Consumer Response to Media Information: The Case of Grapefruit-Drug Interaction

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Consumer Response to Media Information: The Case of Grapefruit-Drug Interaction

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**Introduction and Background**

On November 26 and 27, 2012, major news channels featured stories about the effect of grapefruit-drug interactions. They cited a 2013 study by Bailey, Dresser and Arnold (2013) that found more than 85 drugs have the possibility of interacting with grapefruit. Of these drugs, 43 have interactions that can result in serious adverse effects.

**Not a Brand New Finding**

Bailey et al. initially discovered potential grapefruit-drug interaction in 1991. As many other scientists have studied this topic, the list of medications with grapefruit interactions has grown (Kupferschmidt et al., 1995; Lilja, Kivistö and Neuvonen, 1998; Zhang and Brodbelt, 2004; Kivistö et al., 1999; Kurata et al., 2012; Monroe et al., 2013).

**Special Attention to GF-Drug Interactions**

Comparing the demographics of typical grapefruit consumers and medications that interact tend to identify the same people (Baldwin and Jones, 2013). Of adults aged 60 and over, approximately 45% indicated that they took cholesterol lowering drugs, and 20% and 20% indicated they took Diuretics and β-blockers that are medication related to high blood pressure and heart disease, respectively (Gu, Dillon and Burt, 2010). These are generally on the list of medications with grapefruit interactions.

**Role of Media in Consumer Behavior**

Many study found that consumer attitudes, opinions and choice are influenced by information on media (Piggott and Marsh, 2004; Dillaway et al. 2011; Brown and Schrader 1990; Adhikari et. al 2006; Kalaitzandonakes, Marks and Vickner, 2004)

**Purpose of Study**

To measure the effect of media exposure on grapefruit/grapefruit juice consumption using a sample selection model
1. Identify exposure rate to news about grapefruit
2. Identify characteristics of respondents who are more exposed to grapefruit news
3. Determine the effect of news media on consumer purchases of grapefruit/grapefruit juice by subject age, subjects who initially exposed to the news or not, tone of news, frequency of exposure to news

**Exposure Rate**

Traditional measurement (frequency of hits and quantity to exposure) may not be representative due to the changed environment (increasing availability of portable devices, information sources and duplication).

**Consumer Survey Design**

- Have you seen, read or heard news about grapefruit or grapefruit juice in the last month?
- Respondents' attitude toward health news

**Data Collection**

Online survey: 12/10–12/17/12 (almost two weeks after the news was released)
Valid sample: 3,505 (age 18 and over)

**Estimated Results of Ordered Response Model with Sample Selection (De Luca and Perotti, 2010)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Sample Size</th>
<th>U.S. Census</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>1,500</td>
<td>48.5%</td>
</tr>
<tr>
<td>Age</td>
<td>18-24</td>
<td>1,000</td>
<td>37.3%</td>
</tr>
<tr>
<td></td>
<td>25-39</td>
<td>500</td>
<td>37.9%</td>
</tr>
<tr>
<td></td>
<td>40-60</td>
<td>500</td>
<td>23.0%</td>
</tr>
<tr>
<td></td>
<td>60+</td>
<td>50</td>
<td>25.3%</td>
</tr>
<tr>
<td>Education</td>
<td>Less than high school</td>
<td>1,200</td>
<td>26.9%</td>
</tr>
<tr>
<td></td>
<td>High school and some college</td>
<td>1,000</td>
<td>32.0%</td>
</tr>
<tr>
<td></td>
<td>More than college</td>
<td>1,305</td>
<td>34.4%</td>
</tr>
<tr>
<td>Household Income</td>
<td>Under $25,000</td>
<td>1,500</td>
<td>28.1%</td>
</tr>
<tr>
<td></td>
<td>$25,000 to $49,999</td>
<td>1,000</td>
<td>32.0%</td>
</tr>
<tr>
<td></td>
<td>$50,000 to $74,999</td>
<td>500</td>
<td>19.4%</td>
</tr>
<tr>
<td></td>
<td>$75,000 or more</td>
<td>50</td>
<td>12.7%</td>
</tr>
<tr>
<td>Media exposure</td>
<td>1 if respondents have exposed to GF/GFJ news over the past month</td>
<td>1,500</td>
<td>14.7%</td>
</tr>
</tbody>
</table>

**Findings**

- 16% of participants had seen, read, or heard some news about GF or GFJ in the last month
- Exposure rates were relatively high in consumers aged less than 40
- Identification of respondents who decreased their consumption due to news about GF/GFJ was high in consumers aged 40 and over
- Response attitudes toward health information on TV and the internet significantly explained medication and GF news
- The more aggressive to health news on TV and the internet, the more exposed
- Consumers strongly reacted to information when the news directly related to their health
- Grapefruit consumers (aged 40 and over) and respondents who took prescription medication which interacts with grapefruit were more likely to be exposed to the news
- The interaction effect was only significant in consumers aged 40 and over
- Young people are less sensitive to the news
- Repeated media hits influenced consumption changes
- Both consumers who already knew the news and who initially heard the news were more likely to indicate their GF/GFJ consumption decreased
- Tone of information is more important than frequency
- Positive information offset negative information
- Frequent consumers were more likely to increase consumption of grapefruit juice
- These consumers may well recognize the effect and may know how they can handle the problem. Therefore, the information does not seem to bother these consumers.
- Providing correct information about the effect will help to reduce fear among potential consumers who are not willing to consume grapefruit/grapefruit juice due to inexact information

**Prognosis**

- 1 Year Data Collection: 500 respondents
  - Age 18 and over
  - Gender = 1 if male
  - Income = 1 if respondents agree with reliability of health news
  - Trust = 1 if respondents agree with impact of health news on their behavior
  - Exposure Rate = 1 if respondents agree with the statement searching for further information

- 4 Percentage of use at least one prescription drug is 49.3% age between 20 and 59, and 68.4% age 60 and over from the data of the NSATS 2007-08, CDC/NCHS. Using 2007 population by age, we calculated the number of people who took prescription medication associated with the age groups