Visualizing Data through Maps

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Place matters

- Understanding the problem
  - Why and how certain outcomes exist

- Planning for a solution
  - A policy or program will have different outcomes depending on where it is put into effect
Methods

- GIS and spatial analysis are methods that researchers, community organizations and policy makers can use to:
  - Visualize data across space
  - Layer complex data to understand connections, inequalities and trends among systems
  - Inform and create effective policies and programs
  - Monitor and evaluate change
The Maryland Food System Map
Data Sources

- National Public Datasets
  - USDA Census of Agriculture
  - American Community Survey

- Local Public Datasets
  - Farmers Markets
  - Schools

- Primary Data Collection/Compilation
  - Distribution and Processing sites
  - Farms Selling Locally
Supermarkets 2014

DESCRIPTION
Supermarkets are large-format grocery stores with all food departments present, including produce, meats, seafood, canned goods and packaged goods. Supermarkets are typically chain stores; these stores have annual sales of $2 million or more and have 3 or more cash registers.

Data compiled and categorized by CLF staff.

DATASET ATTRIBUTES

<table>
<thead>
<tr>
<th>Type</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supermarket</td>
<td>(750)</td>
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<table>
<thead>
<tr>
<th>Subtype</th>
<th>Text</th>
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<td>Traditional</td>
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<tr>
<td>Supercenter</td>
<td>(112)</td>
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<tr>
<td>Limited Assortment</td>
<td>(66)</td>
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<td>International</td>
<td>(41)</td>
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<td>Conventional Club</td>
<td>(33)</td>
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TAGS
Supermarket | Grocery
Mapping Baltimore City’s Food Environment
Policy environment
- School meal programs
- Food and nutrition assistance
- Policies that affect food prices
- Regulations on food marketing

Physical environment
- Food cost
- Food availability (in homes, stores, restaurants, schools)
- Food access (vehicle access, sidewalks, public transit)
- Food marketing (advertising, shelf placement, food labels, toys)

Social environment
- Culture
- Religion
- Eating habits of friends, family, coworkers

Individual factors
- Hunger
- Taste
- Income
- Knowledge
- Emotions
- Health conditions
- Values and priorities
  (public health, environment, social justice, animal welfare, nutrition, convenience)
Project Partners

- **Johns Hopkins Center for a Livable Future**
  - The CLF is an interdisciplinary academic research center based within the Department of Environmental Health and Engineering at the Bloomberg School of Public Health. The CLF conducts and promotes research on the most pressing issues in the food system while advancing public health and protecting the environment.

- **Baltimore Food Policy Initiative**
  - BFPI is an interagency collaboration between the Department of Planning, Baltimore City Health Department and the Baltimore Development Corporation, and was founded in 2010 to “address health, economic, and environmental disparities by increasing access to healthy affordable food in Baltimore City.”
Dr. Manuel Franco  
– JHU CLF  
doctoral student  
studies the  
Baltimore City  
Food Environment  

2006  

2009  

CLF created their  
first Baltimore City  
food desert map  
using income and  
distance to  
supermarket  

2012  

CLF and BFPI partner  
to release a joint food  
desert map  

2015  

Mapping Baltimore  
City’s Food  
Environment: 2015  
Report  

2018  

Baltimore City’s  
Food Environment:  
2018 Report  

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Identifying Areas of Need

**Definition:**

- **Healthy food availability:** average Healthy Food Availability Index (HFAI) score is at or below 9.5
- **Household income:** median household income is at or below 185% federal poverty level
- **Vehicle access:** more than 30% of households do not have access to a vehicle
- **Distance to supermarket:** more than ¼ mile from supermarket
Healthy Food Availability Index

**Scored items**

- Vegetables: fresh, canned, frozen
- Fruits: fresh, canned, frozen, juice
- Dried beans
- Milk: skim/low-fat, whole
- Ground beef: lean, regular
- Chicken
- Fish
- Bread: 100% whole wheat, regular
- Corn tortillas
- Low-sugar cereal
- Rice
- Pasta
- Healthy frozen meals
- Low-sodium soup

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### Surveyed Stores

<table>
<thead>
<tr>
<th>Store Type</th>
<th>Number Surveyed</th>
<th>HFAI Score</th>
<th>% SNAP</th>
<th>% WIC</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Range</td>
<td>Average</td>
<td>Median</td>
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<tr>
<td>Supermarkets</td>
<td>47</td>
<td>23.5-28.5</td>
<td>27.7</td>
<td>27.5</td>
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<tr>
<td>Small Grocery and Corner Stores</td>
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<td>0-23.5</td>
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<td>Convenience Stores</td>
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<td>0-18</td>
<td>9.3</td>
<td>9.5</td>
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<td>Public Markets</td>
<td>6</td>
<td>5-20</td>
<td>14.0</td>
<td>16.25</td>
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<tr>
<td>Overall</td>
<td>761</td>
<td>5-20</td>
<td>14.0</td>
<td>16.25</td>
</tr>
</tbody>
</table>

![Map of surveyed stores](image)
SNAP and WIC

- Stores in every category that accept WIC and SNAP or SNAP only have a higher average HFAI score than stores that do not.
- Small grocery and corner stores that accept both WIC and SNAP have about 41% increase in HFAI scores over those that do not.

*Figure 2: Average HFAI Score by Store Type and Federal Benefits Accepted*
2018
Baltimore City
Healthy Food Priority Areas

- Healthy Food Priority Areas*
- Neighborhood Boundaries
- Harbor, Lakes, & Streams
- Major Parks

* A Healthy Food Priority Area is an area where: 1) The average Healthy Food Availability Index score for all foodstores is low; 2) The median household income is at or below 100% of the Federal Poverty Level; 3) Over 30% of households have no vehicle available, and 4) The distance to a supermarket is more than 1.4 miles.