Assessing Beef Demand Determinants

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Joint Evaluation Advisory Committee Meeting

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BEEF

Funded by the Beef Checkoff.

Presentation at 2018 Cattle Industry Convention

Phoenix, AZ

Project Purpose

Main Goal

Provide a multi-faceted assessment of current factors impacting domestic beef demand.

Project Process

Process

➤ **Conducted 4 separate analyses varying in time periods, levels of product aggregation, and socio-economic factors considered:**

1. Aggregate Demand Elasticities Update
2. Media and Medical Journal Information Effects
3. Food Demand Survey Insights
4. Consumer Beef Index Insights

➤ **Summarize findings and provide main recommendations**

➤ **Widely disseminate results and implications**

Project Timeline

1. **Launch**
   - ➢ **April 2017**

2. **Interim Report**
   - ➢ **July 2017 – Denver, Summer Conference**

3. **Final Presentation & Report**
   - ➢ **January/February 2018 - 2018 Annual Convention (this meeting)**

1. Aggregate Demand Elasticities Update

❖ **Estimated multiple models similar to 2007 Beef Demand Determinants Study:**

- **Quarterly per-capita disappearance based volumes**
- **ERS Choice Beef (1970-2017) or All-Fresh (1988-2017) Beef prices**

Key Findings:

1988-2017 Period

- ❑ **1% increase in beef price =**   **0.48% drop in beef consumption**
- ❑ **1% increase in pork price =**   **0.09% increase in beef demand**
- ❑ **1% increase in chicken price =**   **0.02% increase in beef demand**
- ❑ **1% increase in total expend. =**   **0.80% increase in beef demand**

1. Aggregate Demand Elasticities Update

Key Findings:

Insights across time periods: "Beef demand is _____"

❑   … becoming less sensitive to own-price changes,

❑   … becoming more sensitive to consumer expenditures,

❑   … comparatively insensitive to competing protein prices

2. Media and Medical Information Effects

❖ **12 keyword based Lexis-Nexis & Medline searches**
  - ❖ **Animal Welfare, Well-Being, Care**
  - ❖ **Atkins, High Protein, Low Carbohydrate**
  - ❖ **Cancer**
  - ❖ **Climate, Environment**
  - ❖ **Convenience**
  - ❖ **Fat**
  - ❖ **Fat, Cholesterol, Heart Disease, Arteriosclerosis**
  - ❖ **Safety**
  - ❖ **Sustainability**
  - ❖ **Taste, Tender, Flavor**
  - ❖ **Vegan, Vegetarian, Meatless**
  - ❖ **Zinc, Iron, Protein**

❖ **Regression based assessment of impacts on beef demand**

2. Media and Medical Information Effects

Figure 3.3. Beef Industry, Monthly Media and Medical Counts: Jan. 2008 – Nov. 2017
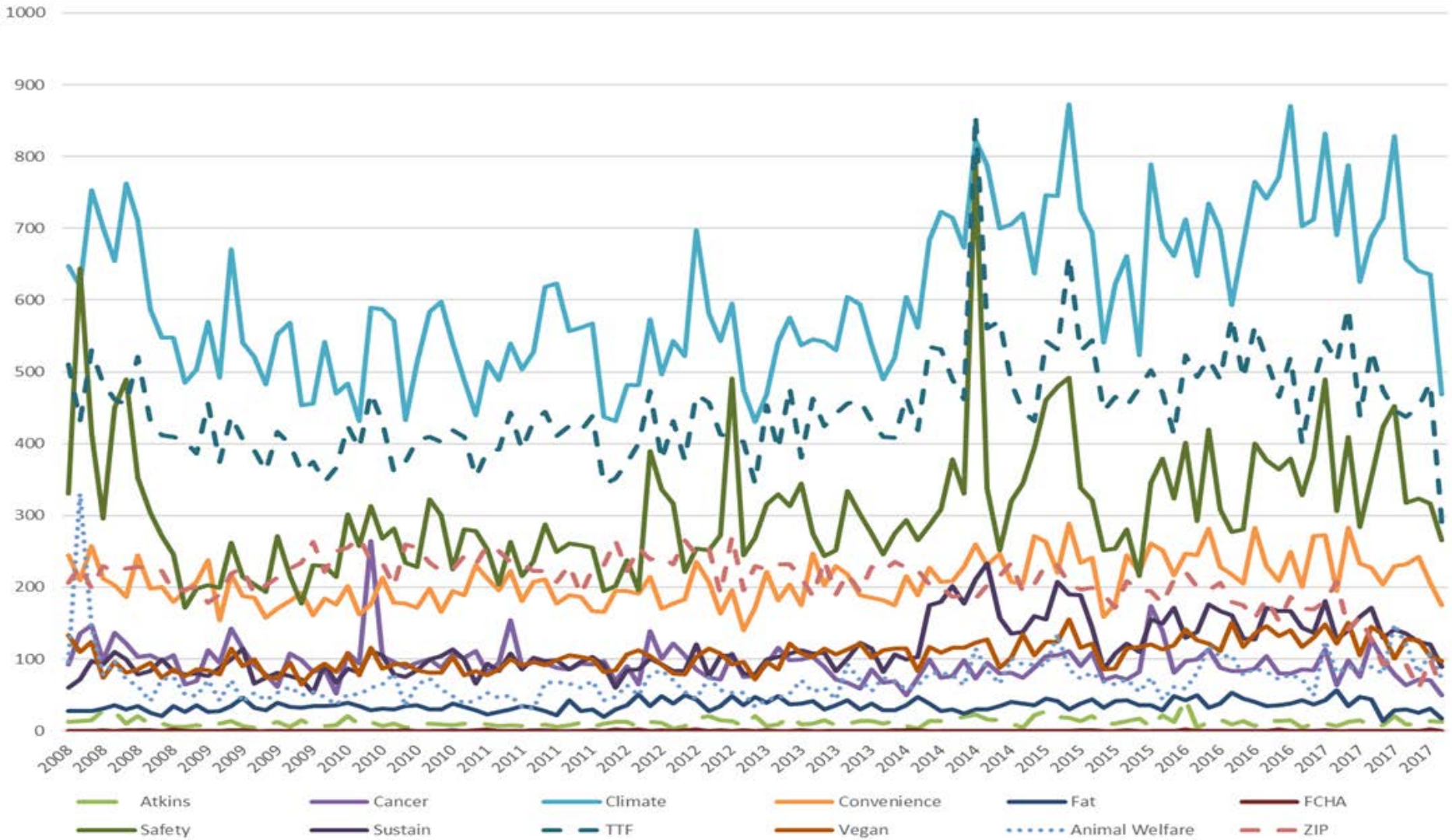
2. Media and Medical Information Effects

Key Findings: 2008-2017 Period

Demand Catalysts: 1% Increase in Coverage:

- [ ] **Atkins =**   **+0.014% in beef demand**
- [ ] **Cancer =**   **+0.197% in beef demand**
- [ ] **Fat =**   **+0.031% in beef demand**
- [ ] **Sustain =**   **+0.058% in beef demand**
- [ ] **Taste, Tender, Flavor =**   **+0.479% in beef demand**
- [ ] **Welfare =**   **+0.098% in beef demand**

Demand Detriments: 1% Increase in Coverage:

- [ ] **Climate =**   **-0.209% in beef demand**
- [ ] **Convenience =**   **-0.054% in beef demand**
- [ ] **Safety =**   **-0.072% in beef demand**
- [ ] **Vegan =**   **-0.240% in beef demand**
- [ ] **Zinc, Iron, Protein =**   **-0.198% in beef demand**

2. Media and Medical Information Effects

Key Findings: 2008-2017 Period

Most variable (volatile) counts are highlighted:

- ❑ Atkins =   +0.014% in beef demand
- ❑ Cancer =   +0.197% in beef demand
- ❑ Fat =   +0.031% in beef demand
- ❑ Sustain =   +0.058% in beef demand
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- ❑ Climate =   -0.209% in beef demand
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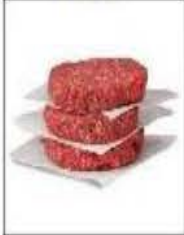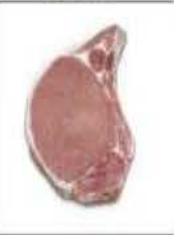
2. Media and Medical Information Effects

Differences from 1990-2007:

➢ **Atkins positive effect reduced**

➢ **Fat effect was negative, now positive**

➢ **6 "new topics" now significant**

➢ **Seasonality effects reduced**

3. Food Demand Survey (FooDS) Insights

❖ **June 2013 – May 2017, 48,358 individual survey responses**
❖ **Each survey involved 9 choices with varying prices:**

Which of the following would you purchase?

Hamburger $2.00/lb	Beef Steak $6.50/lb	Pork Chop $3.75/lb	Deli Ham $2.65/lb	Chicken Breast $3.25/lb	Chicken Wing $1.75/lb	Beans and Rice $0.50/lb	Tomato-Pasta $2.50/lb	If these were the only options, I would buy something else.

I would choose... ○ ○ ○ ○ ○ ○ ○ ○ ○

❖ **We identify number of ground beef & beef steak choices**
❖ **Examine impact of Food Values and Socio-Economic traits**
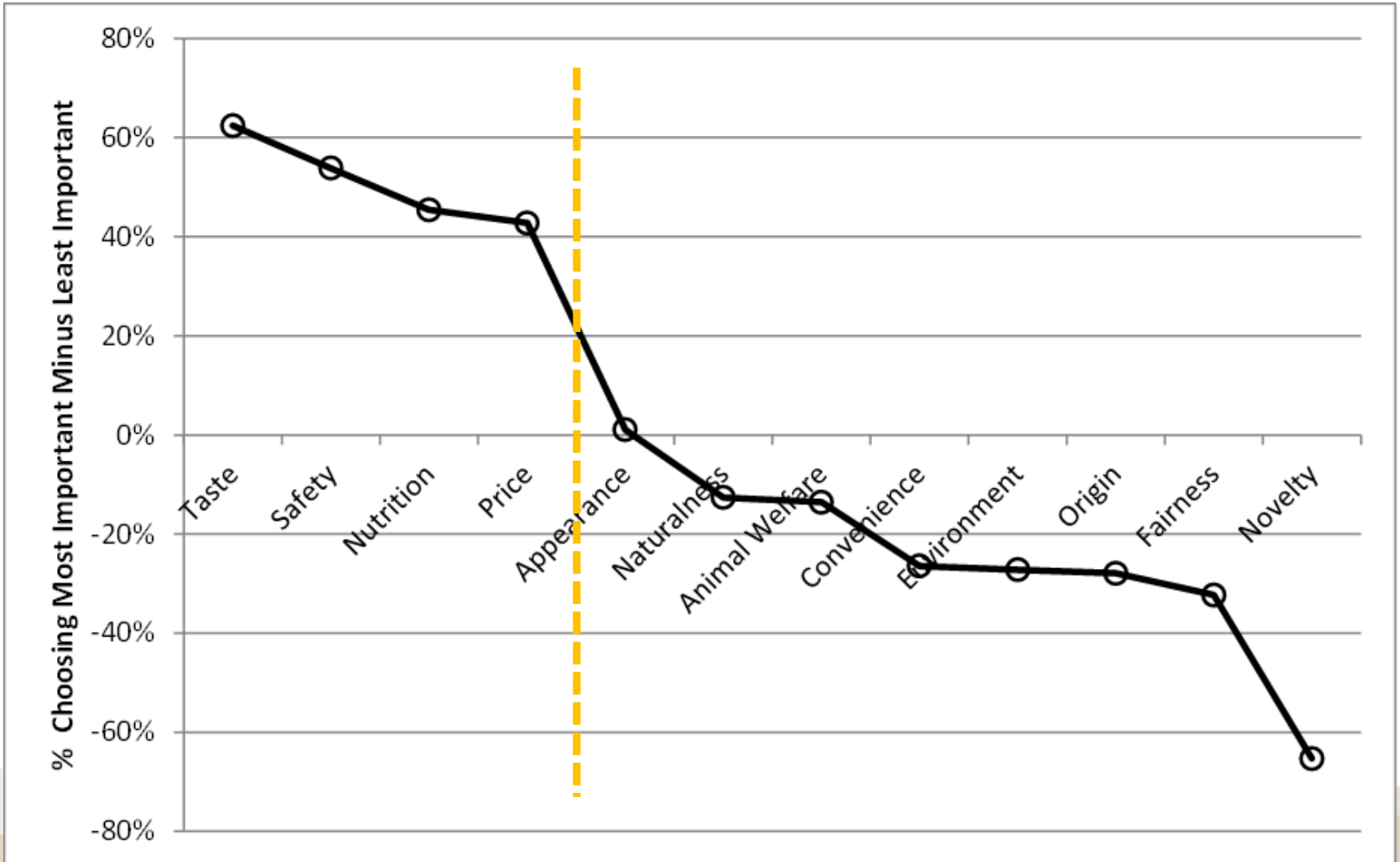
3. Food Demand Survey (FooDS) Insights

Table 4.2. Summary Statistics Associated with Consumer Choices (N = 435,222)

Item	Mean Number of Times Chosen	Percent of Times Chosen
Steak	0.90	10.0%
Ground Beef	1.32	14.7%
Pork Chop	0.80	8.9%
Ham	0.66	7.3%
Chicken Breast	2.42	26.9%
Chicken Wing	0.89	9.9%
Non-Meat (Pasta or Beans and Rice)	1.40	15.5%
None	0.61	6.8%
Total	9.00	100.0%

❑ **Mean number of choices masks substantial heterogeneity, over respondents and time**

3. Food Demand Survey (FooDS) Insights

❑ **Food Values, Relative Importance When Purchasing Food**

3. Food Demand Survey (FooDS) Insights

Key Findings: Steak Demand
- ❖ **Higher (+)**
  - ❖ **Observables**
    - ❖ **Higher Incomes, Older Respondent, Larger Households, College, Hispanic, Midwest, Politically Conservative,**
  - ❖ **Food Values**
    - ❖ **Taste, Convenience, Novelty, Origin, Appearance**

- ❖ **Lower (-)**
  - ❖ **Observables**
    - ❖ **White, Females**
  - ❖ **Food Values**
    - ❖ **Naturalness, Price, Nutrition, Environment, Animal Welfare**

3. Food Demand Survey (FooDS) Insights

Key Findings: Ground Demand (*BOLD denotes change from Steak Demand***)**

❖ **Higher (+)**
- ❖ **Observables**
  - ❖ **Lower Incomes, Older Respondent, Larger Households, College, White, Black, Midwest, Politically Conservative,**
- ❖ **Food Values**
  - ❖ **Price, Taste, Safety, Convenience, Novelty, Appearance**

❖ **Lower (-)**
- ❖ **Observables**
  - ❖ **Hispanic, Females**
- ❖ **Food Values**
  - ❖ **Naturalness, Nutrition, Environment, Animal Welfare**

4. Consumer Beef Index (CBI) Insights

❖ **Collaborated with NCBA to add new demand questions**

❖ **Estimate WTP for boneless Ribeye steak & 80% lean ground beef**

❖ **February (Mar. 9-21) and July (Aug. 9-17) survey waves**

4. Consumer Beef Index (CBI) Insights

❖ **Collaborated with NCBA to add new demand questions**

❖ **Estimate WTP for boneless Ribeye steak & 80% lean ground beef**

❖ **February (Mar. 9-21) and July (Aug. 9-17) survey waves**

Key Findings:

❑ **Mean ground beef WTP of $3.95/lb (Mar.) and $3.97/lb (Aug.)**

❑ **Mean Ribeye steak WTP of $9.88/lb (Mar.) and $9.68/lb (Aug.)**

❑ **Ground Beef Demand:**

    ❑ **Higher for African-Americans, homes with kids, those consuming beef at least 1x week**

    ❑ **Lower in Midwest**

❑ **Steak Demand:**

    ❑ **Higher for those working full-time, higher incomes, Hispanics, those consuming beef at least 1x week**

    ❑ **Lower for older respondents**

Key Determinants "Short List"

❑ **Ranked list ill-advised given multiple methods and data/information involved**

❑ **Short-list (<u>unranked</u>) of key determinants includes:**
  - ✓ **Beef Quality (taste, appearance, convenience, freshness)**
  - ✓ **Consumer Incomes**
  - ✓ **Coverage of Safety, Animal Welfare, Sustainability, Cancer, and Nutrition topics**
  - ✓ **Shifts in Race composition in U.S. population**

Main Unifying Themes / Recommendations

❑ **Meat prices have become less important while consumer income has become more important**
  ➢ **Elevates importance of beef quality focus**

❑ **Beef demand has increased or been stable over the past 5 years depending on measurement approach**
  ➢ **Good news given volume of "negative media"**

❑ **Different methods offer unique insights into beef demand consistent with realities of available data**
  ➢ **Encourage use of multiple information sources**

Main Unifying Themes / Recommendations

❑ **"Hot topics" change notably over time**
- ➢ **Impact on beef demand can substantially change**
- ➢ **Don't over-react at expense of loyal beef customers**

❑ **Several drivers of steak and ground beef demand differ**
- ➢ **Target marketing by beef product type and household type is encouraged**

❑ **Examples of demand concepts being confused continue to exist**
- ➢ **Ongoing support of education on demand concepts and economic value to producers is encouraged**

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