Federal Reserve Bank of Philadelphia

Third District Banking Market Definitions
2014 Revisions

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The **Federal Reserve Bank of Philadelphia** helps formulate and implement monetary policy, supervises banks and bank and savings and loan holding companies, and provides financial services to depository institutions and the federal government. It is one of 12 regional Reserve Banks that, together with the U.S. Federal Reserve Board of Governors, make up the Federal
Reserve System.

The Federal Reserve Bank of Philadelphia is responsible for the Third District, which covers eastern Pennsylvania, southern New Jersey, and Delaware.

The **Research Department** of the Philadelphia Fed supports the Fed's mission through its research; surveys of firms and forecasters; reports on banking, markets, and the regional and U.S. economies; and publications such as ***Banking Brief***.

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Summary of Changes in Market Definitions Since 2003

1. Bradford and Sullivan counties in Pennsylvania are no longer a single market. Now each county is a separate market.

2. The Philadelphia/South Jersey market is changed as follows:

    a. The city of Lambertville, the boroughs of Frenchtown, Milford, and Stockton, and the townships of Delaware, Holland, Kingwood, and West Amwell in Hunterdon County, NJ, are included.

    b. The city of Trenton and Hamilton Township in Mercer County, NJ, are included.

    c. The city of Bordentown, the boroughs of Fieldsboro, Pemberton, and Wrightstown, and the townships of Bass River, Bordentown, Eastampton, Florence, Mansfield, Mount Holly, New Hanover, North Hanover, Pemberton, Shamong, Southampton, Springfield, Tabernacle, Washington, and Woodland in Burlington County, NJ, are excluded.

3. The Lehigh Valley market is changed as follows:

    a. The town of Phillipsburg, the borough of Alpha, and Pohatcong Township in Warren County, NJ, are included.

    b. The townships of Chestnuthill, Eldred, Hamilton, Jackson, Polk, Ross, Tobyhanna, and Tunkhannock in Monroe County, PA, are included.

4. The Scranton/Wilkes-Barre market is changed as follows:

    a. The towns of East Berwick and Nescopeck in Luzerne County, PA, are excluded.

    b. The boroughs of Hawley and Honesdale and the townships of Berlin, Damascus, Dreher, Lebanon, Manchester, Oregon, Palmyra, Paupack, Salem, and Sterling in Wayne County, PA, are excluded.

5. The Binghamton market is changed to include Chenango, Delaware, and Otsego counties in New York.

6. The State College market adds the townships of Beech Creek, Green, Logan, and Porter from Clinton County, PA, to Centre County, PA.

7. The Williamsport market is changed by subtracting the townships Beech Creek, Green, Logan, and Porter from Clinton County. Thus, the market will consist of Lycoming County and the remainder of Clinton County.

8. The Susquehanna Valley market adds the towns of East Berwick and Nescopeck in Luzerne County, PA.

9. The Metro New York/New Jersey market is changed as follows:

a. The towns of Bethlehem, Goshen, Litchfield, Morris, Plymouth, Thomaston, Watertown, and Woodbury in Litchfield County, CT, are included.

b. The towns of Bethany, Hamden, Middlebury, Naugatuck, New Haven, Orange, Southbury, Waterbury, West Haven, and Woodbridge are included.

c. The city of Bordentown, the boroughs of Fieldsboro, Pemberton, and Wrightstown, and the townships of Bass River, Bordentown, Chesterfield, Eastampton, Florence, Mansfield Mount Holly, New Hanover, North Hanover, Pemberton, Shamong, Southampton, Springfield, Tabernacle, Washington, and Woodland in Burlington County, NJ, are included.

d. The city of Hudson and the towns of Ancram, Clermont, Copake, Gallatin, Germantown, Greenport, Livingston, and Taghkanic in Columbia County, NY, are included.

e. The towns of Catskill, Halcott, Hunter, and Lexington in Greene County, NY, are included.

f. The boroughs of Hawley and Honesdale, and the townships of Berlin, Damascus, Dreher, Lebanon, Manchester, Oregon, Palmyra, Paupack, Salem, and Sterling in Wayne County, PA, are included.

g. The boroughs of Frenchtown, Milford, and Stockton, and the townships of Delaware, Holland, Kingwood, and West Amwell in Hunterdon County, NJ, are excluded.

h. The city of Trenton, and Hamilton Township in Mercer County, NJ, are excluded.

i. The town of Phillipsburg, the borough of Alpha, and Pohatcong Township in Warren County, NJ, are excluded.

j. The townships of Chestnuthill, Eldred, Hamilton, Jackson, Polk, Ross, Tobyhanna, and Tunkhannock in Monroe County, PA, are excluded.

Introduction

The federal laws governing bank mergers and bank holding company acquisitions require that the acquiring institution's primary regulator do a competitive analysis on the transaction. Before that analysis can be done, two things must be defined: the product market and the geographic market. In their analysis of these markets, federal regulators are bound by the 1963 Supreme Court decision in *U.S. v. Philadelphia National Bank,* which defined the product market as the "cluster" of banking products and services and the geographic market as a local area.[1] However, the decision did not set specific standards for defining local geographic markets, thereby leaving that task up to the regulatory agencies.

A geographic market can be defined as the largest area over which supply and demand factors interact to determine prices and quantities of bank products and services. For example, three banks may have branches in three separate areas. As long as a sufficient number of customers have access to these branches, they are competitors. A geographic market is often confused with a service area, which can be defined as the area from which a particular bank draws the large majority of its customers. This distinction is important. A large banking organization's service area may cover many markets. Conversely, a major metropolitan area market may encompass the service areas of many small banks, and it is not necessary for these service areas to overlap in order for them to be in the same market.

There is a fairly diverse range of opinions as to how banking markets should be defined.[2] The methodology used by the Federal Reserve Bank of Philadelphia was first developed in 1995, and it has undergone several refinements since then.[3] This paper will use our methodology to redefine Third District banking markets using 2006-2010 American Communities Survey data.[4]

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[1] *United States v. Philadelphia National Bank* (374 U.S. 321) decided June 21, 1963. The court held that banking was a "unique line of commerce" represented by the cluster. The cluster consists of: unsecured personal and business loans, loans secured by securities and accounts receivable, automobile and consumer goods installment loans, tuition financing, bank credit cards, revolving credit funds, demand deposits, time and savings deposits, estate and trust planning, trusteeship services, lock boxes, safety deposit boxes, account reconcilement services, correspondent services, and investment advice.

[2] For a summary of the methodologies used by Federal Reserve Banks, see DiSalvo (1999).

[3] See DiSalvo (2003).

[4] See the section, *A Note on the Data Used*, below for a description of the data used in this paper.

Theoretical Background

In defining geographic markets, the Federal Reserve Bank of Philadelphia begins with two pieces of economic theory. First is the concept of marginal consumers. This should not be confused with the average consumer, who may not be sensitive to, or even aware of, the relative price of a good or service among alternative suppliers. However, if a sufficient number of consumers are aware of the relative prices and have the ability to make their purchases accordingly, any firm attempting to raise prices will see its volume diminish. In economic terms, marginal consumers have relatively high cross-price elasticities of demand.

Consider the following example. A study was done in the 1970s of gasoline purchases in a large metropolitan area.[5] Customers were asked what price per gallon they had just paid. The large majority of those customers had only a vague notion of the approximate price and were not aware if lower-priced alternatives were available. However, those stations with the lowest prices did sell more gasoline. This was because a sufficient number of consumers were aware of the relative prices and made their purchases accordingly.

The concept of marginal consumers is also recognized in the Department of Justice (DOJ) merger guidelines using a *hypothetical monopolist* test:

> In considering likely reactions of customers to price increases for the relevant product(s) imposed in a candidate geographic market, the Agencies consider any reasonably available and reliable evidence, including:
>
> - How customers have shifted purchases in the past between different geographic locations in response to relative changes in price or other terms and conditions;
> - The cost and difficulty of transporting the product (or the cost and difficulty of a customer traveling to a seller's location), in relation to its price;
> - Whether suppliers need a presence near customers to provide service or support;
> - Evidence on whether sellers base business decisions on the prospect of customers switching between geographic locations in response to relative changes in price or other competitive variables;
> - The costs and delays of switching from suppliers in the candidate geographic market to suppliers outside the candidate geographic market; and
> - The influence of downstream competition faced by customers in their output markets.[6]

Thus, if a sufficient number of consumers have the opportunity to switch providers in

[5] Miller (1978), pp. 8–10.
[6] Department of Justice, *Horizontal Merger Guidelines,* 2010, Section 4.2.1,

response to a price increase, the DOJ will include the location of any feasible alternative provider in the geographic market.

A second concept used to determine banking markets is known as transitivity. That is, the pricing decisions of firms in one area might be affected by the pricing decisions of firms in another (noncontiguous) area if both areas are sufficiently integrated with a third area.[7] Thus, if firms in county A compete with firms in county B, and firms in county B compete with firms in county C, then firms in counties A and C are competitors as well. Competitive forces would link the three areas, indicating that all of them should be considered one market, even though counties A and C have no direct link. Many of the firms in A and C may not be competing for the same customer base, yet they will each base their pricing decisions on what all other firms in the market are doing. This theory can be illustrated using Hotelling's theory of spatial competition, which is summarized in Appendix A.

Standardized Urban Areas

Most Federal Reserve Banks begin defining banking markets with some form of standardized area. For urban areas, there are two types: Ranally Metro Areas (RMAs), defined by the Rand McNally Corporation, and Core-Based Statistical Areas (CBSAs), defined by the Office of Management and Budget. The major difference between these two methods is that CBSAs use whole counties (except in New England), whereas RMAs do not. This section will review each of these areas.

RMAs: RMAs use commuting and population density data at the subcounty level. The criteria for delineating an RMA are as follows:[8]

1. An urbanized area with a population of at least 50,000.
2. A population density of at least 70 per square mile.
3. Commutation of at least 20 percent of the labor force to the central urban area.

CBSAs: CBSAs are defined decennially by the Office of Management and Budget (OMB) using census commuting and population data. Starting with the 2000 census, OMB chose to define two types of CBSAs: Metropolitan Statistical Areas (MeSAs) and Micropolitan Statistical Areas (MiSAs).

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http://www.justice.gov/atr/public/guidelines/hmg-2010.html.

[7] For an example of transitivity in banking markets, see Tannenwald (1994).

[8] Source: *Rand McNally Commercial Atlas and Marketing Guide*, 2002 edition. Rand McNally has subsequently stopped updating RMA definitions.

The major difference between these two is the size of the urbanized core. An MeSA requires an urbanized area (as defined by the Census Bureau) with a population of at least 50,000, while and MiSA requires a Census-defined urban cluster with a population of at least 10,000.[9] Each begins with a central county or counties, which are defined as having one of the following characteristics:

1. At least 50 percent of their population in urban areas of at least 10,000 population.
2. A total population of at least 10,000 with at least 5,000 located in a single urban area.

Once the central county or counties are identified, one or more outlying counties can be included in the CBSA if they meet either of the following requirements:

1. At least 25 percent of the employed resident in the outlying county work in the central county or counties.
2. At least 25 percent of the employment in the outlying county is accounted for by workers who reside in the central county or counties.
3. If a county qualifies as a central county in one CBSA and an outlying county in another, it falls within the one in which it is a central county.
4. If a county qualifies as an outlying county in multiple CBSAs, it is included in the one with which it has the strongest commuting ties.

MeSAs can also be combined into larger areas, called Combined Statistical Areas, if the employment interchange between the two areas is at least 25 percent. Figure 1 on the following page shows MeSAs and MiSAs for the Third District and vicinity as defined by the OMB in 2010.

Because they don't rely on political boundaries, RMAs may be a more accurate indicator of the actual degree of integration in an area. This is especially true in western states, where counties tend to be rather large and are defined by latitude and longitude rather than natural boundaries. However, the Federal Reserve Bank of Philadelphia generally prefers to use whole counties rather than RMA boundaries for several reasons.

In the Third District and its vicinity, most counties follow natural borders, with the border being defined in many cases by rivers, streams, and mountains. Second, where CBSAs are delineated decennially, RMAs are done on a more haphazard basis. Some RMAs may have been done using recent population and commuting data, but others may have been drawn using data

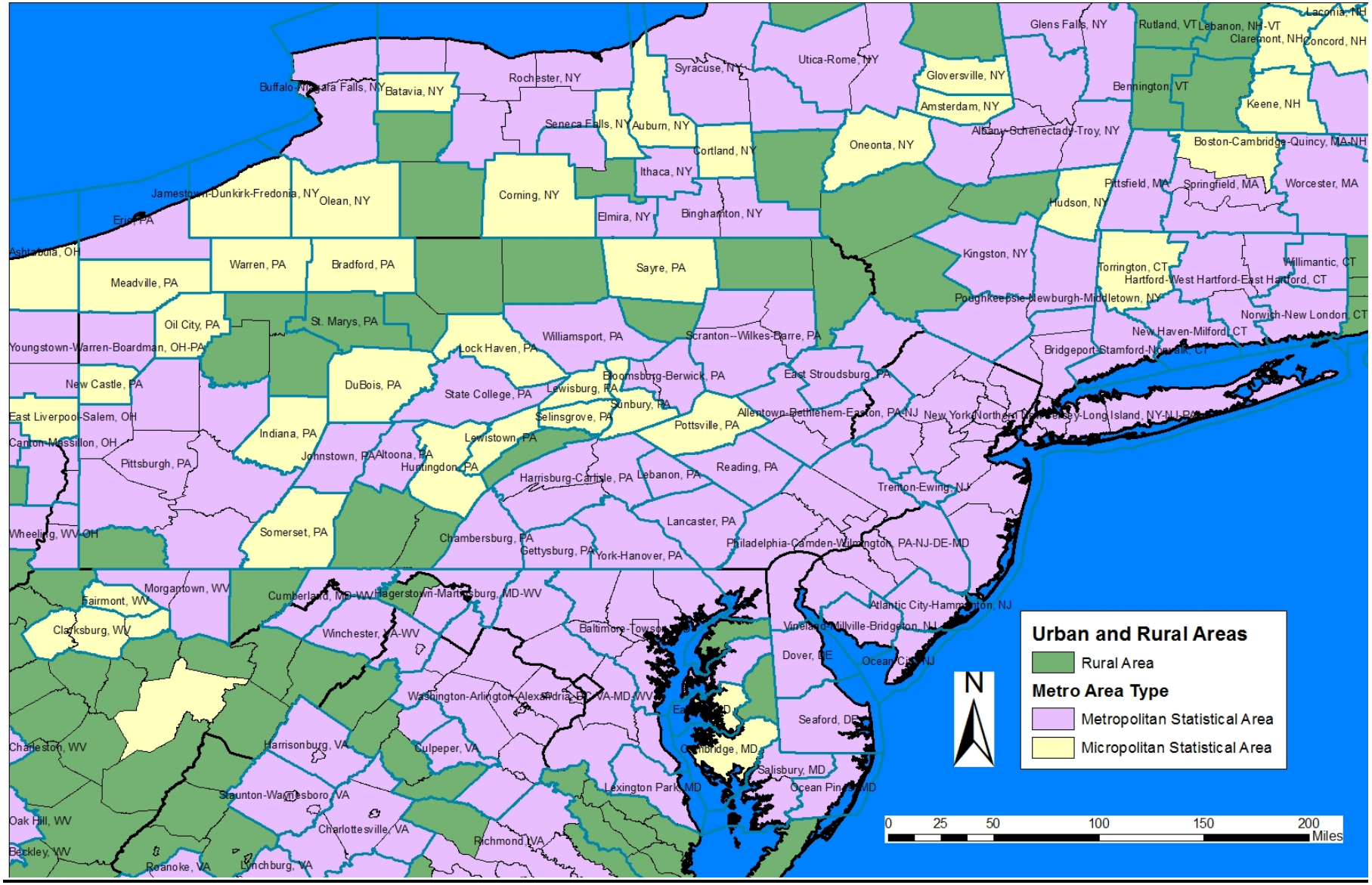
[9] See 65 *Federal Register*, pp. 51060-77 (August 27, 1999) and 65 *Federal Register,* pp. 82228-38 (December 27, 2000) for the full discussion of how the definition of CBSAs was arrived at. Refer to the Census Bureau website for definitions of the terms "urbanized area" and "urban cluster."

from the 1990 or even 1980 census. Third, the non-RMA portions of urban counties are generally sparsely populated, with few banking facilities. Thus, their inclusion or exclusion from a particular market generally has an insignificant impact on that market's structure.

Key Concepts

Before describing the Federal Reserve Bank of Philadelphia's method for defining banking markets, two key concepts must be clarified. The first is how employment within a particular area is measured. Urban and regional economists define employment in a particular area (state, county, city, place, etc.) in two ways: *resident* employment or *establishment* employment. Resident employment is the number of people who live within a particular area who are employed, whether within that area or elsewhere. Establishment employment is the number of people who work in a particular area regardless of where they live. Thus, a person who both lives and works in Pennsylvania is both a resident and establishment employee of Pennsylvania. A person who lives in New Jersey and works in Pennsylvania is a resident employee in New Jersey and an establishment employee in Pennsylvania. The same can be applied to smaller areas such as counties.

The second concept is a continuation of the first, the idea of areas being net importers or exporters of labor. If a substantial percentage of a county's resident employees work in another county or counties, that county is a net exporter of labor and can be linked to the other county or counties. Likewise, if a substantial portion of a county's employees live in another county or counties, that county is a net importer of labor and can be linked to that county or counties. Finally, there may be substantial two-way commutation between counties, especially in areas where there is no defined central city or cities but a continuous, substantially built-up area.


Urban and Rural Areas
Rural Area
Metro Area Type
Metropolitan Statistical Area
Micropolitan Statistical Area
N
0 25 50 100 150 200 Miles
Glens Falls, NY
Rutland, VT
Lebanon, NH-VT
Claremont, NH
Laconia, NH
Concord, NH
Utica-Rome, NY
Syracuse, NY
Rochester, NY
Buffalo-Niagara Falls, NY
Batavia, NY
Gloversville, NY
Bennington, VT
Keene, NH
Amsterdam, NY
Seneca Falls, NY
Auburn, NY
Albany-Schenectady-Troy, NY
Oneonta, NY
Cortland, NY
Boston-Cambridge-Quincy, MA-NH
Ithaca, NY
Pittsfield, MA
Springfield, MA
Worcester, MA
Jamestown-Dunkirk-Fredonia, NY
Olean, NY
Corning, NY
Hudson, NY
Elmira, NY
Binghamton, NY
Erie, PA
Ashtabula, OH
Kingston, NY
Warren, PA
Bradford, PA
Sayre, PA
Torrington, CT
Willimantic, CT
Hartford-West Hartford-East Hartford, CT
Meadville, PA
Poughkeepsie-Newburgh-Middletown, NY
Oil City, PA
St. Marys, PA
Norwich-New London, CT
Williamsport, PA
Scranton--Wilkes-Barre, PA
New Haven-Milford, CT
Youngstown-Warren-Boardman, OH-PA
Lock Haven, PA
Bridgeport-Stamford-Norwalk, CT
Bloomsburg-Berwick, PA
East Stroudsburg, PA
New Castle, PA
DuBois, PA
State College, PA
Lewisburg, PA
Sunbury, PA
East Liverpool-Salem, OH
Selinsgrove, PA
Allentown-Bethlehem-Easton, PA-NJ
New York-Northern New Jersey-Long Island, NY-NJ-PA
Pottsville, PA
Canton-Massillon, OH
Indiana, PA
Lewistown, PA
Johnstown, PA
Altoona, PA
Pittsburgh, PA
Huntingdon, PA
Reading, PA
Harrisburg-Carlisle, PA
Lebanon, PA
Trenton-Ewing, NJ
Lancaster, PA
Wheeling, WV-OH
Somerset, PA
Chambersburg, PA
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
Gettysburg, PA
York-Hanover, PA
Morgantown, WV
Fairmont, WV
Cumberland, MD-WV
Hagerstown-Martinsburg, MD-WV
Atlantic City-Hammonton, NJ
Clarksburg, WV
Winchester, VA-WV
Baltimore-Towson
Vineland-Millville-Bridgeton, NJ
Dover, DE
Ocean City, NJ
Washington-Arlington-Alexandria, DC-VA-MD-WV
Easton, MD
Seaford, DE
Charleston, WV
Harrisonburg, VA
Culpeper, VA
Cambridge, MD
Salisbury, MD
Staunton-Waynesboro, VA
Lexington Park, MD
Ocean Pine, MD
Oak Hill, WV
Charlottesville, VA
Richmond, VA
Beckley, WV
Roanoke, VA
Lynchburg, VA

Federal Reserve Bank of Philadelphia Methodology

The methodology used define markets is not substantially different from the methodology used to define CBSAs. We begin with whole counties. Next, the Census Bureau's Journey-to-Work data (JTW) is examined to see if there are links between neighboring counties or areas. Links can be one of the three kinds described in the previous section: residents commuting one way, employees commuting the other way, or both. The idea behind using commuting data is that bank customers are likely to use banks located near either their residence or their place of work.[10] Commuters have a ready-made choice of banking locations and are therefore more likely to be marginal consumers than noncommuters. Thus, counties or groups of counties will be combined into a single market if they, in aggregate, meet any of the following criteria:

1. At least 15 percent of resident workers in the base county commute to an adjoining county, i.e., the base county is a net exporter of labor to the adjoining county. This is calculated by summing up all of the workers who reside in the base county (resident employment) as the denominator and using the number of workers who reside in the base county and work in the adjoining county as the numerator.
2. At least 20 percent of the employees in the base county reside in the adjoining county, i.e., the base county is a net importer of labor from the adjoining county. This is calculated by summing up all of the workers who work in the base county (establishment employment) as the denominator and using the number of workers who work in the base county and reside in the adjoining county as the numerator.
3. At least 10 percent of the resident workers in the base county commute to the adjoining county, and at least 10 percent of employees in the base county reside in the adjoining county.
4. Each of the above criteria is subject to a minimum of 1,000 total commuters

These criteria will be applied in tiers. That is, first, the criteria will be applied to individual counties to see which counties are linked. We will then take those combined areas and apply the criteria again to see if any more counties should be added or if adjacent combine areas can be further linked. This process will continue through further tiers until no further links can be

[10] See Elliehousen and Wolken (1995).

established. This is consistent with the theory of transitivity discussed above.[11]

Additionally, we may consider additional evidence of integration. Examples of this evidence may include: newspaper circulation data, radio and television markets, bank branching patterns, and shopping patterns. This type of qualitative evidence could be accepted on a case-by-case basis, but there must also be some evidence of commutation, such as one or more of the above criteria being nearly met. Also, a county may be split if it is not a core county and there is evidence that it is linked to two or more counties or groups of counties that are not themselves directly linked. The next section will apply these criteria using the 2000 census JTW data.

A Note on the Data Used

As in previous years, JTW data will be used to assess commutation between counties. However, the way these data are collected has changed. Previously, the data were collected all at one time decennially using the census long form, but this was abolished for the 2010 census. For this revision, the data come from the American Communities Survey (ACS).

There were several problems with the long form data. The long form had been sent to about one in six households in the United States, but the sampling method tended to oversample rural households and under sample urban households.[12] Additionally, response rates on the long form were decreasing with each census, to the point that in 2000 the difference in response rates between the short form and long form exceeded 12 percentage points.[13]

The ACS, instead of being conducted once decennially, is collected on a continuing monthly basis by the Census Bureau. It samples about 250,000 households monthly, for a total of about 3 million per year. There is also a much higher response rate, over 90 percent, compared with barely 50 percent for the long form. Thus, over a period of years there is a much larger sample, and Census claims to have eliminated the selection bias.

The data used in this paper were county-to-county JTW downloaded from the Census Transportation Planning Package.[14] The sample is from the 2006–2010 ACS, in which the number

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[11] This methodology has already been accepted by the Board of Governors as valid. See the Board Order approving the application by First Union Corporation to acquire CoreStates Financial Corporation, *Federal Reserve Bulletin,* June 1998, pp. 489-507.
[12] See the Hearing Before the Subcommittee on the Census (1998).
[13] See the letter to Rep. Dan Miller from the General Accounting Office (2000).
[14] The website is http://www.census.gov/population/metro/data/other.html, using either Table 1 or 2.

of workers per pair of counties is estimated to a 90 percent confidence interval from the aggregate sample from that time period. Each pair of counties contains a margin of error variable representing the spread of that 90 percent confidence interval. Observations where the margin of error exceeded the number of workers commuting between two counties were deleted.

New Market Definitions

A. Single-County Markets

The following areas were found to have no significant interaction with neighboring counties and are therefore designated as single-county markets.

- Reading, PA – Berks County, PA. This is equivalent to the Reading MeSA.
- Lancaster, PA – Lancaster County, PA. This is equivalent to the Lancaster MeSA.
- Schuylkill County, PA. This is equivalent to the Pottsville MiSA.
- Tioga County, PA.
- Potter County, PA.
- Mifflin County, PA – Mifflin County, PA. This is equivalent to the Lewistown MiSA.
- Cameron County, PA.
- McKean County, PA. This is the equivalent to the Bradford MiSA.
- Elk County, PA.
- Huntingdon County, PA. This is equivalent to the Huntingdon MiSA.
- Bedford County, PA.
- Altoona, PA – Blair County, PA. This is equivalent to the Altoona MeSA.

B. Discontinued Multicounty Markets

Breakup of Bradford/Sullivan Market: In the 2003 revision, Bradford and Sullivan counties in Pennsylvania were defined as a single market. This was based on significant two-way commutation between the two counties shown in Table 1.

Table 1: Commutation in the Bradford/Sullivan Area – 2000 Data

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Sullivan, PA	Bradford, PA	11.52	10.75

The 2010 numbers are quite different, with increasing numbers of Sullivan County residents commuting to Bradford County but fewer Sullivan County employees commuting from Bradford. While there is some commutation between the two counties, the percentage is not high enough to consider the two counties a single market (Table 2).

Table 2: Commutation in the Bradford/Sullivan Area – 2006-10 Data

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Sullivan, PA	Bradford, PA	14.62	7.43

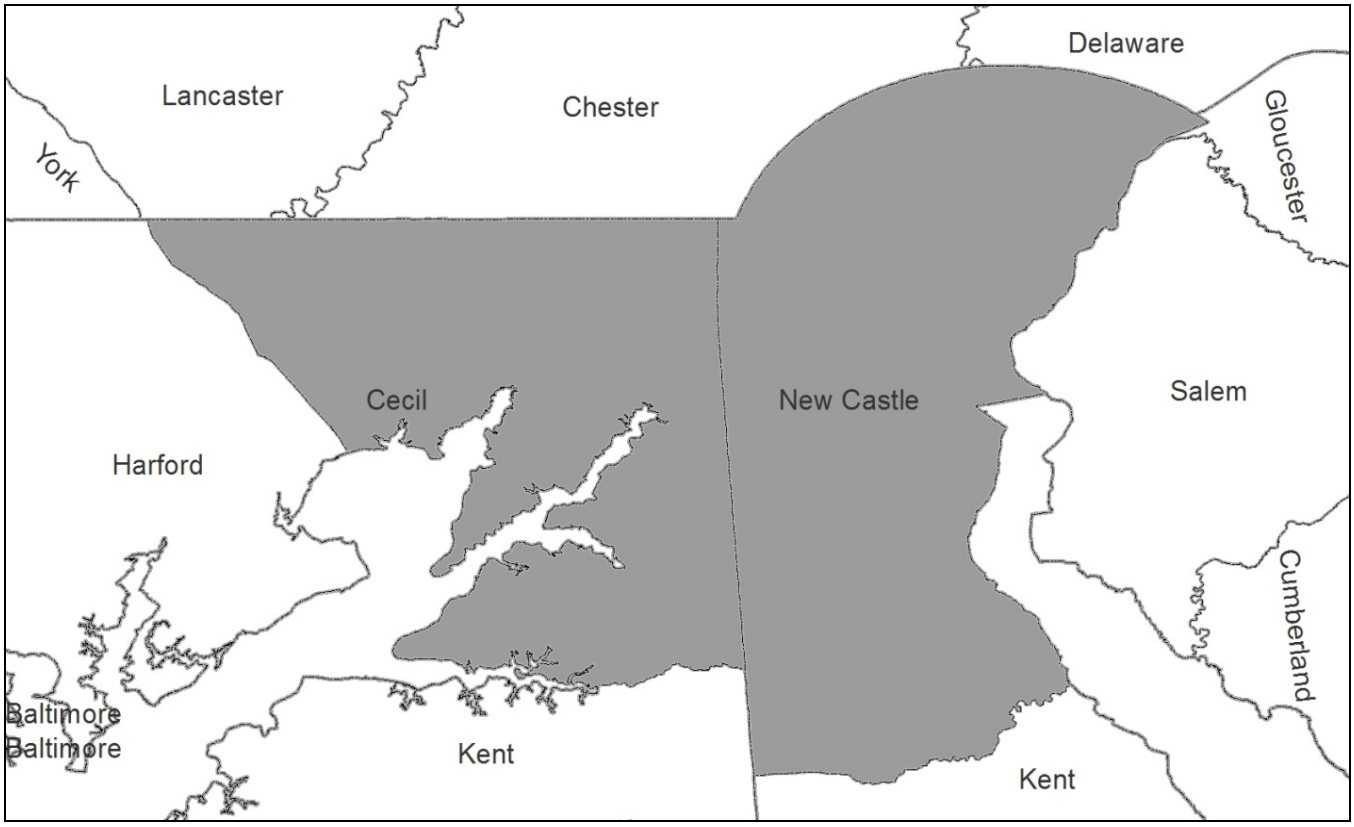
In addition, the number of Sullivan county residents and employees linked to Bradford County is quite small, with only 359 Sullivan residents working in Bradford County and only 132 Sullivan employees living in Bradford County. Thus, we conclude that Bradford and Sullivan counties are each separate markets. Bradford County is equivalent to the Sayre MiSA.

C. Multicounty Markets – Whole Counties

Wilmington, DE–MD: This market consists of New Castle County, DE, and Cecil County, MD. This market is the same as previously defined. The commuting data revealed that a significant number of Cecil County residents work in New Castle County. A second run of the data resulted in no further links. The data are summarized in Table 3 below.

Table 3: Commutation in the Wilmington Area

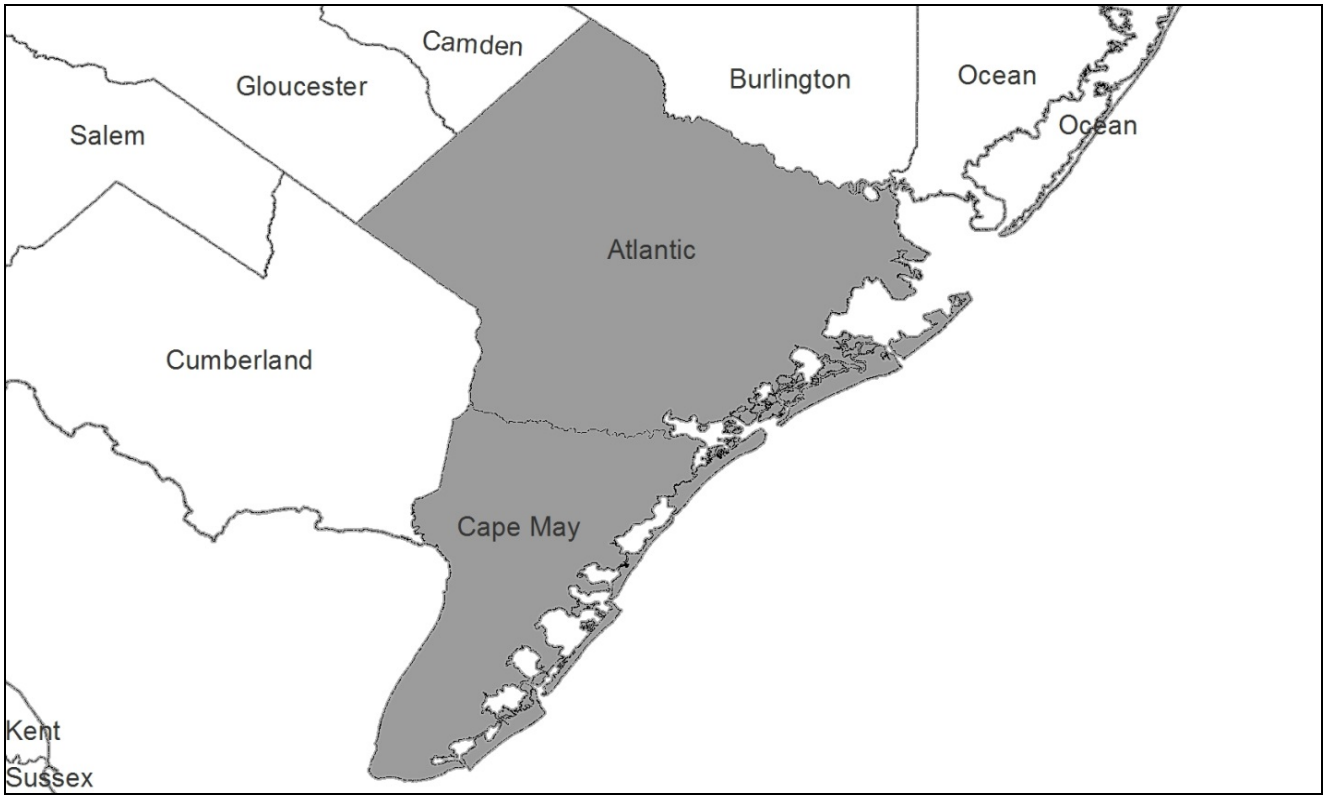
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Cecil, MD	New Castle, DE	25.98	14.26



Atlantic City, NJ: This market consists of Atlantic and Cape May counties in New Jersey. This market is the same as previously defined. The commuting data revealed significant two-way commutation between Cape May and Atlantic counties, with in excess of 14 percent of Cape May County residents commuting to Atlantic County and more than 10 percent of Cape May County employees commuting from Atlantic County. A second run of the data resulted in no further links. The data are summarized in Table 4.

Table 4: Commutation in the Atlantic City Area

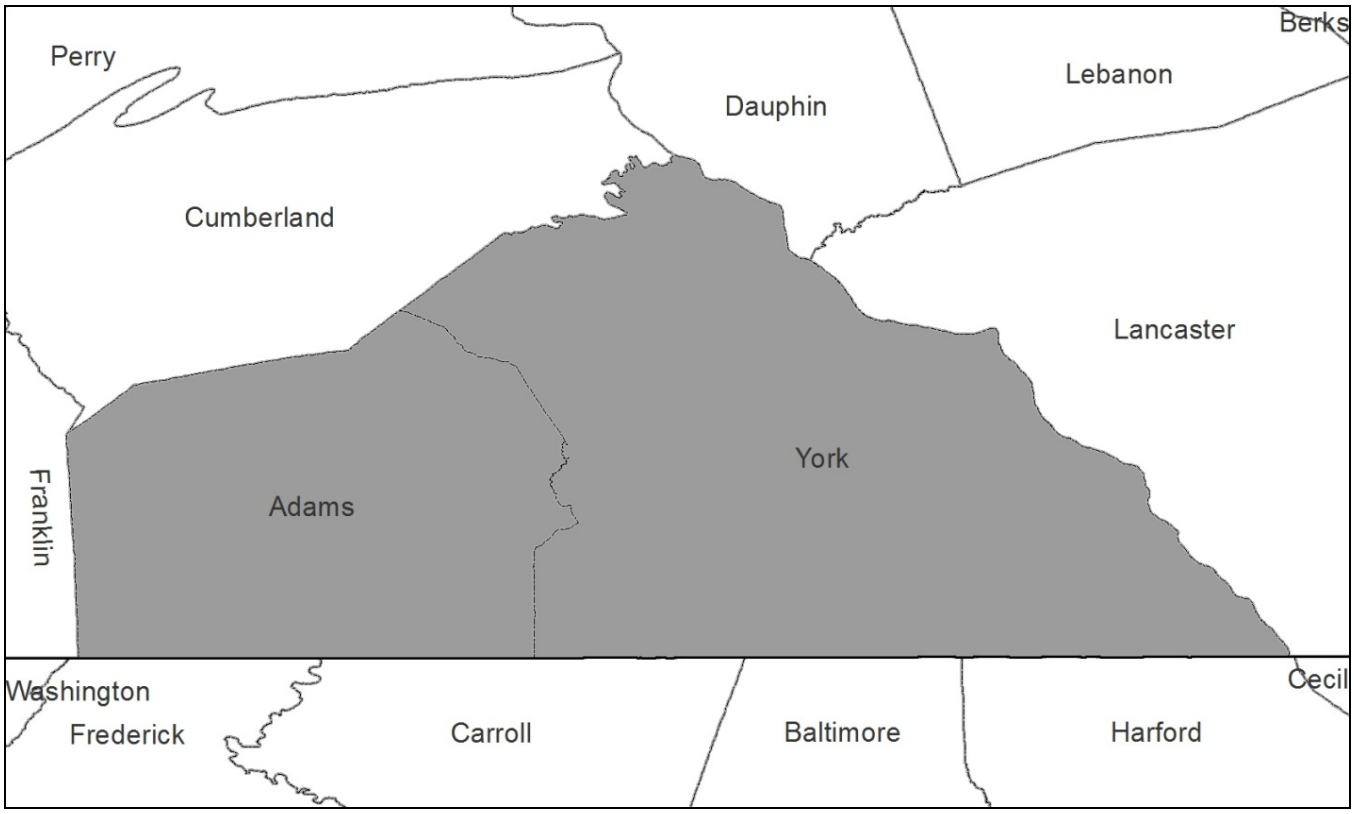
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Cape May, NJ	Atlantic, NJ	14.42	10.05



York, PA: This market comprises York and Adams counties in Pennsylvania. Adams County is a net exporter of labor, and, as shown in Table 5, over 22 percent of Adams County residents commute to York County. Also, over 15 percent of employees in Adams County commute from York County. A second pass of the data yielded no links with any other areas.

Table 5: Commutation in the York Area

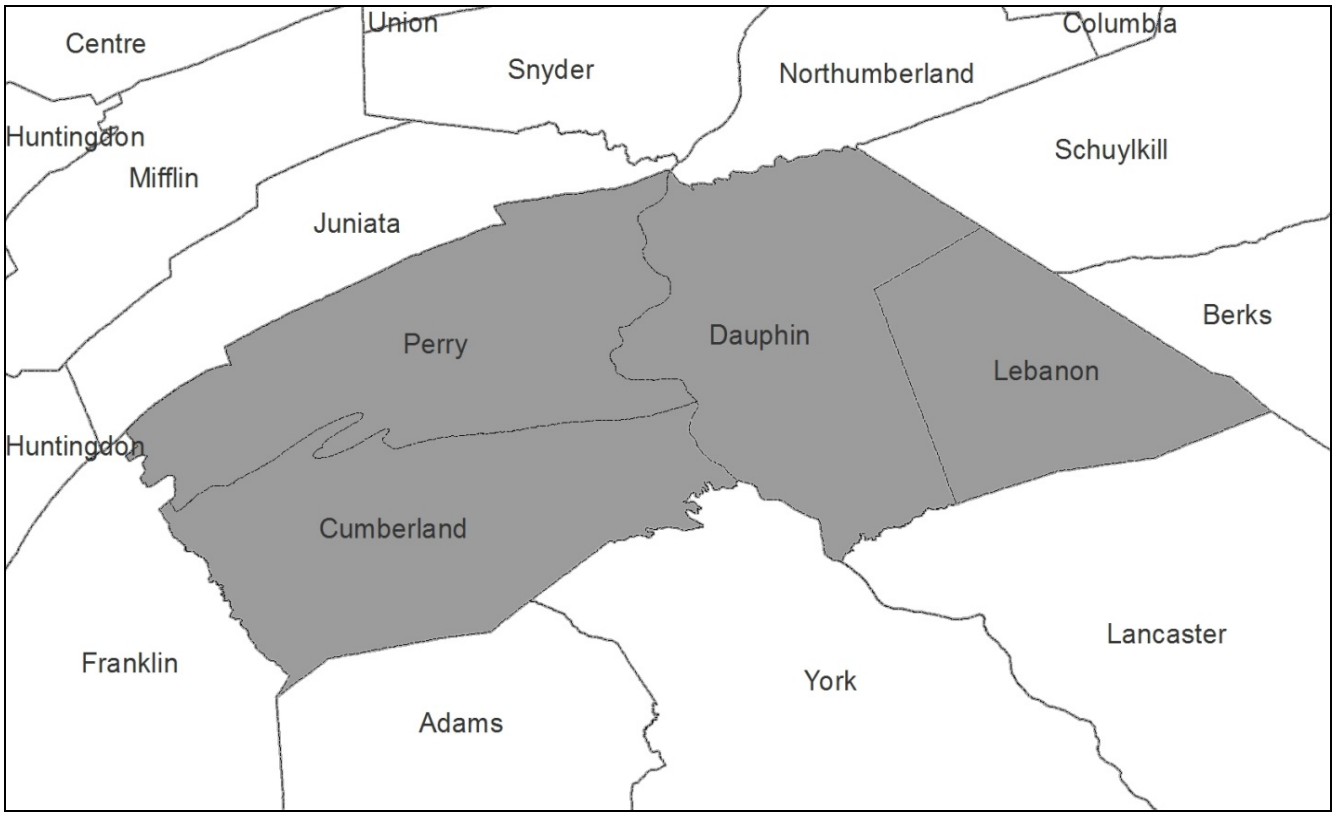
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Adams, PA	York, PA	22.35	16.41



Harrisburg, PA: The Harrisburg market consists of Cumberland, Dauphin, Juniata, Lebanon, and Perry counties in Pennsylvania. This definition was arrived at in two steps. First, Cumberland and Dauphin counties are linked through significant two-way commutation. Second, Lebanon and Perry counties are linked with the core counties of Dauphin and Cumberland by the percentage of residents commuting out (Table 6).

Table 6: Commutation in the Harrisburg Area – First Tier

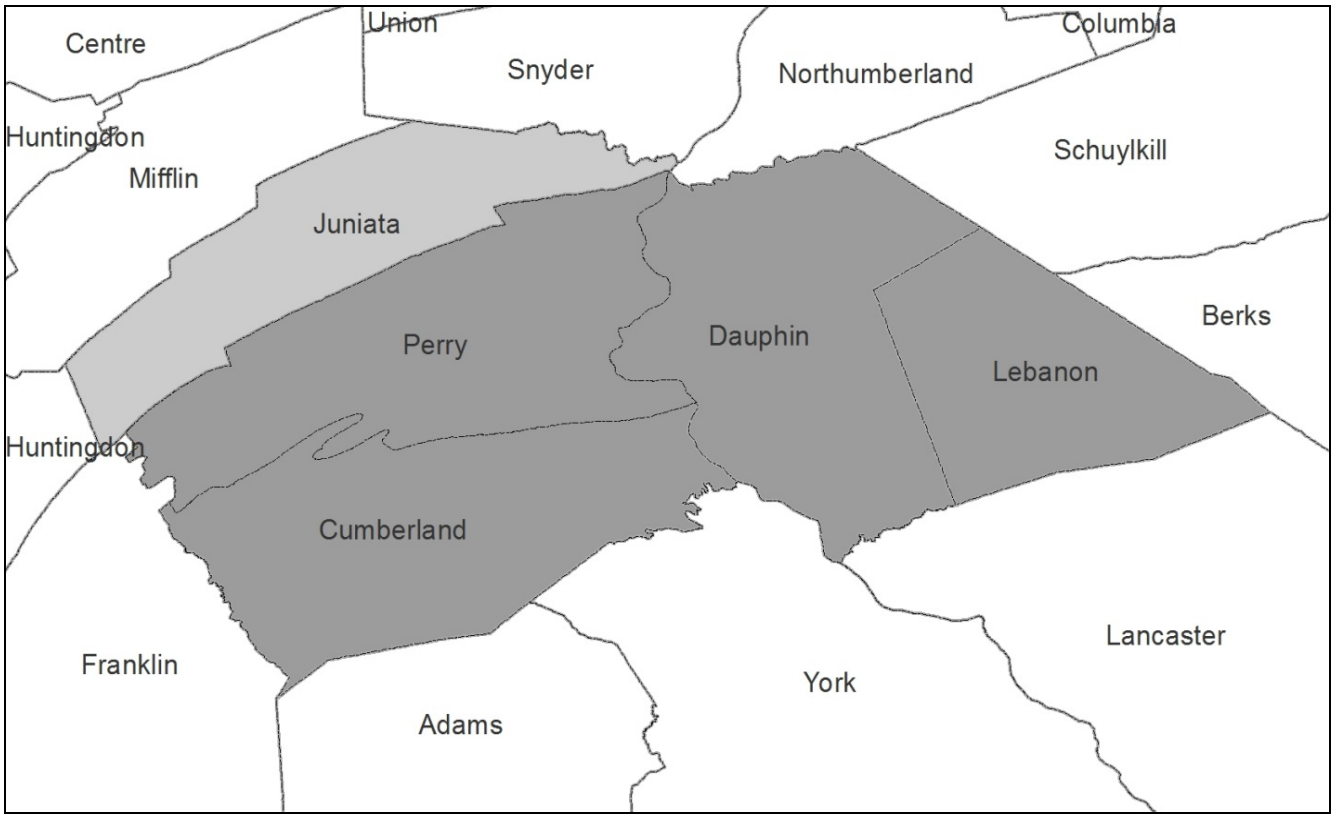
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Perry, PA	Cumberland, PA	34.58	5.86
Dauphin, PA	Cumberland, PA	12.28	13.64
Cumberland, PA	Dauphin, PA	21.15	12.71
Lebanon, PA	Dauphin, PA	22.05	5.90
Perry, PA	Dauphin, PA	27.77	4.28



On the second pass of the data, it was found that over a quarter of Juniata County residents work in one of the other four counties in the market, with the vast majority working in Cumberland and Dauphin counties (Table 7). A third pass of the data revealed no further significant links with other areas.

Table 7: Commutation in the Harrisburg Area – Second Tier

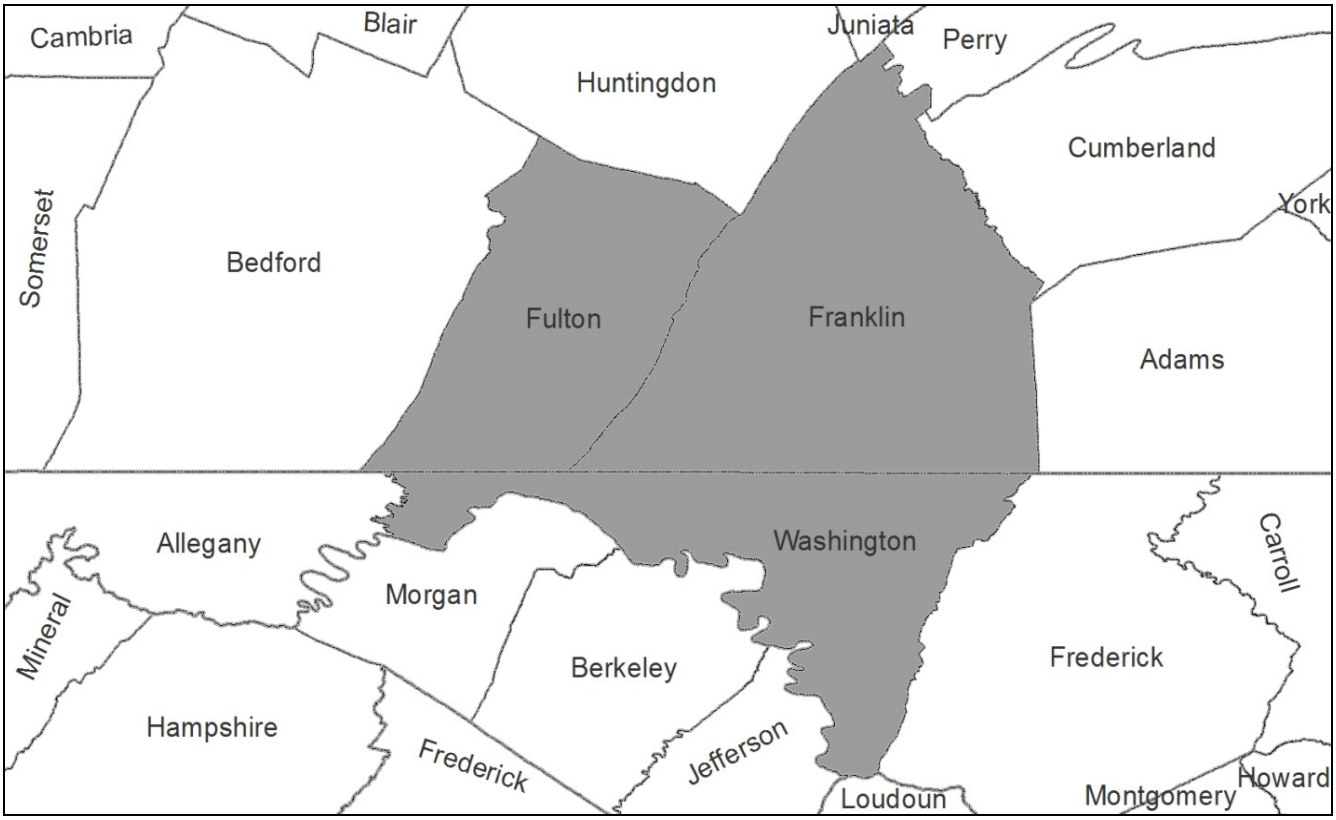
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Juniata County, PA	Harrisburg	28.16	2.06



Hagerstown, MD-PA-WV: The Hagerstown market consists of Washington County in Maryland, Franklin and Fulton counties in Pennsylvania, and at least part of Morgan County in West Virginia. This definition was arrived at in two steps. First, Fulton County is linked to both Franklin and Washington counties. Second, Lebanon and Perry counties are linked with the core counties of Dauphin and Cumberland by the percentage of residents commuting out (Table 8).

Table 8: Commutation in the Hagerstown Area – First Tier

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Fulton, PA	Washington, MD	17.97	1.65
Fulton, PA	Franklin, PA	16.11	12.64



A second pass of the data shows that Morgan County is linked to the other three counties by its residents commuting to the Hagerstown area (Table 9).

Table 9: Commutation in the Hagerstown Area – Second Tier

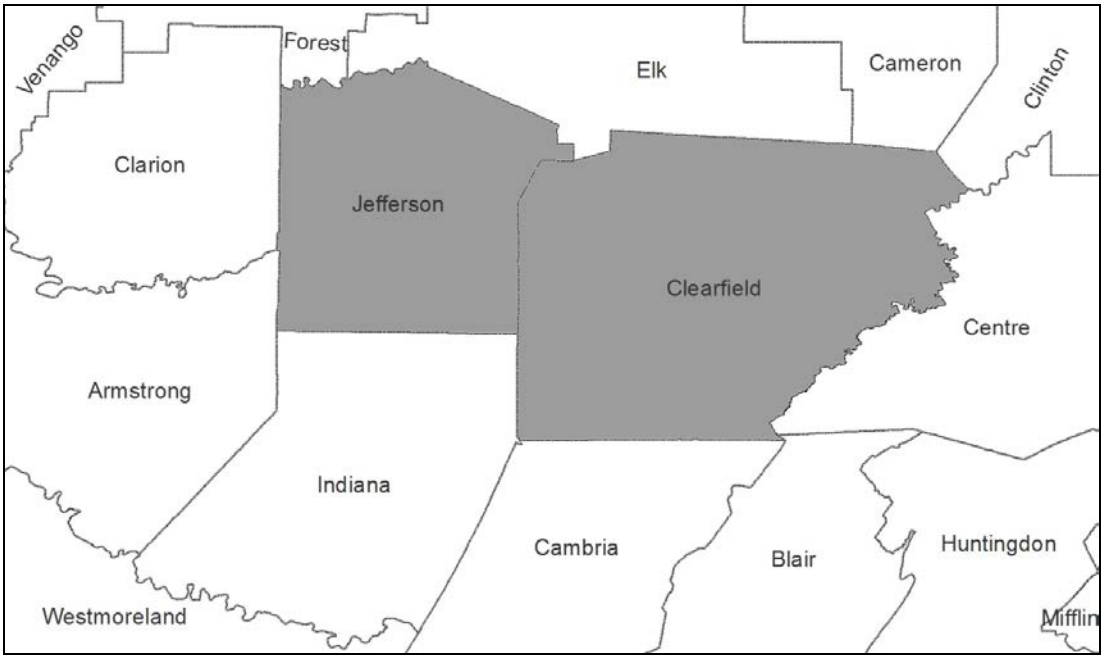
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Morgan, WV	Hagerstown	15.27	6.03

Although the commuting data show a link between Morgan County and the Hagerstown market, additional research by the Federal Reserve Bank of Richmond has shown stronger links between Morgan County and both Berkeley County, WV, and the Winchester, VA, area. Thus, Morgan County will not be included in the Hagerstown market.

Clearfield/Jefferson, PA: There is significant one-way commutation from Jefferson County to Clearfield County, with nearly 20 percent of Jefferson County residents commuting to Clearfield (Table 10).

Table 10: Commutation in the Clearfield/Jefferson Area

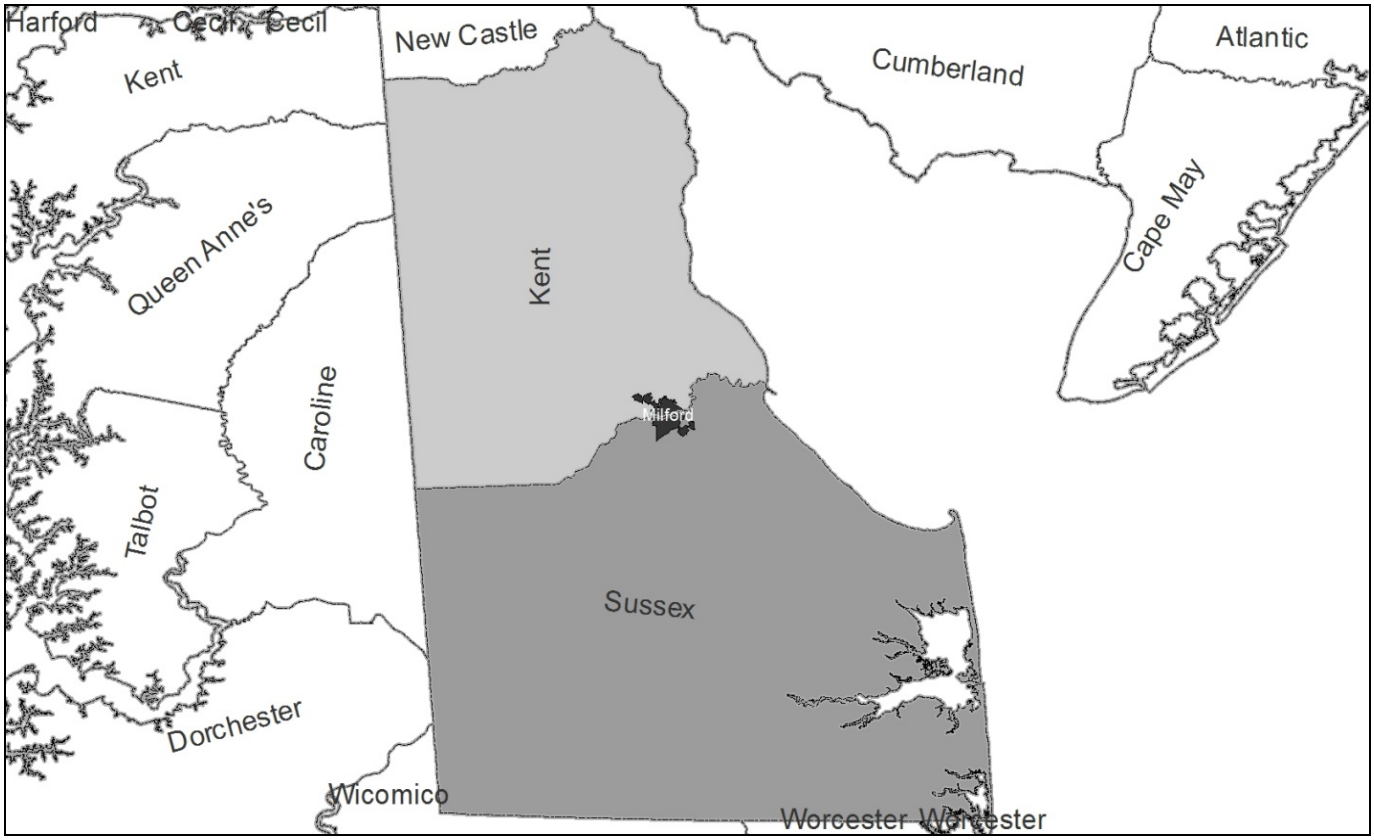
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Jefferson, PA	Clearfield, PA	19.59	8.23



D: Split County Markets – One or Partial Counties

Dover, DE: The Dover market comprises Kent County, DE, plus the parts of the city of Milford that are located in Sussex County. Milford city is split by the Kent-Sussex border (see map below), and Kent County is more populous and contains the state capital. There is no significant commutation between Kent County and any other county.

Sussex County, DE: This market comprises all of Sussex County except the city of Milford (see Dover above and map).

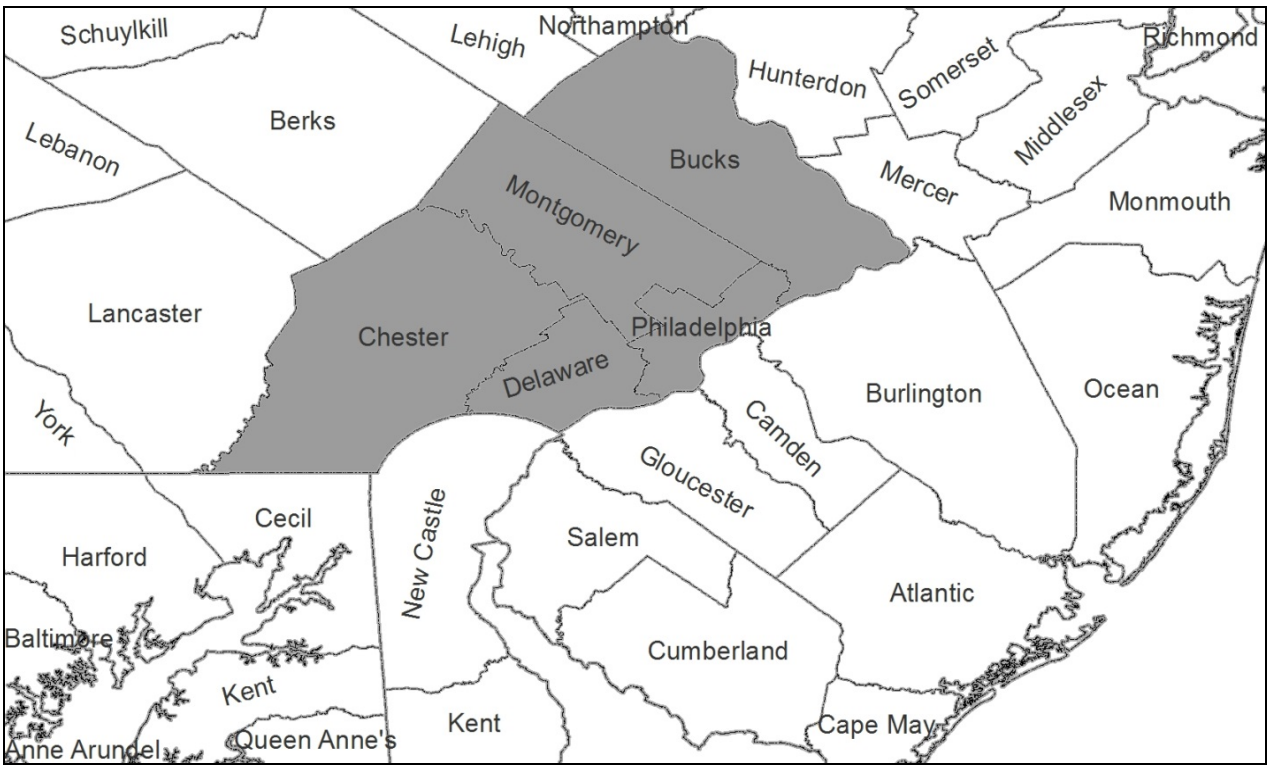


E: Split County Markets – Multiple Counties

Philadelphia/South Jersey, PA–NJ: The Philadelphia/South Jersey market comprises Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in Pennsylvania and Burlington, Camden, Cumberland, Gloucester, and Salem counties in New Jersey. This definition was arrived at by a multistep process. First, as shown in Tables 11 and 12, the commuting data yield two separate areas, which will be designated as Philadelphia and South Jersey. For the Philadelphia side, Bucks County meets two commuting criteria with Montgomery County and one with Philadelphia County. Chester County is also linked to Montgomery County, which is in turn linked to Philadelphia County. Delaware County is also significantly linked to Philadelphia County.

Table 11: Commutation in the Philadelphia Area

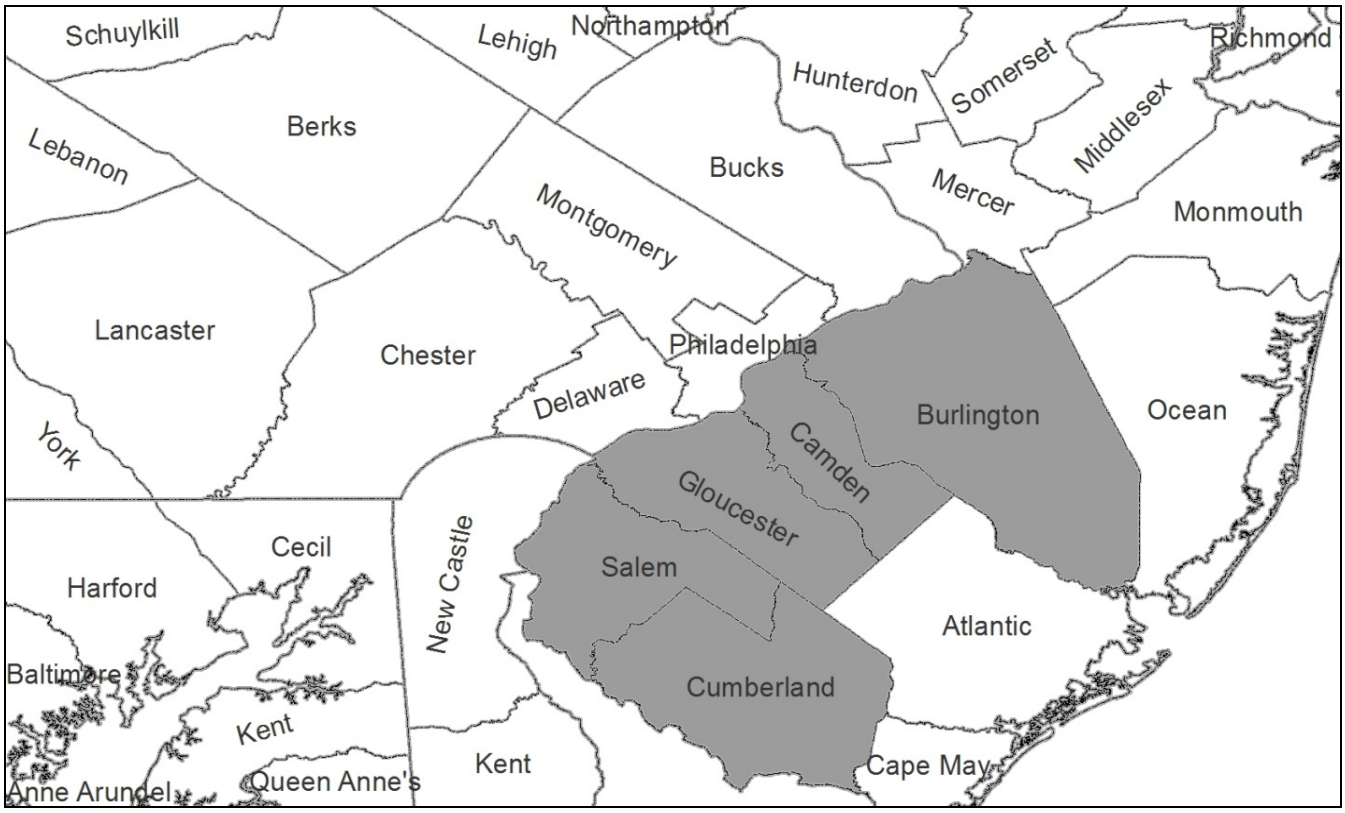
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Bucks, PA	Montgomery, PA	15.32	10.31
Bucks, PA	Philadelphia, PA	10.88	10.17
Chester, PA	Montgomery, PA	12.47	10.77
Delaware, PA	Philadelphia, PA	19.89	8.50
Montgomery, PA	Philadelphia, PA	14.99	12.95



The South Jersey side of the market is arrived at by linking (1) Burlington and Camden counties, (2) Gloucester County to Camden County, and (3) Salem County to Gloucester and Cumberland counties.

Table 12: Commutation in the South Jersey Area

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Burlington, NJ	Camden, NJ	12.34	18.17
Camden, NJ	Burlington, NJ	14.95	13.04
Gloucester, NJ	Camden, NJ	18.02	17.83
Salem, NJ	Cumberland, NJ	11.06	10.83
Salem, NJ	Gloucester, NJ	16.93	11.13



The second pass of the data, summarized in Table 13, shows that, based on commutation alone, there is insufficient evidence to link South Jersey with Philadelphia. Only 13.43 percent of South Jersey residents commute to Philadelphia, and only 6.65 percent of employees commute from Philadelphia. Thus, none of the commutation criteria are met.

Table 13: Commutation in the Philadelphia Area – Second Tier

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
South Jersey	Philadelphia	13.43	6.65

However, the Philadelphia Fed Research Department believes that other factors justify combining these areas. First, the region is an MSA, and has been for over 60 years.

Second, although only about 13 percent of South Jersey residents commute to Philadelphia, this amounts to nearly 92,000 commuters. This is a higher number of commuters than in any other area in the Third District.

Third, there is substantial overlap in the branch networks of the banks that operate in both areas (Table 14). The 14 organizations that have branches in both Pennsylvania and New Jersey represent only a little over 12 percent of all organizations in the market, but they represent about 76 percent of all deposits and about 61 percent of all branches in the market.

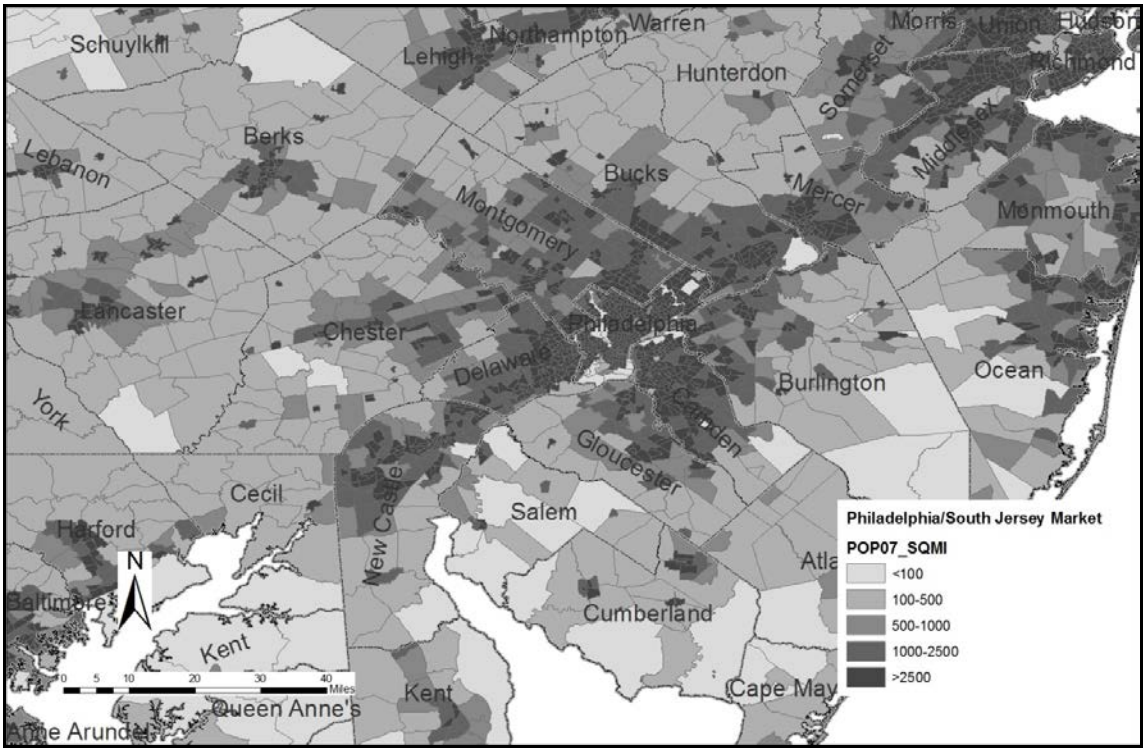
Fourth, as shown in the table, organizations with branches in both areas represent 73.4 percent of deposits and 68.4 percent of branches on the New Jersey side and 77.3 percent of deposits and 62.1 percent of branches on the Pennsylvania side.

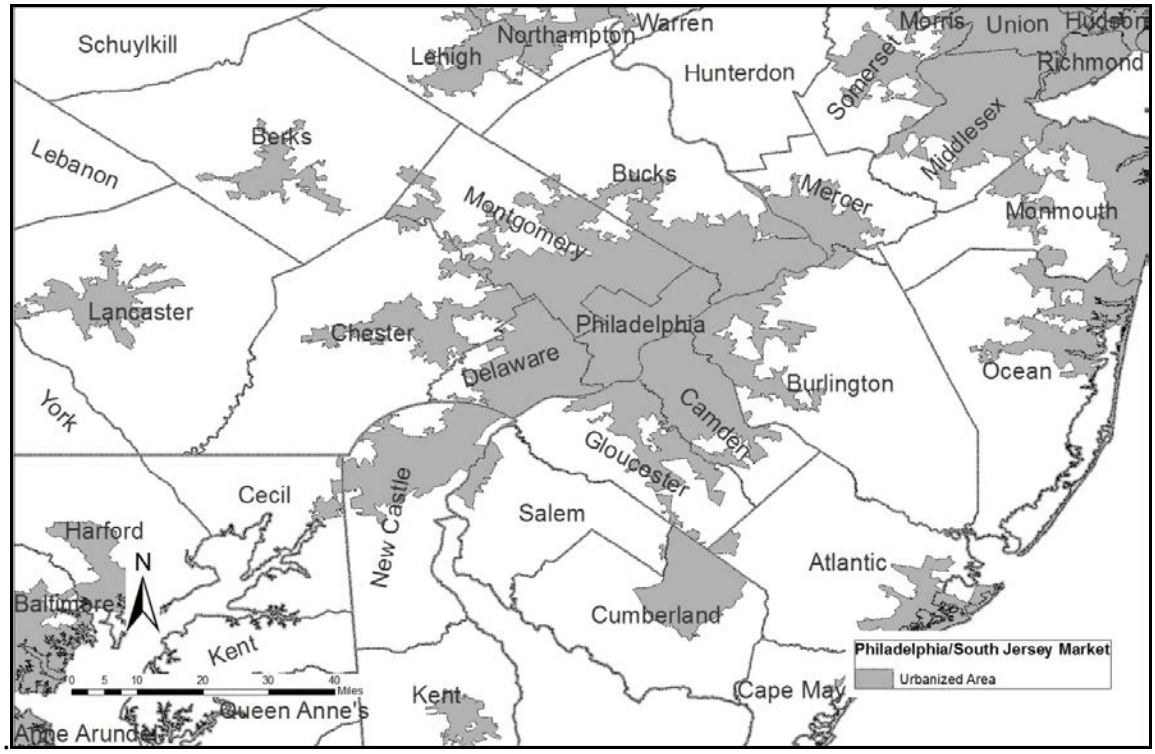
Table 14: Organizations Operating on Both the Pennsylvania and New Jersey Sides of Market[15]

Organization	*New Jersey Side*		*Pennsylvania Side*	
	Deposits ($ millions)	*Number of Branches*	*Deposits ($ millions)*	*Number of Branches*
Bank of America Corporation	1,401.1	33	6,343.5	63
Beneficial Mutual Savings Bank	1,493.8	25	2,283.6	35
CitiGroup	33.7	1	2,429.5	8
RBS Citizens Financial Group	601.3	12	15,867.1	153
Republic First Bank	178.4	2	643.3	11
Firstrust Savings Bank	65.6	1	1,659.6	19
Fulton Financial Corp.	1,296.7	30	833.4	19
Parke Bank	304.2	2	67.9	1
PNC Financial Group	2,494.2	42	11,779.1	101
Royal Bancshares of PA	13.8	1	455.9	12
Banco Santander	257.3	8	3,840.5	63
Susquehanna Bancshares	1,305.0	23	2,036.9	44
TD Holdings	7,118.5	56	12,050.5	88
Wells Fargo & Company	2,770.3	34	23,163.2	151
Total	**19,333.9**	**270**	**83,454.0**	**768**
% of all organizations in area	**73.4**	**68.4**	**77.3**	**62.1**

Fifth, both the urbanized area as defined by the Census Bureau and the most densely populated region are continuous over the area (see maps below). In fact, both the urbanized area and densely populated area continue into Mercer County, NJ, and New Castle County, DE. This will be dealt with below.

[15]Data are from the Federal Deposit Insurance Corporation Summary of Deposits as of June 30, 2013, updated for mergers and acquisitions as of March 31, 2014.





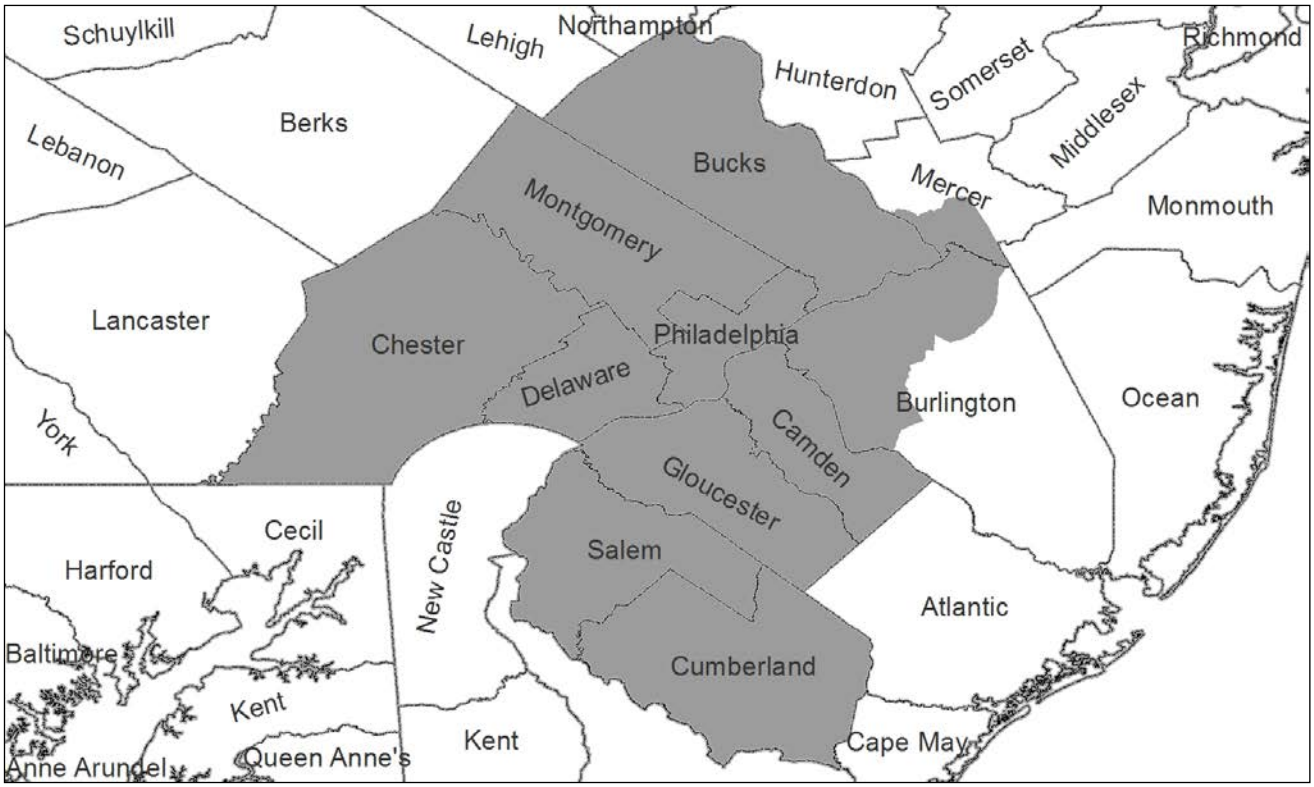
Given the historical ties, the number of commuters, the demographic data, and the evidence of overlapping branch networks by firms in the market, the Philadelphia Fed Research Department

believes that Philadelphia and South Jersey should be a single market.

As noted above, both the urbanized area and the area of densest population continue into Mercer County, NJ, and New Castle County, DE. It does not extend into western Burlington County, NJ. Research by the Federal Reserve Bank of New York shows some link between western Burlington County and the Metro New York/New Jersey market.[16] This area is lightly populated and its exclusion does not affect the structure of the Philadelphia or New York markets substantially. Therefore, the Philadelphia/South Jersey market includes only the following parts of Burlington County: the cities of Beverly, Bordentown, and Burlington, the boroughs of Fieldsboro, Palmyra, and Riverton, and the townships of Bordentown, Burlington, Chesterfield, Cinnaminson, Delanco, Delran, Eastampton, Edgewater Park, Evesham, Florence, Hainesport, Lumberton, Mansfield, Maple Shade, Medford, Medford Lakes, Moorestown, Mount Holly, Mount Laurel, Riverside, Springfield, and Willingboro.

In addition, the New York Fed found sufficient links between Trenton and its suburbs in Mercer County, NJ, to warrant its inclusion in the Philadelphia/South Jersey market. Approximately 6.6 percent of Bucks County, PA, residents commute to Mercer County, and about 9.3 percent of Mercer County employees come from Bucks County. Therefore, the Philadelphia/South Jersey market includes the city of Trenton and Hamilton Township in Mercer County, NJ.

[16] Olson and Morgan (2014).

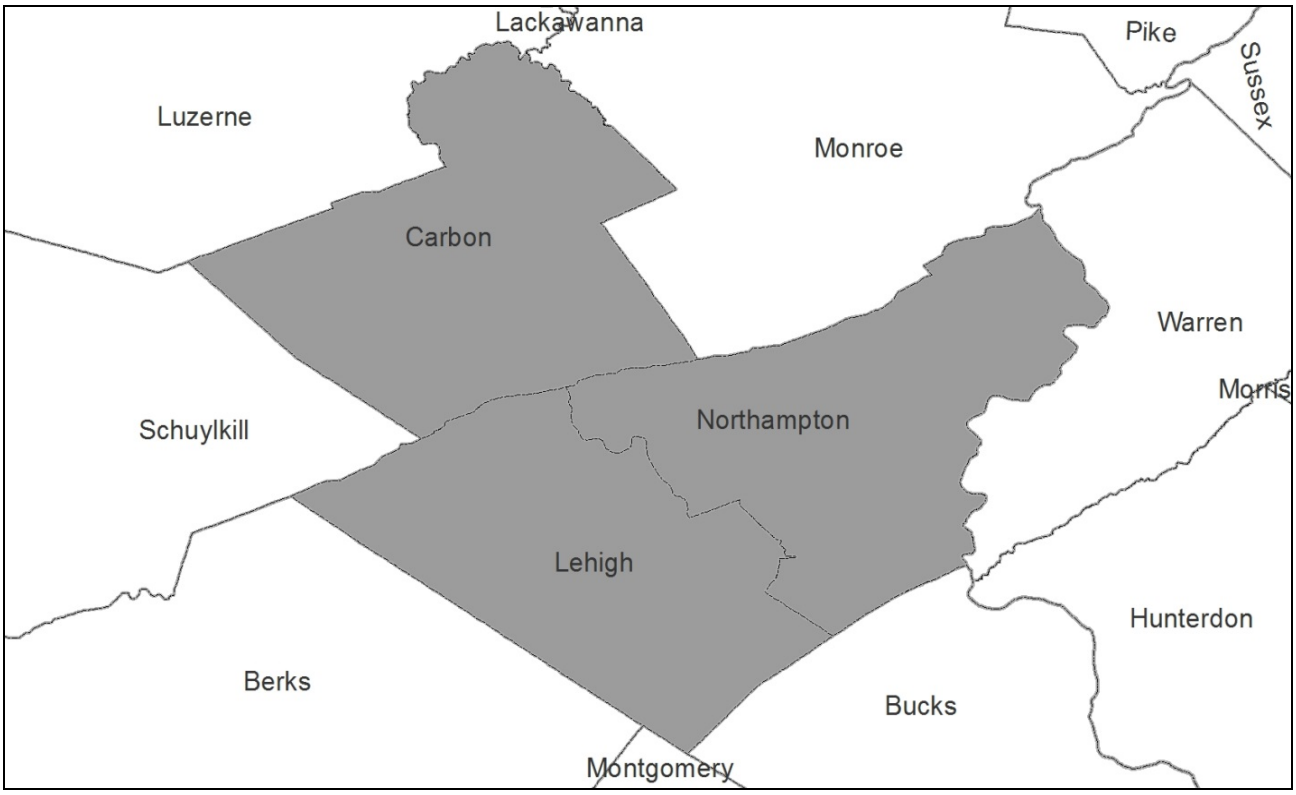


Lehigh Valley, PA: The Lehigh Valley market comprises Carbon, Lehigh, and Northampton counties in Pennsylvania, the townships of Chestnuthill, Eldred, Hamilton, Jackson, Polk, Ross, Tobyhanna, and Tunkhannock in Monroe County, PA, and the town of Phillipsburg, the borough, of Alpha, and Pohatcong Township in Warren County, NJ.

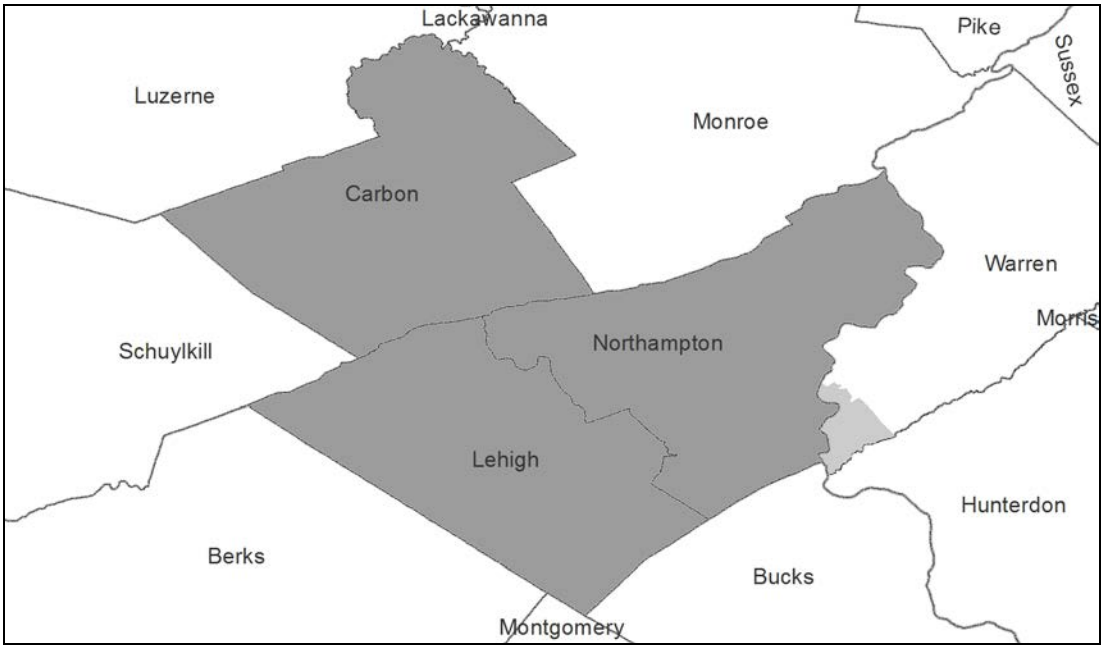
This definition was arrived at in several steps. First, the data in Table 15 show that there are significant links between Carbon and Lehigh counties and between Northampton and Lehigh counties.

Table 15: Commutation in the Lehigh Valley Area

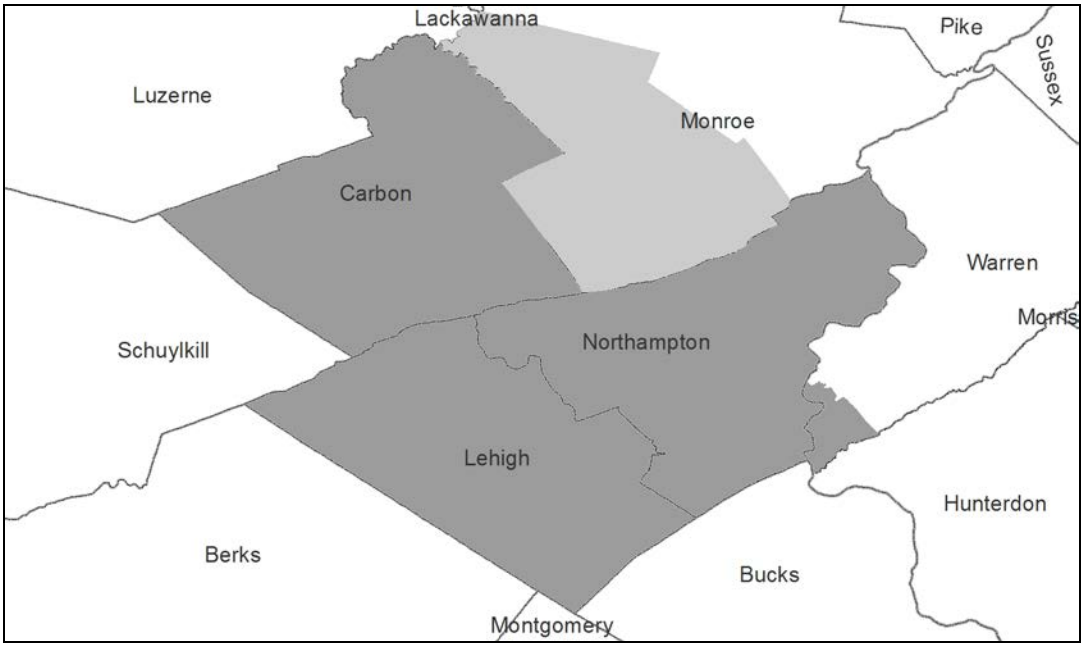
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Carbon, PA	Lehigh, PA	17.91	4.10
Northampton, PA	Lehigh, PA	23.93	20.27
Lehigh, PA	Northampton, PA	13.57	18.77



Second, Warren County, NJ, also has substantial commutation with the Lehigh Valley area, with 22.4 percent of Warren County employees residing in Carbon, Lehigh, and Northampton counties. Warren County also has substantial commutation with the Metro NY/NJ market. Therefore, the Philadelphia Fed Research Department believes that Warren County should be split between the two markets. Thus, the town of Phillipsburg, the borough of Alpha, and Pohatcong Township is included in the Lehigh Valley market.



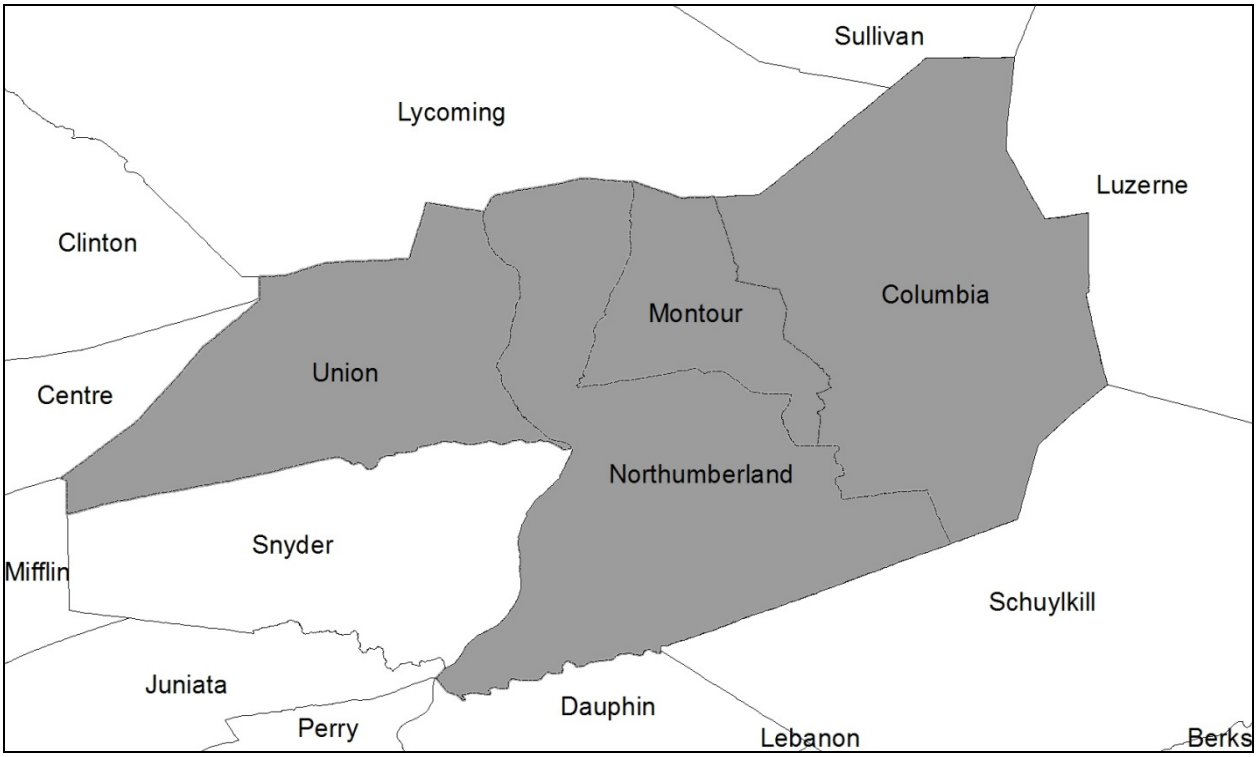
Finally, Monroe County, PA, has substantial commutation with its neighboring counties but not enough to form a single link. Approximately 6.3 percent of Monroe County residents commute to the Lehigh Valley, and 5.2 percent of Monroe County employees reside in the Lehigh Valley. Thus, Monroe County will be split, with the townships of Chestnuthill, Eldred, Hamilton, Jackson, Polk, Tobyhanna, and Tunkhannock included in the Lehigh Valley market.



Susquehanna Valley, PA: The Susquehanna Valley market comprises Columbia, Montour, Northumberland, Snyder, and Union counties in Pennsylvania, plus the boroughs of East Berwick and Nescopeck in Luzerne County, PA. This definition was arrived at in three steps. In the first step, significant links were found between Montour and Northumberland counties, Montour and Columbia counties, and Union and Northumberland counties (Table 16). In case, the links were two-way; that is, a substantial percentage of one county's residents worked in the other county, and a substantial percentage of one county's employees lived in the other county. Both Union and Montour counties were also net labor importers.

Table 16: Commutation in the Susquehanna Valley – First Tier

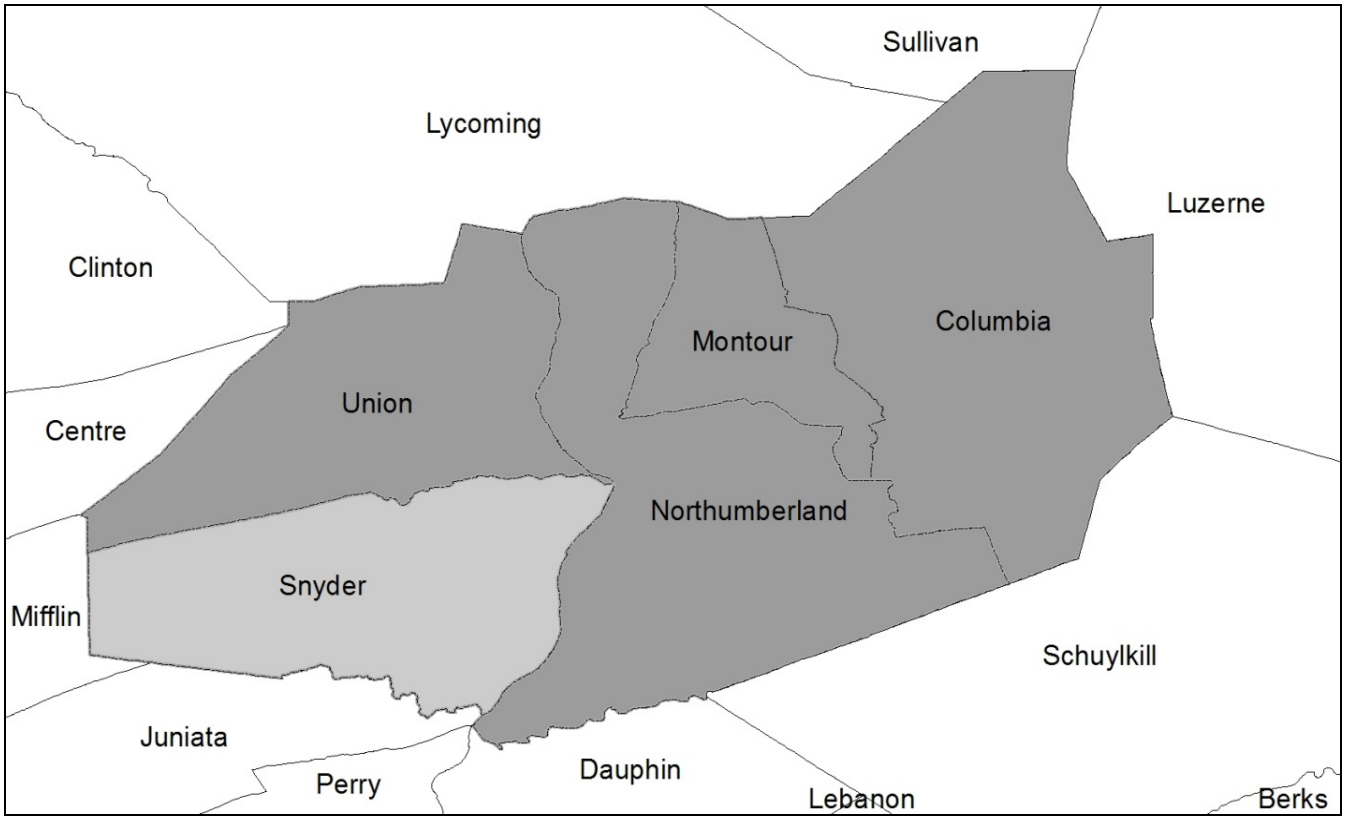
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Montour, PA	Columbia, PA	13.86	19.23
Montour, PA	Northumberland, PA	13.86	29.53
Union, PA	Northumberland, PA	13.28	20.49



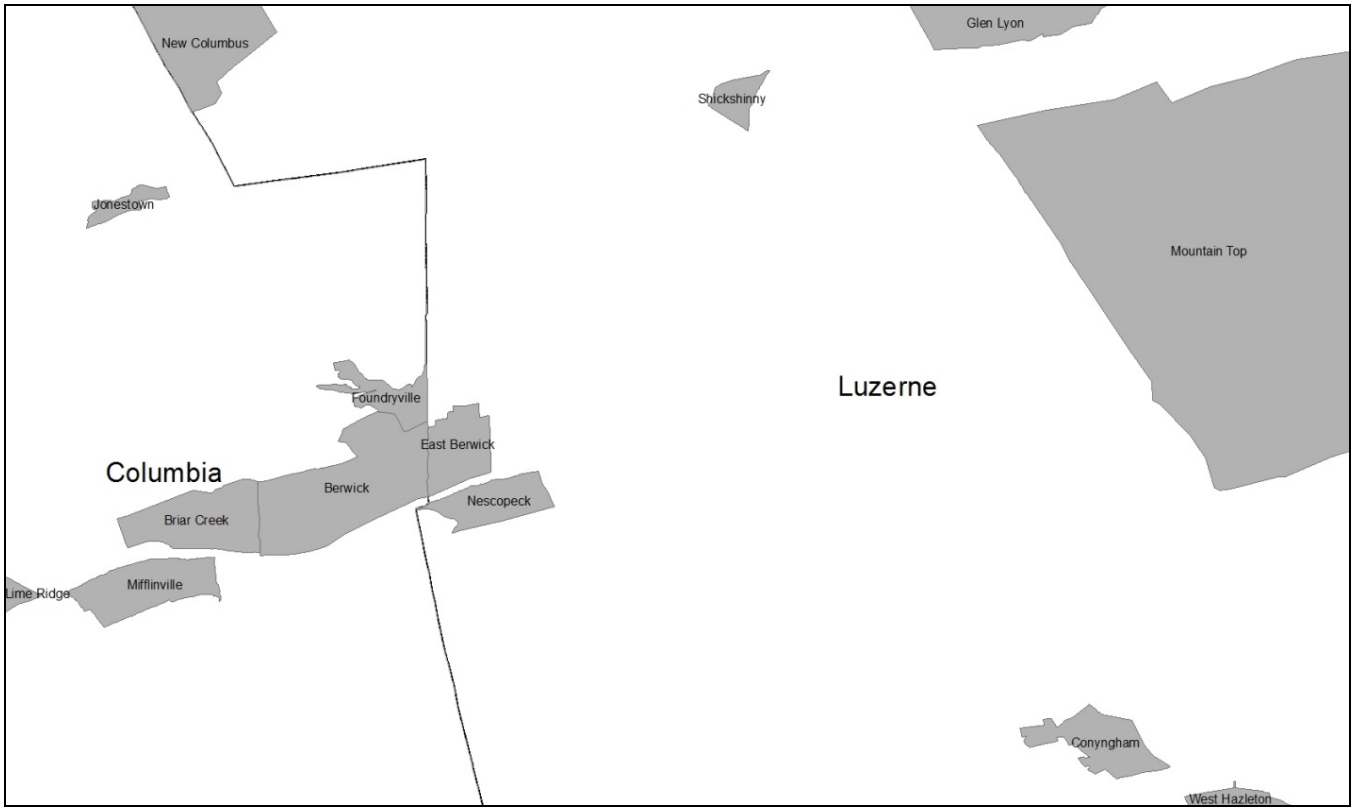
A second pass of the data showed significant two-way commutation between Snyder County and the other counties in the market (Table 17). The link was so strong that it met all three criteria for inclusion.

Table 17: Commutation in the Susquehanna Valley - Second Tier

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Snyder, PA	Susquehanna Valley	23.05	24.99



A third pass revealed no other links with whole counties. However, the city of Berwick in Columbia County has two principal suburbs in Luzerne County, East Berwick and Nescopeck. Berwick is strongly linked to the core of the market, and it is one of the two central cities of the Bloomsburg-Berwick MiSA (Montour and Columbia counties). The two boroughs are contiguous to Berwick, and Berwick contains one of the major employers in the area, Wise Foods. Another major area employer, Bloomsburg University, is also located in Columbia County, while a third, Danville Medical Center, is in Montour County. Additionally, the boroughs are somewhat isolated from the rest of Luzerne County, with the nearest towns more than 10 road miles distant. Thus, we conclude that there is sufficient evidence to include these two boroughs in the Susquehanna Valley market.

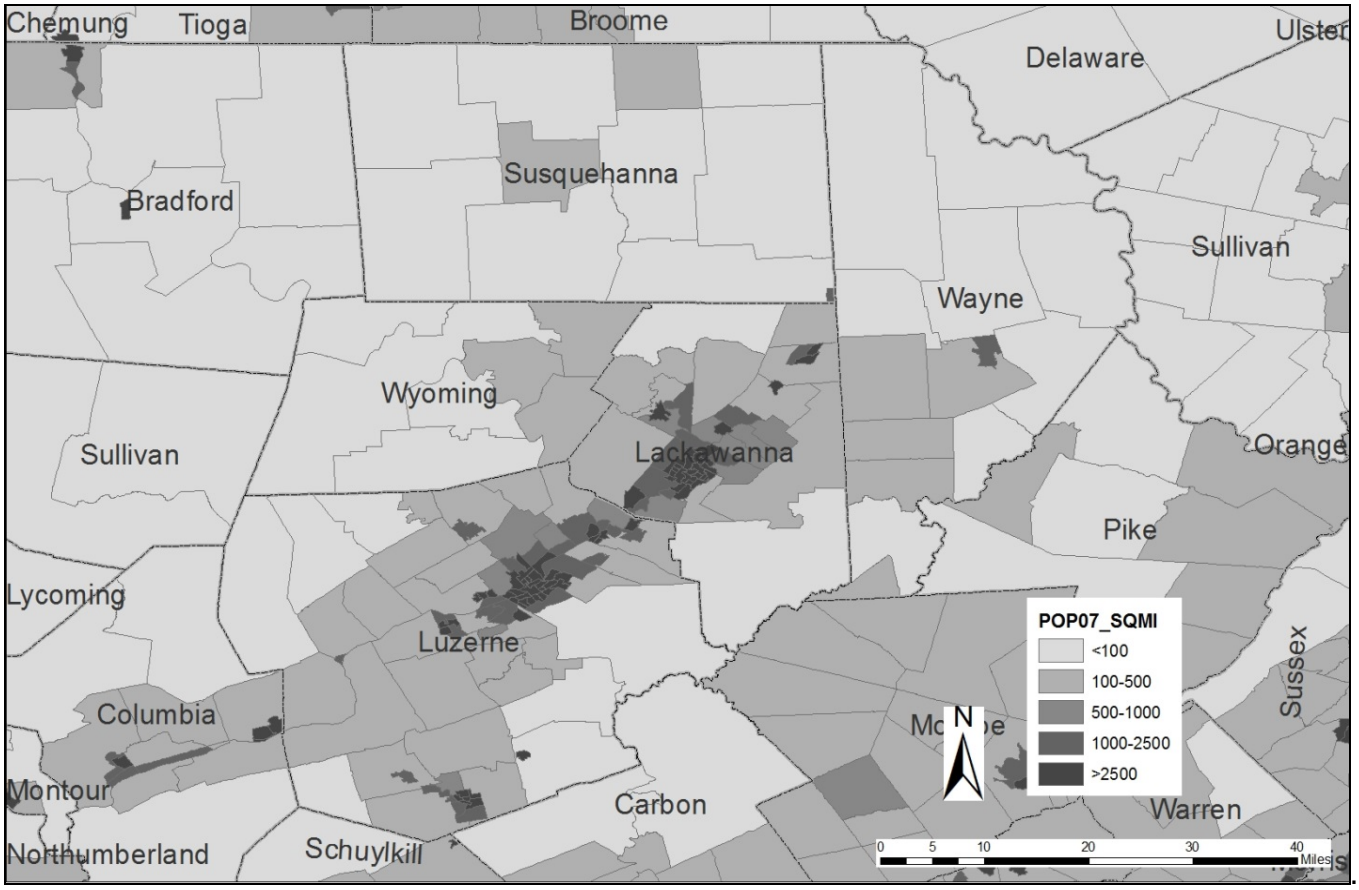


Scranton/Wilkes-Barre, PA: The Scranton/Wilkes-Barre market comprises Lackawanna, Luzerne (less the towns of East Berwick and Nescopeck — see Susquehanna Valley market above), and Wyoming counties in Pennsylvania, plus the southern part of Susquehanna County, PA, and the western part of Wayne County, PA. The commuting data only marginally support this delineation, with the sole connection between Luzerne County and the rest of the market being made through residential commuting from Wyoming County (Table 18). Thus, a case could be made for splitting Wyoming County, with half of it joining Lackawanna and Wayne counties and the other half joining Luzerne County.

Table 18: Commutation in the Scranton/Wilkes-Barre Area – First Tier

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Wayne, PA	Lackawanna, PA	14.94	11.49
Wyoming, PA	Lackawanna, PA	22.96	10.03
Wyoming, PA	Luzerne, PA	16.32	8.51

However, there are several strong reasons for including Luzerne County with the others. First, the area is an MeSA, and has been for 60 years. Second, as seen in the map below of population per square mile in census tracts, the most heavily populated part of the region runs in a northeast line from central Luzerne County to northern Lackawanna County — i.e., from the city of Wilkes-Barre to the city of Scranton. These cities are approximately 10 miles from each other and are connected by three major roads: Interstate 81, U.S. Route 11, and the Pennsylvania Turnpike Northeast Extension (Interstate 476).



Bank branching patterns provide additional evidence of integration between Luzerne and Lackawanna counties. Of a total of 22 organizations operating in at least one of the counties, 15 operate in both. This total includes 12 of the 16 organizations operating in Lackawanna County. These banking organizations are summarized in Table 19 below.[17]

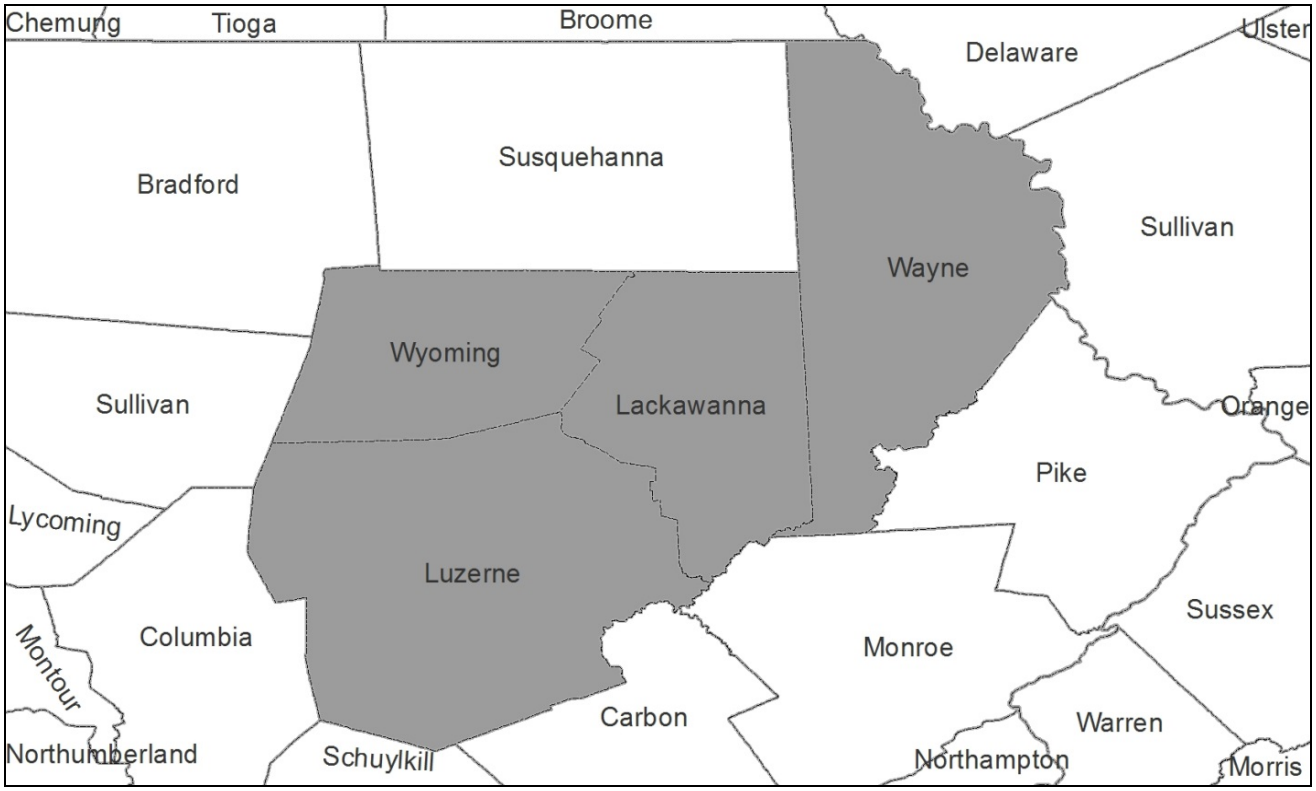
[17]Data are from June 30, 2002, FDIC Summary of Deposits.

Table 19: Organizations Operating in Both Lackawanna and Luzerne Counties[18]

Organization	Lackawanna County		Luzerne County	
	Deposits ($ millions)	**Number of Branches**	**Deposits ($ millions)**	**Number of Branches**
Bank of America Corporation	39.2	1	268.6	5
RBS Citizens Financial Group	22.5	1	508.3	9
Community Bank System	396.8	11	236.5	6
ESSA Bancorp	12.0	1	140.1	1
Fidelity D&D Bancorp	465.5	11	54.0	2
First National Community Bancorp	504.5	7	247.8	10
FNB Corporation	224.8	6	120.1	5
Honat Bancorp	47.9	1	35.8	2
Landmark Bancorp	24.9	1	192.5	3
M&T Bank Corporation	52.0	1	921.2	13
NBT Bancorp	404.0	15	113.3	4
Penseco Financial Services Corporation	635.1	9	31.0	2
PNC Financial Services	1,249.6	10	1,370.0	21
Wells Fargo & Company	493.1	6	579.1	8
Woodforest Financial Group	0.4	1	1.0	2
Total	**4,533.1**	**81**	**4,550.7**	**88**
% of all institutions in county	**91.8**	**89.0**	**78.7**	**74.5**

Thus, given the demographic data, branching patterns, and historical ties, the Research Department concludes that Luzerne and Lackawanna counties are sufficiently integrated to be considered a single market.

[18] Data are from FDIC Summary of Deposits as of June 30, 2013, updated for mergers and acquisitions up to March 31, 2014.



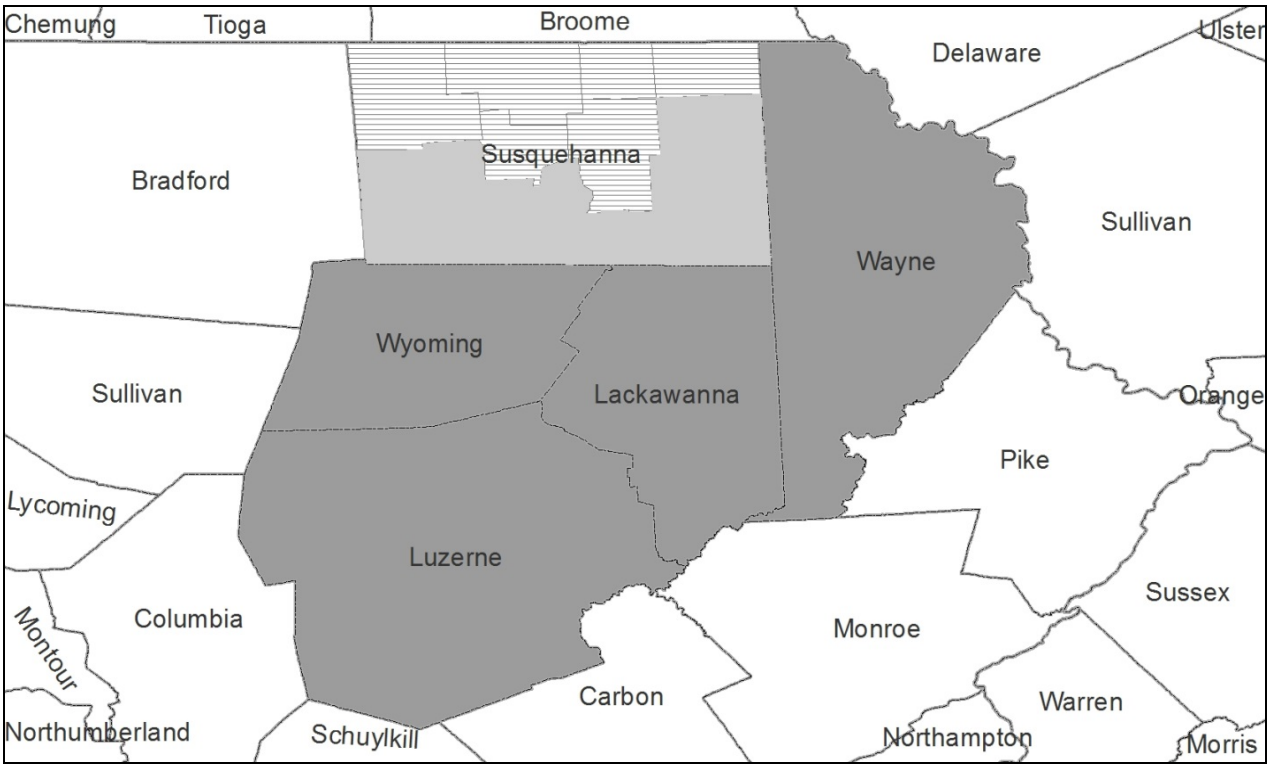
A further look at the commuting data showed a link with Susquehanna County, PA, as well. As shown below, a substantial number of Susquehanna County residents commute to and a substantial number of Susquehanna employees commute from the four counties in the Scranton/Wilkes-Barre market.

Table 20: Commutation in the Scranton/Wilkes-Barre Area – Tier 2

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Susquehanna, PA	Scranton/Wilkes-Barre	24.67	12.29

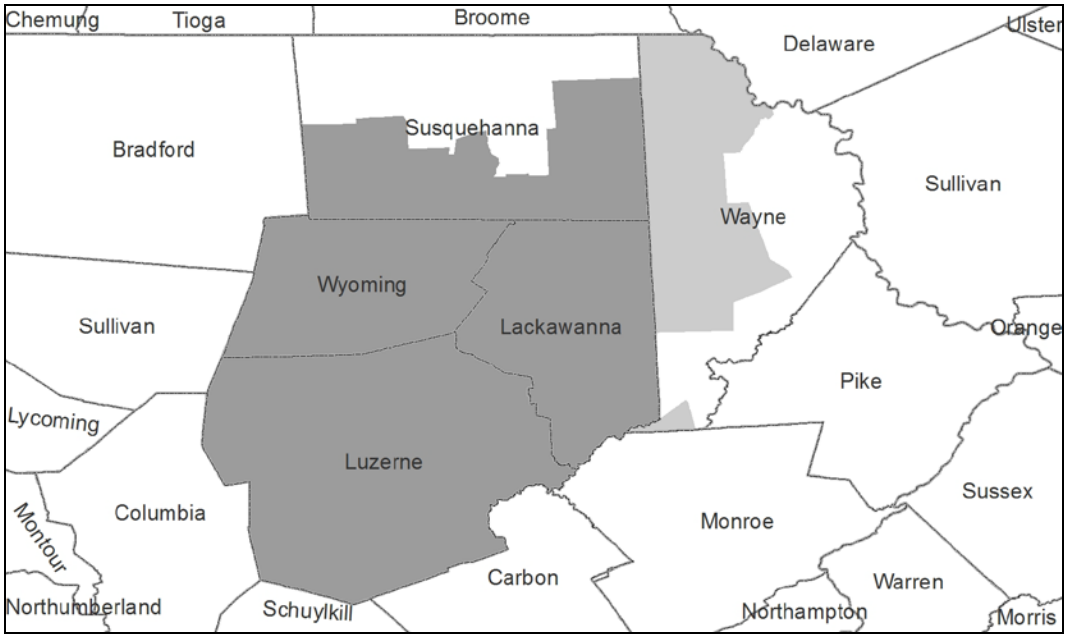
Susquehanna County is also strongly linked to Broome County, NY, with almost 20 percent of its residents commuting to work there. Since Susquehanna is a rural county and there are no ties between the population centers of the two markets (the cities of Scranton and Wilkes-Barre, PA, and the city of Binghamton, NY), the Philadelphia Fed Research Department believes that the best way to define these markets is to split Susquehanna County, with the southern part going to the Scranton/Wilkes-Barre market. The townships included in Scranton/Wilkes-Barre are Auburn,

Clifford, Dimock, Gibson, Harford, Herrick, Lathrop, Lenox, Rush, and Springville.



Finally, research by the Federal Reserve Bank of New York shows that Wayne County, PA, should be split between the Scranton/Wilkes-Barre and Metro NY/NJ markets.[19] Thus, the boroughs of Bethany, Honesdale, Prompton, Starruca and Waymart, plus the townships of Buckingham, Canaan, Cherry Ridge, Clinton, Dyberry, Lake, Lehigh, Mount Pleasant, Preston, Scott, South Canaan, and Texas will be included in the Scranton/Wilkes-Barre market, with the remainder of Wayne County included in the Metro NY/NJ market.

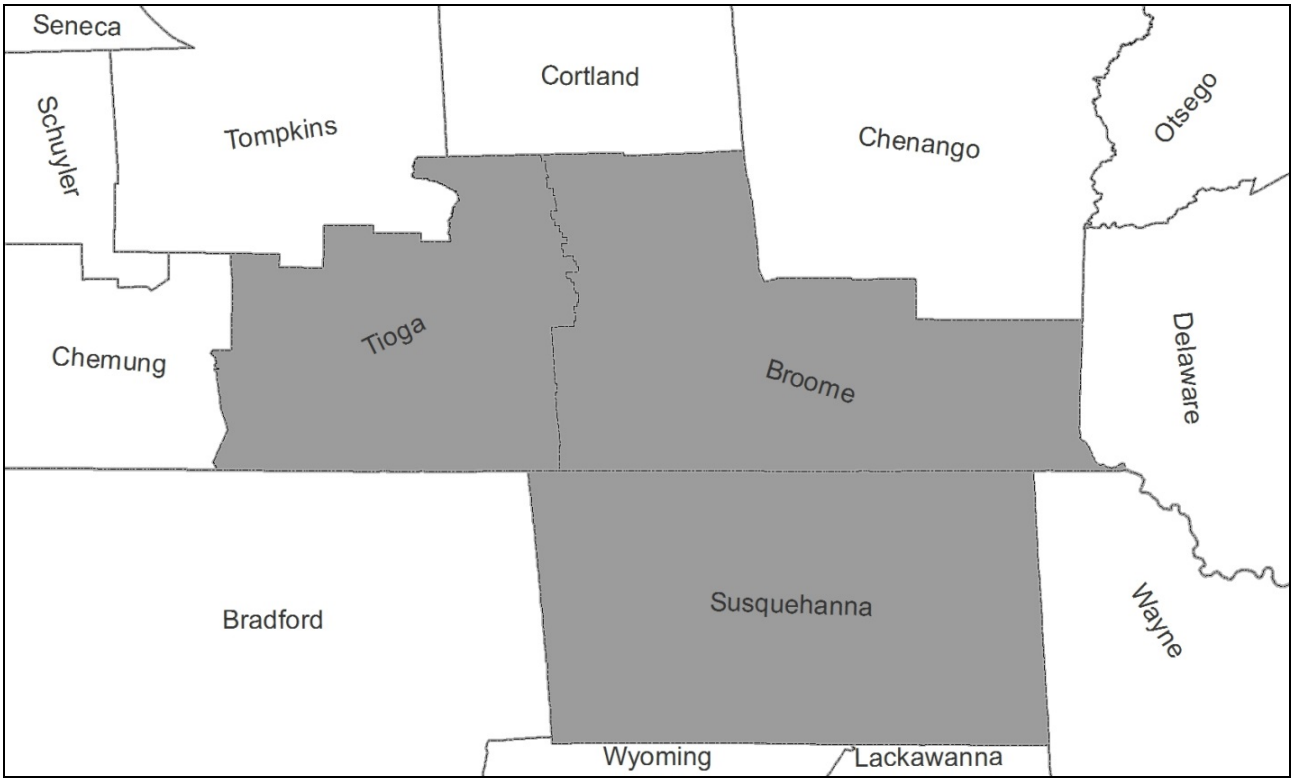
[19] Olson and Morgan (2014).



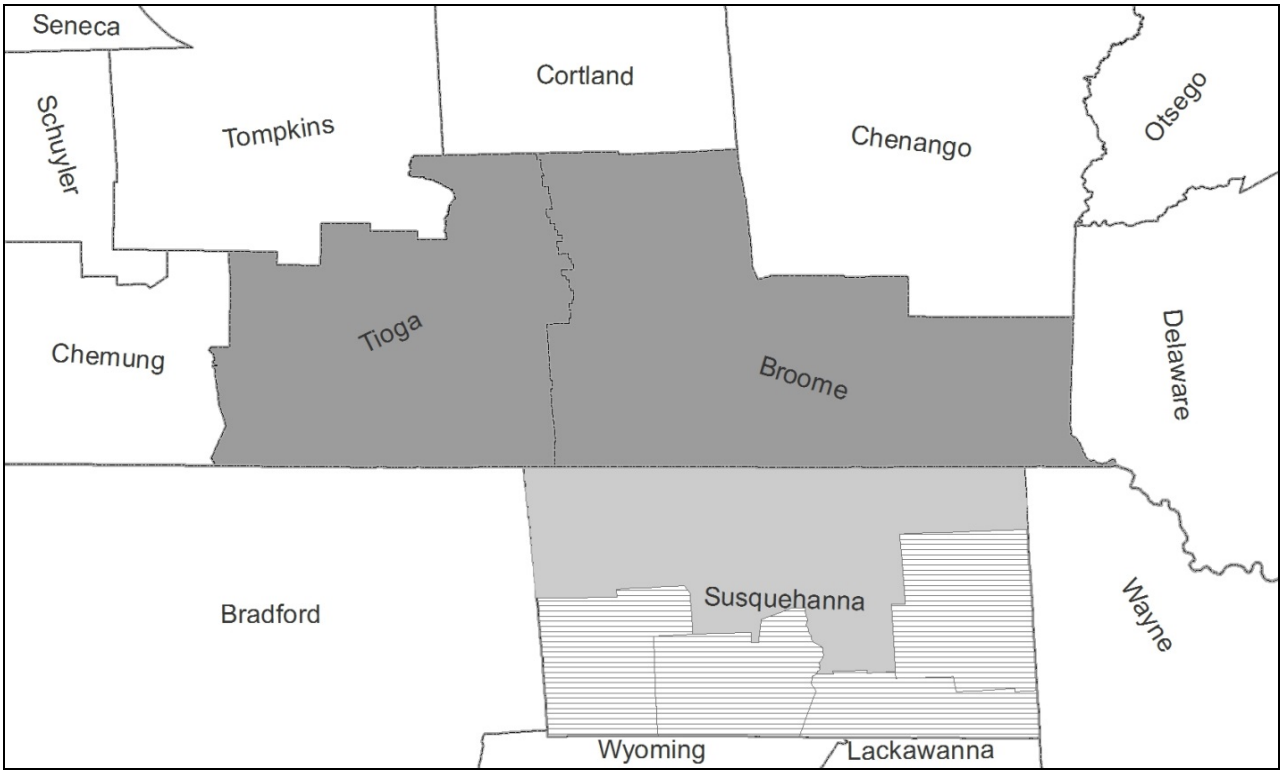
Binghamton, NY–PA: The Binghamton market comprises Broome and Tioga counties in New York and the northern part of Susquehanna County in Pennsylvania. As shown in Table 21, there is substantial commutation from both Tioga and Susquehanna counties into Broome County.

Table 21: Commutation in the Binghamton Area

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Tioga, NY	Broome, NY	29.69	20.78
Susquehanna, PA	Broome, NY	19.42	2.5

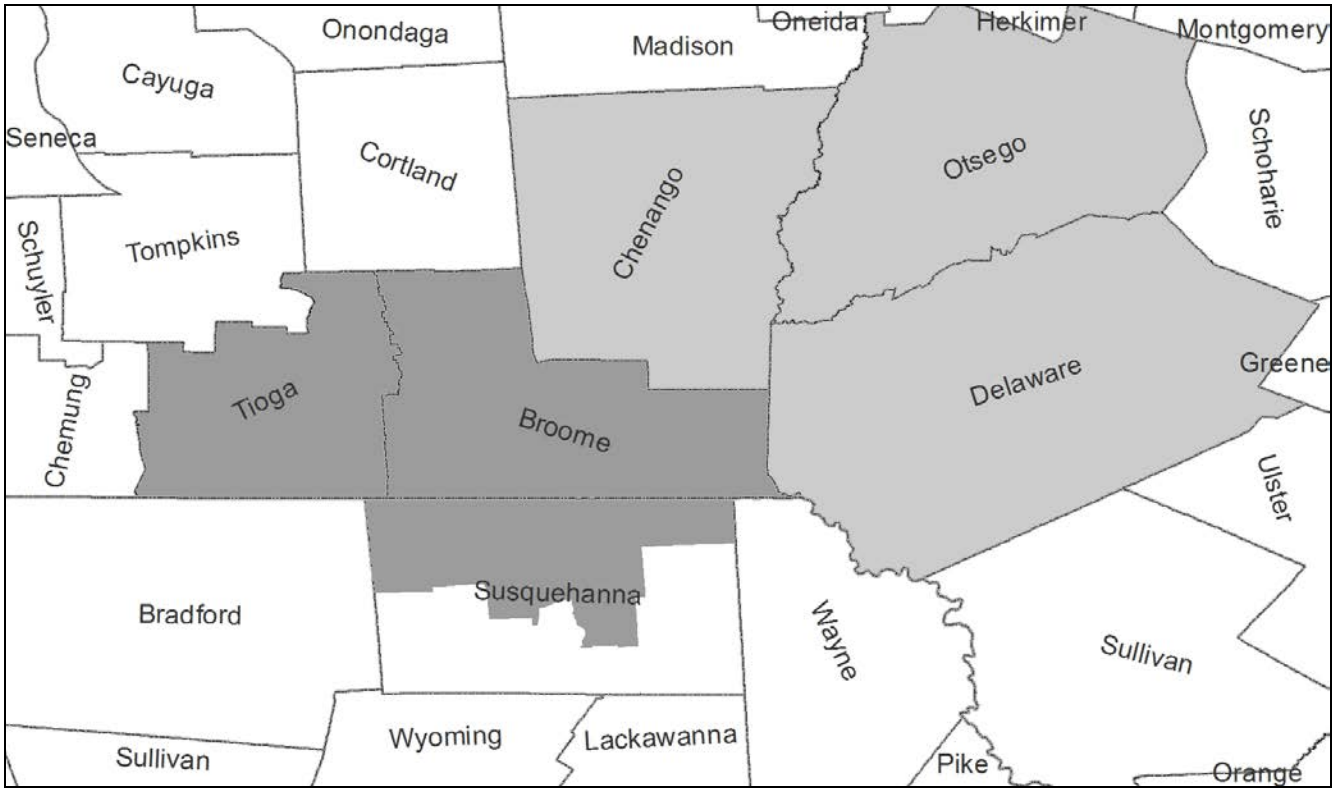


As shown above, there is ample evidence to include Susquehanna County in the Scranton/Wilkes-Barre market as well as the Binghamton market. Since Susquehanna is a rural county and there are no ties between the cores of the two markets, the Philadelphia Fed Research Department believes that the best way to define these markets is to split Susquehanna County, with the northern part going to the Binghamton market. The townships included in Binghamton are Apolocon, Ararat, Bridgewater, Brooklyn, Choconut, Forest Lake, Franklin, Great Bend, Harmony, Jessup, Liberty, Middletown, Milford, Silver Lake, and Thompson.



For a third tier, the Federal Reserve Bank of New York found significant linkage between the Binghamton market and the New York counties of Chenango, Delaware, and Otsego.[20] Therefore, these counties are included in the Binghamton market.

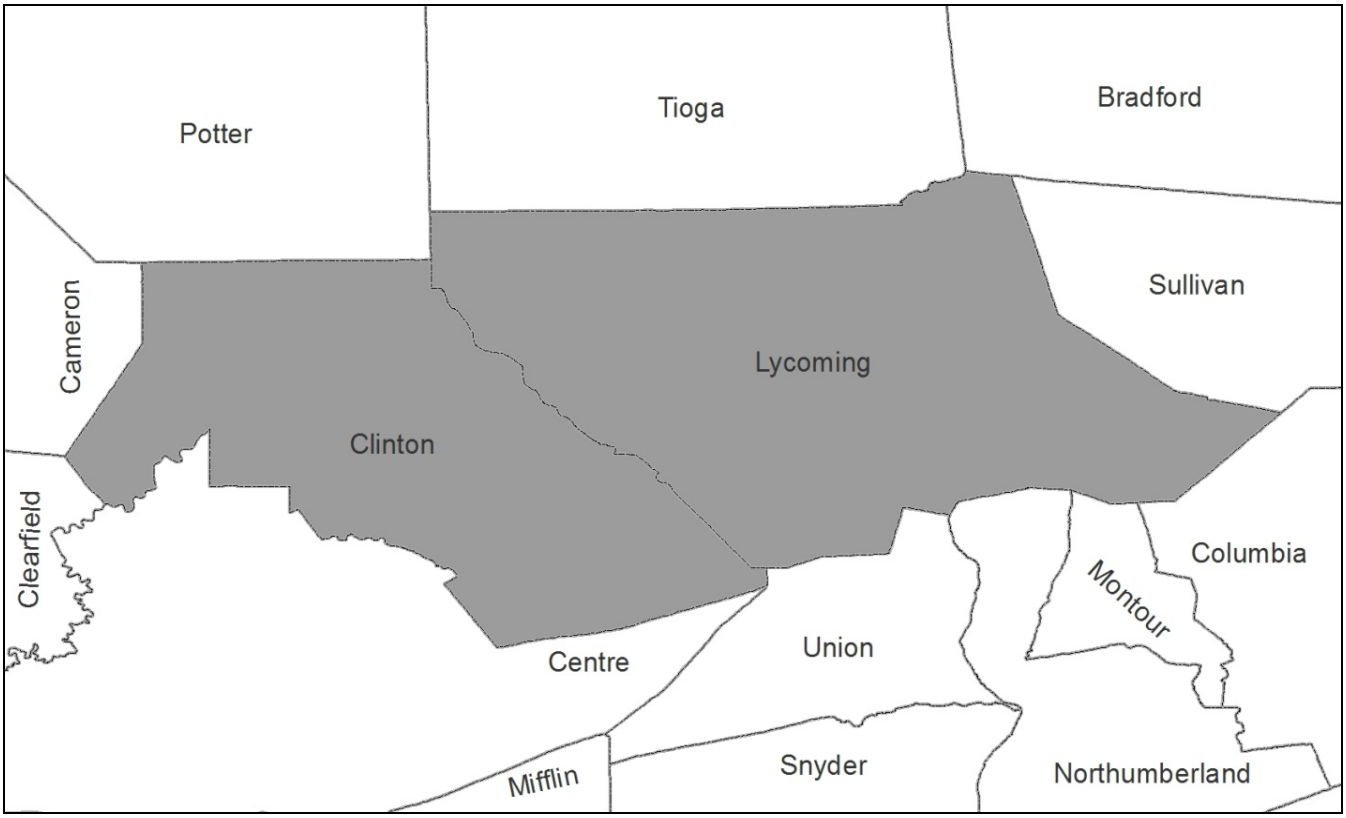
[20] Olson and Morgan (2014).



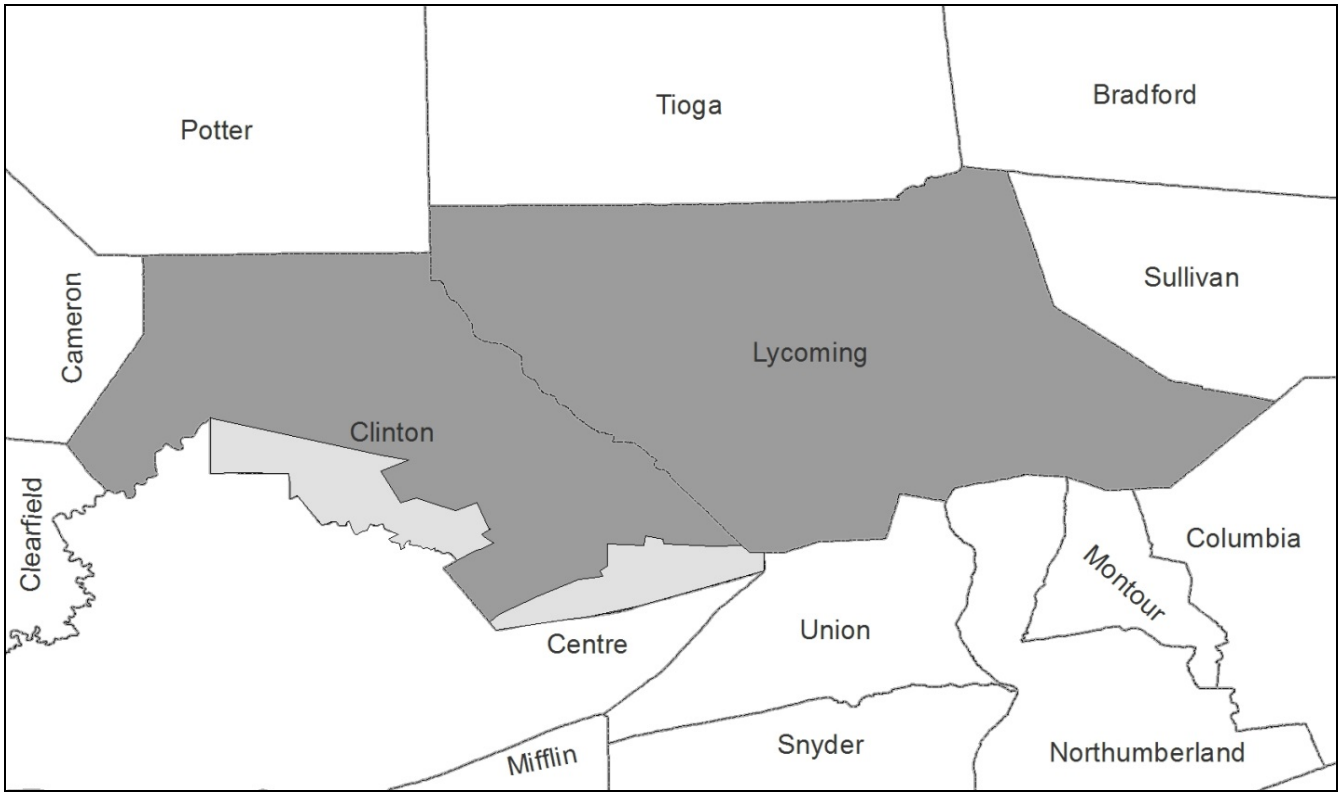
Williamsport/Lock Haven, PA: This market comprises Lycoming County, PA, and most of Clinton County, PA. As shown in Table 22, over 19 percent of Clinton County residents commute to Lycoming County. Also, over 11 percent of employees in Clinton County commute from Lycoming County.

Table 22: Commutation in the Williamsport Area

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Clinton, PA	Lycoming, PA	19.22	11.25



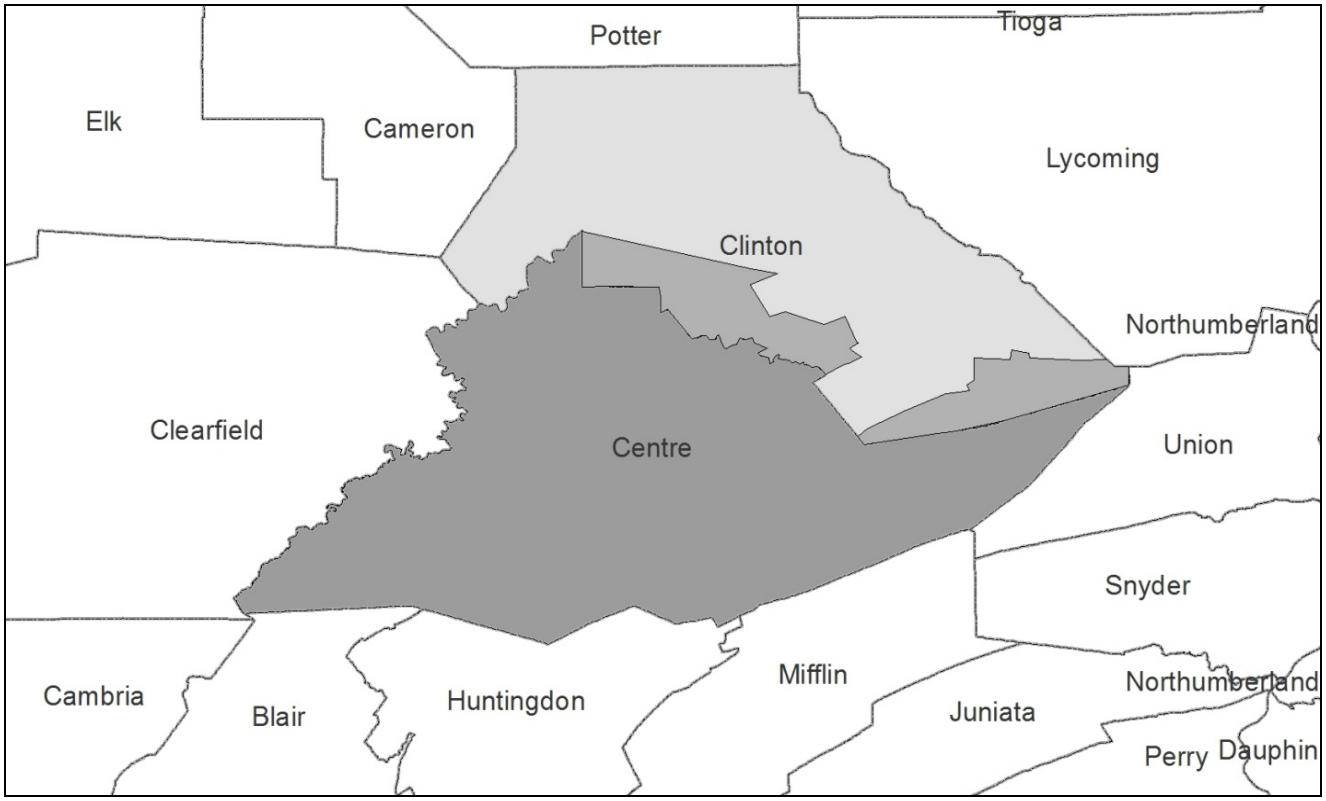
Even though Clinton County is strongly linked to Lycoming County, meeting two criteria for market inclusion, it is also linked to Centre County, PA (see State College below). Clinton is a relatively rural county, with a population of about 42,000, and there are no ties between Lycoming and Centre counties, so the Philadelphia Fed Research Department believes that Clinton County should be split. Since Clinton has stronger ties to Lycoming than to Centre, the bulk of Clinton should be placed in the Williamsport market. Therefore, with the exception of Beech Creek, Greene, Logan and Porter townships, Clinton County is part of the Williamsport market.



State College, PA: As noted above, there is significant commutation between Centre and Clinton counties (Table 23 below), but Clinton County is also tied to Lycoming County. Because of the stronger ties to Lycoming County, a small part of Clinton County, consisting of Beech Creek, Green, Logan and Porter townships, id included in the State College market, with the remainder combined with Williamsport.

Table 23: Commutation in the State College Area

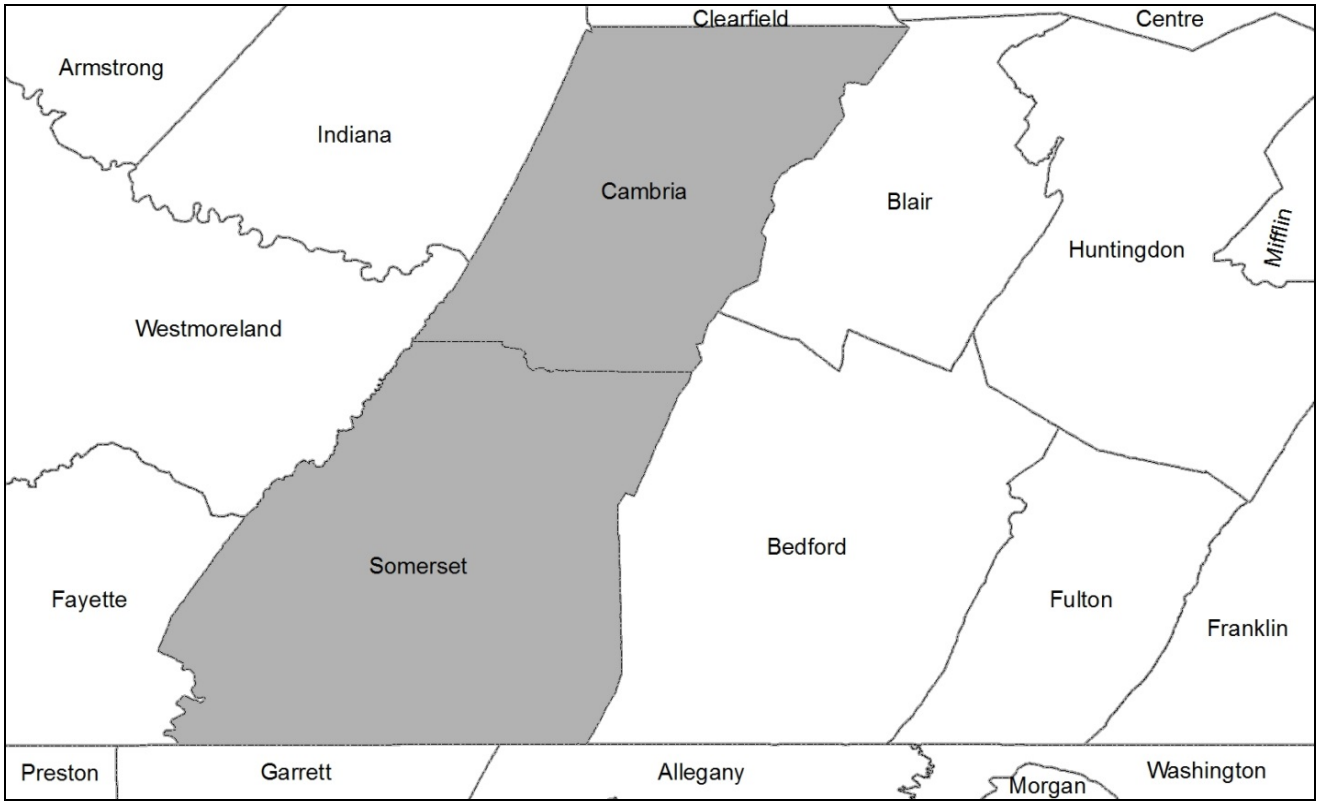
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Clinton, PA	Centre, PA	10.76	10.71



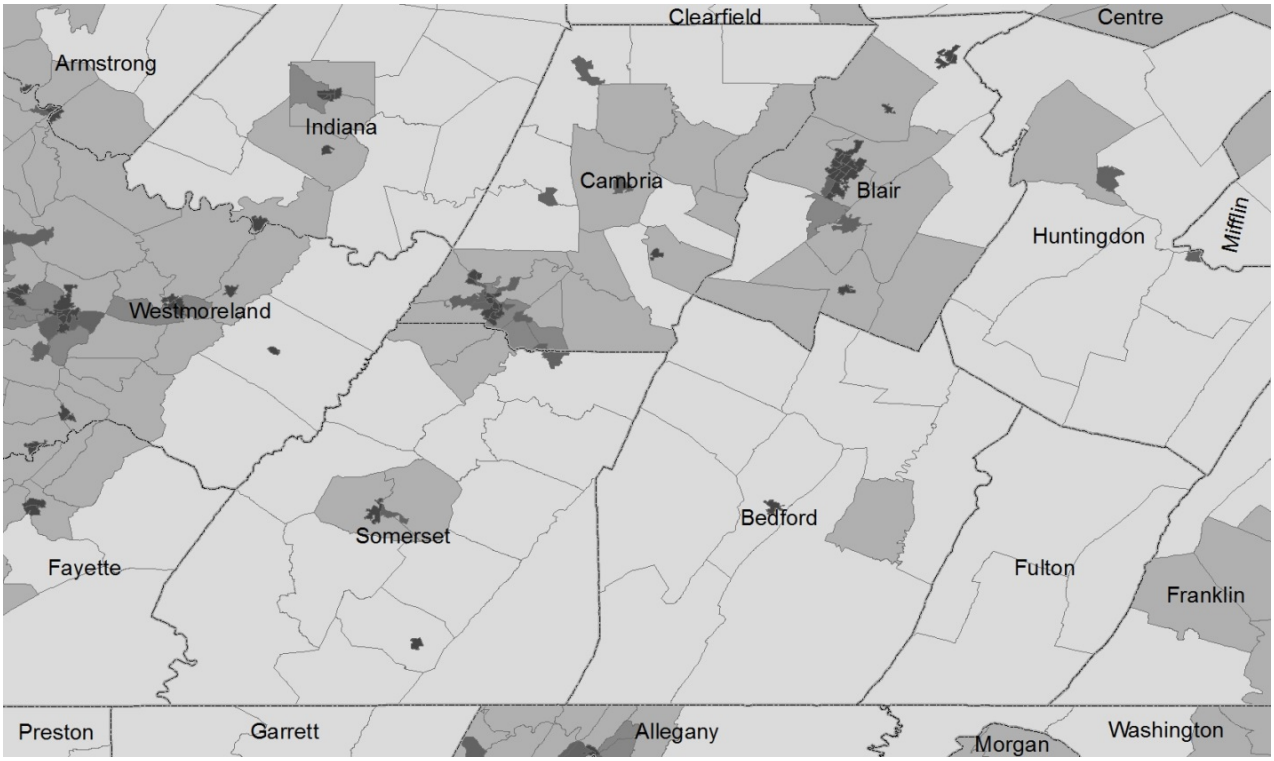
Johnstown, PA: There is significant one-way commutation from Somerset County to Cambria County, with almost 17 percent of Somerset County residents commuting to Cambria (Table 24). This would justify uniting Cambria and Somerset counties into one market.

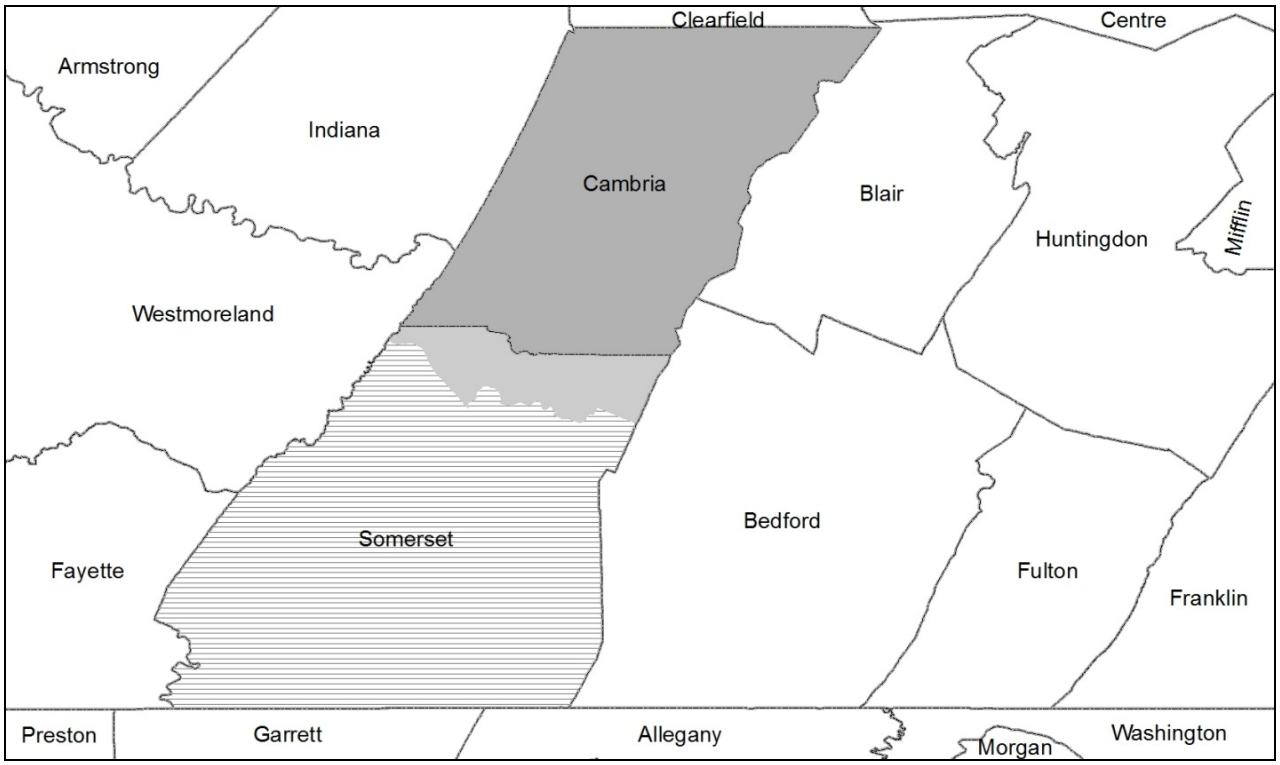
Table 24: Commutation in the Johnstown Area

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Somerset, PA	Cambria, PA	16.92	10.24



Somerset County is in the Fourth Federal Reserve District. The Federal Reserve Bank of Cleveland believes that the vast majority of commutation from Somerset County into Cambria County is from northern Somerset County. A map of population density shows that this is likely, as Somerset County is extremely rural except for the area near Johnstown in the north and the Somerset area further south, with little connection between the two. Thus the Federal Reserve Bank of Cleveland includes only Connemaugh, Paint, and Ogle townships in the Johnstown market, with the rest of Somerset County making up a separate market.


Clearfield
Centre
Armstrong
Indiana
Cambria
Blair
Huntingdon
Mifflin
Westmoreland
Bedford
Somerset
Fayette
Fulton
Franklin
Preston
Garrett
Allegany
Morgan
Washington


Clearfield
Centre
Armstrong
Indiana
Cambria
Blair
Huntingdon
Mifflin
Westmoreland
Bedford
Somerset
Fayette
Fulton
Franklin
Preston
Garrett
Allegany
Morgan
Washington

Metropolitan New York/New Jersey, NY–NJ–CT: This is a very large market consisting of Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, and Union counties in New Jersey; Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, and Westchester counties in New York; Fairfield County plus parts of Litchfield and New Haven counties in Connecticut; Burlington, Mercer, and Warren counties in New Jersey; and Monroe, Polk, and Wayne counties in Pennsylvania.

The market consists of several tiers. The first tier resulted in the delineation of five areas: New York proper (Bergen, Hudson, and Passaic counties in New Jersey, Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, and Westchester counties in New York), Newark/North Jersey (Essex, Hunterdon, Middlesex, Somerset, and Union counties in New Jersey), Monmouth/Ocean (Monmouth and Ocean counties in New Jersey), West Jersey (Morris, Sussex, and Warren counties in New Jersey), and Orange/Sullivan (Orange and Sullivan counties in New York). Commutation in these areas is summarized in Tables 25-29.

Table 25: Commutation in the Metro New York Area – New York City

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Bergen, NJ	New York, NY	15.29	1.58
Passaic, NJ	Bergen, NJ	23.03	13.97
Hudson, NJ	New York, NY	24.27	2.51
Bronx, NY	New York, NY	37.04	7.58
Kings, NY	New York, NY	36.98	3.14
Nassau, NY	New York, NY	15.09	0.77
Nassau, NY	Queens, NY	11.15	13.37
Queens, NY	New York, NY	36.00	2.98
Richmond, NY	New York, NY	26.05	1.18
Westchester, NY	New York, NY	18.89	2.19
Putnam, NY	Westchester, NY	41.71	10.44

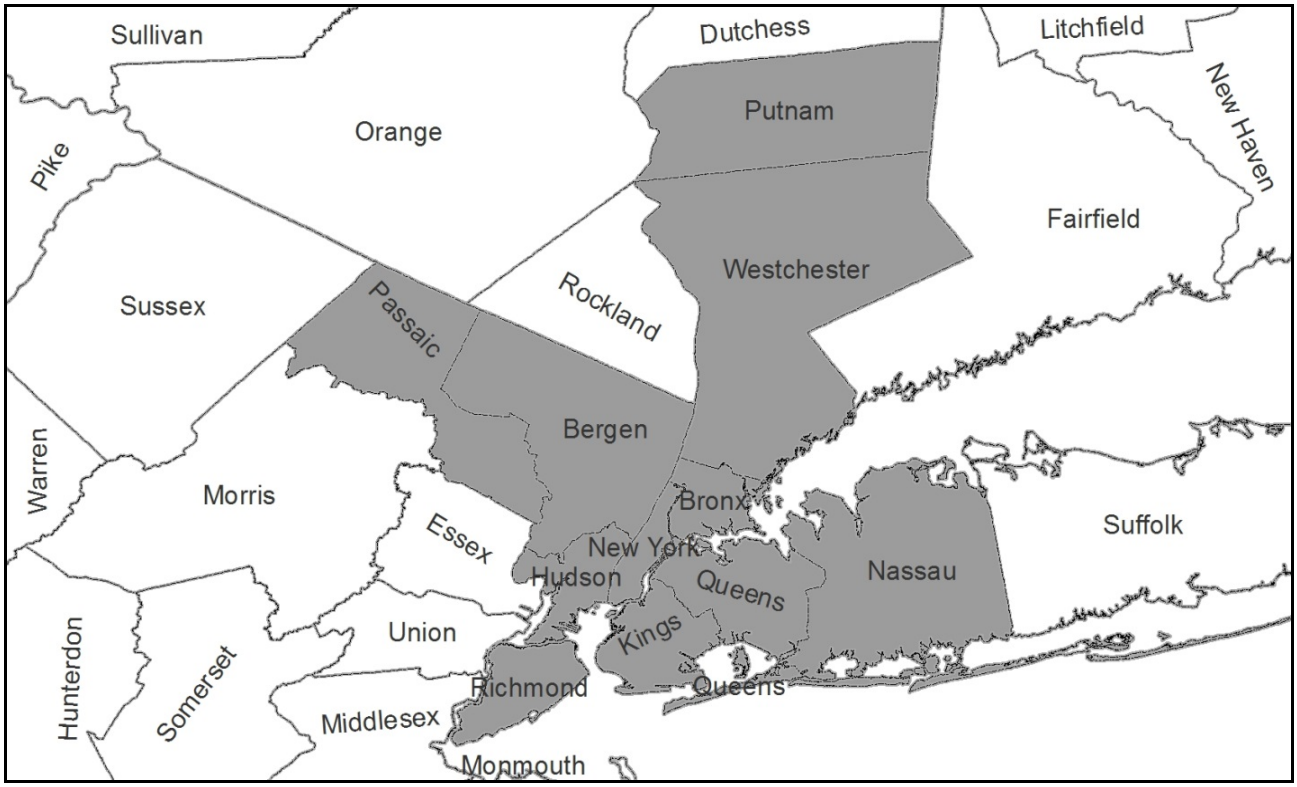


Table 26: Commutation in the Metro New York Area – Newark/North Jersey

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Union, NJ	Essex, NJ	13.65	10.16
Hunterdon, NJ	Somerset, NJ	18.81	7.96
Somerset, NJ	Middlesex, NJ	15.55	15.71
Union, NJ	Middlesex, NJ	10.06	10.68

Table 27: Commutation in the Metro New York Area – Monmouth/Ocean

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Ocean, NJ	Monmouth, NJ	18.17	6.99

Table 28: Commutation in the Metro New York Area – West Jersey

Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Sussex, NJ	Morris, NJ	26.76	6.25
Warren, NJ	Morris, NJ	17.25	5.56

Table 29: Commutation in the Metro New York Area – Orange/Sullivan

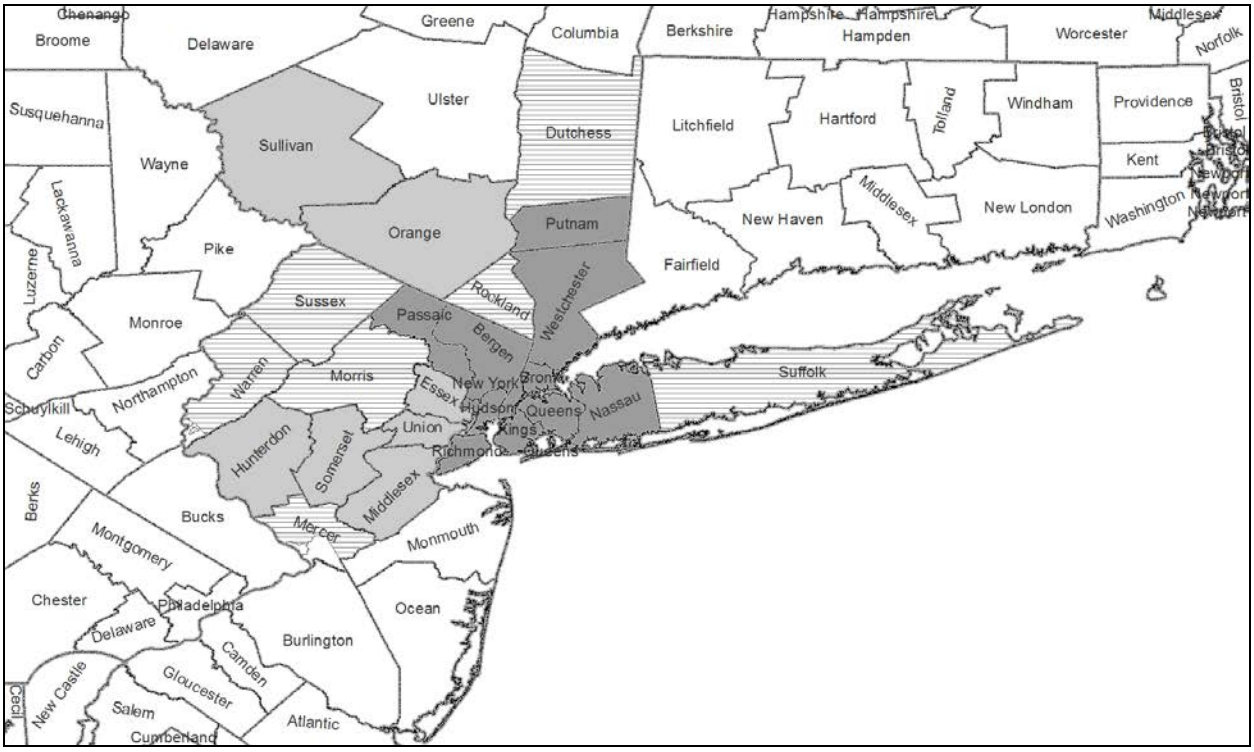
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Sullivan, NY	Orange, NY	16.44	5.03

After combining the areas linked above, the second tier of the data shows links between all of these areas except Monmouth/Ocean. Additionally, four other previously freestanding counties (Mercer, NJ, and Dutchess, Rockland, and Suffolk, NY) are linked to the New York City area (Table 30). However, as shown above, there is sufficient evidence to split Warren County, NJ (see Lehigh Valley, PA–NJ) and Mercer County, NJ (see Philadelphia/South Jersey, PA–NJ).[21]

[21] All of Warren County except the town of Phillipsburg, the borough of Alpha, and Pohatcong Township are included in the Metro New York/New Jersey market. The market will also include all of Mercer County except the city of Trenton and Hamilton Township.

Table 30: Commutation in the Metro New York/New Jersey Area – Second Tier

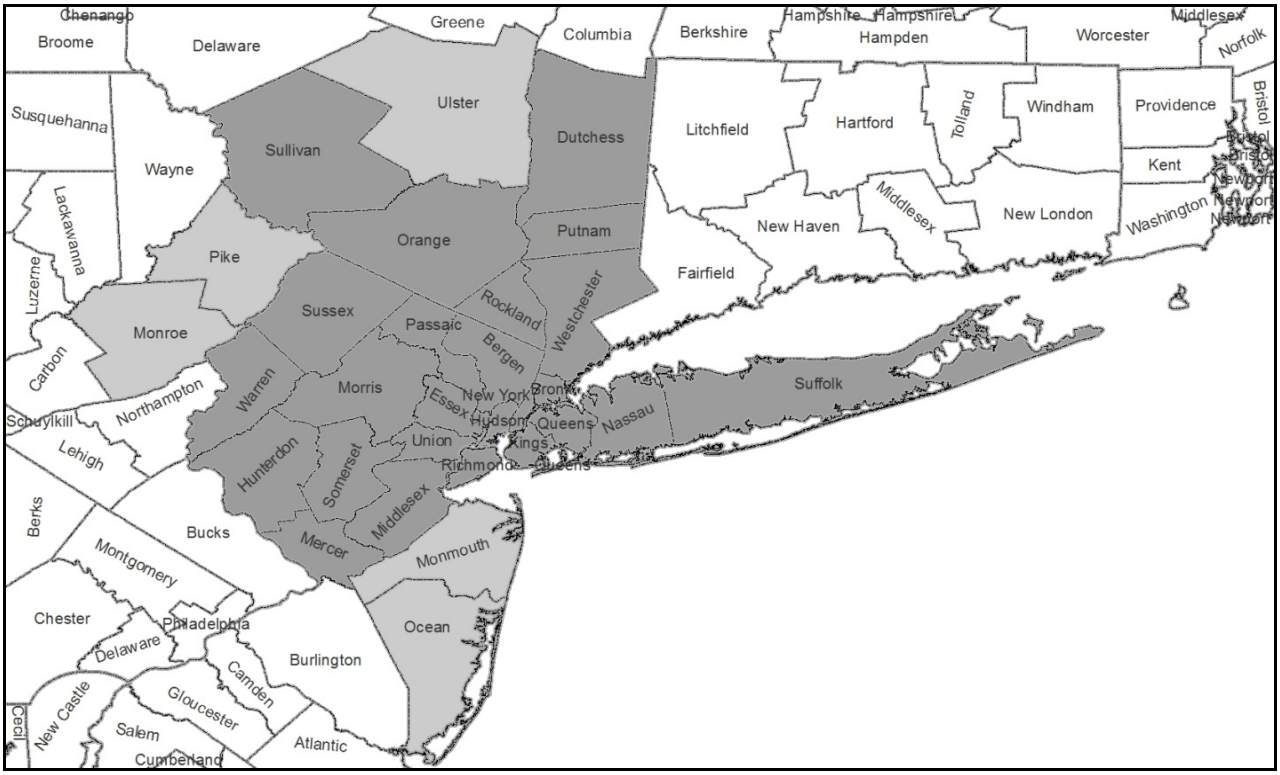
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Newark/North Jersey	New York City	17.31	10.69
Mercer, NJ	Newark/North Jersey	14.65	13.17
Morris/Sussex/Warren	Newark/North Jersey	19.00	16.64
Morris/Sussex/Warren	New York City	15.98	11.36
Dutchess, NY	New York City	21.56	3.28
Orange/Sullivan	New York City	18.36	2.46
Rockland, NY	New York City	35.46	14.63
Suffolk, NY	New York City	24.04	12.09



Again, after combining all of the areas linked in Table 30, a third tier of the data shows strong links between the resulting area, the previously delineated Monmouth/Ocean area, and three outlying counties (Ulster, NY, and Monroe and Pike, PA). These are summarized in Table 31.

Table 31: Commutation in the Metro New York/New Jersey Area – Third Tier

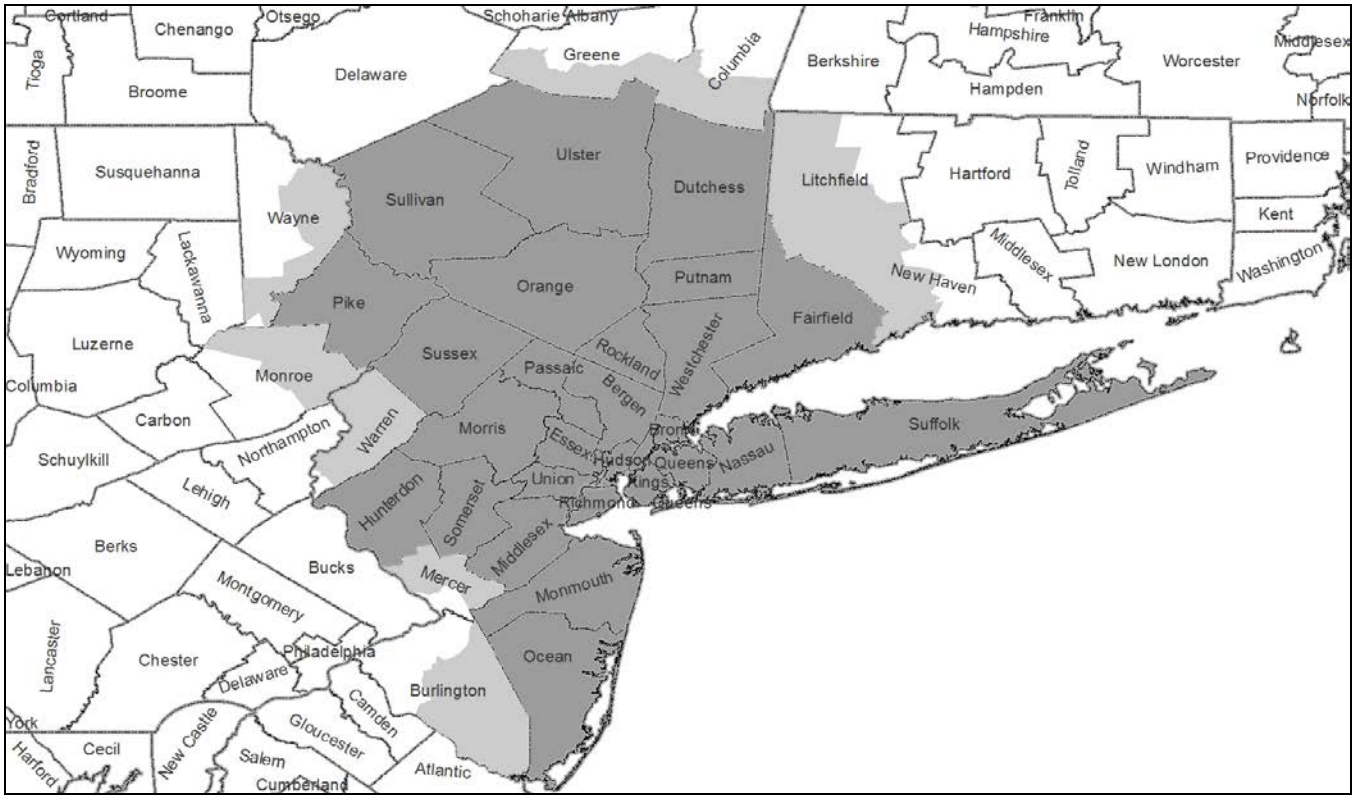
Base County	Adjoining County	% of Base County Residents Commuting to Adjoining County	% of Base County Employees Commuting from Adjoining County
Monmouth/Ocean	Metro NY/NJ	26.40	8.96
Ulster, NY	Metro NY/NJ	30.23	12.09
Monroe, PA	Metro NY/NJ	24.01	1.13
Pike, PA	Metro NY/NJ	41.58	9.32



As a fourth tier, research by the Federal Reserve Bank of New York has shown that several additions can be made to the New York area. First, in Connecticut, all of Fairfield County and parts of Litchfield and New Haven counties are included.[22] Second, in New Jersey, the western part of Burlington County is included, and parts of Mercer County and Warren County are excluded (see Appendix B). Third, in New York, the southern parts of Columbia and Greene counties are added

[22] See Olsen and Morgan (2014). The towns included are Bethlehem, Bridgewater, Canaan, Cornwall, Goshen, Kent, Litchfield, Morris, New Milford, North Canaan, Plymouth, Roxbury, Salisbury, Sharon, Thomaston, Warren, Washington, Watertown, and Woodbury in Litchfield County and Ansonia, Beacon Falls, Bethany, Derby, Hamden, Middlebury, Milford, Naugatuck, New Haven, Orange, Oxford, Seymour, Southbury, Waterbury, West Haven, and Woodbridge in New Haven County.

(see Appendix B). Finally, in Pennsylvania, part of Wayne County is included and part of Monroe County is excluded (see Appendix B).



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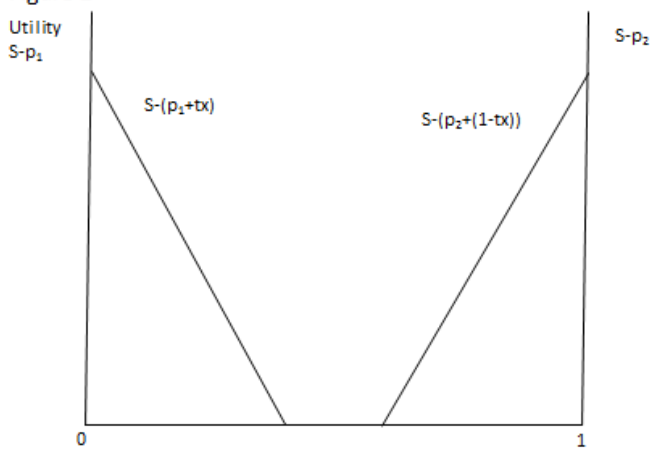
Appendix A: Summary of Hotelling's Spacial Competition Theory

The basic theory is as follows.[23] Two firms (shops 1 and 2) selling identical products and facing identical cost functions are located at points 0 and 1 (for simplicity, it is assumed that their costs of production are zero, but eliminating this assumption merely complicates the math without changing the conclusion). N consumers are uniformly distributed between the two shops. Assume that they have the same utility functions and derive utility S from the goods being sold. These consumers also face transportation costs in getting to the shops, where t represents the distance traveled. It should be noted that t represents all economic costs to the consumer other than price, including search and opportunity costs. Thus, a consumer located at point x would face transportation costs of tx if he went to shop 1 and t(1-x) if he went to shop 2. The consumer will choose the shop that maximizes his utility. Therefore, the consumer's choice between purchasing at shop 1 or 2 is determined by the prices (p_1 and p_2) each shop charges and by the consumer's transportation cost to each shop. For a consumer located at point x, his total cost of shopping at each shop and the utility he derives from each shop are as follows:

If purchases made at	**Consumer x's Cost**	**Consumer x's Utility**
Shop 1	p_1+tx	$S-(p_1+tx)$
Shop 2	$p_2+t(1-x)$	$S-(p_2+t(1-x))$

[23] See Tirol (1988). The original model is in Hotelling (1928). The author is grateful to Loretta Mester for her assistance in writing this section.

Figure 2



This is graphically illustrated in Figure 1.

Consumers located at point x^* get the same utility whether they shop at shop 1 or shop 2, so they will be indifferent between the two shops - these are marginal consumers. Note that if t is sufficiently high, there will be no marginal consumers (as shown in Figure 2). In this case, the two shops are not competing for the same customers; each is a local monopolist.

In order to demonstrate how transitivity works, the model need only be extended to three shops. Assume that shop 1 is located at 0, shop 2 at 0.5, and shop 3 at 1. Let x refer to a consumer located between shops 1 and 2 and y refer to a consumer located between shops 2 and 3. A consumer can shop at any of the three shops and the cost of shopping at each and the utility he derives from each are as follows:

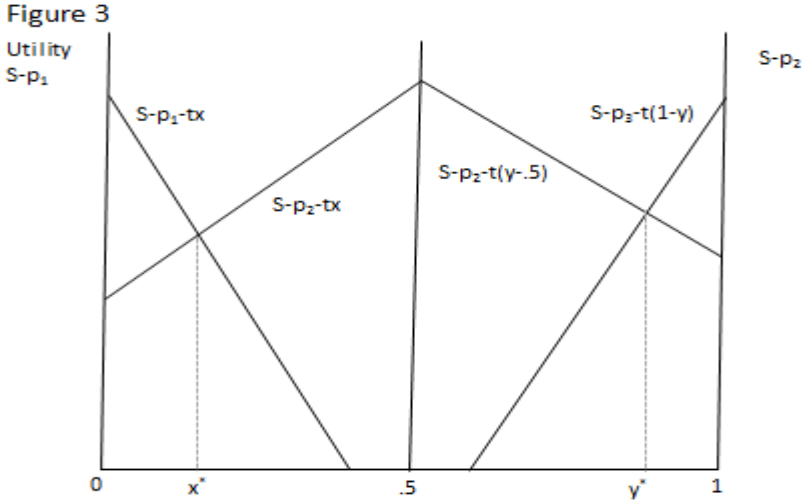
If purchases made at:	**Consumer x's Cost**	**Consumer x's Utility**	**Consumer y's Cost**	**Consumer y's Utility**
Shop 1	p_1+tx	$S-p_1-tx$	p_1+ty	$S-p_1-ty$
Shop 2	$p_2+t(0.5-x)$	$S-p_2-t(0.5-x)$	$p_2+t(y-0.5)$	$S-p_2-t(y-0.5)$
Shop 3	$p_3+t(1-x)$	$S-p_3-t(1-x)$	$p_3+t(1-y)$	$S-p_3-t(1-y)$

Again, each consumer will select the shop that yields him the highest utility. The marginal consumer x^* is indifferent between shops 1 and 2, and the marginal consumer y^* is indifferent between shops 2 and 3.[24] Thus, x^* and y^* solve to the following:

$$S-p_1-tx^*=S-p_2-tx^*$$
$$S-p_2-t(y^*-0.5)=S-p_3-t(1-y^*)$$

that is, $x^*=(p_2-p_1+0.5t)/2t$ and $y^*=(p_3-p_2+1.5t)/2t$. Figure 3 illustrates the case where x^* and y^* exist:

Figure 3



Assume that x^* and y^* exist. Since the consumers are uniformly distributed throughout the area, x^* is the market share of shop 1, y^*-x^* is the market share of shop 2, and $1-y^*$ is the market share of shop 3. Given N total consumers, demand at shop 1 is Nx^*, demand at shop 2 is $N(y^*-x^*)$, and demand at shop 3 is $N(1-y^*)$. Since we assumed that the shops' production costs are zero, the profit functions for the three shops are as follows:

$$\Pi_1=p_1\,Nx^* \quad =p_1N(p_2-p_1+0.5t)/2t$$
$$\Pi_2=p_2\,N(y^*-x^*)=p_2N(p_3-2p_2+t)/2t$$
$$\Pi_3=p_3\,N(1-y^*) \quad =p_3N(p_2-p_3+0.5t)/2t$$

If we assume that the shops are Bertrand competitors, each shop would choose its price to maximize its profit, taking the other shops' prices as given. This would yield the following reaction

[24] In order for x^* and y^* to exist, $p_2-p_3<0.5t$ and $p_2-p_1<0.5t$.

functions:

$$p_1=(2p_2+t)/4$$
$$p_2=(p_1+p_3+t)/4$$
$$p_3=(3t-2p_2)/4$$

Equilibrium prices are found by solving for the fixed point $p_1=p_2=p_3=0.5t$, but the important thing to note is that each shop's profit-maximizing price is dependent on the prices of the other two, because of the interaction between shop 2 and each of the other two shops. That is, shop 1's and shop 3's prices are interdependent because they are both related to shop 2's price. Therefore, if it can be demonstrated that transportation costs between shops 1 and 2 and between shops 2 and 3 are sufficiently low that there are marginal consumers, shops 1 and 3 are competitors. There need not be any direct transportation between shops 1 and 3; in fact, they need have no customers in common whatsoever.

In summary, the economic theory behind defining geographic markets relies on two points: (1) marginal, not average, consumers determine the boundaries; and (2) transitivity throughout the market.

Appendix B – Market Definitions

Market	Counties Included
Altoona	Blair, PA
Atlantic City	Atlantic, NJ Cape May, NJ
Bedford County	Bedford, PA
Binghamton	Broome, NY Chenango, NY Delaware, NY Otsego, NY Tioga, NY Susquehanna, PA – boroughs of Friendsville, Great Bend, Hallstead, Lanesboro, Little Meadows, New Milford, Oakland, Susquehanna Depot, and Thompson and townships of Apolacon, Choconut, Forest Lake, Franklin, Great Bend, Harmony, Jackson, Oakland, Silver Lake, and Thompson
Bradford County	Bradford, PA
Cameron County	Cameron, PA
Clearfield/Jefferson	Clearfield, PA Jefferson, PA
Dover	Kent, DE Sussex, DE – the part of the city of Milford in Sussex County
Elk County	Elk, PA
Hagerstown	Washington, MD Franklin, PA Fulton, PA
Harrisburg	Cumberland, PA Dauphin, PA Juniata, PA Lebanon, PA Perry, PA
Huntingdon County	Huntingdon, PA
Johnstown	Cambria, PA Somerset, PA – boroughs of Benson, Paint, and Windber, and the townships of Connemaugh, Ogle, and Paint
Lancaster	Lancaster, PA
Lehigh Valley	Warren, NJ – town of Phillipsburg, borough of Alpha, and Pohatcong Township Carbon, PA Lehigh, PA Monroe, PA – townships of Chestnuthill, Eldred, Hamilton, Jackson, Polk, Ross, Tobyhanna, and Tunkhannock Northampton, PA
McKean County	McKean, PA

Metro NY/NJ	Fairfield, CT Litchfield, CT – towns of Bethlehem, Bridgewater, Canaan, Cornwall, Goshen, Kent, Litchfield, Morris, New Milford, North Canaan, Plymouth, Roxbury, Salisbury, Sharon, Thomaston, Warren, Washington, Watertown, and Woodbury New Haven, CT – towns of Ansonia, Beacon Falls, Bethany, Derby, Hamden, Middlebury, Milford, Naugatuck, New Haven, Orange, Oxford, Seymour, Southbury, Waterbury, West Haven, and Woodbridge Bergen, NJ Burlington, NJ – boroughs of Pemberton, and Wrightstown and townships of Bass River, New Hanover, North Hanover, Pemberton, Shamong, Southampton, Tabernacle, Washington, and Woodland Hunterdon, NJ Mercer, NJ – boroughs of Hightstown, Hopewell, Pennington, and Princeton, plus townships of East Windsor, Ewing, Hopewell, Lawrence, Princeton, Robbinsville, and West Windsor Middlesex, NJ Monmouth, NJ Morris, NJ Ocean, NJ Passaic, NJ Somerset, NJ Sussex, NJ Union, NJ Warren, NJ – towns of Belvidere and Hackettstown, borough of Washington, and townships of Allamuchy, Blairstown, Franklin, Frelinghuysen, Greenwich, Hardwick, Harmony, Hope, Independence, Knowlton, Liberty, Lopatcong, Mansfield, Oxford, Washington, and White Bronx, NY Columbia, NY – city of Hudson and towns of Ancram, Clermont, Copake, Gallatin, Germantown, Greenport, Livingston, and Taghkanic. Dutchess, NY Greene, NY – towns of Catskill, Halcott, Hunter, and Lexington Kings, NY Nassau, NY New York, NY Orange, NY Putnam, NY Queens, NY Richmond, NY Rockland, NY Suffolk, NY Sullivan, NY Ulster, NY Westchester, NY

	Monroe, PA – boroughs of Delaware Water Gap, East Stroudsburg, Mount Pocono, and Stroudsburg, and townships of Barrett, Coolbaugh, Middle Smithfield, Paradise, Pocono, Price, Smithfield, and Stroud Pike, PA Wayne, PA – borough of Hawley and townships of Berlin, Damascus, Dreher, Lebanon, Manchester, Oregon, Palmyra, Paupack, Salem, and Sterling
Mifflin County	Mifflin, PA
Philadelphia	Burlington, NJ – cities of Beverly, Bordentown, and Burlington, boroughs of Fieldsboro, Palmyra and Riverton, and townships of Bordentown, Burlington, Chesterfield, Cinnaminson, Delanco, Delran, Eastampton, Edgewater Park, Evesham, Florence, Hainesport, Lumberton, Mansfield, Maple Shade, Medford, Moorestown, Mount Holly, Mount Laurel, Riverside, Springfield, and Willingboro Camden, NJ Cumberland, NJ Gloucester, NJ Mercer, NJ – city of Trenton, and Hamilton Township Salem, NJ Bucks, PA Chester, PA Delaware, PA Montgomery, PA Philadelphia, PA
Potter County	Potter, PA
Reading	Berks, PA
Schuylkill County	Schuylkill, PA
Scranton/Wilkes-Barre	Lackawanna, PA Luzerne, PA – all except towns of East Berwick and Nescopeck Susquehanna, PA – boroughs of Hop Bottom, Montrose, and Union Dale, townships of Auburn, Ararat, Bridgewater, Brooklyn, Clifford, Dimock, Gibson, Harford, Herrick, Jessup, Lathrop, Lenox, Rush, and Springville. Wayne, PA – boroughs of Bethany, Honesdale, Prompton, Starrucca, and Waymart and townships of Buckingham, Canaan, Cherry Ridge, Clinton, Dyberry, Lake, Lehigh, Mount Pleasant, Preston, Scott, South Canaan, and Texas Wyoming, PA
State College	Centre, PA Clinton, PA – boroughs of Beech Creek and Loganton and townships of Beech Creek, Greene, Logan and Porter
Susquehanna Valley	Columbia, PA Luzerne, PA – towns of East Berwick and Nescopeck Montour, PA Northumberland, PA

	Snyder, PA Union, PA
Sullivan County	Sullivan, PA
Sussex County	Sussex, DE, minus the part of the city of Milford that is in Sussex County
Tioga County	Tioga, PA
Wilmington	New Castle, DE Cecil, MD
Williamsport/Lock Haven	Clinton, PA – city of Lock Haven, boroughs of Avis, Flemington, Mill Hall, Renovo, and South Renovo, and townships of Allison, Bald Eagle, Castanea, Chapman, Colebrook, Crawford, Dunnstable, East Keating, Gallagher, Grugan, Lamar, Leidy, Noyes, Pine Creek, Wayne, West Keating, and Woodward Lycoming, PA
York	Adams, PA York, PA