

# Factors Affecting Food Safety: Who Do Consumers Trust?

Lynn Hunnicutt and Ruby Ward  
Utah State University

# What is Known

- **Various aspects of produce well understood**
  - Organic
  - Locally produced
- **Premium for various characteristics including safety**
- **Consumer risk perceptions of the food they eat**

# What is Not Known

- **What influences consumer perceptions of food safety**
  - **Production characteristics**
  - **Store where purchased**
  - **Government inspection**
  - **Certification**
  - **Brand**
  - **Growing location**

# Objectives

- **How much do consumers care about the safety of produce they consume?**
- **What characteristics do consumers believe best ensure food safety?**

**Activities**

**Brands**

**Certification**

**Retail outlets**

**Growing location**

# Methods

- Questions about apples, potatoes, all produce
- Obtain consumer's RANK of food safety vis a vis other characteristics
  - Rank=f(demographic variables)
- Obtain consumer's SCORE of determinants of food safety
  - non-parametric comparison of determinants

# The Survey

- **Survey instrument**
  - **Dillman's TDM used**
  - **500 mailed to UT consumers**
    - **78 completed, 28 bad addresses**
  - **Sample representative of UT population**
    - **Salt Lake (35%) and Davis Counties (8%) under represented.**
    - **Carbon (3%) over represented.**

# Sample Demographics

- **66% females**
  - 50% for Utah population
- **3.58 average household size**
  - 3.13 for Utah
- **55% with children under 18**
  - 43% of Utah households
  - 56% of Utah family households

# Sample Demographics

- Younger ages (below 34) under-represented, 35+ over-represented
- Associate's degree+ over-represented in sample
- Sample over-represented for \$30k - \$75k and \$100k plus



# Allergies and Food Borne Illnesses

- **17% of households had someone in the family with a food allergy**
- **21% had someone in their immediate family suffer from a food borne illness in the last 5 years**
  - **12% did not know**

# Ranking of Produce Characteristics

- **Blemish Free**
  - Mode ranking was 2 in all cases
- **Price**
  - Mode ranking was 1 for apples and potatoes, 2 for all produce
- **Food Safety**
  - Mode ranking was 1 in all cases
- **Variety**

# Characteristics Ensuring Safety

- **Apples**
  - Clean produce department
  - Grown in Washington
- **Potatoes**
  - Grown in Idaho
  - Clean produce department
- **All Produce**
  - Clean produce department

# Characteristics NOT Ensuring Safety

- **Apples**
  - Certified GMO Free
  - Grown in Chile
- **Potatoes**
  - Certified GMO Free
  - Grown in Chile
- **All Produce**
  - Certified Organic
  - Grown in Mexico

# Basic Statistics

- **Significant t-tests for differences in means**
  - **Activity: clean dept vs. organic, GM free**
  - **Brand: Sunkist vs. Morning Sun**
  - **Cert Org: UT Dept Ag. vs. WWF**
  - **Growing Location: WA vs. Chile, ID vs. Chile, US vs. Mexico**

# Basic Statistics

- **Other t-tests for differences in means**
  - **UT Dept Agriculture vs. USDA NOT significant**
  - **WA apples, ID potatoes higher than Sunkist**
  - **Albertsons/Smiths lower than clean dept.**

# Preliminary Conclusions

- **Food safety is important to UT consumers**
  - But price and appearance also matter
- **A clean produce dept. best ensures food safety in consumers' minds**
- **GMO free and organic are not viewed as ensuring food safety by UT consumers**
- **More statistical analysis of these data will be needed to confirm these results and test additional hypotheses.**

# The Literature

- **Pesticide Free**
  - Baker (1999)
  - Boccaletti and Nardella (2000)
  - Estes and Smith (1996)
- **Location**
  - Brooker et al (1987, 1988)
  - Loureiro and Hine (2002)
- **Organic**
  - Thompson (1998)



## Table 1: Percentage of sample and Utah's population in each age group

| Age Groups | Sample | Utah * |
|------------|--------|--------|
| 18-24      | 2      | 21     |
| 25-34      | 14     | 22     |
| 35-44      | 26     | 20     |
| 45-64      | 42     | 25     |
| >64        | 17     | 13     |

above  
below

## Table 2: Income distribution, percentage in each group.

|                     | Sample | Utah * |
|---------------------|--------|--------|
| < \$15,000          | 2%     | 11%    |
| 15,000 - 29,999     | 11%    | 18%    |
| 30,000 - 49,999     | 34%    | 26%    |
| 50,000 - 74,999     | 28%    | 23%    |
| 75,000 - 99,999     | 9%     | 11%    |
| 100,000 +           | 17%    | 11%    |
| * Census 2000 data. | above  | below  |

## Table 3: Education Distribution, percentage in each group.

|                 | Sample | Utah |
|-----------------|--------|------|
| less than H.S.* |        | 12%  |
| High School     | 17%    | 25%  |
| Some College    | 21%    | 29%  |
| Associate's     | 18%    | 8%   |
| Bachelor's      | 32%    | 18%  |
| Master's or PhD | 12%    | 8%   |

\* Did not give this choice on survey.

above

below

**Table 4: Percentage of sample making majority of fresh produce purchases at each outlet**

|                   | All Produce* |  |  |
|-------------------|--------------|--|--|
| Local Independent | 41%          |  |  |
| Albertsons        | 15%          |  |  |
| Smiths            | 10%          |  |  |
| Harmons           | 10%          |  |  |
| WalMart           | 10%          |  |  |
| Macy's            | 7%           | * apples and potatoes were exactly the same. |  |
| Grow own          | 5%           |  |  |
| Fred Meyer        | 2%           |  |  |
| Farm stand        | 2%           |  |  |
| Wild Oats         | 0%           |  |  |
| Famer's market    | 0%           |  |  |
| U-pick            | 0%           |  |  |

## Table 5: Percentage of sample servings consumed by entire household

| Servings | Apples per week | Potatoes Per week | Produce per day |
|----------|-----------------|-------------------|-----------------|
| 0        | 5%              | 8%                | 0%              |
| 1-5      | 73%             | 53%               | 65%             |
| 6-10     | 18%             | 21%               | 26%             |
| > 10     | 5%              | 18%               | 9%              |

high

low

**Table 6: Ranking of produce characteristics (1 is best).**

| <b>Characteristic</b>          | <b>Apples</b>            | <b>Potatoes</b>          | <b>All Produce</b>       |
|--------------------------------|--------------------------|--------------------------|--------------------------|
| <b>Blemish Free appearance</b> | <b>1.941<br/>(0.904)</b> | <b>2.306<br/>(1.262)</b> | <b>2.000<br/>(0.941)</b> |
| <b>Price</b>                   | <b>2.765<br/>(1.680)</b> | <b>2.700<br/>(1.961)</b> | <b>2.830<br/>(1.795)</b> |
| <b>Food Safety</b>             | <b>3.313<br/>(1.904)</b> | <b>3.250<br/>(1.919)</b> | <b>3.000<br/>(1.881)</b> |
| <b>Variety</b>                 | <b>3.245<br/>(1.640)</b> | <b>3.818<br/>(1.742)</b> | <b>3.880<br/>(1.560)</b> |
| <b>Store where purchased</b>   | <b>5.041<br/>(1.541)</b> | <b>4.660<br/>(1.748)</b> | <b>4.902<br/>(1.712)</b> |

## Apples: Max and min average score for each category.

|                | Maximum Average |      |    | Minimum Average |      |    |
|----------------|-----------------|------|----|-----------------|------|----|
|                | Item            | Avg  | #  | Item            | Avg  | #  |
| Activity       | Clean Dept.     | 4.20 | 60 | Cert GMO Free   | 2.67 | 42 |
| Brand          | Sunkist         | 3.67 | 45 | Morning Sun     | 2.06 | 18 |
| Certifying Org | UT Dept Ag.     | 3.82 | 55 | WWF             | 1.50 | 18 |
| Retail Outlet  | Wild Oats       | 3.62 | 13 | Farm Mkt.       | 3.00 | 30 |
| Growing Loca   | Washington      | 4.00 | 52 | Chile           | 1.93 | 40 |

# Potatoes: Item with maximum and minimum average for each area of food safety assurance questions.

|                | Maximum Average |      |    | Minimum Average |      |    |
|----------------|-----------------|------|----|-----------------|------|----|
|                | Item            | Avg  | #  | Item            | Avg  | #  |
| Activity       | Clean Dept.     | 4.13 | 60 | Cert GMO Free   | 2.67 | 42 |
| Brand          | Sunkist         | 3.60 | 43 | Morning Sun     | 2.11 | 19 |
| Certifying Org | UT Dept Ag.     | 3.76 | 55 | WWF             | 1.50 | 18 |
| Retail Outlet  | Wild Oats       | 3.62 | 13 | Farm Mkt.       | 2.90 | 30 |
| Growing Locat  | Idaho           | 4.16 | 61 | Chile           | 1.88 | 41 |



# Produce: Max and min average score for each category.

|                | Maximum Average |      |    | Minimum Average |      |    |
|----------------|-----------------|------|----|-----------------|------|----|
|                | Item            | Avg  | #  | Item            | Avg  | #  |
| Activity       | Clean Dept.     | 4.17 | 65 | Cert. Organic   | 2.72 | 50 |
| Brand          | Sunkist         | 3.85 | 55 | Morning Sun     | 2.05 | 21 |
| Certifying Org | UT Dept Ag.     | 3.67 | 61 | WWF             | 1.45 | 20 |
| Retail Outlet  | Wild Oats       | 3.62 | 13 | Farm Mkt.       | 3.00 | 30 |
| Growing Loca   | US              | 3.63 | 59 | Mexico          | 1.87 | 46 |