Creating and Assessing Candidate Food Service and Retail Beef Demand Indices

Glynn T. Tonsor & Ted C. Schroeder

Joint Evaluation Advisory Committee Meeting

February 1, 2017

Presentation at 2017 National Cattlemen's Beef Association Annual Meeting Nashville, TN

Demand is **NOT** Per Capita Consumption

2013 Beef Demand Determinants Study

Funded by the Beef Checkoff.

http://www.beefboard.org/evaluation/130612demanddeterminantstudy.asp

MARKETING > OUTLOOK

What's The Similarity Between Blue Jeans and Beef Demand?
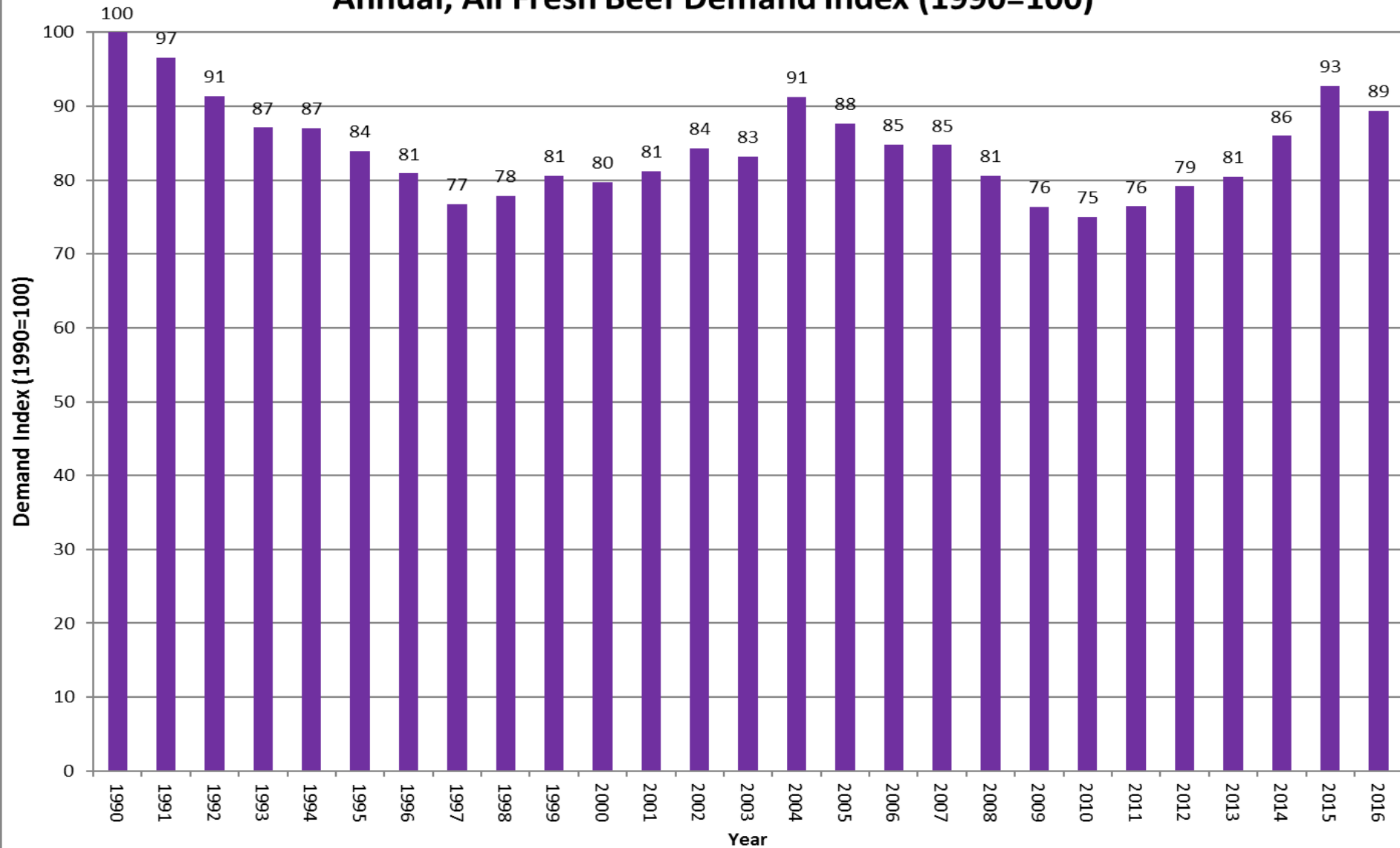
Beef consumption and beef demand isn't the same thing. Here's an explanation.

Burt Rutherford I Sep 19, 2013

http://www.beefmagazine.com/beef-demand/what-s-similarity-between-blue-jeans-and-beef-demand
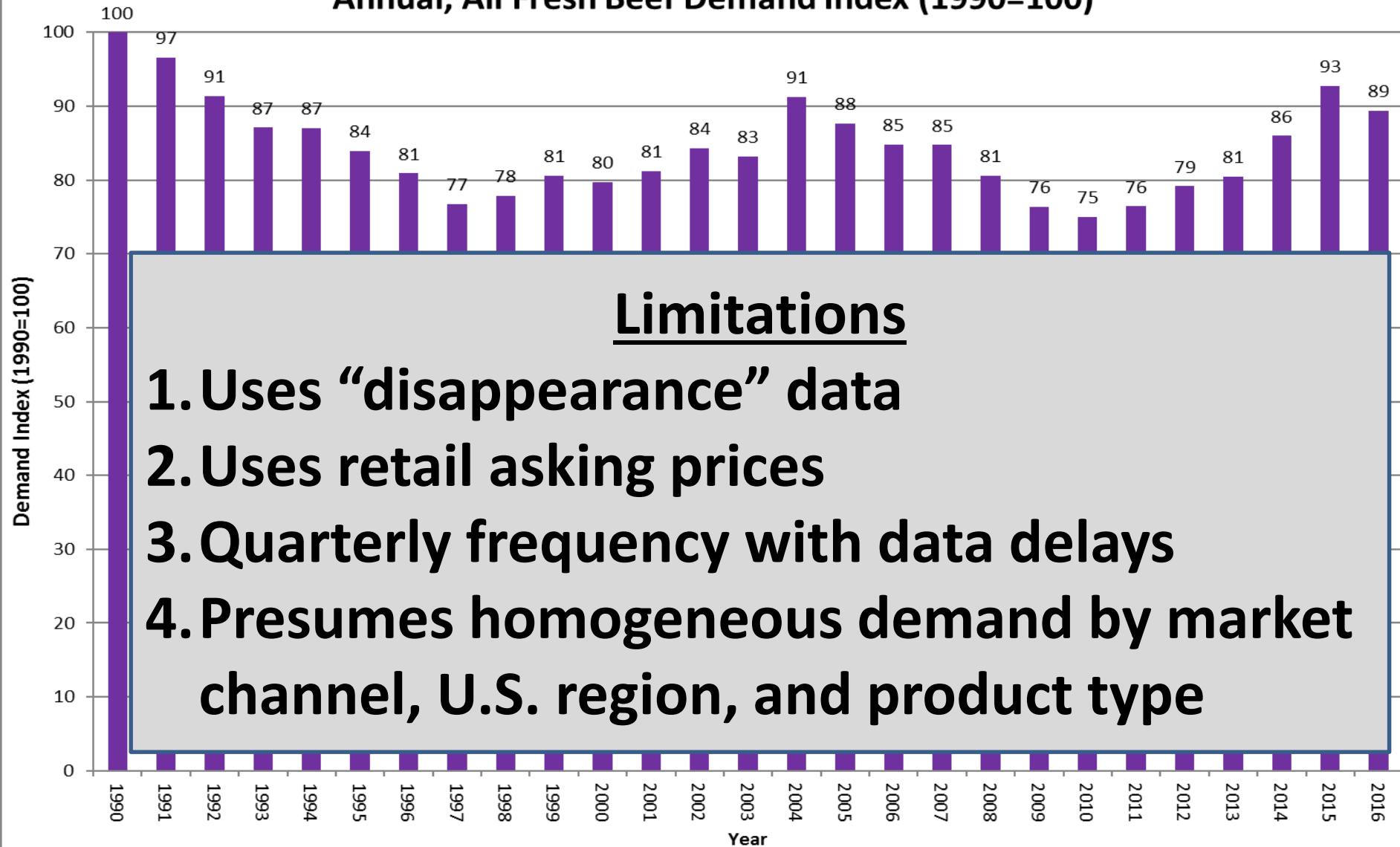
Current Situation

Annual, All Fresh Beef Demand Index (1990=100)

Source: Glynn T. Tonsor, Kansas State University, Jan. 2017

Current Situation

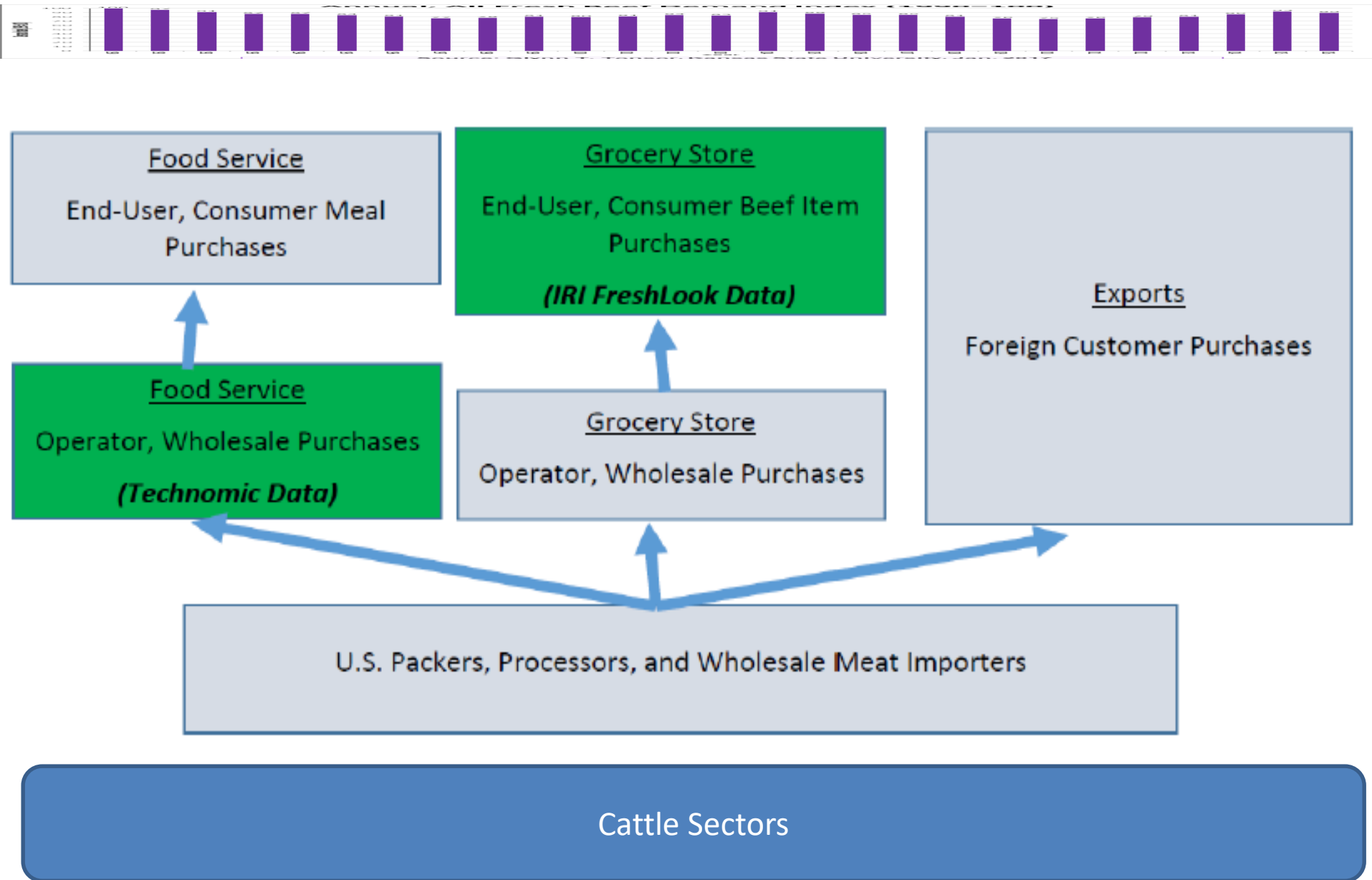## Annual, All Fresh Beef Demand Index (1990=100)

Limitations

1. Uses "disappearance" data
2. Uses retail asking prices
3. Quarterly frequency with data delays
4. Presumes homogeneous demand by market channel, U.S. region, and product type

Position of Potential New Indices

Food Service
End-User, Consumer Meal Purchases

Grocery Store
End-User, Consumer Beef Item Purchases
(IRI FreshLook Data)

Exports
Foreign Customer Purchases

Food Service
Operator, Wholesale Purchases
(Technomic Data)

Grocery Store
Operator, Wholesale Purchases

U.S. Packers, Processors, and Wholesale Meat Importers

Cattle Sectors

Project Purpose

Main Goal

Assess feasibility of new beef demand indices to provide industry guidance on viability for ongoing use to expand understanding of beef demand.

Project Process

Process

1. **Establish feasibility of new beef demand indices**
   - **Food service & Retail (grocery-store scanner)**
     - **Total Beef & Product Category**

2. **Assess strengths and weaknesses of indices**

3. **Recommend indices to maintain**

4. **Widely disseminate findings and implications**

List of New Retail Indices Examined

Product Level:
- **Total Beef**
- **Ground Beef, Loin, Round, Chuck, Ribs**
- **Ground Beef Sub-Category**
  - **70-77%, 78-84%, 85-89%, 90-95%, Chuck**

Frequency: Monthly since Jan-2011

Geographic: National & 8 U.S. Regions
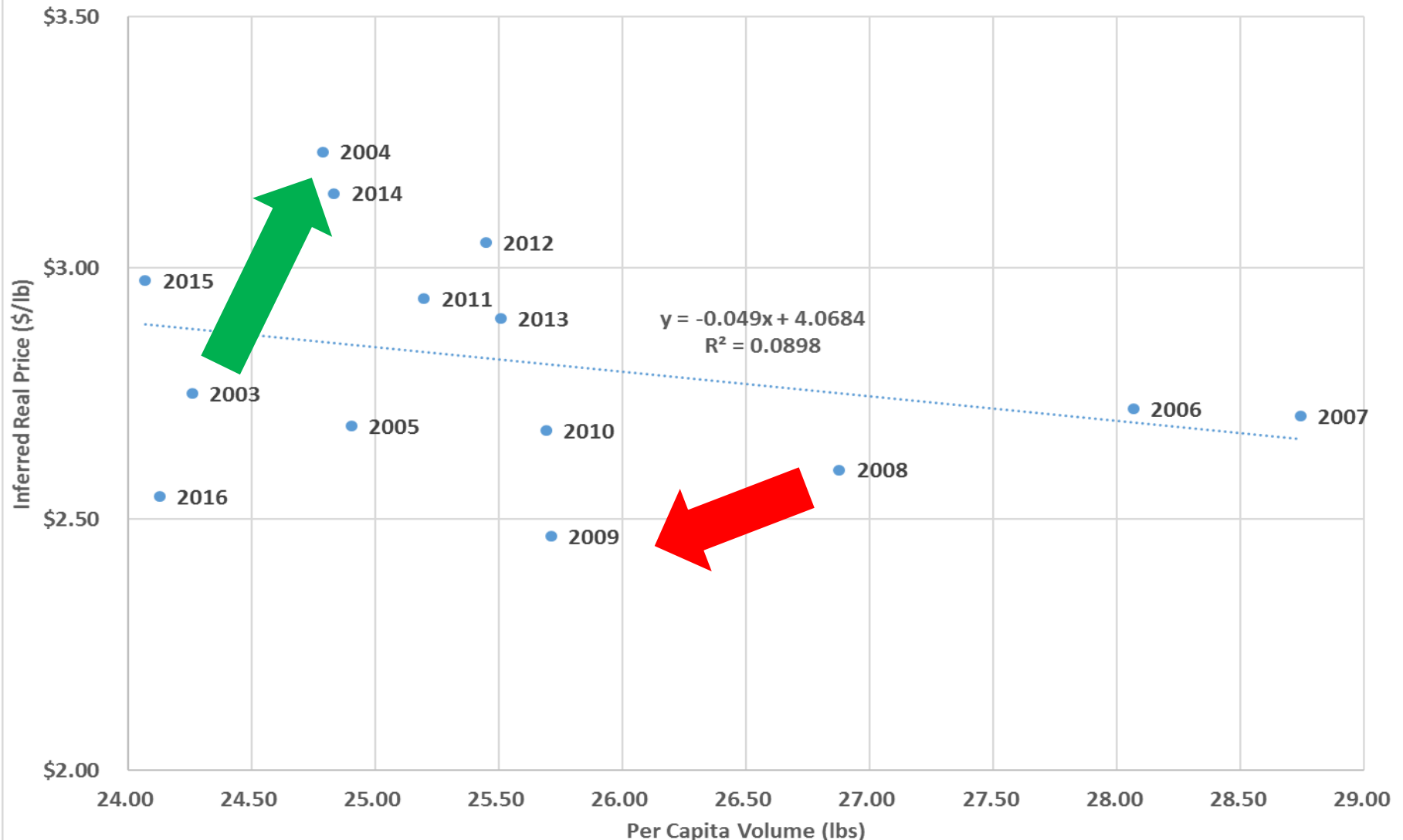
List of New Food Service Indices Examined

Product Level:
- **Total Beef**
- **Ground Beef, Steak, All Other Beef**
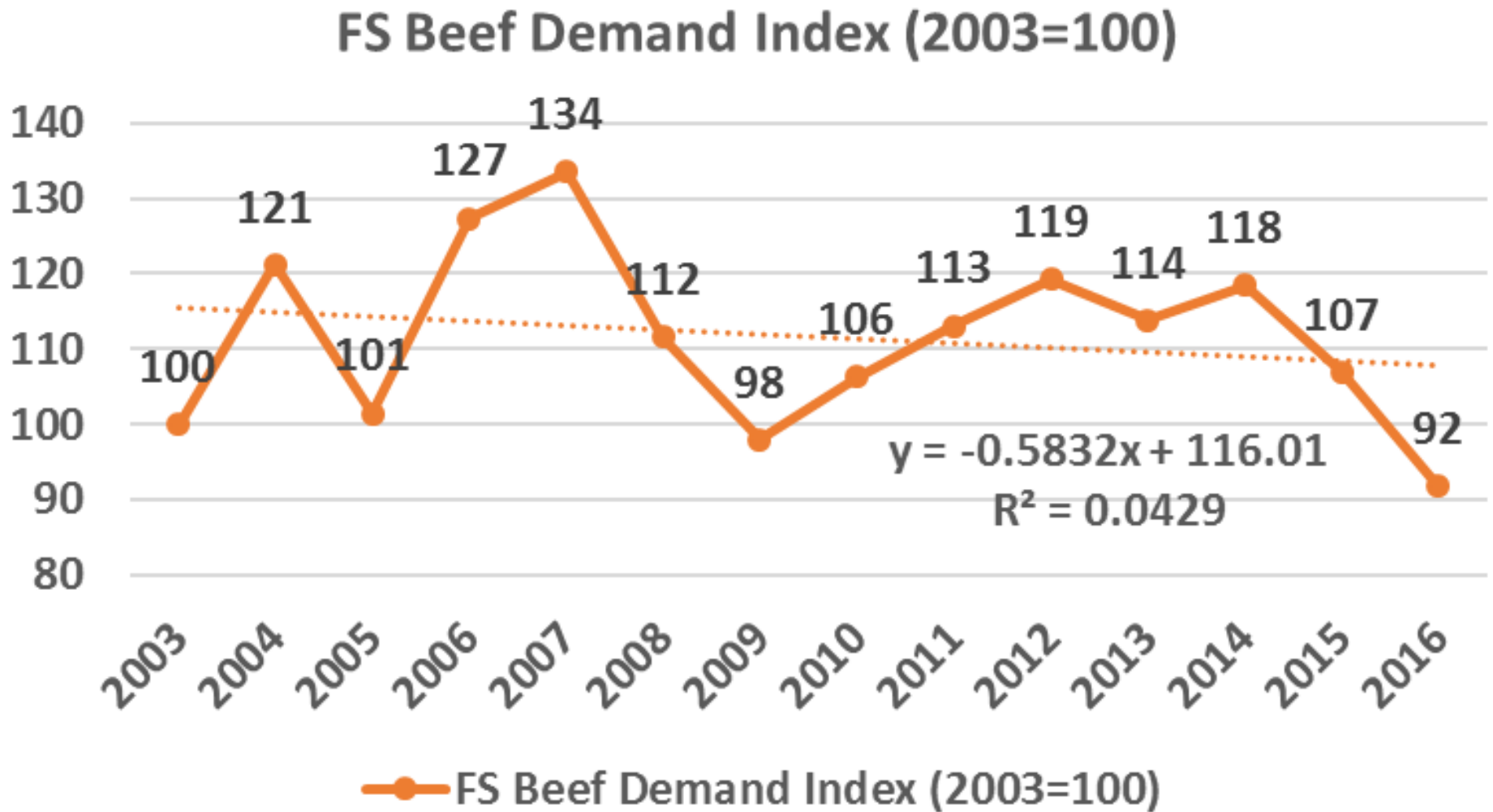
Frequency: Annual since 2003

Geographic: National

New BEEF Food Service Index – Underlying Data
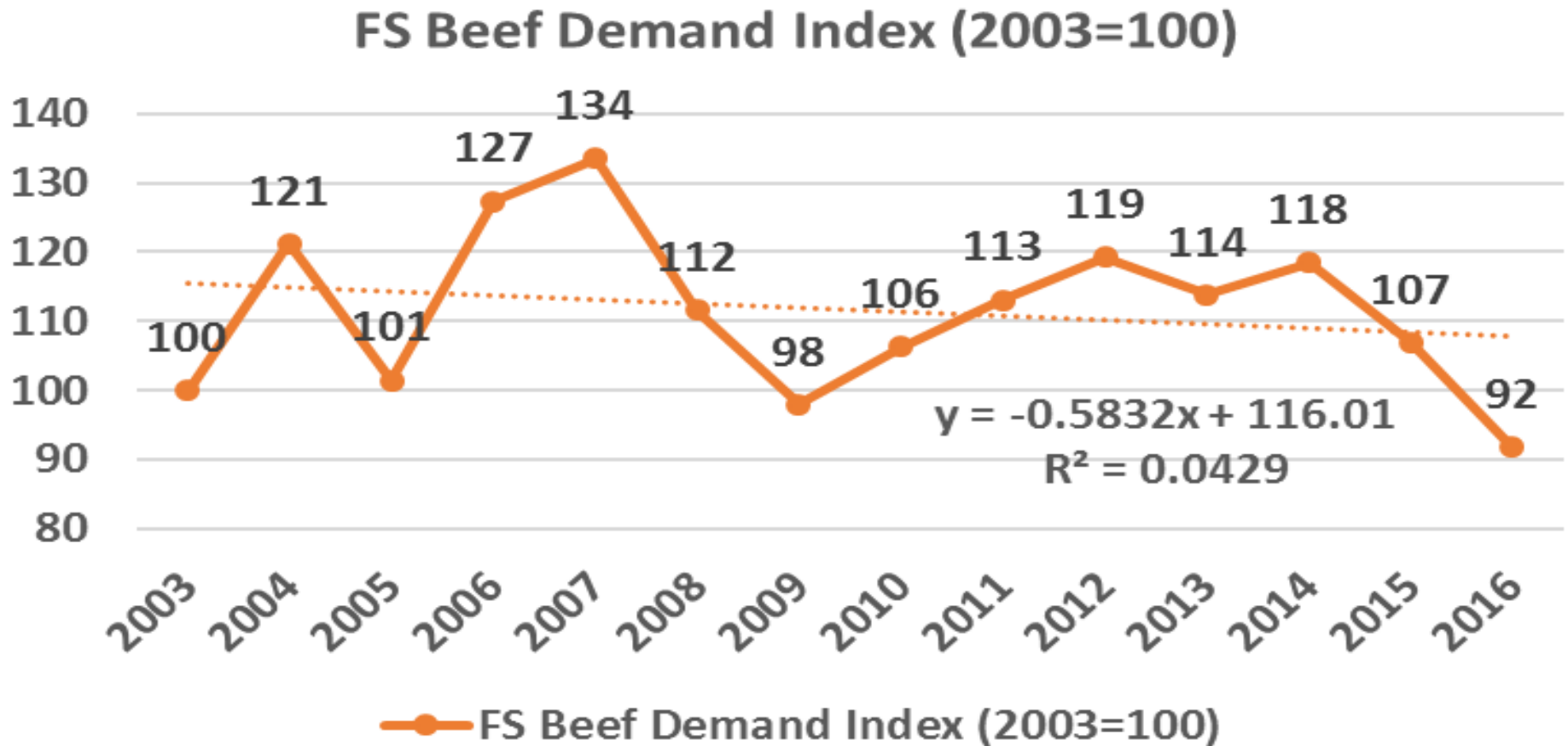

Annual Food Service Beef Volume and Price Relationship, 2003-2016 (Source: Technomic)

$y = -0.049x + 4.0684$
$R^2 = 0.0898$

New BEEF Food Service Index

FS Beef Demand Index (2003=100)

$y = -0.5832x + 116.01$
$R^2 = 0.0429$

New BEEF Food Service Index

FS Beef Demand Index (2003=100)

$y = -0.5832x + 116.01$
$R^2 = 0.0429$

Consistency Points:
- **Atkins effect (2004); Broad recession (2007-2009)**

New BEEF Food Service Index

FS Beef Demand Index (2003=100)

$y = -0.5832x + 116.01$

$R^2 = 0.0429$
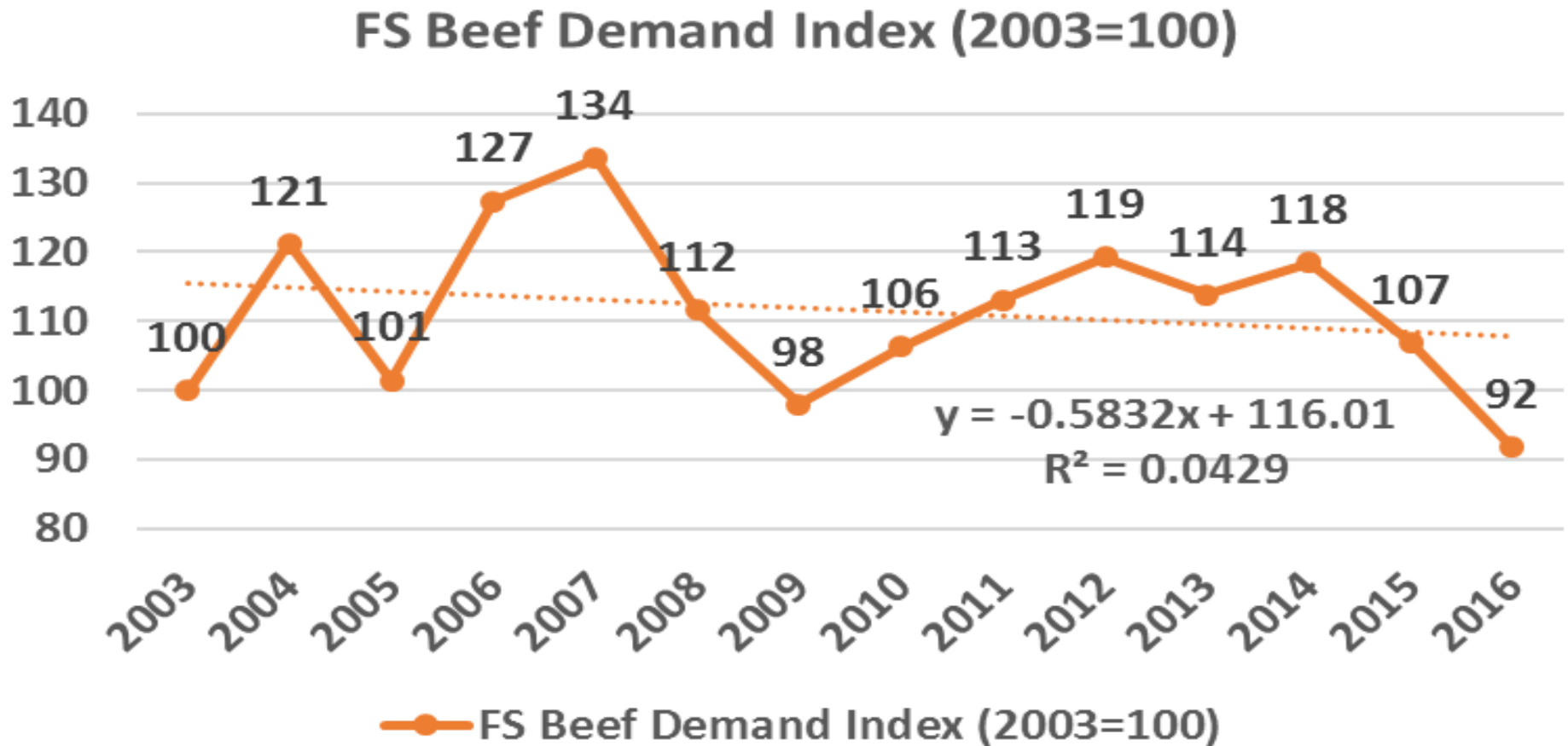
Inconsistency Points:
- **Large volatility (2003-2005; 2008-2010)**

New BEEF CATEGORY Food Service Indices

FS Demand Indices, Category Level Comparisons

Ground Beef — Steak — Other Beef

New BEEF CATEGORY Food Service Indices

FS Demand Indices, Category Level Comparisons

Legend: Ground Beef, Steak, Other Beef
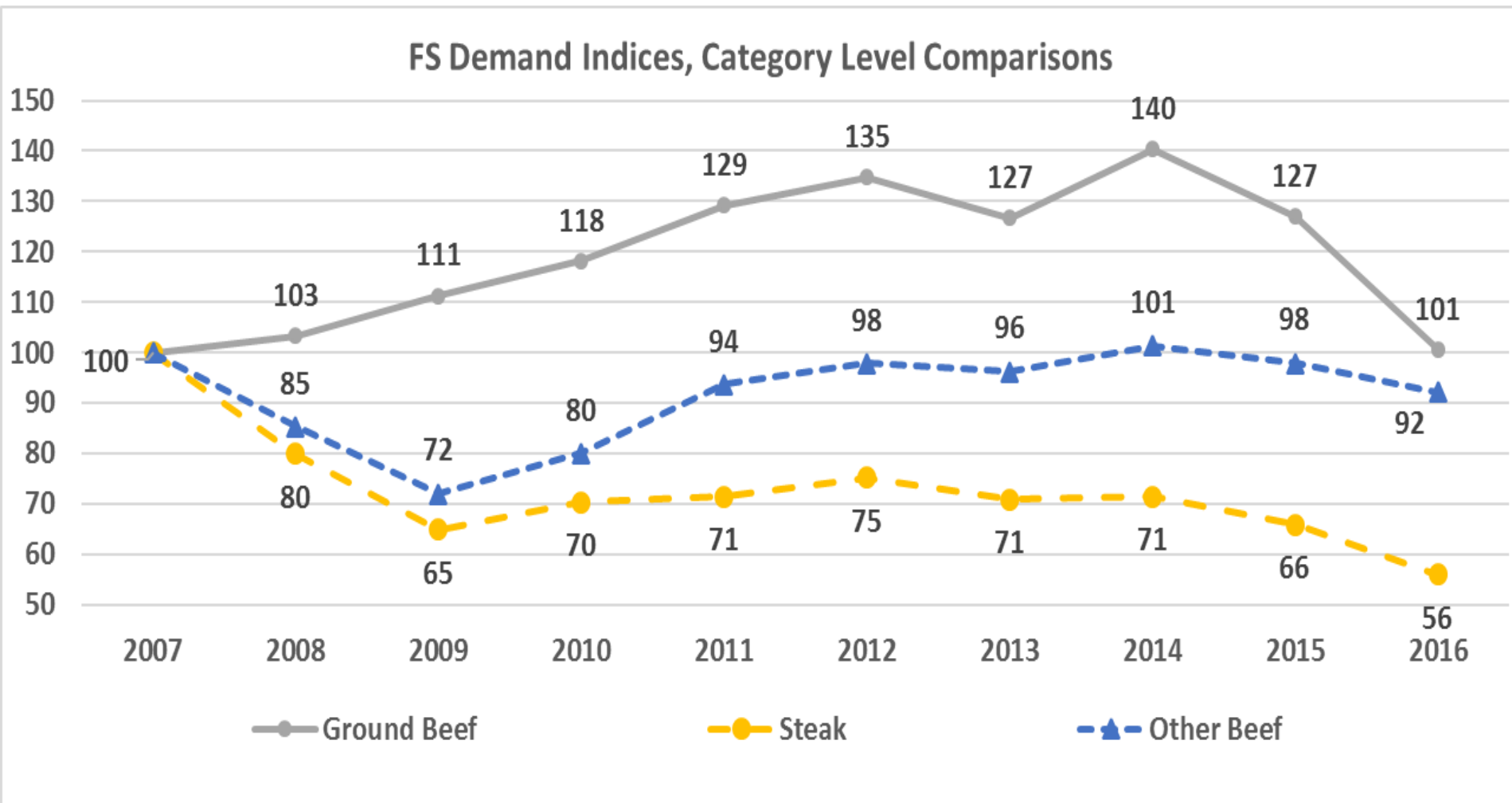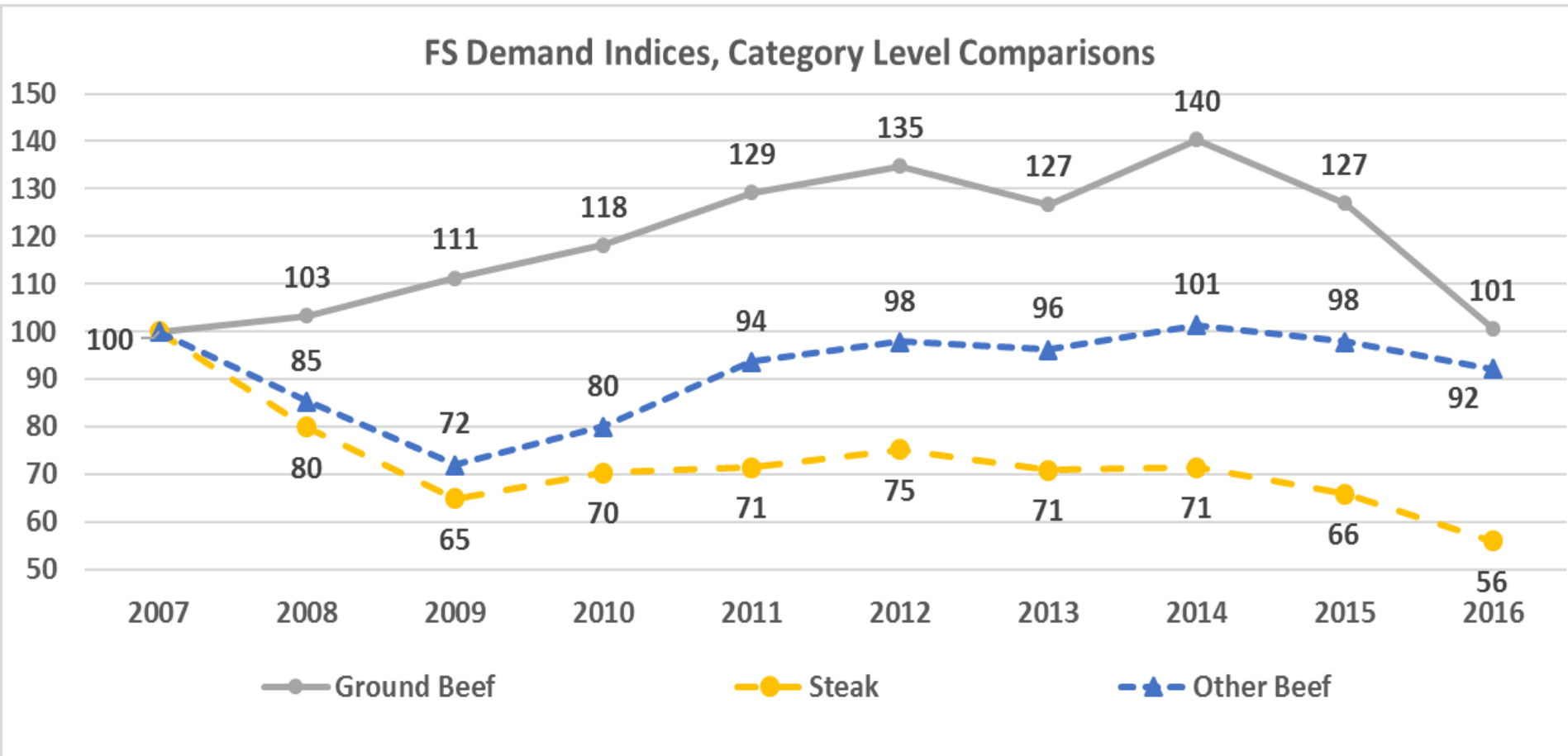
Consistency Points:

- **Burger stock returns (2007-2014)**
- **Steak decline w/ recession (2007-2009)**

New BEEF CATEGORY Food Service Indices

FS Demand Indices, Category Level Comparisons

Legend: Ground Beef (gray, solid), Steak (yellow, dashed), Other Beef (blue, dashed triangle)
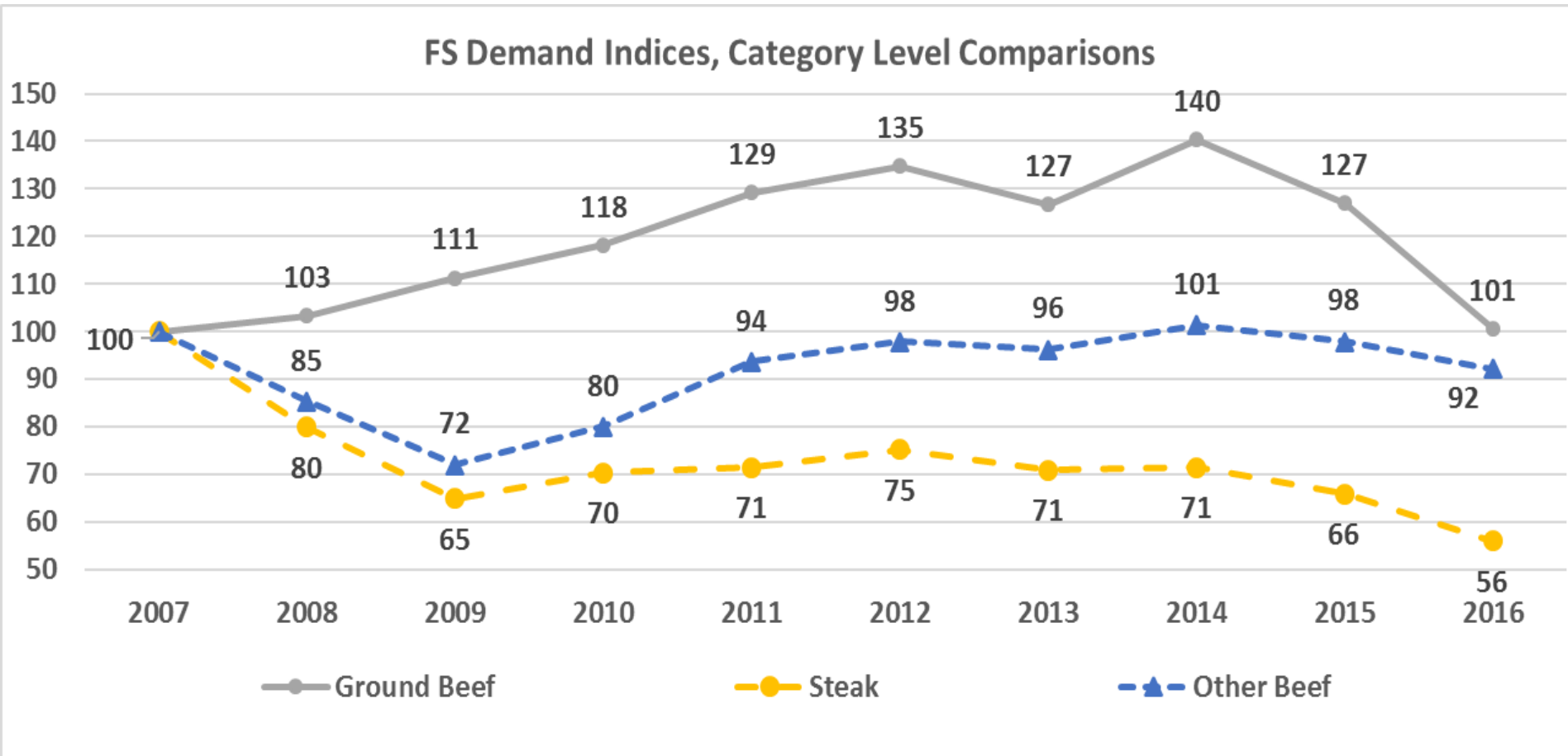
Inconsistency Points:

- **Burger stock returns (2015-2016)**
- **Steak decline 25% since 2012; Mismatch w/ stock returns**

Food Service Indices Synthesis

Key Limitations:

- **Customer vs. end-user consumer data**

- **One, snap-shot price in each annual report**

- **"Build-up" approach vs. random sampling**

- **Indices only partially consistent with stock prices and expectations**

New BEEF Retail Index

Grocery-Store, US Class Level, Non Seasonally-Adjusted Beef Index

MAX:
116.80
July-2015

$$y = 0.0036x - 45.862$$
$$R^2 = 0.2056$$

Nov-2016 Situation
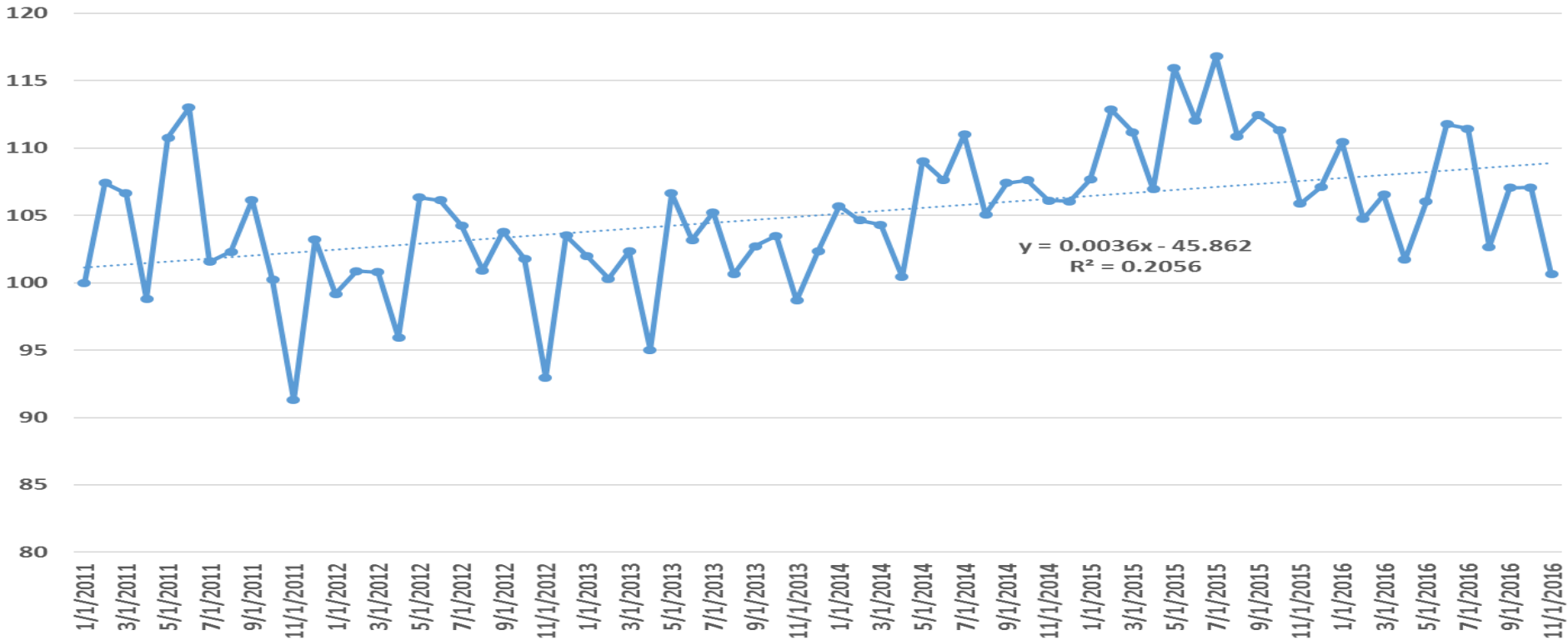Last Month: -6.02%
Last Year: -4.94%

MIN:
91.30
Nov-2011

Note: All estimates and analyses based upon Information Resources, Inc. data are by the authors and not by Information Resources, Inc.

New BEEF Retail Index

Grocery-Store, US Class Level, Non Seasonally-Adjusted Beef Index

$y = 0.0036x - 45.862$
$R^2 = 0.2056$

Note: All estimates and analyses based upon Information Resources, Inc. data are by the authors and not by Information Resources, Inc.

Consistency Points:

- **Demand up with Consumer Sentiment & Pork Prices**
- **Highest demand in May-July (grilling)**
- **Lowest demand in April and November**

New BEEF CATEGORY-LEVEL Retail Indices

Variable	Min	Max	Min Date	Max Date	Current Month	Last Month	Last Year	Last Month	Last Year
					Nov-2016	Oct-16	Nov-15	Percent Change	
Chuck	70.30	108.28	Jul-11	Oct-16	97.46	108.28	101.32	-10.00	-3.81
Ground	99.05	141.81	Nov-11	Jul-15	112.77	117.38	131.31	-3.93	-14.12
Loin	87.75	132.10	Nov-12	Jun-11	92.20	101.54	91.97	-9.20	0.25
Rib	-14,427.13	4,352.21	Dec-11	Dec-12	118.97	116.86	105.83	1.80	12.42
Round	74.94	100.00	Jun-13	Jan-11	77.93	81.44	84.01	-4.31	-7.23

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Inconsistency Points:

- **Rib index is nonsense**

New BEEF CATEGORY-LEVEL Retail Indices

Grocery-Store, US Category Level, Non Seasonally-Adjusted Indices

Legend: Chuck, Ground, Loin, Round

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New BEEF CATEGORY-LEVEL Retail Indices

Grocery-Store, US Category Level, Non Seasonally-Adjusted Indices
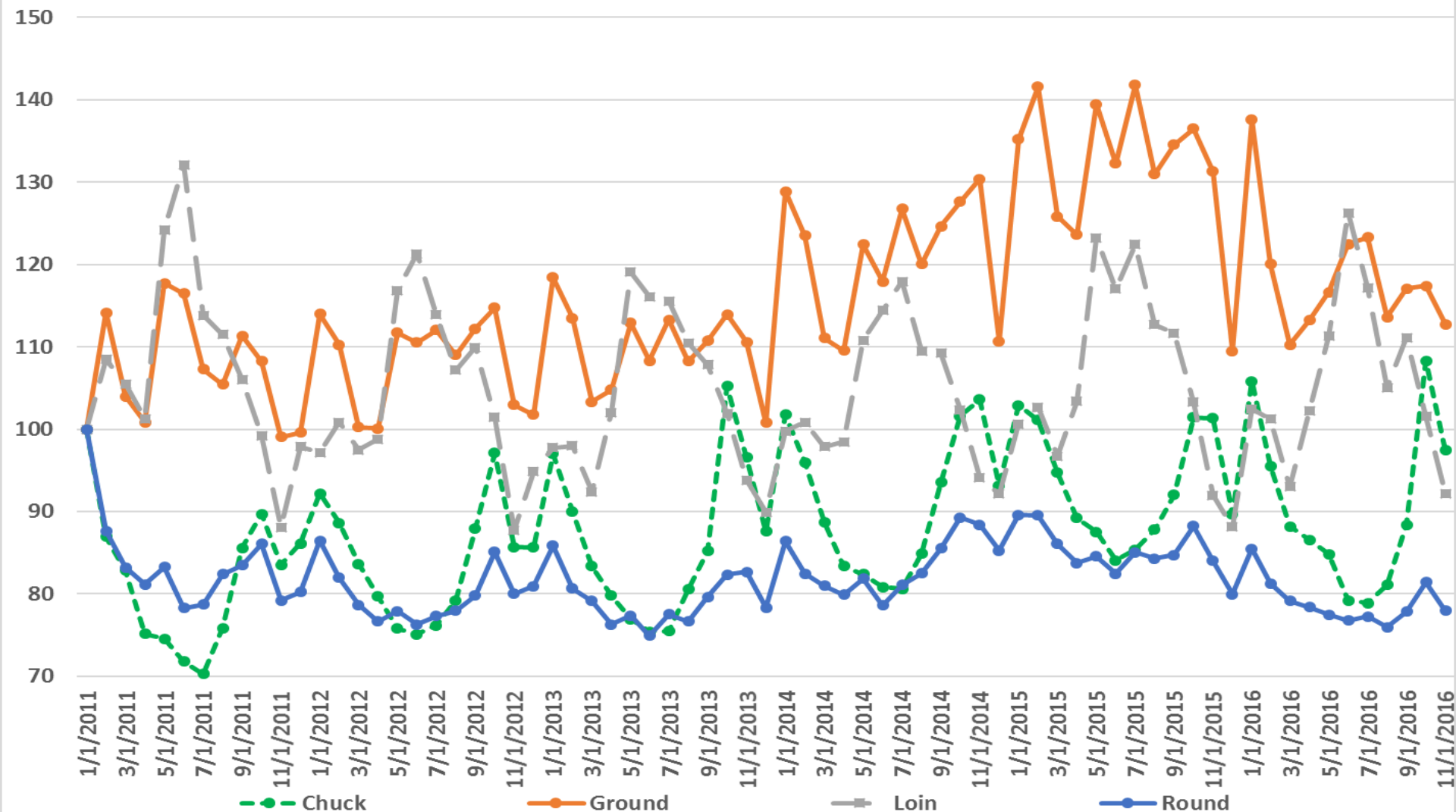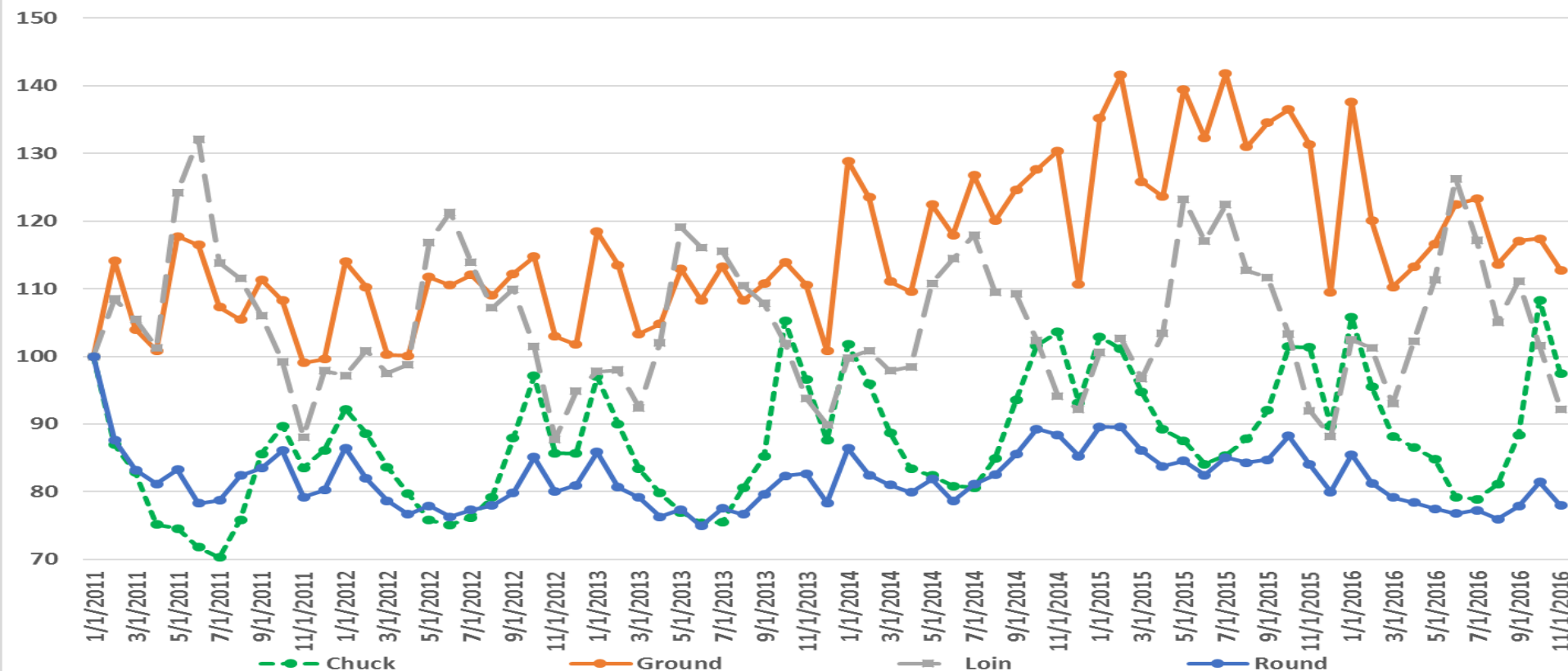
Note: All estimates and analyses based upon Information Resources, Inc. data are by the authors and not by Information Resources, Inc.

Consistency Points:

- **Ground demand up thru July 15, large fall thereafter**
- **Loin demand strongest in May-July (grilling), low Nov-Dec**

New GROUND BEEF SUBCATEGORY Retail Indices

Variable	Mean	StdDev	Min	Max	Min Date	Max Date	Current Month	Last Month	Last Year	Last Month	Last Year
							Nov-2016	Oct-16	Nov-15	Percent Change	
70-77% Lean	160.37	52.05	100.00	453.63	Jan-11	Feb-15	125.60	129.93	159.48	-3.33	-21.25
78-84% Lean	186.25	87.80	91.52	500.24	Apr-12	Oct-15	176.60	201.79	400.25	-12.48	-55.88
85-89% Lean	121.56	20.96	91.51	174.60	Dec-11	Jan-16	147.20	153.71	150.48	-4.24	-2.18
90-95% Lean	96.90	5.43	86.55	118.33	Dec-13	Jan-16	93.64	99.37	100.32	-5.77	-6.67
Chuck	87.57	9.35	70.99	109.17	Aug-16	Jan-13	75.98	78.64	82.55	-3.38	-7.96

Note: All estimates and analyses based upon Information Resources, Inc. data are by the authors and not by Information Resources, Inc.

Inconsistency Points:

- **Large variation & Max index values > 450**
- **Likely reflects endogenous grinding decisions**

New GROUND BEEF SUBCATEGORY Retail Indices

Grocery-Store, US SubCategory Level, Non Seasonally-Adjusted Indices
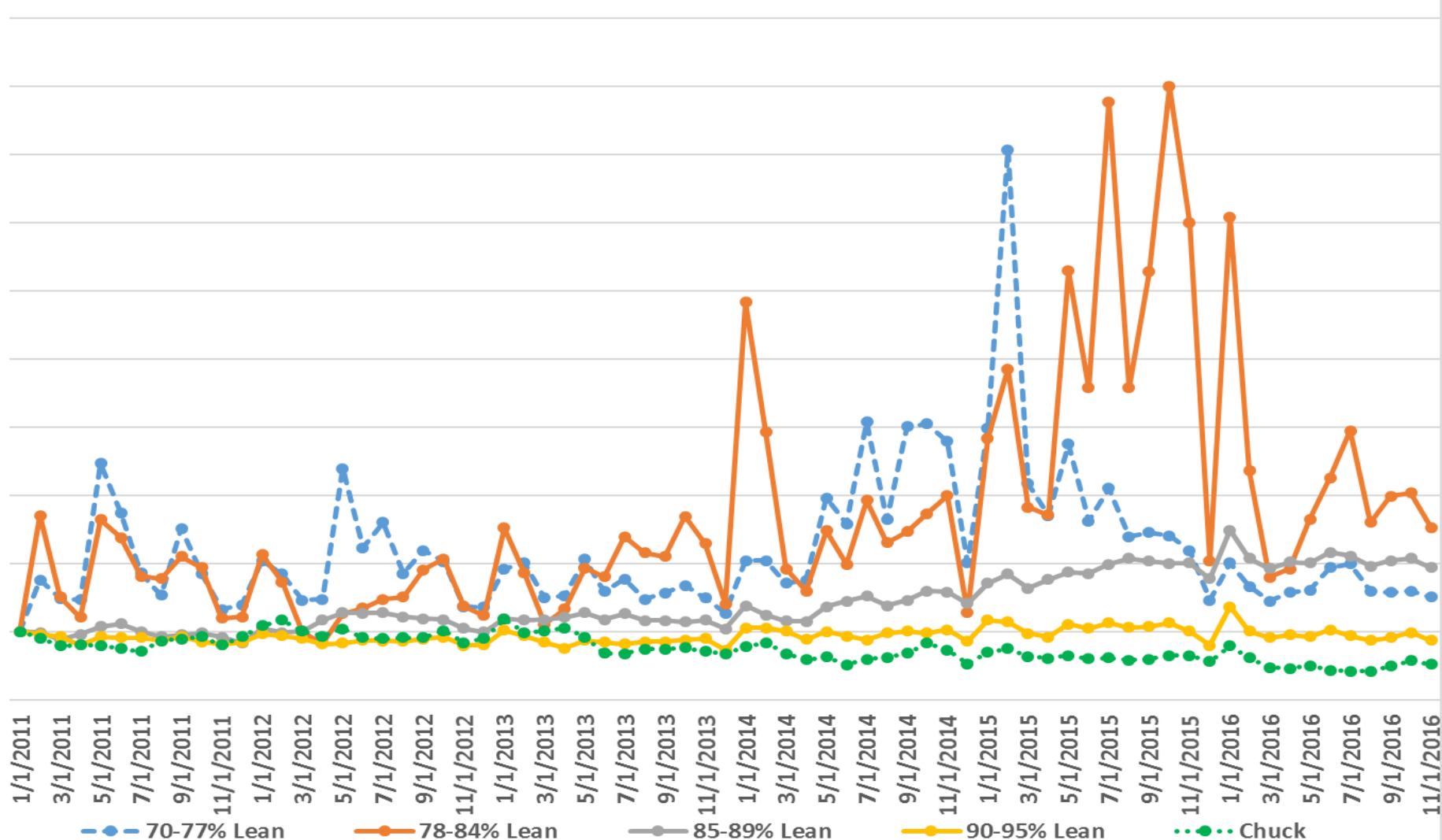
Legend: 70-77% Lean, 78-84% Lean, 85-89% Lean, 90-95% Lean, Chuck

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# New BEEF REGIONAL Retail Indices

InfoScan Standard Regions

Legend:
- California
- West
- Plains
- South Central
- Great Lakes
- Mid South
- Southeast
- Northeast
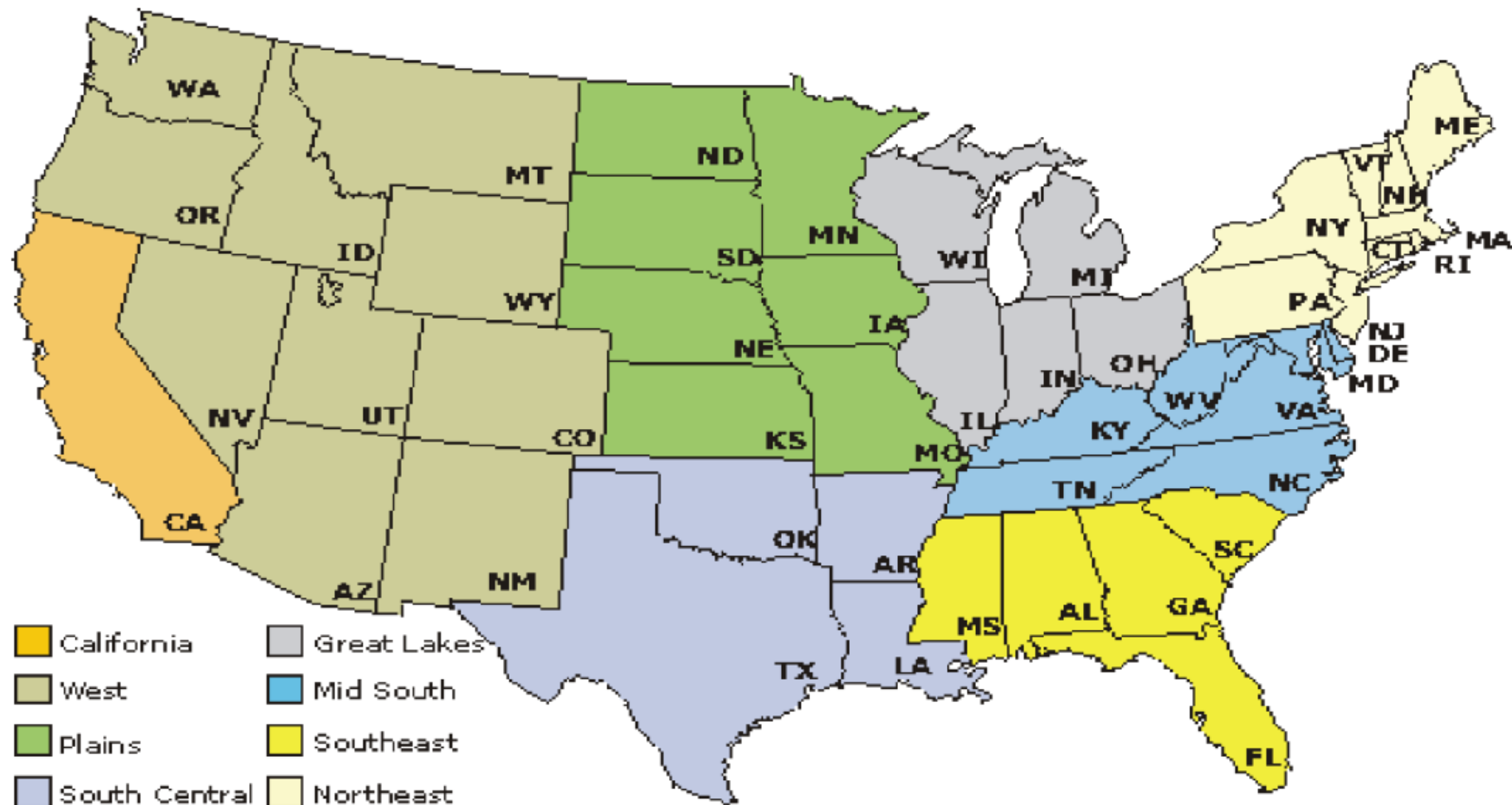
New BEEF REGIONAL Retail Indices

Variable	N	Mean	StdDev	Min	Max	Min Date	Max Date	Current Month	Last Month	Last Year	Last Month	Last Year
								Nov-2016	Oct-16	Nov-15	Percent Change	
Northeast	71	102.85	7.88	84.07	123.07	Nov-11	Jun-16	98.39	107.94	102.23	-9.56	-3.85
South	71	102.04	6.09	92.31	119.82	Feb-13	Nov-14	111.02	106.76	117.60	4.26	-6.58
Midwest	71	111.93	6.92	96.77	127.36	Nov-11	Oct-15	108.69	115.59	119.56	-6.90	-10.86
West	71	108.61	5.67	97.18	122.08	Nov-12	Jul-15	103.55	107.22	112.24	-3.67	-8.69

Heterogeneity Observations:

- **Demand peaked first in *South* and last in *Northeast***
- **Demand up in Nov-2016 in *South* and down in *Northeast***
- **Pork price only impacts *South* & *Midwest* demand**

New BEEF REGIONAL Retail Indices

Grocery-Store, Regional Class-Level, Non Seasonally-Adjusted Beef Indices
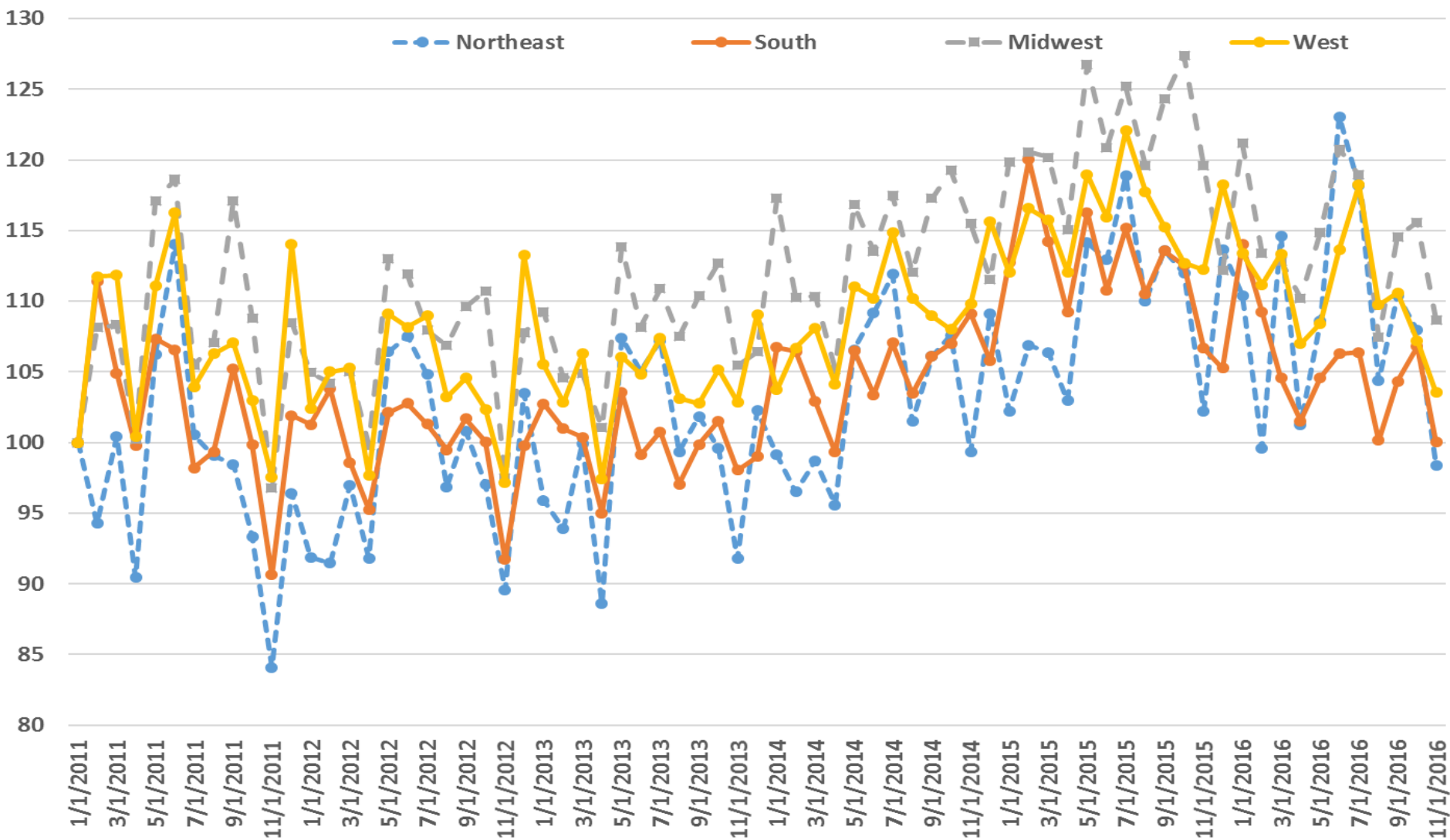
Legend: Northeast, South, Midwest, West

Note: All estimates and analyses based upon Information Resources, Inc. data are by the authors and not by Information Resources, Inc.

Comparison of Retail Data

BLS - IRI Retail Beef Price Spreads
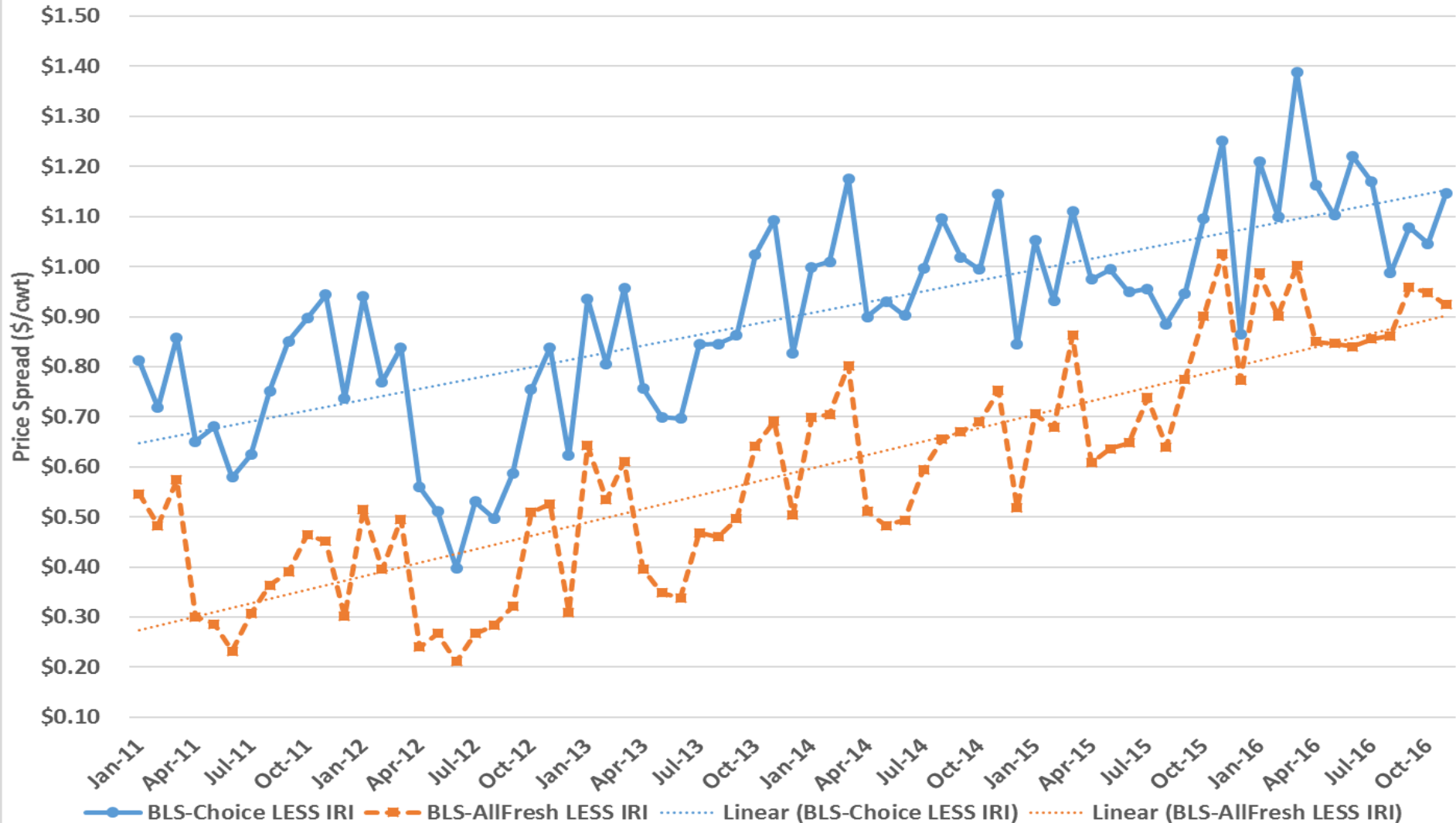
Note: All estimates and analyses based upon Information Resources, Inc. data are by the authors and not by Information Resources, Inc.

Recommendations

❑ **Prioritize support for maintaining some Retail indices:**

➤ **Class-level, U.S. & Regional Beef Indices**

➤ **Category-level, U.S. Indices**

   ➤ *Ground*, *Loin*, *Chuck*, and *Round*

❑ **Do not maintain:**

➤ **Category-level, *Rib* Index**

➤ **Ground Beef SubCategory indices**

➤ **Food Service indices**

Recommendations

➤ **Consider adding new Retail indices to existing monthly communication:**

Retail Beef Performance
IRI/Freshlook Marketing and USDA Market News
November 2016 Highlights

1. **Dollar Sales:** November beef dollar sales decreased (-4.6%) versus the prior year. Chicken dollar sales increased (+1.2%) while pork dollar sales decreased (-5.5%). The decline in November Beef dollar sales was greater than the decrease in total meat category dollar sales (-3.2%).

2. **Pound Sales:** November beef pound sales versus a year ago increased (+2.5%) while the total meat category decreased (-0.8%), driven by weaker turkey sales (-4.7%). Chicken pound sales increased (+1.2%) versus a year ago while pork pounds decreased (-1.7%).

3. **Average Price:** November's average price per pound for beef decreased (-6.9%) versus a year ago to $4.62/lb., down from October's average price of $4.69/lb. Chicken price was unchanged (+0.0%) and pork price decreased (-3.9%). Beef's average price per pound for the latest 52 weeks decreased (-8.4%) compared to October's 52-week decrease (-7.7%).

http://www.beefretail.org/CMDocs/BeefRetail2/Sales%20Data/Sales%20Featuring/11_16%20Top%20Line%20Final.pdf

Recommendations

> **Consider adding new Retail indices to existing monthly communication:**

Total US – Fresh Meat Sales
November 2016
Dollars - Total

Class	4 WEEKS 10/24/16-11/20/16	% Change	13 WEEKS WE 11/20/16	% Change	52 WEEKS WE 11/20/16	% Change
TOTAL MEAT	$3,986,450,612	- 3.2%	$12,150,473,244	- 3.1%	$48,228,659,400	- 2.6%
Beef	$1,752,285,593	- 4.6%	$5,927,522,131	- 4.5%	$24,028,762,039	- 3.1%
Chicken	$893,464,058	+ 1.2%	$3,015,380,173	+ 1.9%	$11,879,683,221	+ 1.3%
Pork	$673,481,629	- 5.5%	$2,014,882,456	- 6.6%	$8,440,236,889	- 7.7%
Turkey	$584,263,849	- 3.5%	$937,756,687	- 2.3%	$2,818,066,804	- 0.8%
Lamb	$28,506,395	- 1.3%	$89,990,025	- 0.3%	$406,373,313	+ 2.0%
Veal	$5,564,120	- 8.0%	$17,053,411	- 10.0%	$68,853,436	- 9.5%
Other*	$48,884,968	+ 4.2%	$147,888,361	+ 5.5%	$586,683,698	+ 5.9%

Pounds - Total

Class	4 WEEKS 10/24/16-11/20/16	% Change	13 WEEKS WE 11/20/16	% Change	52 WEEKS WE 11/20/16	% Change
TOTAL MEAT	1,489,530,220	- 0.8%	3,920,625,666	+ 1.1%	14,780,339,678	+ 2.4%
Beef	379,442,445	+ 2.5%	1,259,301,819	+ 4.2%	4,932,061,999	+ 5.8%
Chicken	381,975,541	+ 1.2%	1,296,823,861	+ 2.0%	5,101,943,398	+ 2.4%
Pork	262,145,802	- 1.7%	750,974,646	- 2.6%	3,211,403,935	- 0.6%
Turkey	447,722,941	- 4.7%	558,698,706	- 3.0%	1,309,769,745	- 2.6%
Lamb	4,007,432	+ 0.4%	12,460,850	+ 1.3%	57,610,935	+ 4.6%
Veal	845,475	- 4.2%	2,482,334	- 8.3%	9,860,971	- 9.2%
Other*	13,390,585	+ 10.6%	39,883,450	+ 10.9%	157,688,695	+ 8.2%

Recommendations

➢ **recognize and support ongoing education on the economic value of understanding beef demand concepts**

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