

# Understanding Your Trade Area: *Implications for Retail Analysis*

Defining a town's trade area is an important first step in developing a strong retail economy. It is the foundation of retail trade analysis, since it helps existing businesses identify ways to expand their markets.

This publication shows a few simple ways to determine the geographic size of a town's trade area. Knowing the trade area lets decision makers do a market analysis of the local area, using important statistics such as number of customers, potential sales, pull factors, and other measures of retail strength.

## *Defining the Trade Area*

Whatever the reasons for existing retail sales, city and county leaders can help local businesses improve these trends. To determine how much retail sales might increase, first define the trade area.

A trade area is the geographic region from which a town draws most of its retail customers. Here are some ways to define a trade area:

- Study traffic flow
- Use a retail gravity model
- Use a zip code method
- Use commuting data to define the trade area boundaries

For the beginner economist, the commuting and retail gravity approaches present the lesser challenges in terms of application.

## *Traffic Flow*

Traffic studies involve random canvassing of parking lots at major locations in town at different times on different days and over several weeks. These locations might include the downtown area, major shopping destinations such as shopping malls and centers, Wal-Mart Super Center, Home Depot, Kroger, and other popular establishments. You should monitor vehicle license plates from different locations to get an overview of vehicles from surrounding counties, record the findings, and compare them to regional commuting data. Results from a traffic study will usually reveal the major towns and counties that make up the local trade area or market.

To determine the major communities in the local market, rank the number of vehicles from various counties in the region and select the top five or six localities based on the highest frequency and/ or the maximum percentage of license plates in the area.

## *Commuting*

The time it takes local residents to commute to work is another way to identify a community's retail trade area. Converting commuting time to work into spatial distances or miles and plotting these data on a map gives a picture of the geographic size of a community's trade area.

## *Reilly's Law*

Another way of defining the retail trade area is to use a gravity model. In retail trade analysis, one popular method is Reilly's Law of Retail Gravitation. This is a rule of thumb that estimates the distance customers will travel to buy goods and services after comparing prices, quality, styles, and other shopping factors. The law assumes that people want to shop in larger towns, but their desire declines the farther and the longer the time they must travel to get to those places. Thus, larger towns draw customers from a larger trade area than smaller towns. The following formula estimates the maximum distance customers will travel to shop in a smaller town.

$$\text{Maximum Distance to Smaller Town (Y)} = \frac{\text{Road distance between towns (X) and (Y)}}{1 + \sqrt{\frac{\text{Population of larger town (X)}}{\text{Population of smaller town (Y)}}}}$$

Table 1 contains the data needed to apply Reilly's Law. Plugging population and distance between the host community (A) and neighboring communities (B-F) into the formula gives an estimate of trade area miles in the region. For example, residents living farther than 5.65 miles from Community B will likely shop in Community A (the host community). Interpretations about other communities in this example are similar. However, as population differences between the host community and neighboring communities converge,

the trade area distance increases. This suggests the retail economies of these communities are similar, with no clear shopping advantages between them.

Plotting the trade area distances on a map gives local officials and merchants a picture of the community's trade area.

County	Total Population	Distance (from Community A to County Seat)	Trade Area Distance
Community A	22,000		
Community B	1,543	27	5.65
Community C	23,799	23	11.73
Community D	2,145	27	6.42
Community E	7,169	33	11.99
Community F	8,489	17	6.51
Average	10,858	25.4	8.46

### *Estimating Total Market Size*

Identifying a trade area's physical boundaries lets you estimate the total number of people in the market size. The total market consists of populations in the host community plus populations from surrounding towns in the trade area. The following data and formula provide estimates of other customers drawn to the area:

$$3.14 \times (\text{Average Retail Trade Miles})^2 \times \text{Average County Trade Population Density Per Square Mile}$$

Example: ( $\pi$  is a constant = 3.14)

Community A's population = 22,000

Average trade area retail miles = 8.46

Average trade area county population density per square mile = 51.45

Number of extra customers drawn to Community A = 11,563

Total retail customer base = 33,563  
(22,000 + 11,563)

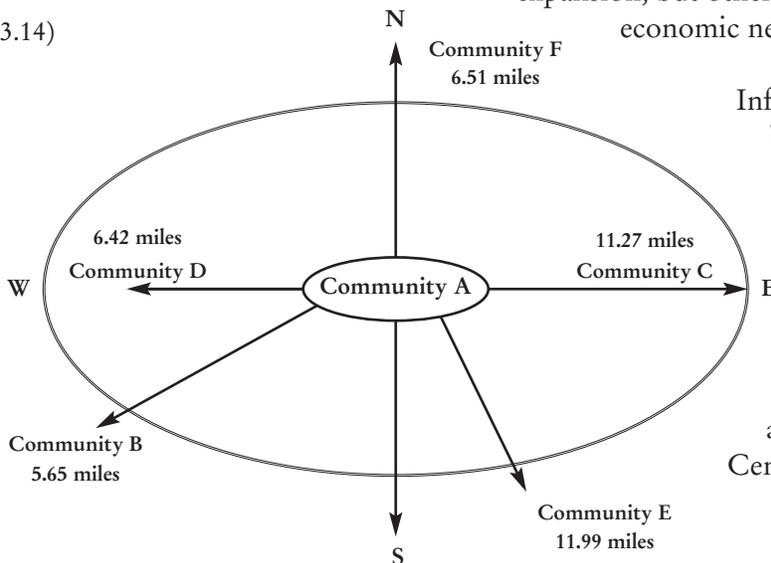
In using this formula, there are a few assumptions and cautions. First, the formula assumes the trade area is circular and uses pi ( $\pi$ ) to determine the number of customers drawn from the population. Second, areas with large populations and densities per square mile can distort the actual situation in retail trade analysis. Third, Reilly's Law is less accurate in calculating trade miles when involving larger towns.

### *Using Information about Market Size*

After defining the trade area, estimate the local sales potential and compare that to actual sales in the area. The following formula estimates potential retail sales.

$$\text{Trade Area Population} \times \frac{\text{State Per Capita Sales}}{\text{Community A's Per Capita Income}} \times \frac{\text{Community A's Per Capita Income}}{\text{State Per Capita Income}}$$

Comparing actual and potential sales lets you determine if a community has room for retail growth. The difference between actual and potential sales is the retail "leakage or gap" in the community. Compare sales over several years to determine the long-term health of retail sectors in the community. Some sectors will represent opportunities for economic growth and expansion, but others will point out areas of economic need and stimulation.



Information on actual sales by cities and county is available on the Mississippi State Tax Commission website ([www.mstc.state.ms.us/](http://www.mstc.state.ms.us/)) for selected years. Data on population and income for Mississippi are available from the U.S. Census Bureau.

## Determining Retail Power

### Trade Area Capture

Information about a community's trade area can help officials assess the ability of local merchants to attract and capture the retail business of people in the area. The trade area capture (TAC) is an estimate of the number of people who shop in the local area during a certain period. The formula for calculating TAC is as follows:

$$\text{TAC} = \frac{\text{Actual Retail Sales in Community A}}{\text{State Per Capita Sales} \times \left[ \frac{\text{Community A's Per Capita Income}}{\text{State Per Capita Income}} \right]}$$

TAC is the number of customer equivalents and not the people sold to by retail merchants. For example, a community of 9,000 and a TAC of 10,500 suggests purchases made by these customers are equivalent to selling to 10,500 people in the community. This simply says that per capita retail expenditures among these customers are higher than per capita expenditures statewide.

### Pull Factors

Determining the trade area is the first step in retail analysis. By knowing the trade area, you can determine the size and strength of local merchants in the market using pull factors. Pull factors are ratios that estimate the proportion of local sales that occurs in a town. Here is the most common method of calculating pull factors:

$$\text{Pull Factor (PF)} = \frac{\text{Trade Area Capture}}{\text{City Population}}$$

You can also calculate pull factors for specific retail sectors by using the following revised equation for the sectors in question. The interpretations are the same.

$$\text{PF}_{it} = \frac{\frac{\text{LC}_{it}}{\text{LP}_t}}{\frac{\text{SS}_{it}}{\text{SP}_t}}$$

Where: PF = Pull Factor  
 LC = Local Sales  
 LP = Local Population  
 SS = State Sales  
 SP = State Population  
 i = Retail Sector  
 t = Time Period

Pull factors are an easy way to determine retail leakage in the community. Subtracting one from the pull factor gives a crude estimate of retail loss. If the product is positive, then the community is attracting customers from outside the immediate trade area. If the product is negative, the community is losing customers to neighboring towns. A value of zero suggests the community is maintaining its customer base, neither attracting nor losing customers to competing communities.

For more information, refer to these publications:

"Gap Analysis as a Tool for Community Economic Development" by Suzetta D. Barta and Mike Woods. Oklahoma Cooperative Extension Service, 1999.

Community Economic Analysis: A How-To Manual by Ronald J Hustedde, Ron Shaffer, and Glen Pulver. North Central Regional Center for Rural development. Iowa State University. Ames Iowa, 1994.

"Potential for Retail Trades in Rural Communities" by Jay Simon and Curtis Braschler. University of Missouri Extension Service. Columbia, Missouri, 1987.



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By **Dr. Albert E. Myles**, Extension Professor, Community Resource Development

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