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# Food Melt in Consumer Food Environments in Low-income Urban Neighborhoods

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## Abstract

**Objectives:** We systematically evaluated changes in availability, price, and quality of perishable food items from the beginning to the end of the month in low-income, urban neighborhoods.

**Methods:** The sample included grocery stores or supermarkets in Cleveland, Ohio, within neighborhoods with >30% of population receiving food assistance. We collected data for 2 sequential months during the first and fourth weeks of each month. Two coders evaluated stores, collecting measures of availability, price, and quality for 50 items. We examined difference in

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Human Subjects Statement
The study was determined to be exempt by the Institutional Review Board at Case Western Reserve University (IRB-2012-296).

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number and proportion of items available at the beginning of the month (BOM) to items remaining available at the end of the month (EOM), as well as quality and price of those items.

**Results:** Across 48 stores, availability at EOM was lower than BOM; as store size increased, reduction in availability (ie, food melt) was significantly ($p < .01$) less pronounced. Overall, items became less expensive at the EOM whereas quality remained consistent; we noted no statistically significant differences by store type for price or quality.

**Conclusions:** Food melt differentially affects individuals in neighborhoods without grocery stores. Findings reveal composition of food environments is dynamic rather than static, influencing food-purchasing choices among low-income consumers.

## Keywords

low-income; urban; food environment; food stores; SNAP; access

With high obesity rates, there is growing interest in understanding the influence of food environments on food shopping and dietary behaviors.[1] Food deserts, defined by the United States Department of Agriculture (USDA) as low-income census tracts with access to a nearest grocery store greater than 0.5 mile in an urban setting and greater than 10 miles in a rural setting,[2] have been explored as a potential contributor to obesity given trends showing that low-income communities have higher rates of obesity compared to higher income counterparts.[3] Additionally, re-searchers have examined the role of the consumer food environment, defined as the characteristics of food stores such as availability and price where individuals shop.[4] In examining the consumer food environment, low-income communities consistently have fewer supermarkets and less availability of healthy foods within those stores.[5–9] The presence of nutritious food stores is not always associated with population diet or weight.[10,11] However, there is an association between availability of healthy foods within a store (ie, consumer food store environment) and dietary outcomes, such as fruit and vegetable consumption,[12] even among individuals receiving Supplemental Nutrition Assistance Program (SNAP) benefits.[1]

Researchers have examined shopping and consumption patterns among SNAP recipients over the course of a month.[13–17] This focus on change over the month resulted because many states (30 states as of 2017) distribute food assistance benefits in one allotment at the beginning of the month.[18] Among individuals receiving food assistance once per month, there are notable variations in both shopping behavior and dietary consumption from the first week after receiving benefits to the last week of benefits (ie, week prior to receiving the next month of benefits).[13–15] Food expenditures tend to be highest the first few days after benefits are distributed and are lower for the remainder of the month,[14] and among households shopping infrequently, mean caloric intake declines significantly between the first and last week of the month.[15] Moreover, quantity of food purchased varied over the month whereas quality of the food purchased did not.[14,16] This phenomenon of food expenditures being greater immediately following distribution of benefits has been referred to as the “food stamp cycle.”[15] Economists have attributed this variation in shopping and consumption to the distribution of the benefits at a single time during the month and have formulated a

theory of short-run impatience leading to a greater expenditure of benefits early in the month when benefits are administered.[14]

SNAP beneficiaries are more likely to observe a healthier diet that includes fruits and vegetables when food stores offer more healthy food choices,[1] but it is unclear how the food stamp cycle influences this phenomenon. Given that behavior is a function of the environment,[19] temporal changes in the consumer food environment throughout a month may limit food choice, and thereby, influence food shopping and consumption patterns. Whereas prior research illuminated inconsistencies in food shopping and consumption over the course of a month among people receiving federal nutrition assistance benefits, there is limited research focused on contemporaneous changes within the consumer food environment that may be influencing food choice. Therefore, in this exploratory research, we systematically examined whether availability and quality of perishable food items decreased and prices increased from the beginning of the month (BOM) to the end of the month (EOM) in low-income neighborhoods with high rates of SNAP beneficiaries.

## METHODS

### Study Population

This study was conducted in Cleveland, Ohio. According to 2010 Census data, Cleveland's population was 396,815, with approximately 32.6% of households living below the federal poverty level and 28.5% receiving Supplemental Nutrition Assistance Program (SNAP) benefits.[20] Statistical planning areas (SPAs) assigned by the Cleveland City Planning Commission in 2013 were used as a proxy for neighborhood; data for each of the 37 SPAs were assessed to determine their inclusion in the study. SPAs with ≥30% households receiving SNAP benefits were selected for inclusion in this study (N = 28).[20]

Stores were identified using the Cleveland Food Retail Database established by the authors; methodology can be found elsewhere.[21] Briefly, the database was established in summer 2012 by using a systematic ground-truthing approach in each neighborhood, documenting the location of all food retail locations, and completing a brief store audit in each to ascertain types of food sold. Within the 28 neighborhoods, there were 432 food retail locations. Data collection for this study was limited to stores that carried at least one fruit, one vegetable, and any kind of milk (eg, whole, 2%, etc.) in 2012, yielding 67 food stores spanning 25 of the neighborhoods; 3 neighborhoods did not have any stores meeting these criteria. Of the stores excluded, 22 were pharmacies, 93 were gas stations, 43 were dollar/variety convenience stores (mostly selling non-food items) and 207 were corner stores selling mostly food items. Using definitions adapted from Han et al,[22] stores were further classified as supermarkets (had at least 6 fruits and 6 vegetables, raw meat, bakery items, and 3 types of milk), large grocery stores (at least 3 fruits and 3 vegetables, raw meat or bakery, and low-fat milk), and small grocery stores (at least 1 fruit and 1 vegetable and any type of milk).

Of 67 stores identified for inclusion in the study based on data from 2012, by 2013 15 stores were excluded after the initial audit because they no longer carried at least one fruit, one vegetable, and any kind of milk (eg, whole, low-fat) at baseline, 3 stores were closed, and

one store refused to allow the teams to complete the audit. The final sample included 48 food retailers open in 2013: supermarkets (N = 12), large grocery stores (N = 21), and small grocery stores (N = 12).

## Data Collection

Six research assistants were trained in the data collection tool and protocol. The 4-hour training consisted of an extensive review of the data collection form and protocols, followed by 3 in-store assessments. The 6 research assistants conducted the training assessments, and answers were compared immediately following the assessment to check for agreement; high agreement (>90%) was reached after 3 stores. Research assistants were blinded to the specific aims of the study throughout the training, data collection, and coding to reduce bias.

Data were collected at each store at the beginning and end of 2 sequential months in 2013 for a total of 4 observations of each store (March 2–6, March 23–27, April 1–5, and April 23–26), conducted between 9:30am and 5:30pm. Data collection was scheduled to ensure at least 3 weeks between visits at the beginning of the month and the end of the month. Data collected in the second month were used as a validation sample to repeat the analyses, particularly to account for the variability of restocking practices. Research assistants conducted audits in pairs to increase quality of data and to ensure safety. Upon entering a store, data collectors approached the store manager to explain the procedures of the data collection and obtain permission to assess the store.

## Measurement Tool

We adapted the Nutrition Environment Measures Survey for Stores (NEMS-S) for use in this project.[23] As we were most interested in fresh and non-processed perishable items, we modified the NEMS-S to fit our research goals, excluding modules for hot dogs, frozen dinners, baked goods, and baked chips. Additional varieties of meat were added and beverage options were limited to milk and 100% juice. Overall, 50 individual items (described below) were assessed at each store visit.

## Measures

Availability was measured as a count of items available at the beginning and at the end of the month. These items were assigned to one of 4 groups for further analyses: produce items (14 total: apples, bananas, carrots, celery, cucumbers, grapes, lettuce, melons, onions, oranges, peppers, potatoes, sweet potatoes, tomatoes); staple goods (14 total: half-dozen eggs, dozen eggs, other-sized eggs, white bread, wheat bread, other types of bread, half- and whole gallon skim milk, 2% milk, whole milk, and 100% juice); meat items (20 total: family- and individual-sized fresh or frozen chicken, beef, and turkey); and junk foods (2 total: more than 20 chips and more than 20 sugar-sweetened beverages).

To measure decrease in availability, a phenomenon we refer to as “food melt” throughout this paper, we calculated the proportion of food items available at the beginning of the month that were no longer available by the end of the month. This proportion was categorized into one of 4 groups (0%−10%, 10%−25%, 25%−50%, and 50%+) with the greatest proportion representing more food melt (ie, 50%+ indicates that more than half of

the items that were available at the beginning of the month are not available at the end of the month).

The lowest regular (ie, non-sale) price of any variety was recorded for all items at both time points during the month. Prices of fruits and vegetables were recorded by piece or by pound. To convert the price of produce from price per piece to price per pound, research assistants visited 5 local stores not included in the study sample. At each store, they weighed a piece of each type of produce 5 times (ie, 25 total measurements for each produce type) to establish an average weight for each produce type. These average weights were used to calculate price per pound. For example, if the average weight of a pepper was 0.25 pounds, and the price per pepper was $1, we calculated the price per pound as $1 divided by 0.25 pounds, or $4 per pound.

Change in price was represented by a comparison of food prices of items available both at the beginning of the month and the end of the month. Changes in price were categorized into one of 3 groups to illustrate items that had no price change, items that became less expensive, and items that became more expensive.

For fresh fruits and vegetables, *quality* was rated as acceptable (ie, peak condition, good color, fresh, firm, and clean) or unacceptable, with the rating reflecting the quality of a majority of the product. *Quality* for all other food items was based on the expiration date, where an acceptable rating was based on having an expiration date that had not yet passed.

Similarly, change in quality was calculated as a comparison of the quality of items that were available at both the beginning and end of the month. Measures of quality were categorized as no change in quality, quality became worse, or quality improved.

### Statistical Analysis

Primary analysis was conducted on the data collected in March (Times 1 and 2). We stratified all results by store type to observe the proportion of change in availability, price, and quality of foods available at the beginning to the end of the month among various food retailers. Most variables were categorized into groups based on their proportion, summarized with frequency counts and percentages, and assessed using Fisher's Exact test to see if store type was associated with a greater proportion of change. Continuous variables, such as the number of food items available at the beginning of the month, were summarized using means and standard deviations and analyzed using a Welch's one-way ANOVA. Data were analyzed using SAS (9.4); statistical significance was determined as $p < .05$. We used data collected in April (Times 3 and 4) to validate findings.

## RESULTS

On average, stores carried 12 produce items, 11 staple goods, 6.6 meat options, and both junk food items (ie, more than 20 bags of chips and more than 20 bottles of soda pop). As expected, availability varied across classification types – supermarkets carried more items within each food category, produce items, staple goods, and meat items, than the large grocery stores, which carried more items than small grocery stores (Table 1).

Table 2 shows that all stores experienced some degree of food melt, indicating less availability of foods at the EOM compared to the BOM. One-third (33.4%) of all food stores experienced less than 25% food melt, 45.8% of all stores experienced a food melt between 25% and 50%, and 20.8% experienced 50% or greater food melt. This means that for one out of 5 stores, half of the items that were available at the BOM were no longer available at the EOM. However, food melt was significantly associated ($p < .01$) with the type of store, with 50% of small grocery stores experiencing a 50%+ reduction in availability, as compared to 9.5% of large grocery stores and 0% of supermarkets.

In observing price, there was wide variation between the BOM and EOM, indicating few items remained the same price. Nearly 63% of items that were available at the BOM were less expensive at the EOM, and 33.3% became more expensive at the EOM. Price differences were not significantly different by store type (data not shown).

Quality remained the same for 52.1% for items that were available at both times of the month, 22.9% had better quality, and 25.0% had poorer quality by the EOM. Differences were not statistically significant across store types (Table 2).

Next, we explored more about the characteristics of food melt. To obtain a more granular perspective of how food melt may differ for different food options, we stratified food melt by the 4 food categories. As Table 3 shows, among the 4 food categories, staple goods and meat items were the most likely to have a food melt at the highest level (50%+). Overall, a 50%+ food melt of staple goods and meat products was observed in 39.6% and 37.8% of all stores, respectively. Although sample sizes were too small to analyze statistically, we noted differences by store type. For 100% of small grocery stores, 14.3% of large grocery stores, and 8.3% of supermarkets, we observed 50%+ food melt for staple goods. A 50%+ food melt for meat items was noted in 50% of small grocery stores, compared to 42.9% of large grocery stores, and 25% of supermarkets. Within the produce category, 53.3% of small grocery stores, 14.3% of large grocery stores, and 0% of supermarkets were observed to have a 50%+ food melt. Notably, no junk food (ie, chips and soda) melt was observed within any store – all stores that had junk food at the BOM had the same amount of junk food items at the EOM.

There were also interesting trends among stores where price changed among the different food categories (Table 3). Over 50% of both small and large grocery stores had produce that was less expensive at the end of the month compared to 75% of supermarkets. In terms of staple goods, most small grocery stores (77.8%) had staple goods become less expensive, whereas the opposite was true for large grocery stores and supermarkets, where most stores saw items become more expensive. Across all stores, there was a greater proportion of stores where meat became less expensive, although there were overall fewer meats available to begin with in smaller stores.

Table 3 shows that supermarkets consistently had no change in quality among all food categories. Within meat items, there was also little difference in quality among the different stores. Between both small grocery and large grocery stores that experienced changes in quality, most stores (77.8% and 66.7%, respectively) had quality improvement for their

produce items. In contrast, for staple goods 80.0% of large grocery stores experienced a quality reduction and small grocery stores were equally as likely to have poorer quality staples as they were to have better quality items.

All analyses were repeated using the validation sample and the patterns of association were the same and all significant associations held. These results are not presented.

## DISCUSSION

We found evidence supporting the existence of food melt in low-income neighborhoods with high SNAP participation. Food melt, as evidenced by a decline in food availability, was observed across all 3 store types including small grocery stores, large grocery stores, and supermarkets. However, food melt was most pronounced among small grocery stores, defined as stores selling the least amount of nutritious food products. Notably, all but one supermarket included in this study experienced at least a 10% decline in food availability from the BOM to the EOM. These findings indicate the consumer food environment may be constraining SNAP purchasing behaviors within even the most robust food retailer establishments (ie, supermarkets) due to food availability changes from the BOM to the EOM.

Notably, the price of food items available in stores, including produce and meat, declined over time. This finding was unexpected because formative community feedback sessions about the food melt phenomenon pointed to increasing prices. Price declines may have been a strategic economic response by store managers to motivate shopping and offset a decline in demand due to the food stamp cycle. Research on the food stamp cycle highlights the short-run economic impatience of SNAP recipients. With this phenomenon, benefits are spent more within the first 3 days of receipt than at any other time of the month, a decline that continues through the remainder of the month by as much as 32%.[14–16] This differential spending directly correlates to patterns in consumption that Shapiro[16] posited may be offset through substantial discount pricing.

Food quality is inherently linked to food safety, which, in turn, influences consumer food choice and demand.[24] The objective component of our food quality measure focused on expiration date, a key component to food safety in retail. Stores carrying expired food items are out of compliance with federal food and safety guidelines, leaving retailers open to punitive action. Additionally, consumers may be less likely to purchase these products. This may explain why no significant differences in the quality of products available were observed across stores from the BOM to the EOM.

The store types observed in this study may inherently differ from each other in stocking standards and logistics. First, supermarkets have more storage space compared to small grocery stores to hold excess stock that may be brought into the storefront. Second, small stores may have a less consistent system for product acquisition compared to supermarkets. Researchers have found that owners of small food retail venues base their product stocking decisions on customer request, open freezer/refrigerator space, and perceived profitability.[25,26] Furthermore, in smaller stores, there was a reliance upon manufacturer

delivery for less nutritious salty snacks whereas store owners purchased produce themselves (self-stocking).[26] Inconsistency in stocking standards may explain why items were not available towards the end of the month in smaller stores and why a majority of small grocery stores had several items priced as less expensive – suggestive of discount pricing either to eliminate unprofitable items and items nearing expiration or to increase market demand.

To understand the implications of these data, it is important to recognize that residents of these high poverty, high SNAP neighborhoods experience a paucity of healthy food options and are inundated with myriad unhealthy food options. Of the 432 food retail locations identified in these neighborhoods in 2012, only 15.5% met the minimum criteria of carrying one fruit, one vegetable, and milk, and 11.1% carried these items consistently at baseline. This means that there were less than 2 food retailer locations per neighborhood that carried a minimum threshold of healthy food options – not including the 3 neighborhoods with no healthy food retail location. Moreover, among the stores that carried the minimum threshold of healthy food items, the most consistently available foods among all food store types were unhealthy products, including chips and soda. This pattern of nutritious food availability is not unique to Cleveland, Ohio, and has been observed in other settings.[5–9] Reduction in the availability of nutritious foods among the food retailer locations offering these products has the potential to restrict spatial access to nutritious food substantially for residents in high SNAP neighborhoods.

Other researchers have explored the consumer food environment using in-depth interviews with storeowners. Gravlee et al[27] identified several themes that influenced storeowners' decisions to carry healthier items in their stores. Not surprisingly, storeowners and managers indicated that consumer demand influenced foods stocked in the stores, but oftentimes business goals of making a profit conflicted with offering healthier and perishable items. Moreover, there was notable difficulty in selling perishable items given the risk the food items might not sell before expiring. Store managers and owners also noted the constraints imposed by poverty and the belief that higher costs reduce demands for healthy, perishable food items, and implicitly acknowledged the food stamp cycle pattern of heavy shopping at the beginning of the month and reduction in sales of these items later in the month.

It is also important to understand individual shopping behaviors and patterns, including frequency of shopping, types of stores that shoppers use, and typical foods purchased, all of which may have contributed to the observed food melt phenomenon. Locally collected, population-level survey data indicate that Cleveland residents living at the lowest income levels (<$15K) shop at a grocery store only once per month.[28] At the time these data were collected, SNAP benefits were distributed over a 10-day period at the BOM. Thus, SNAP recipients may have been more likely to shop at grocery stores at the BOM when SNAP benefits were released, and then shop at smaller neighborhood stores (ie, small grocery stores or other small stores) in the middle and end of the month. This may explain why we observed more food melt in the small grocery stores.

There are notable limitations to this study. First, this study focused on 48 perishable food items selected by the research team as items commonly purchased or in alignment with SNAP guidelines. We assumed these would be most difficult to maintain on shelves and

most prone to the food melt phenomenon; we included 2 non-perishables (chips and soda) for comparison purposes. Whereas canned and frozen produce can be healthy options more easily maintained on store shelves, we cannot comment on the change in availability of other food items from the beginning to the end of the month that were not captured in our audits. Also, we collected the first audit over the course of the first week of the month. By conducting audits after SNAP benefits had been dispersed, we may not have audited a store when food was at initial maximum capacity, thereby minimizing our ability to document changes in availability, price, or quality.

Our end-of-the-month store audits occurred over the course of the fourth week of the month (after the 20$^{th}$ of the month). We did not collect data on store restocking practices. Stores may restock at the end of the month to prepare for the influx of shoppers at the start of the next month; our later audits may have occurred after items had been restocked, potentially influencing detection of changes in availability, price, and quality.

## Implications for Research and Practice

The rigorous methods developed in this study could be used in other geographic regions to examine food melt, particularly in communities with high SNAP utilization. Given that environment influences behavior, the shifting availability of nutritious perishable food items over the course of a month may have a negative impact on the shopping practices of SNAP beneficiaries.

At the time of this study, the state of Ohio still followed a distribution schedule of less than 10 days at the beginning of the month. Since the time of this study, the Ohio guidelines have been updated and benefits are now distributed over 19 days. This staggering of benefits may dilute the possibility of observing food melt in these same stores today. However, 30 US states and the District of Columbia still distribute benefits over a period of 10 days or less, and 8 states distribute on only one day each month.[18] Thus, the food melt phenomenon may be more likely to persist in these states, particularly in areas of concentrated SNAP utilization.

Future research should include an expanded sample of stores to allow for more rigorous comparisons of food melt by store type. Furthermore, it would be valuable to replicate this study in other communities where SNAP distribution varies both in period of time in the month (eg, distributed one day or distributed throughout the month) as well as number of times per month (eg, once a month vs twice a month). Future studies should also integrate methods that allow a differentiation between the impact of shopping practices and restocking practices on availability, price, and quality of perishable and other healthy items. This may allow researchers and policymakers to disentangle the complexity of store supply and shopper demand, and ultimately, inform best practices for promoting healthy consumer food environments.

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**Table 1**

Contextual Characteristics of Food Stores by Type (N = 48)

| | Overall | Small Grocery Store | Large Grocery Store | Supermarket | |
|---|---|---|---|---|---|
| | (N = 48) | (N = 15) | (N = 21) | (N = 12) | p-value[b] |
| **Poverty Rate, N (%)** | | | | | **0.74** |
| <30% | 26 (54.2) | 8 (53.3) | 12 (57.1) | 6 (50.0) | |
| 30%−49.9% | 20 (41.7) | 7 (46.7) | 7 (33.3) | 6 (50.0) | |
| 50%+ | 2 (4.2) | - | 2 (9.5) | - | |
| **Food Stamp, N (%)** | | | | | **1.00** |
| 30%−49.9% | 37 (77.1) | 12 (80.0) | 16 (76.2) | 9 (75.0) | |
| 50%+ | 11 (22.9) | 3 (20.0) | 5 (23.8) | 3 (25.0) | |
| **Food Availability at Baseline, mean (SD)[a]** | | | | | |
| Produce | 12.0 (3.2) | 8.6 (3.6) | 13.3 (1.1) | 14.0 (−) | < .01 |
| Staple Goods | 11.0 (2.6) | 8.8 (1.5) | 11.1 (2.4) | 13.6 (0.8) | < .01 |
| Meat | 6.6 (2.3) | 4.3 (1.9) | 6.1 (2.1) | 8.3 (1.6) | < .01 |
| Junk Food | 2.0 (0.2) | 1.9 (0.4) | 2.0 (−) | 2.0 (−) | .100 |

*a:* Total possible available items among each group: 14 produce items (apples, bananas, carrots, celery, cucumbers, grapes, lettuce, melons, onions, oranges, peppers, potatoes, sweet potatoes, tomatoes), 14 staple goods (different sizes/varieties of eggs, milk, bread, juice), 20 meat options (different sizes/varieties of fresh and frozen chicken, ground beef, and ground turkey), and 2 junk food options (more than 20 bags of chips, more than 20 soda pops)

*b:* Fisher's Exact test was for examining differences for poverty rate and food stamp population and Welch's One-Way ANOVA was used for examining food availability at baseline.

**Table 2**

Measures of Food Melt—Availability, Price, and Quality—by Store Type (N = 48)

| | Overall (N = 48) | Small Grocery Store (N = 15) | Large Grocery Store (N = 21) | Supermarket (N = 12) | p-value[d] |
|---|---|---|---|---|---|
| **Availability, N (%)[a]** | | | | | **< .01** |
| 0–10% | 1 (2.1) | - | - | 1 (8.3) | |
| 10–25% | 15 (31.3) | - | 6 (28.6) | 9 (75.0) | |
| 25–50% | 22 (45.8) | 7 (43.8) | 13 (61.9) | 2 (16.7) | |
| 50%+ | 10 (20.8) | 8 (50.0) | 2 (9.5) | - | |
| **Price, N (%)[b]** | | | | | **.961** |
| More Expensive | 16 (33.3) | 5 (33.3) | 7 (33.3) | 4 (33.3) | |
| No Change | 2 (4.2) | - | 1 (4.8) | 1 (8.3) | |
| Less Expensive | 30 (62.5) | 10 (66.7) | 13 (61.9) | 7 (58.3) | |
| **Quality, N (%)[c]** | | | | | **.318** |
| Better Quality | 11 (22.9) | 6 (40.0) | 4 (19.1) | 1 (8.3) | |
| No Change | 25 (52.1) | 7(46.7) | 10 (47.6) | 8 (66.7) | |
| Worse Quality | 12 (25.0) | 2 (13.3) | 7 (33.3) | 3 (25.0) | |

*a:* Availability: Proportion of items that were available at the beginning of the month that were no longer available at the end of the month

*b:* Price: Price comparison of items available both at the beginning of the month and the end of the month

*c:* Quality: Quality comparison of items available both at the beginning of the month and the end of the month

*d:* Fisher's Exact test was used to examine differences between store type.

**Table 3**

Measures of Food Melt by Food Category and Store Type

| | Overall | Small Grocery Store | Large Grocery Store | Supermarket |
|---|---|---|---|---|
| | (N = 48) | (N = 15) | (N = 21) | (N = 12) |
| **Produce Items** | | | | |
| ***Availability*** | | | | |
| No melt | 4 (8.3) | - | 1 (4.8) | 3 (25.0) |
| 1%−10% | 6 (12.5) | - | 2 (9.5) | 4 (33.3) |
| 10%−25% | 11 (22.9) | 2 (13.3) | 5 (23.8) | 4 (33.3) |
| 25%−50% | 16 (33.3) | 5 (33.3) | 10 (47.6) | 1 (8.3) |
| 50%+ | 11 (22.9) | 8 (53.3) | 3 (14.3) | - |
| ***Price*** | | | | |
| Less Expensive | 23 (57.5) | 7 (53.8) | 10 (52.6) | 6 (75.0) |
| More Expensive | 17 (42.5) | 6 (46.2) | 9 (47.4) | 2 (25.0) |
| ***Quality*** | | | | |
| Better Quality | 9 (75.0) | 7 (77.8) | 2 (66.7) | - |
| Worse Quality | 3 (25.0) | 2 (22.2) | 1 (33.3) | - |
| **Staple Goods** | | | | |
| ***Availability*** | | | | |
| No melt | 4 (8.3) | - | 1 (4.8) | 3 (25.0) |
| 1%−10% | 6 (12.5) | - | 3 (14.3) | 3 (25.0) |
| 10%−25% | 10 (20.8) | - | 6 (28.6) | 4 (33.3) |
| 25%−50% | 9 (18.6) | - | 8 (38.1) | 1 (8.3) |
| 50%+ | 19 (39.6) | 15 (100.0) | 3 (14.3) | 1 (8.3) |
| ***Price*** | | | | |
| Less Expensive | 18 (45.0) | 11 (78.6) | 4 (22.2) | 3 (37.50 |
| More Expensive | 22 (55.0) | 3 (21.4) | 14 (77.8) | 5 (62.5) |
| ***Quality*** | | | | |
| Better Quality | 3 (27.3) | 2 (50.0) | 1 (20.0) | - |
| Worse Quality | 8 (72.7) | 2 (50.0) | 4 (80.0) | 2 (100.0) |
| **Meat Items** | | | | |

| | Overall | Small Grocery Store | Large Grocery Store | Supermarket |
|---|---|---|---|---|
| | (N = 48) | (N = 15) | (N = 21) | (N = 12) |
| ***Availability*** | | | | |
| No melt | 1 (2.7) | 1 (25.0) | - | - |
| 1%−10% | - | - | - | - |
| 10%−25% | 3 (8.1) | - | 2 (9.5) | 1 (8.3) |
| 25%−50% | 19 (51.4) | 1 (25.0) | 10 (47.6) | 8 (66.7) |
| 50%+ | 14 (37.8) | 2 (50.0) | 9 (42.9) | 3 (25.0) |
| ***Price*** | | | | |
| Less Expensive | 19 (59.4) | 2 (66.7) | 11 (61.1) | 6 (54.5) |
| More Expensive | 13 (40.61) | 1 (33.3) | 7 (38.9) | 5 (45.5) |
| ***Quality*** | | | | |
| Better Quality | 2 (28.6) | - | 1 (25.0) | 1 (50.0) |
| Worse Quality | 5 (71.4) | 1 (100.0) | 3 (75.0) | 1 (50.0) |
| **Junk Food** | | | | |
| ***Availability*** | | | | |
| No melt | 44 (100.0) | 13 (100.0) | 19 (100.0) | 12 (100.0) |

Produce items include apples, bananas, carrots, celery, cucumbers, grapes, lettuce, melons, onions, oranges, peppers, potatoes, sweet potatoes, tomatoes; staple goods include eggs, milk, bread, juice; meat items include fresh and frozen chicken, ground beef, and ground turkey; junk foods include chips and soda