Assessing Place-Based Access to Healthy Food: The Limited Supermarket Access (LSA) Analysis

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RESEARCH CONDUCTED BY
Policy Solutions at Reinvestment Fund
Michael H. Norton, Chief Policy Analyst
Kevin Reeves, Research Analyst
Introduction
Despite gains over the past decade, limited access to healthy food continues to affect urban and rural communities across the United States. Financing the construction of new supermarkets and the expansion of existing stores is one of the primary strategies to increase access to sources of healthy food in underserved communities. Reinvestment Fund’s Limited Supermarket Access (LSA) analysis is a tool to help investors and policymakers identify areas across the 48 contiguous United States and the District of Columbia that have both inadequate and inequitable access to healthy food and sufficient market demand for new or expanded food retail operations.

The LSA analysis was first developed in 2011 to support Reinvestment Fund’s Pennsylvania Fresh Food Financing Initiative (FFFI), which used strategic financing to attract supermarkets to distressed communities and to assist small stores to expand or upgrade their facilities.¹ This report summarizes Reinvestment Fund’s 2018 update to the LSA analysis, including results for selected regions as well as relevant changes to the methodology and data sources used in the analysis.

Identifying Well-Served and Limited-Access Areas
The LSA analysis measures access to healthy food by identifying areas that are well-served by supermarkets and those that have relatively limited access to supermarkets. Reinvestment Fund uses supermarkets (grocery stores with at least $2 million in annual sales) as a proxy for healthy food access because a review of the relevant research shows that supermarkets, compared to smaller stores (e.g., corner stores), most consistently offer the greatest variety of healthy foods at the lowest prices.

Access means different things in different places. In densely-populated urban areas, supermarkets tend to be located more closely together, and a neighborhood may have relatively limited access if its nearest store is a mile or two away. In rural areas, many if not most communities are miles from the nearest supermarket. To account for this variation, Reinvestment Fund assigns every census block group in the contiguous 48 states and the District of Columbia to one of seven classes based on that block group’s population density and, for densely populated block groups, car ownership.²

Within each class, Reinvestment Fund calculates the typical distance traveled to the nearest supermarket by residents of well-served block groups, i.e., block groups with median household incomes at or above 120 percent of area median income (AMI). This reference distance is used under the assumption that in a functioning free market, there will generally exist an adequate complement of amenities like supermarkets in areas where incomes are above average.

Each block group is then assigned a Low Access Score, which represents the percentage by which that block group’s distance to the nearest supermarket would need to be reduced to equal the typical distance for well-served block groups in that class. Block groups with Low Access Scores greater than or equal to 0.45 are considered limited-access. In those limited-access block groups, residents must travel almost twice as far to a supermarket as residents in well-served block groups with similar population density and car ownership.

Finally, contiguous limited-access block groups with a collective population of at least 5,000 people are combined to form LSA Areas—areas with both limited access to supermarkets and potentially enough market demand to support new or expanded supermarket operations.

² See Appendix for the seven classes used to establish reference distances for individual block groups.
Methodological Updates to the LSA Analysis

Reinvestment Fund’s 2018 LSA analysis is the second update of our 2011 study Searching for Markets: The Geography of Inequitable Access to Healthy & Affordable Foods in the United States. Like the first update in 2014, this 2018 update was developed when our lenders observed that enough stores had opened and closed that the previous report was no longer sufficient to guide financing decisions.

In this update, Reinvestment Fund made the following enhancements to the LSA analysis methodology:

- **Updated definition of supermarkets.** Observing that Nielson’s TDLinx database categorized some corner stores as conventional supermarkets, stores under 5,000 square feet were removed from the analysis unless it could be determined that they offered a full range of fresh and healthy foods. Wholesale clubs were also excluded because they require a paid membership. Military commissaries were excluded because they are not open to the public.
- **Revised and simplified population density and car ownership classes.** Based on observed declines in car ownership, feedback from users of the LSA analysis, and variation in the American Community Survey (ACS) sample data that underlies the analysis, the number of classes was reduced for the 2018 update.
- **Updated timeframe for the longitudinal analyses.** The historical frame for the analysis was updated to 2010 through 2016 from 2005 through 2013. Starting with 2010 provides the best start date to reliably assess how food retail locations, block group classifications, and socioeconomic data change from year to year, enabling Reinvestment Fund to identify LSA Areas and the populations affected by them over time.
- **Updated decision rule to move block groups from one class to another over time.** Because the American Community Survey population data often fluctuate within what is generally understood to be the range of sampling error, from year to year a block group will change class only if the block group’s population estimate in the second year is statistically significantly different from the population estimate in the first year (and estimate of car ownership, if applicable) and that difference places the block group in a new class.

These changes simplified the longitudinal analysis and enabled Reinvestment Fund to more accurately track changes in access to healthy food over time.

National, State, and Major Metropolitan Area Results

The 2018 LSA analysis uses grocery store location and socioeconomic data for all years from 2010 through 2016 to assess changes in Low Access Scores, LSA Area boundaries, and the number of people with limited access to healthy food. Nationally, 17.6 million people (5.6% of the population) lived in LSA Areas in 2016, a decrease of 3.1 million people (or 14.9%) from 2010 when 20.7 million people (6.8% of the population) lived in LSA Areas (see Table 1).

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4 Both these criteria rely on Census Bureau guidance for assessing whether year to year differences in block group populations and car ownership levels are statistically significant. See https://www.census.gov/library/publications/2009/acs/researchers.html for more information.
Table 1. LSA Areas and LSA Populations: 2010 to 2016

<table>
<thead>
<tr>
<th>Year</th>
<th>LSA Areas</th>
<th>Total Population</th>
<th>Population in LSA Areas</th>
<th>Percent Population in LSA Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1,629</td>
<td>306,675,006</td>
<td>20,703,322</td>
<td>6.8%</td>
</tr>
<tr>
<td>2011</td>
<td>1,558</td>
<td>304,498,648</td>
<td>19,052,548</td>
<td>6.3%</td>
</tr>
<tr>
<td>2012</td>
<td>1,486</td>
<td>306,974,780</td>
<td>17,721,064</td>
<td>5.8%</td>
</tr>
<tr>
<td>2013</td>
<td>1,471</td>
<td>309,348,307</td>
<td>17,445,818</td>
<td>5.6%</td>
</tr>
<tr>
<td>2014</td>
<td>1,444</td>
<td>311,887,280</td>
<td>17,315,284</td>
<td>5.6%</td>
</tr>
<tr>
<td>2015</td>
<td>1,441</td>
<td>314,261,518</td>
<td>17,198,345</td>
<td>5.5%</td>
</tr>
<tr>
<td>2016</td>
<td>1,462</td>
<td>316,292,890</td>
<td>17,625,275</td>
<td>5.6%</td>
</tr>
</tbody>
</table>

In 2016, 47 of the contiguous 48 states and the District of Columbia had at least one LSA Area. However, changes in the number of people living in LSA Areas from 2010 and 2016 varied considerably across different states and metropolitan regions. Table 2 presents the 10 states that had the largest relative reductions in their LSA populations from 2010 to 2016 as well as the 10 states that had the smallest relative reductions, or largest relative increases.

Table 2: Top 10 and Bottom 10 States by Percentage Decrease in LSA Population from 2010 to 2016*

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>North Dakota</td>
<td>92,427</td>
<td>58,662</td>
<td>53,384</td>
<td>54,737</td>
<td>-37%</td>
<td>-9%</td>
<td>3%</td>
<td>-41%</td>
<td>1</td>
</tr>
<tr>
<td>Idaho</td>
<td>98,590</td>
<td>84,866</td>
<td>81,793</td>
<td>58,446</td>
<td>-14%</td>
<td>-4%</td>
<td>-29%</td>
<td>-41%</td>
<td>2</td>
</tr>
<tr>
<td>Iowa</td>
<td>75,480</td>
<td>44,989</td>
<td>43,861</td>
<td>45,456</td>
<td>-40%</td>
<td>-3%</td>
<td>4%</td>
<td>-40%</td>
<td>3</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>112,148</td>
<td>86,903</td>
<td>78,737</td>
<td>69,057</td>
<td>-23%</td>
<td>-9%</td>
<td>-12%</td>
<td>-38%</td>
<td>4</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>284,963</td>
<td>187,496</td>
<td>183,052</td>
<td>181,682</td>
<td>-34%</td>
<td>-2%</td>
<td>-1%</td>
<td>-36%</td>
<td>5</td>
</tr>
<tr>
<td>Alabama</td>
<td>187,176</td>
<td>129,289</td>
<td>115,198</td>
<td>121,184</td>
<td>-31%</td>
<td>-11%</td>
<td>5%</td>
<td>-35%</td>
<td>6</td>
</tr>
<tr>
<td>Kansas</td>
<td>111,879</td>
<td>68,504</td>
<td>68,569</td>
<td>73,251</td>
<td>-39%</td>
<td>0%</td>
<td>7%</td>
<td>-35%</td>
<td>7</td>
</tr>
<tr>
<td>New York</td>
<td>1,409,599</td>
<td>1,004,982</td>
<td>976,207</td>
<td>935,381</td>
<td>-29%</td>
<td>-3%</td>
<td>-4%</td>
<td>-34%</td>
<td>8</td>
</tr>
<tr>
<td>Arkansas</td>
<td>183,470</td>
<td>140,858</td>
<td>128,515</td>
<td>123,857</td>
<td>-23%</td>
<td>-9%</td>
<td>-4%</td>
<td>-32%</td>
<td>9</td>
</tr>
<tr>
<td>Indiana</td>
<td>424,729</td>
<td>245,553</td>
<td>263,767</td>
<td>290,024</td>
<td>-42%</td>
<td>7%</td>
<td>10%</td>
<td>-32%</td>
<td>10</td>
</tr>
<tr>
<td>Nation</td>
<td>20,704,649</td>
<td>17,721,064</td>
<td>17,315,284</td>
<td>17,625,275</td>
<td>-14%</td>
<td>-2%</td>
<td>2%</td>
<td>-15%</td>
<td></td>
</tr>
<tr>
<td>Florida</td>
<td>1,135,678</td>
<td>953,501</td>
<td>969,252</td>
<td>1,061,469</td>
<td>-16%</td>
<td>2%</td>
<td>10%</td>
<td>-7%</td>
<td>39</td>
</tr>
<tr>
<td>Montana</td>
<td>81,697</td>
<td>72,062</td>
<td>78,077</td>
<td>78,708</td>
<td>-12%</td>
<td>8%</td>
<td>1%</td>
<td>-4%</td>
<td>40</td>
</tr>
<tr>
<td>Wyoming</td>
<td>30,002</td>
<td>22,778</td>
<td>28,999</td>
<td>29,880</td>
<td>-24%</td>
<td>27%</td>
<td>3%</td>
<td>0%</td>
<td>41</td>
</tr>
<tr>
<td>Arizona</td>
<td>706,328</td>
<td>645,897</td>
<td>663,820</td>
<td>711,611</td>
<td>-9%</td>
<td>3%</td>
<td>7%</td>
<td>1%</td>
<td>42</td>
</tr>
<tr>
<td>Michigan</td>
<td>377,220</td>
<td>378,027</td>
<td>366,463</td>
<td>384,679</td>
<td>0%</td>
<td>-3%</td>
<td>5%</td>
<td>2%</td>
<td>43</td>
</tr>
<tr>
<td>Washington, D.C.</td>
<td>173,325</td>
<td>168,265</td>
<td>151,894</td>
<td>176,837</td>
<td>-3%</td>
<td>-10%</td>
<td>16%</td>
<td>2%</td>
<td>44</td>
</tr>
<tr>
<td>Virginia</td>
<td>401,229</td>
<td>420,705</td>
<td>408,253</td>
<td>418,883</td>
<td>5%</td>
<td>-3%</td>
<td>3%</td>
<td>4%</td>
<td>45</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>75,998</td>
<td>80,915</td>
<td>79,920</td>
<td>79,455</td>
<td>6%</td>
<td>-1%</td>
<td>-1%</td>
<td>5%</td>
<td>46</td>
</tr>
<tr>
<td>Nevada</td>
<td>251,318</td>
<td>248,813</td>
<td>268,132</td>
<td>317,050</td>
<td>-1%</td>
<td>8%</td>
<td>18%</td>
<td>26%</td>
<td>47</td>
</tr>
<tr>
<td>Maine</td>
<td>34,546</td>
<td>30,558</td>
<td>31,310</td>
<td>43,767</td>
<td>-12%</td>
<td>2%</td>
<td>40%</td>
<td>27%</td>
<td>48</td>
</tr>
</tbody>
</table>

*Vermont is excluded because it had no LSA Areas, and thus no LSA Population, over the 2010-2016 period.

5 Only Vermont did not have any LSA Areas in 2016.

6 See Appendix for a table that includes all 48 contiguous states and the District of Columbia.
Among the “top 10” states, the number of people living in LSA Areas declined by more than 30% from 2010 to 2016. On the other hand, Maine and Nevada experienced substantial percentage increases in their LSA populations from 2010 to 2016. The number of Nevadans living in LSA Areas increased by 65,732 or 26%, while the number of Mainers increased by 9,221 or 27%. The remainder of the states in the “bottom 10” had more modest percentage increases or slight declines in their LSA populations. While most states had declining LSA populations, many lagged the national decrease of -15%, including states that had substantial population growth like Florida and Arizona.

Table 3 presents the 10 major metropolitan areas that had the largest relative reductions in their LSA populations from 2010 to 2016 as well as the 10 major metros that had the largest relative increases over the same period. Major metropolitan areas are defined as those with a 2016 population of at least one million people.

Table 3: Top 10 and Bottom 10 Major Metropolitan Areas by Percentage Decrease in LSA Population from 2010 to 2016

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Charlotte-Concord-Gastonia, NC-SC</td>
<td>1</td>
<td>44,430</td>
<td>23,032</td>
<td>25,284</td>
<td>9,570</td>
<td>-48%</td>
<td>-10%</td>
<td>-62%</td>
<td>-78%</td>
<td>1</td>
</tr>
<tr>
<td>Buffalo-Cheektowaga-Niagara Falls, NY</td>
<td>2</td>
<td>287,448</td>
<td>112,043</td>
<td>109,666</td>
<td>118,882</td>
<td>-61%</td>
<td>-2%</td>
<td>8%</td>
<td>-59%</td>
<td>2</td>
</tr>
<tr>
<td>Nashville-Davidson-Murfreesboro-Franklin, TN</td>
<td>3</td>
<td>75,147</td>
<td>46,834</td>
<td>38,454</td>
<td>31,202</td>
<td>-38%</td>
<td>-18%</td>
<td>-19%</td>
<td>-58%</td>
<td>3</td>
</tr>
<tr>
<td>Grand Rapids-Wyoming, MI</td>
<td>4</td>
<td>28,938</td>
<td>27,426</td>
<td>22,251</td>
<td>16,576</td>
<td>-5%</td>
<td>-19%</td>
<td>-26%</td>
<td>-43%</td>
<td>4</td>
</tr>
<tr>
<td>Indianapolis-Carmel-Anderson, IN</td>
<td>5</td>
<td>163,379</td>
<td>87,547</td>
<td>95,178</td>
<td>96,788</td>
<td>-46%</td>
<td>9%</td>
<td>2%</td>
<td>-41%</td>
<td>5</td>
</tr>
<tr>
<td>Hartford-West Hartford-East Hartford, CT</td>
<td>6</td>
<td>96,677</td>
<td>74,357</td>
<td>59,633</td>
<td>58,637</td>
<td>-23%</td>
<td>-20%</td>
<td>-2%</td>
<td>-39%</td>
<td>6</td>
</tr>
<tr>
<td>Salt Lake City, UT</td>
<td>7</td>
<td>33,924</td>
<td>18,464</td>
<td>15,087</td>
<td>21,159</td>
<td>-46%</td>
<td>-18%</td>
<td>40%</td>
<td>-38%</td>
<td>7</td>
</tr>
<tr>
<td>Rochester, NY</td>
<td>8</td>
<td>149,556</td>
<td>99,641</td>
<td>94,039</td>
<td>95,339</td>
<td>-33%</td>
<td>-6%</td>
<td>1%</td>
<td>-36%</td>
<td>8</td>
</tr>
<tr>
<td>Birmingham-Hoover, AL</td>
<td>9</td>
<td>84,290</td>
<td>63,275</td>
<td>57,085</td>
<td>56,128</td>
<td>-25%</td>
<td>-10%</td>
<td>-2%</td>
<td>-33%</td>
<td>9</td>
</tr>
<tr>
<td>Kansas City, MO-KS</td>
<td>10</td>
<td>76,908</td>
<td>43,739</td>
<td>37,222</td>
<td>53,118</td>
<td>-43%</td>
<td>-15%</td>
<td>43%</td>
<td>-31%</td>
<td>10</td>
</tr>
</tbody>
</table>

Among the “top 10” metros, the number of people living in LSA Areas declined by more than 30% from 2010 to 2016. Notably, the Charlotte-Concord-Gastonia, NC-SC, metropolitan area had a 78% decline in its LSA population over that period. In contrast, the Las Vegas-Henderson-Paradise, NV, metropolitan area had a substantial 54,019-person (34%) increase in its LSA population from 2010 to 2016; by 2016 the Las Vegas metropolitan area accounted for roughly two thirds of all Nevadans living in LSA areas. The remainder of the metros in the “bottom 10” had more modest increases in their LSA populations.

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7 See Appendix for a table that includes all 52 major metropolitan areas.
While most major metros had declining LSA populations, many lagged the average major metropolitan area decrease of -16%.

**LSA Areas Disproportionately Affect Low-Income Communities and People of Color**

Across the country, LSA Areas disproportionately impact low-income communities and people of color. However, the magnitude of these disparities varies considerably across different states and metropolitan areas.

Table 4 presents the 10 states where LSA Areas are most disproportionately concentrated in low-income communities, defined as block groups at or below 80% of AMI. The Income Disparity Ratio in Table 4 represents the ratio between the percentage of the LSA population living in low-income areas and the percentage of the total population living in low-income areas. If LSA Areas were evenly distributed across a state, the Income Disparity Ratio would be 1.0. Values greater than 1.0 indicate that LSA Areas are disproportionately located in low-income areas. For the nation overall, an Income Disparity Ratio of 1.7 suggests that LSA Areas are disproportionately concentrated in low-income areas throughout the lower 48 states and Washington, DC.

**Table 4: 2016 LSA Figures for Top 10 States by Income Disparity**

<table>
<thead>
<tr>
<th>State</th>
<th>Total Population</th>
<th>% Total Population in Low-Income Areas</th>
<th>LSA Population</th>
<th>% LSA Population in Low-Income Areas</th>
<th>Income Disparity Ratio*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhode Island</td>
<td>1,054,491</td>
<td>29%</td>
<td>69,057</td>
<td>91%</td>
<td>3.2</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>12,783,977</td>
<td>25%</td>
<td>1,088,457</td>
<td>73%</td>
<td>2.9</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>5,754,798</td>
<td>21%</td>
<td>181,682</td>
<td>62%</td>
<td>2.9</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>6,742,143</td>
<td>26%</td>
<td>619,747</td>
<td>65%</td>
<td>2.5</td>
</tr>
<tr>
<td>Delaware</td>
<td>934,695</td>
<td>20%</td>
<td>66,431</td>
<td>49%</td>
<td>2.4</td>
</tr>
<tr>
<td>Maine</td>
<td>1,329,923</td>
<td>18%</td>
<td>43,767</td>
<td>43%</td>
<td>2.4</td>
</tr>
<tr>
<td>Connecticut</td>
<td>3,588,570</td>
<td>29%</td>
<td>200,897</td>
<td>67%</td>
<td>2.3</td>
</tr>
<tr>
<td>Illinois</td>
<td>12,851,684</td>
<td>28%</td>
<td>812,572</td>
<td>62%</td>
<td>2.2</td>
</tr>
<tr>
<td>Michigan</td>
<td>9,909,600</td>
<td>26%</td>
<td>384,679</td>
<td>56%</td>
<td>2.2</td>
</tr>
<tr>
<td>Kentucky</td>
<td>4,411,989</td>
<td>23%</td>
<td>183,208</td>
<td>50%</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Nation</strong></td>
<td><strong>316,292,890</strong></td>
<td><strong>26%</strong></td>
<td><strong>17,625,275</strong></td>
<td><strong>44%</strong></td>
<td><strong>1.7</strong></td>
</tr>
</tbody>
</table>

*Income Disparity Ratios are calculated by dividing the percentage of LSA residents living in low-income communities by the percentage of all residents living in low-income communities.

Rhode Island tops the list in Table 4. Of the state’s more than one million residents, fewer than one third live in low-income areas. In contrast, more than 90% of the state’s LSA residents live in low-income areas, a percentage that is more than triple the percentage of the state’s overall population living in low-income areas. This relatively high Income Disparity Ratio indicates that limited access to healthy food disproportionately affects Rhode Island’s low-income communities. Likewise, the remaining states in Table 4 all have Income Disparity Ratios well above the national ratio of 1.7.

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*See Appendix for a table that includes all 48 contiguous states and the District of Columbia.*
The Income Disparity Ratios presented in Table 4 do not indicate the size of an area’s food access problem. Rather, the Income Disparity Ratios identify how unevenly LSA areas are distributed across communities at different income levels. For example, Wisconsin, Delaware, and Michigan have few people living in LSA areas relative to their overall populations. However, their comparatively high Income Disparity Ratios suggest that LSA Areas in these states are disproportionately concentrated in low-income communities.

Table 5 presents the 10 major metropolitan areas where LSA Areas are most disproportionately concentrated in low-income communities.9

<table>
<thead>
<tr>
<th>Metropolitan Area</th>
<th>Total Population</th>
<th>% Total Population in Low-Income Areas</th>
<th>LSA Population</th>
<th>% LSA Population in Low-Income Areas</th>
<th>Income Disparity Ratio*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rochester, NY</td>
<td>1,082,226</td>
<td>22%</td>
<td>95,339</td>
<td>71%</td>
<td>3.3</td>
</tr>
<tr>
<td>Pittsburgh, PA</td>
<td>2,354,926</td>
<td>24%</td>
<td>246,285</td>
<td>78%</td>
<td>3.2</td>
</tr>
<tr>
<td>Buffalo-Cheektowaga-Niagara Falls, NY</td>
<td>1,135,503</td>
<td>26%</td>
<td>118,882</td>
<td>83%</td>
<td>3.2</td>
</tr>
<tr>
<td>Milwaukee-Waukesha-West Allis, WI</td>
<td>1,571,730</td>
<td>30%</td>
<td>90,450</td>
<td>92%</td>
<td>3.1</td>
</tr>
<tr>
<td>Cleveland-Elyria, OH</td>
<td>2,061,630</td>
<td>28%</td>
<td>138,020</td>
<td>77%</td>
<td>2.7</td>
</tr>
<tr>
<td>Providence-Warwick, RI-MA</td>
<td>1,609,359</td>
<td>28%</td>
<td>118,752</td>
<td>77%</td>
<td>2.7</td>
</tr>
<tr>
<td>Virginia Beach-Norfolk-Newport News, VA-NC</td>
<td>1,714,428</td>
<td>29%</td>
<td>90,623</td>
<td>74%</td>
<td>2.6</td>
</tr>
<tr>
<td>Philadelphia-Camden-Wilmington, PA-NJ-DE-MD</td>
<td>6,047,721</td>
<td>30%</td>
<td>713,847</td>
<td>74%</td>
<td>2.5</td>
</tr>
<tr>
<td>Jacksonville, FL</td>
<td>1,424,097</td>
<td>23%</td>
<td>99,512</td>
<td>55%</td>
<td>2.4</td>
</tr>
<tr>
<td>Boston-Cambridge-Newton, MA-NH</td>
<td>4,728,844</td>
<td>26%</td>
<td>479,393</td>
<td>62%</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Major Metropolitan Area Average</strong></td>
<td><strong>3,398,778</strong></td>
<td><strong>28%</strong></td>
<td><strong>211,643</strong></td>
<td><strong>49%</strong></td>
<td><strong>1.7</strong></td>
</tr>
</tbody>
</table>

*Income Disparity Ratios are calculated by dividing the percentage of LSA residents living in low-income communities by the percentage of all residents living in low-income communities.

The Rochester, NY, metropolitan area tops the list of major metropolitan areas in Table 5. Of Rochester’s more than one million residents, 22% live in low-income areas, compared to 71% of the region’s nearly 100,000 LSA residents. Rochester’s Income Disparity Ratio of 3.3 indicates that the percentage LSA residents in low-income areas is more than three times the percentage of all Rochester metro area residents in low-income areas. This relatively high Income Disparity Ratio indicates that limited access to healthy food disproportionately affects Rochester’s low-income communities.

Several of the metro areas in Table 5 are a driving factor behind their state’s presence in Table 4. That is, the concentration of LSA Areas in low-income block groups is a substantial driver of state-level disparities in healthy food access in the following places: Pittsburgh and Philadelphia, PA; Wilmington, DE; Milwaukee, WI; Providence, RI; and Boston, MA. Some of the states in Table 4—like Rhode Island, Wisconsin, and Massachusetts—have relatively small statewide LSA populations, but the LSA Areas in these states are disproportionately concentrated in low-income communities in the states’ largest metro regions.

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9 See Appendix for a table that includes all 52 major metropolitan areas.
Table 6 presents the 10 states where people of color are most disproportionately concentrated in LSA Areas.10 (People of color are defined as all people except those identifying as non-Hispanic whites.) The Racial/Ethnic Disparity Ratio in Table 6 represents the ratio between the percentage of people living in LSA areas who are people of color and the percentage of the total population who are people of color. As with the Income Disparity Ratio, if LSA Areas were evenly distributed across a state, the Racial/Ethnic Disparity Ratio would be 1.0. Values greater than 1.0 indicate that people of color are disproportionately concentrated in LSA areas. For the nation overall, a Racial/Ethnic Disparity Ratio of 1.3 suggests that people of color are slightly over-represented in LSA Areas throughout the lower 48 states and Washington, DC.

Table 6: 2016 LSA Figures for Top 10 States by Racial/Ethnic Disparity

<table>
<thead>
<tr>
<th>State</th>
<th>Total Population</th>
<th>% Total Population People of Color</th>
<th>LSA Population</th>
<th>% LSA Population People of Color</th>
<th>Racial/Ethnic Disparity Ratio*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhode Island</td>
<td>1,054,491</td>
<td>26%</td>
<td>69,057</td>
<td>60%</td>
<td>2.3</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>5,754,798</td>
<td>18%</td>
<td>181,682</td>
<td>41%</td>
<td>2.3</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>12,783,977</td>
<td>21%</td>
<td>1,088,457</td>
<td>47%</td>
<td>2.2</td>
</tr>
<tr>
<td>Kentucky</td>
<td>4,411,989</td>
<td>14%</td>
<td>183,208</td>
<td>31%</td>
<td>2.1</td>
</tr>
<tr>
<td>Ohio</td>
<td>11,586,941</td>
<td>19%</td>
<td>566,224</td>
<td>37%</td>
<td>1.9</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>6,742,143</td>
<td>26%</td>
<td>619,747</td>
<td>48%</td>
<td>1.9</td>
</tr>
<tr>
<td>Missouri</td>
<td>6,059,651</td>
<td>19%</td>
<td>323,225</td>
<td>35%</td>
<td>1.8</td>
</tr>
<tr>
<td>Connecticut</td>
<td>3,588,570</td>
<td>31%</td>
<td>200,897</td>
<td>56%</td>
<td>1.8</td>
</tr>
<tr>
<td>South Dakota</td>
<td>836,795</td>
<td>17%</td>
<td>64,020</td>
<td>30%</td>
<td>1.7</td>
</tr>
<tr>
<td>Maine</td>
<td>1,329,923</td>
<td>6%</td>
<td>43,767</td>
<td>11%</td>
<td>1.7</td>
</tr>
<tr>
<td>Nation</td>
<td>316,292,890</td>
<td>37%</td>
<td>17,625,275</td>
<td>46%</td>
<td>1.3</td>
</tr>
</tbody>
</table>

*Racial/Ethnic Disparity Ratios are calculated by dividing the percentage of LSA residents who are people of color by the percentage of all residents who are people of color.

In Table 6, Rhode Island is again at the top of the list. Of the state’s more than one million residents, about one quarter are people of color. In contrast, 60% of the state’s LSA residents are people of color. Rhode Island’s Racial/Ethnic Disparity Ratio of 2.3 indicates that the percentage LSA residents who are people of color is more than two times the percentage of all Rhode Island residents who are people of color. The relatively high Racial/Ethnic Disparity Ratio indicates that limited access to healthy food disproportionately affects Rhode Island’s communities of color. Likewise, the remaining states in Table 6 all have Racial/Ethnic Disparity Ratios well above the national ratio of 1.3.

As with the Income Disparity Ratios, the Racial/Ethnic Disparity Ratios presented in Table 6 do not indicate the size of an area’s food access problem. Rather, the Racial/Ethnic Disparity Ratios identify how unevenly LSA areas are distributed across communities with differing racial/ethnic compositions.

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10 See Appendix for a table that includes all 48 contiguous states and the District of Columbia.
Table 7 presents the 10 major metropolitan areas where people of color are most disproportionately concentrated in LSA Areas.11

Table 7: 2016 LSA Figures for Top 10 Major Metropolitan Areas by Racial/Ethnic Disparity

<table>
<thead>
<tr>
<th>Metropolitan Area</th>
<th>Total Population</th>
<th>% Total Population People of Color</th>
<th>LSA Population</th>
<th>% LSA Population People of Color</th>
<th>Racial/Ethnic Disparity Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buffalo-Cheektowaga-Niagara Falls, NY</td>
<td>1,135,503</td>
<td>21%</td>
<td>118,882</td>
<td>58%</td>
<td>2.8</td>
</tr>
<tr>
<td>Rochester, NY</td>
<td>1,082,226</td>
<td>23%</td>
<td>95,339</td>
<td>59%</td>
<td>2.6</td>
</tr>
<tr>
<td>Pittsburgh, PA</td>
<td>2,354,926</td>
<td>14%</td>
<td>246,285</td>
<td>35%</td>
<td>2.6</td>
</tr>
<tr>
<td>Cincinnati, OH-KY-IN</td>
<td>2,146,410</td>
<td>20%</td>
<td>186,132</td>
<td>42%</td>
<td>2.1</td>
</tr>
<tr>
<td>Nashville-Davidson--Murfreesboro--Franklin, TN</td>
<td>1,794,570</td>
<td>27%</td>
<td>31,202</td>
<td>55%</td>
<td>2.1</td>
</tr>
<tr>
<td>Providence-Warwick, RI-MA</td>
<td>1,609,359</td>
<td>22%</td>
<td>118,752</td>
<td>46%</td>
<td>2.0</td>
</tr>
<tr>
<td>Milwaukee-Waukesha-West Allis, WI</td>
<td>1,571,730</td>
<td>32%</td>
<td>90,450</td>
<td>60%</td>
<td>1.9</td>
</tr>
<tr>
<td>Cleveland-Elyria, OH</td>
<td>2,061,630</td>
<td>27%</td>
<td>138,020</td>
<td>50%</td>
<td>1.9</td>
</tr>
<tr>
<td>St. Louis, MO-IL</td>
<td>2,803,449</td>
<td>24%</td>
<td>215,015</td>
<td>42%</td>
<td>1.8</td>
</tr>
<tr>
<td>Philadelphia-Camden-Wilmington, PA-NJ-DE-MD</td>
<td>6,047,721</td>
<td>34%</td>
<td>713,847</td>
<td>60%</td>
<td>1.7</td>
</tr>
<tr>
<td><strong>Major Metropolitan Area Average</strong></td>
<td><strong>3,398,778</strong></td>
<td><strong>38%</strong></td>
<td><strong>211,643</strong></td>
<td><strong>47%</strong></td>
<td><strong>1.3</strong></td>
</tr>
</tbody>
</table>

*Racial/Ethnic Disparity Ratios are calculated by dividing the percentage of LSA residents who are people of color by the percentage of all residents who are people of color.

The Buffalo-Cheektowaga-Niagara Falls, NY, metropolitan area tops the list of major metropolitan areas in Table 7. Of the Buffalo region’s more than 1.1 million residents, 21% are people of color, compared to 58% of the region’s more than 100,000 LSA residents. Buffalo’s Racial/Ethnic Disparity Ratio of 2.8 indicates that a substantially greater share of people of color experience limited access to healthy food than white residents in the Buffalo region. The other metro regions in Table 7 all have Racial/Ethnic Disparity Ratios well above the major metropolitan area average of 1.3.

As with the Income Disparity Ratios, it’s possible to observe the influence large metro regions have on statewide concentrations of people of color in LSA Areas. That is, the concentration of people of color in LSA Areas is a substantial driver of state-level disparities in healthy food access in places like: Pittsburgh and Philadelphia, PA; Cincinnati and Cleveland, OH; Milwaukee, WI; and Providence, RI. As seen previously, some of these states—like Rhode Island, Wisconsin, and Ohio—have relatively small statewide LSA populations; however, people of color are disproportionately concentrated in LSA areas in these states’ large metro regions.

Conclusions and Next Steps

Reinvestment Fund’s Limited Supermarket Access analysis is a unique tool designed to help a wide range of food access stakeholders identify areas that have both inadequate access to healthy food and sufficient market demand to support new or expanded food retail operations. The 2018 update increases the utility of this tool by incorporating more recent data related to supermarket locations, sales, and demographics. The updated longitudinal analysis also more reliably tracks changes in food access over time.

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11 See Appendix for a table that includes all 52 major metropolitan areas.
The 2018 LSA update shows that the nation’s LSA population declined by 15% from 20.1 million people in 2010 to 17.6 million people in 2016. While access to healthy food in the United States overall has improved over the last decade, progress has not been even in all areas. In some areas, improvements in early years have been followed by setbacks. In other areas, progress has lagged the national average. In still other areas, access to healthy food has declined, sometimes substantially. In addition, limited access to healthy food is not evenly distributed across individual states or metropolitan regions. Throughout the country, LSA areas are disproportionately located in lower-income areas and communities of color.

CDFIs and others interested in improving access to healthy food can use the LSA analysis to identify areas of concern, whether they are areas with large numbers of people with limited access or areas where those with limited access are disproportionately low-income and/or people of color. These results can help individuals and organizations strategically target their investments in new and expanded food retail operations to maximize their impact. Investors and policymakers can also use the LSA to understand the impacts of past investments. A forthcoming white paper will examine the relationship between Reinvestment Fund’s food retail lending activity and changes access to healthy food over time. This report will provide critical insights for others as they use the LSA analysis to assess the impacts of their efforts to expand access to healthy food in the communities they serve.

Using the LSA Analysis to Better Understand Food Access Challenges in Rural America

Historically, those who have used the LSA have done so to inform food retail lending in primarily urban and suburban settings. In 2017, Reinvestment Fund was designated as the National Fund Manager for the USDA’s Healthy Food Financing Initiative (HFFI) with a mandate to support innovative solutions to limited healthy food access in all communities—urban, suburban, and rural—throughout the country. The 2018 LSA update provides an opportunity to conduct targeted analyses in rural communities to identify intervention strategies to address limited access to healthy food specific to these communities. A forthcoming “Rural Supplement” to the 2018 LSA update will present three broad analytic approaches to better understanding access to healthy food in rural areas:

1. The first set of analyses will describe defining characteristics of rural communities that are well-served and those with limited access to better understand key differences between these places.

2. The second set of analyses will identify defining characteristics of rural communities that were previously well-served but that had become limited-access by 2016, particularly store closures and changes in population, racial/ethnic composition, median incomes, poverty levels, and employment.

3. The third set of analyses will estimate how much food retail is sufficient to provide adequate access in communities that are too small to support full-service supermarkets.

These additional analyses will provide critical insights into rural places with limited access to healthy food. The results will help identify actionable interventions to address pressing challenges in high-need areas across the country.
# Appendix

## Table A1. Updated Block Group Density/Car Ownership Classes

<table>
<thead>
<tr>
<th>Class</th>
<th>Population Density*</th>
<th>% Households With No Car</th>
<th>Reference Distance (miles)</th>
<th>Block Groups in Class in 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>Density 1</td>
<td>0.0</td>
<td>10.4</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Density 2</td>
<td>10.4</td>
<td>64.2</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Density 3</td>
<td>64.2</td>
<td>296.9</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Density 4</td>
<td>296.9</td>
<td>1,236.1</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Density 5</td>
<td>1,236.1</td>
<td>3,741.8</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Density 6, High Car</td>
<td>3,741.8</td>
<td>161,342.7</td>
<td>0.0%</td>
<td>12.6%</td>
</tr>
<tr>
<td>Density 6, Low Car</td>
<td>3,741.8</td>
<td>813,265.2</td>
<td>12.6%</td>
<td>96.0%</td>
</tr>
</tbody>
</table>

*Population density is calculated as people per square mile of populated land area.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>North Dakota</td>
<td>92,427</td>
<td>58,662</td>
<td>53,384</td>
<td>54,737</td>
<td>-37%</td>
<td>-9%</td>
<td>3%</td>
<td>-41%</td>
<td>1</td>
</tr>
<tr>
<td>Idaho</td>
<td>98,590</td>
<td>84,866</td>
<td>81,793</td>
<td>58,446</td>
<td>-14%</td>
<td>-4%</td>
<td>-29%</td>
<td>-41%</td>
<td>2</td>
</tr>
<tr>
<td>Iowa</td>
<td>75,480</td>
<td>44,989</td>
<td>43,861</td>
<td>45,456</td>
<td>-40%</td>
<td>-3%</td>
<td>4%</td>
<td>-40%</td>
<td>3</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>112,148</td>
<td>86,903</td>
<td>78,737</td>
<td>69,057</td>
<td>-23%</td>
<td>-9%</td>
<td>-12%</td>
<td>-38%</td>
<td>4</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>284,963</td>
<td>187,496</td>
<td>183,052</td>
<td>181,682</td>
<td>-34%</td>
<td>-2%</td>
<td>-1%</td>
<td>-36%</td>
<td>5</td>
</tr>
<tr>
<td>Alabama</td>
<td>187,176</td>
<td>129,289</td>
<td>115,198</td>
<td>121,184</td>
<td>-31%</td>
<td>-11%</td>
<td>5%</td>
<td>-35%</td>
<td>6</td>
</tr>
<tr>
<td>Kansas</td>
<td>111,879</td>
<td>68,504</td>
<td>68,569</td>
<td>73,251</td>
<td>-39%</td>
<td>0%</td>
<td>7%</td>
<td>-35%</td>
<td>7</td>
</tr>
<tr>
<td>New York</td>
<td>1,409,599</td>
<td>1,004,982</td>
<td>976,207</td>
<td>935,381</td>
<td>-29%</td>
<td>-3%</td>
<td>-4%</td>
<td>-34%</td>
<td>8</td>
</tr>
<tr>
<td>Arkansas</td>
<td>183,470</td>
<td>140,858</td>
<td>128,515</td>
<td>123,857</td>
<td>-39%</td>
<td>0%</td>
<td>-29%</td>
<td>-32%</td>
<td>9</td>
</tr>
<tr>
<td>Indiana</td>
<td>424,729</td>
<td>245,553</td>
<td>263,767</td>
<td>290,024</td>
<td>-42%</td>
<td>7%</td>
<td>10%</td>
<td>-32%</td>
<td>10</td>
</tr>
<tr>
<td>Nebraska</td>
<td>82,828</td>
<td>61,097</td>
<td>51,170</td>
<td>58,276</td>
<td>-26%</td>
<td>-16%</td>
<td>14%</td>
<td>-30%</td>
<td>11</td>
</tr>
<tr>
<td>Minnesota</td>
<td>414,788</td>
<td>299,380</td>
<td>281,115</td>
<td>299,014</td>
<td>-28%</td>
<td>-6%</td>
<td>6%</td>
<td>-28%</td>
<td>12</td>
</tr>
<tr>
<td>Connecticut</td>
<td>271,099</td>
<td>245,535</td>
<td>211,460</td>
<td>200,897</td>
<td>-10%</td>
<td>-14%</td>
<td>-5%</td>
<td>-26%</td>
<td>13</td>
</tr>
<tr>
<td>South Carolina</td>
<td>134,644</td>
<td>120,894</td>
<td>109,298</td>
<td>101,042</td>
<td>-10%</td>
<td>-10%</td>
<td>-8%</td>
<td>-25%</td>
<td>14</td>
</tr>
<tr>
<td>Mississippi</td>
<td>146,465</td>
<td>113,004</td>
<td>101,909</td>
<td>113,507</td>
<td>-23%</td>
<td>-10%</td>
<td>11%</td>
<td>-23%</td>
<td>15</td>
</tr>
<tr>
<td>Colorado</td>
<td>316,341</td>
<td>247,968</td>
<td>242,393</td>
<td>250,317</td>
<td>-22%</td>
<td>-2%</td>
<td>3%</td>
<td>-21%</td>
<td>16</td>
</tr>
<tr>
<td>Utah</td>
<td>171,492</td>
<td>126,590</td>
<td>118,595</td>
<td>136,272</td>
<td>-26%</td>
<td>-6%</td>
<td>15%</td>
<td>-21%</td>
<td>17</td>
</tr>
<tr>
<td>Kentucky</td>
<td>229,496</td>
<td>217,189</td>
<td>211,786</td>
<td>183,208</td>
<td>-5%</td>
<td>-2%</td>
<td>-13%</td>
<td>-20%</td>
<td>18</td>
</tr>
<tr>
<td>Louisiana</td>
<td>384,639</td>
<td>344,515</td>
<td>367,494</td>
<td>311,509</td>
<td>-10%</td>
<td>7%</td>
<td>-15%</td>
<td>-19%</td>
<td>19</td>
</tr>
<tr>
<td>Tennessee</td>
<td>368,549</td>
<td>291,927</td>
<td>300,260</td>
<td>298,610</td>
<td>-21%</td>
<td>3%</td>
<td>-1%</td>
<td>-19%</td>
<td>20</td>
</tr>
<tr>
<td>Texas</td>
<td>2,637,694</td>
<td>2,374,762</td>
<td>2,283,103</td>
<td>2,156,378</td>
<td>-10%</td>
<td>-4%</td>
<td>-6%</td>
<td>-18%</td>
<td>21</td>
</tr>
<tr>
<td>South Dakota</td>
<td>77,386</td>
<td>72,534</td>
<td>68,475</td>
<td>64,020</td>
<td>-6%</td>
<td>-6%</td>
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<tr>
<td>Nation</td>
<td>20,703,322</td>
<td>17,713,302</td>
<td>17,307,889</td>
<td>17,618,385</td>
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Table A2 (Continued). State LSA Population Changes from 2010 to 2016

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<td>17,713,302</td>
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<td>-8%</td>
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<td>58,961</td>
<td>66,431</td>
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<td>-8%</td>
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<td>953,501</td>
<td>969,252</td>
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<td>2%</td>
<td>10%</td>
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<td>72,062</td>
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<td>1%</td>
<td>-4%</td>
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<td>29,880</td>
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<td>27%</td>
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<td>0%</td>
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<td>663,820</td>
<td>711,611</td>
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<td>3%</td>
<td>7%</td>
<td>1%</td>
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<td>Michigan</td>
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<td>366,463</td>
<td>384,679</td>
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<td>-3%</td>
<td>5%</td>
<td>2%</td>
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<td>District of Columbia</td>
<td>173,325</td>
<td>168,265</td>
<td>151,894</td>
<td>176,837</td>
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<td>-10%</td>
<td>16%</td>
<td>2%</td>
<td>44</td>
</tr>
<tr>
<td>Virginia</td>
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<td>408,253</td>
<td>418,883</td>
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<td>-3%</td>
<td>3%</td>
<td>4%</td>
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<td>79,920</td>
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<td>-1%</td>
<td>-1%</td>
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<td>Nevada</td>
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<td>40%</td>
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Table A3. Major Metropolitan Area LSA Population Changes from 2010 to 2016*

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<tbody>
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<td>Charlotte-Concord-Gastonia, NC-SC</td>
<td>44,430</td>
<td>23,032</td>
<td>25,284</td>
<td>9,570</td>
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<td>10%</td>
<td>62%</td>
<td>-78%</td>
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<td>Buffalo-Cheektowaga-Niagara Falls, NY</td>
<td>287,448</td>
<td>112,043</td>
<td>109,666</td>
<td>118,882</td>
<td>-61%</td>
<td>-2%</td>
<td>8%</td>
<td>-59%</td>
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<td>Nashville-Davidson--Murfreesboro--Franklin, TN</td>
<td>75,147</td>
<td>46,834</td>
<td>38,454</td>
<td>31,202</td>
<td>-38%</td>
<td>-18%</td>
<td>-19%</td>
<td>-58%</td>
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<td>Grand Rapids-Wyoming, MI</td>
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<td>22,251</td>
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<td>-19%</td>
<td>-26%</td>
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<td>9%</td>
<td>2%</td>
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<td>58,637</td>
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<td>-20%</td>
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<td>-18%</td>
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<td>-6%</td>
<td>1%</td>
<td>-36%</td>
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<td>-10%</td>
<td>-2%</td>
<td>-33%</td>
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<td>-15%</td>
<td>43%</td>
<td>-31%</td>
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<td>22,938</td>
<td>23,439</td>
<td>-26%</td>
<td>-2%</td>
<td>2%</td>
<td>-26%</td>
<td>11</td>
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<td>Dallas-Fort Worth-Arlington, TX</td>
<td>527,662</td>
<td>489,383</td>
<td>445,466</td>
<td>390,846</td>
<td>-7%</td>
<td>-9%</td>
<td>-12%</td>
<td>-26%</td>
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</tr>
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<td>Providence-Warwick, RI-MA</td>
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<td>118,752</td>
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<td>-4%</td>
<td>-7%</td>
<td>-25%</td>
<td>13</td>
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<td>Portland-Vancouver-Hillsboro, OR-WA</td>
<td>68,585</td>
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<td>49,048</td>
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<td>-12%</td>
<td>-19%</td>
<td>5%</td>
<td>-25%</td>
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<td>San Diego-Carlsbad, CA</td>
<td>197,743</td>
<td>168,364</td>
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<td>148,812</td>
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<td>-8%</td>
<td>-4%</td>
<td>-25%</td>
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<tr>
<td>San Antonio-New Braunfels, TX</td>
<td>394,062</td>
<td>348,155</td>
<td>345,940</td>
<td>304,634</td>
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<td>-1%</td>
<td>-12%</td>
<td>-23%</td>
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<td>Miami-Fort Lauderdale-West Palm Beach, FL</td>
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<td>262,723</td>
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<td>244,341</td>
<td>-16%</td>
<td>-8%</td>
<td>1%</td>
<td>-22%</td>
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<td>54,001</td>
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<td>-17%</td>
<td>3%</td>
<td>-22%</td>
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<tr>
<td>Cleveland-Elyria, OH</td>
<td>177,038</td>
<td>152,795</td>
<td>144,132</td>
<td>138,020</td>
<td>-14%</td>
<td>-6%</td>
<td>-4%</td>
<td>-22%</td>
<td>19</td>
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<tr>
<td>Denver-Aurora-Lakewood, CO</td>
<td>162,793</td>
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<td>114,575</td>
<td>127,427</td>
<td>-30%</td>
<td>1%</td>
<td>11%</td>
<td>-22%</td>
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<tr>
<td>Chicago-Naperville-Elgin, IL-IN-WI</td>
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<td>761,125</td>
<td>724,204</td>
<td>729,386</td>
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<td>-5%</td>
<td>1%</td>
<td>-18%</td>
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<td>Baltimore-Columbia-Towson, MD</td>
<td>331,002</td>
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<td>-7%</td>
<td>1%</td>
<td>-17%</td>
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<td>Houston-The Woodlands-Sugar Land, TX</td>
<td>634,128</td>
<td>559,991</td>
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<td>-8%</td>
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<td>1,305,809</td>
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<td>1%</td>
<td>-2%</td>
<td>-17%</td>
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<td>Louisville/Jefferson County, KY-IN</td>
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<td>-4%</td>
<td>12%</td>
<td>-17%</td>
<td>25</td>
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<td>St. Louis, MO-IL</td>
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<td>233,941</td>
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<td>-3%</td>
<td>8%</td>
<td>-16%</td>
<td>26</td>
</tr>
<tr>
<td>Minneapolis-St. Paul-Bloomington, MN-WI</td>
<td>281,645</td>
<td>220,838</td>
<td>211,344</td>
<td>236,332</td>
<td>-22%</td>
<td>-4%</td>
<td>12%</td>
<td>-16%</td>
<td>27</td>
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<tr>
<td><strong>Major Metropolitan Area Average</strong>*</td>
<td><strong>245,691</strong></td>
<td><strong>212,332</strong></td>
<td><strong>206,469</strong></td>
<td><strong>211,510</strong></td>
<td><strong>-15%</strong></td>
<td><strong>-3%</strong></td>
<td><strong>2%</strong></td>
<td><strong>-16%</strong></td>
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</table>

*Major metropolitan areas are defined as metropolitan areas with an estimated 2016 population of at least one million people.
Table A3 (Continued). Major Metropolitan Area LSA Population Changes from 2010 to 2016*

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<th>Metropolitan Area</th>
<th>2010</th>
<th>2012</th>
<th>2014</th>
<th>2016</th>
<th>% Chg 2010-2012</th>
<th>% Chg 2012-2014</th>
<th>% Chg 2014-2016</th>
<th>% Chg 2010-2016</th>
<th>Rank</th>
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<tbody>
<tr>
<td>Major Metropolitan Area Average*</td>
<td>245,691</td>
<td>212,332</td>
<td>206,469</td>
<td>211,510</td>
<td>-15%</td>
<td>-3%</td>
<td>2%</td>
<td>-16%</td>
<td>-</td>
</tr>
<tr>
<td>Seattle-Tacoma-Bellevue, WA</td>
<td>152,728</td>
<td>142,139</td>
<td>126,417</td>
<td>131,073</td>
<td>-7%</td>
<td>-11%</td>
<td>4%</td>
<td>-14%</td>
<td>28</td>
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<tr>
<td>Boston-Cambridge-Newton, MA-NH</td>
<td>558,019</td>
<td>499,095</td>
<td>494,698</td>
<td>479,393</td>
<td>-11%</td>
<td>-1%</td>
<td>-3%</td>
<td>-14%</td>
<td>29</td>
</tr>
<tr>
<td>Milwaukee-Waukesha-West Allis, WI</td>
<td>105,227</td>
<td>105,893</td>
<td>98,479</td>
<td>90,450</td>
<td>1%</td>
<td>-7%</td>
<td>-8%</td>
<td>-14%</td>
<td>30</td>
</tr>
<tr>
<td>Austin-Round Rock, TX</td>
<td>303,137</td>
<td>280,138</td>
<td>273,350</td>
<td>262,237</td>
<td>-8%</td>
<td>-2%</td>
<td>-4%</td>
<td>-13%</td>
<td>31</td>
</tr>
<tr>
<td>New Orleans-Metairie, LA</td>
<td>106,274</td>
<td>103,441</td>
<td>118,433</td>
<td>95,808</td>
<td>3%</td>
<td>14%</td>
<td>-19%</td>
<td>-10%</td>
<td>32</td>
</tr>
<tr>
<td>Sacramento--Roseville--Arden-Arcade, CA</td>
<td>137,945</td>
<td>127,894</td>
<td>126,212</td>
<td>125,481</td>
<td>-7%</td>
<td>-1%</td>
<td>-1%</td>
<td>-9%</td>
<td>33</td>
</tr>
<tr>
<td>San Francisco-Oakland-Hayward, CA</td>
<td>179,467</td>
<td>159,630</td>
<td>154,408</td>
<td>165,170</td>
<td>-11%</td>
<td>-3%</td>
<td>7%</td>
<td>-8%</td>
<td>34</td>
</tr>
<tr>
<td>Orlando-Kissimmee-Sanford, FL</td>
<td>136,648</td>
<td>108,817</td>
<td>112,913</td>
<td>128,545</td>
<td>-20%</td>
<td>4%</td>
<td>14%</td>
<td>-6%</td>
<td>35</td>
</tr>
<tr>
<td>Riverside-San Bernardino-Ontario, CA</td>
<td>290,454</td>
<td>259,646</td>
<td>281,304</td>
<td>273,769</td>
<td>-11%</td>
<td>8%</td>
<td>-3%</td>
<td>-6%</td>
<td>36</td>
</tr>
<tr>
<td>Tampa-St. Petersburg-Clearwater, FL</td>
<td>192,702</td>
<td>178,158</td>
<td>172,185</td>
<td>182,582</td>
<td>-8%</td>
<td>-3%</td>
<td>6%</td>
<td>-5%</td>
<td>37</td>
</tr>
<tr>
<td>Washington-Arlington-Alexandria, DC-VA-MD-WV</td>
<td>527,288</td>
<td>487,807</td>
<td>459,732</td>
<td>506,111</td>
<td>-7%</td>
<td>-6%</td>
<td>10%</td>
<td>-4%</td>
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</tr>
<tr>
<td>Atlanta-Sandy Springs-Roswell, GA</td>
<td>414,370</td>
<td>382,099</td>
<td>380,797</td>
<td>397,743</td>
<td>-8%</td>
<td>0%</td>
<td>4%</td>
<td>-4%</td>
<td>39</td>
</tr>
<tr>
<td>Pittsburgh, PA</td>
<td>256,287</td>
<td>211,737</td>
<td>207,446</td>
<td>246,285</td>
<td>-17%</td>
<td>-2%</td>
<td>19%</td>
<td>-4%</td>
<td>40</td>
</tr>
<tr>
<td>Memphis, TN-MS-AR</td>
<td>135,613</td>
<td>102,646</td>
<td>114,677</td>
<td>130,584</td>
<td>-24%</td>
<td>12%</td>
<td>14%</td>
<td>-4%</td>
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<tr>
<td>Cincinnati, OH-KY-IN</td>
<td>187,352</td>
<td>181,139</td>
<td>180,951</td>
<td>186,132</td>
<td>-3%</td>
<td>0%</td>
<td>3%</td>
<td>-1%</td>
<td>42</td>
</tr>
<tr>
<td>Los Angeles-Long Beach-Anaheim, CA</td>
<td>353,743</td>
<td>318,006</td>
<td>318,571</td>
<td>359,565</td>
<td>-10%</td>
<td>0%</td>
<td>13%</td>
<td>2%</td>
<td>43</td>
</tr>
<tr>
<td>Philadelphia-Camden-Wilmington, PA-NJ-DE-MD</td>
<td>701,731</td>
<td>657,672</td>
<td>612,332</td>
<td>713,847</td>
<td>-6%</td>
<td>-7%</td>
<td>17%</td>
<td>2%</td>
<td>44</td>
</tr>
<tr>
<td>Phoenix-Mesa-Scottsdale, AZ</td>
<td>326,028</td>
<td>292,637</td>
<td>313,992</td>
<td>338,492</td>
<td>-10%</td>
<td>7%</td>
<td>8%</td>
<td>4%</td>
<td>45</td>
</tr>
<tr>
<td>Detroit-Warren-Dearborn, MI</td>
<td>242,419</td>
<td>240,495</td>
<td>235,809</td>
<td>253,786</td>
<td>-1%</td>
<td>-2%</td>
<td>8%</td>
<td>5%</td>
<td>46</td>
</tr>
<tr>
<td>Richmond, VA</td>
<td>79,534</td>
<td>83,258</td>
<td>82,917</td>
<td>84,235</td>
<td>5%</td>
<td>0%</td>
<td>2%</td>
<td>6%</td>
<td>47</td>
</tr>
<tr>
<td>Columbus, OH</td>
<td>110,669</td>
<td>108,914</td>
<td>106,451</td>
<td>118,380</td>
<td>-2%</td>
<td>-2%</td>
<td>11%</td>
<td>7%</td>
<td>48</td>
</tr>
<tr>
<td>Raleigh, NC</td>
<td>28,675</td>
<td>29,335</td>
<td>35,582</td>
<td>31,578</td>
<td>2%</td>
<td>21%</td>
<td>-11%</td>
<td>10%</td>
<td>49</td>
</tr>
<tr>
<td>Jacksonville, FL</td>
<td>84,895</td>
<td>85,495</td>
<td>91,251</td>
<td>99,512</td>
<td>1%</td>
<td>7%</td>
<td>9%</td>
<td>17%</td>
<td>50</td>
</tr>
<tr>
<td>Virginia Beach-Norfolk-Newport News, VA-NC</td>
<td>77,270</td>
<td>95,206</td>
<td>83,040</td>
<td>90,623</td>
<td>23%</td>
<td>-13%</td>
<td>9%</td>
<td>17%</td>
<td>51</td>
</tr>
<tr>
<td>Las Vegas-Henderson-Paradise, NV</td>
<td>157,036</td>
<td>148,187</td>
<td>173,476</td>
<td>211,055</td>
<td>-6%</td>
<td>17%</td>
<td>22%</td>
<td>34%</td>
<td>52</td>
</tr>
</tbody>
</table>

*Major metropolitan areas are defined as metropolitan areas with an estimated 2016 population of at least one million people.
2016 LSA Figures for States and Major Metropolitan Areas by Income Disparity

The Income Disparity Ratio in represents the ratio between the percentage of the LSA population living in low-income areas and the percentage of the total population living in low-income areas. If LSA areas were evenly distributed across a geography, the Income Disparity Ratio would be 1.0. Values greater than 1.0 indicate that LSA areas are disproportionately located in low-income areas. The Income Disparity Ratio does not indicate the size of an area’s food access problem; rather, it identifies states and metropolitan regions where LSA areas are disproportionately concentrated in low-income communities.

Table A4. 2016 LSA Figures for States by Income Disparity

<table>
<thead>
<tr>
<th>State</th>
<th>Total Population</th>
<th>% Total Population in Low-Income Areas</th>
<th>LSA Population</th>
<th>% LSA Population in Low-Income Areas</th>
<th>Income Disparity Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhode Island</td>
<td>1,054,491</td>
<td>29%</td>
<td>69,057</td>
<td>91%</td>
<td>3.2</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>12,783,977</td>
<td>25%</td>
<td>1,088,457</td>
<td>73%</td>
<td>2.9</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>5,754,798</td>
<td>21%</td>
<td>181,682</td>
<td>62%</td>
<td>2.9</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>6,742,143</td>
<td>26%</td>
<td>619,747</td>
<td>65%</td>
<td>2.5</td>
</tr>
<tr>
<td>Delaware</td>
<td>934,695</td>
<td>20%</td>
<td>66,431</td>
<td>49%</td>
<td>2.4</td>
</tr>
<tr>
<td>Maine</td>
<td>1,329,923</td>
<td>18%</td>
<td>43,767</td>
<td>43%</td>
<td>2.4</td>
</tr>
<tr>
<td>Connecticut</td>
<td>3,588,570</td>
<td>29%</td>
<td>200,897</td>
<td>67%</td>
<td>2.3</td>
</tr>
<tr>
<td>Illinois</td>
<td>12,851,684</td>
<td>28%</td>
<td>812,572</td>
<td>62%</td>
<td>2.2</td>
</tr>
<tr>
<td>Michigan</td>
<td>9,909,600</td>
<td>26%</td>
<td>384,679</td>
<td>56%</td>
<td>2.2</td>
</tr>
<tr>
<td>Kentucky</td>
<td>4,411,989</td>
<td>23%</td>
<td>183,208</td>
<td>50%</td>
<td>2.2</td>
</tr>
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<td>Wyoming</td>
<td>583,029</td>
<td>18%</td>
<td>29,880</td>
<td>38%</td>
<td>2.1</td>
</tr>
<tr>
<td>Ohio</td>
<td>11,586,941</td>
<td>26%</td>
<td>566,224</td>
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<td>2.1</td>
</tr>
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<td>Virginia</td>
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<td>22%</td>
<td>418,883</td>
<td>45%</td>
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</tr>
<tr>
<td>West Virginia</td>
<td>1,846,092</td>
<td>20%</td>
<td>99,644</td>
<td>40%</td>
<td>2.0</td>
</tr>
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<td>Minnesota</td>
<td>5,450,868</td>
<td>23%</td>
<td>299,014</td>
<td>44%</td>
<td>1.9</td>
</tr>
<tr>
<td>New Jersey</td>
<td>8,915,456</td>
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<td>879,188</td>
<td>46%</td>
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<td>323,225</td>
<td>45%</td>
<td>1.9</td>
</tr>
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<td>Tennessee</td>
<td>6,548,009</td>
<td>25%</td>
<td>298,610</td>
<td>46%</td>
<td>1.9</td>
</tr>
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<td>Maryland</td>
<td>5,959,902</td>
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<td>507,840</td>
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<td>1.8</td>
</tr>
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<td>New York</td>
<td>19,639,978</td>
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<td>935,381</td>
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<td>1.7</td>
</tr>
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<td>17,618,385</td>
<td>44%</td>
<td>1.7</td>
</tr>
<tr>
<td>State</td>
<td>Total Population</td>
<td>% Total Population in Low-Income Areas</td>
<td>LSA Population</td>
<td>% LSA Population in Low-Income Areas</td>
<td>Income Disparity Ratio</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------</td>
<td>----------------------------------------</td>
<td>----------------</td>
<td>--------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Nation</td>
<td>316,292,890</td>
<td>26%</td>
<td>17,618,385</td>
<td>44%</td>
<td>1.7</td>
</tr>
<tr>
<td>District of Columbia</td>
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<td>41%</td>
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<td>1,061,469</td>
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</tr>
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<td>33%</td>
<td>1.4</td>
</tr>
<tr>
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<td>1,524,408</td>
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</tr>
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<td>-</td>
</tr>
<tr>
<td>Metropolitan Area</td>
<td>Total Population</td>
<td>% Total Population in Low-Income Areas</td>
<td>LSA Population</td>
<td>% LSA Population in Low-Income Areas</td>
<td>Income Disparity Ratio</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>------------------</td>
<td>---------------------------------------</td>
<td>----------------</td>
<td>--------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Rochester, NY</td>
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<td>71%</td>
<td>3.3</td>
</tr>
<tr>
<td>Pittsburgh, PA</td>
<td>2,354,926</td>
<td>24%</td>
<td>246,285</td>
<td>78%</td>
<td>3.2</td>
</tr>
<tr>
<td>Buffalo-Cheektowaga-Niagara Falls, NY</td>
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<td>26%</td>
<td>118,882</td>
<td>83%</td>
<td>3.2</td>
</tr>
<tr>
<td>Milwaukee-Waukesha-West Allis, WI</td>
<td>1,571,730</td>
<td>30%</td>
<td>90,450</td>
<td>92%</td>
<td>3.1</td>
</tr>
<tr>
<td>Cleveland-Elyria, OH</td>
<td>2,061,630</td>
<td>28%</td>
<td>138,020</td>
<td>77%</td>
<td>3.0</td>
</tr>
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<td>Providence-Warwick, RI-MA</td>
<td>1,609,359</td>
<td>28%</td>
<td>118,752</td>
<td>77%</td>
<td>2.7</td>
</tr>
<tr>
<td>Virginia Beach-Norfolk-Newport News, VA-NC</td>
<td>1,714,428</td>
<td>29%</td>
<td>90,623</td>
<td>74%</td>
<td>2.6</td>
</tr>
<tr>
<td>Louisville-Camden-Wilmington, PA-NJ-DE-MD</td>
<td>6,047,721</td>
<td>30%</td>
<td>713,847</td>
<td>74%</td>
<td>2.5</td>
</tr>
<tr>
<td>Jacksonville, FL</td>
<td>4,204,097</td>
<td>23%</td>
<td>99,512</td>
<td>55%</td>
<td>2.4</td>
</tr>
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<td>Boston-Cambridge-Newton, MA-NH</td>
<td>4,728,844</td>
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<td>479,393</td>
<td>62%</td>
<td>2.4</td>
</tr>
<tr>
<td>Louisville/Jefferson County, KY-IN</td>
<td>1,269,550</td>
<td>25%</td>
<td>90,305</td>
<td>58%</td>
<td>2.3</td>
</tr>
<tr>
<td>Baltimore-Columbia-Towson, MD</td>
<td>1,214,073</td>
<td>23%</td>
<td>99,512</td>
<td>55%</td>
<td>2.3</td>
</tr>
<tr>
<td>Richmond, VA</td>
<td>1,258,158</td>
<td>27%</td>
<td>84,235</td>
<td>60%</td>
<td>2.2</td>
</tr>
<tr>
<td>St. Louis, MO-IL</td>
<td>2,803,449</td>
<td>26%</td>
<td>215,015</td>
<td>57%</td>
<td>2.2</td>
</tr>
<tr>
<td>Cincinnati, OH-KY-IN</td>
<td>2,146,410</td>
<td>26%</td>
<td>186,132</td>
<td>56%</td>
<td>2.2</td>
</tr>
<tr>
<td>Portland-Vancouver-Hillsboro, OR-WA</td>
<td>2,351,319</td>
<td>24%</td>
<td>51,579</td>
<td>52%</td>
<td>2.2</td>
</tr>
<tr>
<td>Raleigh, NC</td>
<td>1,243,720</td>
<td>28%</td>
<td>31,578</td>
<td>59%</td>
<td>2.1</td>
</tr>
<tr>
<td>Nashville-Davidson--Murfreesboro--Franklin, TN</td>
<td>1,794,570</td>
<td>27%</td>
<td>31,202</td>
<td>57%</td>
<td>2.1</td>
</tr>
<tr>
<td>Miami-Fort Lauderdale-West Palm Beach, FL</td>
<td>5,926,955</td>
<td>33%</td>
<td>244,341</td>
<td>69%</td>
<td>2.1</td>
</tr>
<tr>
<td>Chicago-Naperville-Elgin, IL-IN-WI</td>
<td>9,528,396</td>
<td>31%</td>
<td>729,386</td>
<td>64%</td>
<td>2.1</td>
</tr>
<tr>
<td>Minneapolis-St. Paul-Bloomington, MN-WI</td>
<td>3,488,436</td>
<td>25%</td>
<td>236,332</td>
<td>51%</td>
<td>2.0</td>
</tr>
<tr>
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<td>4,296,731</td>
<td>30%</td>
<td>253,786</td>
<td>59%</td>
<td>2.0</td>
</tr>
<tr>
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<td>4,577,530</td>
<td>29%</td>
<td>165,170</td>
<td>58%</td>
<td>2.0</td>
</tr>
<tr>
<td>Salt Lake City, UT</td>
<td>1,154,504</td>
<td>23%</td>
<td>21,159</td>
<td>45%</td>
<td>1.9</td>
</tr>
<tr>
<td>San Jose-Sunnyvale-Santa Clara, CA</td>
<td>1,943,107</td>
<td>26%</td>
<td>23,439</td>
<td>49%</td>
<td>1.8</td>
</tr>
<tr>
<td>New Orleans-Metairie, LA</td>
<td>1,250,247</td>
<td>30%</td>
<td>95,808</td>
<td>55%</td>
<td>1.8</td>
</tr>
<tr>
<td>Kansas City, MO-KS</td>
<td>2,070,147</td>
<td>28%</td>
<td>53,118</td>
<td>50%</td>
<td>1.8</td>
</tr>
<tr>
<td>Washington-Arlington-Alexandria, DC-VA-MD-WV</td>
<td>6,011,752</td>
<td>28%</td>
<td>506,111</td>
<td>49%</td>
<td>1.7</td>
</tr>
<tr>
<td><strong>Major Metropolitan Area Average</strong>*</td>
<td><strong>3,398,778</strong></td>
<td><strong>28%</strong></td>
<td><strong>211,510</strong></td>
<td><strong>49%</strong></td>
<td><strong>1.7</strong></td>
</tr>
</tbody>
</table>

*Major metropolitan areas are defined as metropolitan areas with an estimated 2016 population of at least one million people.
<table>
<thead>
<tr>
<th>Metropolitan Area</th>
<th>Total Population</th>
<th>% Total Population in Low-Income Areas</th>
<th>LSA Population</th>
<th>% LSA Population in Low-Income Areas</th>
<th>Income Disparity Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Metropolitan Area Average*</td>
<td>3,398,778</td>
<td>28%</td>
<td>211,510</td>
<td>49%</td>
<td>1.7</td>
</tr>
<tr>
<td>Hartford-West Hartford-East Hartford, CT</td>
<td>1,211,826</td>
<td>27%</td>
<td>58,637</td>
<td>46%</td>
<td>1.7</td>
</tr>
<tr>
<td>Los Angeles-Long Beach-Anaheim, CA</td>
<td>13,184,423</td>
<td>34%</td>
<td>359,565</td>
<td>56%</td>
<td>1.6</td>
</tr>
<tr>
<td>Tampa-St. Petersburg-Clearwater, FL</td>
<td>2,927,714</td>
<td>26%</td>
<td>182,582</td>
<td>43%</td>
<td>1.6</td>
</tr>
<tr>
<td>Memphis, TN-MS-AR</td>
<td>1,341,339</td>
<td>35%</td>
<td>130,584</td>
<td>55%</td>
<td>1.6</td>
</tr>
<tr>
<td>Birmingham-Hoover, AL</td>
<td>1,141,309</td>
<td>30%</td>
<td>56,128</td>
<td>47%</td>
<td>1.5</td>
</tr>
<tr>
<td>Seattle-Tacoma-Bellevue, WA</td>
<td>3,671,095</td>
<td>25%</td>
<td>131,073</td>
<td>39%</td>
<td>1.5</td>
</tr>
<tr>
<td>Phoenix-Mesa-Scottsdale, AZ</td>
<td>4,486,153</td>
<td>30%</td>
<td>338,492</td>
<td>42%</td>
<td>1.4</td>
</tr>
<tr>
<td>Denver-Aurora-Lakewood, CO</td>
<td>2,752,056</td>
<td>31%</td>
<td>127,427</td>
<td>42%</td>
<td>1.4</td>
</tr>
<tr>
<td>San Antonio-New Braunfels, TX</td>
<td>2,332,345</td>
<td>33%</td>
<td>304,634</td>
<td>43%</td>
<td>1.3</td>
</tr>
<tr>
<td>New York-Newark-Jersey City, NY-NJ-PA</td>
<td>20,031,443</td>
<td>33%</td>
<td>1,085,573</td>
<td>42%</td>
<td>1.3</td>
</tr>
<tr>
<td>Las Vegas-Henderson-Paradise, NV</td>
<td>2,070,153</td>
<td>27%</td>
<td>211,055</td>
<td>33%</td>
<td>1.2</td>
</tr>
<tr>
<td>San Diego-Carlsbad, CA</td>
<td>3,253,356</td>
<td>31%</td>
<td>148,812</td>
<td>38%</td>
<td>1.2</td>
</tr>
<tr>
<td>Atlanta-Sandy Springs-Roswell, GA</td>
<td>5,612,777</td>
<td>29%</td>
<td>397,743</td>
<td>33%</td>
<td>1.2</td>
</tr>
<tr>
<td>Columbus, OH</td>
<td>1,995,004</td>
<td>30%</td>
<td>118,380</td>
<td>34%</td>
<td>1.1</td>
</tr>
<tr>
<td>Houston-The Woodlands-Sugar Land, TX</td>
<td>6,482,592</td>
<td>33%</td>
<td>526,008</td>
<td>36%</td>
<td>1.1</td>
</tr>
<tr>
<td>Orlando-Kissimmee-Sanford, FL</td>
<td>2,328,508</td>
<td>26%</td>
<td>128,545</td>
<td>27%</td>
<td>1.0</td>
</tr>
<tr>
<td>Riverside-San Bernardino-Ontario, CA</td>
<td>4,430,646</td>
<td>30%</td>
<td>273,769</td>
<td>30%</td>
<td>1.0</td>
</tr>
<tr>
<td>Austin-Round Rock, TX</td>
<td>1,942,615</td>
<td>29%</td>
<td>262,237</td>
<td>27%</td>
<td>0.9</td>
</tr>
<tr>
<td>Dallas-Fort Worth-Arlington, TX</td>
<td>6,957,123</td>
<td>32%</td>
<td>390,846</td>
<td>29%</td>
<td>0.9</td>
</tr>
<tr>
<td>Indianapolis-Carmel-Anderson, IN</td>
<td>1,968,768</td>
<td>30%</td>
<td>96,788</td>
<td>23%</td>
<td>0.8</td>
</tr>
<tr>
<td>Sacramento--Roseville--Arden-Arcade, CA</td>
<td>2,242,542</td>
<td>29%</td>
<td>125,481</td>
<td>4%</td>
<td>0.1</td>
</tr>
<tr>
<td>Oklahoma City, OK</td>
<td>1,337,075</td>
<td>28%</td>
<td>41,950</td>
<td>3%</td>
<td>0.1</td>
</tr>
<tr>
<td>Grand Rapids-Wyoming, MI</td>
<td>1,028,173</td>
<td>23%</td>
<td>16,576</td>
<td>0%</td>
<td>0.0</td>
</tr>
<tr>
<td>Charlotte-Concord-Gastonia, NC-SC</td>
<td>2,381,152</td>
<td>29%</td>
<td>9,570</td>
<td>0%</td>
<td>0.0</td>
</tr>
</tbody>
</table>

*Major metropolitan areas are defined as metropolitan areas with an estimated 2016 population of at least one million people.
2016 LSA Figures for States and Major Metropolitan Areas by Racial/Ethnic Disparity

The Racial/Ethnic Disparity Ratio represents the ratio between the percentage of people living in LSA areas who are people of color and the percentage of the total population who are people of color. If LSA areas were evenly distributed across a geography, the Racial/Ethnic Disparity Ratio would be 1.0. Values greater than 1.0 indicate that people of color are disproportionately concentrated in LSA areas. The Racial/Ethnic Disparity Ratio does not indicate the size of an area’s food access problem; rather, it identifies states and metropolitan regions where people of color are disproportionately concentrated in LSA areas.

Table A6. 2016 LSA Figures for States by Racial/Ethnic Disparity

<table>
<thead>
<tr>
<th>State</th>
<th>Total Population</th>
<th>% Total Population People of Color</th>
<th>LSA Population</th>
<th>% LSA Population People of Color</th>
<th>Racial/Ethnic Disparity Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhode Island</td>
<td>1,054,491</td>
<td>26%</td>
<td>69,057</td>
<td>60%</td>
<td>2.3</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>5,754,798</td>
<td>18%</td>
<td>181,682</td>
<td>41%</td>
<td>2.3</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>12,783,977</td>
<td>21%</td>
<td>1,088,457</td>
<td>47%</td>
<td>2.2</td>
</tr>
<tr>
<td>Kentucky</td>
<td>4,411,989</td>
<td>14%</td>
<td>183,208</td>
<td>31%</td>
<td>2.1</td>
</tr>
<tr>
<td>Ohio</td>
<td>11,586,941</td>
<td>19%</td>
<td>566,224</td>
<td>37%</td>
<td>1.9</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>6,742,143</td>
<td>26%</td>
<td>619,747</td>
<td>48%</td>
<td>1.9</td>
</tr>
<tr>
<td>Missouri</td>
<td>6,059,651</td>
<td>19%</td>
<td>323,225</td>
<td>35%</td>
<td>1.8</td>
</tr>
<tr>
<td>Connecticut</td>
<td>3,588,570</td>
<td>31%</td>
<td>200,897</td>
<td>56%</td>
<td>1.8</td>
</tr>
<tr>
<td>South Dakota</td>
<td>836,795</td>
<td>17%</td>
<td>64,020</td>
<td>30%</td>
<td>1.7</td>
</tr>
<tr>
<td>Maine</td>
<td>1,329,923</td>
<td>6%</td>
<td>43,767</td>
<td>11%</td>
<td>1.7</td>
</tr>
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<td>Michigan</td>
<td>9,909,600</td>
<td>23%</td>
<td>384,679</td>
<td>38%</td>
<td>1.7</td>
</tr>
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<td>19%</td>
<td>299,014</td>
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<td>1.6</td>
</tr>
<tr>
<td>Tennessee</td>
<td>6,548,009</td>
<td>24%</td>
<td>298,610</td>
<td>36%</td>
<td>1.5</td>
</tr>
<tr>
<td>Delaware</td>
<td>934,695</td>
<td>36%</td>
<td>66,431</td>
<td>51%</td>
<td>1.4</td>
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<td>812,572</td>
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<td>250,317</td>
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<td>19,639,978</td>
<td>40%</td>
<td>935,381</td>
<td>50%</td>
<td>1.3</td>
</tr>
<tr>
<td>Nation</td>
<td>316,292,890</td>
<td>37%</td>
<td>17,625,275</td>
<td>46%</td>
<td>1.3</td>
</tr>
<tr>
<td>State</td>
<td>Total Population</td>
<td>% Total Population People of Color</td>
<td>LSA Population</td>
<td>% LSA Population People of Color</td>
<td>Racial/Ethnic Disparity Ratio</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------</td>
<td>------------------------------------</td>
<td>----------------</td>
<td>----------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Nation</td>
<td>316,292,890</td>
<td>37%</td>
<td>17,618,385</td>
<td>46%</td>
<td>1.3</td>
</tr>
<tr>
<td>Kansas</td>
<td>2,898,292</td>
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<td>73,251</td>
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</tr>
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<td>Montana</td>
<td>1,023,391</td>
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<td>78,708</td>
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</tr>
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<td>879,188</td>
<td>51%</td>
<td>1.2</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>659,009</td>
<td>56%</td>
<td>176,837</td>
<td>66%</td>
<td>1.2</td>
</tr>
<tr>
<td>Indiana</td>
<td>6,589,578</td>
<td>19%</td>
<td>290,024</td>
<td>23%</td>
<td>1.2</td>
</tr>
<tr>
<td>Louisiana</td>
<td>4,645,670</td>
<td>38%</td>
<td>311,509</td>
<td>44%</td>
<td>1.2</td>
</tr>
<tr>
<td>Virginia</td>
<td>8,304,006</td>
<td>37%</td>
<td>418,883</td>
<td>42%</td>
<td>1.2</td>
</tr>
<tr>
<td>New Mexico</td>
<td>2,082,669</td>
<td>60%</td>
<td>238,789</td>
<td>69%</td>
<td>1.1</td>
</tr>
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<td>16%</td>
<td>29,880</td>
<td>18%</td>
<td>1.1</td>
</tr>
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<td>50%</td>
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<td>1.1</td>
</tr>
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</tr>
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<td>1.1</td>
</tr>
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<td>9,940,828</td>
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<td>37%</td>
<td>1.0</td>
</tr>
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<td>West Virginia</td>
<td>1,846,092</td>
<td>8%</td>
<td>99,644</td>
<td>8%</td>
<td>1.0</td>
</tr>
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<td>1,327,503</td>
<td>9%</td>
<td>79,455</td>
<td>9%</td>
<td>1.0</td>
</tr>
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<td>2,839,172</td>
<td>49%</td>
<td>317,050</td>
<td>48%</td>
<td>1.0</td>
</tr>
<tr>
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<td>38,649,263</td>
<td>60%</td>
<td>1,524,408</td>
<td>58%</td>
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</tr>
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<td>101,042</td>
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<td>0.9</td>
</tr>
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<td>0.9</td>
</tr>
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<td>17%</td>
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<td>Arkansas</td>
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</tr>
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<td>Oklahoma</td>
<td>3,875,589</td>
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<td>175,722</td>
<td>28%</td>
<td>0.9</td>
</tr>
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<td>7,073,146</td>
<td>30%</td>
<td>301,240</td>
<td>25%</td>
<td>0.8</td>
</tr>
<tr>
<td>North Dakota</td>
<td>736,162</td>
<td>14%</td>
<td>54,737</td>
<td>11%</td>
<td>0.8</td>
</tr>
<tr>
<td>Utah</td>
<td>2,948,427</td>
<td>21%</td>
<td>136,272</td>
<td>16%</td>
<td>0.8</td>
</tr>
<tr>
<td>Vermont</td>
<td>626,249</td>
<td>7%</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Metropolitan Area</td>
<td>Total Population</td>
<td>% Total Population People of Color</td>
<td>LSA Population</td>
<td>% LSA Population People of Color</td>
<td>Racial/Ethnic Disparity Ratio</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>------------------</td>
<td>-----------------------------------</td>
<td>----------------</td>
<td>----------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Buffalo-Cheektowaga-Niagara Falls, NY</td>
<td>1,135,503</td>
<td>21%</td>
<td>118,882</td>
<td>58%</td>
<td>2.8</td>
</tr>
<tr>
<td>Rochester, NY</td>
<td>1,082,226</td>
<td>23%</td>
<td>95,339</td>
<td>59%</td>
<td>2.6</td>
</tr>
<tr>
<td>Pittsburgh, PA</td>
<td>2,354,926</td>
<td>14%</td>
<td>246,285</td>
<td>35%</td>
<td>2.6</td>
</tr>
<tr>
<td>Cincinnati, OH-KY-IN</td>
<td>2,146,410</td>
<td>20%</td>
<td>186,132</td>
<td>42%</td>
<td>2.1</td>
</tr>
<tr>
<td>Nashville-Davidson--Murfreesboro--Franklin, TN</td>
<td>1,794,570</td>
<td>27%</td>
<td>31,202</td>
<td>55%</td>
<td>2.1</td>
</tr>
<tr>
<td>Providence-Warwick, RI-MA</td>
<td>1,609,359</td>
<td>22%</td>
<td>118,752</td>
<td>46%</td>
<td>2.0</td>
</tr>
<tr>
<td>Milwaukee-Waukesha-West Allis, WI</td>
<td>1,571,730</td>
<td>32%</td>
<td>90,450</td>
<td>60%</td>
<td>1.9</td>
</tr>
<tr>
<td>Cleveland-Elyria, OH</td>
<td>2,061,630</td>
<td>27%</td>
<td>138,020</td>
<td>50%</td>
<td>1.9</td>
</tr>
<tr>
<td>St. Louis, MO-IL</td>
<td>2,803,449</td>
<td>24%</td>
<td>215,015</td>
<td>42%</td>
<td>1.8</td>
</tr>
<tr>
<td>Philadelphia-Camden-Wilmington, PA-NJ-DE-MD</td>
<td>6,047,721</td>
<td>34%</td>
<td>713,847</td>
<td>60%</td>
<td>1.7</td>
</tr>
<tr>
<td>Louisville/Jefferson County, KY-IN</td>
<td>1,269,550</td>
<td>22%</td>
<td>90,305</td>
<td>38%</td>
<td>1.7</td>
</tr>
<tr>
<td>Boston-Cambridge-Newton, MA-NH</td>
<td>4,728,844</td>
<td>27%</td>
<td>479,393</td>
<td>47%</td>
<td>1.7</td>
</tr>
<tr>
<td>Kansas City, MO-KS</td>
<td>2,070,147</td>
<td>26%</td>
<td>53,118</td>
<td>45%</td>
<td>1.7</td>
</tr>
<tr>
<td>Minneapolis-St. Paul-Bloomington, MN-WI</td>
<td>3,488,436</td>
<td>23%</td>
<td>236,332</td>
<td>35%</td>
<td>1.5</td>
</tr>
<tr>
<td>Tampa-St. Petersburg-Clearwater, FL</td>
<td>2,927,714</td>
<td>35%</td>
<td>182,582</td>
<td>51%</td>
<td>1.5</td>
</tr>
<tr>
<td>Raleigh, NC</td>
<td>1,243,720</td>
<td>38%</td>
<td>31,578</td>
<td>55%</td>
<td>1.5</td>
</tr>
<tr>
<td>New Orleans-Metairie, LA</td>
<td>1,250,247</td>
<td>43%</td>
<td>95,808</td>
<td>63%</td>
<td>1.5</td>
</tr>
<tr>
<td>Richmond, VA</td>
<td>1,258,158</td>
<td>41%</td>
<td>84,235</td>
<td>59%</td>
<td>1.4</td>
</tr>
<tr>
<td>Virginia Beach-Norfolk-Newport News, VA-NC</td>
<td>1,714,428</td>
<td>43%</td>
<td>90,623</td>
<td>62%</td>
<td>1.4</td>
</tr>
<tr>
<td>Detroit-Warren-Dearborn, MI</td>
<td>4,296,731</td>
<td>29%</td>
<td>253,786</td>
<td>42%</td>
<td>1.4</td>
</tr>
<tr>
<td>Hartford-West Hartford-East Hartford, CT</td>
<td>1,211,826</td>
<td>31%</td>
<td>58,637</td>
<td>43%</td>
<td>1.4</td>
</tr>
<tr>
<td>Denver-Aurora-Lakewood, CO</td>
<td>2,752,056</td>
<td>35%</td>
<td>127,427</td>
<td>47%</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>Major Metropolitan Area Average</strong>*</td>
<td><strong>3,398,778</strong></td>
<td><strong>38%</strong></td>
<td><strong>211,510</strong></td>
<td><strong>47%</strong></td>
<td><strong>1.3</strong></td>
</tr>
</tbody>
</table>

*Major metropolitan areas are defined as metropolitan areas with an estimated 2016 population of at least one million people.
<table>
<thead>
<tr>
<th>Metropolitan Area</th>
<th>Total Population</th>
<th>% Total Population People of Color</th>
<th>LSA Population</th>
<th>% LSA Population People of Color</th>
<th>Racial/Ethnic Disparity Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Metropolitan Area Average*</td>
<td>3,398,778</td>
<td>38%</td>
<td>211,510</td>
<td>47%</td>
<td>1.3</td>
</tr>
<tr>
<td>Portland-Vancouver-Hillsboro, OR-WA</td>
<td>2,351,319</td>
<td>35%</td>
<td>121,486</td>
<td>52%</td>
<td>1.2</td>
</tr>
<tr>
<td>Jacksonville, FL</td>
<td>1,424,097</td>
<td>34%</td>
<td>122,240</td>
<td>51%</td>
<td>1.3</td>
</tr>
<tr>
<td>Baltimore-Columbia-Towson, MD</td>
<td>2,780,873</td>
<td>39%</td>
<td>107,877</td>
<td>40%</td>
<td>1.3</td>
</tr>
<tr>
<td>San Francisco-Oakland-Hayward, CA</td>
<td>4,577,530</td>
<td>59%</td>
<td>267,271</td>
<td>58%</td>
<td>1.2</td>
</tr>
<tr>
<td>Chicago-Naperville-Elgin, IL-IN-WI</td>
<td>9,528,396</td>
<td>63%</td>
<td>590,836</td>
<td>61%</td>
<td>1.2</td>
</tr>
<tr>
<td>Phoenix-Mesa-Scottsdale, AZ</td>
<td>4,486,153</td>
<td>43%</td>
<td>193,752</td>
<td>44%</td>
<td>1.2</td>
</tr>
<tr>
<td>Austin-Round Rock, TX</td>
<td>1,942,615</td>
<td>47%</td>
<td>90,737</td>
<td>47%</td>
<td>1.2</td>
</tr>
<tr>
<td>Atlanta-Sandy Springs-Roswell, GA</td>
<td>5,612,777</td>
<td>50%</td>
<td>280,387</td>
<td>53%</td>
<td>1.1</td>
</tr>
<tr>
<td>Miami-Fort Lauderdale-West Palm Beach, FL</td>
<td>5,926,955</td>
<td>65%</td>
<td>388,517</td>
<td>68%</td>
<td>1.1</td>
</tr>
<tr>
<td>Houston-The Woodlands-Sugar Land, TX</td>
<td>6,482,592</td>
<td>60%</td>
<td>388,517</td>
<td>68%</td>
<td>1.1</td>
</tr>
<tr>
<td>Dallas-Fort Worth-Arlington, TX</td>
<td>6,957,123</td>
<td>51%</td>
<td>350,867</td>
<td>55%</td>
<td>1.1</td>
</tr>
<tr>
<td>Washington-Arlington-Alexandria, DC-VA-MD-WV</td>
<td>6,011,752</td>
<td>51%</td>
<td>306,111</td>
<td>51%</td>
<td>1.1</td>
</tr>
<tr>
<td>San Antonio-New Braunfels, TX</td>
<td>2,332,345</td>
<td>63%</td>
<td>120,634</td>
<td>65%</td>
<td>1.0</td>
</tr>
<tr>
<td>Birmingham-Hoover, AL</td>
<td>1,141,309</td>
<td>32%</td>
<td>56,128</td>
<td>54%</td>
<td>1.0</td>
</tr>
<tr>
<td>Seattle-Tacoma-Bellevue, WA</td>
<td>3,671,095</td>
<td>34%</td>
<td>131,073</td>
<td>39%</td>
<td>1.0</td>
</tr>
<tr>
<td>Las Vegas-Henderson-Paradise, NV</td>
<td>2,070,153</td>
<td>55%</td>
<td>111,055</td>
<td>54%</td>
<td>1.0</td>
</tr>
<tr>
<td>New York-Newark-Jersey City, NY-NJ-PA</td>
<td>20,031,443</td>
<td>48%</td>
<td>1,085,573</td>
<td>49%</td>
<td>1.0</td>
</tr>
<tr>
<td>Sacramento--Roseville--Arden-Arcade, CA</td>
<td>2,242,542</td>
<td>46%</td>
<td>125,481</td>
<td>47%</td>
<td>1.0</td>
</tr>
<tr>
<td>Memphs, TN-MS-AR</td>
<td>1,341,339</td>
<td>50%</td>
<td>130,584</td>
<td>50%</td>
<td>1.0</td>
</tr>
<tr>
<td>Indianapolis-Carmel-Anderson, IN</td>
<td>1,968,768</td>
<td>26%</td>
<td>96,788</td>
<td>26%</td>
<td>1.0</td>
</tr>
<tr>
<td>Riverside-San Bernardino-Ontario, CA</td>
<td>4,430,646</td>
<td>66%</td>
<td>273,769</td>
<td>65%</td>
<td>1.0</td>
</tr>
<tr>
<td>Columbus, OH</td>
<td>1,995,004</td>
<td>25%</td>
<td>118,380</td>
<td>24%</td>
<td>1.0</td>
</tr>
<tr>
<td>Los Angeles-Long Beach-Anaheim, CA</td>
<td>13,184,423</td>
<td>66%</td>
<td>359,565</td>
<td>63%</td>
<td>1.0</td>
</tr>
<tr>
<td>Orlando-Kissimmee-Sanford, FL</td>
<td>2,328,508</td>
<td>50%</td>
<td>128,545</td>
<td>48%</td>
<td>0.9</td>
</tr>
<tr>
<td>San Jose-Sunnyvale-Santa Clara, CA</td>
<td>1,943,107</td>
<td>66%</td>
<td>23,439</td>
<td>52%</td>
<td>0.8</td>
</tr>
<tr>
<td>Salt Lake City, UT</td>
<td>1,154,504</td>
<td>27%</td>
<td>21,159</td>
<td>20%</td>
<td>0.7</td>
</tr>
<tr>
<td>San Diego-Carlsbad, CA</td>
<td>3,253,356</td>
<td>53%</td>
<td>148,812</td>
<td>38%</td>
<td>0.7</td>
</tr>
<tr>
<td>Grand Rapids-Wyoming, MI</td>
<td>1,028,173</td>
<td>20%</td>
<td>16,576</td>
<td>14%</td>
<td>0.7</td>
</tr>
<tr>
<td>Oklahoma City, OK</td>
<td>1,337,075</td>
<td>34%</td>
<td>41,950</td>
<td>20%</td>
<td>0.6</td>
</tr>
<tr>
<td>Charlotte-Concord-Gastonia, NC-SC</td>
<td>2,381,152</td>
<td>37%</td>
<td>9,570</td>
<td>7%</td>
<td>0.2</td>
</tr>
</tbody>
</table>

*Major metropolitan areas are defined as metropolitan areas with an estimated 2016 population of at least one million people.
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2017
Growing a Healthy Food Financing Program: ReFresh and Colorado Enterprise Fund