Identifying Optimal Areas for Supermarket Development

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Overview

This chapter provides users with an overview of The Reinvestment Fund's (TRF) Limited Supermarket Access (LSA) analysis, an important new tool which helps CDFIs access robust analysis related to communities with limited access to healthy foods. The LSA was conducted as part of the Community Development Financial Institutions Fund's (CDFI Fund) Financing Healthy Food Options track, provided by Opportunity Finance Network (OFN), and is available through PolicyMap, an online data and mapping tool. Accessing the information through PolicyMap.com offers CDFIs the ability to further understand the characteristics of an LSA area by overlaying data related to income, race, age, and more.

Identifying Areas with Need for Public Intervention:

Beginning in 1990, researchers, communities and policymakers started defining areas with limited access to food retail locations as 'food deserts'. The definition of what constitutes a 'food desert' and the methods and data used to identify and characterize these areas varies greatly, resulting in diverse opinions on the extent of the problem and its location. TRF, with support from the CDFI Fund, sought to define and measure limited access: Where are households that have limited access to full service supermarkets? TRF's approach established benchmark travel distances (while accounting for the diversity of both population density and car ownership rates in the US) and used full service supermarkets[1] as a proxy for access to healthy, affordable foods. Our study of areas with Limited Supermarket Access (LSA) was designed specifically to:

(a) Prioritize underserved areas based on their level of grocery retail leakage, demand, and lack of access;

(b) Identify optimal areas for supermarket development;

(c) Display the results at various levels of geography ranging from the census block groups, to nation;

(d) Design a tool that helps a diverse range of clients, including policymakers, government agencies, businesses, foundations, financial institutions, and policy research organizations to understand Low Access Areas, and craft strategies based upon the conditions in their community.

Method for Identifying Limited Supermarket Access (LSA) areas, as of 2011:

TRF's methodology is designed to identify areas[1] where residents travel longer distances to reach a supermarket when compared to the average distance traveled by non-low/moderate income areas to access a supermarket. The areas are compared to other areas that share similar values for population density and car ownership rates.

Map 1: Nationwide map showing Low Supermarket Access Areas
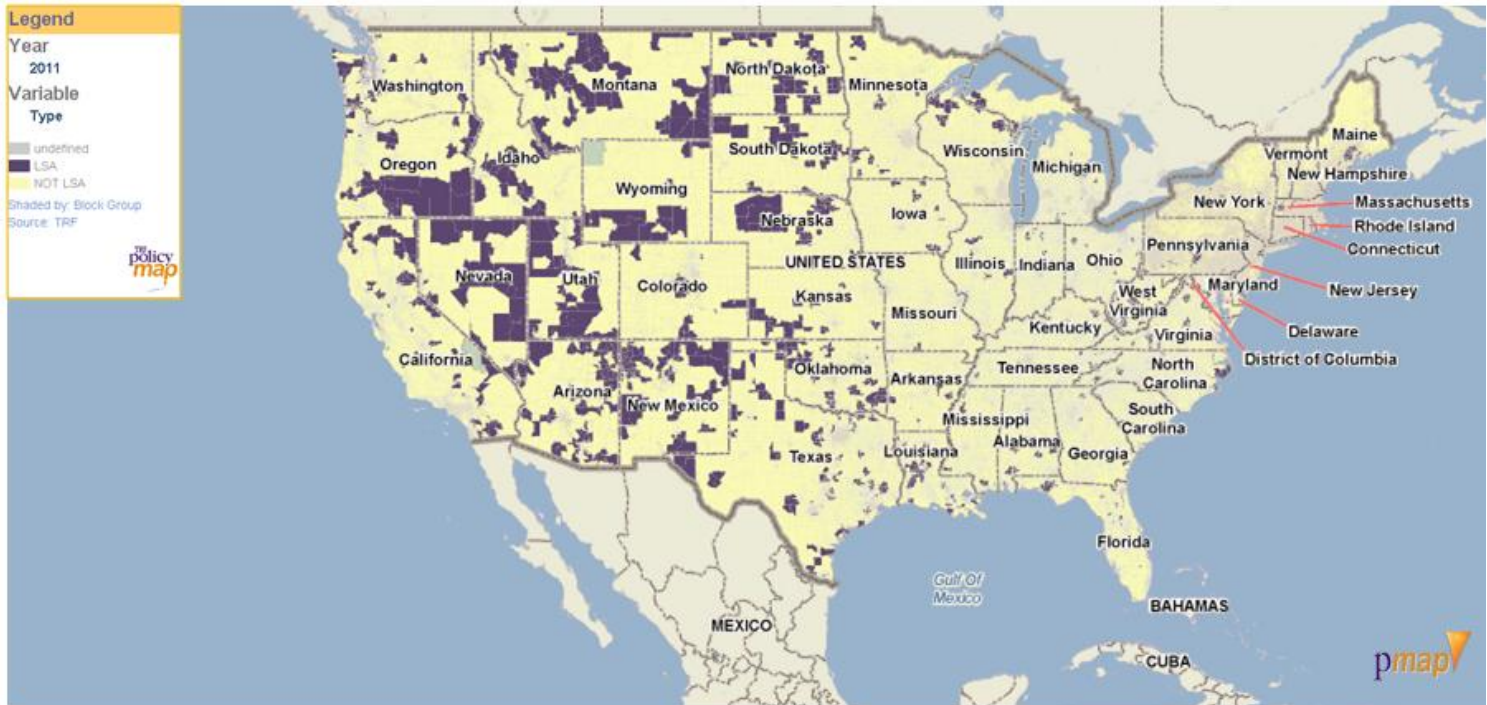
Our data sources include US Census (2010) for population living in households, residential land area, and car ownership rate; and Trade Dimensions (2011) for supermarket locations[2].

Many prior research efforts to identify underserved areas have used fixed distances for urban, suburban, and rural areas throughout entire counties, metro areas, and even states; TRF's methodology accounts for the wide-ranging values for population density and car ownership rate and their significant influence on how far households are expected to travel to shop for food. This methodology's key assumption is that block groups with a median household income greater than 120% of their respective metro area household median (or non-metro state median for non-metro areas) are adequately served by supermarkets and thus travel an appropriate distance. This assumption establishes the benchmark to which all block groups are compared. This assumption is based on existing research that indicates an intense level of competition in the supermarket industry in higher-income communities.

Step I. Classify Population Density: TRF categorized all block groups in the continental US using Census data for population density and car ownership. This process results in 13 categories ranging from "Density 1 (lowest density – high car ownership) to Density 7 (highest density – lowest car ownership). *Note that block groups with fewer than 250 people were excluded because they do not represent the typical community structure, in that a significant portion of the land area contains non-residential uses (these may include park land, largely industrial or commercial areas).*

Step II. Calculate Network Distance: TRF then calculated the distance travelled using actual roads from the population center of every census block (or block centroid) to the nearest "full-service" store. For each census block group a population-weighted distance was established based on distance traveled by each of the member blocks.

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Step III. Establish Benchmarks: TRF calculated benchmark distances based on our key assumption noted above. Each benchmark represents the average block group (calculated in Step II) distance of all non-low/moderate income (LMI) block groups and their nearest supermarket, within each category created in Step I. The benchmark distance represents a comparatively acceptable distance for households to travel to a supermarket.

Step IV. Calculate Access Score: TRF calculated an access score for each block group which represents the percent that the block group distance needs to be lowered in order to reach the reference group distance. These are referred to as Access Scores.

Step V. Identify Limited Supermarket Access areas: TRF used spatial-statistical methods to identify block groups clustered together with high access scores that have neighboring block groups with high access scores. These identified areas represent spatial clusters of high low access scores and are referred to as LSA areas.

Step VI. TRF created retail grocery leakage estimates as a way to determine the magnitude of each LSA's access problem and its potential remedy – leakage represents grocery purchases made outside of the LSA boundaries. Using household income categories and their respective percentages of income spent on "food at home" (Consumer Expenditure Survey, 2011), TRF estimated total retail grocery demand in each LSA. Total grocery sales occurring within each LSA (from superettes and limited assortment stores) were then subtracted from demand, resulting in estimates for retail grocery leakage. Because the access problem is better understood in terms of square feet, TRF converted dollars leaked to square feet using nationwide weighted averages for sales per square foot.

Utilizing the Data

The designated LSAs can be analyzed and ranked using variables included in the analysis to inform local strategies and policy and engage operators. Information is available to answer questions such as: How much retail leakage is occurring?; What is the consumer demand for an area?; How does this area's access compare to well served communities?; or What is the demographic profile of this community?

Access scores and grocery leakage are two metrics which can help policymakers sort and compare LSAs. The access score describes the severity of the access in Limited Supermarket Access areas, while the leakage measure represents the estimated amount of dollars a household spends outside its area on food to prepare at home. These two measures can help policymakers match appropriate policy interventions to areas that need them the most. CDFIs and program administrators can look within a specific selected geography to compare and understand the opportunities of each LSA.

Understanding and Analyzing LSAs Using PolicyMap: Philadelphia Example

TRF's Study is available to the public through www.policymap.com. A complete copy of the study will be available on the TRF website. The PolicyMap platform allows users to view information in tabular, map and report formats as well as access the extraordinary amount of data available through PolicyMap to understand real estate markets and the communities in need of supermarket access. The following is one example using some of the available dataset to determine where the need for supermarkets may exist in the City of Philadelphia.

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[1] "Supermarkets" include all grocery store types (supermarkets, supercenters, warehouse, limited assortment or natural foods) except "superettes" as defined by Trade Dimensions (a Nielsen Media company), because they are less likely to provide a wide range of fresh groceries.

[2] US Census block groups serve as the unit of analysis; "areas" are clusters of underserved block groups.

Map 2: Map of Philadelphia with Low Supermarket Access Area Status as of 2011
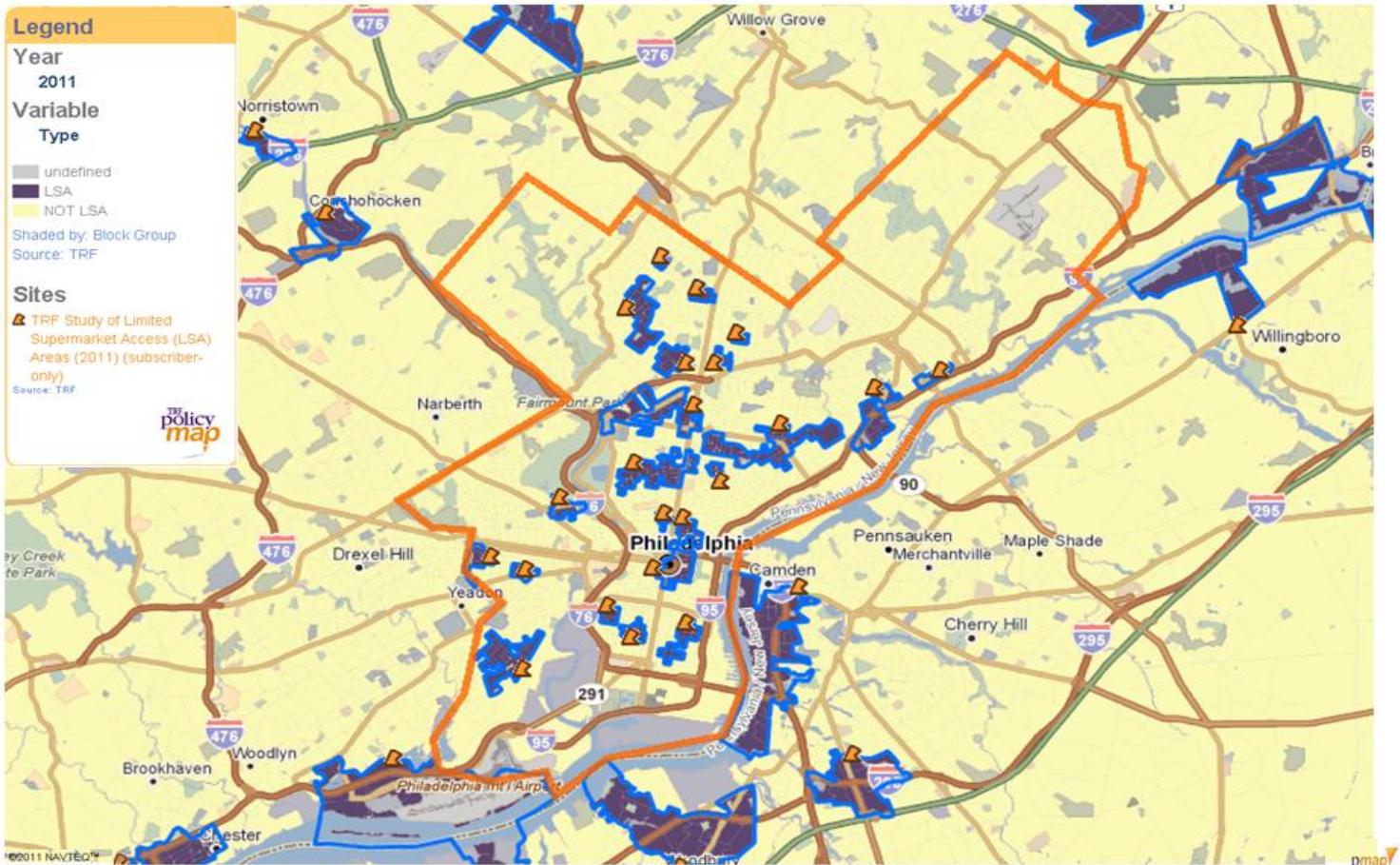
Here is a map of the City of Philadelphia (Map 2), the orange outline is the City border; in purple (outlined in blue) are the areas designated as LSA areas. Within the City there are 22 LSA areas. From the map you can either click on a specific LSA area to look at the data for that area or use the PolicyMap.com report function to export the data on all of these areas into a table.

A CDFI working in this City may have a specific geographic area where they are interested in supporting a project, or if they have a citywide agenda, may be interested in attracting a supermarket to an area of greatest need. The information provided in Table 1 below can be used to drive that discussion. In this case, if interested in identifying the LSA area with the highest leakage, you would see LSA Philadelphia County, Pennsylvania 13 is composed of 37 block groups and has an estimated leakage of $27,700,000.

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Table 1: Listing of Philadelphia Low Supermarket Access Areas, PolicyMap Report

Limited Supermarket Access (LSA) Name	Population Weighted LSA Score	# Block Groups in LSA	Est. Grocery Retail Leakage Amount	Est. Grocery Retail Leakage Rate	Est. Total Grocery Retail Demand	Est. Total Grocery Retail Sq Ft Demand	Est. # Grocery Retail Sq Ft Leaked	# Limited Access Stores in LSA	Population
LSA Philadelphia County, Pennsylvania 19	50	18	18,800,000	93	20,300,000	36000	33000	5	17825
LSA Philadelphia County, Pennsylvania 8	56	13	17,800,000	80	22,200,000	39000	31000	6	17710
LSA Philadelphia County, Pennsylvania 7	58	3	2,300,000	98	2,400,000	4000	4000	1	1749
LSA Philadelphia County, Pennsylvania 9	55	5	4,500,000	86	5,200,000	9000	8000	3	4215
LSA Philadelphia County, Pennsylvania 12	54	5	4,700,000	95	5,000,000	9000	8000	0	3999
LSA Philadelphia County, Pennsylvania 14	54	6	8,100,000	93	8,700,000	15000	14000	1	6484
LSA Philadelphia County, Pennsylvania 18	51	18	27,200,000	78	34,800,000	61000	48000	16	19094
LSA Philadelphia County, Pennsylvania 1	69	7	3,400,000	81	4,100,000	7000	6000	2	3830
LSA Philadelphia County, Pennsylvania 22	48	5	1,900,000	76	2,500,000	4000	3000	1	2137
LSA Philadelphia County, Pennsylvania 17	52	9	6,800,000	79	8,600,000	15000	12000	2	6162
LSA Philadelphia County, Pennsylvania 4	60	5	2,300,000	100	2,300,000	4000	4000	0	2379
LSA Philadelphia County, Pennsylvania 15	53	4	2,600,000	69	3,700,000	7000	5000	1	3472
LSA Philadelphia County, Pennsylvania 10	55	8	6,700,000	88	7,700,000	13000	12000	2	5781
LSA Philadelphia County, Pennsylvania 2	66	2	2,100,000	99	2,100,000	4000	4000	0	1738
LSA Philadelphia County, Pennsylvania 11	55	4	5,000,000	87	5,800,000	10000	9000	0	3614
LSA Philadelphia County, Pennsylvania 6	59	2	1,400,000	97	1,400,000	3000	2000	1	831
LSA Philadelphia County, Pennsylvania 21	48	14	13,100,000	84	15,500,000	27000	23000	6	11574
LSA Philadelphia County, Pennsylvania 16	53	8	9,200,000	82	11,200,000	20000	16000	3	9224
LSA Philadelphia County, Pennsylvania 5	60	31	21,000,000	80	26,300,000	46000	37000	6	24321
LSA Philadelphia County, Pennsylvania 13	54	37	27,700,000	77	35,800,000	63000	49000	12	38288
LSA Philadelphia County, Pennsylvania 3	62	23	22,000,000	93	23,700,000	42000	39000	4	17091
LSA Philadelphia County, Pennsylvania 20	48	15	14,700,000	94	15,700,000	27000	26000	3	12209

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You can then use the PolicyMap.com search function to find polygon "LSA Philadelphia County, Pennsylvania 13" and view the opportunity and market conditions within the specific area or run a Community Profile Report for that area or a subset of that area. Map 3 below shows the specific LSA:

Map 3: Map of Philadelphia showing grocery retail locations and Low Supermarket Access Area status as of 2011

Map 3 also shows all store locations within LSA 13. An LSA area will not have full service supermarkets within their boundaries, but they may have other food retail locations. In this case, there are 12 superettes. The leakage number is also converted for the user into square feet. An area of this size appears to be able to support 1 full service supermarket. In order to determine if and where a store may be feasible and how it may impact existing stores operating in other parts of the city, a user may want to also consider:

- *Where are the supermarkets located outside of the area?;*
- *What is the quality of the superettes within the area?; and*
- *What is the market profile of the community?*

(Note: Implementation Handbook chapter titled *Understanding the Grocery Industry* provides definitions of grocery industry formats, including superettes and full-serve supermarkets).

LSA Philadelphia County, Pennsylvania 13 covers a large area. A user may also want to divide the area into smaller segments based upon known natural boundaries between neighborhoods or demographic information about the communities. Users can create custom regions on top of the LSA area to determine where to locate a store to meet

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the greatest need and look at the data for these specific areas. Many demorgaphic data sets are available through PolicyMap.

Information including population trends, racial characteristics, age and incomes of households can be gathered from PolicyMap's Community Profile Report. From this report, users can gather that as of 2009, this area was home to an estimated 37,782 people. In the report area from 2005-2009, 5.84% of the population is over the age of 65. 54.69% are of working age (18-64). 39.47% are under 18, and 11.54% are under 5 years old. During the same period, 30.38% of the area's population was white, 30.67% was African American, 2.12% was Asian, 0.28% was American Indian or Alaskan Native, and 57.14% identified as Hispanic. In 2009, 86.62%% of households in the study area had an annual income of less than $50,000, compared to 50.24% of people in Pennsylvania. The Community Profile Report also identified the state and federal elected officials representing this area.

The data can be viewed at even more specific levels of geography to locate the households with the highest level of poverty or the areas that have the most diverse income levels. Operators may be drawn to areas that have the potential to serve a wider range of income levels. They may operate a range of store types, some that are more viable in low-income communities. Viewing demographic data can inform that conversation. Demographic data can also offer an understanding of what is required to make a store attractive to the community. For example, an operator locating in a high density low-income community will likely need to secure a WIC and/or SNAP certification before openning a store. While this will not replace a market study required by most financial institutions, it will report many of the variables a store's marketing department gathers when evaluating a site. This data is also useful for CDFIs to view when evaluating potential requests for financing as a means to validate the borrower's pro forma and overall project.

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PolicyMap also provides some point level data that can be added to maps as well. Map 4, shows the *Estimated percent of families that live in Poverty,* and the location of public transit stops. This can be used to understand which of the possible sites is located closest to transit stops *(some public financing programs provide applicants with additional points to projects that are in transit areas)* and it may assist a project to maximize convience for shoppers already in transit and for those with limited access to a car.

Map 4: Map showing estimated percentage of all families that live in poverty between 2005 – 2009.

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In trying to match areas with need with areas that provide economic incentives to operators and developers, it is also useful to view the areas that are eligible for economic and community development incentives. For example, Map 5 shows LSA areas that meet the *CDFI Fund's NMTC Program criteria for severly distressed*. Only the areas that meet both criteria are shaded. PolicyMap has many federal programs in the data warehouse, including the USDA Food Desert Study and Community Development Block Grant (CDBG) eligible tracts. Users can map both the TRF LSA polygons (shapes) and the federal program guidelines (thematic colored layers) at the same time to find optimal locations for both meeting need and accessing resources.

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Map 5: This map shows the NMTC program's severe distress status against Low Supermarket Access Area status. Areas within the blue boundaries meet both criteria.

PolicyMap provides users with many ways to rank or prioritize the areas. If a specific site is under consideration, users can create a radius and run a **Community Profile Report** from that address. Map 6 shows what this would look like. All maps can be saved, shared and printed to increase collaboration and communication about areas' needs and opportunities with the policymakers and local partners.

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Map 6: Map of LSA Philadelphia County, Pennsylvania 13 showing 0.5 mile radius.
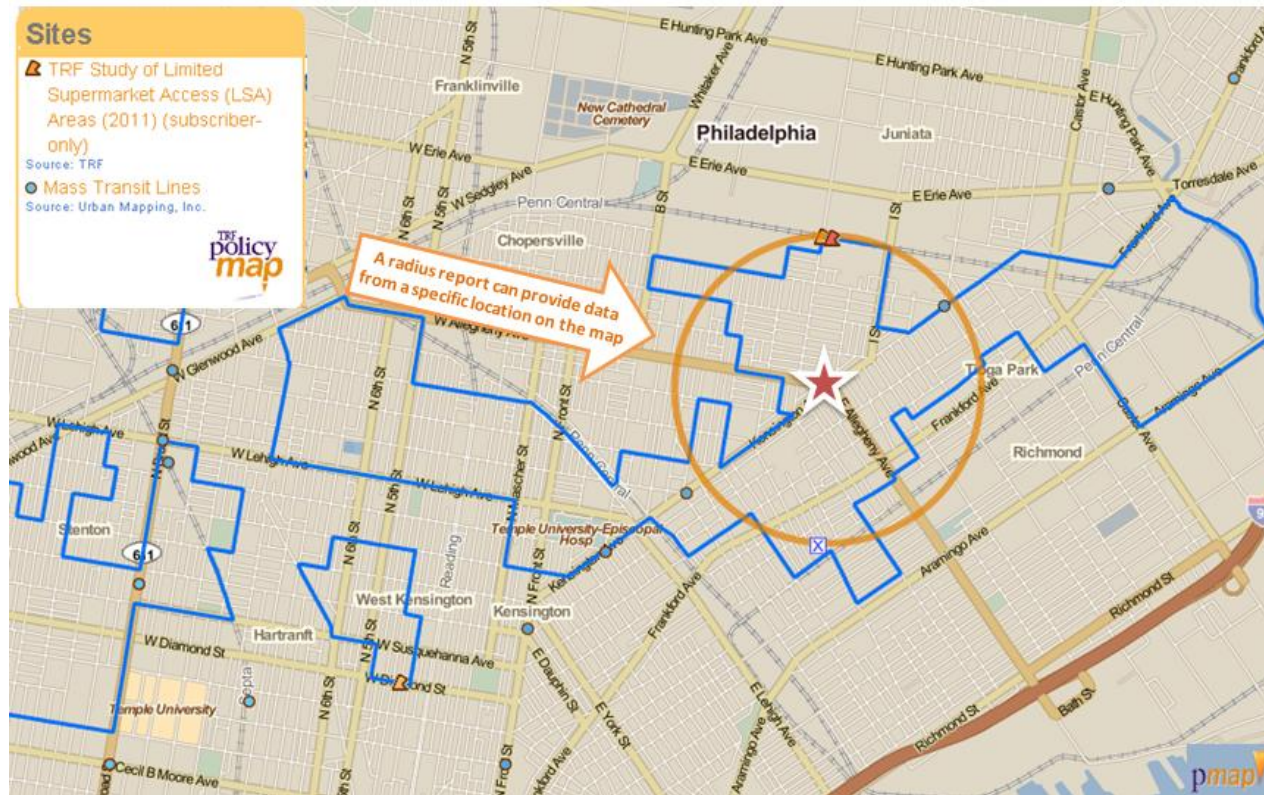
This Philadelphia example shows the analytic tool working from a metro area to a specific site. The same process could be followed to look at results at a statewide or county level and then drilled down to a specific LSA area, or to look at how a specific area compares to other areas in the City and State.

Just as an operator or developer will send staff to assess sites, entities working with the data still need to visit a location to validate and understand the specific opportunities and challenges presented within a geographic area. This is point in time data that is updated on an annual basis, so if a new store opens or an existing store closes after the TRF analysis is complete it will not be shown until the data is updated. Site visits also offer an opportunity to collect additional data. This primary data can be uploaded, displayed, and shared with others on PolicyMap. For Example: A user may conduct physical surveys of the area and observe: where are possible sites to locate a store; where is the land zoned for this commercial use; and/or where are there housing development sites under construction. This address level data can be loaded directly onto PolicyMap by the subscriber, or a Premium Subscriber can submit this data to PolicyMap staff and have the information loaded into PolicyMap for them.

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