

A Comprehensive Method for Identifying Optimal Areas for Supermarket Development

TRF Policy Solutions

April 28, 2011



Capital at the point of impact.

The Reinvestment Fund builds wealth and opportunity for low-wealth communities and low and moderate income individuals through the promotion of socially and environmentally responsible development.

We achieve our mission through:

Capital

- Grants, loans and equity investments

Knowledge

- Information and policy analysis; Policy Solutions & PolicyMap

Innovation

- Products, markets and strategic partnerships

- A growing body of research suggests that there are areas in the United States that suffer from poor access to healthy and affordable food.
- U.S. Department of Agriculture's Economic Research Service reports that:
 - People without access to full service grocery stores often depend on small grocery or convenience stores that may not carry all the foods needed for a healthy diet.
 - Convenience stores often charge more than grocery stores for the same items, keeping people from eating a balanced diet. *
 - 23.5 million people live in low income areas (below 200% poverty) that are 1 mile from a supermarket.

Where are these low access areas?

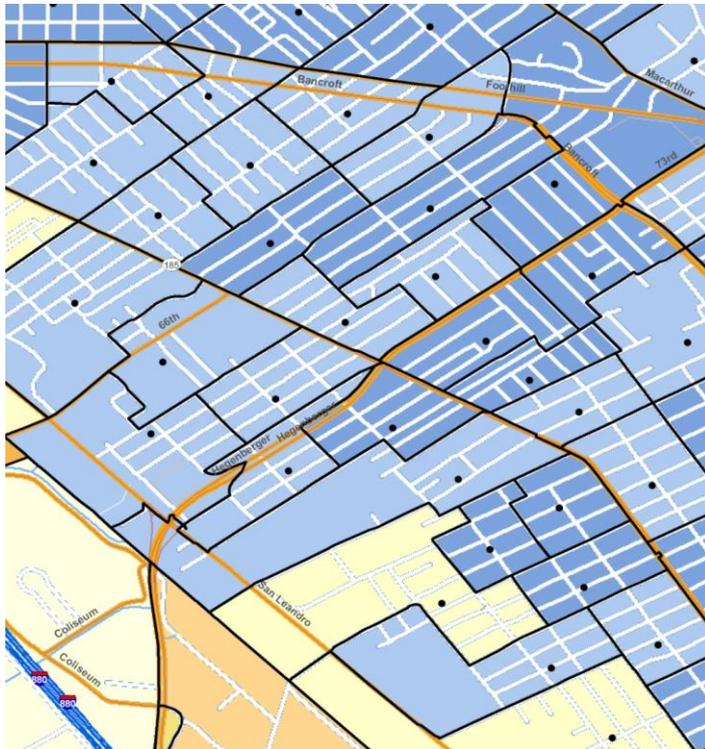
Methodological limitations of previous research:

- Imprecise definitions (e.g., the many and varied definitions of the term “food desert.”)
- Data quality / coverage
- Use fixed distances for urban, suburban, and rural areas throughout entire counties, metro areas, and even states (does not take account of population density, access to transportation, etc.).
- Use large geographies (zip codes, counties) as unit of analysis.
- Do not establish meaningful benchmarks for defining “adequate access.”
- Based on presence/absence of food retail, not travel distance or other physical or economic impediments to access that retail.

Assumption: The degree to which food retail is available in middle and upper income places is the standard against which other locations are measured. Stated differently, *we assume that “the market” is operating well in the higher income areas.*

1. Locate small geographic areas showing the strongest need for additional supermarket development **and** a sufficiency of demand to support additional development.
2. Create a demographic profile of low access areas.
3. Calculate the food at home expenditures leaked from the low access areas.
4. Establish a valid and reliable method for measuring low grocery access nationwide.
5. Provide CDFIs and policymakers operating at the city, metro, state, regional or national level summaries of inadequate supermarket access problem.

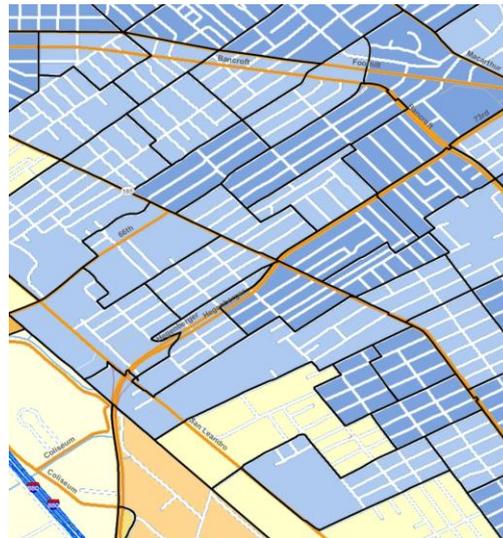
- Location of all supermarkets, sales and square footage: **Trade Dimensions**
- Population and Car Ownerships rates: **Claritas / Census**
- Estimates of demand and employment opportunities: **Census, Claritas and BLS Consumer Expenditure Survey**



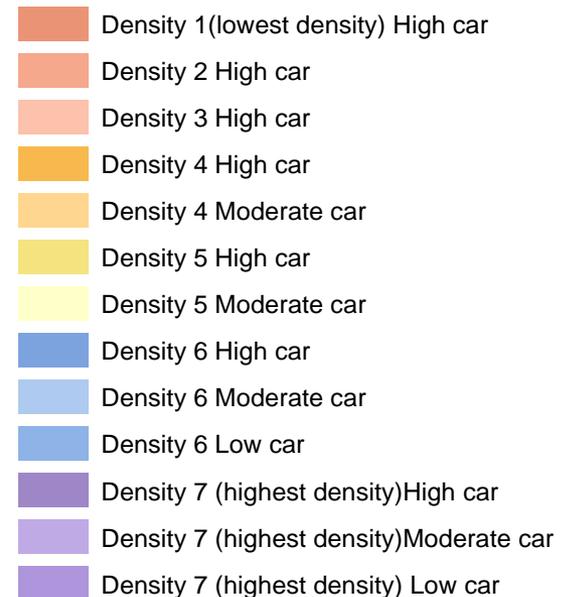
- ❑ Census block population data used to calculate the populated weighted centroid for each block group.
- ❑ The weighted centroid is the point at which the population has the smallest possible *sum of squared distances*.
- Population weighted block group centroids

Block Group Population Density and Car Ownership

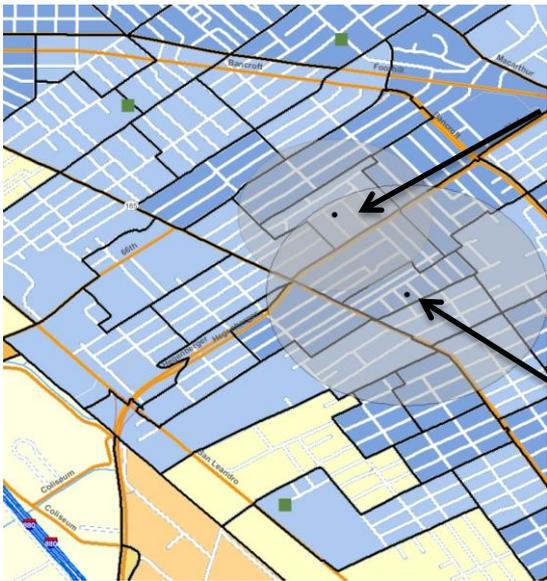
- Obtain location data for food stores in all lower 48 states and DC.
- Geocode those food stores categorized as supermarkets, supercenters, natural/gourmet foods or wholesale clubs (i.e., stores with a full selection of all foods).
- Calculate the distance from each population weighted centroid to the nearest supermarket, natural foods or wholesale club.



- Calculate population density for all block groups with population > 250 population in households
- Adjusted each block group's square mile total for non-residential area
- Classify into 7 population density groups
- Divide density groups based on % car ownership



Calculating Access Score



Market Distance: 1.13 miles
Reference Distance (6L): .21 miles
Access Score: $(1.13-.21)/1.13 = .81$

This block group's travel distance would have to be decreased by 81% to equal the distance traveled by its non-LMI counterparts.

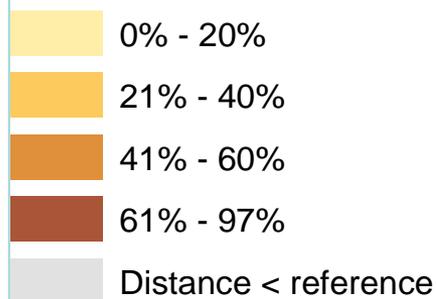
Market Distance: 1.25 miles
Reference Distance (6H): .64 miles
Access Score: $(1.25 -.64)/1.25= .49$

This block group's travel distance would have to be decreased by 49% to equal the distance traveled by its non-LMI counterparts.

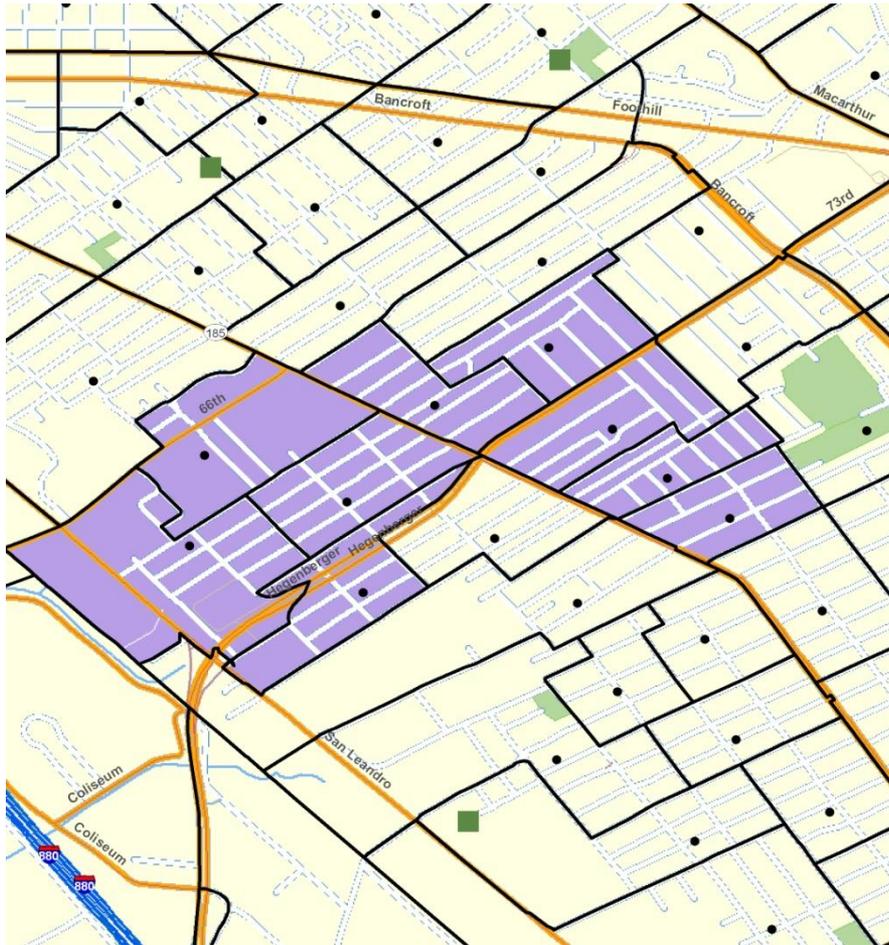


■ Supermarket, Natural Foods, or Wholesale Club

Access Score



Identifying Low Access (Clusters)



- Conduct Local Indicators of Spatial Association (LISA) to identify where areas of high access scores are surrounded by neighboring high score areas.
- Spatial neighbors defined as the 4 nearest neighbors to each population weighted centroid – spatial correlation.
- **Cluster membership is based on the spatial correlation.**

Low Access Area Aggregate Estimates

	<i>Population Living in Occupied HH</i>	<i>LAA Population</i>	<i>% Total Pop in LAA</i>	<i>% LAA Pop Non-white</i>	<i>% of LAA Pop in low income area</i>	<i>% of LAA Pop below 200% of poverty</i>
Major Metro (1 million or >)	145,982,206	11,839,533	8%	43%	49%	37%
Other Metro (< 1 million)	80,585,268	6,343,807	8%	26%	37%	38%
Micropolitan	28,416,833	2,724,681	10%	14%	15%	37%
Rural	18,647,141	2,291,872	12%	14%	49%	42%
<i>Nationwide</i>	<i>273,631,448</i>	<i>23,199,893</i>	<i>9%</i>	<i>32%</i>	<i>42%</i>	<i>38%</i>

Low Access Areas & Income



Map of Prince George's with TRF Supermarket Study of LAA (Subscriber-only) and Estimated typical (median) income of a household between 2005-2009.

Estimated typical (median) income of a household between 2005-2009.

Estimated median household income in the past twelve months, as reported between 2005-2009. A household includes all the people who occupy a housing unit as their usual place of residence. Medians were suppressed in cases where the sample of the average was less than 10 of the unit that is being described (e.g., households, people, householders, etc). Such areas are represented as having "Insufficient Data" in the map. ACS employs values to indicate top and bottom ranges of income. A value of 250,001 indicates a value of 250,000 or greater, whereas a value of 2,499 indicates a value of 2,500 or less.

Legend

Year
2009

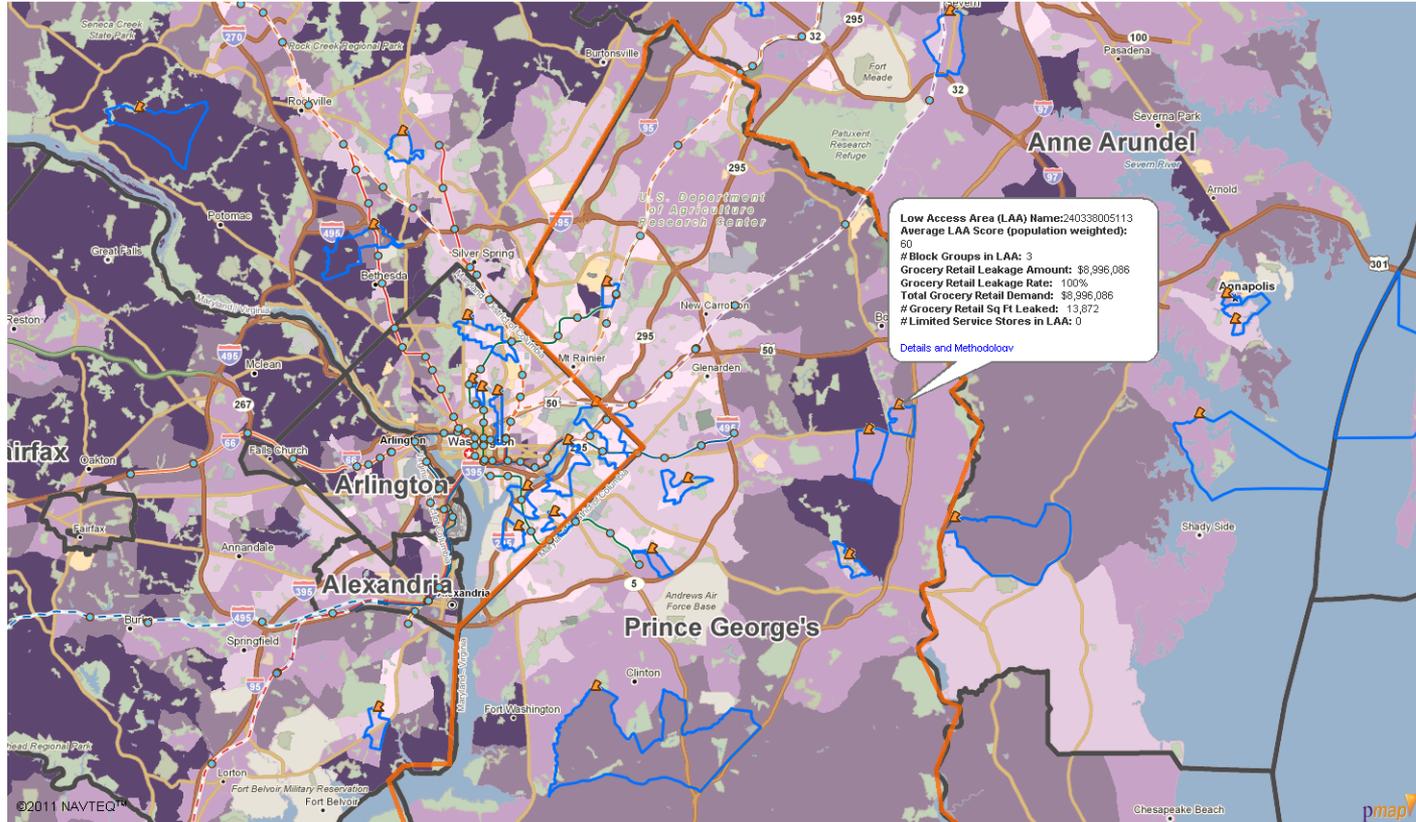
Variable
\$

- Insufficient Data
- \$49,999 or less
- \$50,000 - \$74,999
- \$75,000 - \$99,999
- \$100,000 - \$124,999
- \$125,000 or more

Shaded by: Census Tract
Source: Census

Sites

- TRF Supermarket Study of LAA (Subscriber-only)
Source: TRF
- Mass Transit Lines
Source: Urban Mapping, Inc.



Low Access Areas & Food Expenditures



Map with TRF Supermarket Study of LAA (Subscriber-only) and Total Grocery Retail Demand, as of 2010.

Total Grocery Retail Demand, as of 2010.

Total grocery retail demand is the dollar amount of grocery demand estimated for a given Low Access Area (LAA) for a given year. Grocery retail demand is determined by income (Census) and percent of income spent on food prepared at home (Bureau of Labor Statistics), weighted by number of households. Block groups with fewer than 250 households or those with insufficient data are shown as grey areas on the map. For a detailed description of how TRF calculated the family of LAA indicators, please see the Data Directory.

Legend

Year
2010

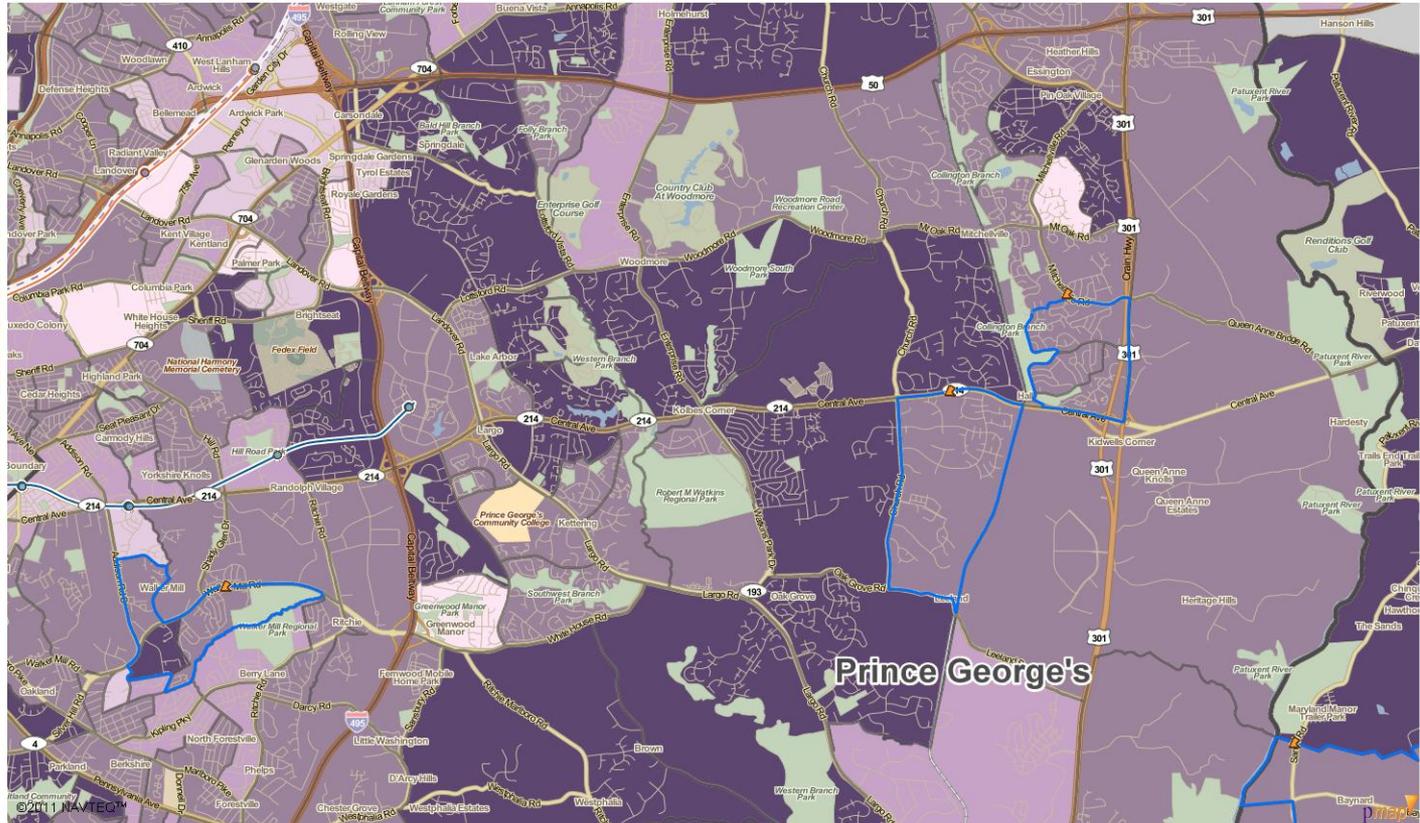
Variable
\$

- Insufficient Data
- \$1,499,999.00 or less
- \$1,499,999.01 - \$1,999,999.00
- \$1,999,999.01 - \$2,499,999.00
- \$2,499,999.01 - \$4,999,999.00
- \$4,999,999.01 or more

Shaded by: Block Group
Source: TRF

Sites

- TRF Supermarket Study of LAA (Subscriber-only)
Source: TRF
- Mass Transit Lines
Source: Urban Mapping, Inc.



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Characteristics of Low Access Areas



Current Report:
Community Profile Report of
Polygon: 240338005093



Date: April 24, 2011

Proposed Area:

This area is located in **Prince George's** County, in the state of **Maryland**

It is located within or touches the following census tract(s): **800507, 800603, 800508, 800509.**

Similarly, it is located within or touches the following zip code(s): **20774, 20721.**

Data presented in this report summarize the Census Block Groups that this area covers. See Endnotes for a full explanation of how the data are calculated.

(-) Polygon Details

Low Access Area (LAA) Name: 240338005093

Average LAA Score (population weighted): 54

Block Groups in LAA: 1

Grocery Retail Leakage Amount: \$3,775,409

Grocery Retail Leakage Rate: 100%

Total Grocery Retail Demand: \$3,775,409

Grocery Retail Sq Ft Leaked: 5,822

Limited Service Stores in LAA: 0

(-) Population Trends:

As of 2009, this area was home to an estimated **2,092** people.

Population	2000	2005-2009	Change 2000 to 2005-2009 (%)
Area	1,732	2,092	20.79%
Counties (Prince George's)	801,515	834,986	4.18%
State (Maryland)	5,296,486	5,637,418	6.44%

Race	2000	2010	2015	Percent of Total Population in 2010	Percent of State Population in 2010 (Maryland)
White	174	126	115	4.38%	60.32%
African American	1,558	2,681	2,974	93.09%	28.89%
Asian	0	22	29	0.76%	5.06%
Native Hawaiian or Pacific Islander	0	0	1	0%	0.05%
American Indian or Alaskan Native	0	11	15	0.38%	0.31%
Some Other Race	0	9	13	0.31%	2.75%
Two or More Races	0	31	33	1.08%	2.6%

Ethnicity	2000	2010	2015	Percent of Total Population in 2010	Percent of State Population in 2010 (Maryland)
Hispanic	0	115	176	3.99%	6.89%

2010 Annual Income Category	Number of Households	Percent of Households
240338005093		
Less than \$25,000	8	0.95%
Less than \$50,000	34	4.06%
Less than \$75,000	98	11.69%
Less than \$150,000	417	49.76%
\$150,000 or more	421	50.24%
County (Prince George's)		
Less than \$25,000	33,085	11.29%
Less than \$50,000	93,935	32.05%
Less than \$75,000	155,175	52.95%
Less than \$150,000	260,579	88.91%
\$150,000 or more	32,508	11.09%
State (Maryland)		
Less than \$25,000	309,214	14.52%
Less than \$50,000	730,273	34.29%
Less than \$75,000	1,131,960	53.15%
Less than \$150,000	1,831,239	85.98%
\$150,000 or more	298,534	14.02%

According to Nielsen estimates, the median income for a family in 2009 was **\$150,100**, compared to the state median family income of **\$82,923**.

Employment by Industry	People Employed	Percent Employed in this Industry	Percent Employed in this Industry in Maryland
Accommodation and Food Services Industry Employment	46	2.84%	5.8%
Administrative and Support and Waste Management Services Industries Employment	49	3.02%	4.04%
Agriculture, Forestry, Fishing and Hunting Industry Employment	0	0%	0.49%
Arts, Entertainment, and Recreation Industries Employment	36	2.22%	1.82%
Educational Service Industry Employment	213	13.14%	9.28%
Finance, Insurance, Real Estate and Rental and Leasing Industries Employment	84	5.18%	6.85%
Health Care and Social Assistance Industry Employment	236	14.56%	12.67%
Information Industry Employment	82	5.06%	2.82%
Manufacturing Industry Employment	20	1.23%	5.37%
Management of Companies and Enterprises Industry Employment	0	0%	0.06%
Other Services Industry Employment	66	4.07%	5.39%
Professional, Scientific, and Technical Services Industry Employment	218	13.45%	10.12%
Public Administration Employment	260	16.04%	10.67%
Retail Trade Industry Employment	111	6.85%	9.92%
Construction Industry Employment	68	4.19%	7.74%
Transportation and Warehousing, and Utilities Industries Employment	83	5.12%	4.64%
Wholesale Trade Industry Employment	49	3.02%	2.33%

TRF Contact Information

Ira Goldstein
Ira.Goldstein@trfund.com

&

Kennen Gross
Ken.Gross@trfund.com

The Reinvestment Fund
Policy Solutions