot be determined. As ERS obtains additional years of data, the household characteristics for each subsequent year of data will be retained, enabling researchers to observe changes over time beginning with 2012.

InfoScan Data

Brand/Category private-label data: In 2013, Walmart and Sam's began releasing private-label data at the brand/category level. These data are included in the private-label RMA table and dictionary along with the Kroger and Safeway private-label data discussed in this report.

RMA definitions: On an annual basis, retailers may redefine their RMA definitions. These changes, called "restatements," may result in the new RMA definitions that do not align with historical data. For example, Walmart restated its geographies in the 2015 data, and other retailer restatements may occur in future data deliveries. Similarly, retailers may change between store-level and RMA-level reporting due to restatements, mergers, or acquisitions. For example, Harris Teeter changed from store-level reporting to RMA-level reporting in 2014 when the chain was purchased by Kroger.

Product Dictionaries and Nutrition Data

Product dictionaries: In the 2008-12 dictionaries, it was not feasible to determine whether products have been reformulated or relabeled over time because only the most recent product attributes are included in the dataset. ERS will maintain annual versions of the dictionaries from 2013 forward.

Household random-weight dictionary: Because households record purchases of random-weight products at an aggregated product-category level, the product dictionary for household random-weight items is static; all years of data link to one dictionary (product_dictionary_RWpanel), and annual updates are not necessary.

Appendix table 1

Abbreviations and acronyms in this report

Abbreviation	Term	Description
ACV	All commodity volume	ACV includes all scanned and nonscanned food and nonfood items (e.g., health and beauty products) and services (e.g., floral department, video rental, and photo development) but excludes items such as gasoline, prescription drugs, furniture, appliances, and sporting equipment.
CN	Consumer Network	IRI household scanner data. "Consumer Network data" and "household data" are used interchangeably in this report.
EAN	International Article Number	True UPC barcode as assigned by the manufacturer.
NAICS	North American Industry Classification System	Standard industry classification system used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.
NCP	National Consumer Panel	An operational joint venture between IRI and Nielsen to collect consumer and market insight data from a panel of consumers who report their purchases and answer surveys.
PL	Private label	Store brands, as opposed to national brands. For example, Kroger brand ketchup is private label, while Heinz is a national brand.
PLU	Price look-up code	Four- or five-digit product identification numbers on non-UPC grocery items such as bulk produce.
POS	Point of sale	Refers to both UPC products (items with a UPC that can be scanned by a point-of-sale checkout or payment system) and UPC-product transactions in the InfoScan data.
RMA	Retailer marketing area	An aggregate geographic area that a retailer defines as its competitive marketing area. Unique by retailer. Certain retailers provide data to ERS by aggregate RMA instead of by store.
RW	Random weight	Perishable products without a UPC that are typically sold in bulk or by the unit. Random-weight products cover fresh meat, poultry, seafood, bakery, fruits, vegetables, cheese, cold cuts and lunch meat, prepared foods, coffee, and candy, nuts, and seeds.
UPC	Universal Product Code	A barcode symbology widely used in the U.S. and other countries to track trade items in stores. Its most common form, the UPC-A, consists of 12 numerical digits, which are uniquely assigned to each trade item. IRI UPCs add two digits to the end of the UPC-A to track when UPCs are recycled.

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a]

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
ALCOHOLIC CIDERS	0	41	0	0	0	0	41
ALL OTHER BAKING MIXES	52	101	62	34	9	6	264
ALL OTHER CRACKERS	400	1,106	874	411	137	286	3,214
ALL OTHER DRY SEASONING MIXES	29	25	42	3	0	2	101
ALL OTHER PROCESSED CHEESE	62	99	63	62	14	18	318
ALL OTHER SEASONAL CANDY	51	22	24	2	2	0	101
AMERICAN CHEESE-ALL FORM	100	33	80	309	13	97	632
ASIAN COOKING OILS	12	23	41	3	2	0	81
BABY ELECTROLYTES	1	17	4	5	41	3	71
BABY FOOD/SNACK	154	469	644	132	79	128	1,606
BABY FORMULA	0	60	1	2	39	0	102
BABY FORMULA LIQUID CONCENTRATE	1	21	0	0	0	0	22
BABY FORMULA POWDER	6	75	5	4	24	7	121
BABY JUICE	4	48	38	4	0	0	94
BAKING CHOCOLATE/CHIPS/COCOA	42	77	116	132	13	61	441
BAKING POWDER/SODA	8	12	17	48	2	31	118
BREAD MIXES	23	92	76	16	4	2	213
BREADCRUMBS	53	64	84	146	5	36	388
BREADING/BATTER/COATING MIXES	39	96	130	42	3	17	327
BREATH FRESHENER (INCLUDE SUGARLESS)	62	54	130	0	0	0	246
BROWN/POWDER/FLAVORED SUGAR	29	24	38	164	13	52	320
BROWNIE MIX	29	43	91	72	14	21	270
CAKE/CUPCAKE/PIE MIX	58	84	212	116	27	59	556
CARAMEL/TAFFY APPLES	56	0	5	13	0	0	74
CARBONATED WATER/CLUB SODA (INCLUDE FLAVORED)	246	220	266	498	91	204	1,525
CAROB/YOGURT COATED SNACK	80	40	23	40	14	10	207
CATSUP/KETCHUP	27	39	37	170	30	87	390
CHEESE SNACKS	200	195	173	93	8	48	717
CHEESE SPREADS/BALLS	176	108	116	55	6	7	468
CHOCOLATE CANDY BAR < 3.5OZ/UNIT	279	741	400	42	21	2	1,485
CHOCOLATE CANDY BOX/BAG > 3.5OZ	538	975	601	214	91	46	2,465
CHOCOLATE CANDY SNACK SIZE	49	215	77	0	10	0	351
CHOCOLATE COVERED COOKIE/WAFER CANDY BAR	35	88	54	3	1	1	182
CHOCOLATE COVERED SALTED SNACK	126	58	45	48	17	3	297

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
CHOCOLATE MILK FLAVORING/COCOA MIX	70	132	109	121	25	73	530
CHOCOLATE SYRUP/DESSERT TOPPING	22	171	91	67	11	31	393
CHOW MEIN NOODLES	2	11	16	6	1	2	38
CHRISTMAS CANDY	530	71	212	67	6	8	894
CHUNKY PEANUT BUTTER	31	19	51	124	22	51	298
CHUTNEY	17	46	34	4	0	1	102
COCONUT	9	17	21	94	3	22	166
COFFEE CAKE/GINGERBREAD/PASTRY MIX	19	34	47	4	1	0	105
COFFEE SUBSTITUTES	0	14	7	0	0	0	21
COFFEE TEA ADDITIVES/FLAVORING	77	44	59	4	4	1	189
COOKIE/COOKIE BAR MIX	38	43	52	33	4	11	181
COOKIES	1,512	2,281	1,528	1,496	443	587	7,847
COOKING & SALAD OILS	101	228	130	438	40	139	1,076
COOKING SHERRY/WINE	8	20	45	21	0	6	100
COOKING SPRAY	10	33	33	146	15	72	309
COOKING STARCHES/RENNET	10	21	33	20	2	18	104
CORN/CARO/CRYSTAL/WHITE SYRUP	22	9	21	55	0	7	114
CORNMEAL/BAKING OAT BRAN	100	36	82	33	0	6	257
COTTAGE CHEESE	167	149	207	239	24	123	909
COUGH DROP/SQUARE	0	1	0	0	0	0	1
CREAM CHEESE/CREAM CHEESE SPREAD	70	73	68	241	45	95	592
CREAMY PEANUT BUTTER	55	85	83	175	40	83	521
CROUTONS-NO STUFFING CROUTONS	37	73	65	104	14	54	347
DATES	67	6	25	12	3	3	116
DIET CANDY	75	199	144	29	18	8	473
DISTILLED WATER	10	3	6	16	0	6	41
DOMESTIC BEER/ALE	0	128	0	0	0	0	128
DOMESTIC STILL/TABLE WINE	0	74	0	0	0	0	74
DRIED BEANS/GRAINS	327	227	224	603	25	144	1,550
DRIED MEAT SNACKS	310	560	260	138	28	21	1,317
DRIED PRUNES	21	39	29	72	9	23	193
DRIED VEGETABLE—EXCEPT BEANS	125	65	88	61	3	20	362
DRY DINNER MIX WITH MEAT	13	5	21	0	3	1	43
DRY DINNER MIX—ADD MEAT	56	93	139	133	38	45	504
DRY GRAVY MIXES	33	67	112	183	11	50	456
DRY MACARONI & CHEESE MIX	29	70	109	273	29	90	600

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
DRY MEAT/SEAFOOD SEASONING MIXES	112	186	298	170	13	66	845
DRY NOODLES	107	114	199	174	16	52	662
DRY RICE	344	255	303	585	19	133	1,639
DRY RICE MIXES	105	244	297	254	17	54	971
DRY SALAD/SIDE DISH MIX	19	79	127	170	19	50	464
DRY SAUCE MIX	18	86	73	44	1	9	231
DRY SPAGHETTI/MACARONI/PASTA	584	808	900	1,140	185	460	4,077
DRY WHIP TOPPING MIX	1	1	4	3	1	1	11
DRY/RFG YEAST	4	15	17	3	0	1	40
EASTER CANDY	394	114	206	29	8	5	756
EDIBLE CAKE DECORATION	128	85	125	36	4	1	379
EVAPORATED CONDENSED MILK	21	8	26	91	17	45	208
EXTRACT/FLAVORING/FOOD COLORING	0	36	0	0	0	0	36
FLAVORED HOT DRINK MIX	5	5	11	1	0	3	25
FLOUR	100	101	170	219	9	44	643
FRESH CUT SALAD AND COLESLAW	187	72	111	278	40	72	760
FROZEN MEAT—NO POULTRY	321	79	73	201	26	48	748
FROZEN REGULAR DINNERS	25	189	124	7	0	5	350
FROZEN REGULAR ENTREES	331	973	901	112	94	137	2,548
FROZEN RFG MEAT SUBSTITUTES—NO POULTRY	60	118	128	2	7	5	320
FRUIT BUTTER	37	26	22	13	0	6	104
FRUIT FLAVORED SYRUPS	52	36	37	36	0	12	173
FRUIT ROLL UP/BAR/PROCESSED FRUIT SNACK	147	356	210	257	49	93	1,112
FRUIT/VEGETABLE PRESERVATIVE/PECTIN	15	8	31	1	0	1	56
FZ APPETIZER/SNACK ROLL	249	211	258	198	47	91	1,054
FZ APPLE JUICE CONCENTRATE	1	0	6	30	0	16	53
FZ BABY FOOD/JUICE/SNACK	1	26	9	0	0	0	36
FZ BAGELS	16	10	30	61	13	20	150
FZ BEANS	99	11	60	351	17	80	618
FZ BLENDED FRUIT JUICE CONCENTRATE	6	2	19	2	0	2	31
FZ BREADED VEGETABLES	40	2	14	20	1	3	80
FZ BROCCOLI	47	11	25	274	9	47	413
FZ CARROTS	8	5	7	70	7	11	108
FZ CHEESECAKE	38	26	15	23	9	3	114

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
FZ CHILI	14	9	13	2	0	0	38
FZ COCKTAIL MIXES	13	1	7	2	1	1	25
FZ COFFEE CREAMER	1	0	2	0	0	1	4
FZ COOKIE DOUGH	24	23	6	3	0	0	56
FZ CORN	58	19	34	199	9	50	369
FZ CORN ON THE COB	26	3	11	102	4	15	161
FZ DOUGH BREAD/ROLLS/PASTRY	68	20	38	49	10	16	201
FZ DRINK/COCKTAIL DRINK CONCENTRATE	39	21	47	58	13	22	200
FZ EGG ROLL/POTSTICKERWONTON WRAPPER	16	4	3	0	0	0	23
FZ EGG SUBSTITUTES	0	0	1	1	0	0	2
FZ FISH/SEAFOOD	1,172	287	229	849	88	144	2,769
FZ FRANKFURTERS/WIENERS	9	14	4	2	3	0	32
FZ FRESH BAKED BREAD/ROLLS/BISCUIT	92	54	88	206	8	36	484
FZ FRUIT	136	20	37	522	21	116	852
FZ GRAPE JUICE CONCENTRATE	2	0	5	13	0	1	21
FZ GRAPEFRUIT JC CONCENTRATE	0	0	1	3	0	1	5
FZ HANDHELD NON BREAKFAST ENTREES	310	239	302	138	30	18	1,037
FZ HARD/SOFT TORTILLA	5	0	4	0	0	0	9
FZ ICE CREAM/ICE MILK DESSERTS	64	100	20	18	52	5	259
FZ JAMS/JELLIES/PRESERVE	8	0	0	0	0	0	8
FZ LEMONADE/LIMEADE CONCENTRATE	1	1	7	84	5	19	117
FZ MEAT SPREAD/SALADS	2	0	0	0	0	0	2
FZ MEAT/SEAFOOD SEASONING MIXES	3	0	2	0	0	0	5
FZ MIXED VEGETABLES	181	29	98	737	52	141	1,238
FZ NOVELTIES SINGLE SERVING	439	680	672	459	205	259	2,714
FZ ONION RINGS	11	4	9	36	1	11	72
FZ ONIONS	6	0	3	38	1	4	52
FZ ORANGE JUICE CONCENTRATE	6	2	12	137	9	49	215
FZ OTHER BREAKFAST FOOD	186	178	196	142	15	41	758
FZ OTHER PLAIN VEGETABLE	122	15	41	309	15	58	560
FZ OTHER VEGETABLE/FRUIT JUICE CONCENTRATE	3	0	2	1	2	0	8
FZ PASTA/NOODLES	261	91	86	216	9	57	720
FZ PEAS	74	10	34	263	14	56	451

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
FZ PIE/PASTRY SHELLS	8	14	10	79	2	16	129
FZ PIES	30	80	127	14	4	1	256
FZ PIZZA	299	409	460	437	96	118	1,819
FZ PIZZA CRUSTS/DOUGH	26	12	5	7	0	8	58
FZ PLAIN POTATO/FRENCH FRY/HASH BROWNS	107	20	90	415	24	133	789
FZ POT PIES	14	33	43	9	3	1	103
FZ PREBAKED MUFFINS	7	3	21	1	0	0	32
FZ PREPARED DIPS	9	2	7	3	2	2	25
FZ PREPARED PUDDING/MOUSSE	4	0	0	1	0	2	7
FZ PREPARED VEGETABLE (IN SAUCE)	19	9	60	9	9	11	117
FZ PRETZELS	10	6	18	16	0	5	55
FZ READY TO EAT COOKIES	1	1	0	0	2	2	6
FZ RFG POULTR/POULTRY SUBSTITUTES	821	245	353	394	69	88	1,970
FZ SAUCE/GRAVY/MARINADE	21	3	9	2	0	0	35
FZ SAUSAGE	115	31	56	44	3	4	253
FZ SIDE DISH	114	89	98	43	17	18	379
FZ SOUP	61	30	61	8	1	6	167
FZ SPINACH	30	5	15	163	4	35	252
FZ SQUASH/ZUCCHINI	11	0	3	45	0	8	67
FZ STUFFING	7	0	2	1	0	0	10
FZ SWEET GOODS—NO CHEESECAKE	75	96	70	45	19	22	327
FZ WAFFLES	32	60	65	223	26	85	491
FZ WHIP TOPPINGS	6	7	19	177	6	47	262
FZ YOGURT/TOFU—CARTON	105	120	118	60	17	40	460
GELATIN DESSERT MIX	37	80	88	237	27	81	550
GIFT BOX CHOCOLATES	141	111	75	2	4	1	334
GLAZED FRUIT	29	3	20	18	2	6	78
GRAHAM CRACKER CRUMBS	1	1	3	3	1	2	11
GRAHAM CRACKERS	30	72	33	101	24	62	322
GROUND COFFEE (INCLUDE FLAVORED)	17	46	12	5	1	5	86
GROUND DECAFFEINATED COFFEE (INCLUDE FLAVORED)	0	5	13	0	0	0	18
HALLOWEEN CANDY	184	62	54	20	13	8	341
HARD SUGAR CANDY/PACKAGE/ROLL CANDY	198	579	184	95	37	18	1,111
HOMINY GRITS	22	11	20	43	0	9	105
HOT CEREAL/OATMEAL	111	196	199	496	79	192	1,273

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
ICE CREAM—CARTON	799	1,378	904	1,345	381	617	5,424
ICE CREAM CONES	8	37	20	126	6	23	220
ICE CREAM MIX	29	4	4	0	0	0	37
ICE MILK/FZ DAIRY DESSERT	7	0	0	0	0	0	7
IMITATION CHEESE—ALL FORMS	37	22	31	26	1	14	131
IMPORTED BEER/ALE	0	15	0	0	0	0	15
IMPORTED STILL/TABLE WINE	0	5	0	0	0	0	5
INSTANT BREAKFAST (ADD TO MILK MEAL)	8	2	9	0	1	3	23
INSTANT COFFEE	23	100	72	5	6	6	212
INSTANT DECAFFEINATED COFFEE	0	10	7	0	0	1	18
INSTANT TEA/ICE TEA MIX	68	115	150	137	17	63	550
KERNEL POPCORN	27	2	18	96	1	31	175
KETCHUP/MUSTARD/OTHER COMBO	0	4	0	0	0	0	4
LICORICE BIG BOX/BAG > 3.5OZ	84	128	102	18	13	8	353
LOOSE TEA & TEA BAGS	149	675	391	192	62	62	1,531
LOW CALORIE SOFT DRINKS	278	219	354	232	50	86	1,219
MAPLE/PANCAKE & WAFFLE SYRUP	68	90	109	322	26	113	728
MARGARINE/MARGARINE & BUTTER BLEND/SUBSTITUTE	45	61	125	125	40	36	432
MARSHMALLOW CREME	1	3	8	8	1	6	27
MARSHMALLOWS	35	50	43	102	13	45	288
MATZOH CRACKERS	17	34	76	2	0	0	129
MATZOH MEAL	11	11	16	0	0	0	38
MILK CHOCOLATE MILK FLAVORING/ DRINK MIX	17	41	21	9	0	5	93
MOLASSES	11	8	17	2	2	0	40
MUFFIN MIX	40	60	91	54	7	17	269
NATURAL CHEESE—NO SHREDDED	1,149	786	884	1,916	145	468	5,348
NATURAL SHREDDED CHEESE	207	58	233	963	17	333	1,811
NON CARBONATED WATER (INCLUDE FLAVORED)	149	513	303	247	99	85	1,396
NON CHOCOLATE CHEWY BIG BOX/ BAG > 3.5OZ	573	840	473	534	123	110	2,653
NON CHOCOLATE CHEWY CANDY BAR < 3.5OZ/UNIT	152	187	247	11	15	4	616
NON CHOCOLATE CHEWY SNACK SIZE	18	50	30	0	8	0	106
NOT FOOD	0	48	0	0	70	0	118
NOVELTY CANDY	333	500	230	48	20	7	1,138
NUTRITIONAL SNACK BAR/GRANOLA BAR	585	2,618	1,445	357	106	237	5,348

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
NUTRITIONAL SNACK/TRAIL MIX	375	340	219	355	113	141	1,543
NUTS FOR BAKING/COOKING	328	68	147	350	29	98	1,020
OLIVE OIL	195	374	231	311	30	89	1,230
OTHER CORN SNACK—NO TORTILLA CHIP	126	149	89	37	13	20	434
OTHER DRIED FRUIT—NO PROCESSED SNACK	389	289	229	198	60	74	1,239
OTHER SALTED SNACK—NO NUTS	660	777	600	306	28	98	2,469
PANCAKE/FRENCH TOAST/WAFFLE MIX	46	90	114	115	17	42	424
PEANUT BUTTER COMBO—PEANUT BUTTER & JELLY	10	4	3	20	1	0	38
PEPPER	0	46	0	0	5	0	51
PIECRUST MIX	0	0	5	4	0	1	10
PIZZA CRUST MIX	2	9	11	9	2	2	35
PLAIN MINTS	88	183	69	102	24	19	485
POPCORN OIL	3	1	3	1	0	0	8
POTATO CHIPS	850	1,019	726	420	63	125	3,203
POTATO PANCAKE/DUMPLING MIX	3	6	21	0	0	0	30
POWDERED MILK	14	25	16	64	4	26	149
PREMIXED COCKTAILS/COOLERS—WINE/SPIRITS/MALT	0	117	0	0	0	0	117
PREPARED MUSTARD	50	302	180	302	44	126	1,004
PRETZELS	260	283	288	229	27	87	1,174
PROCESSED SHREDDED CHEESE	5	1	5	2	0	2	15
PUDDING/PIE FILLING/MOUSSE MIXES	50	111	130	215	15	79	600
RAISINS	33	49	46	188	15	67	398
READY TO EAT CEREAL	540	953	832	1,477	395	612	4,809
REGULAR GUM (NO SUGARLESS)	134	312	121	18	11	1	597
REGULAR SOFT DRINKS	777	907	825	739	167	242	3,657
RFG ALL OTHER FRUIT JUICE	19	68	9	2	0	1	99
RFG APPETIZERS/SNACK ROLL	159	25	20	3	2	2	211
RFG APPLE JUICE	6	7	9	5	1	0	28
RFG BACON	522	36	169	288	5	77	1,097
RFG BAGELS/BIALYS	28	14	20	50	0	6	118
RFG BAKED BEANS	9	0	4	19	1	1	34
RFG BISCUIT DOUGH	11	8	29	363	7	43	461
RFG BLENDED FRUIT JUICE	45	23	50	18	1	8	145
RFG BOTTLED JUICE & DRINK SMOOTHIE	31	85	62	5	1	1	185

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
RFG BREAD	16	1	5	1	0	0	23
RFG BREAKFAST ENTREE	42	15	16	33	0	0	106
RFG BREAKFAST SAUSAGE/HAM	508	49	141	114	2	32	846
RFG BUTTER ALL FLAVORS	78	49	86	170	11	49	443
RFG CAKE (NO SNACK/COFFEE CAKE)	50	2	1	45	3	0	101
RFG CANNED/BOTTLED HAM	16	7	7	0	0	0	30
RFG CHEESECAKE	98	23	10	76	0	2	209
RFG CIDER	87	4	12	37	2	6	148
RFG COCKTAIL MIXES	2	0	0	0	0	0	2
RFG COFFEE CONCENTRATE	6	0	0	0	0	0	6
RFG COFFEE CREAMER	41	48	138	118	15	48	408
RFG COOKIE/BROWNIE DOUGH	41	44	77	54	10	25	251
RFG CRANBERRY COCKTAIL/DRINK	5	3	6	1	0	1	16
RFG CRANBERRY JUICE/CRANBERRY JUICE BLEND	3	0	2	0	0	0	5
RFG DAIRY CREAM/HALF & HALF/SOY TOPPING	268	141	223	466	28	113	1,239
RFG DINNER SAUSAGE (POLISH/ITALIAN)	1,260	217	302	362	38	75	2,254
RFG DINNER/SANDWICH ROLL/CROISSANT	2	1	1	7	0	0	11
RFG DOUGH (BREAD/ROLLS/BUN)	7	11	21	123	8	30	200
RFG DOUGH (PASTRY/DUMPLING)	9	11	28	128	6	24	206
RFG DRINK CONCENTRATE/SYRUP	0	0	0	1	0	0	1
RFG EGG SUBSTITUTES	16	4	11	55	10	25	121
RFG EGGROLL/WONTON WRAPPER	15	5	8	2	0	0	30
RFG ENGLISH MUFFIN	6	0	6	19	4	6	41
RFG FISH/HERRING/SEAFOOD	370	79	88	125	5	28	695
RFG FLAVORED MILK/EGG NOG/BUTTER MILK	511	327	391	317	17	57	1,620
RFG FLAVORED SPREADS	125	136	110	80	12	10	473
RFG FRANKFURTER/WIENERS	395	67	181	110	17	28	798
RFG FRESH EGGS	241	88	47	336	19	60	791
RFG FRESH SOUPS	45	24	6	133	4	48	260
RFG FRUIT DRINK ALL FLAVORS	133	100	145	44	8	14	444
RFG FRUIT JUICE LIQUID CONCENTRATE	8	0	0	0	0	0	8
RFG FRUIT NECTAR	11	9	6	3	0	0	29
RFG GRAPE JUICE	2	1	3	0	1	0	7
RFG GRAPEFRUIT COCKTAIL/DRINK	2	0	0	0	0	0	2

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
RFG GRAPEFRUIT JUICE	11	10	10	13	7	3	54
RFG GRATED CHEESE	35	10	17	31	1	5	99
RFG HANDHELD NON BREAKFAST ENTREE	194	37	59	138	2	4	434
RFG HARD/SOFT TORTILLA	86	13	21	12	2	18	152
RFG HONEY	0	0	0	1	0	0	1
RFG HORSERADISH/HORSERADISH SAUCE	51	16	39	15	3	4	128
RFG KEFIR/SUBSTITUTES MILK/SOY MILK	54	129	99	91	15	43	431
RFG LARD	7	0	2	0	0	0	9
RFG LEMON/LIME JUICE	1	2	0	0	0	0	3
RFG LEMONADE	37	31	61	22	2	7	160
RFG MARINATED VEGETABLE/FRUIT/EGG	27	10	11	4	2	0	54
RFG MEAT SPREAD/SALAD	53	14	12	46	1	1	127
RFG MEAT/CHEESE/CRACKER/DESSERT	30	87	71	4	0	0	192
RFG MEAT/SEAFOOD SEASONING MIXES	3	0	6	0	0	0	9
RFG MILKSHAKE/NON DAIRY DRINK	21	29	21	7	0	0	78
RFG MUFFIN	2	0	0	0	0	0	2
RFG MUSTARD	1	0	0	0	0	0	1
RFG NON DAIRY TOPPINGS	8	0	0	12	0	2	22
RFG NON SLICED LUNCH MEAT	252	86	39	21	30	6	434
RFG ORANGE JUICE	163	133	161	381	29	71	938
RFG PASTRY/DANISH/COFFEE CAKE	6	11	0	9	6	1	33
RFG PEANUT BUTTER (ALL)	7	0	5	1	0	0	13
RFG PEPPER/PIMENTO/OLIVES	13	4	6	5	0	1	29
RFG PICKLES	39	7	29	14	1	15	105
RFG PIE (NO SNACK PIE)	45	2	3	28	1	0	79
RFG PINEAPPLE JUICE	1	1	1	0	1	1	5
RFG PIZZA CRUST/DOUGH	19	10	7	39	14	9	98
RFG PIZZA/PIZZA KITS	37	9	16	84	4	5	155
RFG PORK PRODUCT HOCK/FEET	88	7	6	0	5	0	106
RFG POT PIES	10	3	8	6	1	2	30
RFG PREPARED CHILI	20	13	6	11	0	4	54
RFG PREPARED DINNER/ENTREE	204	184	97	158	63	46	752
RFG PREPARED DIPS	310	161	173	225	16	48	933
RFG PREPARED SALAD FRUIT/COLESLAW	173	26	59	388	12	54	712

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
RFG PREPARED TEAS	149	84	118	116	12	4	483
RFG PUDDING/MOUSSE/GELATIN/ PARFAIT	152	120	112	114	14	55	567
RFG RELISHES/APPETIZER RELISH	3	0	4	3	1	0	11
RFG RTD COFFEE	6	5	17	0	2	0	30
RFG SALAD DRESSING—POURABLE/ SPREAD	89	56	169	21	18	18	371
RFG SALAD TOPPING/BACON BITS	1	0	0	2	0	0	3
RFG SAUCE/GRAVY/MARINADE	253	38	109	130	11	34	575
RFG SAUERKRAUT	22	2	11	16	0	5	56
RFG SIDE DISHES	107	68	53	65	13	26	332
RFG SKIM/LOW-FAT MILK	655	309	582	848	35	178	2,607
RFG SLICE/SHAVED LUNCH MEAT	596	482	457	544	128	202	2,409
RFG SNACK CAKE/DOUGHNUT < 5OZ	7	6	9	2	0	0	24
RFG UNCOOKED MEATS	311	42	24	192	270	3	842
RFG VEGETABLE JUICE/COCKTAIL	11	15	13	0	0	0	39
RFG WEIGHT CONTROL/PROTEIN SUPPLEMENT	5	16	2	0	0	0	23
RFG WHOLE MILK	243	98	210	301	9	57	918
RFG YOGURT	517	606	851	996	271	313	3,554
RFG YOGURT DRINKS	84	55	95	18	1	8	261
RFG/DELI PASTA/NOODLE	80	39	41	41	20	56	277
RICE CAKES/POPCORN CAKE	35	83	58	101	21	44	342
RICOTTA CHEESE	34	11	59	128	5	33	270
RTD BREAKFAST MEALS	15	25	7	0	2	0	49
RTE POPCORN/CARAMEL CORN	455	181	207	83	11	34	971
RTS FROSTING/FROSTING MIX	60	41	147	97	4	39	388
SALAD TOPPING/BACON BIT	73	59	85	97	9	37	360
SALT/SALT SEASONING/SALT SUBSTI-TUTES	0	321	0	0	85	0	406
SALTED APPLE CHIPS	1	0	4	0	0	0	5
SALTINE CRACKERS	21	15	17	109	15	52	229
SHERBET/SORBET/ICE CARTON	99	137	65	174	36	76	587
SHERRY/VERMOUTH/CHAMPAGNE	0	11	0	0	0	0	11
SNACK NUTS	657	913	520	1,254	375	500	4,219
SOUR CREAM	90	88	108	190	19	64	559
SPECIALTY NUT BUTTER	23	75	82	16	18	9	223
SPECIALTY NUT/COCONUT CANDY	197	214	103	66	26	14	620
SPICE/SEASONING—NO SALT/PEPPER	0	1,468	0	0	81	0	1,549
SPIRITS/LIQUOR	0	21	0	0	0	0	21

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
SS AEROSOL/SQUEEZEABLE CHEESE SPREAD	0	4	5	24	3	11	47
SS ALL OTHER BEANS	233	126	419	584	43	195	1,600
SS ALL OTHER FISH/SEAFOOD	184	295	378	27	12	11	907
SS ALL OTHER FRUIT	35	16	33	4	0	1	89
SS ALL OTHER MEXICAN SAUCE/MARINADE	67	78	133	56	5	15	354
SS ALOE VERA JUICE NAC	8	31	13	0	0	0	52
SS APPLE JUICE NAC	53	58	76	151	21	57	416
SS APPLESAUCE/FRUIT SAUCE	115	109	161	426	73	183	1,067
SS APRICOT JUICE NAC	0	1	1	0	0	0	2
SS ASEPTIC ISOTONIC DRINKS	2	9	20	0	0	0	31
SS ASEPTIC JUICE ALL FLAVORS	55	36	119	12	1	7	230
SS ASEPTIC JUICE DRINK	68	67	134	19	6	21	315
SS ASIAN FOOD ITEMS	119	273	264	3	12	5	676
SS ASIAN SAUCE/MARINADE	67	415	310	90	7	34	923
SS BAGELS/BIALYS	96	179	81	183	81	30	650
SS BAKED BEAN/PORK & BEAN	38	21	85	62	45	50	301
SS BAMBOO SHOOTS/WATERCHESTNUT	13	37	29	28	3	11	121
SS BOTTLED JUICE & DRINK SMOOTHIE	8	96	10	0	26	0	140
SS BREAD (NO CANNED BREAD)	1,080	1,014	840	1,391	184	299	4,808
SS BREADSTICK	48	53	50	29	3	7	190
SS BREAKFAST DRINK MIX	0	1	0	6	0	2	9
SS CAKE (NO SNACK/COFFEE CAKE)	467	86	51	554	14	8	1,180
SS CAN/BTLD GREEN BEANS	56	8	65	301	36	100	566
SS CAN/BTLD GREEN PEAS	40	7	43	209	17	74	390
SS CANNED ALL OTHER VEGETABLE	96	109	189	375	9	110	888
SS CANNED BREAD	0	0	2	0	0	0	2
SS CANNED FRUIT JUICE ALL FLAVORS	77	25	73	29	2	5	211
SS CANNED JUICE DRINK	109	99	177	7	2	3	397
SS CANNED VEGETABLE JUICE/COCKTAIL	24	24	24	79	1	22	174
SS CANNED/BOTTLED APPLES	10	6	9	3	0	1	29
SS CANNED/BOTTLED APRICOTS	6	4	4	55	5	20	94
SS CANNED/BOTTLED BERRIES	9	4	12	3	1	0	29
SS CANNED/BOTTLED CARROTS	5	5	11	99	8	33	161
SS CANNED/BOTTLED CHERRIES	5	5	14	13	0	4	41

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
SS CANNED/BOTTLED CITRUS FRUIT	27	18	43	129	13	34	264
SS CANNED/BOTTLED CORN	52	21	103	336	28	111	651
SS CANNED/BOTTLED GRAPES	1	0	1	0	0	0	2
SS CANNED/BOTTLED HAM	18	5	8	1	0	0	32
SS CANNED/BOTTLED MIXED FRUIT	50	32	53	355	27	95	612
SS CANNED/BOTTLED MUSHROOMS	41	17	45	194	0	59	356
SS CANNED/BOTTLED PEACHES	56	16	56	358	29	99	614
SS CANNED/BOTTLED PEARS	24	4	28	234	17	64	371
SS CANNED/BOTTLED PINEAPPLE	41	20	42	227	23	74	427
SS CANNED/BOTTLED POTATO/SWEET POTATO	37	8	30	196	10	56	337
SS CANNED/BOTTLED PRUNES/PLUMS	2	1	4	11	3	3	24
SS CANNED/BOTTLED SAUERKRAUT	32	19	38	82	2	21	194
SS CANNED/BOTTLED SPINACH	5	0	12	60	4	20	101
SS CANNED/BOTTLED TOMATO	165	96	258	817	35	309	1,680
SS CANNED/BOTTLED VEGETABLE	36	18	49	135	8	42	288
SS CANNED/PREPARED TEA	197	544	441	78	44	35	1,339
SS CHERRY JUICE NAC	5	4	14	11	5	8	47
SS CHILI/HOTDOG SAUCE	19	27	50	44	1	18	159
SS CIDER NAC	55	6	20	58	1	13	153
SS CLAM JUICE	6	5	11	2	0	0	24
SS COFFEE CAPPUCINO DRINKS	19	104	50	10	13	2	198
SS COFFEE CREAMER	33	40	49	296	47	128	593
SS COLESLAW/FRUIT SALAD DRESSING	4	5	12	3	0	1	25
SS CRACKERS WITH FILLINGS	56	136	153	28	10	13	396
SS CRANBERRY COCKTAIL/JUICE DRINK NAC	60	51	106	297	60	99	673
SS CRANBERRY SAUCE	11	6	11	98	14	24	164
SS CRANBERRY/JUICE/CRANBERRY JUICE BLEND NAC	26	23	58	97	25	36	265
SS DAIRY SAUCE/CHEESE	32	15	29	16	2	4	98
SS DOUGHNUT	153	169	101	151	59	18	651
SS DRIED BREAKFAST FOOD	6	0	0	0	0	0	6
SS DRINK CONCENTRATE/SYRUP	117	9	10	6	4	0	146
SS DRY DIP MIX	25	54	50	35	4	5	173
SS DRY SOUPS/SOUP MIXES	161	345	426	91	20	28	1,071
SS EGG SUBSTITUTES	4	3	4	0	0	2	13
SS ENGLISH MUFFIN	43	74	61	95	28	29	330
SS FRESH ROLL/BUN/CROISSANTS	605	422	423	933	80	151	2,614

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
SS FROST/WHIPPED/YOGURT DRINK MIX	28	2	19	0	0	0	49
SS FRUIT DRINK MIX	108	320	267	356	104	135	1,290
SS FRUIT DRINK NAC	291	529	388	192	59	56	1,515
SS FRUIT JUICE BLEND NAC	58	282	103	73	52	23	591
SS FRUIT JUICE LIQUID CONCENTRATE	15	14	21	1	5	0	56
SS FRUIT NECTAR NAC	40	93	47	3	1	1	185
SS GARLIC SPREAD	15	19	14	4	1	1	54
SS GRAPE JUICE NAC	21	38	49	104	20	42	274
SS GRAPEFRUIT COCKTAIL NAC	14	6	15	60	1	14	110
SS GRAPEFRUIT JUICE NAC	13	5	9	37	6	11	81
SS GRATED CHEESE	37	21	46	107	3	35	249
SS HARD/SOFT TORTILLAS/TACO KIT	368	242	327	210	22	44	1,213
SS HOLLANDAISE/BEARNAISE/DILL SAUCE	4	6	4	1	0	1	16
SS HONEY	164	160	99	244	30	58	755
SS HORSERADISH/HORSERADISH SAUCE	20	25	47	12	1	2	107
SS ICE POP NOVELTIES	60	53	49	38	9	7	216
SS INSTANT POTATOES	60	60	93	314	18	85	630
SS ISOTONIC DRINK MIX	34	121	61	38	3	11	268
SS ISOTONIC DRINKS NON-ASEPTIC	285	828	430	90	69	30	1,732
SS JAMS/JELLIES/PRESERVE	192	577	437	683	111	246	2,246
SS LEMON/LIME JUICE NAC	17	10	23	78	0	27	155
SS LEMONADE	66	59	73	48	14	19	279
SS LIQUID COCKTAIL MIXES	113	84	177	31	5	16	426
SS LUNCH MEATS	221	90	154	94	12	45	616
SS MARASCHINO CHERRIES	11	9	13	157	11	46	247
SS MARINATED VEGETABLE/FRUIT/EGG	236	261	288	82	6	21	894
SS MEAT SAUCE/MARINADE/GLAZE	180	527	443	233	12	79	1,474
SS MEAT SUBTITUTES/VEGETABLE PROTEIN PRODUCT	29	1	31	0	0	1	62
SS MEAT/MEAT SPREAD	141	53	90	110	11	33	438
SS MEXICAN FOOD ITEMS	11	119	28	2	5	1	166
SS MICROWAVE PACKAGE DINNER/ENTREE	46	65	146	27	12	15	311
SS MICROWAVE POPCORN	142	202	172	342	73	114	1,045
SS MUFFIN	190	85	82	222	24	8	611

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
SS NON FRUIT DRINKS—NO COFFEE	14	67	43	1	5	3	133
SS OLIVES	187	351	301	572	36	203	1,650
SS ORANGE JUICE NAC	21	16	21	19	7	3	87
SS OTHER FRUIT JUICE NAC	19	31	36	29	9	18	142
SS OTHER VEGETABLE JUICE/COCKTAIL NAC	25	50	48	111	22	50	306
SS PASTRY/DANISH/COFFEE CAKE	408	255	191	311	53	34	1,252
SS PEPPERS/PIMENTOS	216	273	379	217	9	57	1,151
SS PICANTE SAUCE	17	9	28	46	2	15	117
SS PICKLES	201	224	234	704	90	175	1,628
SS PIE/PASTRY FILLING	54	57	76	154	10	48	399
SS PIES (NO SNACK PIES)	255	19	7	251	0	9	541
SS PINEAPPLE JUICE NAC	8	1	6	28	2	5	50
SS PIZZA KITS/MIXES TOPPINGS	2	6	6	2	0	0	16
SS POURABLE SALAD DRESSING	116	1,020	537	613	158	300	2,744
SS POWDER COCKTAIL MIXES	7	39	29	1	2	5	83
SS PREPARED BARBECUE SAUCE	167	359	265	219	38	78	1,126
SS PREPARED CHILI	85	75	135	109	16	22	442
SS PREPARED DIP	67	88	79	55	2	12	303
SS PREPARED HOT/CAJUN SAUCE	99	196	207	89	3	19	613
SS PREPARED ITALIAN SAUCE	174	595	493	497	128	176	2,063
SS PREPARED LIQUID GRAVY	19	19	38	177	13	48	314
SS PREPARED PASTA DISHES	20	49	59	193	36	115	472
SS PREPARED PIZZA SAUCE	23	30	44	44	1	9	151
SS PREPARED PUDDING/GELATIN	39	65	49	156	25	49	383
SS PREPARED SALAD	15	38	21	28	8	4	114
SS PREPARED SEAFOOD SAUCE	21	42	40	58	5	21	187
SS PREPARED SLOPPY SAUCE	16	0	11	32	0	18	77
SS PREPARED TACO SAUCE	18	12	27	18	2	8	85
SS PREPARED TARTAR SAUCE	18	25	29	49	0	12	133
SS PRUNE/FIG JUICE NAC	2	3	10	66	2	22	105
SS REFRIED BEANS ONLY	40	44	84	86	13	45	312
SS REGULAR PREPARED DINNER/ENTREE	68	113	69	60	28	19	357
SS RELISH/APPETIZER RELISH	73	75	86	177	16	54	481
SS RTD MILK/MILK SUBSTITUTES	85	64	185	61	8	34	437
SS RTU PIE CRUST	21	25	31	52	2	16	147
SS SALAD DRESSING MIX	5	32	26	13	0	7	83
SS SALMON	50	60	50	30	9	9	208
SS SALSA	176	361	376	326	63	185	1,487

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
SS SANDWICH SPREAD/MAYONNAISE	69	185	155	193	58	54	714
SS SNACK/CUPCAKE/BROWNIE < 5OZ	414	473	326	275	39	18	1,545
SS SOUP	178	412	597	1,137	168	384	2,876
SS SOUP STARTER/BOUILLON/BOTH	136	244	311	433	33	146	1,303
SS SPARKLING JUICE NAC	75	122	85	18	22	17	339
SS STEAK/WORCESTERSHIRE SAUCE	13	103	57	106	28	37	344
SS STUFFING MIX	33	55	34	95	17	41	275
SS TOASTER PASTRY/TART	57	61	84	212	49	79	542
SS TOMATO PASTE/SAUCE/PUREE/ ASPIC	111	48	88	309	12	125	693
SS TUNA	70	147	158	127	36	62	600
SS VEGETABLE/ANIMAL SHORTENING/ LARD	14	10	18	42	7	13	104
SS YOGURT/YOGURT DRINKS	7	3	13	1	0	0	24
SUGAR SUBSTITUTES	63	108	111	151	33	58	524
SUGARLESS GUM	268	288	355	3	7	0	921
SUNFLOWER/PUMPKIN SEEDS	172	149	153	103	35	33	645
TAFFY/CANDY APPLE KIT	10	3	18	5	0	1	37
TOASTED CORN NUT SNACKS	20	20	33	3	0	0	76
TORTILLA/TOSTADA CHIPS	375	497	327	183	27	101	1,510
UNIFORM WEIGHT FRESH OTHER FRUIT	0	75	0	0	31	0	106
UNIFORM WEIGHT FRESH OTHER VEGETABLE	0	56	0	0	17	0	73
UNIFORM WEIGHT FRESH APPLES	0	60	0	0	35	0	95
UNIFORM WEIGHT FRESH BEANS	0	7	0	0	2	0	9
UNIFORM WEIGHT FRESH BROCCOLI	0	4	0	0	6	0	10
UNIFORM WEIGHT FRESH CABBAGE	0	4	0	0	2	0	6
UNIFORM WEIGHT FRESH CARROTS	0	20	0	0	39	0	59
UNIFORM WEIGHT FRESH CAULI-FLOWER	0	1	0	0	1	0	2
UNIFORM WEIGHT FRESH CELERY	0	2	0	0	7	0	9
UNIFORM WEIGHT FRESH CUCUMBER	0	0	0	0	1	0	1
UNIFORM WEIGHT FRESH GRAPE-FRUIT	0	1	0	0	3	0	4
UNIFORM WEIGHT FRESH LETTUCE	0	9	0	0	13	0	22
UNIFORM WEIGHT FRESH MIXED VEGETABLE	0	38	0	0	46	0	84
UNIFORM WEIGHT FRESH MUSH-ROOM	0	35	0	0	34	0	69
UNIFORM WEIGHT FRESH ONIONS	0	9	0	0	5	0	14

Appendix table 2

Comparison of IRI nutrition data versus Gladson for branded and private-label products, 2012[a] - continued

IRI product category	Branded UPCs			Private-label UPCs			Total
	IRI only	Gladson only	Both	IRI only	Gladson only	Both	
UNIFORM WEIGHT FRESH ORANGES	0	4	0	0	5	0	9
UNIFORM WEIGHT FRESH PEAS	0	8	0	0	11	0	19
UNIFORM WEIGHT FRESH PEPPERS	0	3	0	0	0	0	3
UNIFORM WEIGHT FRESH POTATO	0	20	0	0	46	0	66
UNIFORM WEIGHT FRESH SPINACH	0	6	0	0	6	0	12
UNIFORM WEIGHT FRESH SPROUTS	0	5	0	0	4	0	9
UNIFORM WEIGHT FRESH TOMATO	0	0	0	0	2	0	2
UNIFORM WEIGHT FRESH YAMS	0	4	0	0	2	0	6
UNIFORM WEIGHT TOFU/SOYBEAN	0	61	0	0	6	0	67
VALENTINE CANDY	439	126	208	27	9	7	816
VINEGAR	75	257	164	233	18	51	798
WEIGHT CONTROL/PROTEIN SUPPLEMENT	532	1,679	681	142	43	78	3,155
WHEAT GERM	7	3	9	0	2	0	21
WHITE GRANULATED SUGAR	56	21	53	161	12	47	350
WHOLE COFFEE BEANS	1	2	0	0	0	0	3
Total	53,543	63,465	56,461	68,009	11,283	21,536	274,297

[a]Counts based on an unprojected subset of stores from IRI's InfoScan market tracking services.

FZ = frozen. RFG = refrigerated. RTD = ready-to-drink. RTE = ready-to-eat. NAC = nonalcoholic. SS = shelf stable.

Source: Calculated by authors using data from IRI and Gladson.