SPATIAL POPULATION AND ASSET REPRESENTATIONS: A GUIDE FOR PUBLIC HEALTH PROGRAM PLANNING (HOW DO YOU FIND WHAT YOU NEED?)

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When confronting barriers to access, social determinants of health (SDOH) can dictate our choices. SDOH may be distributed unequally in the population.

How do we increase the number and quality of choices?
FY’17 EBT at Michigan Farmers Markets Project

- Electronic benefit transfer (EBT) - An electronic system that allows state welfare departments to issue benefits via a magnetically encoded payment card
- Address food insecurity by improving healthy food access to families in need
- Encourage farmers markets (FM) to accept Supplemental Nutrition Assistance Program (SNAP) benefits
  - 300 FMs participate in Michigan Farmers Market Association (MiFMA)
  - 139 FMs do not accept SNAP benefits
- Identify areas reaching the greatest number of SNAP eligible families by mapping and analyzing data
Method

- Selected geographic level for comparison
- Defined families in need
  - SNAP eligible (income less than 1.85X poverty level)
  - No healthy food retail options such as fresh foods at supermarkets, large grocery stores, or fruit and vegetable stores
- Defined accessible as farmers markets within specified driving/walking distance (buffer)
  - ½-mile radius for urban area
  - 5-mile radius for rural area
- Used geoprocessing to create buffers
- Determined which census tracts were accessible to farmers markets (within or intersecting buffer)
Analysis – Ranked regions based on

- Estimated number of families eligible for SNAP and accessible to FMs by geographic region

- Estimated percentage of families eligible for SNAP and accessible to FMs by geographic region

\[
Percentage = \frac{\text{Estimated SNAP families}}{\text{Total estimated families}} \times 100\%
\]

- Both
Ten Michigan Prosperity Regions

- 161 FMs accept SNAP (black)
- 139 FMs do not (gray)
Families in Need and Accessibility to FM

- Each census tract shown had
  - No healthy food retailers
  - At least one family that was SNAP eligible
- Driving/walking distance was a buffer radius (red) of
  - 0.5 mile for urban census tracts
  - 5 miles for rural census tracts

For example, this extent shows three farmers markets accessible to families living in a rural area in Prosperity Region 5.

Sources and Resources:
- Nielsen Business-Fact 2015.2
- American Community Survey 5 yr. estimate, 2010-2014
- ESRI ArcGIS Platform
# Results – Top 3 rankings

<table>
<thead>
<tr>
<th>Prosperity Region</th>
<th>Estimated number families accessible to FM by Prosperity Region</th>
<th>Estimated number families SNAP eligible accessible to FM by Prosperity Region</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region 1</td>
<td>10,404</td>
<td>3,043</td>
<td>29.2%</td>
</tr>
<tr>
<td>Region 2</td>
<td>10,673</td>
<td>2,723</td>
<td>25.5%</td>
</tr>
<tr>
<td>Region 3</td>
<td>14,982</td>
<td>3,781</td>
<td>25.2%</td>
</tr>
<tr>
<td>Region 4</td>
<td>30,824</td>
<td>7,900</td>
<td>25.6%</td>
</tr>
<tr>
<td><strong>Region 5</strong></td>
<td><strong>15,550</strong></td>
<td><strong>5,551</strong></td>
<td><strong>35.7%</strong></td>
</tr>
<tr>
<td>Region 6</td>
<td>14,559</td>
<td>3,018</td>
<td>20.7%</td>
</tr>
<tr>
<td>Region 7</td>
<td>7,274</td>
<td>1,475</td>
<td>20.3%</td>
</tr>
<tr>
<td>Region 8</td>
<td>13,488</td>
<td>3,659</td>
<td>27.1%</td>
</tr>
<tr>
<td>Region 9</td>
<td>19,162</td>
<td>3,456</td>
<td>18.0%</td>
</tr>
<tr>
<td>Region 10</td>
<td>42,353</td>
<td>6,993</td>
<td>16.5%</td>
</tr>
</tbody>
</table>

*FM – Farmers market; Supplemental Nutrition Assistance Program*
Findings

• Regions 1, 5, and 8 had the three highest percentages of families eligible for SNAP in the Prosperity Region (29.2%, 35.7%, and 27.1%, respectively).

• Regions 4, 5, and 10 had the three highest estimated number of families eligible for SNAP benefits in the Prosperity Region (7,900, 5,551, and 6,993).

• Prosperity Region 5 had the highest percentage and third highest estimated count of families SNAP eligible accessible to farmers markets not accepting SNAP benefits.
Conclusions

• Farmers markets accepting SNAP benefits is one means of improving healthy food choices for families in need.

• Mapping was used to estimate the potential population reach of farmers markets 1) accessible to SNAP eligible families and 2) that start accepting SNAP benefits.

• Potential reach estimates were determined for the ten Prosperity Regions and compared.

• The results showed that region 5 ranked the highest for estimated reach of families for improved accessibility to healthy food.