

Food Accessibility and Pricing In a Rural Setting

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Abstract:

Rising obesity rates have sparked a great deal of interest in availability of healthy food options. Several studies examine the differences in healthy food accessibility between grocery and convenience stores, but these studies are generally restricted to urban or suburban areas. This study examines the availability and cost of healthy foods in grocery stores (n=6) and convenience stores (n=6) within the rural community of Mount Vernon, OH. Forty food items were surveyed in grocery and convenience stores and three hypotheses were tested: 1) food items at grocery stores are less expensive than food items found at convenience stores, 2) grocery stores are expected to have a greater variety of healthy foods relative to convenience stores, and 3) healthy foods, e.g. fresh produce, are more expensive than less healthy food choices in both grocery and convenience stores. Produce was found only at grocery stores and was significantly more expensive than other food items, with a p value of 0.046. Foods at convenience stores were not significantly more expensive than food items at grocery stores, with a p value of 0.239. Finally, convenience stores stocked almost no healthy food options. While most people in the Mount Vernon area seem to have access to grocery stores, which seem obviously more preferable for their variety and savings, some may be forced to buy food from convenience stores due to issues of transportation and time.

Introduction:

According to the Center for Disease Control, in 2008, only one state had an obesity rate of less than 20%, Colorado at 18.5%, and these rates range all the way up to Mississippi at an astounding 32.8%. This problem is partially due to the fact that low income families generally cannot afford healthier foods in urban environments, as many of them actually have to pay 3% to 37% more for groceries in their local community compared to suburban residents (Morland et al. 2001). Some of the areas have been labelled "food deserts", which can be defined as "areas characterized by poor access to healthy and affordable food" (Beaulac et al. 2009). Studies on food accessibility had been performed in the past, but only examinations within urban settings, where food deserts are thought to be most commonly found. Knox County's rural setting allows us to examine the problem in a different context to see if food deserts exist in lower income rural settings. As of 2008, over 8,500 residents of Knox County were receiving food stamps, approximately 14.4% of the population of Knox County. A total of 22.2% of the population of Knox County relied on some form of income support, according to the Ohio Department of Job and Family Services (2009). With a high proportion of the population using food stamps, money becomes the most limiting factor for many families in food accessibility. In this environment, we would expect to see the following issues for food accessibility: 1) food items at grocery stores will be less expensive than food items found at convenience stores, 2) grocery stores will have a greater variety of healthy foods relative to convenience stores, and 3) healthy foods, e.g. fresh produce, will be more expensive than less healthy food choices in both grocery and convenience stores.

Materials and Methods:

Following protocols established in previous research on health food availability (Franco et al, Glanz et al, Liese et al, etc.) a survey of foods considered healthy and unhealthy was constructed. Healthy food was identified using the guidelines provided by the U.S Department of Health and Human Services. Healthy foods included items such as fresh fruits and vegetables, while unhealthy choices included hot dogs, low fiber breads, and high fat ground beef. Permission for research was obtained and data was collected from all 6 grocery stores in the Mt. Vernon area and 6 of 9 convenience stores in the area. The prices of 41 separate items were examined, 19 different types of fresh produce and 22 other items were selected. These items were chosen through compiling the lists of food items used in studies performed by Glanz et al. and Liese et al. (2007; 2007).

Data was examined using SPSS statistical software. Box-plots were used to examine the basic shape of data and comparative T-tests were used to determine the statistical significance of differences in pricing of food items.

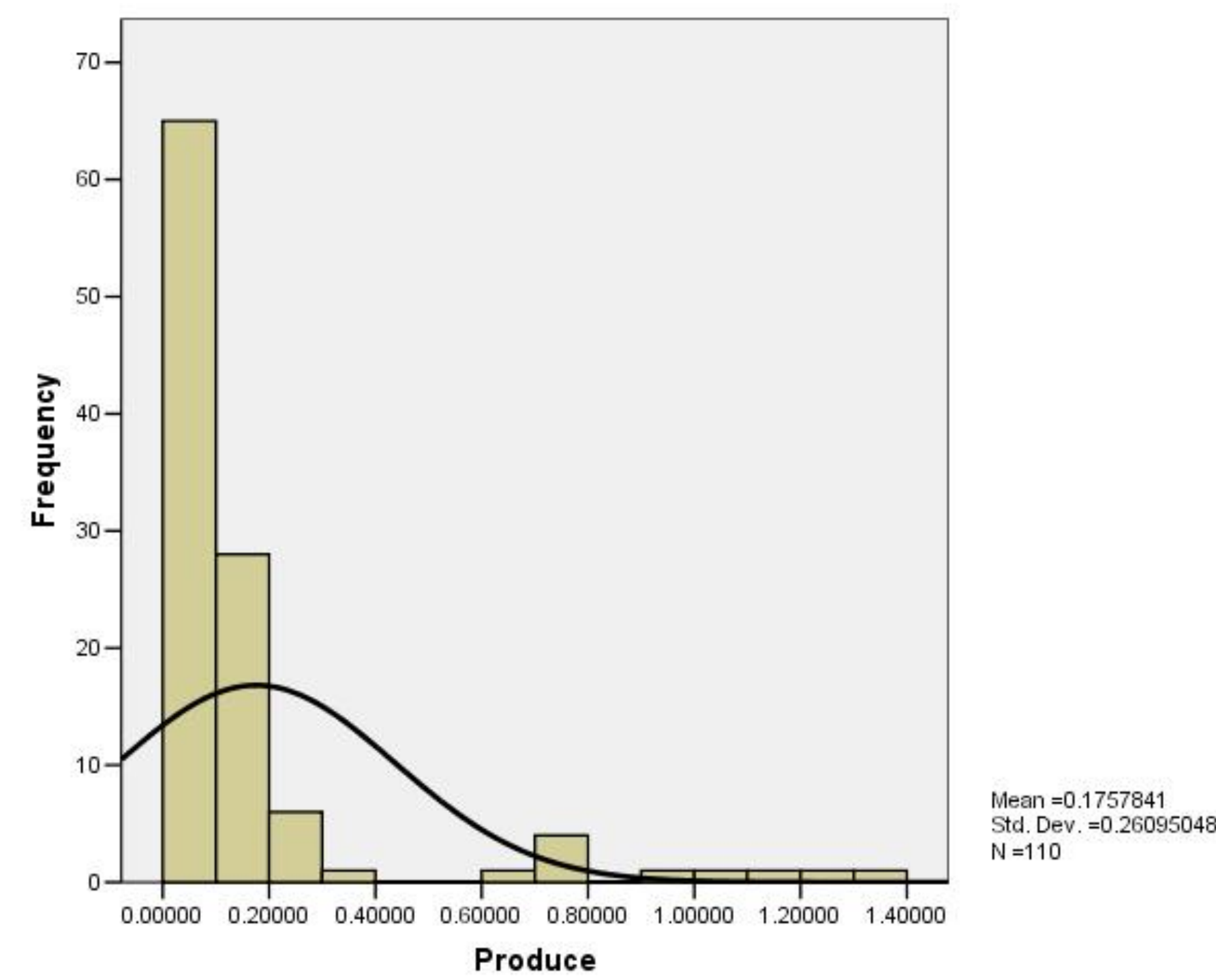


Figure 1

	Grocery Store	Convenience Store	p value
Fresh Fruit	0.14037	N/A	N/A
Fresh Vegetables	0.20882	N/A	N/A
Milk	0.02165	0.02204	0.804
Meat and Eggs	0.15145	0.22219	0.266
Hot Dogs	0.12380	0.13688	0.758
Canned Seafood	0.17120	0.31800	0.004
Beverages	0.05071	0.06089	0.440
Bread	0.21135	0.12365	0.374
Chips	0.24738	0.35305	0.190

Table 1 shows the mean values for different categories of food items in grocery and convenience stores and the p values associated with each mean difference.

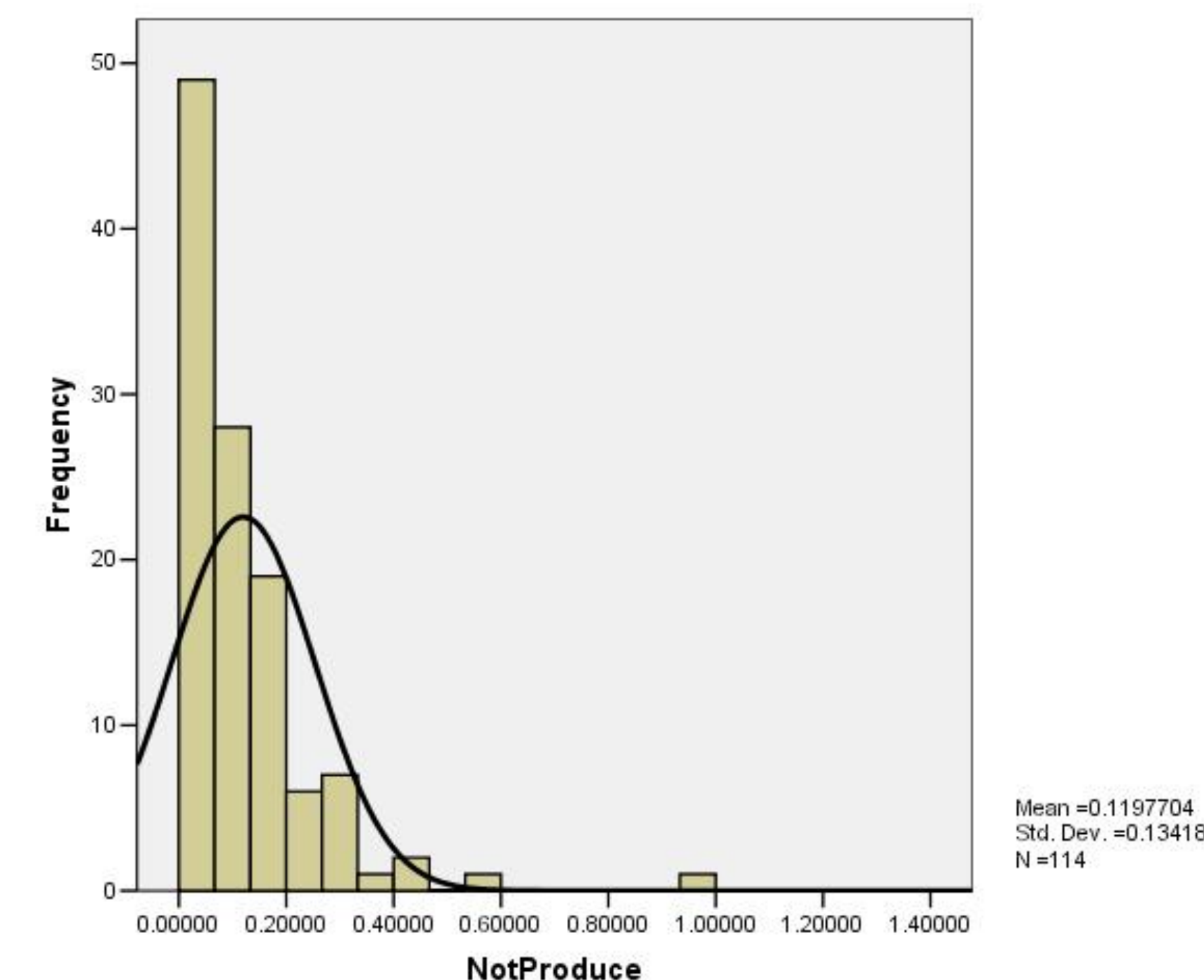


Figure 2

Figure 1 shows the frequency of price per oz of produce, while Figure 2 shows the frequency of price per oz of the other food items examined.



Results

In the Mt. Vernon area, there are only 6 grocery stores and 8 convenience stores. Healthier food was extremely scarce in convenience stores, as no convenience store examined carried any fruits, vegetables, or high fiber bread. Only one convenience store stocked skim or low fat milk and only one convenience store carried low fat chips. Prices in convenience stores were generally higher than prices in grocery stores, but were not significantly different (p=0.239). The difference in price between produce and non-produce in grocery stores was significant (p=0.046). Healthier options were usually higher priced and less accessible. Fruit juice was significantly (p=0.033) more expensive than soda and while hot dogs were extremely common, low fat hot dogs could only be found in two locations, at significantly (p=0.01) increased price.

Discussion:

As expected, many more healthy food options exist at grocery stores, in fact, none of the convenience stores surveyed had any fresh produce, despite the survey occurring at the height of the agricultural season for Knox County. Produce was also significantly more expensive than non-produce items. Prices for food items were higher in convenience stores, but not significantly so. As long as one has access to the 6 grocery stores in the Mt. Vernon/Gambier area, healthy food options are available. Access to the grocery stores, however, is contingent on transportation. Public transportation is not widely available in the area, so if one has to rely on a convenience store for access to food, their ability to access healthy food options greatly diminishes. Low income housing is currently under construction in the areas surrounding the main commercial centers of Mt. Vernon, and this may play a part in increasing accessibility to those areas in the future.



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