

Assessment of Commercial Store and Household Scanner Data: Methods, Content, and Cautions

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Understanding IRI Household-Based and Store-Based Scanner Data

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Food-at-Home Expenditures: Comparing Commercial Household Scanner Data From IRI and Government Survey Data

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Acknowledgments and Disclaimer

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- Collaborators on this work include Megan Sweitzer (ERS), Abigail
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- Any opinions, findings, conclusions, or recommendations expressed in this presentation are not attributable to USDA, ERS, or IRI.

Introduction

- Primary types of scanner data available from commercial suppliers (specifically, IRI and Nielsen in the U.S.)
 - Store-based
 - Household-based
- Advantages of scanner data
 - Provide high frequency product prices and purchase quantities at the store-keeping unit (SKU) level
 - By Universal Product Code (UPC) or Price Lookup Code (PLU)
 - By individual household, individual store, or geographic area
- Considerations in using scanner data
 - Cost of purchasing or obtaining license to use the data
 - Limited availability of documentation on sampling, data collection, and weighting methods
 - Representativeness depending on particular application
 - Potential restrictions on release of analysis results

Introduction (continued)

- Examples of current government uses
 - Construct prices for ERS Quarterly Food at Home Price Database
 - Calculate cost of the WIC food package
 - Calculate cost of the Thrifty Food Plan, which is the basis for the SNAP allotment formula (updated using CPI)
- Importance of understanding the properties of the data
 - Sample selection methods
 - Data collection and processing methods
 - Weighting methods
 - Comparisons to other data sources

IRI InfoScan Store Scanner Data: Contents

- Data obtained from transactions data provided by retailers to IRI
 - Includes IRI "census" stores that have agreed to provide sales for all stores
 - Excludes "sampled" stores that IRI randomly selects from the remainder
 - Includes private label (store brand) sales from selected retailers
 - A few retailers only release data at the brand/category level, which means package size information is not available
 - Some retailers release individual store data while others aggregate to retailer marketing area (RMA)
- Data obtained by ERS represent an unprojected (unweighted) subset of the total IRI store data
- Dataset components:
 - Week
 - Store ID or geography key (RMA-level data)
 - UPC code (indicating package size)
 - Quantity
 - Total value of purchase
 - Can be linked to store and product information

InfoScan Store Scanner Data: Data Collection Procedures

- IRI receives daily sales data from retailers including products with UPCs and random-weight products
 - Retailers aggregate individual transactions to the UPC or product level
 - IRI aggregates to a weekly level and conducts quality control checks
- Note about random-weight and uniform-weight perishable products (e.g., fresh produce, meat, deli, bakery)
 - Some products are scanned
 - Products with UPC codes (uniform-weight)
 - Products that are pre-weighed and labeled at the store
 - Some products are weighed and product codes are entered by the cashier
 - Products with price lookup codes (PLUs)
- Most retailers report total units sold and total dollars
 - Total dollars are net of loyalty card discounts
 - Can calculate unit prices (e.g. price per ounce) by dividing weightedaverage price by number of units in the package

InfoScan Store Scanner Data: Store Counts

Numbers of Stores Represented, 2012

	UPC			Random weight		
	Store- level	RMA- level	Total	Store- level	RMA- level	Total
Conven- ience	9,613	0	9,613	0	0	0
Defense	515	10	525	0	0	0
Dollar	8,237	0	8,237	1,282	0	1,282
Drug	12,497	7,358	19,855	12,176	7,341	19,517
Grocery	7,100	5,743	12,841	6,720	5,743	12,463
Liquor	341	464	805	0	0	0
Mass/ club	3,140	4,521	7,661	1,786	4,485	6,271
Total	41,443	18,096	59,537	21,964	17,569	39,533

InfoScan Store Scanner Data: Comparisons

InfoScan Relative to Census Bureau Data, 2012

	Percentage of Stores			Percentage of Sales		
	Store- level	RMA- level	Total	Store- level	RMA- level	Total
Conven- ience	36%	0%	36%	35%	NA	35%
Dollar	23%	0%	23%	19%	NA	19%
Drug	29%	17%	46%	69%	50%	119%
Grocery	25%	20%	46%	25%	25%	50%
Liquor	1%	1%	2%	2%	4%	7%
Mass/ club	61%	88%	150%	9%	70%	79%
Total	28%	12%	41%	22%	34%	55%

Census Bureau estimates are from the 2012 Economic Census, Industry Series.

InfoScan Store Scanner Data: Considerations

- Stores represented in the data
 - Data collection process is not designed to capture sales from smaller, independent stores
- Private-label product data
 - Not provided by all retailers
 - Aggregation of data by some retailers prevents calculation of unit prices
- Random-weight data (e.g., produce, meat, deli, bakery)
 - Only available for some stores
 - Product information is limited
 - Must determine if units are weights or counts
- Projection factors (or weights)
 - Not provided with ERS data; therefore unable to calculate national estimates
 - RTI has a contract to develop weights for use by ERS

IRI Consumer Network Household Scanner Data: Contents

- Data obtained from the National Consumer Panel (joint venture between IRI and Nielsen)
 - Households are recruited online and complete demographic survey
 - Households are randomly selected to meet quotas by demographic category
 - Household record purchases using an in-home scanner or mobile app
- Data are weighted using a raking (IPF) procedure
- Dataset components:
 - Purchase date
 - Household ID
 - Store ID
 - UPC code
 - Quantity
 - Price (and use of coupons or deals)
 - Projection factor
 - Can be linked to store, household, and product information

CN Household Data: Household Counts (2012)

- All households in the panel record UPC products and a portion also records random weight products
- Households are included in the annual "static" panel if they meet requirements for
 - Minimum frequency of reporting
 - Minimum average spending level for household size
- Projection factors are calculated for the static panel

	No. of Households			No. of Transaction Records		
Dataset	Static	Total	Static %	Static	Total	Static %
Consumer Network	62,517	126,040	50%	58.8 MM	72.1 MM	82%
Random Weight	33,852	78,992	43%	5.0 MM	6.4 MM	78%

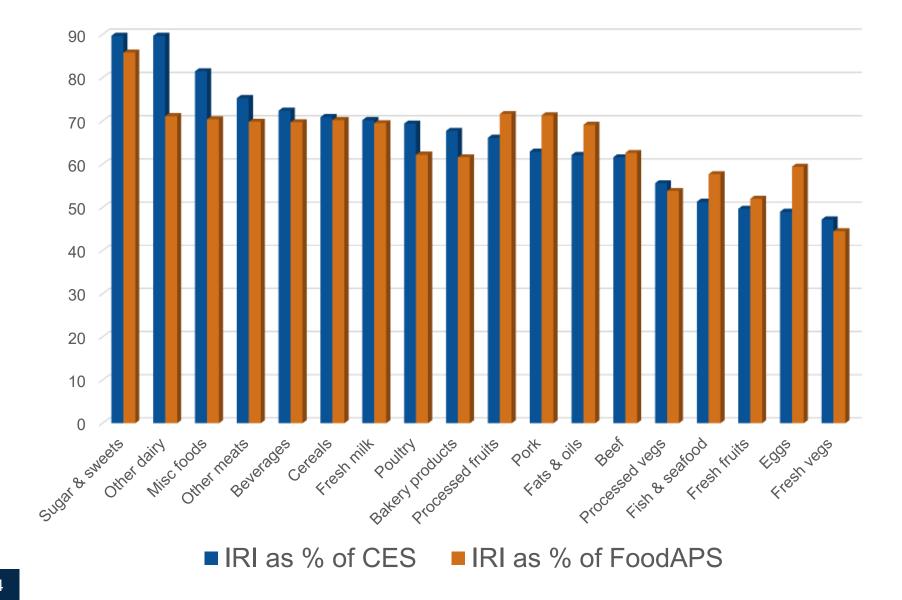
CN Household Data: Data Collection Procedures

- Purchase recording by households
 - Indicate store where purchased
 - Packaged products—scan UPC; indicate if product on sale or received a deal
 - Random weight products—select from list of products or scan code on reference card and enter total amount paid (no quantities recorded)
- IRI price assignment
 - Assigns average price for store chain and market area using store scanner data
 - If not available, assigns average price for store type and market area
 - If no store scanner data, household enters price
 - Last resort, assign "dictionary" price

CN Household Data: Weighting

- IRI calculates projection factors using Iterative Proportional Fitting
 - Separate weights for entire static panel and static random weight panel
 - Demographic targets are based on Census demographic data (obtained through PopStatsTM)
 - Household size, age of household head, household income, ethnicity, race, presence of children, county size
- Projection factors are dynamic
 - Households appearing in the data across multiple years have new projection factors each year

CN Household Data: Comparison of Average Weekly Household Expenditures to Other Sources, 2012



CN Household Data: Considerations

- Households that participate are likely different from the general population
 - Intensive data collection process
 - More aware consumers
- Some types of households are less like to meet qualifications for inclusion in static panel
 - Younger (under age 35) households
 - Lower income households
 - Black and Hispanic households
 - Households with children
- Prices are typically not exact prices paid by the household
- Data are weighted based on demographics, not shipment or expenditure totals

Conclusions

- Data are collected for commercial purposes
 - Not necessarily designed for research purposes
- Goals of the data vendors are to:
 - Adhere to agreements with stores regarding level of disclosure
 - Ensure confidentiality of household participants
 - Protect their competitive information
- In using the data, it is important to understand the data collection and processing procedures and assess implications for results of analyses based on:
 - Characteristics of stores and households that participate
 - How quantities, prices, or expenditures are recorded
 - How the weights are constructed (if available)
- But no other comparable data source provides the same level of granularity and detail needed for many types of analyses

More Information

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