

Consumer Preference for Specific Attributes in Natural Beef Products

Jennifer Grannis¹, Neal H. Hooker² and Dawn Thilmany³

1. Jennifer Grannis, Graduate Research Assistant
Department of Agriculture and Resource Economics (DARE)
Colorado State University
Fort Collins, CO 80523-1771
(970) 491-6730
e-mail: jgrannis@lamar.colostate.edu

2. Neal Hooker, Assistant Professor
Department of Agricultural, Environmental and Development Economics
The Ohio State University
2120 Fyffe Road
Columbus, OH 43210-1067
(614) 292-2822
e-mail: hooker.27@osu.edu

3. Dawn Thilmany, Associate Professor
DARE
Colorado State University
Fort Collins, CO 80523-1771
(970) 491-7220
e-mail: thilmany@lamar.colostate.edu

Paper presented at the Western Agricultural Economics Association Annual Meetings,
Vancouver, British Columbia, June 29-July1, 2000.

Copyright 2000 by Jennifer Grannis, Neal Hooker and Dawn Thilmany. All rights reserved.
Readers may make verbatim copies of this document for non-commercial purposes by any
means, provided that this copyright notice appears on all such copies.

Consumer Preference for Specific Attributes in Natural Beef Products

Jennifer Grannis, Neal H. Hooker, and Dawn Thilmany

Abstract: This study examines the willingness to pay for a locally-produced, natural beef product in the Intermountain West. In addition to presenting market shares at various prices, this study examines the relevance of several production characteristics, to determine how important they are to consumers, especially the target group willing to pay premium prices. Concern about hormones is consistently higher than other animal- and environmentally-friendly attributes, while concern about local production is the lowest among the respondents. As would be expected, the average concern about each of these characteristics increased among the group most willing to pay a premium for natural beef.

Consumer Preference for Specific Attributes in Natural Beef Products

Introduction

The recent activity surrounding the development of government guidelines on organic foods has renewed interest in who is buying these products (see USDA, 2000). Natural and organic food sales have grown significantly in recent years gaining market share in several categories. This growth has been mirrored in the fresh meat sector as demonstrated by the increasing share of shelf space in premium meat cases devoted to natural beef and poultry. However, the previous patchwork method of organic certification (state or regional, public or private), as well as the role of oversight by the US Department of Agriculture has contributed to the absence of organic meat on grocery store shelves. Subsequently, there were no verifiable or refutable organic claims made, indicating the need for guidelines on the use of 'natural' labels.

It is not clear which specific product attributes attract consumers to these products, what consumers value about 'natural' as opposed to 'organic' products, and what effect these preferences would have on optimal pricing and marketing strategies. An association of Western Colorado meat producers funded a contingent valuation survey, which was completed in the spring of 1998. The mail survey was conducted in the Rocky Mountain Region (Colorado, Eastern Utah, Northern New Mexico) by the National Family Opinion (NFO) survey research group. Several natural beef brands were available in natural food stores in this region (including Maverick Natural Beef and Lassater Grassfed Beef). However, at the time of the survey no organic beef products were in traditional supermarkets in the sample area.

This study helps determine which beef production practices are most important to consumers, and how these attributes can be best communicated, thereby assisting producers to develop focused marketing plans for new beef products and brands. The primary analysis in this

paper will explore the nature of beef characteristics that were rated by respondents. Seven attributes are ranked by the entire sample, while only a subsample also ranked the attribute 'organic.' Two beef products, ground round and steak, were evaluated in the contingent valuation portion of the study. The primary objective of this paper is to analyze absolute and relative consumer rankings of several specific product attributes that are either directly or indirectly related to natural production methods. The paper also assesses how these rankings vary by consumers willing to pay various premiums for hypothetical, natural beef products.

Background

Colorado producers are interested in determining whether there is a distinct segment of consumers who are willing to pay a premium for locally produced food. An example of such research is presented by Unterschultz, Quagraine, and Veeman (1998). This study concluded that product origin was considered a quality attribute, with consumers willing to pay a significant premium for local meat. Thus, producers may be able to capture a significant premium if Colorado consumers similarly value local food products.

The second marketing strategy considered by the producers was a natural or organic focus. Retail sales of organic foods have grown from \$178 million in 1980 to \$3.5 billion in 1996 with natural product stores accounting for the largest share of \$1.95 billion in 1996 sales (Duram, 1998). Sales through general supermarkets (rather than specialty natural markets) more than doubled from 1993 to 1995 (\$98 to \$210 million). This development signals the growing mainstream appeal of organic foods, which may be linked to both internal and external factors. Byrne, Bacon and Toensmeyer (1994) found that preferences for organic produce are linked to perceptions that such products are safer, fresher, more nutritious, and cause less detrimental

environmental impact. In this research, we will focus on how a set of production attributes and characteristics related to the meat they purchase is valued by potential consumers.

Concerns about food safety related to residues on or in food are compounded with concerns about biotechnology. Biotechnology methods are intended to increase production efficiency and develop new agricultural and food products and processes. However, some consumers have questioned the overall effect on food quality and safety. For example, consumers have shown a reluctance to consume pork injected with pST (a growth hormone) due to the lack of information regarding the health risks from this additive. Women and those with larger households were found to be less likely to buy the pST injected pork (Misra, Gotegut, and Clem, 1997). Similar concerns have been raised with respect to livestock antibiotics and the irradiation of meat and poultry.

In addition to determining which consumer segments are most interested in buying natural beef products, there is also interest in what prices these consumers are willing to pay for these products (so that additional production or marketing costs can be justified). Several studies have found that consumers are willing to pay a premium for products that are free of chemicals and additives (van Ravensway and Hoehn, 1991; Huang, 1996). Misra, Gotegut, and Clem (1997) found that 60% of consumers prefer organic produce, and 75% of those consumers are willing to pay at least a 10% premium.

There are many challenges to marketing natural products once consumer preferences have been determined. The underlying issue of market information is quality signaling. If producers cannot differentiate their product, premiums from the unique bundle of attributes they offer consumers cannot be achieved. Previous research concluded that quality signaling is most easily accomplished through the use of a certified label (Zarkin and Anderson, 1992; Caswell

and Mojdzieszka, 1996), which is now an option for natural and organic meats, and may be possible if USDA guidelines are approved in the near future. This study tried to determine what other issues, if integrated into production practices and included on the label, may be of value to the consumer.

The Data

Twenty-two hundred primary grocery shoppers in Colorado, Utah and New Mexico were surveyed by mail from the National Family Opinion (NFO) database, and fourteen hundred useable responses were collected (slightly greater than 60% of the sample). The National Family Opinion company (www.nfo.com) was used to conduct the survey based on its strong reputation in the market research industry, and its' access to a readily available database of consumers who are willing to respond to surveys, thereby assuring high response rates. The survey instrument was pre-tested with focus groups and critiqued by the NFO. Past shopping information was collected, including weekly expenditures on all grocery products, consumption of beef, consumption of pork, past consumption of natural beef, and primary store used for meat purchases (Grannis and Thilmany, 2000).

Consumers were asked to rank their relative concern about antibiotics, growth hormones and various other attributes. These responses help to determine what characteristics established during production, and highlighted in marketing materials and product labels, would make the products most attractive to customers. The production attributes that consumers ranked were: no small or crowded pens, no antibiotics, no growth hormones, grazing managed to protect streams, grazing managed to protect endangered species, animals raised within 250 miles, meat aged at least 14 days and grassfed. These attributes were ranked independently, on a Likert-like scale of one to five, with five being the most important.

Figures 1 and 2 break down attribute ranks across the premium level the respondents indicated they were willing to pay for steak and ground round. These graphs illustrate the relative importance of the attributes, as well as how rankings vary among different target markets for natural beef. The two figures also illustrate that while we would expect there to be a correlation between higher attribute ranks and premium levels, some attributes do not necessarily follow that pattern.

For both meat products, “no use of hormones” has the highest average rank and it trends upward with increasing premium levels. The average ranking for the “animal raised within 250 miles” attribute, labeled local in the graph, was the lowest of all the attributes. Although the steak graph shows this attribute’s average rank rising slightly at higher premium levels, there is no clear trend in the ground beef chart. In general, the remaining attributes were ranked in the following order; antibiotics, streams, endangered species, pens, grassfed, and aged. Specifically, the environmental- and animal-friendly attributes appear to increase more among those with a higher willingness to pay and are relatively higher in the steak figure. The average ranking for attributes in that figure also appear to be more spread out, indicating more differing views among those customers willing to pay a premium for natural steak.

Willingness to Pay for Natural Meat

Survey respondents were also asked about their willingness to pay for natural beef products. Each respondent chose from a scale of ten, incrementally increasing premiums for hypothetical steak and ground beef (see below). The beef products were defined in the following manner:

Please imagine that you are at the counter where you usually buy fresh meat. Four types of meat are available as both regular and labeled as naturally (organically) produced. The naturally (organically) produced meat is from animals born and raised within 250 miles

of where you live. The meats are displayed identically; their color, fat and size are exactly the same.

Figures 3 and 4 show willingness to pay curves for both steak and ground round. Note that all ten premium levels are not included, since the graphs show only the highest price that any respondent noted a willingness to pay. The higher curve in both figures represents those consumers who have purchased natural beef in the past and their corresponding WTP for these natural beef products. As expected, a higher share of consumers who noted past purchases of natural beef is likely to pay at each premium level. This finding adds credibility to the stated preferences of the consumers, since those with revealed preferences (who have made purchases) also respond with consistent stated preferences.

Of the 1400 survey respondents, 521 consumers (38%) were willing to pay \$5.49 (10% price premium) for natural steak and 197 consumers (14%) were willing to pay \$5.99 (20% price premium). At \$1.89 (12% price premium), 912 consumers (67%) would buy natural ground round, and at \$2.09 (23% price premium), 403 consumers (29%) were still willing to buy the natural ground round. In the ground beef figure, we can see that respondents are willing to pay at most an 83% premium, while no steak consumers are willing to pay more than a 50% premium. At the lowest premium level, one cent higher than base price for both steak and ground beef, 87% of all respondents indicate that they would purchase ground beef and only 69% of steak consumers indicate they would purchase the product. In both figures, the difference between the two samples (all consumers and those who purchased natural beef in the past) declines as the price level rises. Finally, previous natural beef consumers make up a significant share of the consumers who will pay the highest premiums for the natural, ground beef.

The shopping behavior of likely customers, and how they ranked the various production attributes, was also of interest in this market analysis. Figure 5 illustrates average attribute rankings, conditional on meat shopping behavior. The meat shopping choices analyzed were “some meat purchased in a natural food store,” “some meat purchased direct from a producer,” “some meat purchased at a meat shop,” and “most meat purchased from a supermarket.”

As discussed previously, hormones, antibiotics, protection of streams, and protection of endangered species were the most important factors to all types of consumers, while the local attribute was consistently the lowest ranked. Those who mostly shop in supermarkets dominate the sample, but 14% of the sample purchased some meat at a meat shop, 6% at natural food stores, and 6.1% purchased directly from producers. As expected, natural food shoppers rank all attributes higher (but with more variability) than the other subsamples. With the exception of local and aged attributes, those who buy meat from producers had higher ranks than the two remaining subsamples. The next highest average ranks were by supermarket shoppers (except for the grassfed, local and aged attributes where meat shop purchasers have the next highest ranks).

Marketing Implications

Consumers in the Intermountain region are very concerned about additives (hormones and antibiotics) to the meat they consume, and somewhat concerned with how friendly livestock production methods are with respect to the environment and animals. In addition, many of these consumers are willing to pay a premium for natural meat that promote attention to some, or all, of these practices. Unfortunately, the locally-produced attribute is not as important to these consumers, so an alternative marketing strategy needs to be considered. Adoption and promotion of the other practices is especially important if producers want to attract those willing to pay the

highest premiums for natural beef to their specific brand of natural beef (and would provide a competitive edge against bigger, established brands).

There is a substantial market segment willing to pay a twenty-percent premium for either natural steak or ground round, indicating a strategy that is well-suited to a traditional grocery store. Producers limited by production capacity may want to look at entering natural food/specialty meat markets, or selling premium local products to restaurants where premiums would be higher (and the lower quantity demanded would make their supply issues more manageable). In either case, this study provides the market research necessary to secure a retailer relationship (or to attract a food broker) and initiate a marketing campaign.

Figure 1: Average Attribute Ranks for Steak Consumers across Premium Levels

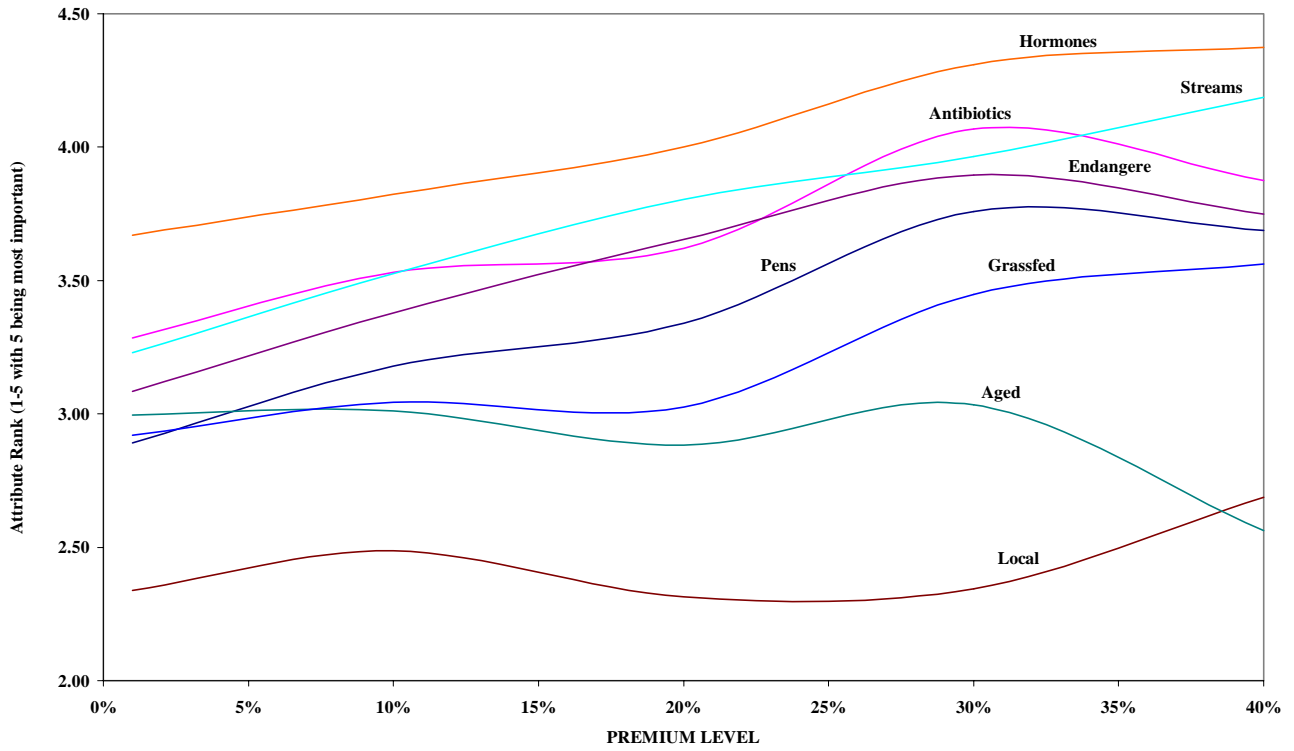


Figure 2: Average Attribute Ranks for Ground Beef Consumers across Premium Levels

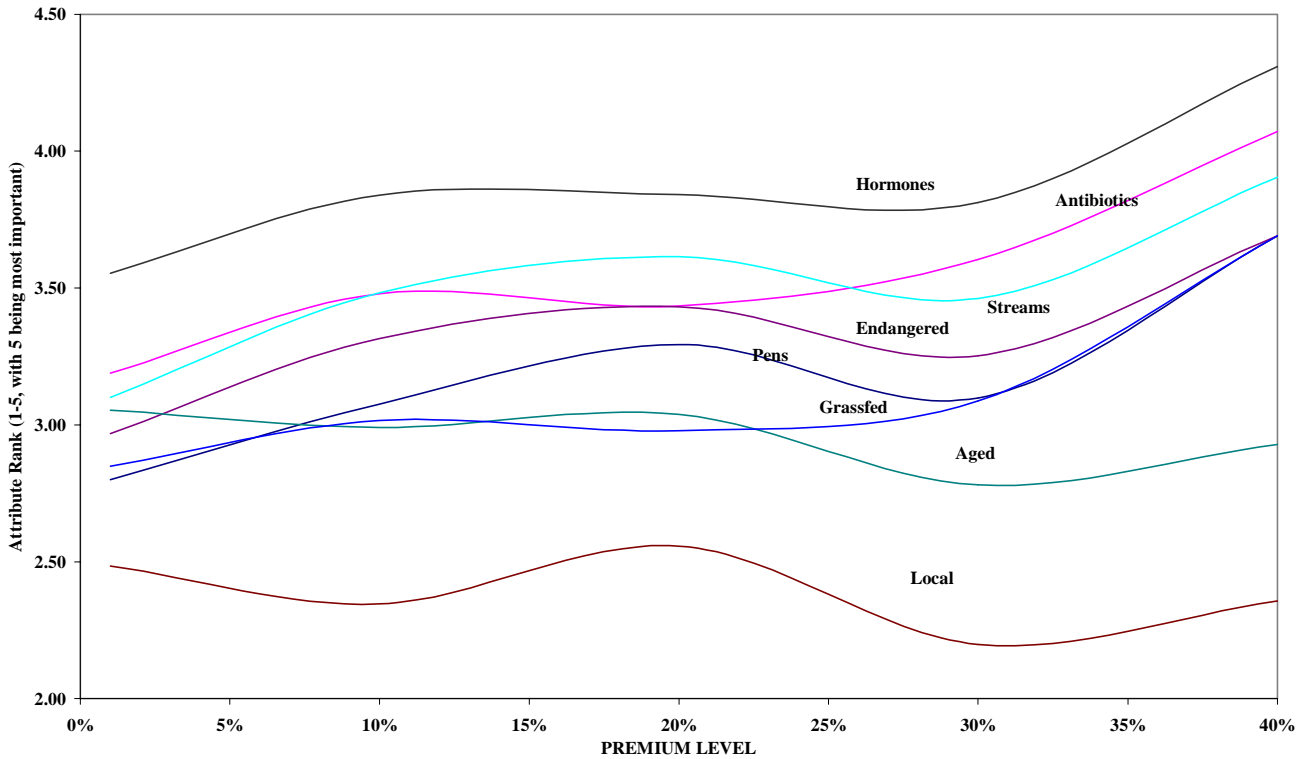


Figure 3: Willingness to Pay Curves for Steak: All Consumers and Natural Beef Consumers

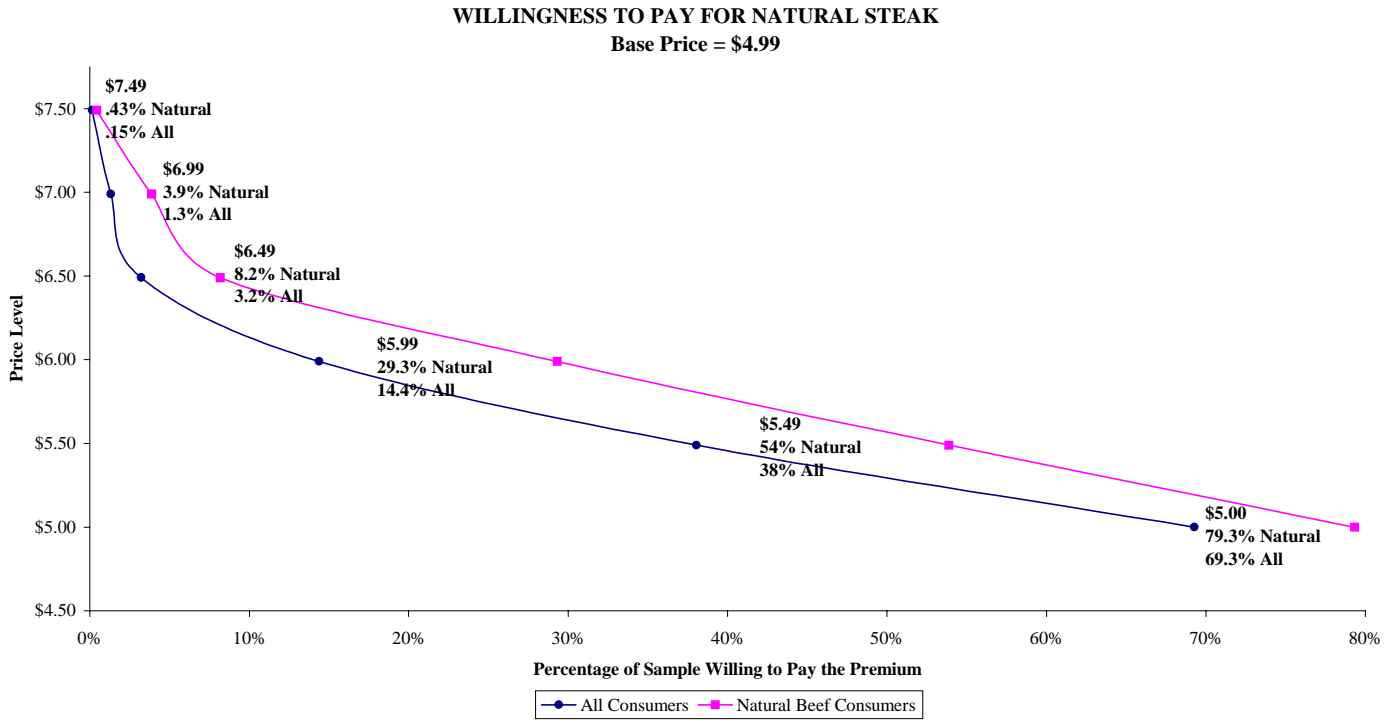


Figure 4: Willingness to Pay Curves for Ground Beef: All Consumers and Natural Beef Consumers

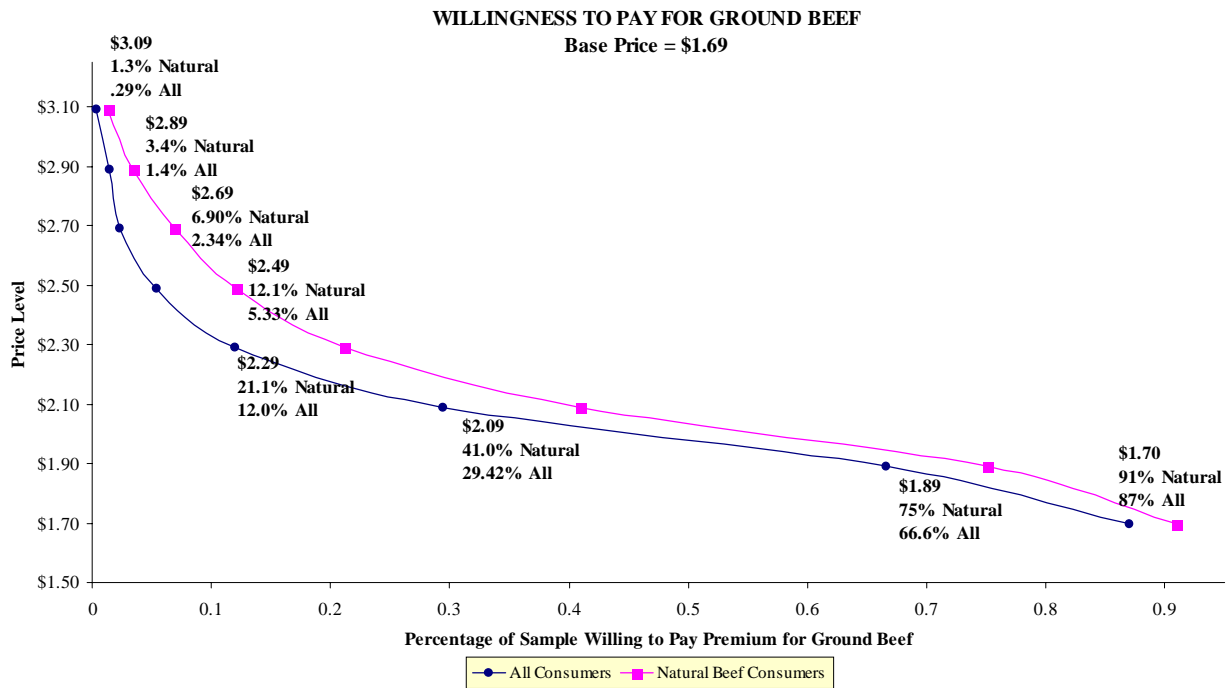
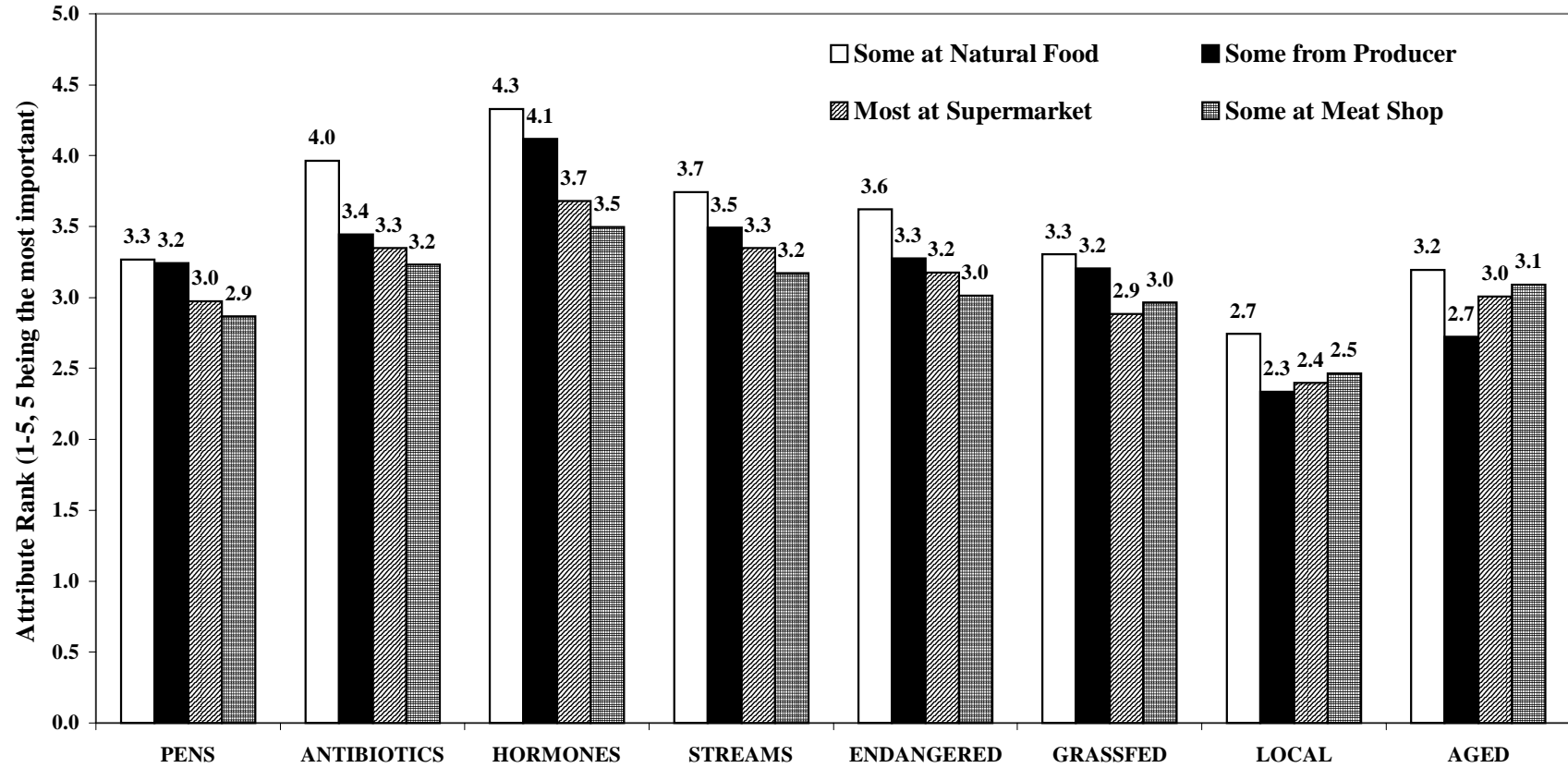


Figure 5: Average Attribute Rankings across Consumers' Shopping Behavior: Classified by Frequency and Store Choice



References

- Baker, Gregory and Crosbie, Peter. Consumer Preferences for Food Safety Attributes: A Market Segment Approach. *Agribusiness*. 1994; 10(4):319-24.
- Byrne, Patrick J.; Bacon, J., and Toensmeyer, Richard. Pesticide Residue Concerns and Shopping Location Likelihood. *Agribusiness*. 1994; 10(5):491-501.
- Caswell, Julie and Mojduszka, Eliza. Using Informational Labeling to Influence the Market for Quality in Food Products. *American Journal of Agricultural Economics*. 1996; 78(5):1248-53.
- Duram, L. A. Organic Agriculture in the United States: Current Status and Future Regulation. *CHOICES*. 1998; 13(2):34-38.
- Grannis, J. and D. Thilmany. Marketing Natural Pork: An Empirical Analysis of Mountain Region Consumers. Submitted to *Agribusiness*. 2000.
- Huang, Chung. Consumer Preferences and Attitudes Towards Organically Grown Produce. *European Review of Agricultural Economics*. 1996; 23:331-342.
- Misra, Sukant; Gotegut, Donna, and Clem, Klyes. Consumer Attitude Toward Recombinant Porcine Somatotropin. *Agribusiness*. 1997; 13(1):11-20.
- Moon, Wanki and Ward, Ronald. Effects of Health Concerns and Consumer Characteristics on U.S. Meat Consumption. American Agricultural Economics Association National Meetings; Nashville, TN.
- USDA, Agricultural Marketing Service. National Organic Program; Proposed Rule. *Federal Register* 2000; 65(49):13511-13658.
- Unterschultz, James; Quagraine, Kwamena, and Veeman, Michelle. Effects of Product Origin and Selected Demographics on Consumer Choice of Red Meats. *Canadian Journal of Agricultural Economics*. 1998; 46(2):201-19.
- van Ravensway, Eileen and Hoehn, John. Consumer Willingness to Pay for Reducing Pesticide Residues in Food: Results of a Nationwide Survey. Michigan Agricultural Experiment Station Project #3800. 1991.
- Zarkin, Gary and Anderson, Donald. Consumer and Producer Responses to Nutrition Label Changes. *American Journal of Agricultural Economics*. 1992; 74(5):1202-1207.