Perceived Barriers to Purchasing Healthy Foods vs. Access in Underserved Areas across the Northeast

Alessandro Bonanno1,2, Lauren Chenarides1, Anne Palmer3, Kate Clancy3

1The Pennsylvania State University, University Park, PA
2Wagenius University, The Netherlands
3Johns Hopkins University, Baltimore, MD

Introduction

- In the U.S., many households are unable to meet their dietary needs for leading an active and healthy lifestyle (USDA, 2010).
- Research assessing community-level constraints concerning access to healthy and nutritious food for low-income and disadvantaged populations is plentiful.
- Disparities in healthy eating and access to food (or food stores) have become a largely investigated topic.
- Caspi et al. (2012): Perceived supermarket access is related to fruits and vegetables consumption in low-income individuals more than distance to supermarkets (that is, actual access).
- Hatzenbuehler et al. (2012): Residents in low-income and rural areas have disincentives to purchase healthy food because of the spatial organization of their local food market.
- Hilmers, Hilmer and Dave (2012): Limited access to supermarkets and grocery stores in low-income neighborhoods may represent a significant barrier to the consumption of healthy foods.
- Little research has been done to assess differences directly between actual access to food (or food stores) and consumers’ perception of barriers to healthy eating.
- Time and taste factors, as well as financial considerations, are the most frequently cited barriers to healthy eating (Eikenberry and Smith, 2004; Kearney and McElhone, 1999).
- Improving a community’s retail food infrastructure may not lead to changes in food purchasing and consumption patterns; instead, intervention significantly improved residents’ perceptions of food access (Cummins, Flint and Matthews, 2014).

Research Goals and Objectives

- This research seeks to understand how low-income individuals’ perceived barriers in acquiring healthy foods are impacted by
  - Overall perception of the food available to them,
  - Their shopping habits,
  - Their individual characteristics, and
  - Their surrounding food environment

Data Collection: The Intercept Survey

Ten-minute survey administered to shoppers upon exiting 15 stores in nine locations:

<table>
<thead>
<tr>
<th>Location</th>
<th>Average Age</th>
<th>Average Income (household)</th>
<th>No. People Shopped For</th>
<th>% w/ HHs below poverty</th>
<th>% w/ Children (under 18)</th>
<th>% Program Participants</th>
<th>% Shopped at Farmers Markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baltimore</td>
<td>40.7</td>
<td>$41,850</td>
<td>2.5</td>
<td>37.2</td>
<td>69.5</td>
<td>54.4</td>
<td></td>
</tr>
<tr>
<td>Charleston</td>
<td>50.0</td>
<td>$47,155</td>
<td>2.3</td>
<td>37.4</td>
<td>74.7</td>
<td>54.4</td>
<td></td>
</tr>
<tr>
<td>Essex County</td>
<td>53.1</td>
<td>$60,225</td>
<td>2.7</td>
<td>37.4</td>
<td>74.7</td>
<td>54.4</td>
<td></td>
</tr>
<tr>
<td>Madison County</td>
<td>53.6</td>
<td>$47,155</td>
<td>2.1</td>
<td>37.4</td>
<td>74.7</td>
<td>54.4</td>
<td></td>
</tr>
<tr>
<td>New York City</td>
<td>50.8</td>
<td>$41,850</td>
<td>2.2</td>
<td>37.4</td>
<td>74.7</td>
<td>54.4</td>
<td></td>
</tr>
<tr>
<td>Philadelphia</td>
<td>42.8</td>
<td>$47,155</td>
<td>3.1</td>
<td>37.4</td>
<td>74.7</td>
<td>46.4</td>
<td></td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>44.8</td>
<td>$47,155</td>
<td>1.8</td>
<td>34.0</td>
<td>61.4</td>
<td>46.4</td>
<td></td>
</tr>
<tr>
<td>Sussex County</td>
<td>61.0</td>
<td>$47,155</td>
<td>2.3</td>
<td>25.6</td>
<td>58.5</td>
<td>55.5</td>
<td></td>
</tr>
<tr>
<td>Syracuse</td>
<td>51.2</td>
<td>$47,155</td>
<td>2.3</td>
<td>11.4</td>
<td>55.5</td>
<td>55.5</td>
<td></td>
</tr>
</tbody>
</table>

Survey Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Correlation to Age</th>
<th>Correlation to Income</th>
<th>Correlation to % w/ HHs below poverty</th>
<th>Correlation to % w/ Children (under 18)</th>
<th>Correlation to % Program Participants</th>
<th>Correlation to % Shopped at Farmers Markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Age</td>
<td>40.7</td>
<td>2.5</td>
<td>0.12</td>
<td>0.13</td>
<td>0.06</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Average Income</td>
<td>41,850</td>
<td>4,155</td>
<td>0.12</td>
<td>0.13</td>
<td>0.06</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Shopping Frequency</td>
<td>2.5</td>
<td>1.5</td>
<td>0.12</td>
<td>0.13</td>
<td>0.06</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>% w/ HHs below poverty</td>
<td>37.2</td>
<td>69.5</td>
<td>0.12</td>
<td>0.13</td>
<td>0.06</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>% w/ Children</td>
<td>69.5</td>
<td>54.4</td>
<td>0.12</td>
<td>0.13</td>
<td>0.06</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>% Program Participants</td>
<td>54.4</td>
<td>54.4</td>
<td>0.12</td>
<td>0.13</td>
<td>0.06</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>% Shopped at Farmers Markets</td>
<td>54.4</td>
<td>54.4</td>
<td>0.12</td>
<td>0.13</td>
<td>0.06</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
</tr>
</tbody>
</table>

Food Environment Data and Econometric Model

Data on the food environments comes from zip code-level County Business Patterns of the U.S. Bureau of Labor Statistics
- NAICS 45510: Grocery Stores
- NAICS 455210: Convenience Stores
- NAICS 452910: Supercenters and Mass Merchandisers

Re-classification of grocery stores:
- Medium/Large Grocery Stores: NAICS 455120 (>20 employees)
- Small Grocery Store: NAICS 455120 (<20 employees)

Econometric Results

Econometric Model (Multivariate Probit estimator):

\[ Pr(B_i | \mu_i) = \cdots \]

\( \mu_i \) indicator variable capturing respondent's (i) in zip code / declared to be experiencing the perceived barrier to purchasing healthy foods.

Rho between respondents' (i) characteristics (gender, age, age squared, etc.)

\( \rho_{ij} \) measures the food environment in zip code /

\( \rho_{ki} \) allows for correlation of coefficients

\( \rho_{kj} \) X-variables of coefficients

\( \phi_k \) = X-normal CDF

Key Findings - Discussion

- The food environment plays an important role in the perception of barriers to purchasing healthy food:
  - Small grocery stores associated with higher (lower) probability of declaring price (availability) as a barrier
  - Large grocery stores associated with price as a barrier; Supercenters indicate no effect
  - Does presence of large stores reduce barriers?
  - Respondents unsatisfied with food quality (variety) and prices more likely to indicate price (availability) as a barrier
  - Free healthy food barriers part of larger problems?
  - Respondents who shopped at a farmers market, with higher food expenditure or shopping on weekends, less likely to indicate price as a barrier
  - Income effect?
  - Respondents from rural communities more likely to indicate no barrier
  - Income mobility matter?

References


Neighborhoods? An Analysis of Retail Food Cost and Spatial Competition, Journal of the American Dietetic Association, 104(4S), S133-S137.

Enhancing Food Security in the Northeast

Enhancing Food Security in the Northeast through regional food systems is a five-year, multidisciplinary, multi-institution project funded by USDA NIFA Award Number 2011-68004-30057. The project’s primary goal is to start determining whether more reliance on regional sources can provide healthy and affordable foods to low income consumers in the Northeast.

One of the projects multiple objectives is to assess current and potential community level constraints and opportunities for improving access to regionally-produced food for people in urban and rural disadvantaged communities. The goal for the portion of the project reported here is to understand what types of barriers and obstacles some households face when purchasing healthy food.