Southwest Central Indiana in Perspective

An Economic Benchmarking Analysis

KELLEY SCHOOL OF BUSINESS
INDIANA UNIVERSITY
Indiana Business Research Center

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By
Indiana Business Research Center
Kelley School of Business, Indiana University

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Acknowledgments

IBRC Research Team

Jerry Conover, Ph.D., Director
Wendy DeBoard, GIS Analyst
Amia Foston, Graduate Research Associate
Tanya Hall, Economic Research Analyst
Bethany Holiday, Manager, Database Systems Integration
Matt Kinghorn, Economic Research Analyst & Demographer
Molly Manns, Graphic Designer & Associate Editor
Vickie Nelson, Statistical Programmer
Diane Probst, Graphic Designer
Carol Rogers, Deputy Director & CIO
Timothy Slaper, Ph.D., Director of Economic Analysis
Rachel Strange, Managing Editor

SWCI Project Collaborators

Lori Torres, SWCI Project Manager
Paul Mitchell, President & CEO, Energy Systems Network
SWCI Project Steering Committee
Deborah Cummings, Senior Program Manager, Battelle Technology Partnership Practice

Contact Information

For questions or more information about this study, contact the Indiana Business Research Center at (812) 855-5507 or ibrc@iupui.edu.

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Executive Summary

A major regional strategic planning effort was initiated in 2013 to identify paths to growth and prosperity for an 11-county region in Southwest Central Indiana (SWCI). This report presents data and analysis focused on key characteristics of the region's economic and demographic performance.

The report also compares the region on many of these characteristics to six other "peer" regions sharing important qualities in common with SWCI. These regions are in Alabama, Mississippi, New York, Tennessee, Washington and West Virginia. Benchmarking the SWCI region against the peers offers insight into places from which useful lessons may be learned as the strategic planning process unfolds. These largely rural regions, like SWCI, all have key innovation assets in the form of research universities and federal research laboratories. Such assets, properly leveraged, could be important facilitators of innovation-driven growth strategies.

The SWCI region's largest county, Monroe, tends to skew statistics about the region as a whole, since it accounts for more than a third of the SWCI population. For example, Monroe's population is younger, more diverse, and growing more rapidly than the rest of the region. Thus, this report often summarizes data for SWCI as a whole and also for the region excluding Monroe County to highlight such variations. Data are also presented for each county.

Highlights of Findings

Population & Labor Force

- Though the SWCI region as a whole enjoyed positive net migration (more people moving into than out of the region) from 2000 to 2010, excluding Monroe County the region's net migration has been relatively flat, and actually negative since the Great Recession. This reflects the challenged economic conditions in much of the region during the downturn.
- While population of SWCI should continue growing over the next 20 years, this growth will occur largely in three counties. Other parts of the region will shrink gradually as their population ages. The size of the labor force will also shrink in most of the region in the years ahead.
- SWCI population and net migration are growing more slowly than the peers in Washington, Tennessee, West Virginia and Alabama.

Education

- Educational attainment has improved throughout SWCI since 2000, especially at the some-college-or-associate-degree level and a bit less at the bachelor's-or-more level. However, more than half the region's adults have no more than a high-school education, and bachelor's-or-more attainment still trails the Indiana average by a wide margin in most SWCI counties.
- SWCI is comparable to four peers in bachelor degree attainment (Mississippi and Washington regions are notably higher) and second-lowest for some-college-or-associate-degrees.

Housing

- Housing is very affordable throughout the SWCI region. Sales and construction fell during the recession, but to a lower degree than statewide. Many peer regions experienced a much more pronounced housing boom-and-bust cycle. The rate of residential construction in SWCI has been lower than in most peers throughout the cycle, while the Washington region's rate has been higher than the other peers.

Personal Income

- The SWCI region's overall per capita personal income (PCPI) is about $10,000 below the national figure, though PCPI varies widely throughout the region. All of the peer regions have higher PCPI than SWCI. PCPI is growing more slowly in SWCI than in the other regions, too.

Economic Distress

- Unemployment rates vary widely across SWCI, with the highest (Lawrence County) nearly double the rate of the lowest (Dubois County). Unemployment rates in the Tennessee and Washington peer regions are comparable to SWCI, while other regions are notably lower.
- Poverty rates also vary widely across the region. In terms of family poverty rates, Crawford County is clearly at the high end, while five counties are well below 10 percent. The region as a whole has a family poverty rate lower than all peers except one.

Commuting

- Compared to its peers, SWCI has the greatest amount of commuting to jobs outside the county or region of residence; however, commuting patterns vary greatly within SWCI. In Monroe and Dubois counties, 88 percent of residents who work have jobs within their county, and these counties also attract many workers from elsewhere.

Industry Structure

- Overall employment in the SWCI region is the same now as it was the years ago, though it's grown modestly in the past two years. Among the larger industry super-sectors, manufacturing, retailing and construction are both down notably over the decade, while there's been welcome growth in educational services; health care and hospitality; and professional, scientific and technical services.
- Viewed in terms of industry clusters rather than sectors, SWCI's largest clusters are education, knowledge creation & laboratory research; furniture; life sciences; business services; tourism and automotive. Their performance varied over the last 10 years, but all except tourism have grown respectably the last two years.
- SWCI and the Alabama region have much more significant manufacturing clusters than the other peers, and SWCI leads the pack in educational services. Compared to peers, SWCI has the lowest percentage of jobs in the professional, scientific and technical services cluster, however, and this cluster has been shrinking the last two years.

Regional Specialization & Wages

- Peer regions were compared in terms of their concentration of jobs in a given cluster vs. the national average. SWCI stands out with especially robust specialization in these clusters:

furniture; life sciences; wood products; automotive; knowledge creation, education and research labs. The region also has above-average specialization in plastics and in construction products and services.

- Average SWCI wages are below the peers in many clusters, including life sciences and the knowledge creation/education/research labs cluster. SWCI wages are relatively higher in automotive, production technology & heavy machinery, and plastics.

Innovation Environment

- Business churn—the creation of new jobs through business expansions and opening of new businesses, as well as the closing or contraction of old firms—was examined for the SWCI region and its peers. Higher levels of churn are common in regions experiencing more dynamic economies.
    - Comparing the ratio of establishment growth (expansions + births) to establishments with constant employment from one year to the next, the SWCI region had one of the least dynamic and vital economies among the peer group from 2000 through 2010.
    - The Washington region led all others through most of the decade, the only region in which establishment expansions outpaced constants every year of the decade.
- The SWCI region attracted only one reported venture capital deal between 2005 and 2012, accounting for just 0.2 percent of total VC funding in Indiana. In contrast, the Mississippi and Alabama peers raised many times as much venture funding during the same period. Only the Washington peer region attracted less VC investment (zero).
- A key infrastructure asset for innovation-based growth, broadband internet connectivity ranges in SWCI from 30 percent of households in Crawford to 70 percent in Monroe County, averaging 50 percent region-wide. This is similar to three peer regions, but notably lower than in the New York, Washington and West Virginia regions.

Introduction

In mid-2013, leaders from an 11-county Southwest Central Indiana (SWCI) region came together to develop a strategic plan to enhance the region's quality of life and economic opportunities for its residents and communities. This region initially includes Brown, Crawford, Daviess, Dubois, Greene, Lawrence, Martin, Monroe, Orange, Owen and Washington counties, though the geographical focus may evolve as the planning process develops. For convenience, the following report refers informally to the 11-county area as the SWCI region. A formal name for the region has yet to be selected.

Crafting a strategic plan for such an initiative requires a solid base of information about the region and its communities as a foundation on which to build. This report provides extensive economic and demographic context to support the planning effort, with data and interpretation for the region as a whole and for each of its 11 counties. It examines how the SWCI region is performing now and also how the region and counties are changing over time. Knowing where a region started is essential for planning where it aims to wind up and how it will get there.

In addition, the report benchmarks the performance of the SWCI region against six other "peer" regions around the nation that are similar in many respects to this area. Such benchmark comparisons can foster insights into what makes some regions more competitive than others, helping leaders in the SWCI area shape a vision for this area's future.

This research was conducted by the Indiana Business Research Center (IBRC) at Indiana University's Kelley School of Business. Funding to support the regional planning effort is provided by the Central Indiana Corporate Partnership Foundation via Energy Systems Network, which provides project management services for the planning effort.

Selecting Peer Regions

Peer Selection Criteria

The IBRC research team began by searching for regions of the country that share salient attributes with the SWCI region. Three key characteristics guided the selection of peer regions. The first two reflect two important economic anchors in the SWCI region: a major federal research laboratory and a large research university. To identify these regions, IBRC mapped the locations of all federal labs in the U.S. and then looked for major universities reasonably close to these labs, i.e., within an hour's drive or so. Ideally, peer regions would include a university classified as either a "high research activity" or a "very high research activity" institution in the Carnegie Classification framework.[1]

The team also concluded that, like SWCI, the peer regions should be relatively rural. Thus, the final selection criterion was that there should not be a major metropolitan area within any peer region. For instance, based on the first two characteristics there were several candidate regions in Maryland, Virginia and California, but they were disqualified because they were near major metro areas such as Washington, D.C., or San Francisco. That said, each of the selected peer regions region does have a relatively small-to-midsize metropolitan statistical area. The largest counties in each region range in population from 100,332 people (Monongalia, WV) to 466,852 people (Onondaga, NY).

When selecting peer regions—or at this stage, the federal lab/university pairings—there was a desire to have some geographic diversity. That is, we didn't want all the regions to be clustered in the same part of the country, such as Appalachia or the Northeast.

The final step in peer selection was identifying which counties would comprise each region. Ideally, each region would be self-defined; that is, the collection of counties comprising a region would have been the outgrowth of a regional development strategy and an association of entities that banded together to pursue that strategy. As a result, the research team searched for regional economic development entities or workforce organizations with a regional development focus that incorporated the federal lab and research university pair. Put another way, the research team used the self-determined regional boundaries of development organizations that contained the laboratory and university pair. This approach was considered superior to attempting an empirical analysis to define which counties comprised a region because the self-defined region would, most likely, already have a strategic plan or some other organizing principle tying the counties together. The IBRC found such organizations in each peer area and adopted their geographic definitions of member counties.

Table 1 presents the regions identified by their key city or cities, the region's shorthand appellation used in this document (though the regions are sometimes referred to just by their state), the federal lab associated with the region and the research university in the region. Table 2 provides basic population and density data for the regions.

[1] http://classifications.carnegiefoundation.org

Table 1: Peer Regions, the dominant city, federal laboratory and university

Region's Major City & State	Appellation	Federal Laboratory	Research University
Bloomington/Southwest-Central, IN	SWCI	Naval Surface Warfare Center Crane	Indiana University
Huntsville, AL	AL region	Marshall Space Flight Center	Univ. of AL - Huntsville
Vicksburg, MS	MS region	Army Corp of Engineers Lab.	Jackson State University
Rome/Syracuse, NY	NY region	Air Force Research Lab.	Syracuse University
Knoxville/Oak Ridge, TN	TN region	Oak Ridge Nat. Lab.	Univ. of Tennessee
Richland/Pullman, WA	WA region	Pacific Northwest Nat. Lab.	Washington State Univ.
Morgantown, WV	WV region	National Energy Tech. Lab.	West Virginia University

Sources: IBRC and Federal Laboratory Consortium for Technology Transfer

Table 2: Peer Region Characteristics, 2012

Region	Number of Counties	Population	Density (population per square mile)
SWCI	11	399,171	89
AL region	13	1,113,160	126
MS region	7	624,884	119
NY region	11	1,286,698	148
TN region	15	1,127,666	176
WA region	7	402,364	47
WV region	6	285,152	128

Source: IBRC, using regionally defined boundaries and U.S. Census Bureau data

Population and Labor Force

The Southwest-Central Indiana (SWCI) region had a total population of nearly 400,000 in 2012 (see Table 3). Monroe County, with more than 141,000 residents, is SWCI's largest county, accounting for 35 percent of the region's total population. The next-largest counties are Lawrence (46,100), Dubois (42,100) and Greene (32,900). With fewer than 11,000 residents apiece, Martin and Crawford are SWCI's least populous counties. These 11 counties combined account for 6 percent of Indiana's population.

Monroe is not only the region's largest county; it is also the most rapidly growing. The county grew an average of 1.3 percent annually between 2000 and 2012, the seventh-fastest rate of growth among the state's 92 counties. Daviess County (0.6 percent growth per year) and Dubois County (0.5 percent) also posted relatively strong gains over the last 12 years, yet no other SWCI counties had an annual growth rate above 0.25 percent. Owen, Martin, Greene and Crawford counties have lost population since the start of the century.

Taken as a group, the SWCI region's residents are younger than Hoosiers as a whole. Remove Monroe County's university-centric population from the equation, however, and the SWCI region is relatively older. With the exception of Daviess County, all other counties in the region had a median age above 40 in 2012. Brown County's median age of nearly 48 years represents an extreme outlier in the state. This mark is more than three years greater than Indiana's second-oldest county population (Ohio County with a median age of 44.7).

The SWCI region is also less diverse than the state. According to Census Bureau estimates, minority residents (i.e., everyone other than non-Hispanic white residents) account for 6.4 percent of the region's population compared to 19 percent statewide. Not surprisingly, SWCI's fastest-growing communities are also its most diverse. For instance, minority residents account for more than 14 percent of Monroe County's population. Dubois and Daviess counties are also more diverse than their SWCI counterparts.

Table 3: Population Characteristics in 2012

County	Total Population	Average Annual Percent Change, 2000-2012	Minorities as a Percent of Total Population	Median Age
Brown	15,083	0.07%	3.7%	47.9
Crawford	10,665	-0.06%	3.3%	42.5
Daviess	32,064	0.61%	6.5%	35.1
Dubois	42,071	0.49%	7.9%	40.4
Greene	32,940	-0.05%	2.8%	42.1
Lawrence	46,078	0.03%	3.6%	42.1
Martin	10,260	-0.09%	2.4%	42.1
Monroe	141,019	1.31%	14.4%	28.1
Orange	19,690	0.16%	4.0%	41.2
Owen	21,380	-0.16%	3.2%	43.3
Washington	27,921	0.21%	2.8%	40.1
SWCI Region	399,171	0.56%	6.4%	36.4
Indiana	6,537,334	0.61%	19.0%	37.0

Source: U.S. Census Bureau Population Estimates (Vintage 2012)

Migration Trends

Trends in population change are important for a variety of reasons, but they may not always provide a clear measure of how populations respond to current conditions in a community or region. As an economic indicator, data on net migration generally offer a more precise measure of a local area's vitality. Migration numbers are akin to a referendum on a community's economic or quality of life conditions.

In the SWCI region, for instance, seven counties posted a population increase between 2000 and 2012, yet only four of these counties can claim a net in-migration of residents over that same period. The populations of Daviess, Lawrence and Washington counties grew only because their level of natural increase (i.e., more births than deaths) more than offset their net out-migration.

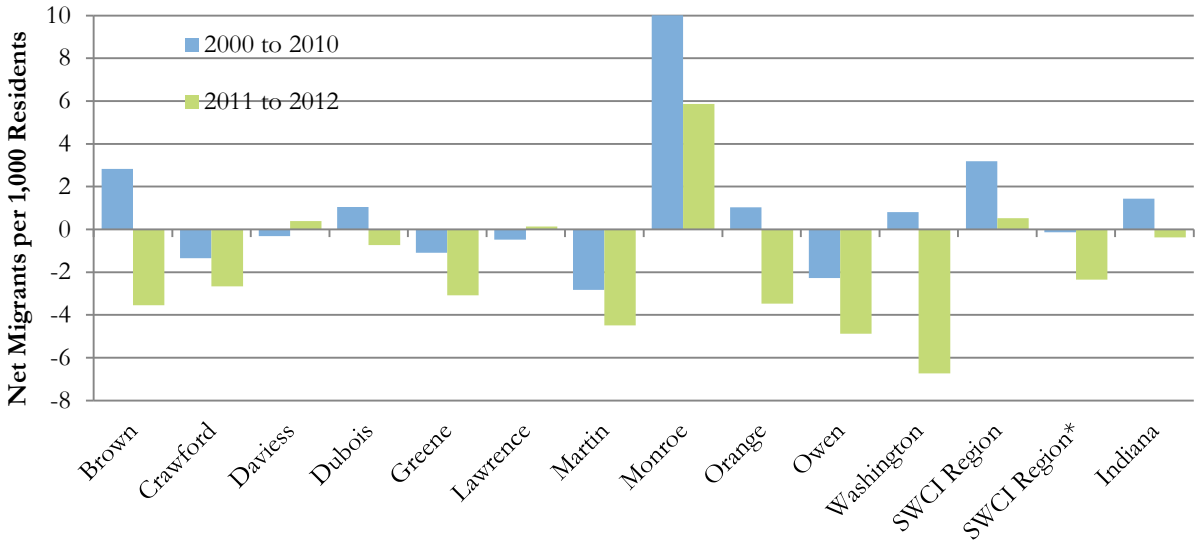
Figure 1 presents the average annual net migration rates for SWCI's counties for the years 2000 to 2010 and the more recent 2011 to 2012 period. During the past decade, Brown (2.8 net in-migrants a year per 1,000 residents), Dubois (1.0), Monroe (10.0), Orange (1.0) and Washington (0.8) counties had a net inflow of residents while the remaining counties—led by Martin (-2.8) and Owen (-2.3)—had a net out-migration.

In the wake of the Great Recession, however, net migration rates are down throughout most of the SWCI region, as well as across the state. According to Census Bureau estimates, the net migration rate in Monroe County is down to 5.9 over the last two years, while the region's other "magnet" counties of the last decade have experienced a net outflow more recently. Daviess and Lawrence counties appear to have bucked the broader trend with (slightly) improved net migration numbers in recent years.

As a region, SWCI has had a net in-migration over the last twelve years, but these numbers are buoyed by Monroe County. A look at the region without Monroe shows that net migration was essentially flat during the last decade and, in the last couple of years, the rate dipped to an estimated -2.3 percent. Note that this trend is

playing out across the state. Indiana is experiencing its first sustained period of net out-migration since the mid-1980s.

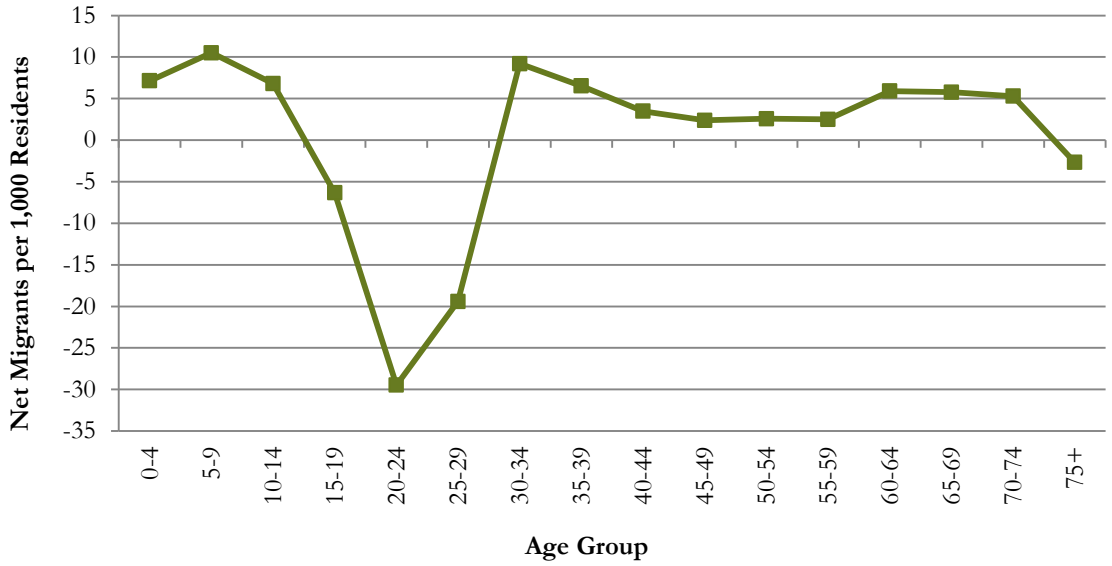
Figure 1: Average Annual Net Migration Rates per 1,000 Residents, 2000-2010 and 2011-2012



*Figures represent the SWCI region excluding Monroe County.
Sources: U.S. Census Bureau Population Estimates (Vintage 2012) and the Applied Population Laboratory, University of Wisconsin

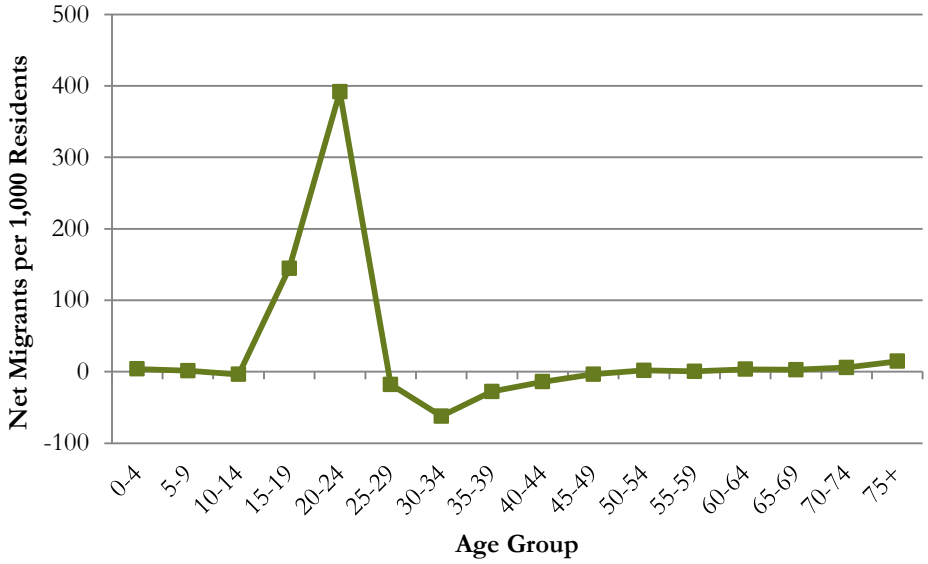
In the SWCI region's mid-sized and smaller counties, the typical migration pattern features strong net out-migration between the ages of 18 and 29 as young adults move away for school or to start a career, followed by a relatively healthy inflow between the ages of 30 and 39 as some young families settle down (see Figure 2). Most counties in the region maintain a net inflow for all adult age groups up to 75 or older. Of course, Monroe County's migration signature is far different with a large inflow of college age residents and a less dramatic net outflow between the ages of 25 and 49 (see Figure 3).

Figure 2: Average Annual Net Migration Rate by Age, SWCI Region excluding Monroe, 2000 to 2010



Source: Applied Population Laboratory, University of Wisconsin

Figure 3: Average Annual Net Migration Rate by Age, Monroe County, 2000 to 2010



Source: Applied Population Laboratory, University of Wisconsin

Population and Labor Force Projections

Around the country, one of the dominant demographic tendencies over the next couple of decades is likely to be a slowdown in population growth due primarily to the aging of the baby boom generation. This pattern is certainly expected to play out in Indiana and in the SWCI region (see Table 4: Population Projections, 2010 to 2030Table 4). According the IBRC population projections, Monroe, Daviess and Dubois counties will continue to be the fastest growing communities in the region, but their growth pace will likely taper off

somewhat over the next twenty years. Meanwhile, counties that have been losing population are expected to see these losses accelerate over the same period. That said, the region as a whole should continue to grow.

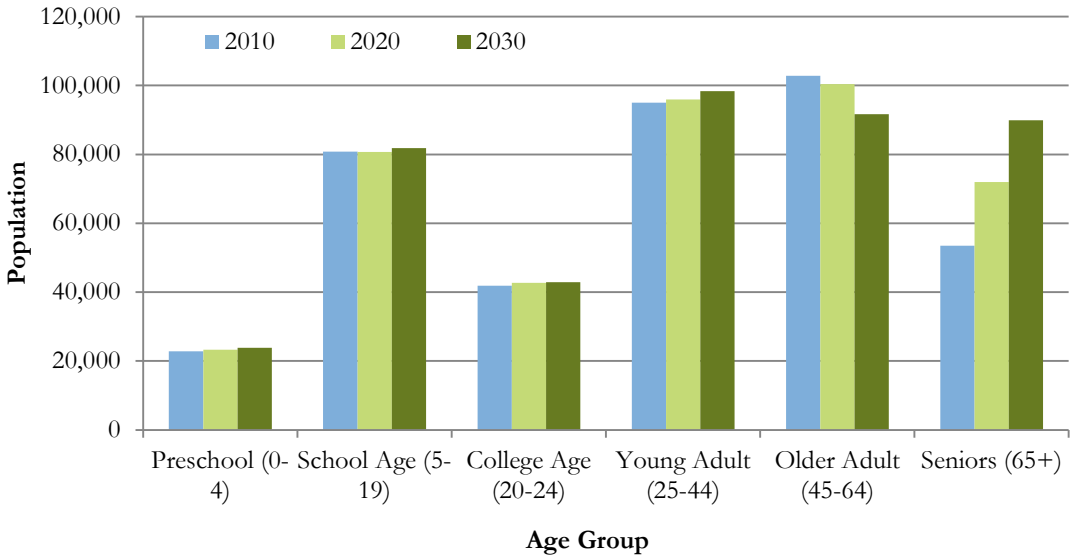
Table 4: Population Projections, 2010 to 2030

	Population (thousands)			Average Annual Change	
County	2010	2020	2030	2010-2020	2020-2030
Brown	15.2	15.4	14.8	0.10%	-0.38%
Crawford	10.7	10.7	10.3	-0.06%	-0.29%
Daviess	31.6	34.1	36.5	0.75%	0.69%
Dubois	41.9	44.0	45.4	0.50%	0.31%
Greene	33.2	32.9	32.3	-0.07%	-0.18%
Lawrence	46.1	45.8	44.9	-0.07%	-0.21%
Martin	10.3	10.3	10.1	-0.02%	-0.18%
Monroe	138.0	151.4	163.5	0.93%	0.77%
Orange	19.8	20.2	20.3	0.18%	0.04%
Owen	21.6	21.3	20.6	-0.13%	-0.31%
Washington	28.3	29.1	29.7	0.29%	0.19%
SWCI Region	396.8	415.2	428.5	0.45%	0.32%
Indiana	6,483.8	6,852.1	7,143.8	0.55%	0.42%

Source: Indiana Business Research Center

An aging population is the primary factor behind the projected slowdown in growth. By the year 2030, when the entire baby boom generation will be older than 65, the SWCI region's senior population will have grown by nearly 70 percent over the prior two decades (see Figure 4). Over this period, the share of the region's population age 65 or older will jump from 13 percent to 21 percent. The older adult population will shift the percentages as the boomers graduate from the "older adult" (age 45-64) bracket while all the other age groups will likely see very modest gains. The upshot of this trend is that the natural increase of the population—which typically accounts for the majority of the state's growth—will decline over the next three decades before beginning to rise again sometime after 2040.

Figure 4: Population Projections by Age, SWCI Region, 2010 to 2030



Source: Indiana Business Research Center

Within the SWCI region, this growth in the senior age group will single-handedly drive total population gains in several counties while only moderating declines in many others. But this senior-driven growth has the effect of masking what the IBRC projects will be relatively swift declines in the working-age populations in many SWCI communities. As Table 5 highlights, seven counties in the region already experienced a decline in their labor force during the last decade. The tough economy in 2010 certainly played a role in this drop, but the aging population was also a key factor. Even with the economy generally improving since then, it will be a challenge to offset the overarching demographic forces.

Unless there are significant shifts in migration trends or labor force participation rates, labor force declines in many of these same counties will continue in this decade and accelerate in the next one. In the SWCI region as a whole, the labor force is expected to grow 0.2 percent per year between 2010 and 2020 but then decline by 0.1 percent annually in the next decade. With Monroe County not counted in the group, these rates fall to -0.1 percent and -0.5 percent, respectively.

Table 5: Labor Force Projections, 2010 to 2030

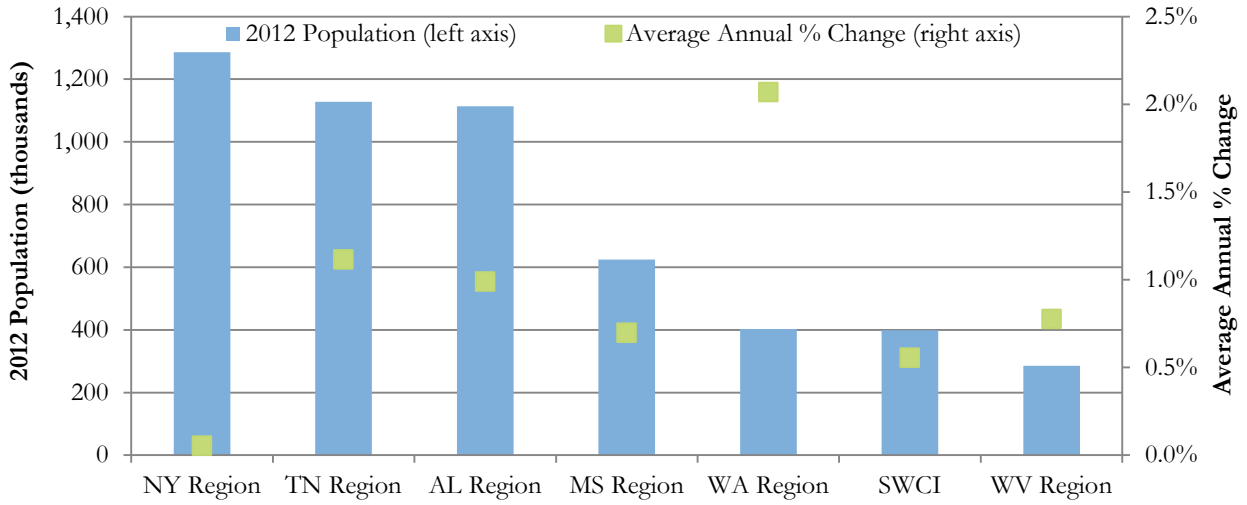
	Labor Force (thousands)				Average Annual Percent Change		
County	2000	2010	2020	2030	2000-2010	2010-2020	2020-2030
Brown	7.7	7.6	7.1	6.4	-0.17%	-0.65%	-1.07%
Crawford	4.9	5.0	4.7	4.3	0.12%	-0.58%	-0.86%
Daviess	13.9	15.2	16.0	16.6	0.87%	0.52%	0.39%
Dubois	21.4	22.0	22.7	21.7	0.27%	0.28%	-0.43%
Greene	16.1	15.7	15.2	14.2	-0.27%	-0.34%	-0.65%
Lawrence	23.0	21.4	20.7	19.2	-0.72%	-0.34%	-0.73%
Martin	5.1	5.0	4.7	4.4	-0.22%	-0.62%	-0.68%
Monroe	64.8	69.4	74.8	78.7	0.69%	0.76%	0.51%
Orange	9.2	9.1	9.1	8.6	-0.11%	-0.09%	-0.51%
Owen	10.9	10.5	9.9	9.0	-0.36%	-0.55%	-0.97%
Washington	13.8	13.6	13.7	13.2	-0.18%	0.09%	-0.33%
SWCI Region	190.9	194.4	198.4	196.4	0.18%	0.21%	-0.10%
SWCI Region*	126.1	125.0	123.6	117.6	-0.09%	-0.11%	-0.50%
Indiana	3,120.9	3,253.0	3,370.3	3,362.2	0.42%	0.36%	-0.02%

*Figures represent the SWCI region excluding Monroe County.
Source: Indiana Business Research Center

SWCI Region in Perspective: Population Change

Among SWCI's peer regions, the Richland-Pullman, WA area has experienced the greatest pace of population growth since the year 2000 with an average annual population gain of 2.1 percent (see Figure 5). The peer regions in Tennessee and Alabama had the next-fastest growth rates at 1.1 percent and 1.0 percent per year, respectively. The Rome-Syracuse, NY area is the most populous peer region, but it has barely grown over the last dozen years (0.1 percent per year). The SWCI region ranks sixth out of the seven regions in both population size and growth rate.

Figure 5: 2012 Population and 2000-to-2012 Population Growth Rates, Peer Regions

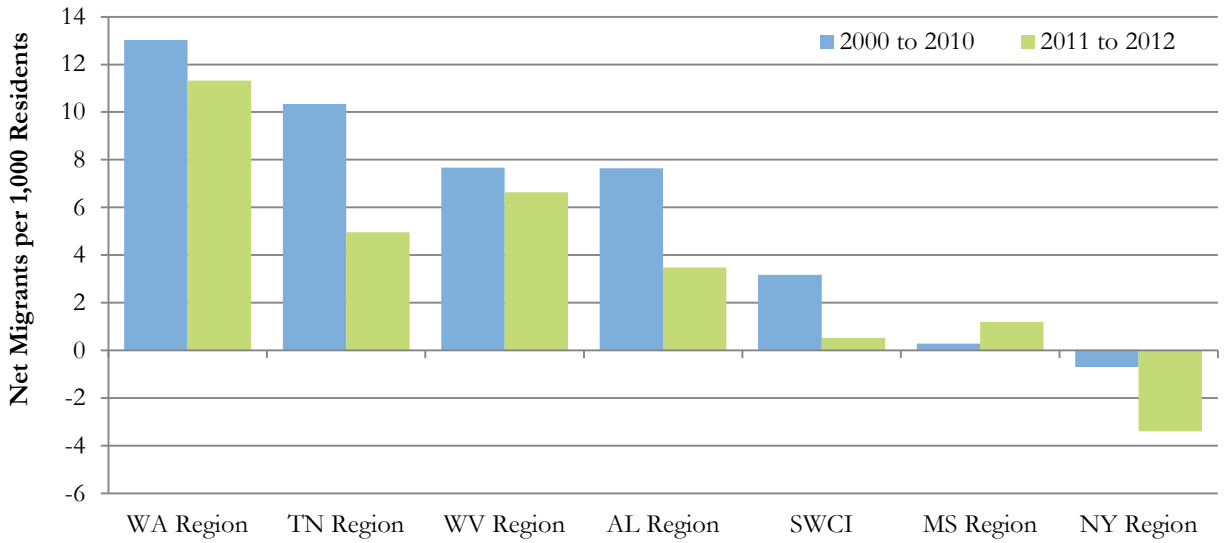


Source: U.S. Census Bureau Population Estimates (Vintage 2012)

In the WA region, the area around the Pacific Northwest National Laboratory has been the engine of population growth. Benton and Franklin counties—home to the so-called Tri-Cities area of Richland, Pasco and Kennewick—combine to account for nearly 90 percent of the region's growth over this period. Whitman County, WA (home to Washington State University) has seen comparatively light growth. In the Tennessee region, by contrast, the counties that are home to the Oak Ridge National Laboratory are among the most slowly growing in the region, while Knox County (Knoxville/University of Tennessee) and Sevier County (Great Smoky Mountain National Park) have had the largest gains. Madison County, AL (Huntsville) and neighboring Limestone County combined to account for 71 percent of the Alabama region's growth.

Not surprisingly, the WA region has also had the strongest rates of net in-migration with a net inflow of 13 residents per 1,000 population annually in the last decade and a slightly lower rate of 11.3 over the last two years (see Figure 6**)**. The SWCI region had the fifth-highest net migration rate between 2000 and 2010, but it has slipped to sixth more recently. All of the regions with the exception of the MS region had lower rates of net migration in 2011 and 2012 than they did in the preceding decade.

Figure 6: Average Annual Net Migration Rates per 1,000 Residents, Peer Regions



Sources: U.S. Census Bureau Population Estimates (Vintage 2012) and the Applied Population Laboratory, University of Wisconsin

Education

Twenty-seven public school corporations and approximately 26 private schools serve the SWCI region's K-12 population; three postsecondary institutions also serve the region. Over the past 11 years the SWCI region has seen a modest decline in adults with no more than a high school diploma, and corresponding increases in various levels of college education including certificates and associate, bachelor's and graduate/professional degrees (see Table 6). Compared to Indiana statewide percentages, the SWCI region has fewer individuals with at least some college education. The region, however, has experienced a slightly stronger decline than the state among those with only a high school diploma or less. Not surprisingly, Monroe County (home of Indiana University) had the largest percentage of bachelor's degrees or higher—far above the state average—and the smallest percentage of those with a high school diploma or less. In nearly all the other counties, at least half the adult population has a high school diploma or less, despite a slow transition to higher education attainment over the past 11 years.

Table 6: Educational Attainment of the SWCI Region, 2011 and Percentage Point Change since 2000

	Bachelor's Degree or Higher		Some College or Associate Degree		High School Diploma or Less	
	2011	Percentage Point Change	2011	Percentage Point Change	2011	Percentage Point Change
Indiana	22.7%	3.3	28.1%	2.6	49.2%	-5.9
SWCI	22.1%	2.9	25.4%	3.4	52.6%	-6.2
Monroe	42.5%	2.8	25.1%	2.4	32.5%	-5.2
Brown	22.9%	4.4	27.4%	1.1	49.7%	-5.5
Dubois	19.7%	5.2	24.2%	2.9	56.2%	-8.1
Lawrence	12.9%	2.2	25.8%	5.5	61.3%	-7.1
Crawford	12.5%	4.1	20.1%	3.0	67.4%	-7.1
Orange	12.2%	2.1	22.8%	4.4	65.0%	-6.5
Daviess	11.8%	2.1	25.0%	2.8	63.2%	-4.9
Greene	11.0%	0.5	30.3%	5.0	58.8%	-5.5
Washington	10.3%	0.1	22.9%	2.1	66.7%	-2.2
Martin	9.5%	0.6	30.7%	7.6	59.9%	-8.2
Owen	9.1%	0.0	25.3%	3.0	65.6%	-3.0

Source: U.S. Census Bureau, 2000 Census data and 2011 American Community Survey, 5-year estimates

The SWCI region has several well-performing schools, an important consideration for parents moving into the area. Twenty of the 27 school corporations with high schools in the region were in the top half of Indiana school corporations for average SAT scores (2011-2012), with two (Bloomington North and Bloomington South High Schools) in the state's top 50 on this measure. Beginning in the 2011-2012 school year, the state began assigning A-F "grades" to schools based on their end-of-course assessment results, student

improvement levels, graduation rates and college and career readiness scores. Of the 131 schools (public and private) in the SWCI region that were graded by the Indiana Department of Education, 60.3 percent of the schools received either an "A" or "B". An additional 22.1 percent were rated as average or "C" with the remainder receiving lower grades.

SWCI in Perspective: Educational Attainment

Among peer regions, Table 7 shows that the Mississippi region had the largest percentage of adults (25 and older) with a bachelor's degree or higher. The Washington region had the highest percentage with some college or an associate degree, while the West Virginia region had the highest percentage with a high school diploma or less. SWCI's educational mix is relatively comparable to the other regions, although it had the lowest percentage with a bachelor's degree or more. It also had the second lowest percentage with some college or an associate degree and the second largest share of adults with a high school diploma or less – second only to the West Virginia region on both counts.

SWCI, however, did experience the largest decline (6.2 percentage points) since 2000 in the concentration of adults (25 years and older) who had only a high school diploma or less. This decline coincides with percentage point increases in SWCI residents with some college or an associate's degree (3.4 percentage points), and those with a bachelor's degree or higher (2.9 percentage points).

All peer regions saw similar educational attainment gains since 2000, except for the New York region, where a 1.7 percentage point increase in the concentration of adults with bachelor's degree or higher was offset by a corresponding percentage point decline in the concentration of adults with some college or an associate's degree. This left the proportion of adults in the New York region with high school diploma or less at 51.4 percent—essentially unchanged since 2000.

Table 7: Educational Attainment, Peer Regions, 2011 and Percentage Point Change since 2000

Region	Bachelor's Degree or Higher		Some College or Associate Degree		High School or Less	
	2011	Percentage Point Change	2011	Percentage Point Change	2011	Percentage Point Change
AL Region	22.5%	3.2%	28.0%	2.5%	49.5%	-5.7%
SWCI	22.1%	2.9%	25.4%	3.4%	52.6%	-6.2%
MS Region	28.1%	3.1%	30.5%	1.2%	41.4%	-4.2%
NY Region	22.9%	1.7%	25.7%	-1.7%	51.4%	0.0%
TN Region	22.3%	3.0%	26.5%	2.9%	51.2%	-5.9%
WA Region	25.8%	0.8%	34.4%	1.5%	39.9%	-2.2%
WV Region	22.5%	2.9%	23.2%	2.2%	54.2%	-5.1%

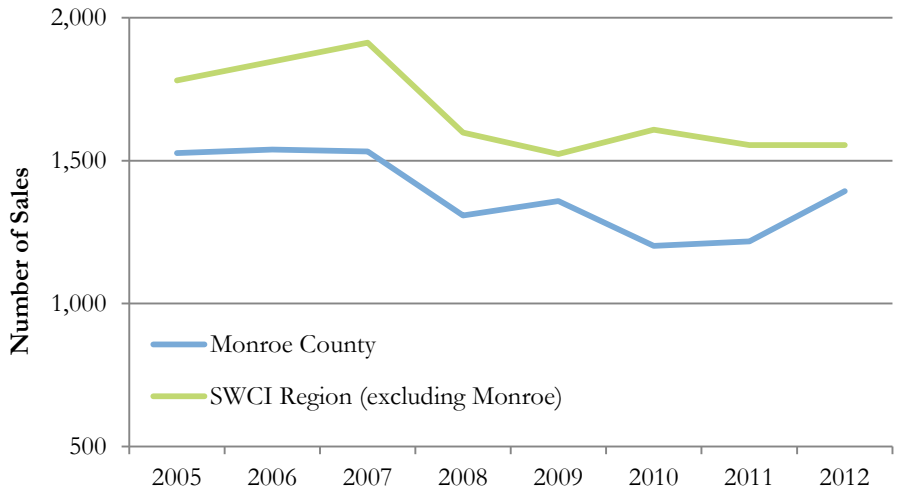
Source: U.S. Census Bureau

Housing

An active yet affordable housing market is typically one sign of regional economic vitality. The national housing bust and subsequent Great Recession that began in late 2007 impacted home sales in the SWCI region. In 2007, the region set an all-time high in annual existing-home sales at roughly 3,440. After 2007, however, the number of sales declined 20 percent over four consecutive years to a low of 2,745 in 2011. Existing home sales in the area finally began to rebound in 2012 with a nearly 7 percent increase over 2011. By comparison, Indiana home sales declined a little more than 30 percent from a peak in 2006 to a trough in 2011, and the state posted a 15 percent rise in sales in 2012.

Figure 7 shows that Monroe County, with a 15 percent increase of its own, played a large role in the region's stronger home sales in 2012. Taking the rest of the region as a whole, there was no change in the number of home sales between 2011 and 2012. Some notable trends within the region in 2012 include a 12 percent sales increase in Dubois County (to 354), a five percent decline in Lawrence County (to 350) and a seven percent drop in Daviess County (to 190).

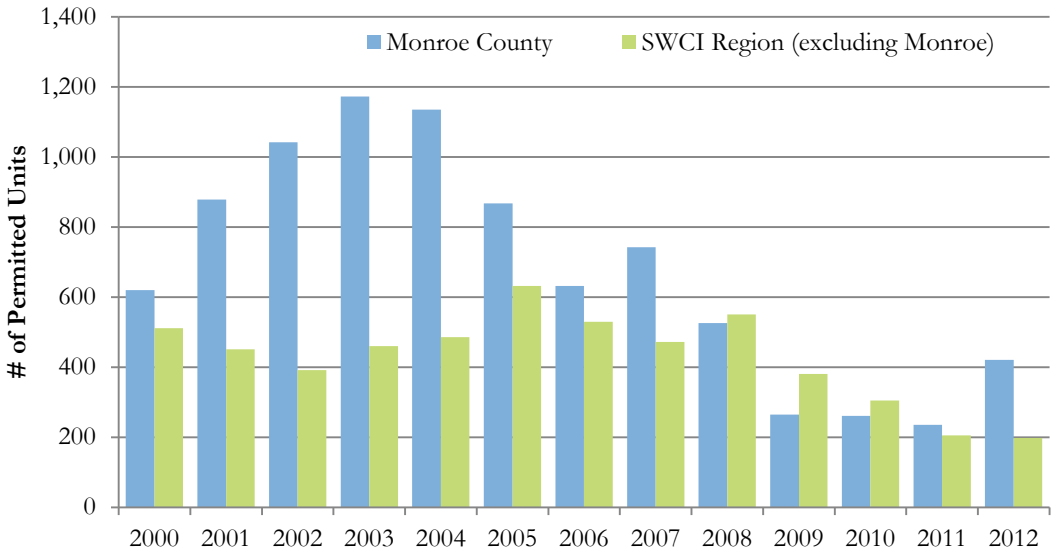
Figure 7: Existing Home Sales, 2005 to 2012



Source: IBRC, using Indiana Association of Realtors data

Of course, the last few years have been even harder on the residential construction industry. Fueled by a building surge in Monroe County, residential building permits peaked in the SWCI region in 2003 at roughly 1,630 units. By 2011, permits in the area were down 73 percent to about 440 units. As with home sales, Monroe County saw a sizable rebound in construction activity in 2012, but permits throughout the rest of the area remained flat (see Figure 8).

Figure 8: Residential Building Permits, 2000 to 2012



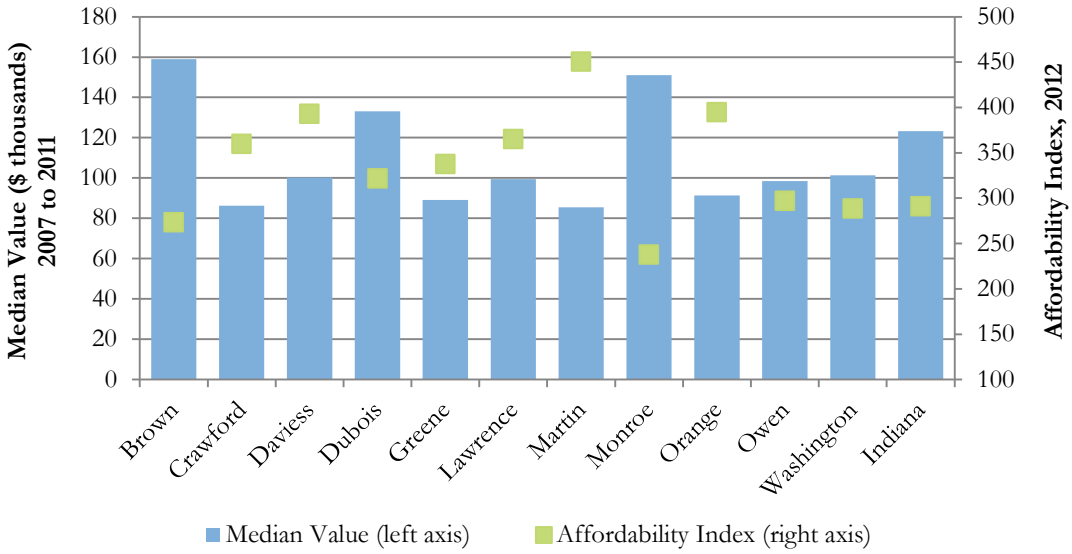
Source: U.S. Census Bureau

Within the SWCI region, only Brown County ($159,000), Monroe County ($151,000) and Dubois County ($133,000) have median home values greater than the state average of $123,300 (see Figure 9). Washington, Daviess and Lawrence counties were the only other communities with median values at or above $100,000. Martin County has the area's lowest median home value at roughly $85,000.

An analysis of home values is more meaningful when considered within the context of an area's typical family income. Moody's Analytics combines these factors in its single-family housing affordability index, which is based on an area's annual median existing-home sales price (not the median value of housing stock), median family income and effective mortgage interest rates. Index values are calibrated to 100, meaning that in a community with a value of 100, the typical family income is just enough to qualify for a mortgage (with a 20 percent down payment) on a median-priced home. The higher the index value, the more affordable the housing is.

By this measure, housing is considered very affordable throughout the SWCI region in 2012. Monroe County, for instance, has the region's lowest affordability index value at 238, which can be interpreted to mean that the county's median family income in 2012 was more than twice the income needed to qualify for a mortgage on the median-priced home. Brown and Washington counties were the only other communities in the region with index values below the state average of 291. Based on the affordability index, Martin (450), Orange (395) and Daviess (393) counties have the most affordable housing in the region.

Figure 9: Median Home Value and Housing Affordability Index



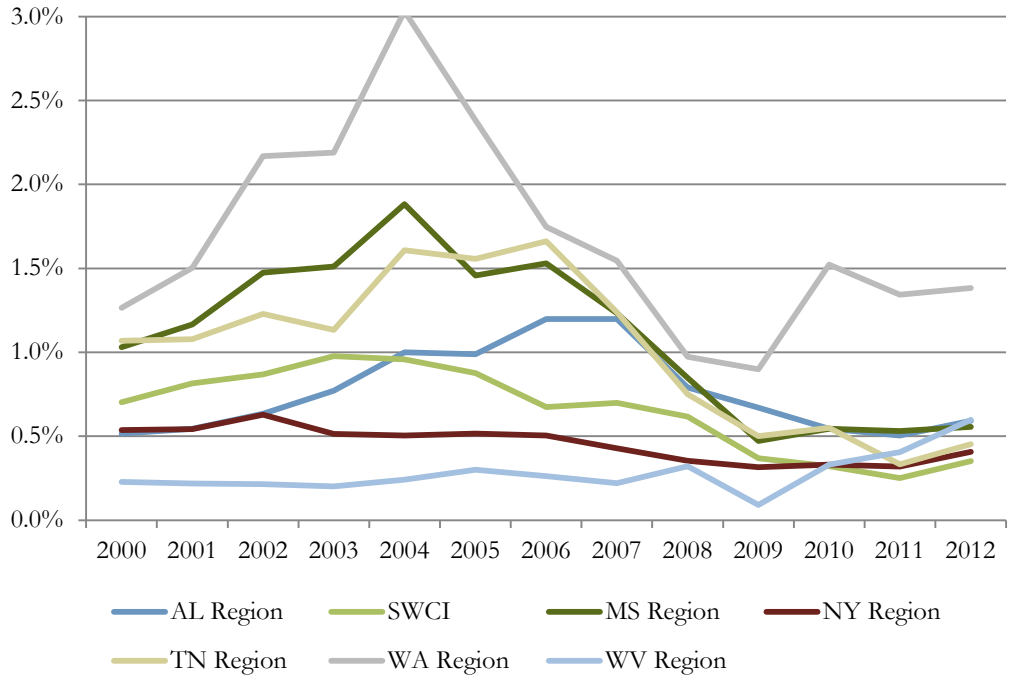
Sources: U.S. Census Bureau 2011 American Community Survey 5-year estimates and Moody's Economy.com

SWCI Region in Perspective: Residential Construction and Housing Affordability

Most of SWCI's peer regions experienced a decline in residential construction at some point in the last few years. For example, the number of annual residential building permits in the TN region fell by nearly 80 percent from 2006 to 2011, and the MS region saw permits slip by 74 percent from a peak in 2004 to a low in 2009.

Between the years 2000 and 2009, the peer regions varied substantially in the rate of residential construction (i.e., the number of permits as a share of total housing stock). However, with the exception of the WA region—which has consistently posted the group's highest rate of residential construction—there has been very little difference in construction rates among the peers in the last few years (see Figure 10). In 2012, for instance, the number of building permits in each region amounted to between 0.4 percent and 0.6 percent of total housing stock. Over the last two years, the SWCI region has had the lowest rate of residential construction among the peers.

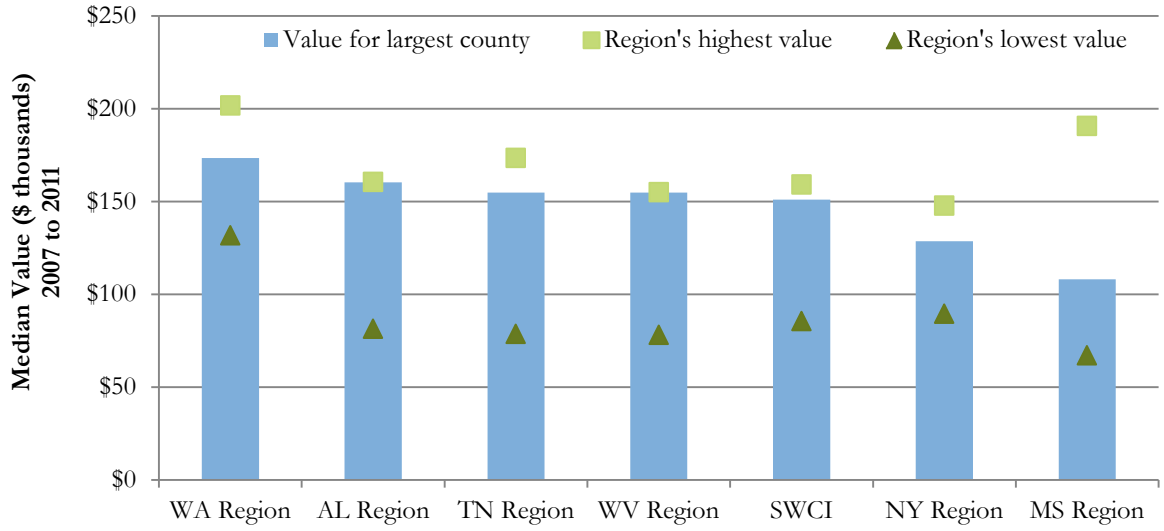
Figure 10: Annual Residential Building Permits as a Share of Total Housing Stock



Sources: U.S. Census Bureau and Moody's Analytics

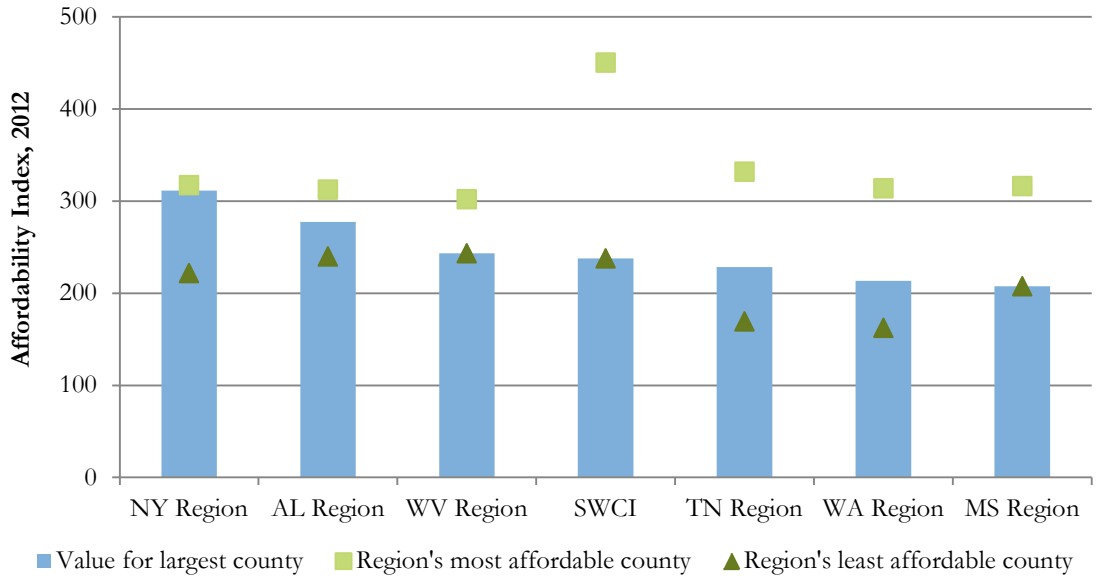
In comparing each region's largest county, Figure 11 and Figure 12 indicate that SWCI's Monroe County is roughly in the middle of the peer group with regard to home values and housing affordability. Monroe has the fifth-lowest median value and ranks fourth in most-affordable housing. Affordability rates much higher in other parts of the SWCI region, however. Looking at all the individual counties comprising all these regions, the top six counties for affordable housing among the entire set are in the SWCI region. Furthermore, there are 21 counties in the peer regions with an affordability index value that is lower (i.e., more expensive) than Monroe County's.

Figure 11: The Range of Median Home Values in Peer Regions



Source: U.S. Census Bureau's 2011 American Community Survey 5-year estimates

Figure 12: The Range of Housing Affordability Index Values in Peer Regions



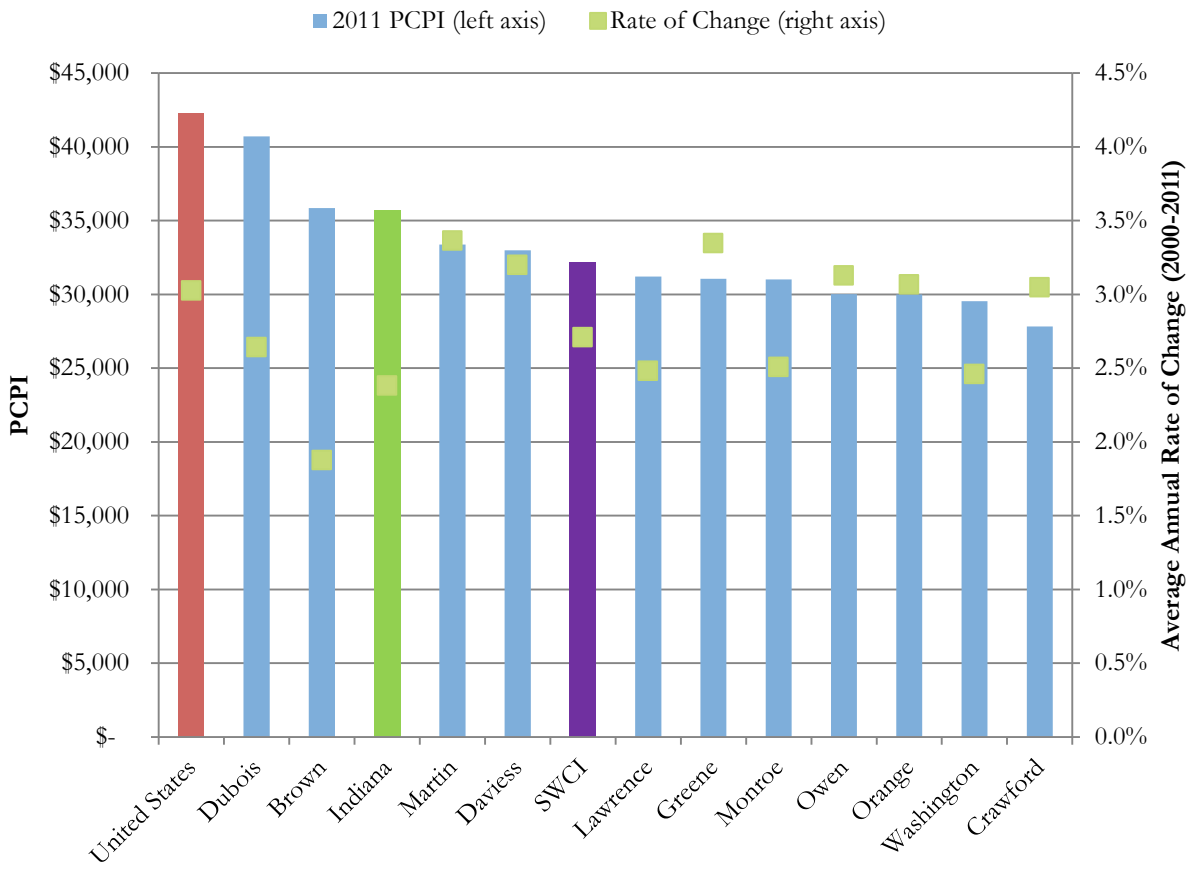
Source: Moody's Analytics

Personal Income

Personal income is a broad indicator of a region's wealth reflecting many sources of income. It includes wages and salaries, any supplements to wages and salaries (e.g., bonuses), proprietors' income, investment income and personal current transfer receipts, but not contributions for government social insurance. A common way of expressing personal income is per capita (PCPI), which offers a level playing field for comparing personal income across regions varying widely in population.

Figure 13 depicts the PCPI for each of the counties in the SWCI region as well as Indiana and the U.S. Dubois County had the region's highest PCPI in 2011 at $40,718, and Crawford County had the lowest at $27,820. Dubois County's PCPI is not far below the national average, lagging by just $1,580. Of the SWCI counties, Martin County had the largest average annual growth rate over the past 11 years at 3.4 percent, followed closely by Greene County at 3.3 percent. These two counties are home to many of the defense industry workers at and near NSWC Crane, whose earnings are well above average. And though many Monroe County workers earn relatively high wages, the large student population holds down the PCPI.

Figure 13: Per Capita Personal Income, SWCI Region, 2011



Source: IBRC using Bureau of Economic Analysis data

SWCI in Perspective: Personal Income

The SWCI region's total personal income was the second lowest of the seven regions, and it has grown the most slowly over the ten years from 2001 to 2011. Factoring in population, the SWCI region falls to last place for PCPI, $1,838 behind the next-lowest-PCPI region (AL region). To shed light on the composition of personal income, Table 8 shows the proportion of total personal income accounted for by each of its main components. In all of the regions the percentage contributions are fairly similar to the nation in all categories except personal current transfer receipts (which account for higher shares of total personal income among peers than the national average) and dividends, interest and rent (lower than the U.S.).

- Net earnings by place of residence (which includes wages earned at the workplace adjusted for government and social insurance contributions and residence) comprises the largest share of personal income, across all of the regions accounting for a little under two-thirds of total personal income. Wages and salaries are the primary component of net earnings, followed by supplements to wages and salaries (i.e., employer contributions to employee pension and insurance funds and for government social insurance).
- The smallest major category of income for all areas (except the U.S.) was dividends, interest and rent, comprising less than one-sixth of each peer region's personal income, slightly below the national share.
- The remainder of personal income is derived from personal current transfer receipts, which are government payments to individuals for which no services are performed. Each of the peer regions is more dependent on such government payments than are residents of the nation, likely attributed to medical benefits and retirement and disability insurance benefits.

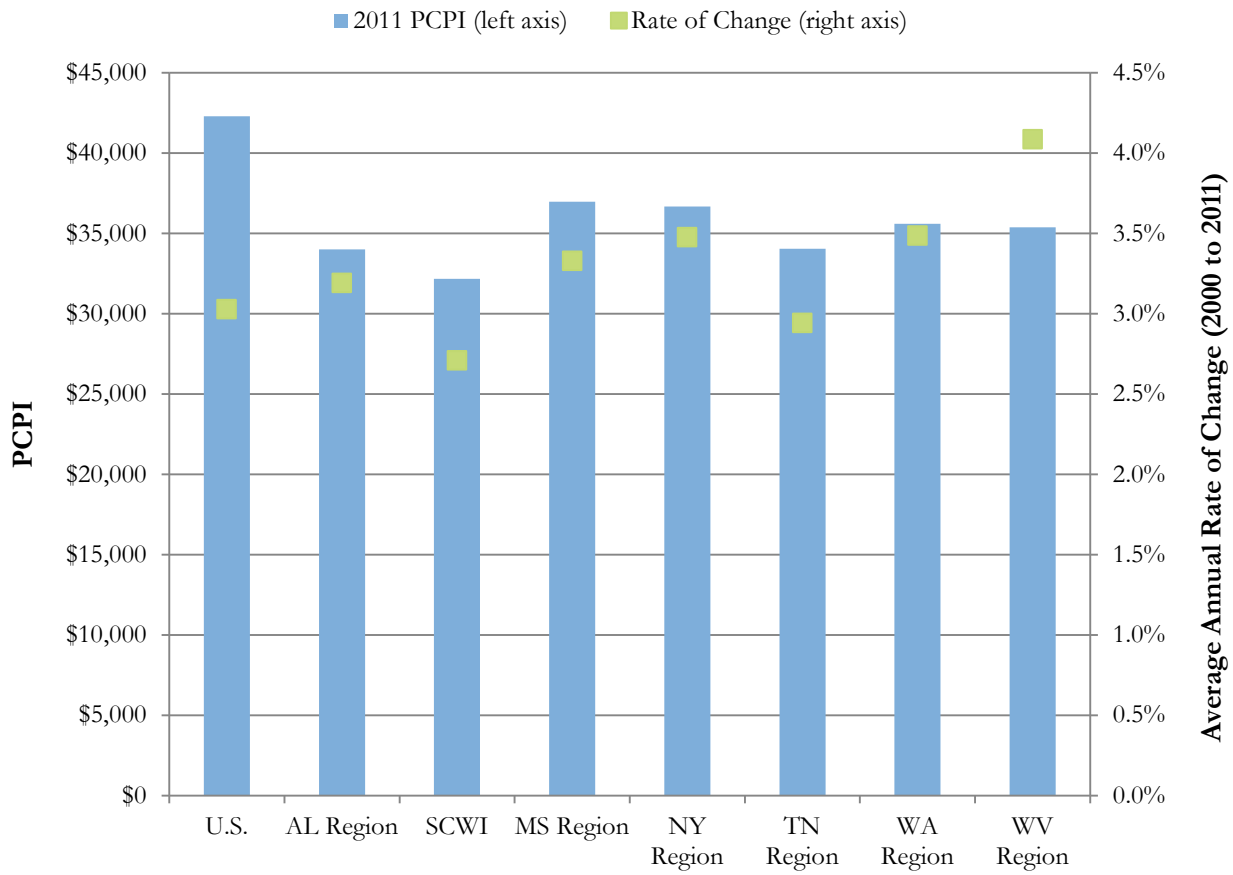
Table 8: Personal Income and its Composition, National Peers, 2011

	U.S.	AL Region	SWCI Region	MS Region	NY Region	TN Region	WA Region	WV Region
Total Personal Income *(billion $)*	$13,191.3	$37.7	$12.8	$23.0	$47.3	$38.2	$14.1	$10.0
Average Annual Rate of Change ('01-'11)	3.9%	4.2%	3.4%	4.0%	3.6%	4.0%	5.4%	4.6%
Per Capita Personal Income	$42,298	$34,017	$32,179	$36,980	$36,682	$34,054	$35,606	$35,384
Personal Income Components:								
Net earnings by place of residence	64.6%	63.1%	63.8%	66.2%	61.3%	62.8%	65.4%	66.1%
Net earnings by place of work	71.5%	70.9%	64.6%	74.9%	66.4%	69.0%	74.4%	75.8%
Wage and salary disbursements	70.4%	72.1%	70.1%	68.0%	70.8%	70.1%	70.8%	68.6%
Supplements to wages and salaries	17.4%	19.7%	19.9%	18.1%	19.3%	16.6%	17.4%	20.2%
Proprietor's income	12.2%	8.1%	10.0%	13.9%	9.9%	13.4%	11.7%	11.1%
Dividends, interest and rent	18.0%	15.3%	15.2%	13.0%	15.3%	13.1%	15.4%	11.7%
Personal current transfer receipts	17.5%	21.6%	21.0%	20.7%	23.4%	24.0%	19.2%	22.2%

Source: Bureau of Economic Analysis

Figure 14 graphically depicts each region's PCPI and its average annual PCPI growth rate since 2000. As noted above, the SWCI region lags all the other regions and also had the weakest growth rate. Average annual PCPI growth in most regions exceeded the national rate of 3.0 percent (exceptions were Indiana and Tennessee). While the WV region's PCPI had the strongest growth (4.1 percent) since 2000, its PCPI is still more than $6,900 below the national value.

Figure 14: Per Capita Personal Income, National Peers, 2000 to 2011



Source: Bureau of Economic Analysis

Economic Distress

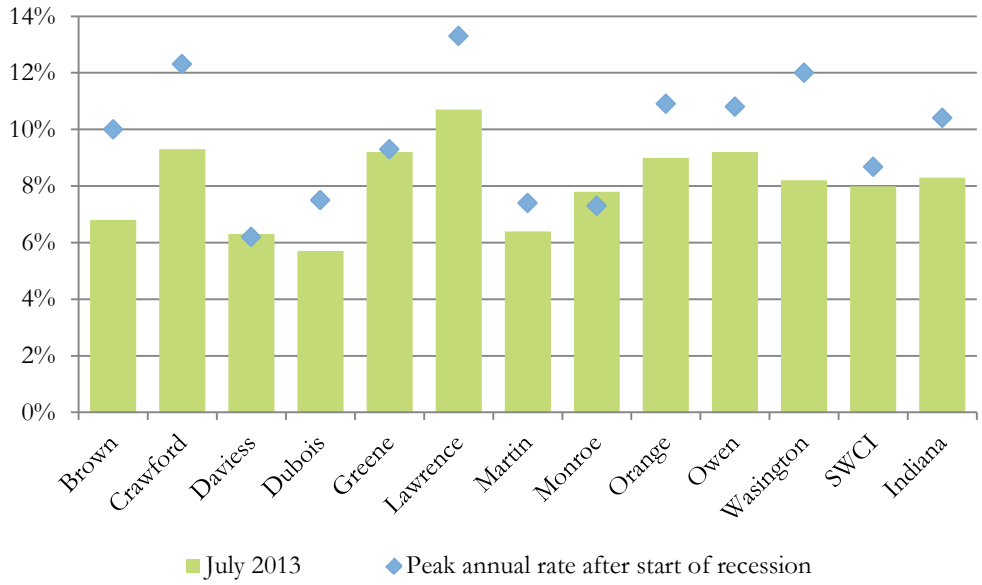
Regional planners and policymakers often analyze the extent of economic distress a region experiences to assess the need for remedial actions and to evaluate applications for government assistance. This section presents two indicators – poverty rate and unemployment – often used to measure economic distress.

Unemployment

SWCI communities exhibited a wide range of unemployment rates in July 2013 with five counties below the Indiana average of 8.3 percent, led by Dubois (5.7 percent), Daviess (6.3 percent) and Martin (6.4 percent) counties (see Figure 15). At the other end of the spectrum, Lawrence County (10.7 percent) has struggled with high unemployment since the onset of the Great Recession. Unemployment rates in Crawford (9.3 percent) Greene (9.2 percent) and Owen (9.2 percent) counties were also quite a bit higher than the state average.

All told, the SWCI area had an unemployment rate of 8.0 percent in the summer of 2013. This mark is only 0.7 percentage points below the region's post-recession peak (based on annual averages) of 8.7 percent in 2010. This comparatively modest improvement is due in large part to the somewhat lower, but persistently steady unemployment rate in Monroe County.[2]

Figure 15: Unemployment Rates, SWCI Counties



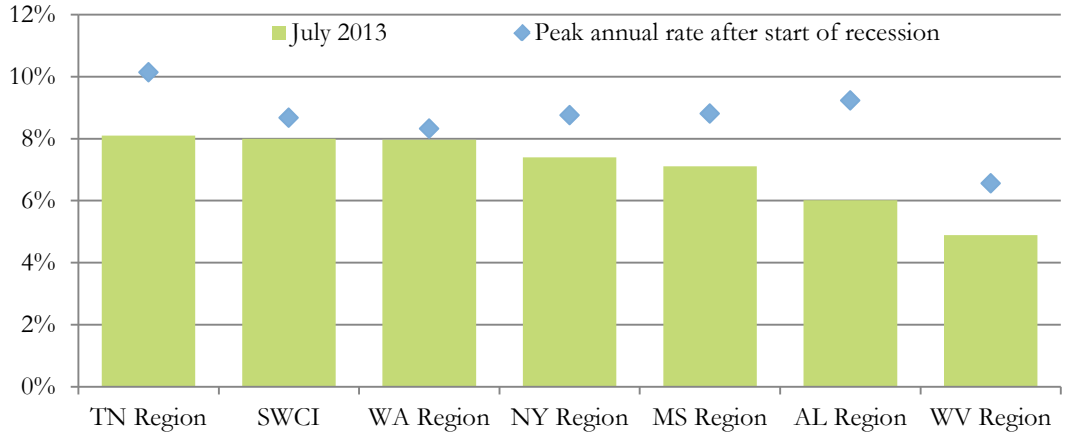
Source: Bureau of Labor Statistics, Local Area Unemployment Statistics

[2] It may appear odd that Monroe County's July 2013 unemployment rate is higher than its "peak" rate since the recession began. Monroe County's unemployment rates tend to rise notably in the summer months, and county-level unemployment data are not seasonally adjusted. The peak annual rates shown above, however, are not influenced by this seasonal effect.

SWCI Region in Perspective: Unemployment Rate

The SWCI area is one of three peer regions with unemployment rates above the U.S. average of 7.7 percent in July 2013. The TN region had the highest rate at 8.1 percent, and the WA region matched SWCI's mark of 8.0 percent. The WV region (4.9 percent) and AL region (6.0 percent) had the lowest unemployment rates in the peer comparison.

Figure 16: Unemployment Rates, Peer Regions



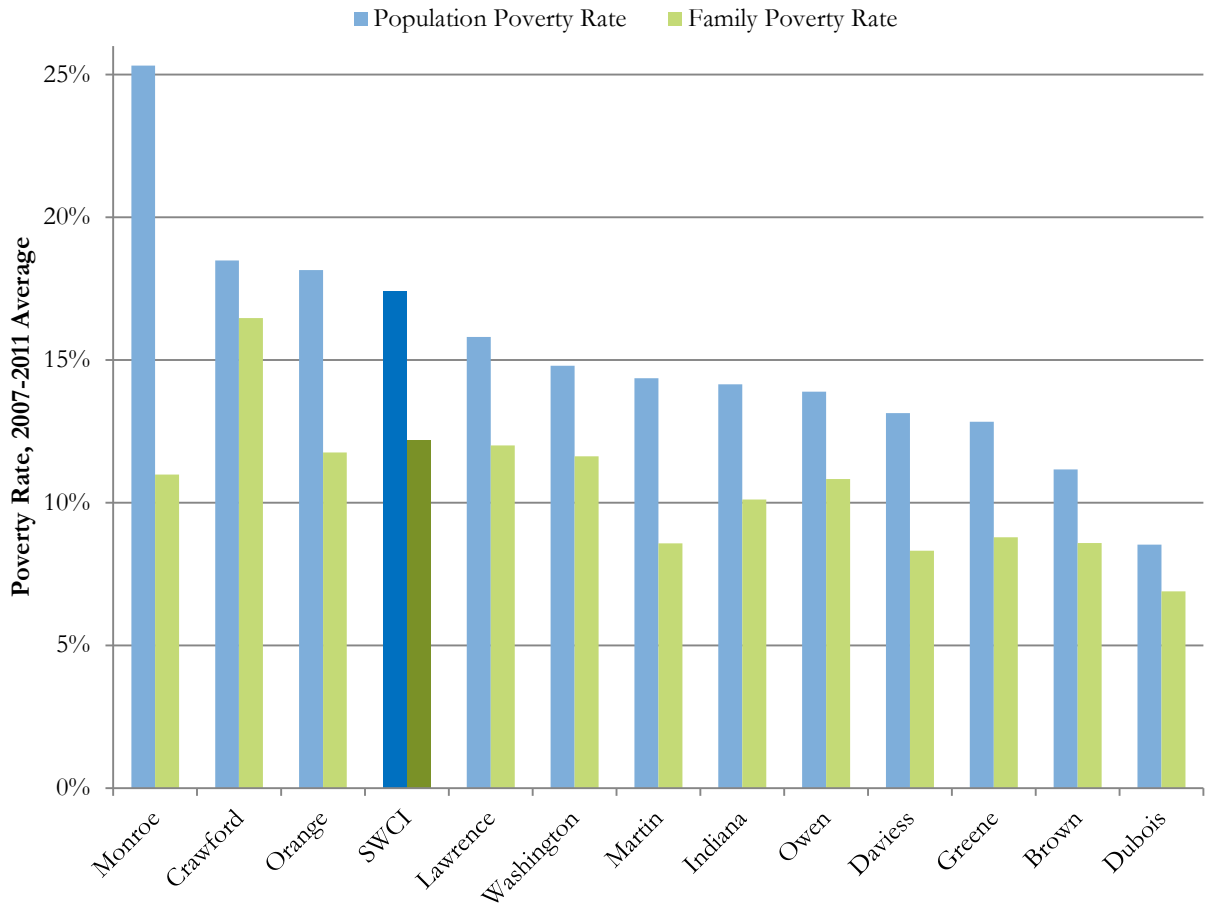
Source: Bureau of Labor Statistics, Local Area Unemployment Statistics

Poverty

The SWCI region includes counties that historically have had higher poverty rates than the state at large. Monroe County, the home of Indiana University, for example, gives the impression of being a very poor county. However, the American Community Survey's five-year poverty estimates do not adjust for the presence of tens of thousands of college students who expect to earn very small incomes while in school. High poverty rates are quite common in counties with large college-student populations. Figure 17 highlights this effect in the stark contrast in poverty rates between families and individuals (the majority of students live in non-family households) in Monroe County.

As seen in Figure 17, Monroe County surges past the other SWCI counties with a 25.3 percent poverty rate among all individuals, yet the poverty rate for families is much more modest at 11 percent. Following Monroe County, Crawford and Orange counties have individual poverty rates of 18.5 and 18.1 percent, respectively. These three counties helped pull the SWCI region's poverty rate up to 17.4 percent. At the other end of the spectrum, Dubois County—which also had the highest PCPI—had the lowest poverty rate for both individuals and families at 8.5 and 6.9 percent, respectively.

Figure 17: Poverty Rates, SWCI Region, 2007-2011 Average

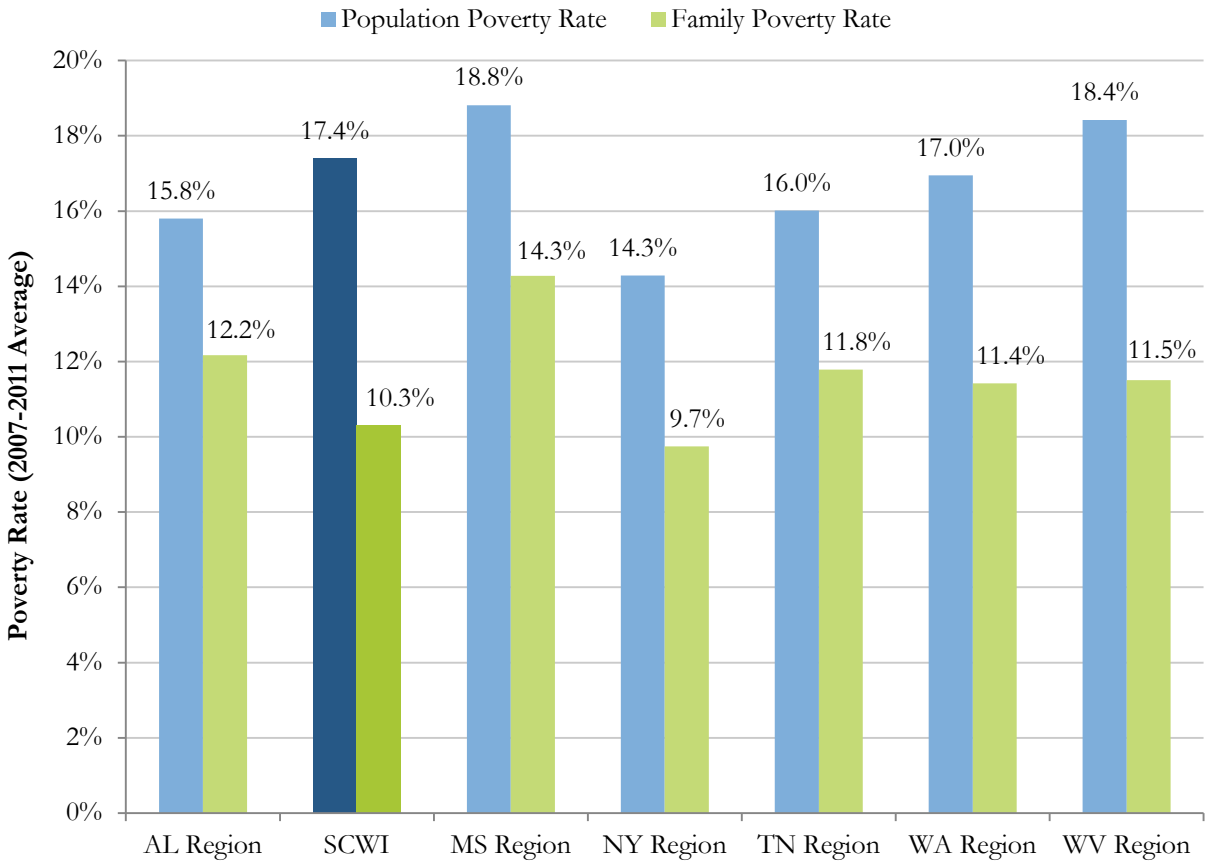


Source: IBRC using Census Bureau's American Community Survey, 5-year estimates

SWCI in Perspective: Economic Distress

Among its peers (Figure 18), the SWCI region is the middle of the pack regarding its overall-population poverty rate, surpassed by Mississippi and West Virginia. Unfortunately, in all regions more than one out of every seven individuals lives in poverty. However, when one looks at poverty rates for families, the SWCI region had the second lowest poverty rate at 10.3 percent. For all the peers the family poverty rates were several percentage points lower than the overall poverty rate, with the incidence of families below the poverty level ranging from about one-in-eight to one-in-ten.

Figure 18: Poverty Rates, National Peers, 2007-2011 Average



Source: IBRC using Census Bureau's American Community Survey, 5-year estimates

Commuting Patterns

The availability of good jobs in other regions and the willingness of workers to travel mean commuting has become a way of life for many workers. The economic effects of commuting reach beyond the individual worker, impacting the broader community. Thus, this section examines workers commuting to and from SWCI and its peer regions. Given the diverse sizes of SWCI counties, five-year-averages from the American Community Survey were used for data reliability.

Table 9 shows that the county employing the most workers in the 2006-2010 period was Monroe, followed by Dubois County. In both of these counties, only about one of every nine labor force members commutes to a job outside the county. Because there are so many jobs locally, far more people commute into the county to work than residents commuting out of the county to jobs elsewhere.

The other nine counties in the region experience a substantial amount of commuting flow, both within and outside of the SWCI region. Brown and Washington counties experience the highest percentages of residents who work outside of the SWCI region, primarily to the Indianapolis and Louisville areas, respectively. As expected, Dubois and Monroe counties attracted the largest number of commuters to their communities, although Dubois County pulls in a higher share of workers from outside the SWCI region than Monroe County (20.0 percent versus 11.3 percent).

Table 9: SWCI Region Commuting Trends by County, 2006-2010

County	# Who Live in County and Work (implied resident labor force)	# Who Live and Work in County	# Who Live in County but Work Elsewhere		# Who Work in County (implied workforce)	# Who Live and Work in County	# Who Live Elsewhere but Work in County	
			Out of Region	Within Region			Out of Region	Within Region
Brown								
Number	6,819	2,535	3,412	872	3,525	2,535	572	418
Percentage	100.0%	37.2%	50.0%	12.8%	100.00%	71.9%	16.2%	11.9%
Crawford								
Number	4,414	1,639	1,743	1,032	2,475	1,639	439	397
Percentage	100.0%	37.1%	39.5%	23.4%	100.00%	66.2%	17.7%	16.0%
Daviess								
Number	14,044	9,287	1,816	2,941	11,769	9,287	1,520	962
Percentage	100.0%	66.1%	12.9%	20.9%	100.00%	78.9%	12.9%	8.2%
Dubois								
Number	20,929	18,482	1,703	744	27,411	18,482	5,483	3,446
Percentage	100.0%	88.3%	8.1%	3.6%	100.00%	67.4%	20.0%	12.6%
Greene								
Number	13,985	6,272	2,546	5,167	7,944	6,272	1,056	616
Percentage	100.0%	44.8%	18.2%	36.9%	100.00%	79.0%	13.3%	7.8%
Lawrence								
Number	19,171	12,116	817	6,238	14,554	12,116	381	2,057
Percentage	100.0%	63.2%	4.3%	32.5%	100.00%	83.2%	2.6%	14.1%
Martin								
Number	4,786	2,685	191	1,910	7,852	2,685	485	4,682
Percentage	100.0%	56.1%	4.0%	39.9%	100.0%	34.2%	6.2%	59.6%
Monroe								
Number	61,990	54,372	4,323	3,295	74,552	54,372	8,440	11,740
Percentage	100.0%	87.7%	7.0%	5.3%	100.0%	72.9%	11.3%	15.7%
Orange								
Number	7,904	5,223	845	1,836	6,892	5,223	299	1,370
Percentage	100.0%	66.1%	10.7%	23.2%	100.0%	75.8%	4.3%	19.9%
Owen								
Number	9,418	3,707	2,733	2,978	5,658	3,707	678	1,273
Percentage	100.0%	39.4%	29.0%	31.6%	100.00%	65.5%	12.0%	22.5%
Washington								
Number	12,062	6,020	5,540	502	6,921	6,020	543	358
Percentage	100.0%	49.9%	45.9%	4.2%	100.00%	87.0%	7.8%	5.2%

Source: IBRC using U.S. Census Bureau, 2006-2010 American Community Survey data

SWCI in Perspective: Regional Commuting Patterns

Compared to its peers, the SWCI region has the greatest amount of commuting activity; even so, 85.4 percent of SWCI residents in the 2006-2010 period both lived and worked within the region. The SWCI region thus had the highest share of workers leaving the region to jobs elsewhere (14.6 percent) despite also having the highest share of workers entering the region for employment (11.7 percent). The Tennessee peer region had very small shares of residents commuting to jobs outside the region or workers commuting into the region for employment, perhaps reflecting a scarcity of jobs and residents outside the Knoxville area within reasonable commuting distances.

Table 10: Commuting Trends, National Peers, 2006-2010 averages

Region	a) # Who Live in Region and Work (implied resident labor force)	b) # Who Work in Region (implied workforce)	c) # Who Live and Work in Region	d) # Who Live in Region but Work Elsewhere	e) # Who Live Elsewhere but Work in Region
	Percentage calculations:		c/a	d/a	e/b
AL Region					
Number	467,127	457,216	436,502	30,625	20,714
Percentage			93.4%	6.6%	4.5%
SWCI					
Number	175,522	169,749	149,853	25,669	19,896
Percentage			85.4%	14.6%	11.7%
MS Region					
Number	257,168	267,223	245,559	11,609	21,664
Percentage			95.5%	4.5%	8.1%
NY Region					
Number	581,517	572,372	542,343	39,174	30,029
Percentage			93.3%	6.7%	5.2%
TN Region					
Number	487,416	484,013	464,462	22,954	19,551
Percentage			95.3%	4.7%	4.0%
WA Region					
Number	161,062	160,894	145,994	15,068	14,900
Percentage			90.6%	9.4%	9.3%
WV Region					
Number	131,042	129,502	116,404	14,638	13,098
Percentage			88.8%	11.2%	10.1%

Source: IBRC using U.S. Census Bureau, 2006-2010 American Community Survey data

Industry Structure

Employment by Major Sector: SWCI

In 2012, the SWCI region employed an average of 147,761 individuals, virtually unchanged from ten years earlier. Only over the past two years has the region recaptured the jobs it lost during the Great Recession. As Table 11 shows, job growth has varied widely by major industry sector over the past ten years. The most rapidly growing sector (professional, scientific & technical services) grew at an average annual rate of 4.6 percent, while the arts, entertainment & recreation sector shed jobs at a 6.7 percent average annual rate.

The region's larger sectors include manufacturing, educational services and health care, totaling 44 percent of the regional workforce. Even before the recession's dramatic impact, manufacturing was losing ground, leading to a ten-year decline of 2.2 percent. On the upside, however, manufacturing has made some gains in the last two years, recovering from the recession by increasing employment 0.8 percent. Even the health care sector, which some have called "recession proof," has taken a hit recently, losing 1.4 percent of sector employment from 2010 to 2012. Educational services, however, has been a steady growth sector.

Table 11 also shows the region's Location Quotients (LQs) for each major sector. Regional LQs were calculated for each sector by dividing the sector's share of total employment in the region by the same sector's corresponding employment share in the nation as a whole. An LQ greater than 1.0 indicates that the sector is more concentrated in SWCI than the national average. Conversely, an LQ less than 1.0 reflects a sector that is less concentrated in this region than "average" for the nation as a whole.[3]

[3] For instance, say Industry X accounts for 10 percent of all jobs in the national economy, but 20 percent of all jobs in a given region. Industry X's location quotient in the region would then be 20/10; that is, the LQ = 2.0. This means that the industry is twice as concentrated, or specialized, in the region as it is in the nation as a whole.

Table 11: Employment by Sector, SWCI Region

				Average Rate of Change	
Industry Sector	2012 Employment	Share of Total	Employment LQ	2010-2012	2002-2012
Total, all sectors	*147,791*	*100.0%*	*1.00*	*0.4%*	*0.0%*
Manufacturing	27,125	18.3%	2.01	0.8%	-2.2%
Educational Services	20,092	13.6%	1.48	2.1%	1.5%
Health Care and Social Assistance	18,280	12.3%	0.87	-1.4%	1.6%
Retail Trade	16,812	11.3%	1.00	1.5%	-0.6%
Accommodation and Food Services	15,419	10.4%	1.16	1.6%	1.6%
Public Administration*	9,989	6.7%	1.22	2.9%	0.9%
Construction	6,372	4.3%	0.98	-0.5%	-1.2%
Professional, Scientific & Technical Services	5,269	3.6%	0.59	-2.5%	4.6%
Transportation and Warehousing	4,528	3.1%	0.79	-1.8%	-1.2%
Wholesale Trade	4,003	2.7%	0.63	3.4%	0.9%
Other Services (except Public Administration)	3,900	2.6%	0.76	0.5%	-0.2%
Administrative and Support & Waste Management and Remediation	3,731	2.5%	0.41	-5.2%	1.3%
Finance and Insurance	2,946	2.0%	0.47	-3.9%	-0.4%
Information	2,425	1.6%	0.77	-9.7%	-0.8%
Real Estate and Rental & Leasing	1,983	1.3%	0.89	6.9%	-0.1%
Utilities	1,427	1.0%	1.57	-3.0%	0.0%
Management of Companies and Enterprises	1,108	0.7%	0.49	4.5%	-2.7%
Arts, Entertainment & Recreation	1,028	0.7%	0.39	3.9%	-6.7%
Agriculture, Forestry, Fishing & Hunting	1,013	0.7%	0.75	8.7%	3.4%
Mining, Quarrying, and Oil & Gas Extraction	792	0.5%	0.88	4.4%	-3.9%

Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics. The sum of all sector employment values—derived by the IBRC to estimate suppressed and undisclosed data—will not equal to the regional employment total (the top line)—reported by BLS.

* Much NSWC Crane employment is classified as public administration in the sector presentation for SWCI. This is not the case for all federal laboratories.

Employment by Industry Cluster: SWCI

The most straightforward presentation of a region's economic profile typically examines employment (and output) by industry, classified by NAICS[4] codes. The foregoing presentation reported SWCI region jobs by NAICS super-sector (reflecting the first two digits of a 6-digit hierarchy for classifying industries).

Another analytical framework, industry clusters, has been increasingly popular in the last couple of decades. Simply put, clusters are collections of related industries that tend to locate near each other. A pioneer of cluster-based research, Professor Michael Porter of Harvard University developed a set of industry clusters based on how certain industries tend to co-locate within regions. The IBRC researchers used Porter's latest set of cluster definitions to assess the cluster structure and specialization of the SWCI and peer regions.[5] Figure 19 shows the SWCI region's 2012 employment and the 10-year employment change for the region's 15 largest clusters.

It is critical to note that the cluster labeled "education, knowledge creation and laboratory research" is not strictly a cluster defined by Porter. The researchers discovered that, in reporting its employment data to government agencies, a federal laboratory may classify its "industry" in different ways. A lab run by a private concern may consider the reported industry to be research and design, whereas a lab run by the Navy would classify its employees as national defense. Another lab may consider its work and industry to be best described as engineering services. As a result, all federal lab employees, irrespective of their industry assignment, were aggregated into the education, knowledge creation and laboratory research cluster. The other minor adjustments to the cluster definitions are detailed in Appendix A.[6]

The SWCI region's leading clusters by employment are education, knowledge creation and laboratory research; life sciences; furniture; business services; tourism and automotive. These clusters may have had varied performance over the last ten years, but with the exception of tourism, these clusters have grown respectably over the last two years, automotive especially so.

Employment has waned in the production technology & heavy machinery cluster and the media, publishing & design services cluster. In contrast, in what appears to be a turnaround from its ten-year trend, information technology and analytical instruments have surged in the last two years.

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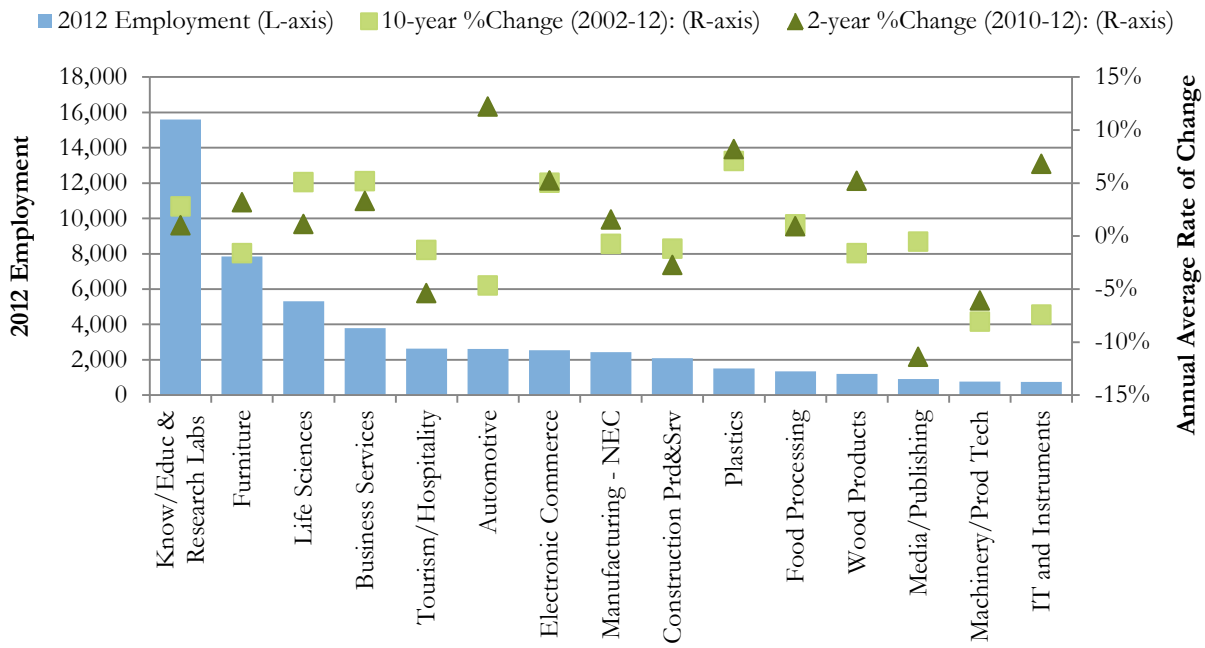
[4] North American Industry Classification System, http://www.census.gov/eos/www/naics/

[5] Cluster theory also distinguishes three general types of industries: traded, natural-resource-dependent and non-traded (local). The 44 Porter clusters referenced here are comprised primarily of traded industries. These industries' outputs are primarily "exported" from the region to customers outside the region—for example, automobiles, medical devices, processed foods. Most of traded industry output is not consumed within the region. Non-traded industries are those producing goods or services locally that are consumed primarily by local residents—for example, restaurants, food retailing and haircuts. Appendix A contains brief descriptions of each of the 44 clusters plus manufacturing NEC.

[6] For example, the "manufacturing not elsewhere classified" (or manufacturing NEC) cluster is an amalgam of manufacturing industries considered by the Porter methodology (as of the date of this analysis) to be non-traded. In addition, the life science cluster used here combined Porter's medical devices and pharmaceutical clusters in order to obviate data suppression concerns.

Figure 19: Employment and Employment Change in SWCI Region's 15 Largest Clusters



Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics and industry cluster definitions from the Institute for Strategy and Competitiveness, Harvard Business School.

Employment: Alabama Region

Table 12 presents the employment profile for the AL region. Like the SWCI Region, this region has a large manufacturing sector that has been losing employment over the last decade, and especially more recently. Also like the SWCI region, the professional, scientific & technical services sector bounced back from the recession more strongly than the AL region's other large sectors.

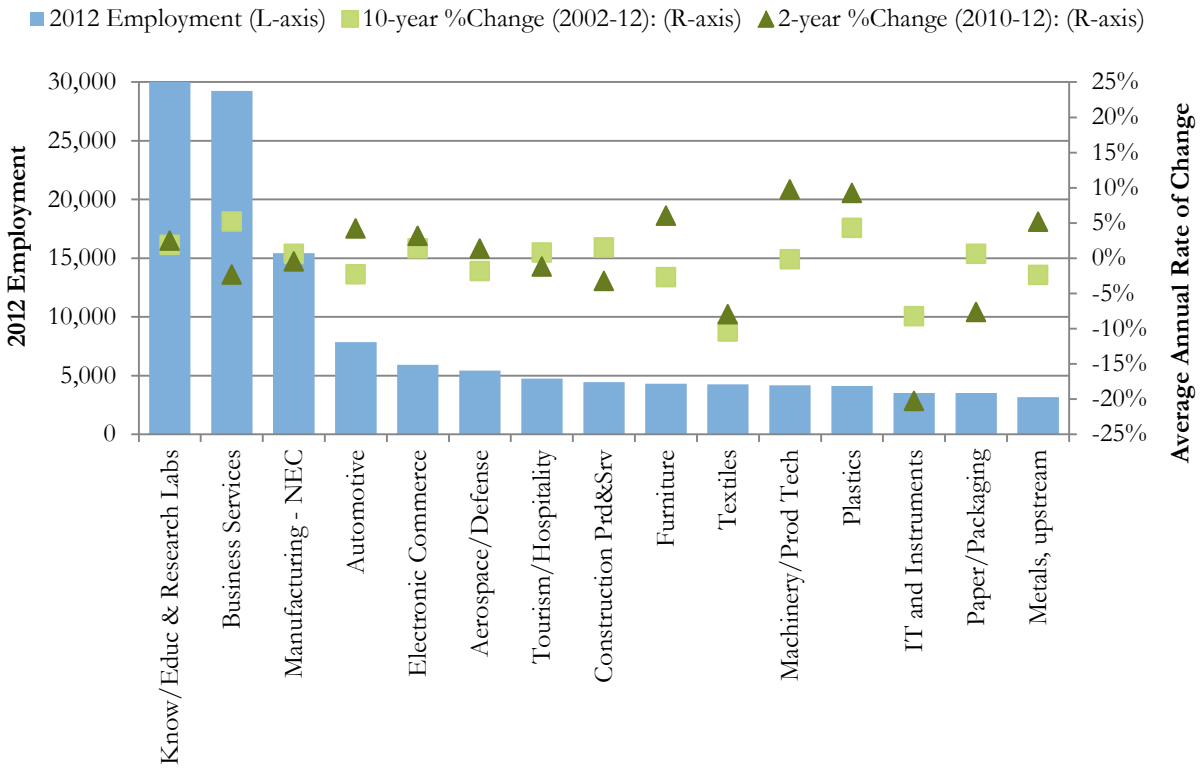
Table 12: Employment by Sector, Alabama Region

Industry Sector	2012 Employment	Share of Total	Employment LQ	Average Rate of Change 2010-2012	Average Rate of Change 2002-2012
Total (QCEW)	*418,753*	*100.0%*	*1.00*	*0.1%*	*0.4%*
Manufacturing	75,966	18.1%	1.99	-0.1%	-2.8%
Retail Trade	52,053	12.4%	1.10	0.8%	0.4%
Health Care and Social Assistance	49,042	11.7%	0.83	-0.3%	2.4%
Accommodation and Food Services	35,769	8.5%	0.95	1.3%	1.9%
Professional, Scientific, and Technical Services	35,669	8.5%	1.40	-1.2%	3.5%
Public Administration	33,424	8.0%	1.45	1.3%	1.6%
Educational Services	33,235	7.9%	0.86	0.2%	0.8%
Administrative and Support and Waste Management & Remediation Services	22,893	5.5%	0.89	0.4%	2.9%
Construction	16,205	3.9%	0.89	-2.2%	-0.7%
Wholesale Trade	12,021	2.9%	0.67	-0.7%	-0.9%
Transportation and Warehousing	11,151	2.7%	0.69	1.1%	0.4%
Finance and Insurance	9,927	2.4%	0.56	-1.3%	0.1%
Other Services (except Public Administration)	8,816	2.1%	0.61	-1.6%	-0.1%
Utilities	5,709	1.4%	2.22	-0.2%	1.6%
Information	4,529	1.1%	0.51	-1.8%	-2.0%
Real Estate and Rental and Leasing	4,097	1.0%	0.65	-1.6%	-1.1%
Arts, Entertainment, and Recreation	3,595	0.9%	0.48	1.5%	0.5%
Management of Companies and Enterprises	2,305	0.5%	0.36	12.2%	5.6%
Agriculture, Forestry, Fishing and Hunting	2,188	0.5%	0.58	-0.6%	-1.1%
Mining, Quarrying, and Oil and Gas Extraction	658	0.2%	0.26	3.7%	-1.4%

Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics. The sum of all sector employment values—derived by the IBRC to estimate suppressed and undisclosed data—will not equal to the regional employment total (the top line)—reported by BLS.

The cluster perspective of Figure 20 reveals that the Alabama region is particularly strong in the business services cluster and the knowledge creation, education and laboratory research cluster. The region also has a respectable presence of automotive, aerospace and electronic commerce jobs. Automotive had a strong bounce-back from the recession, as did the furniture, machinery, plastics and upstream metals clusters. The clusters in unquestionable decline in the Alabama region are IT & instruments and textiles.

Figure 20: Employment and Employment Change in the Alabama Region's 15 Largest Clusters



Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics and industry cluster definitions from the Institute for Strategy and Competitiveness, Harvard Business School.

Employment: Mississippi Region

Table 13 presents the employment profile for the MS region. While this region's manufacturing sector is not as prominent as in SWCI, the sector has been getting smaller over the last decade. The region has a large health care & social assistance sector that has grown over the last decade more rapidly than the region's total employment. The region's leading growth sector, both since the recession and over ten years, is administrative & support and waste management & remediation services.

Table 13: Employment by Sector, Mississippi Region, 2012

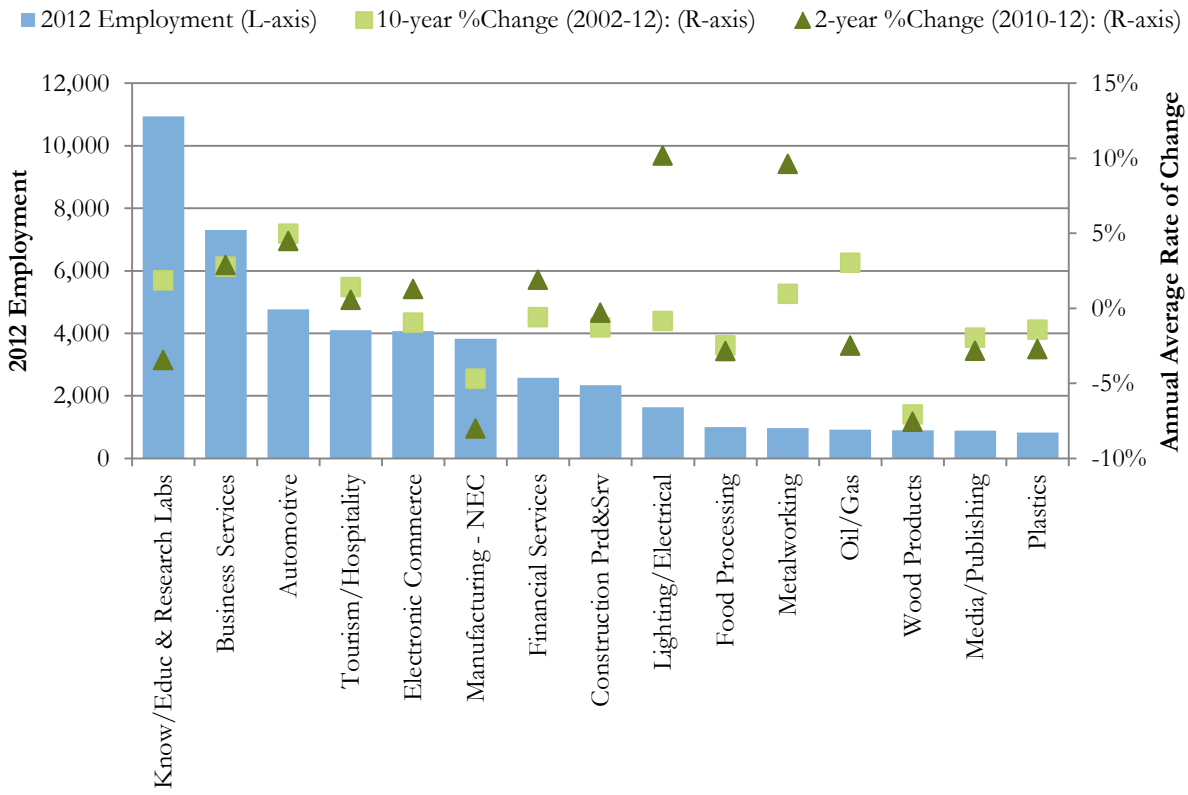
Industry Sector	2012 Employment	Share of Total	Employment LQ (compared to U.S.)	Avg. Rate of Change, 2010-2012	Avg. Rate of Change, 2002-2012
Total (QCEW)	*264,255*	*100.0%*	*1.00*	*0.5%*	*0.4%*
Health Care and Social Assistance	48,519	18.4%	1.30	1.3%	2.9%
Retail Trade	30,208	11.4%	1.01	0.5%	0.4%
Educational Services	29,068	11.0%	1.20	0.9%	1.1%
Accommodation and Food Services	24,050	9.1%	1.02	1.9%	1.3%
Manufacturing	20,064	7.6%	0.84	0.1%	-2.7%
Public Administration	19,210	7.3%	1.32	-1.5%	0.4%
Administrative and Support and Waste Management and Remediation Services	13,580	5.1%	0.84	7.8%	3.0%
Professional, Scientific, and Technical Services	12,634	4.8%	0.79	-1.1%	0.2%
Finance and Insurance	11,650	4.4%	1.04	1.4%	-0.5%
Construction	10,907	4.1%	0.95	-1.7%	-0.9%
Transportation and Warehousing	9,780	3.7%	0.96	-3.3%	-1.6%
Wholesale Trade	8,962	3.4%	0.79	-0.9%	-1.4%
Other Services (except Public Administration)	6,252	2.4%	0.68	-0.2%	-1.4%
Information	5,051	1.9%	0.90	2.8%	-3.0%
Management of Companies and Enterprises	4,607	1.7%	1.15	0.4%	1.4%
Real Estate and Rental and Leasing	3,615	1.4%	0.91	0.0%	1.5%
Arts, Entertainment, and Recreation	3,222	1.2%	0.68	1.4%	1.8%
Agriculture, Forestry, Fishing and Hunting	1,247	0.5%	0.52	-1.5%	-2.9%
Utilities	1,124	0.4%	0.69	-22.8%	-2.3%
Mining, Quarrying, Oil & Gas Extraction	556	0.2%	0.35	-5.4%	-1.2%

Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics. The sum of all sector employment values—derived by the IBRC to estimate suppressed and undisclosed data—will not equal to the regional employment total (the top line)—reported by BLS.

From a cluster perspective, the MS region is particularly strong in the knowledge/education/research and business services clusters. The former cluster gave up some employment over the past two years, however. While the sector analysis showed that the region isn't especially strong in manufacturing employment generally, it posts a relatively strong showing in the automotive cluster in terms of both employment level and growth, as seen in Figure 21. (As will be seen below, the MS region concentration in automotive employment

rivals the SWCI Region.) Other relatively strong manufacturing clusters are lighting & electrical and metalworking, both posting impressive post-recession results. Unlike the view of employment by industry sector, the MS region's leading industry clusters are far from stagnant. Of the region's 15 largest clusters, the two with notable rates of recent shrinkage are wood products and media/publishing.

Figure 21: Employment and Employment Change in the Mississippi Region's 15 Largest Clusters



Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics and industry cluster definitions from the Institute for Strategy and Competitiveness, Harvard Business School.

Employment: New York Region

Table 14 presents the sector employment profile for the NY region. The region's total employment has been declining slowly the last 10 years. It does not have an overly large manufacturing presence, and this sector has lost employment more rapidly than the SWCI Region over the last 10 years. Moreover, the region did not experience the post-recession manufacturing bounce back that SWCI enjoyed. Like the MS region, the region's largest sector is health care and social assistance, which grew slightly over the last decade and, unlike the region as a whole, has been is growing rather than shrinking. The sectors associated with tourism—retail trade and accommodation & food services—have also grown slightly, though retail employment is down slightly since the recession. Wholesale trade has beat the odds, posting a respectable growth rate of 2.5 percent. It is difficult to find a standout sector, but if one had to make that call it would be professional, scientific & technical services, which has grown more robustly than the region's other relatively large sectors.

Table 14: Employment by Sector, New York Region, 2012

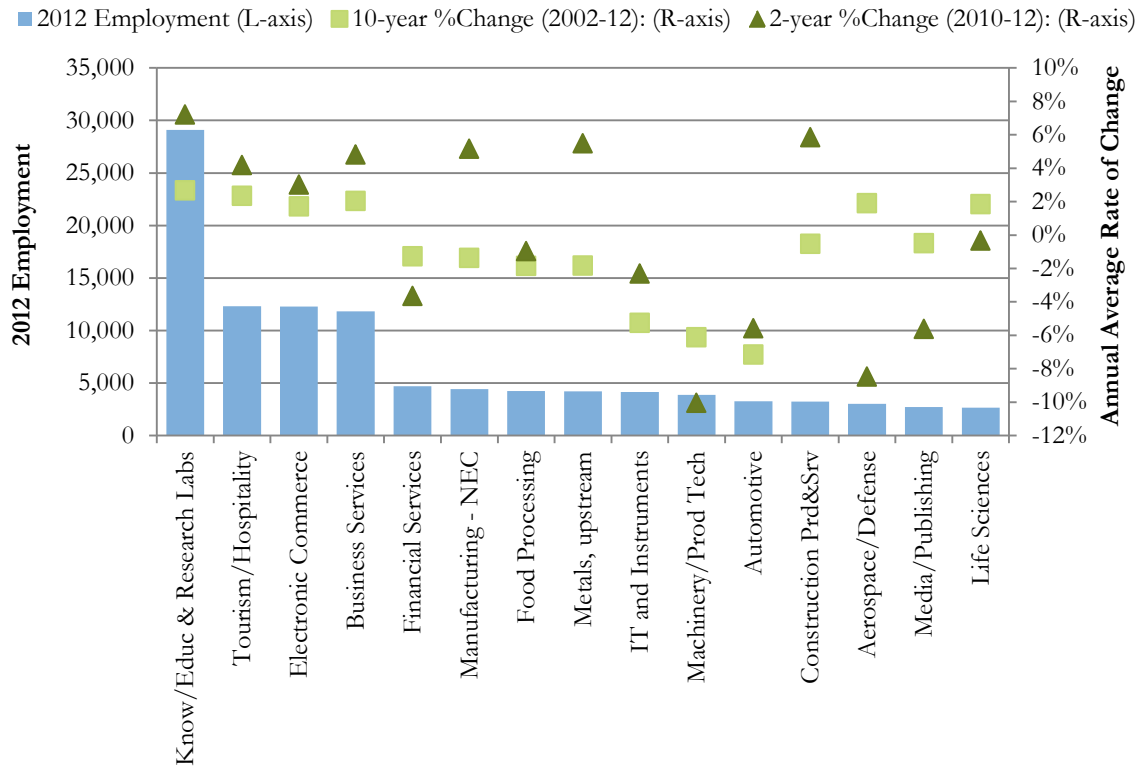
Industry Sector	2012 Employment	Share of Total	Employment LQ (compared to US)	Average Rate of Change 2010-2012	Average Rate of Change 2002-2012
Total (QCEW)	527,124	100.0%	1.00	-0.1%	-0.2%
Health Care and Social Assistance	92,533	17.5%	1.24	0.3%	1.5%
Educational Services	64,939	12.3%	1.34	0.2%	0.6%
Retail Trade	63,716	12.1%	1.07	1.1%	-0.3%
Manufacturing	48,059	9.1%	1.00	-1.5%	-3.5%
Accommodation and Food Services	43,865	8.3%	0.93	1.3%	0.7%
Public Administration	35,457	6.7%	1.22	-4.2%	-0.9%
Transportation and Warehousing	23,251	4.4%	1.14	0.1%	0.8%
Professional, Scientific, and Technical Services	22,827	4.3%	0.71	4.3%	1.9%
Finance and Insurance	21,855	4.1%	0.98	0.0%	-0.4%
Wholesale Trade	20,056	3.8%	0.89	2.5%	-0.3%
Administrative and Support and Waste Management and Remediation Services	19,833	3.8%	0.62	-2.7%	-0.5%
Construction	18,291	3.5%	0.79	0.7%	-0.1%
Other Services (except Public Administration)	17,030	3.2%	0.93	-0.4%	-1.3%
Arts, Entertainment, and Recreation	8,722	1.7%	0.92	-0.4%	2.3%
Information	7,672	1.5%	0.68	-4.2%	-5.1%
Real Estate and Rental and Leasing	6,079	1.2%	0.76	-2.2%	-0.6%
Utilities	5,088	1.0%	1.57	-4.1%	-3.2%
Management of Companies and Enterprises	4,231	0.8%	0.53	-3.3%	-2.4%
Agriculture, Forestry, Fishing and Hunting	2,911	0.6%	0.61	5.1%	1.5%
Unclassified	681	0.1%	0.96	11.8%	-1.4%
Mining, Quarrying, and Oil and Gas Extraction	613	0.1%	0.19	4.7%	3.4%

Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics. The sum of all sector employment values—derived by the IBRC to estimate suppressed and undisclosed data—will not equal to the regional employment total (the top line)—reported by BLS.

From a cluster perspective, the NY region, like most peers, has a large and growing knowledge creation & education & labs cluster. As hinted in the sector-based review of employment, the hospitality & tourism cluster has a significant presence and has enjoyed modest growth. Electronic commerce and business services also have substantial employment and have bounced back from the recession and expanded over the last decade.

Many of the other relatively large clusters are in manufacturing, where this region's results are a mixed bag. Upstream metals, plastics and construction products have bounced back strongly from the recession. But IT, machinery, automotive, aerospace and media have continued to lose ground after the recession.

Figure 22: Employment and Employment Change in the New York Region's 15 Largest Clusters



Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics and industry cluster definitions from the Institute for Strategy and Competitiveness, Harvard Business School.

Employment: Tennessee Region

Table 15 presents the sector employment profile for the TN region. Based on total employment, the region has performed above average among its peers, especially post-recession. The region's employment is largest in the tourism-related sectors of retail trade, hospitality and arts, entertainment & recreation, the former two posting respectable bounce-back growth.

While the region does not have as concentrated a manufacturing sector as SWCI, this sector has grown faster than average since the recession, reversing a longer-term trend of sectoral decline. The educational services sector is not highly concentrated, the lowest percentage of the seven regions. The standout sector in terms of growth, both longer-term and post-recession, is administrative & support and waste management & remediation services. While not large in absolute levels, management of companies and enterprises has grown consistently, both over the last ten years and post-recession.

Table 15: Employment by Sector, Tennessee Region, 2012

Industry Sector	2012 Employment	Share of Total	Employment LQ (compared to US)	Average Rate of Change, 2010-2012	Average Rate of Change, 2002-2012
Total (QCEW)	*431,473*	*100.0%*	*1.00*	*1.3%*	0.6%
Retail Trade	58,119	13.5%	1.19	1.3%	0.3%
Health Care and Social Assistance	58,070	13.4%	0.95	1.0%	2.0%
Accommodation and Food Services	51,802	12.0%	1.34	3.8%	2.2%
Manufacturing	47,263	10.9%	1.20	2.5%	-2.2%
Educational Services	36,507	8.5%	0.92	-3.8%	0.6%
Administrative and Support and Waste Management and Remediation Services	28,015	6.5%	1.06	6.8%	3.1%
Professional, Scientific, and Technical Services	23,673	5.5%	0.90	-1.7%	0.8%
Construction	19,288	4.5%	1.02	-1.0%	-0.7%
Public Administration	18,757	4.3%	0.79	1.1%	-0.3%
Wholesale Trade	16,523	3.8%	0.89	0.4%	0.4%
Finance and Insurance	15,295	3.5%	0.84	-0.1%	1.8%
Transportation and Warehousing	14,460	3.3%	0.87	3.8%	0.4%
Other Services (except Public Administration)	12,652	2.9%	0.84	2.3%	1.0%
Arts, Entertainment, and Recreation	8,512	2.0%	1.10	0.1%	2.9%
Information	5,988	1.4%	0.65	0.2%	-1.5%
Management of Companies and Enterprises	5,846	1.4%	0.89	3.2%	3.5%
Real Estate and Rental and Leasing	5,328	1.2%	0.82	4.7%	0.3%
Utilities	3,561	0.8%	1.35	2.5%	-2.1%
Agriculture, Forestry, Fishing and Hunting	1,118	0.3%	0.29	2.1%	-0.4%
Mining, Quarrying, and Oil and Gas Extraction	1,098	0.3%	0.42	-8.0%	-1.9%
Unclassified	36	0.0%	.06	-4.0%	-20.5%

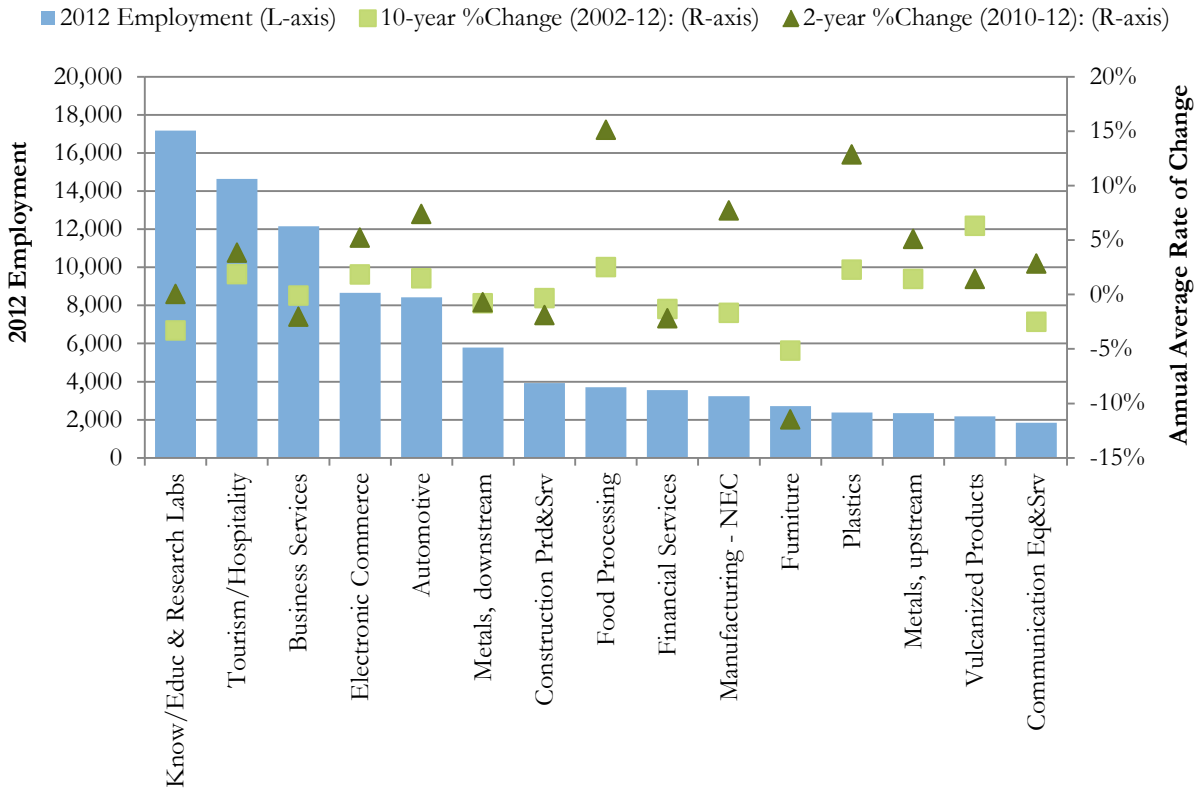
Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics. The sum of all sector employment values—derived by the IBRC to estimate suppressed and undisclosed data—will not equal to the regional employment total (the top line)—reported by BLS.

The TN region, like most SWCI peers, has a large knowledge creation, education and research labs cluster, though it hasn't grown over the past decade. As observed with the sector-based analysis, hospitality and tourism dominate the landscape have enjoyed modest employment growth. Business services have a relatively strong presence, but this cluster appears to be shrinking gradually.

The news for many of the larger manufacturing clusters is generally good. The largest manufacturing clusters in the region, automotive and electronic commerce, have positive ten-year and post-recession growth rates. Many of the other large clusters are in manufacturing, and the results here are inconsistent. Downstream metals and construction products have been flat, whereas food processing and upstream metals have grown modestly over the last ten years and have surged following the recession. Furniture appears to be on an

unambiguous decline, whereas the plastics and food processing clusters appear to have reversed the longer-term trends and bounced back strongly after the recession. On balance, the recent performance of the region's manufacturing clusters has outpaced the peer regions, with the exception of WA region (whose manufacturing growth is from a smaller base level).

Figure 23: Employment and Employment Change in the Tennessee Region's 15 Largest Clusters



Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics and industry cluster definitions from the Institute for Strategy and Competitiveness, Harvard Business School.

Employment: Washington Region

Table 16 presents the employment profile for the WA region. Based on total employment, the region has outpaced its peers over the last decade, with an average annual employment growth rate of 1.7 percent. The region does not have particularly specialized healthcare or educational services sectors compared to its peers, but these sectors are the largest employers. In stark contrast to its peers, the region has a particularly concentrated agriculture, forestry, fishing and hunting sector whose rapid growth appears to have helped increase the region's average growth in total employment.

Manufacturing, while relatively small compared to the SWCI and Alabama regions, has also grown at above average rates. The services side of business—professional, scientific and technical along with administrative and support—have grown more slowly over the last decade than average for the region, but at higher-than-average rates compared to its peers. The lack of post-recession bounce-back, indeed shrinkage in services, appears contrary to the region's stronger and balanced growth across most sectors.

Table 16: Employment by Sector, Washington Region, 2012

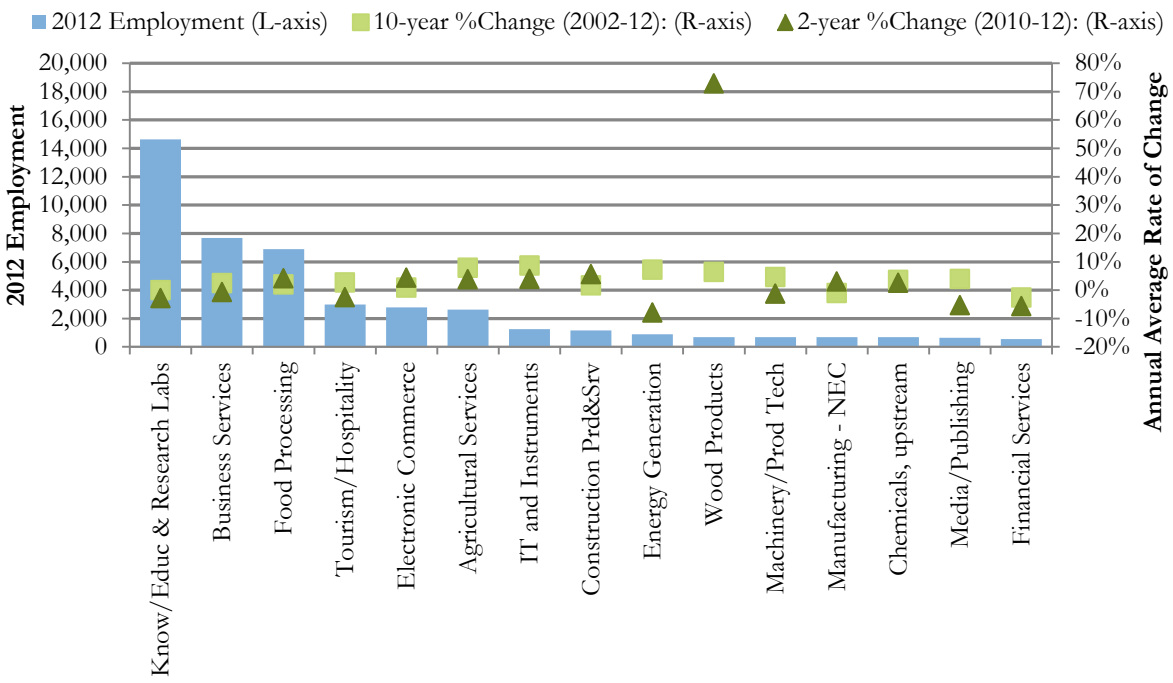
Industry Sector	2012 Employment	Share of Total	Employment LQ (compared to US)	Average Rate of Change, 2010-2012	Average Rate of Change, 2002-2012
Total (QCEW)	*160,758*	*100.0%*	*1.00*	*0.3%*	*1.7%*
Health Care and Social Assistance	20,430	12.6%	0.89	0.9%	2.2%
Educational Services	17,121	10.6%	1.16	1.1%	0.9%
Agriculture, Forestry, Fishing and Hunting	16,680	10.3%	11.39	5.1%	2.9%
Retail Trade	16,621	10.3%	0.91	1.3%	1.7%
Manufacturing	13,423	8.3%	0.91	3.9%	2.3%
Professional, Scientific, and Technical Services	12,552	7.8%	1.28	-4.6%	1.2%
Administrative and Support and Waste Management and Remediation Services	11,564	7.2%	1.17	-3.7%	0.9%
Accommodation and Food Services	11,367	7.0%	0.79	2.1%	2.0%
Public Administration	8,608	5.3%	0.97	-1.5%	1.4%
Construction	7,281	4.5%	1.03	-2.3%	1.6%
Other Services (except Public Administration)	6,190	3.8%	1.10	-1.9%	2.1%
Wholesale Trade	4,212	2.6%	0.61	0.0%	1.4%
Transportation and Warehousing	3,418	2.1%	0.55	2.9%	2.8%
Finance and Insurance	3,114	1.9%	0.45	-1.6%	1.2%
Arts, Entertainment, and Recreation	2,599	1.6%	0.90	0.3%	2.6%
Real Estate and Rental and Leasing	2,092	1.3%	0.86	3.7%	1.2%
Utilities	1,870	1.2%	1.89	1.2%	5.0%
Information	1,815	1.1%	0.53	-0.9%	0.0%
Management of Companies and Enterprises	521	0.3%	0.21	12.3%	8.7%
Mining, Quarrying, and Oil and Gas Extraction	76	0.0%	0.08	-18.9%	-6.4%

Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics. The sum of all sector employment values—derived by the IBRC to estimate suppressed and undisclosed data—will not equal to the regional employment total (the top line)—reported by BLS.

From a cluster perspective, the WA region, like most peers, has a large knowledge creation, education and research lab presence. It also has a respectable concentration of business services. Unlike other peers, however, food processing is a leading cluster. Given the strong sector showing of agriculture, forestry, fishing & hunting, it comes as little surprise that agricultural services and wood products are among the top 15 clusters (in addition to food processing). What may come as a surprise is the immense surge in wood products cluster, which grew at around 70 percent annually on average from 2010 to 2012. This surge is so large, it distorts the regional comparison across region graphs as the right-hand axis maximum is 80 percent for the WA region and MS region and well below 30 percent for all others.

Once one re-calibrates interpretation of the graph for the growth rate axis, the rates of growth across most manufacturing related clusters falls in line with other peers, except that the starting point, the level in the base year, is considerably lower.

Figure 24: Employment and Employment Change in the Washington Region's 15 Largest Clusters



Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics and industry cluster definitions from the Institute for Strategy and Competitiveness, Harvard Business School.

Employment: West Virginia Region

Table 17 presents the employment profile for the WV region. Based on total employment, the region has posted solid job gains over the last decade and since the recession. Healthcare seems to be helping to drive those gains. This sector not only has the largest share within the region and among the peers, but it has also grown at above-average rates both post-recession and over the last decade.

In contrast to the peer regions, the WV region is not dominated by educational services, which ranks third in size behind retail trade. Given that the retail trade and hospitality sectors both rank so highly, it appears the region's economy is influenced more by tourism than by most other economic bases. Manufacturing, for example, ranks a distant 7th among sectors, and it has been shrinking slowly over the past decade.

The bright spot for the region is the growth of professional, scientific, and technical services, posting more than 3 percent growth over the decade, which may suggest less reliance in the future on tourism and mineral extraction. Speaking of mineral extraction, the national boom in energy production is in full evidence in the WV region's mining, quarrying and oil & gas extraction sector, growing 2.5 percent annually the last 10 years and an astounding 14.8 annually percent since the recession.

Table 17: Employment by Sector, West Virginia Region, 2012

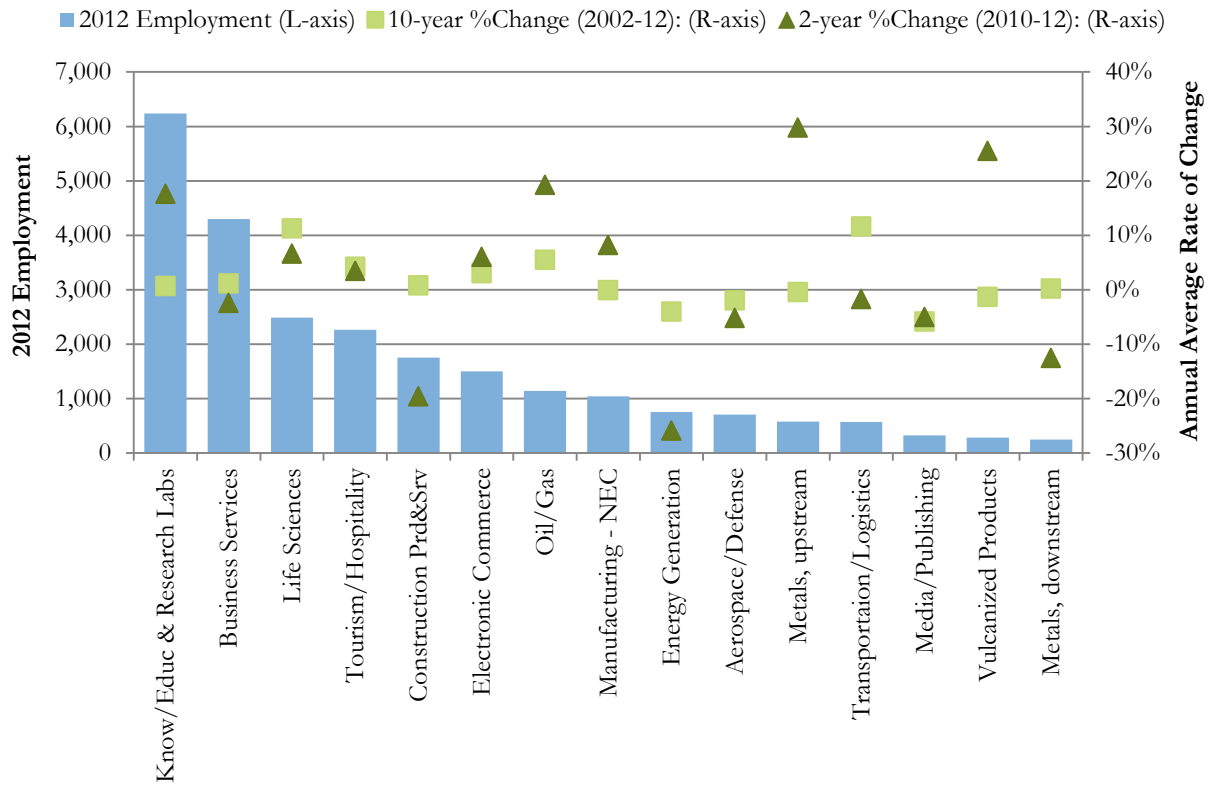
Industry Sector	2012 Employment	Share of Total	Employment LQ (compared to US)	Average Rate of Change, 2010-2012	Average Rate of Change, 2002-2012
Health Care and Social Assistance	25,460	21.3%	1.50	2.5%	2.0%
Retail Trade	14,475	12.1%	1.07	1.2%	0.6%
Educational Services	11,819	9.9%	1.08	-0.9%	-0.4%
Accommodation and Food Services	11,450	9.6%	1.07	3.0%	2.9%
Public Administration	9,131	7.6%	1.39	-0.1%	1.1%
Construction	7,736	6.5%	1.48	0.1%	1.3%
Manufacturing	7,260	6.1%	0.67	1.1%	-0.4%
Professional, Scientific, and Technical Services	5,302	4.4%	0.73	1.4%	3.1%
Administrative and Support and Waste Management and Remediation Services	4,275	3.6%	0.59	-3.0%	0.0%
Other Services (except Public Administration)	3,870	3.2%	0.93	2.9%	1.7%
Mining, Quarrying, and Oil and Gas Extraction	3,403	2.8%	4.71	14.8%	2.5%
Transportation and Warehousing	2,989	2.5%	0.65	-4.2%	0.9%
Wholesale Trade	2,917	2.4%	0.57	1.3%	1.3%
Finance and Insurance	2,196	1.8%	0.43	-1.1%	-0.2%
Information	1,757	1.5%	0.69	0.1%	-1.4%
Management of Companies and Enterprises	1,512	1.3%	0.83	17.0%	10.4%
Utilities	1,420	1.2%	1.94	0.9%	-3.4%
Real Estate and Rental and Leasing	1,385	1.2%	0.77	2.5%	1.8%
Arts, Entertainment, and Recreation	1,062	0.9%	0.50	4.6%	4.3%
Agriculture, Forestry, Fishing and Hunting	83	0.1%	0.08	2.5%	-6.6%
Unclassified	42	0.0%	0.26	-16.1%	-5.1%

Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics. The sum of all sector employment values—derived by the IBRC to estimate suppressed and undisclosed data—will not equal to the regional employment total (the top line)—reported by BLS.

Like most peers, the WV region has a large knowledge creation, education and laboratory research cluster. It also has a respectable concentration of business services. Also something of a standout cluster due to the growth of bio pharmaceuticals is the WV region's third-largest cluster, life sciences, which boasts a ten-year growth rate over 10 percent annually. The growth of the transportation and logistics cluster also tops 10 percent.

The performance of other manufacturing-related clusters has been uneven, tilting toward the negative. Though the manufacturing sector has been in general decline, there are few bright spots that appear to drive the bounce-back post-recession, for example, the upstream metals and vulcanized products clusters.

Figure 25: Employment and Employment Change in the West Virginia Region's 15 Largest Clusters



Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics and industry cluster definitions from the Institute for Strategy and Competitiveness, Harvard Business School.

The Regions Compared

The graphs and tables above present sector and cluster employment and employment growth rates. Table 18 presents shares of total employment for the SWCI region's 15 largest sectors, together with the profiles of the peer regions for the same sectors. The SWCI and AL regions are the clear leaders in manufacturing; Indiana has three times the concentration of workers in manufacturing as the WV region.

The range for educational service is less dramatic, but still considerable. Here, the AL region had the lowest concentration of employees in education services, possibly explained by the larger population of the region. On the other hand, the NY region has the largest population but still registers above average in educational services. In general, the level of employment in non-traded industries such as retail and health care tend to be driven by the level of population; a given population needs a certain number of physicians, for example. Health care & social assistance is in the top three sectors in every region, with similar percentages of the workforce across regions except for WV, where it's substantially more concentrated.

Accommodation and food service is the sector most closely linked to tourism. Given the TN region's proximity to the Smoky Mountains and Gatlinburg tourism magnet, it is not a surprising that this region has the greatest concentration in this sector.

Perhaps the most interesting observation is the relative concentrations of professional, scientific and technical services employment. Among other industry components of this sector, probably the most important for economic development is research and development. Higher concentrations of workers in these fields are often correlated with introduction of future products and economic growth.

Table 18: Comparing Regions' 2012 Employment Shares for SWCI's Top 15 Sectors

	IN	AL	MS	NY	TN	WA	WV
Manufacturing	18.3%	18.1%	9.1%	9.1%	10.9%	8.3%	6.1%
Educational Services	13.6%	7.9%	12.3%	12.3%	8.5%	10.6%	9.9%
Health Care and Social Assistance	12.3%	11.7%	17.5%	17.5%	13.4%	12.6%	21.3%
Retail Trade	11.3%	12.4%	12.1%	12.1%	13.5%	10.3%	12.1%
Accommodation and Food Services	10.4%	8.5%	8.3%	8.3%	12.0%	7.0%	9.6%
Public Administration	6.7%	8.0%	6.7%	6.7%	4.3%	5.3%	7.6%
Construction	4.3%	3.9%	3.5%	3.5%	4.5%	4.5%	6.5%
Professional, Scientific, and Technical Services	3.6%	8.5%	4.3%	4.3%	5.5%	7.8%	4.4%
Transportation and Warehousing	3.1%	2.7%	4.4%	4.4%	3.3%	2.1%	2.5%
Wholesale Trade	2.7%	2.9%	3.8%	3.8%	3.8%	2.6%	2.4%
Other Services (except Public Administration)	2.6%	2.1%	3.2%	3.2%	2.9%	3.8%	3.2%
Administrative and Support and Waste Management and Remediation Services	2.5%	5.5%	3.8%	3.8%	6.5%	7.2%	3.6%
Finance and Insurance	2.0%	2.4%	4.1%	4.1%	3.5%	1.9%	1.8%
Information	1.6%	1.1%	1.5%	1.5%	1.4%	1.1%	1.5%
Real Estate and Rental and Leasing	1.3%	1.0%	1.2%	1.2%	1.2%	1.3%	1.2%
Utilities	1.0%	1.4%	1.0%	1.0%	0.8%	1.2%	1.2%

Source: IBRC estimates based on QCEW data from the Bureau of Labor Statistics.

The post-recession employment growth rates for peer region sectors does not appear to tell a particular tale:

Table 19: Comparing Regions' Employment Growth, 2010 to 2012, for SWCI Top 15 Sectors

	IN	AL	MS	NY	TN	WA	WV
Manufacturing	0.8%	-0.1%	-1.5%	-1.5%	2.5%	3.9%	1.1%
Educational Services	2.1%	0.2%	0.2%	0.2%	-3.8%	1.1%	-0.9%
Health Care and Social Assistance	-1.4%	-0.3%	0.3%	0.3%	1.0%	0.9%	2.5%
Retail Trade	1.5%	0.8%	1.1%	1.1%	1.3%	1.3%	1.2%
Accommodation and Food Services	1.6%	1.3%	1.3%	1.3%	3.8%	2.1%	3.0%
Public Administration	2.9%	1.3%	-4.2%	-4.2%	1.1%	-1.5%	-0.1%
Construction	-0.5%	-2.2%	0.7%	0.7%	-1.0%	-2.3%	0.1%
Professional, Scientific, and Technical Services	-2.5%	-1.2%	4.3%	4.3%	-1.7%	-4.6%	1.4%
Transportation and Warehousing	-1.8%	1.1%	0.1%	0.1%	3.8%	2.9%	-4.2%
Wholesale Trade	3.4%	-0.7%	2.5%	2.5%	0.4%	0.0%	1.3%
Other Services (except Public Administration)	0.5%	-1.6%	-0.4%	-0.4%	2.3%	-1.9%	2.9%
Administrative and Support and Waste Management and Remediation Services	-5.2%	0.4%	-2.7%	-2.7%	6.8%	-3.7%	-3.0%
Finance and Insurance	-3.9%	-1.3%	0.0%	0.0%	-0.1%	-1.6%	-1.1%
Information	-9.7%	-1.8%	-4.2%	-4.2%	0.2%	-0.9%	0.1%
Real Estate and Rental and Leasing	6.9%	-1.6%	-2.2%	-2.2%	4.7%	3.7%	2.5%

Source: IBRC estimates using QCEW data from the Bureau of Labor Statistics.

Employment: Regional Specialization and Wages

There are several ways to consider the industry structure and employment profile of a region. One can look at absolute job totals, as presented above. Unsurprisingly, education services ranked highly in each region due to the presence of large universities. One can also evaluate the relative employment mix of a given region with respect to the other regions and to the nation as a whole. The latter is a better measure of a region's specialization (i.e., industry cluster concentration). Location quotients (LQs) are widely used to show which clusters have a particularly strong or weak presence in a region.

The following figures and narrative present LQs of the regions' more concentrated clusters, along with their average wages. The reader should be aware that the peer regions have some interesting idiosyncrasies and should take special note of the scale on the LQ (left) axis. Also note that the U.S., by definition, has an LQ of 1.0 for any cluster.

Not all clusters are presented in this section, only the "sweet sixteen" of particular interest in this benchmark study. If a cluster was in the SWCI region's top ten in terms of absolute level of employment, it was selected for comparison with the peer regions. If another cluster was particularly important for a few peer regions, it was also selected. The resulting set of 16 clusters was then compared across regions.

In addition to presenting a region's specialization, or employment concentration, the region's average wage by cluster is also presented. These data are useful not only for comparing the cost of labor across regions, but also as an indicator for which industries or clusters pay better than others. For example, a quick look at the wage scale—the right axis—shows that biopharmaceuticals, financial services and information technology & analytical instruments are the best paid among the sweet-sixteen set of clusters. In contrast, hospitality and tourism, wood products and furniture are the clusters paying the least.

Salient Characteristics of Regions

Indiana

The SWCI region is particularly specialized in the following sweet-sixteen clusters (LQs are shown in parentheses): furniture (13.9), life sciences (6.1), wood products (2.5), automotive (1.9), knowledge creation, education and research labs (2.1). The region is also somewhat above the national average in the plastics (1.5) and construction products and services (1.2) clusters.

With LQs below 1, the SWCI region is relatively unspecialized in the following sweet-sixteen clusters: food processing and manufacturing (0.66), media, publishing and design services (0.64), production technology and heavy machinery (0.53), hospitality and tourism (0.53), distribution and electronic commerce (0.49), business services (0.44), information technology and analytical instruments (0.40) and financial services (0.16).

Compared to its peer regions, SWCI is a standout in furniture, life sciences, wood products, plastics and knowledge creation, education and research labs, with the greatest employment concentrations in these clusters across the regions (with the exception of the WA region for the latter cluster).

Ranking seventh among the seven regions for business services and financial services, SWCI appears to be under-balanced in two key clusters that help facilitate a vibrant business climate, at least when the concentration is compared to the national average. Several of the peer regions also have LQs below 1.0 for these clusters.

In terms of the industrial concentration, the SWCI region is a mix of relatively lower-paying industries such as furniture and wood products and higher paying industries such as life sciences, education, knowledge creation & laboratory research, and construction products and services. That said, the region does not pay as well as the national average or as most peer regions in the life sciences or the education, knowledge creation & laboratory research clusters.

There are several clusters for which the SWCI region wages are both below national averages and rank at the bottom of the peer set as well: business services, financial services, construction products and services, education, knowledge creation and laboratory research, information technology and analytical instruments, life sciences, distribution and electronic commerce and plastics clusters.

There are three clusters for which the SWCI region pays above the national average and ranks highly – first or second – among peers: automotive, production technology and heavy machinery and food processing and manufacturing.

Alabama

With LQs all above 2, the AL region is particularly strong in the following clusters: furniture (LQ=2.7), manufacturing NEC (2.3) and automotive (2.1). Relatively speaking, the region is also above the national average in wood products (1.6), education, knowledge creation & laboratory research (1.5), plastics (1.4) and business services (1.2).

With LQs below 1, the AL region is relatively less specialized in the following clusters: construction products and services (0.94), information technology and analytical instruments (0.68), life sciences (0.65), distribution and electronic commerce (0.41), food processing and manufacturing (0.37), hospitality and tourism (0.34), financial services (0.21), and media, publishing and design services (0.17).

Ranking number one among the peer regions, the AL region stands out in the clusters of manufacturing NEC and business services. Among the select set of 16 clusters, the region ranked second in concentration for the furniture, plastics and production technology and heavy machinery clusters.

In contrast to SWCI, the Alabama region pays above the national average and is first among peers for the IT and plastics clusters, and also for education, knowledge creation and laboratory research. in terms of industries that are the more concentrated, the region pays below the national average and also does not rank well among peers in the clusters of furniture, manufacturing NEC and automotive.

Mississippi

Only the automotive cluster has an LQ above 2 in the MS region. In addition to auto, relatively speaking, the region is also more concentrated in manufacturing NEC cluster.

The MS region ranks first among the peers for concentration in two clusters only, automotive and financial services, but the region's LQ for the latter is still below the national average. The MS region also ranks behind the peer regions in most of the remaining select set (sixteen) clusters.

With LQs below 1.0, the MS region is relatively less specialized in the following clusters: financial services (0.85),business services (0.85), hospitality and tourism (0.82), plastics (0.81), distribution and electronic commerce (0.79),furniture (0.76), media, publishing and design services (0.63), production technology and heavy machinery (0.52),food processing and manufacturing (0.50), information technology and analytical instruments (0.42) and life sciences (0.28).

The MS region's wages in the automotive and information technology and analytical instruments outperform peer regions and the nation. In the remaining clusters, however, the MS region is typically below the national average and the bottom of the peer rankings too.

New York

There are no clusters that have an LQ above 2 in the NY region among the (sweet) sixteen cluster set. Relative to the nation, the region is concentrated in education, knowledge creation and laboratory research (1.7), furniture (1.3), life sciences (1.3), production technology and heavy machinery (1.1), and hospitality and tourism (1.1).

With LQs below 1, the NY region is relatively less specialized in the following clusters: information technology and analytical instruments (0.96), food processing and manufacturing (0.90),wood products (0.89), media, publishing and design services (0.83), construction products and services (0.82), manufacturing NEC (0.82), financial services (0.67), and business services (0.59).

The NY region is first among peers in several clusters: production technology and heavy machinery, distribution and electronic commerce, information technology and analytical instruments and media, publishing and design services. In none of the aforementioned clusters is the SWCI region particularly concentrated, with LQs below 0.6.

A number of NY region clusters pay above national average wage and above regional peers, namely, furniture, production technology and heavy machinery, hospitality and tourism and food processing and manufacturing. With the exception of production technology, these clusters are not among the higher paying industries in the nation.

Tennessee

With LQs all above 2, the TN region is particularly strong in the automotive (3.1) and furniture (2.4) clusters. The region is also above the national average in the clusters of hospitality and tourism (1.5), wood products (1.3), plastics (1.2), education, knowledge creation and laboratory research (1.2), and construction products and services (1.2).

The TN region is relatively less specialized in the following clusters: food processing and manufacturing (0.92), distribution and electronic commerce (0.84), business services (0.71), manufacturing NEC (0.68), financial services (0.59), production technology and heavy machinery (0.57), life sciences (0.5), information technology and analytical instruments (0.48), and media, publishing and design services (0.31).

Compared to other peer regions, the automotive, hospitality and tourism and distribution and electronic commerce clusters stand out. The region is in the middle of the peer pack, ranking third, for the plastics and furniture clusters. Despite the presence of the University of Tennessee and the Oak Ridge lab, the region's concentration in education, knowledge creation and laboratory research ranks last among peers.

The TN region pays above national-average wage and better than peers in four clusters: furniture, plastics, education, knowledge creation and laboratory research, and manufacturing - not elsewhere classified. While ranking first among peers in average wages in the distribution and electronic commerce and media, publishing and design services clusters, the TN region average wage for these clusters are still below the national averages.

Washington

The WA region is particularly strong in food processing and manufacturing with an LQ of 4.0 that ranks first among the peers. The region is also above the national average in the education, knowledge creation and laboratory research (2.3), and wood products (LQ=1.7), ranking first and third among the peer regions respectively. The LQ for business services is also slightly above the national average.

The WA region is relatively less specialized in the following industry clusters: Construction Products and Services (0.80), Information Technology and Analytical Instruments (0.79), Hospitality and Tourism (0.70), Distribution and Electronic Commerce (0.63), Production Technology and Heavy Machinery (0.55), and Media, Publishing and Design Services (0.52). For the remaining clusters, the WA region LQs were below 0.5.

As one may expect based on the region's LQs below one, the WA region's peer-set rankings for most clusters were fourth or lower.

The WA region wages in the most heavily concentrated cluster – food processing – were ranked sixth among the seven peer region, while wages in the region's wood products clusters (with an LQ of 1.7) were not only the highest among peers, but were 10 percent above the national average. Wages in the education, knowledge creation and laboratory research cluster ranked second and were well above the national average.

West Virginia

Propelled by the presence of biopharmaceuticals, the WV region's life sciences LQ of 6.09 nearly tied the SWCI region. The region is also above the national concentrations for the clusters of construction products & services (2.2), education & knowledge creation (1.8) and business services (1.1).

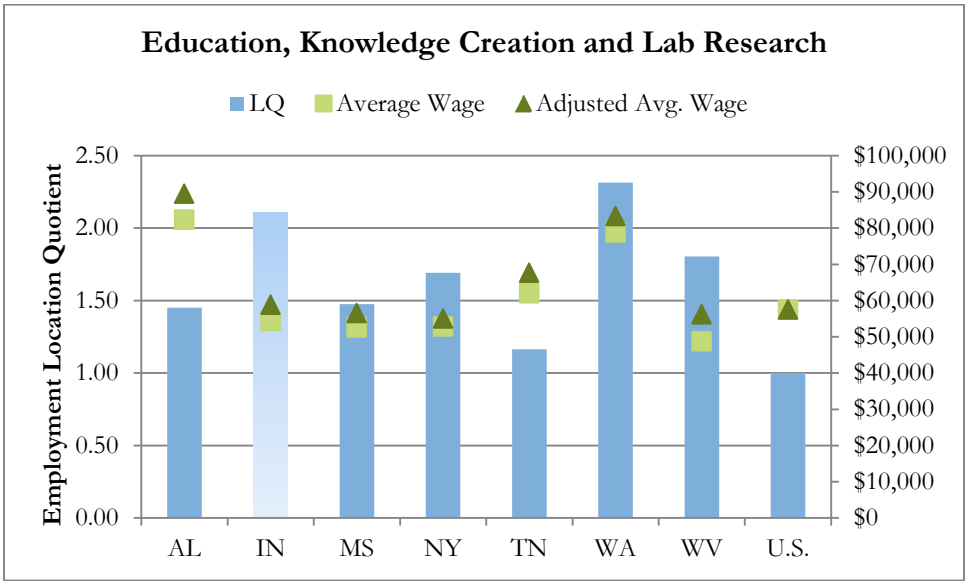
With the exceptions of moderately below-average LQs for hospitality and tourism (0.97), manufacturing NEC (0.94), wood products (0.79), distribution and electronic commerce (0.63) and furniture (0.50), the employment concentrations for other clusters indicated very little representation in the region, well below most peers.

The WV region had only one standout cluster for pay level: life sciences. The WV region was the only one among peers for which average wages in this cluster exceeded the national average. Wages in most other clusters were ranked poorly among peers, with education, knowledge creation and laboratory research, business services, wood products, hospitality and tourism, food processing and production technology all ranking dead last.

Comparisons of Regions by Cluster

Each of the graphs below compares the seven peer regions with respect to a particular cluster among the "sweet 16" set of clusters. The columns indicate each region's employment LQ for the cluster; the small square represents the average annual wage paid to cluster workers in the region; and the triangle shows the average wage adjusted for differences in cost of living among the regions.[7] The graphs are presented in an order based on the relative employment size of the cluster in the SWCI region, starting with the largest.

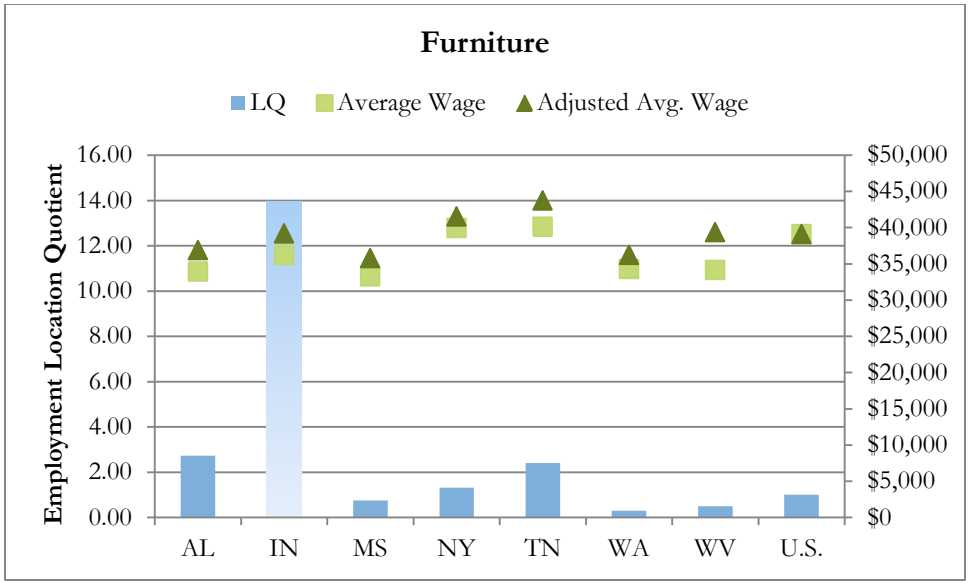
Figure 26: Employment Location Quotient for Education, and Knowledge Creation and Laboratory Research



Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

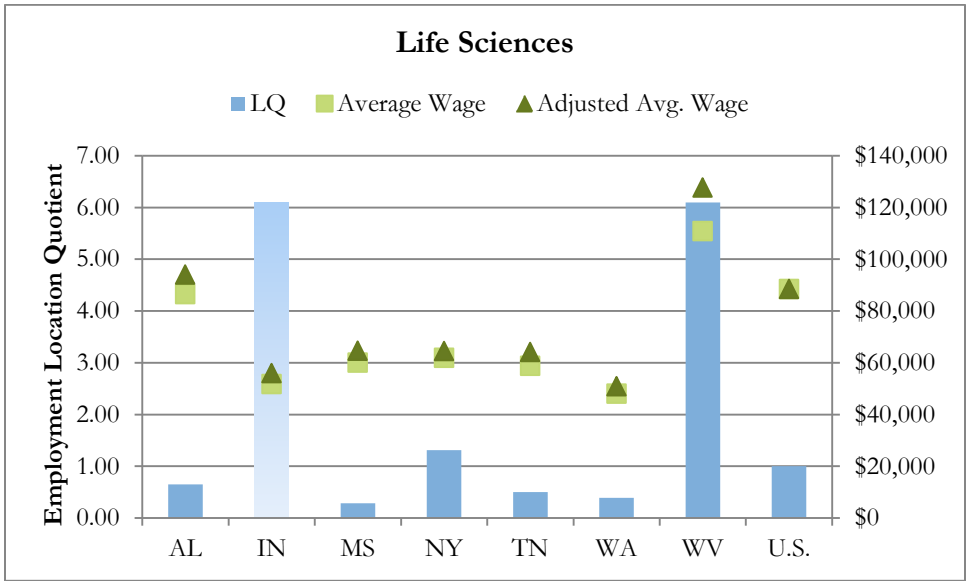
[7] These employment and wage data for these comparisons are derived from IBRC county-level estimates of employment and wages for 6-digit NAICS industries, aggregated into clusters and regions. These estimates are based on 2012 QCEW annual data from the Bureau of Labor Statistics. IBRC used the U.S. Bureau of Economic Analysis 2011 Regional Price Parity data to apply cost of living adjustments to reported wages.

Figure 27: Employment Location Quotient for Furniture



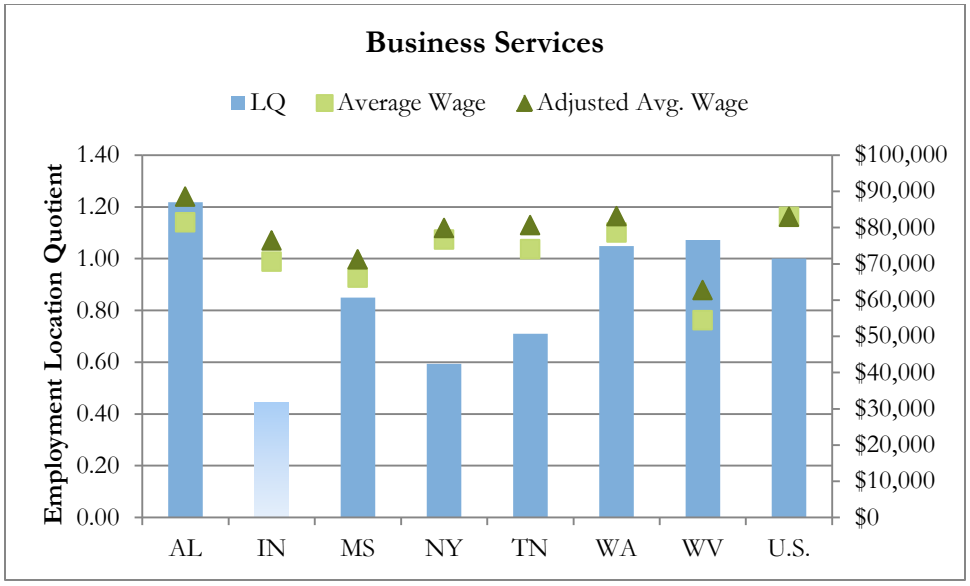
Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 28: Employment Location Quotient for Life Sciences



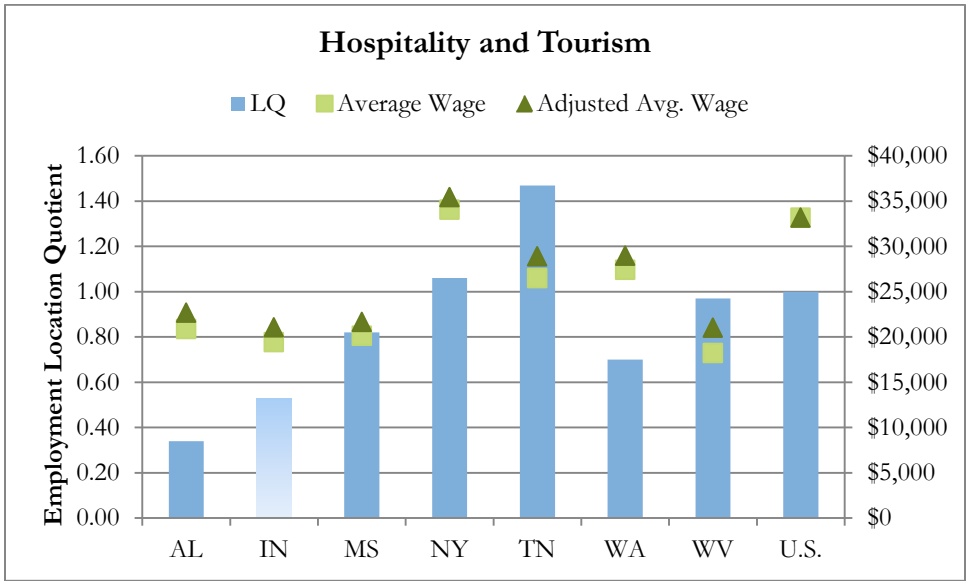
Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 29: Employment Location Quotient for Business Services



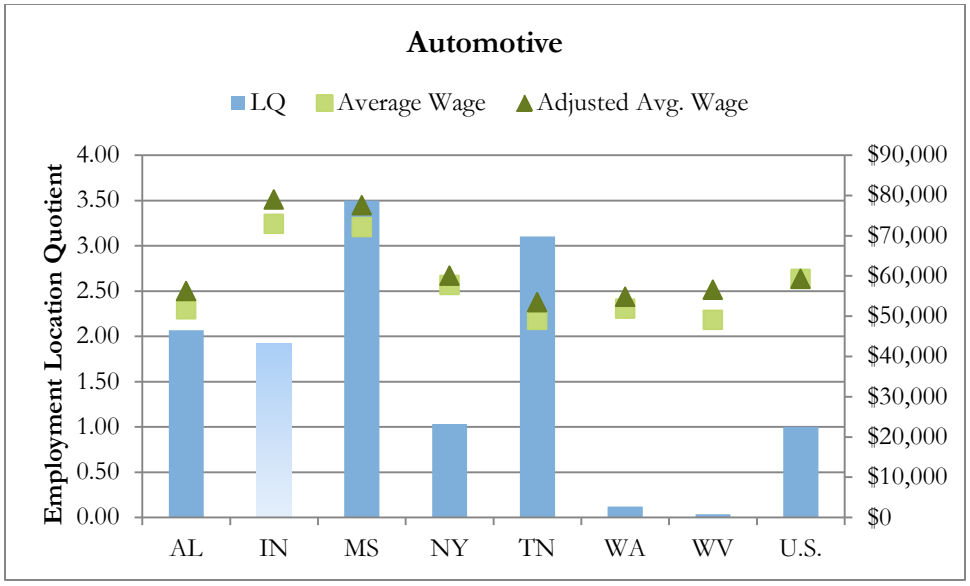
Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 30: Employment Location Quotient for Hospitality and Tourism



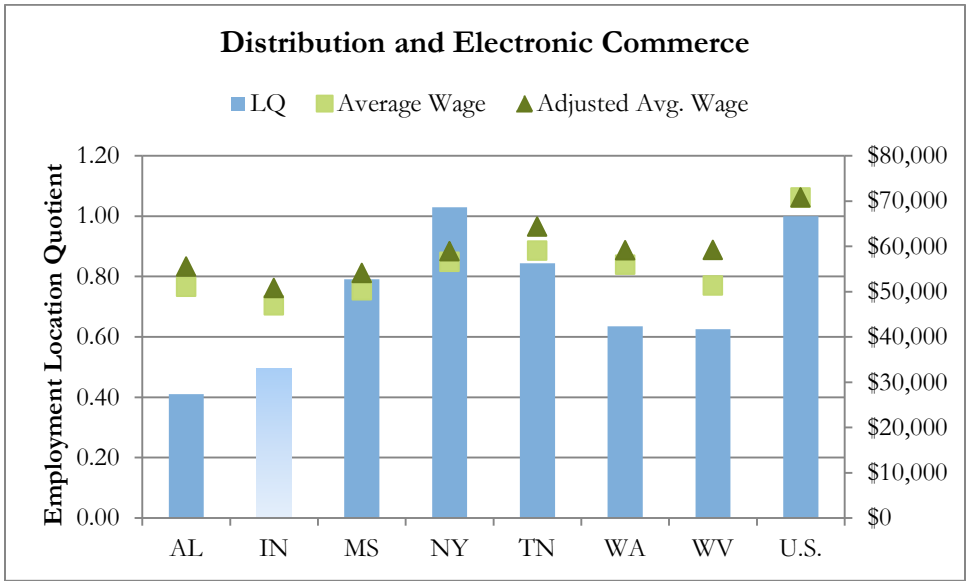
Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 31: Employment Location Quotient for Automotive



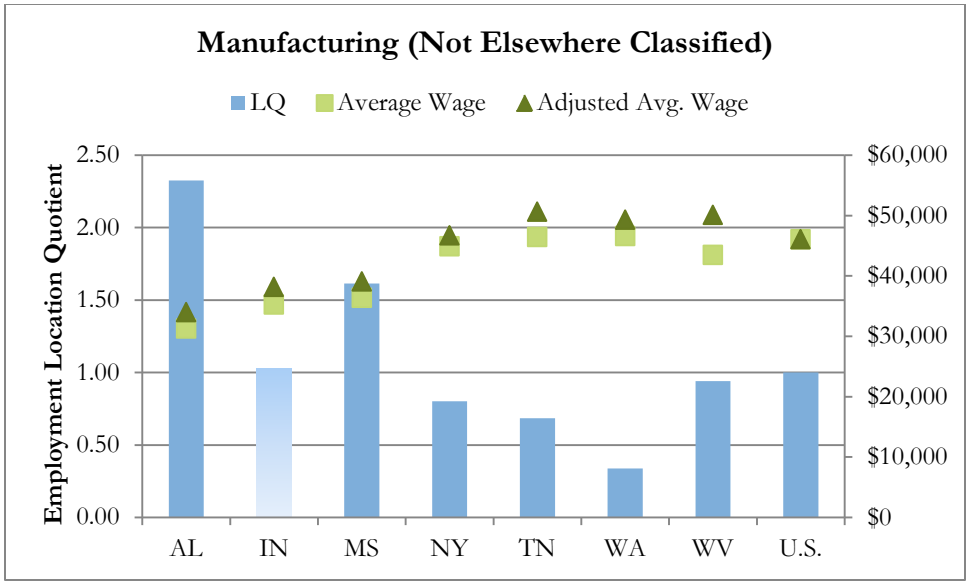
Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 32: Employment Location Quotient for Distribution and Electronic Commerce



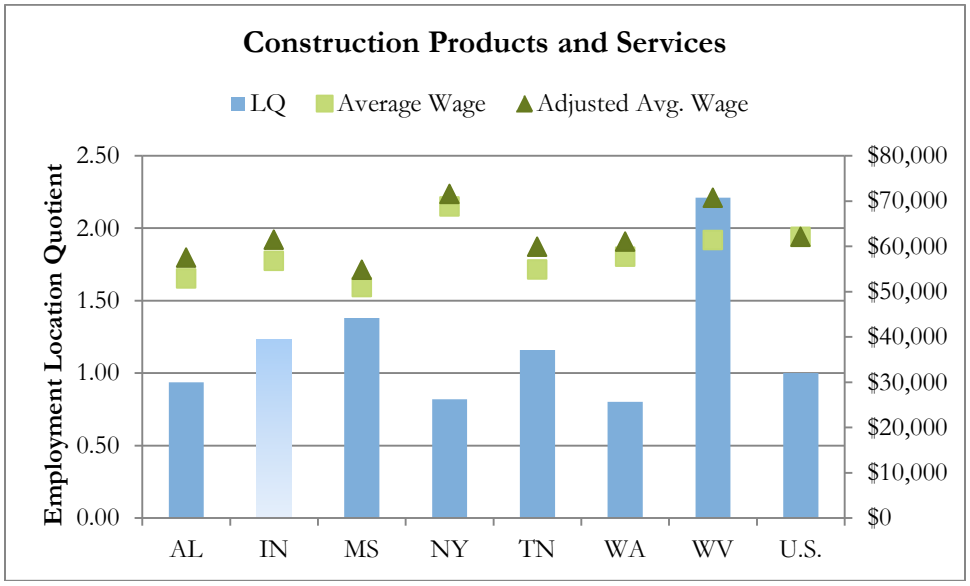
Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 33: Employment Location Quotient for Manufacturing (Not Elsewhere Classified)



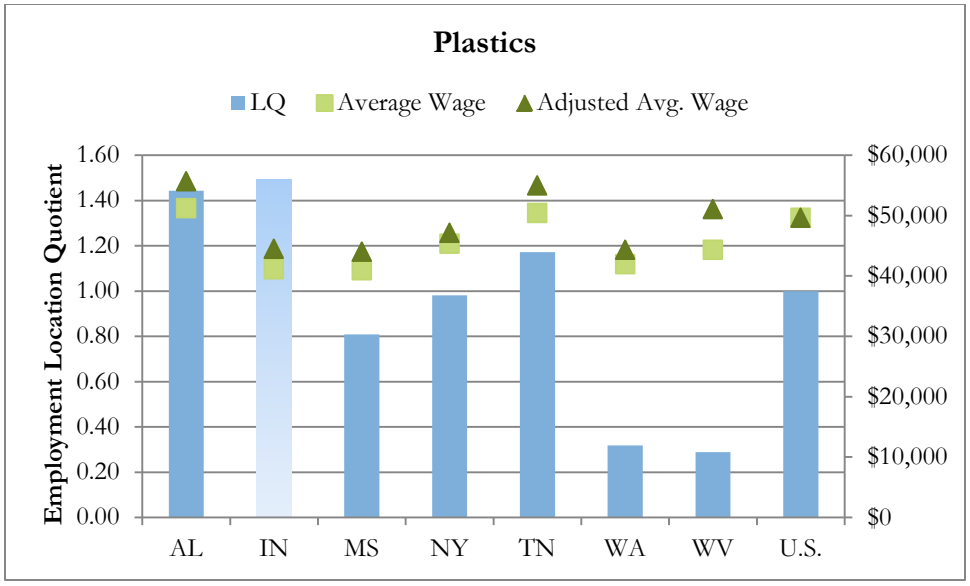
Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 34: Employment Location Quotient for Construction Products and Services



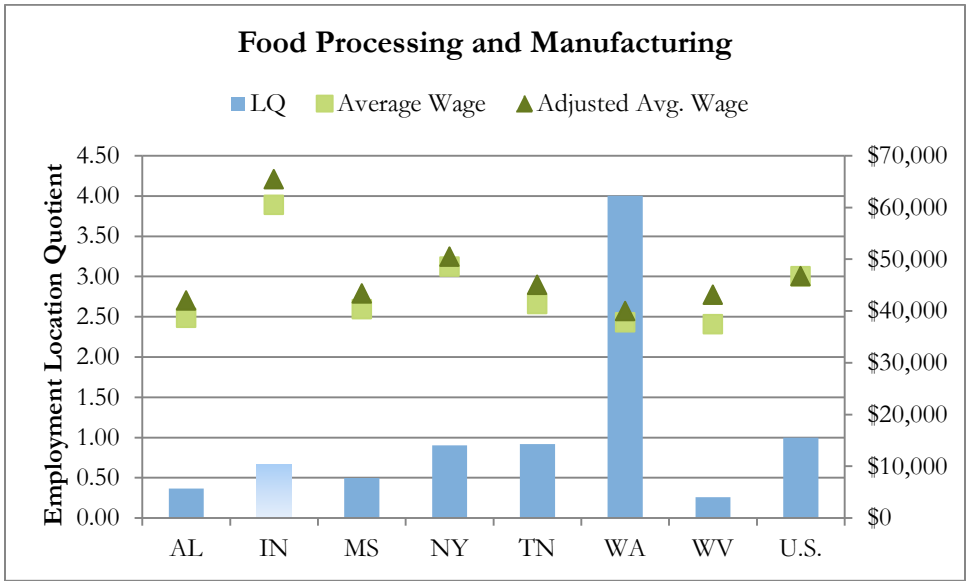
Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 35: Employment Location Quotient for Plastics



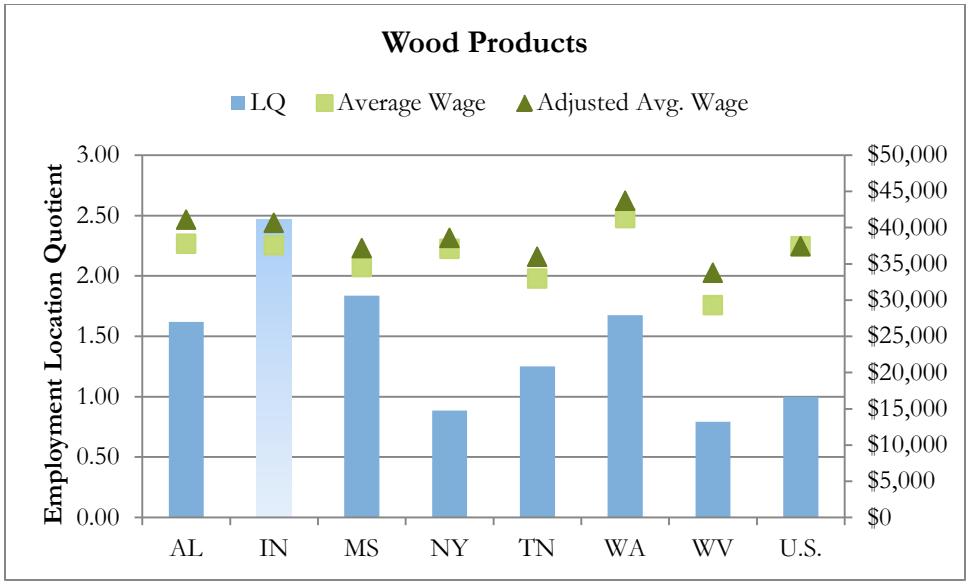
Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 36: Employment Location Quotient for Food Processing and Manufacturing



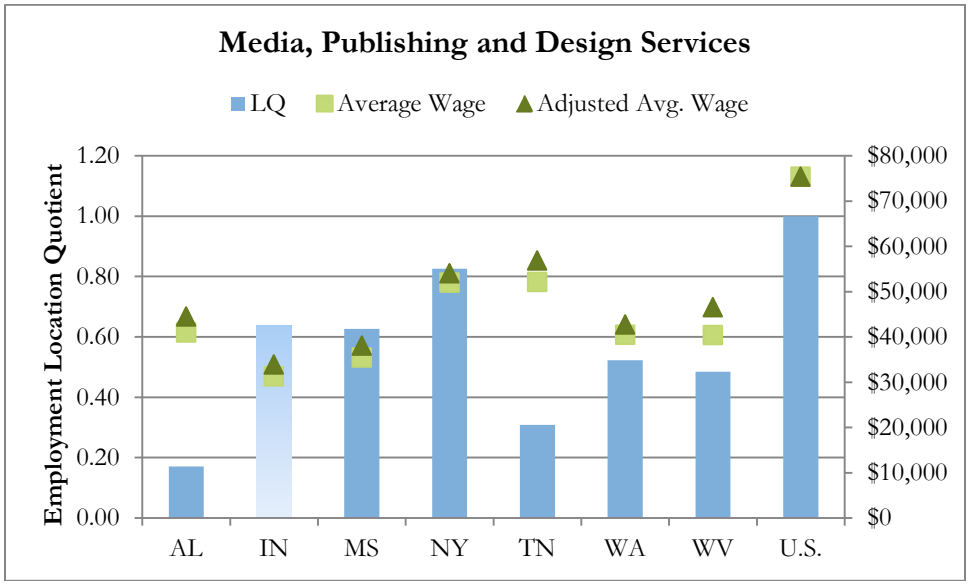
Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 37: Employment Location Quotient for Wood Products



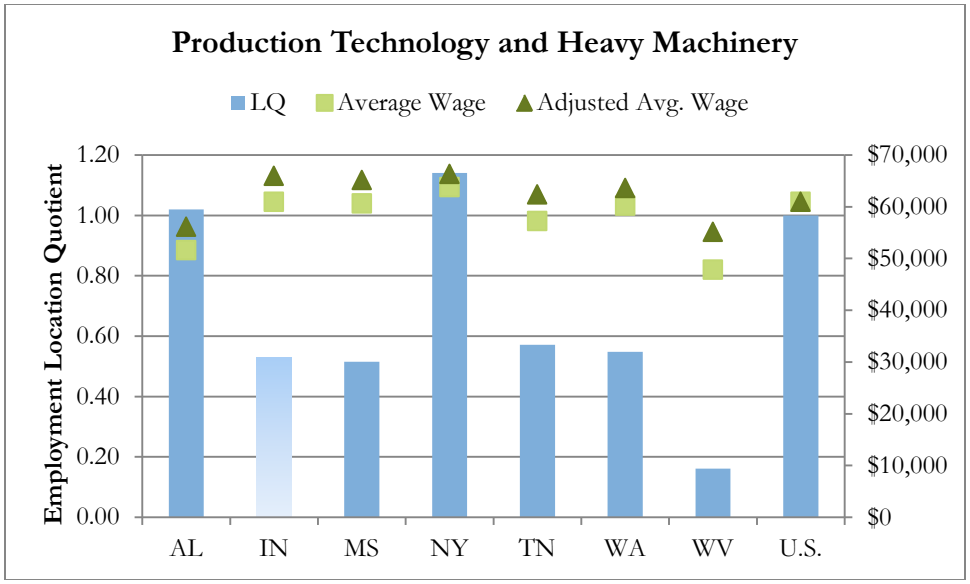
Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 38: Employment Location Quotient for Media, Publishing and Design Services



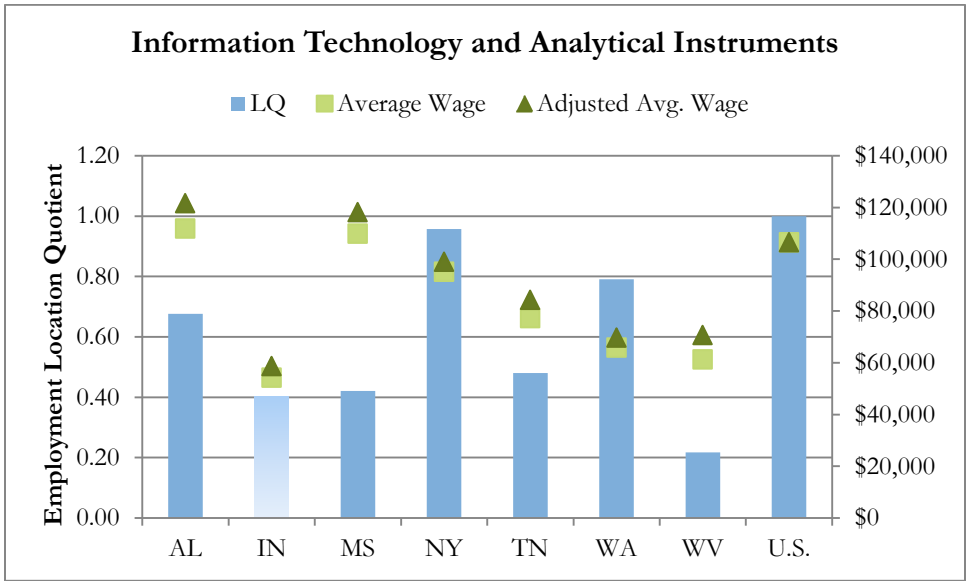
Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 39: Employment Location Quotient for Production Technology and Heavy Machinery



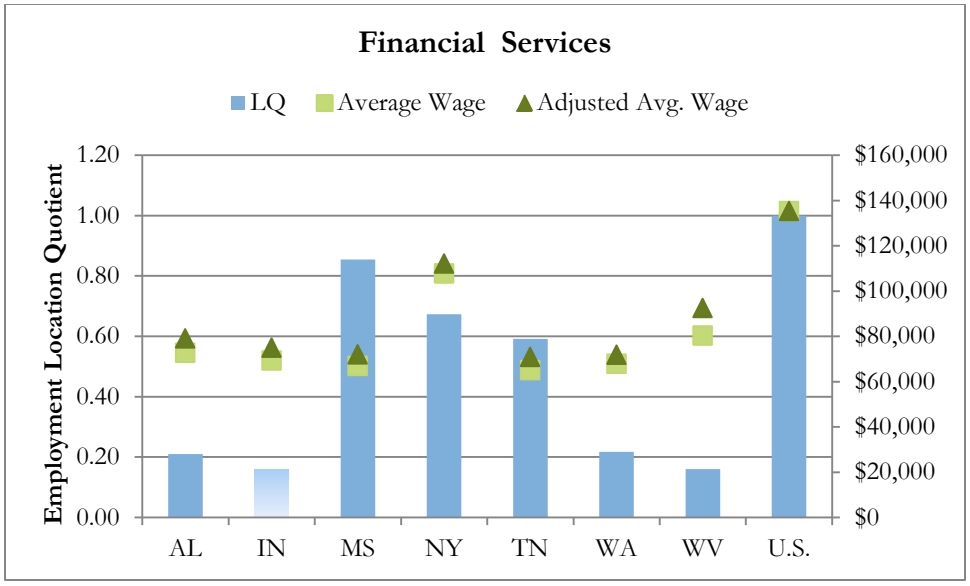
Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 40: Employment Location Quotient for Information Technology and Analytical Instruments



Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Figure 41: Employment Location Quotient for Financial Services



Source: IBRC county-level estimates based on 2012 QCEW annual data from the Bureau of Labor Statistics

Establishment Churn

Establishment Churn in the SWCI Region, 2000-2010

Changes over time in the employment levels of establishments convey a sense of a region's economic vitality, and they're closely related to entrepreneurial activity. The growth of new businesses, the decline of less productive ones, and the reallocation of resources from less profitable businesses and establishments to more profitable ones characterize a process known as "creative destruction."

A region's gross job gains are the sum of net job gains from establishments opening or expanding over time. Similarly, its gross job losses are the sum of net job losses from establishments closing or contracting. *Openings* include establishments reporting employment for the first time as well as those that reopened after a period with no employment (e.g., seasonal businesses). Establishment *births* include only those establishments that have never previously reported any employment. Analogously, *closings* include establishments that go out of business permanently (*deaths*) as well as those that shut down temporarily. Thus, births and deaths exclude cases involving seasonal shutdowns.[8]

Establishments can thus be categorized by five possible types of employment change they can undergo between two time periods (e.g., months, quarters, years): births, expansions, contractions and expansions as defined above, and also *constants,* which are establishments with no employment level change between the two periods. Taken together, these measures of establishment change reflect the degree of "churn" in a region's business environment. Higher levels of churn indicate more dynamic environments, often associated with regions having more entrepreneurial activity.

Figure 42 shows annual data[9] from 2000 and 2010 for the five establishment-change categories for the SWCI region from two perspectives. The top graph shows the annual number of regional establishments within each category. The top graph also displays the net establishment difference between births and deaths and the difference between expansions and contractions for the same years. When the net differences are greater than zero, the region added more jobs than were lost. Conversely, when the net differences are less than zero, the region lost more jobs than were added. Though possible, no region in any year studied experienced a net difference of zero where jobs added equaled jobs lost. The bottom graph provides additional context by showing each establishment category as a percent of total annual establishments.

While the number of establishments in each category varied across regions, the regions shared several similarities. For ease of presentation, similar graphs for the peer regions are included in the Appendix. First, establishments with no employment level changes (constants) were the largest category in each year. Second, each region's lowest and highest concentration of constants occurred in 2002 and 2010, respectively – except for Tennessee and West Virginia. Third, expanding and contracting establishments were the next two largest categories, together averaging approximately half of the establishments in each region, and they moved in a

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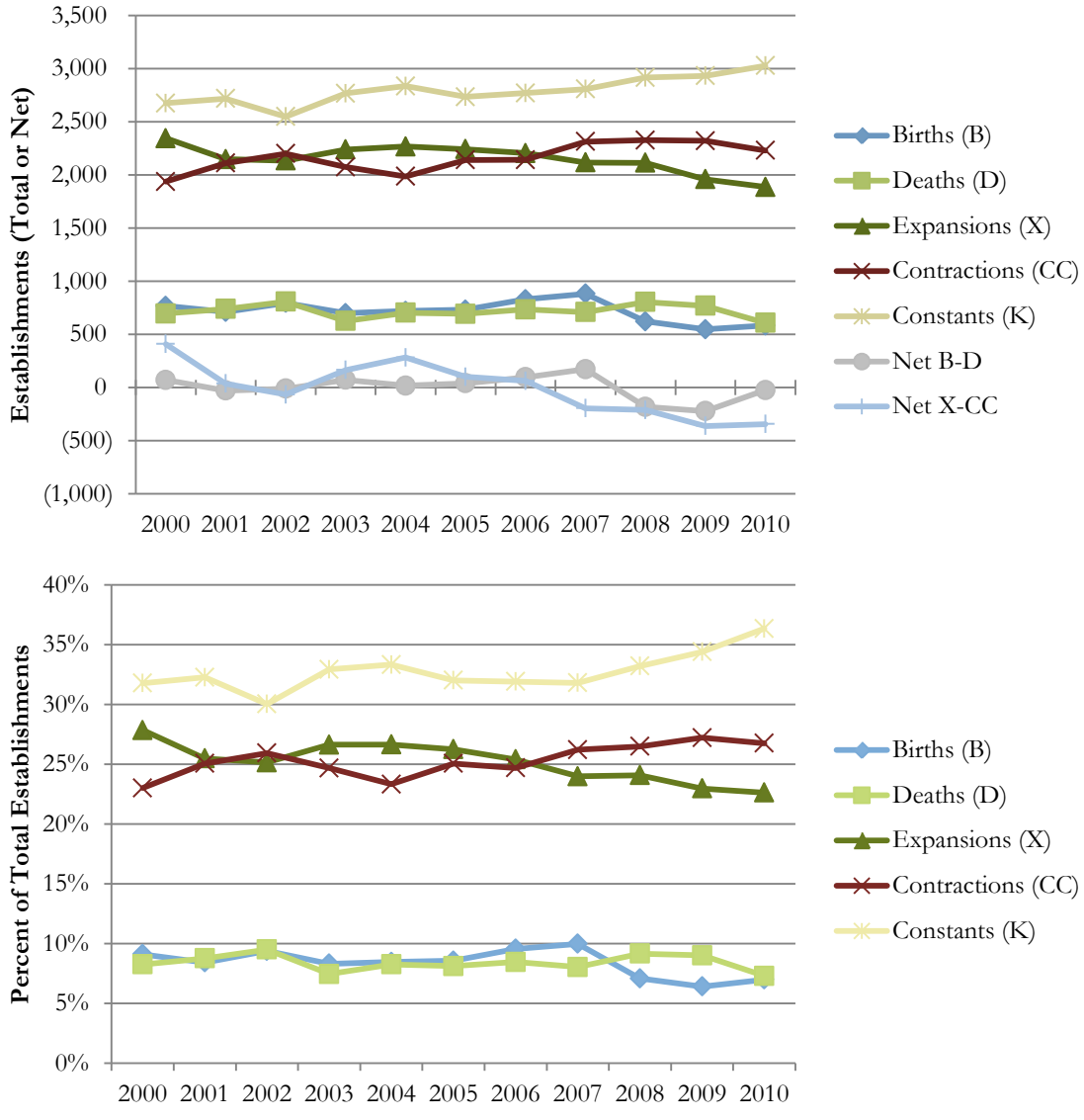
[8] Akbar Sadeghi, "The births and deaths of business establishments in the United States," *Monthly Labor Review,* Bureau of Labor Statistics, December 2008. http://www.bls.gov/opub/mlr/2008/12/art1full.pdf

[9] IBRC used the Statistics of U.S. Businesses data set from the U.S. Census Bureau for this analysis.

countercyclical fashion. In other words, between 2000 and 2010, whenever the number of expanding establishments in a region increased, the number of contracting establishments decreased and vice versa. Lastly, establishment births and deaths were the two smallest categories each year.

Figure 42 also shows similar effects of the most recent recession on establishment-level employment changes. For example, Southwest Central Indiana and all of the other regions saw a consistent uptick in the number and percentage of constants between 2007 and 2010. This trend suggests several establishments weathered the economic downturn without any net employment changes. Figure 42 also highlights the establishments in the region that were not that fortunate. In each region, contractions exceeded expansions at some point between 2007 and 2010. This divergence was most pronounced in 2009 – the last official year of the recession – in all regions except West Virginia.

Figure 42: Indiana Establishments by Type of Employment Change, 2000-2010



Source: U.S. Census Bureau, Statistics of U.S. Businesses

Establishment Growth Ratios in SWCI and Peer Regions, 2000-2010

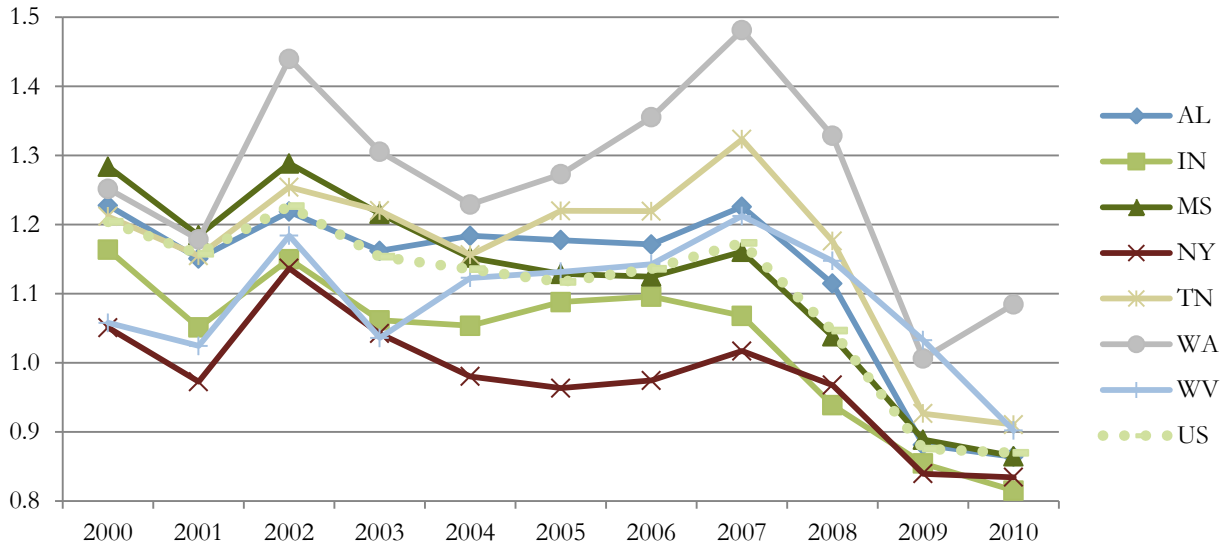
The availability of county-level establishment counts by type of employment-change enables researchers to calculate and analyze several measures for a county or region over time. To compare economic vitality across SWCI and peer regions, IBRC analyzed the ratio of job-creation categories (births plus expansions) to establishments with no employment level changes (constants), reasoning that the regions with higher establishment growth ratios have more dynamic and vital regional economies. Figure 43 shows a general downward trend in this ratio across nearly all regions between 2000 and 2010 (especially after 2007), with upticks in 2002 and 2007; SWCI, however, did not experience the 2007 uptick.

Compared to its peers, the SWCI region had one of the least dynamic and vital economies with respect to establishment growth. It had the fifth highest ratio (1.16) of the seven regions in 2000 but the lowest ratio of all (0.82) in 2010. The constants in the SWCI region first surpassed the combined number of establishment births and expansions (i.e., fell below the 1.0 threshold) in 2008, the first full year of the Great Recession. The New York region had the lowest ratio in every year except 2008 when it edged out the SWCI region.

The SWCI and New York regions were the only regions that had lower establishment growth ratios than the U.S. every year. The Alabama region closely tracked the U.S. ratio from 2000 to 2003, and temporarily surpassed it between 2004 and 2008. The Mississippi region, on the other hand, exceeded the U.S. ratio from 2000 to 2003, but then essentially matched U.S. levels through 2010.

Each region experienced the most precipitous declines in its ratio during the Great Recession. Even the leading region since 2002 was not immune. Washington was the only region whose ratio remained above 1.0 every year. Its highest ratio (1.48) occurred in 2007—the year the recession began—and its lowest ratio (1.01) occurred in 2009—the recession's final year.

Figure 43: Ratio of Establishment Births and Expansions to Establishment Constants



Source: IBRC using data from U.S. Census Bureau, Statistics of U.S. Businesses

Corresponding growth-ratio data are shown in Appendix B for each of SWCI's six peer regions.

Venture Capital

Venture Capital Activity in SWCI and Peer Regions

Venture capital activity can be an important indicator of a region's economic dynamism and capacity for innovation. For this benchmarking study, IBRC analyzed all disclosed venture capital transactions between 2005 and 2012 for each peer region and peer state (see Table 20). Companies throughout Indiana raised nearly $1 billion in venture capital during this period, ranking third among the seven peer states. However, only one company within the SWCI region received venture capital ($1.8 million) during this seven-year period, ranking sixth among the seven peer regions. This lone deal accounted for 0.2 percent of the venture capital raised by all Indiana companies. This low percentage suggests companies in the SWCI region have not been very influential in attracting venture capital to the Hoosier state.

Table 20: Venture Capital Activity by Peer Region and State, 2005-2012

	Venture Capital Amount			Number of Deals			Average VC per Deal	
	Region	State	% of State	Region	State	% of State	Region	State
AL	$65,764,200	$175,229,200	37.5%	13	36	36.1%	$5,058,785	$4,867,478
IN	$1,800,000	$952,314,087	0.2%	1	102	1.0%	$1,800,000	$9,336,413
MS	$117,060,542	$157,800,542	74.2%	10	15	66.7%	$11,706,054	$10,520,036
NY	$21,000,000	$11,888,406,835	0.2%	2	1,813	0.1%	$10,500,000	$6,557,312
TN	$54,003,243	$420,967,050	12.8%	16	128	12.5%	$3,375,203	$3,288,805
WA	$0	$7,479,213,653	0.0%	0	871	0.0%		$8,586,927
WV	$9,500,000	$51,655,122	18.4%	5	12	41.7%	$1,900,000	$4,304,594
Total	$269,127,985.00	$21,125,586,489.00		47	2,977			

Source: IBRC calculations using VentureDeal data

Companies in the Mississippi peer region appear to be the exact opposite. They raised nearly seventy-five percent of the total $157.8 million venture capital raised throughout the state and closed two-thirds of the 15 deals. These high percentages suggest that companies in the Jackson/Vicksburg region are quite influential in attracting venture capital dollars to Mississippi.

The Huntsville region of Alabama also appeared to have companies with modest success in attracting venture capital to the state. They amassed 37.5 percent of the $175 million in venture capital invested in Alabama between 2007 and 2012, and closed 13 (36.1 percent) of the state's 36 venture capital deals.

West Virginia companies in the Morgantown region attracted $9.5 million (18.4 percent) of the $51.6 million of venture capital invested in that state. They also accounted for five (41.7 percent) of the 12 deals closed during this period. Tennessee companies in the Knoxville region accounted for one-eighth of the $421 million venture capital raised and of the total number of deals (128) statewide.

Although New York and Washington ranked first and second in statewide venture capital raised, with companies in those peer states receiving nearly $11.9 billion and $7.5 billion respectively, the peer regions in these states did not appear to be major factors in attracting venture capital to their states. The one company in New York's Syracuse-Rome region, like Indiana's SWCI region, accounted for only 0.2 percent of the venture capital raised. This company received $21 million in venture capital. Technology companies in the Richland-Pullman region of Washington did not attract any venture capital to that state.

Wired Broadband

Wired Broadband Connectivity and Total Providers in SWCI

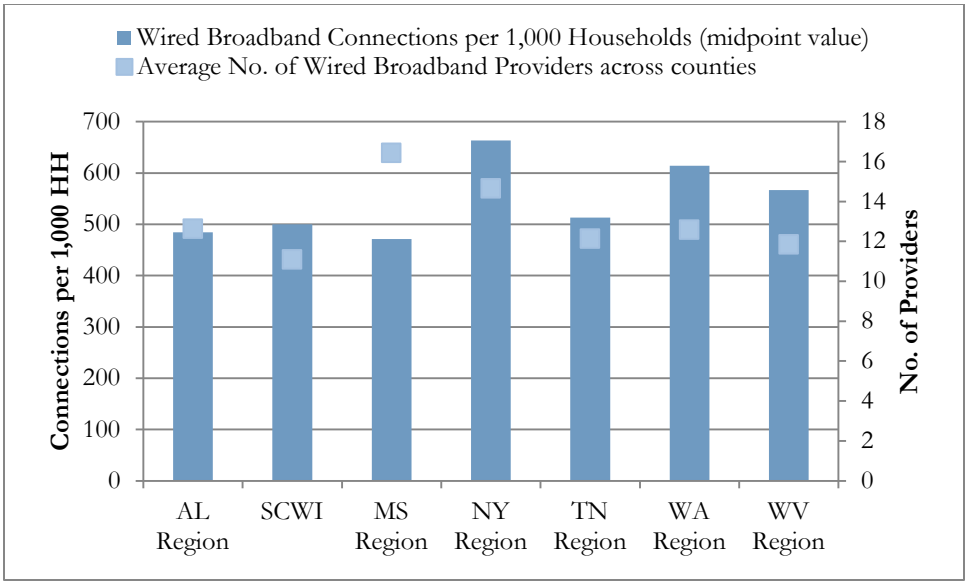
High-speed internet connectivity offered by broadband is essential for businesses and consumers in the knowledge-based economy. From a regional perspective, the extent of broadband connections and the number of available broadband providers can serve as indicators of a region's capacity for innovation and economic growth.

Figure 44 shows how the wired broadband connectivity in SWCI compares to the other peer regions.[10] SCWI ranked third lowest on average connectivity with 500 broadband connections per 1,000 households, slightly higher than the Alabama (485) and Mississippi (471) regions. The New York region had the highest average connectivity (664) followed by Washington (614) and West Virginia (567), respectively. The Tennessee region averaged 513 wired broadband connections per 1,000 households. While the MS region had the greatest average number of providers per county, it had the lowest average number of households connected per county.

Figure 44 also shows the average number of wired broadband providers in each peer region. The average number of providers per county ranged from 11 (Indiana) to 16 (Mississippi). The NY region had the second-highest number of providers with 14 per county, and the remaining regions each had approximately 12 wired broadband providers per county.

[10] The Federal Communications Commission 2012 county-level connectivity data used to create these graphs ranged from zero to five. Values of zero meant no connections, and values of five represented 800 or more connections. Each value between one and four corresponded to a 200 point range of connections per 1,000 households. For example, a value of one equaled "1-200" connections per 1,000 houses, and value of two represented "201-400" connections. In order to graph this data with minimal distortion, IBRC recoded these data at the midpoint of each corresponding range – except for observations coded zero and five. An original value of two, for instance, was recoded to a midpoint value of 300 between the "201-400" range. Data values of zero did not need to be recoded, but data values of five were recoded as 900 connections. Therefore, in all graphs similar to (and including) Figure 44, the "connection" figures all represent data transformed in this way.

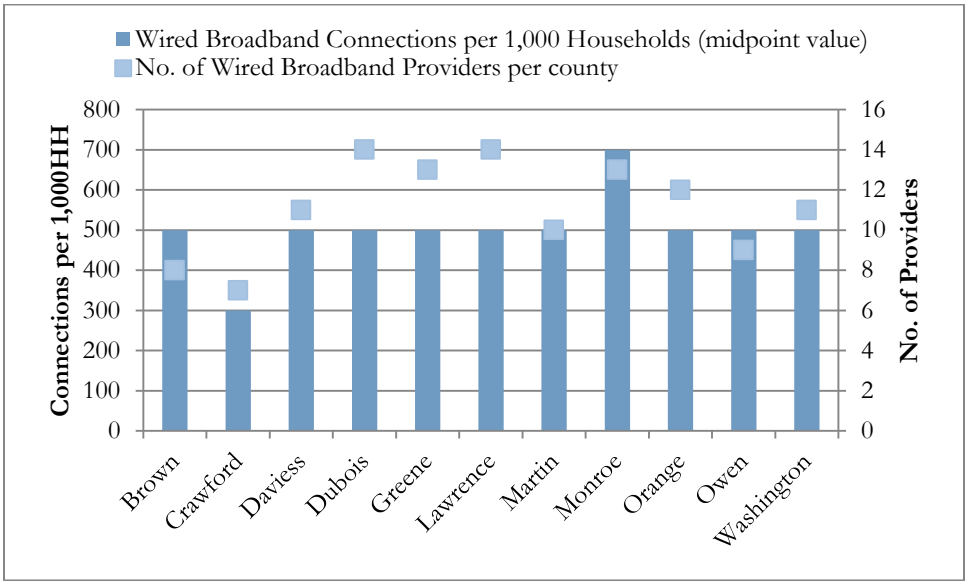
Figure 44: Wired Broadband Connectivity and Providers by Peer Region, 2012



Source: Indiana Business Research Center, using 2012 Federal Communications Commission data

While Figure 44 provides the broadband connectivity and provider levels to make regional comparisons, similar data summaries of smaller geographic areas may also prove useful. Figure 45 reveals how broadband connectivity varies by county in the SWCI region. With 700 wired broadband connections per 1,000 households, Monroe was the most connected county, while Crawford (300) was the least connected. The remaining nine counties in the SWCI region all averaged 500 connections per 1,000 households. Figure 45 also shows how the number of wired broadband providers varied across counties ranging from 7 (Crawford) to 14 (Dubois and Lawrence). Similar graphs for the peer regions are included in Appendix C.

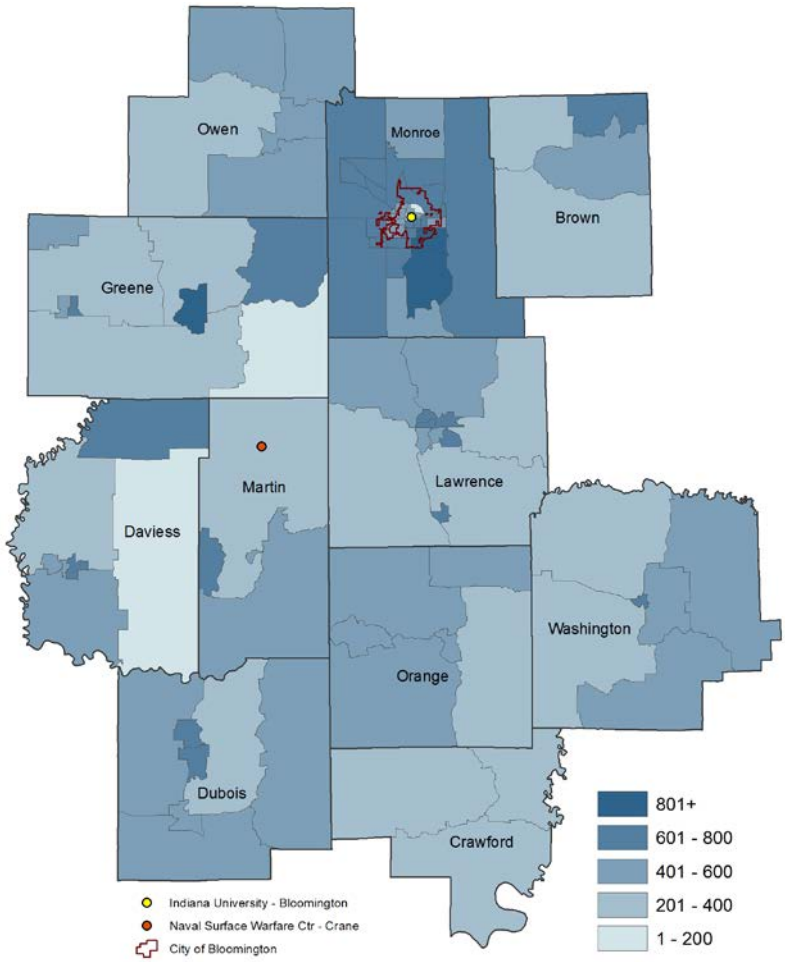
Figure 45: Wired Broadband Connectivity and Providers in SWCI Counties, 2012



Source: Indiana Business Research Center, using 2012 Federal Communications Commission data

For the finest level of detail, the research team also used census-tract data to create two wired broadband maps for each peer region. Figure 46 show the extent of wired broadband connections per 1,000 households, while the second set of maps displays the number of broadband providers for each census tract in the region. In both sets of maps, darker shades indicate more connections or more providers, respectively. For ease of presentation, only the SWCI maps are included in the body of the report; the maps for the peer regions are included in Appendix D.

Figure 46: SWCI's Wired Broadband Connections per 1,000 Households by Census-Tract, 2012



Source: Indiana Business Research Center, using 2012 Federal Communications Commission data

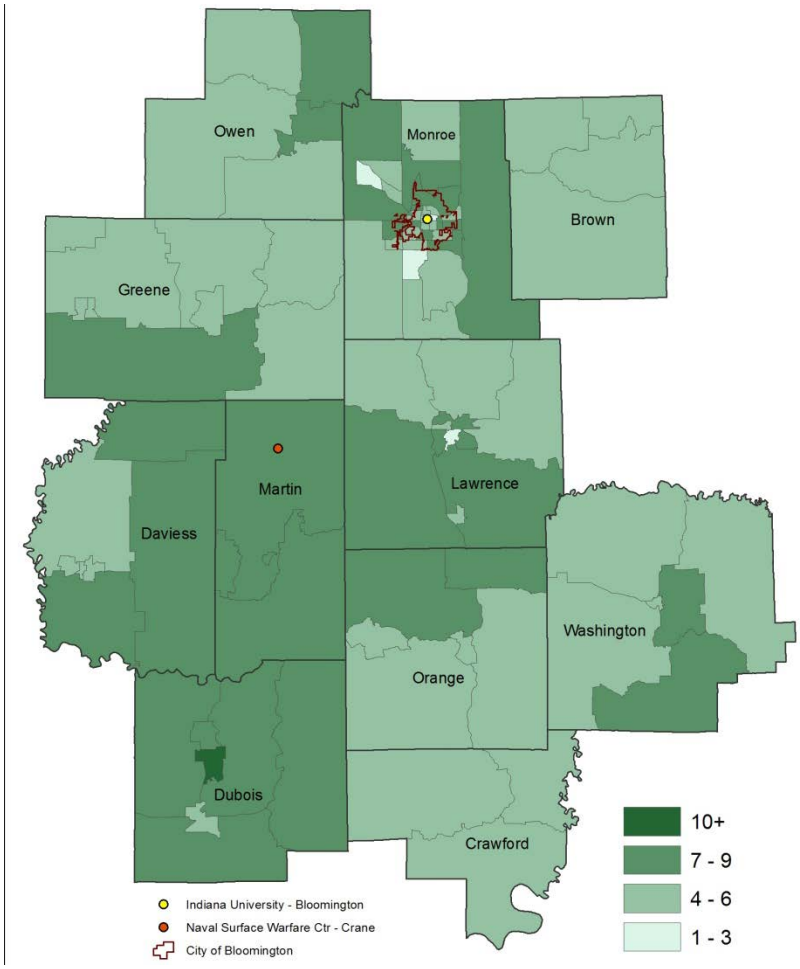
As presented in the SWCI map, Monroe County led the region with the highest levels of wired broadband connectivity. The majority of the county had 601 to 800 connections per 1,000 households, while an area just south of Bloomington had over 800 connections. Monroe County only had two census tracts between 401 to 600 wired broadband connections.

Crawford County, on the other hand, had the lowest levels of connectivity. The entire county had between 201 and 400 wired broadband connections per 1,000 households – the second lowest connectivity category.

The connectivity of the remaining counties primarily ranged between 201 and 600 exclusively (e.g., Orange and Owen counties) or with a few small areas with denser connections of 601 to 800 (e.g., Brown, Daviess, Dubois, Lawrence, Martin and Washington counties).

While Greene County had a similar connectivity profile (201 to 600), it was the only other county in the SWCI Region besides Monroe County to have an area that exceeded 800 wired broadband connections per 1,000 households. Greene County also shared a similarity with Daviess County. They were the only counties in the SCWI Region with areas in the lowest range of connectivity (1 to 200).

Figure 47: Number of Wired Broadband Providers by Census-Tract, SWCI Region



Source: Indiana Business Research Center, using 2012 Federal Communications Commission data

The SWCI provider map (Figure 47) shows that only three counties had the same level of broadband providers across all census tracts. Martin had seven to nine providers, while Brown and Crawford counties had four to six. Most census tracts in the remaining nine counties fell into one of those two provider categories. Overall, the SWCI region has a reasonably adequate number of wired broadband providers, although there are numerous local areas within the region where connectivity is limited.

Appendix A: Brief Cluster Descriptions

Cluster Name	Harvard Cluster Codes	Brief Description
Aerospace Vehicles and Defense	1	Includes firms that manufacture aircraft, space vehicles, guided missiles, and related parts. This cluster also contains firms that manufacture the necessary search and navigation equipment used by these products.
Agricultural Services	2	Includes establishments primarily engaged in farming and its related services. Farming includes soil preparation, planting, cultivating, harvesting, and post-harvest activities. It also includes services that supply farm labor and additional operations management.
Apparel	3	Includes establishments focused on manufacturing clothing and fabric accessories
Automotive	4	Includes establishments along the value chain required for manufacturing cars
Life Sciences	5 and 25	*Includes all biopharmaceutical and medical device firms.* Biopharma firms produce complex chemical and biological substances used in medications, vaccines, diagnostic tests, and similar medical applications. Medical device firms primarily manufacture surgical, dental, and optical instruments and supplies.
Business Services	6	Includes firms providing services primarily designed to assist other businesses. This includes consulting, computer, engineering, placement, and other professional services.
Communications Equipment and Services	7	Involves goods and services used for communications -- including cable, wireless, and satellite services; as well as telephone, broadcasting, and wireless communications equipment.
Construction Products and Services	8	Includes establishments that supply construction materials, components, products, and services. Construction materials and components include those made of sand, stone, gravel, asphalt, cement, concrete, and other earthen substances. Construction products include pipes and heat exchangers. Construction services include the construction of pipelines for water, sewer, oil and gas, power, and communication, as well as building services for homes and industrial buildings.
Distribution and Electronic Commerce	9	Consists primarily of wholesaler establishments. The companies in this cluster mostly buy, hold in inventory, and/or distribute apparel, farm materials, machinery, and other merchandise. It also contains equipment rental and leasing for distribution. Firms include traditional wholesalers as well as mail order houses and electronic merchants.
Downstream Chemical Products	10	Includes firms that manufacture complex chemical products for end users. These products include adhesives, beauty products, soaps, cleaners, film processing chemicals, dyes, paints, and explosives.
Downstream Metal Products	11	Contains establishments that manufacture metal containers, prefabricated metal structures, and end user metal products. These end user products include ammunition, kitchenware, hardware, metal bathroom fixtures, and similar products.

Education, Knowledge Creation and Laboratory Research	12	Contains all educational and training institutions and related support services. Research and development institutions in biotechnology, physical sciences, engineering, life sciences, and social sciences are also included.
Energy Generation and Distribution	13	Contains establishments primarily responsible for generating and/or distributing electric power, oil, gas, and petroleum.
Financial Services	14	Contains establishments involved in aiding the transaction, growth, and protection of financial assets for businesses and individuals. These firms include securities brokers, dealers, and exchanges; credit institutions; and insurance carriers.
Fishing and Fishing Products	15	Includes firms engaged primarily in catching fish and other seafood and processing the catch for consumption.
Food Processing and Manufacturing	16	Includes firms involved in the processing of raw food materials and manufacturing of downstream food products for end users. This includes millers and refineries of rice, flour, corn, sugar, and oilseed. It also includes wholesalers of grains, beans, and livestock. These upstream products contribute, in part, to producing specialty foods, baked goods, candies, teas, coffees, beers, wines, meats, packaged fruits and vegetables, and processed dairy products.
Footwear	17	Includes firms that manufacture men's and women's shoes, boots, slippers, and other footwear (including athletic shoes).This cluster also contains the upstream finished leather used in making footwear.
Furniture	18	Contains establishments that manufacture furniture, woodwork, cabinets, and shelving for residential homes and offices. It also includes establishments that produce manufactured homes. The products in this cluster can be made of wood, metal, plastic, and textiles.
Hospitality and Tourism	19	Contains establishments related to hospitality/tourism services. This includes attractions, hotels and other accommodations, transportation, and other services related to recreational travel such as reservation services and tour operators.
Household Textiles and Leather Products	20	Contains establishments that primarily manufacture household textiles such as curtains, bedspreads, sheets, towels, and shower curtains; as well as luggage and bags (leather & fabric). This cluster also contains the upstream manufacture of textiles and components used in producing these core goods.
Information Technology and Analytical Instruments	21	Consists of information technology products (e.g., computers, software, and audio visual equipment) and analytical instruments used for controlling and measuring processes. The cluster also includes the standard and precision electronics used by these products (e.g., circuit boards and semiconductor devices).
Jewelry and Precious Metals	22	Includes firms that manufacture jewelry, silverware, and fine tableware. This cluster also includes the upstream manufacture of jewelry parts and processing of gemstones.
Lighting and Electrical Equipment	23	Contains firms involved in the manufacture of electrical and electronic components, and they manufacture wire for communications and energy, wiring devices, fiber optic cables, switchboards, lighting fixtures, and related products.

Media, Publishing & Design Services	24	Consists of establishments involved in media services-- publishing (hard copy and on the internet), design services (physical and graphical), and marketing (including marketing research, media buying, and public relations).
Metalworking Technology	26	Includes establishments that manufacture machine tools and process metal for use in metalworking. The cluster also contains the downstream manufacture of metal fasteners and hand tools.
Music and Sound Recording	27	Consists of establishments mainly involved in the production of music and other sound recordings.
Oil and Gas Production	28	Includes firms involved in locating, extracting, and refining oil and gas. This includes companies that manufacture the equipment necessary to extract oil and gas, as well as companies that provide support services for oil and gas operations.
Paper and Packaging	29	Contains the paper mills and manufacturers of paper products used for shipping, packaging, containers, office supplies, personal products, and similar products.
Performing Arts	30	Contains services that produce, promote, and support live artistic performances. Live performances include those by theater companies, dance troupes, musicians, and independent artists.
Plastics	31	Includes firms that manufacture plastic materials, components, and products. The plastics are manufactured for packaging, pipes, floor coverings, insulation, signs, and related plastic products. The cluster also includes the upstream manufacturing of plastic materials and resins, as well as industrial machines used to manufacture plastics (for example, injection molding machines).
Printing Services	32	Contains firms primarily engaged in commercial printing, digital printing, and binding. The cluster includes upstream products and services necessary for printing
Production Technology and Heavy Machinery	33	Includes firms that primarily manufacture machines designed to produce parts and devices used in the production of downstream products. This cluster also includes end use heavy machinery. The machines are used for industrial, agricultural, construction, commercial, service industry, and related purposes.
Recreational & Small Electric Goods	34	Contains firms that manufacture end use products for recreational and decorative purposes. These products include games, toys, bicycles, motorcycles, musical instruments, sporting goods, art supplies, shades, and home accessories. This cluster also incorporates firms that produce small, simple electric goods like calculators, hairdryers, and fans.
Textile Manufacturing	35	Contains textile mills that primarily produce and finish fabrics for clothing, carpets, upholstery, and similar uses. The textiles include yarn, thread, fibers, hosiery, knits, and other specialty fabrics.
Tobacco	36	Consists of firms that manufacture cigarettes and other tobacco products. This also includes upstream tobacco leaf processing.
Trailers, Motor Homes and Appliances	37	Includes establishments that manufacture trailers, campers, and motor homes, as well as major household appliances.
Transportation and Logistics	38	Contains all air, rail, and freight transportation services. It also includes related operation services and support activities such as inspections, maintenance, repairs, security, and loading/unloading.

Upstream Chemical Products	39	Consists of firms that manufacture basic organic and inorganic chemicals and gases. The chemicals are usually separate elements that could be used as inputs for more complex downstream chemical products.
Upstream Metal Manufacturing	40	Includes establishments that manufacture upstream metal products such as pipes, tubes, metal closures, and related products. The cluster includes iron and steel mills and foundries, as well as related metal processing techniques.
Video Production and Distribution	41	Contains firms that are primarily involved with the production and distribution of motion pictures and other video. This includes specialized viewing venues such as drive-in theaters.
Vulcanized and Fired Materials	42	Contains firms that manufacture construction and other materials out of earthen substances such as clay, sand, and rubber at extremely high temperatures. The production processes create goods made of tile, brick, ceramic, glass, and rubber (including refractories and tires).
Water Transportation	43	Contains all establishments involved in transporting people and goods over water. The cluster includes boat building, transportation, operations, and other support services.
Wood Products	44	Contains firms that are primarily engaged in making upstream wood materials and manufacturing non-furniture wood products. Upstream establishments include sawmills, plywood and hardwood manufacturers, cut stock manufacturers, and wood preservation services. The downstream establishments produce windows, doors, flooring, wood containers, prefabricated wood buildings, and related products.
Manufacturing - Not Elsewhere Classified	Not a Porter cluster	All manufacturing industries not assigned to a Harvard Cluster (See table below.)

Source: Delgado, M., M.E. Porter, and S. Stern (2013), "Defining Clusters of Related Industries," http://www.clustermapping.us/lite/general.liteDownload/?file=files%2Fblocks_resource_item%2Fbinary%2FDefining_Clusters_of_Related_Industries_vBeta_Feb_2013.pdf
Cluster by Cluster Definitions (Enhanced Cluster Definitions 2013, Beta Version): 2/2013 (pp 48-50)

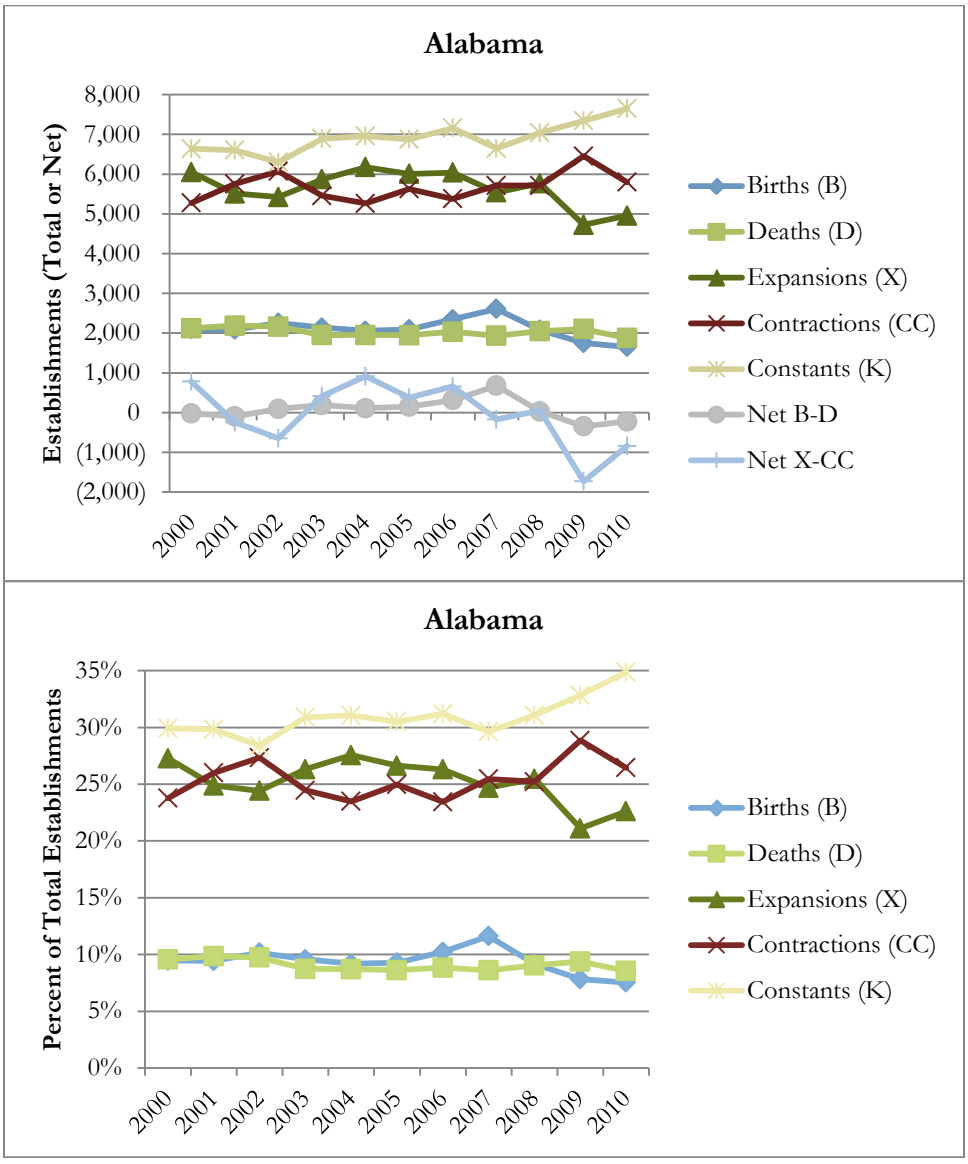
Industries in the "Manufacturing–Not Elsewhere Classified" Cluster

2012 NAICS Code	2012 NAICS Title
311224	Soybean and Other Oilseed Processing
311313	Beet Sugar Manufacturing
311615	Poultry Processing
311811	Retail Bakeries
312111	Soft Drink Manufacturing
312112	Bottled Water Manufacturing
312140	Distilleries
321212	Softwood Veneer and Plywood Manufacturing
322110	Pulp Mills
323111	Commercial Printing (except Screen and Books)
325311	Nitrogenous Fertilizer Manufacturing

325314	Fertilizer (Mixing Only) Manufacturing
326212	Tire Retreading
327320	Ready-Mix Concrete Manufacturing
327390	Other Concrete Product Manufacturing
327410	Lime Manufacturing
327992	Ground or Treated Mineral and Earth Manufacturing
331313	Alumina Refining and Primary Aluminum Production
331410	Nonferrous Metal (except Aluminum) Smelting and Refining
332322	Sheet Metal Work Manufacturing
332710	Machine Shops
336611	Ship Building and Repairing
339116	Dental Laboratories

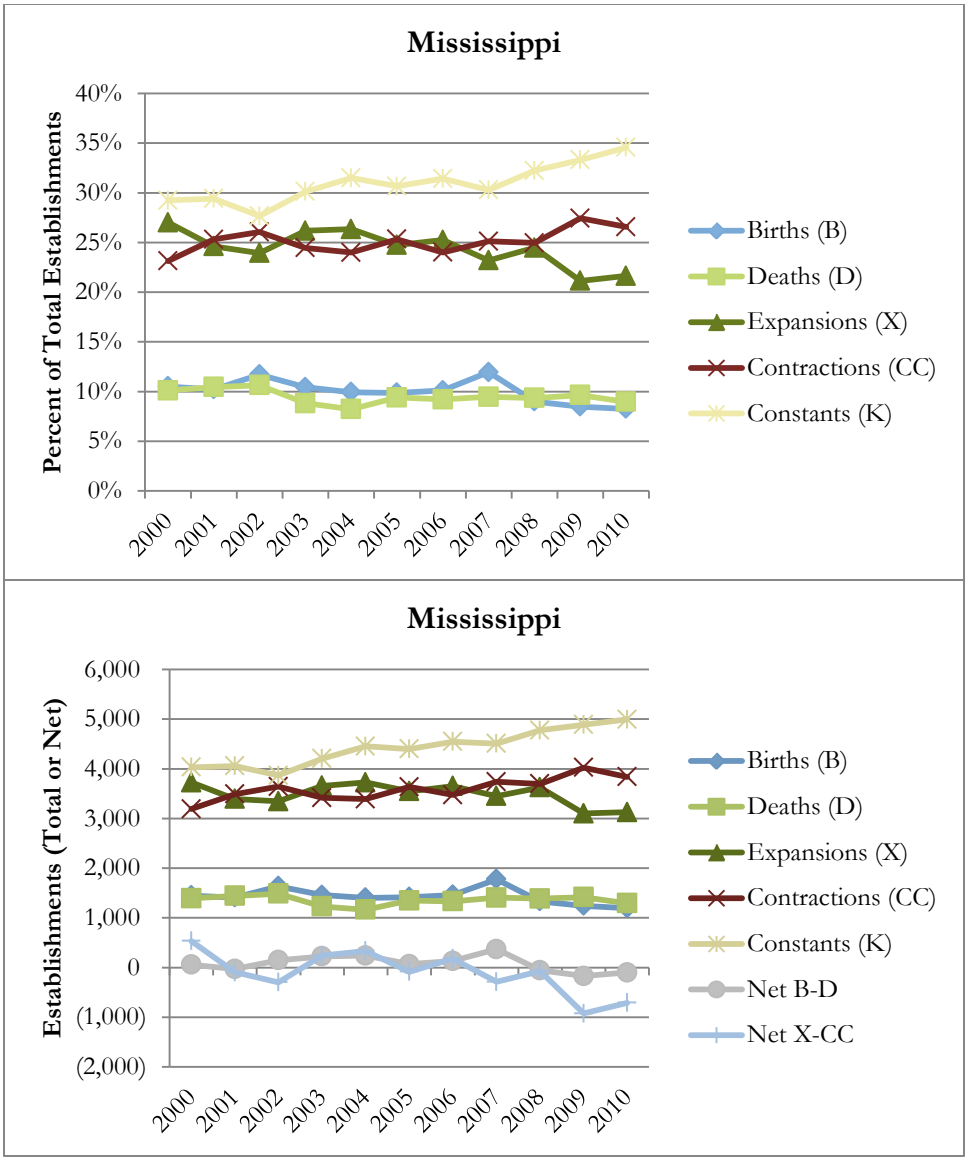
Appendix B: Establishment Churn in Peer Regions

Figure 48: Alabama Establishments by Type of Employment Change, 2000-2010



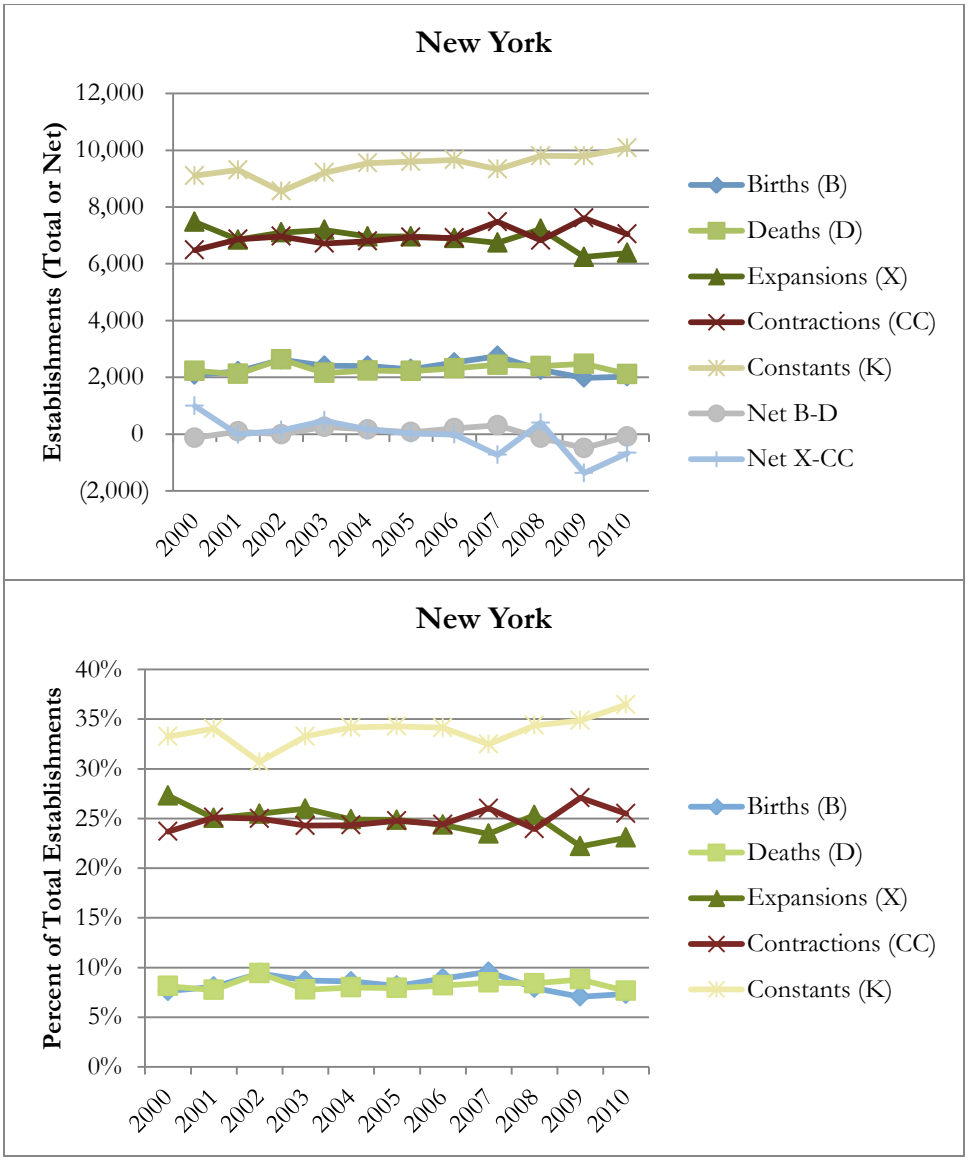
Source: U.S. Census Bureau, Statistics of U.S. Businesses

Figure 49: Mississippi Establishments by Type of Employment Change, 2000-2010



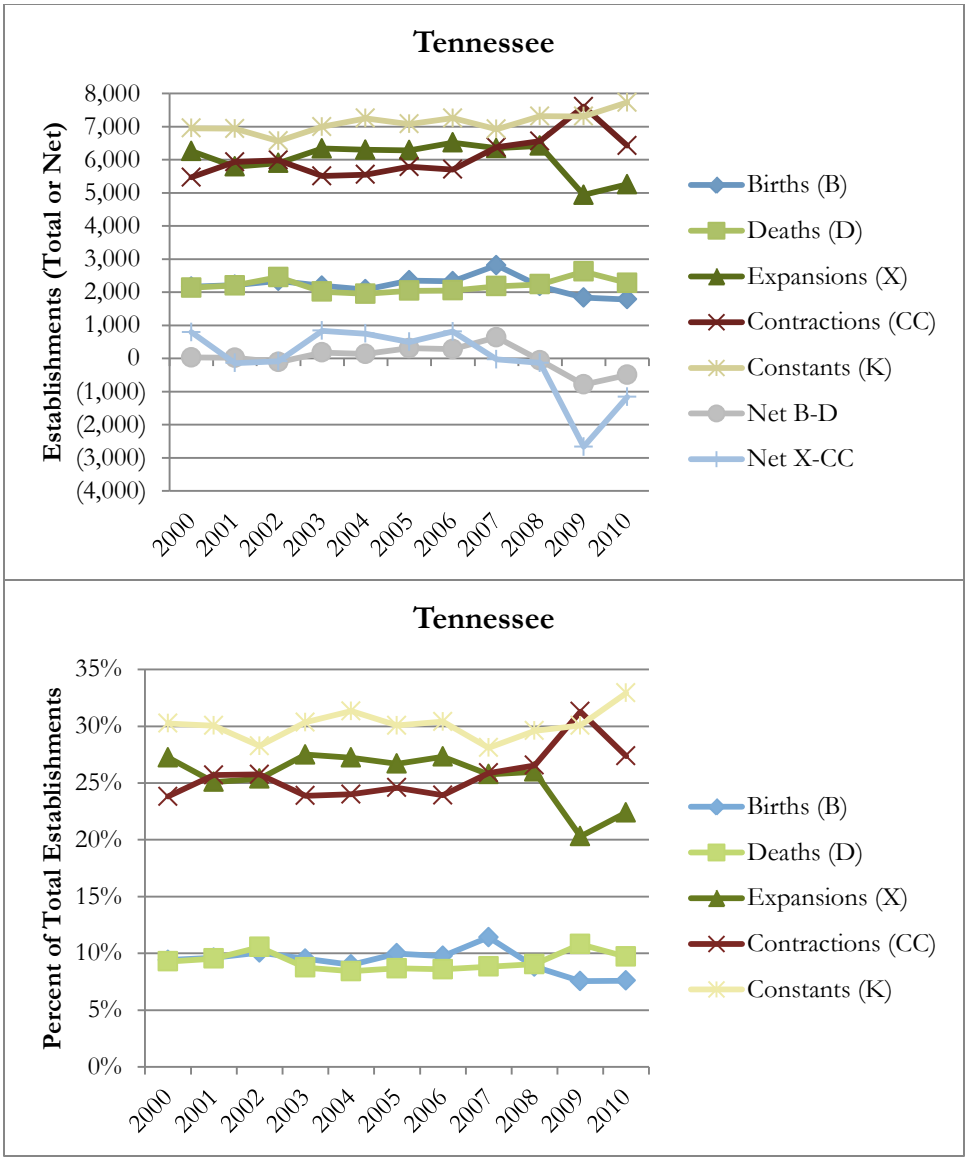
Source: U.S. Census Bureau, Statistics of U.S. Businesses

Figure 50: New York Establishments by Type of Employment Change, 2000-2010



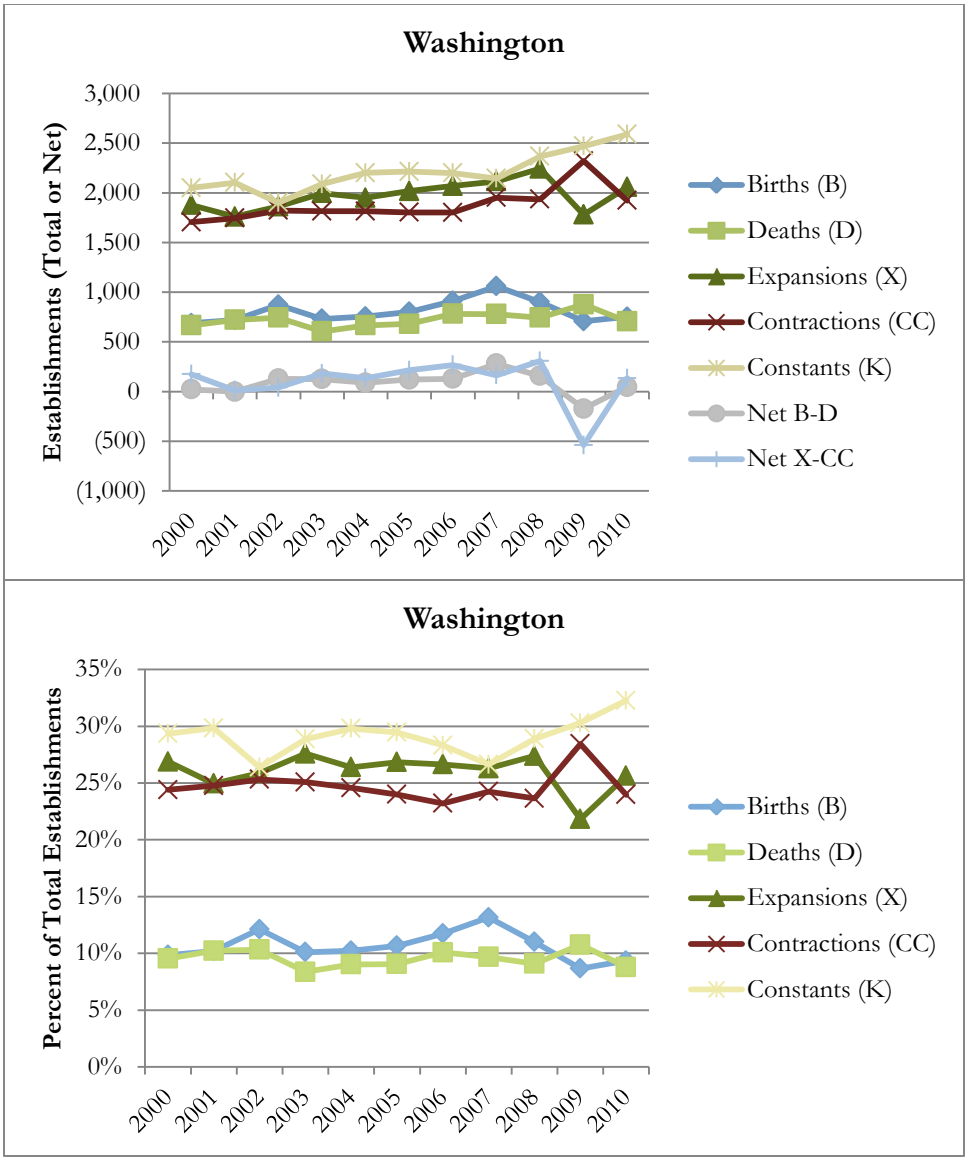
Source: U.S. Census Bureau, Statistics of U.S. Businesses

Figure 51: Tennessee Establishments by Type of Employment Change, 2000-2010



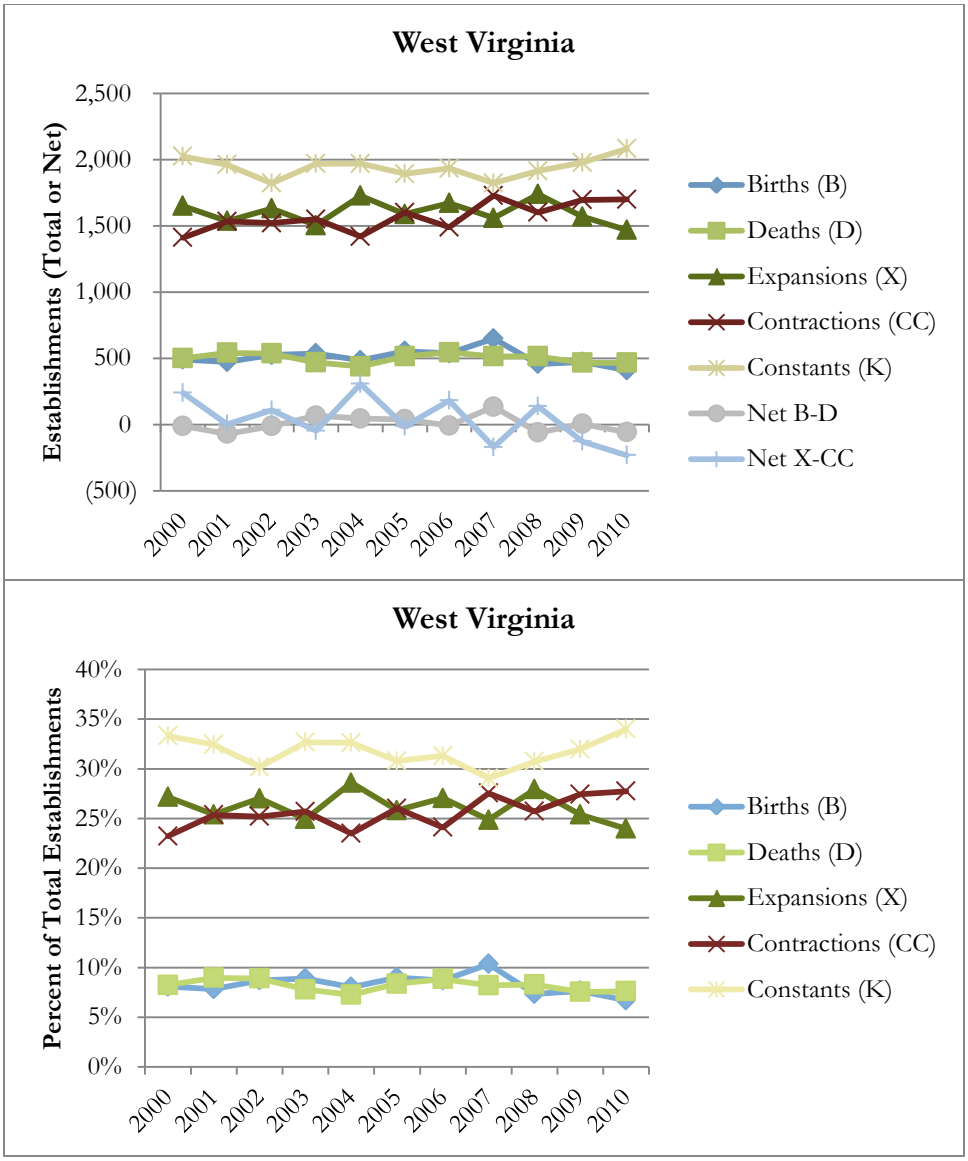
Source: U.S. Census Bureau, Statistics of U.S. Businesses

Figure 52: Washington Establishments by Type of Employment Change, 2000-2010



Source: U.S. Census Bureau, Statistics of U.S. Businesses

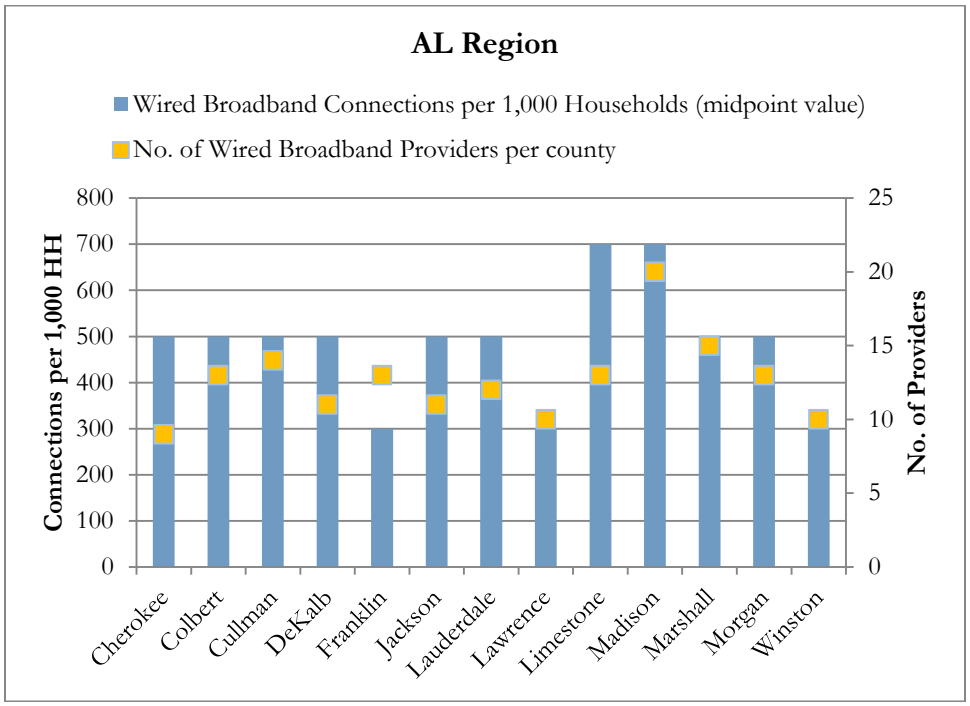
Figure 53: West Virginia Establishments by Type of Employment Change, 2000-2010



Source: U.S. Census Bureau, Statistics of U.S. Businesses

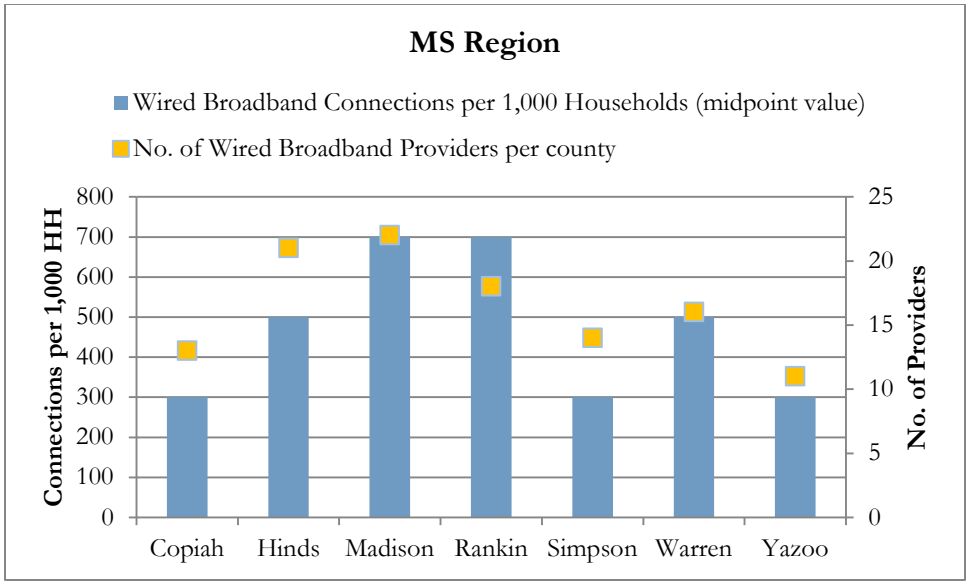
Appendix C: Wired Broadband Connectivity and Total Providers in Peer Regions

Figure 54: Wired Broadband Connectivity and Providers in Alabama Counties, 2012



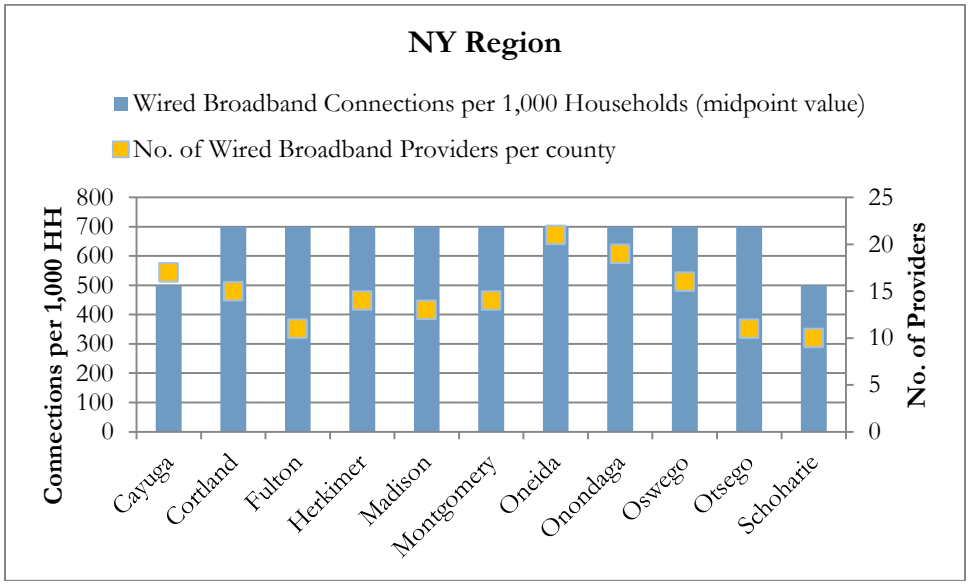
Source: Indiana Business Research Center, using 2012 Federal Communications Commission data

Figure 55: Wired Broadband Connectivity and Providers in Mississippi Counties, 2012



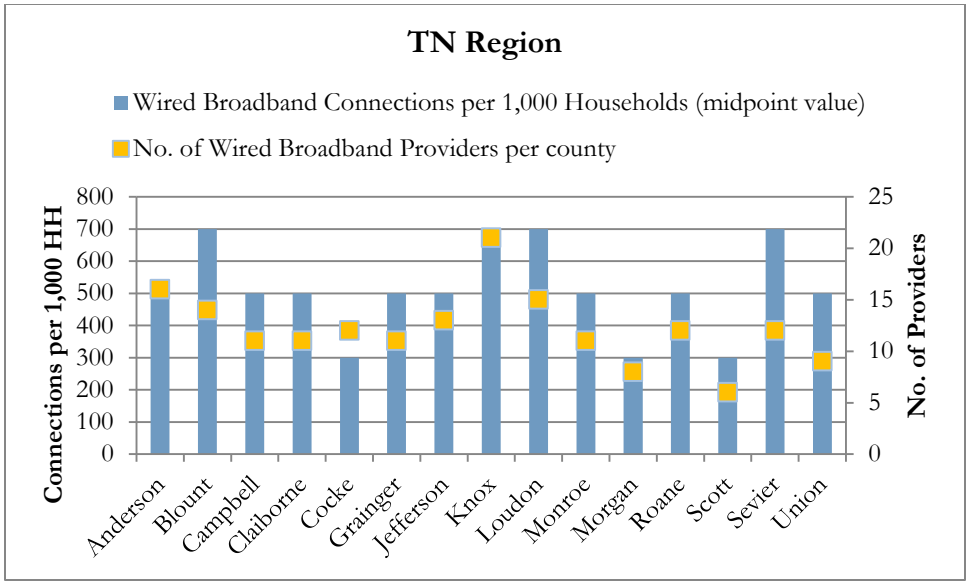
Source: Indiana Business Research Center, using 2012 Federal Communications Commission data

Figure 56: Wired Broadband Connectivity and Providers in New York Counties, 2012



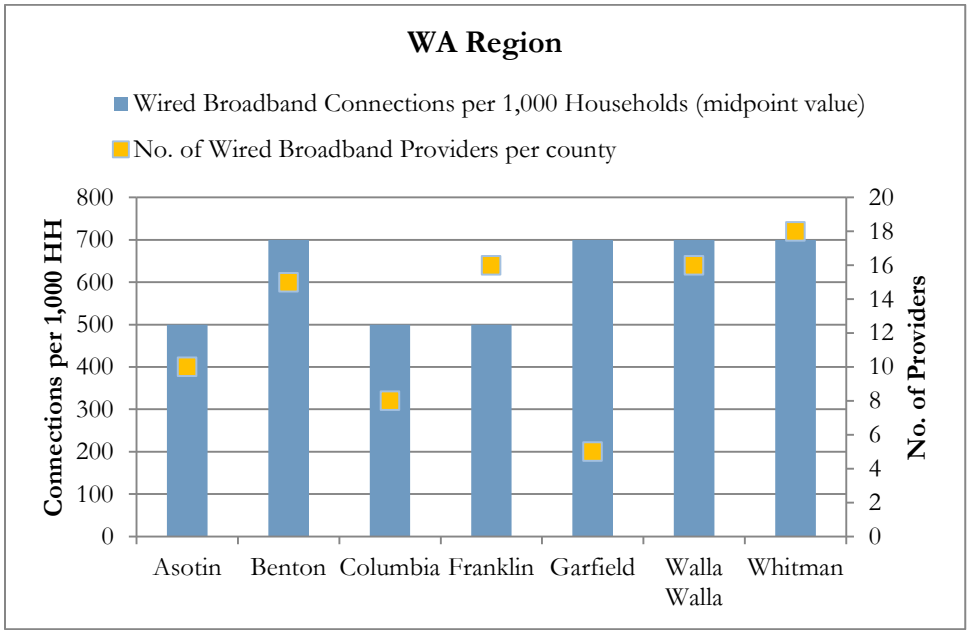
Source: Indiana Business Research Center, using 2012 Federal Communications Commission data

Figure 57: Wired Broadband Connectivity and Providers in Tennessee Counties, 2012



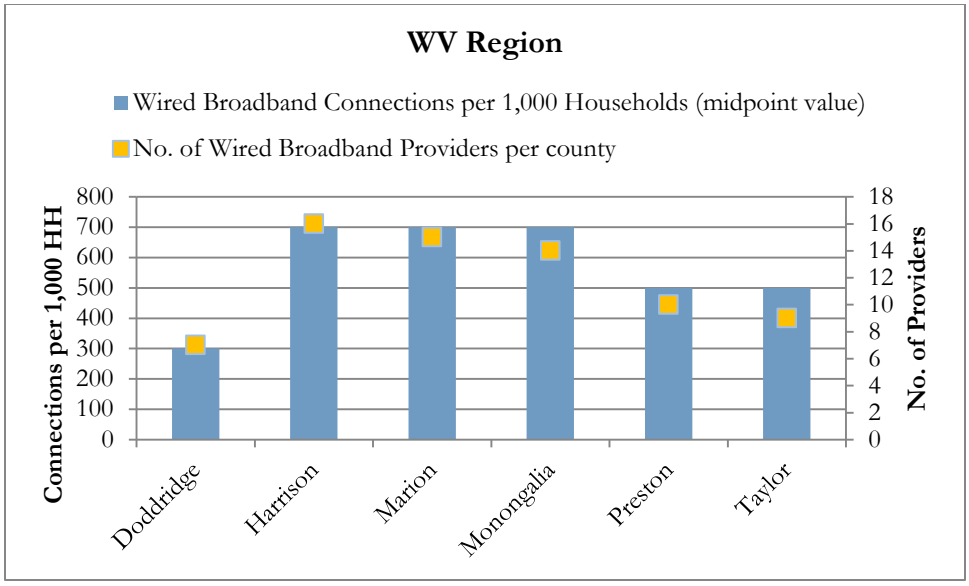
Source: Indiana Business Research Center, using 2012 Federal Communications Commission data

Figure 58: Wired Broadband Connectivity and Providers in Washington Counties, 2012



Source: Indiana Business Research Center, using 2012 Federal Communications Commission data

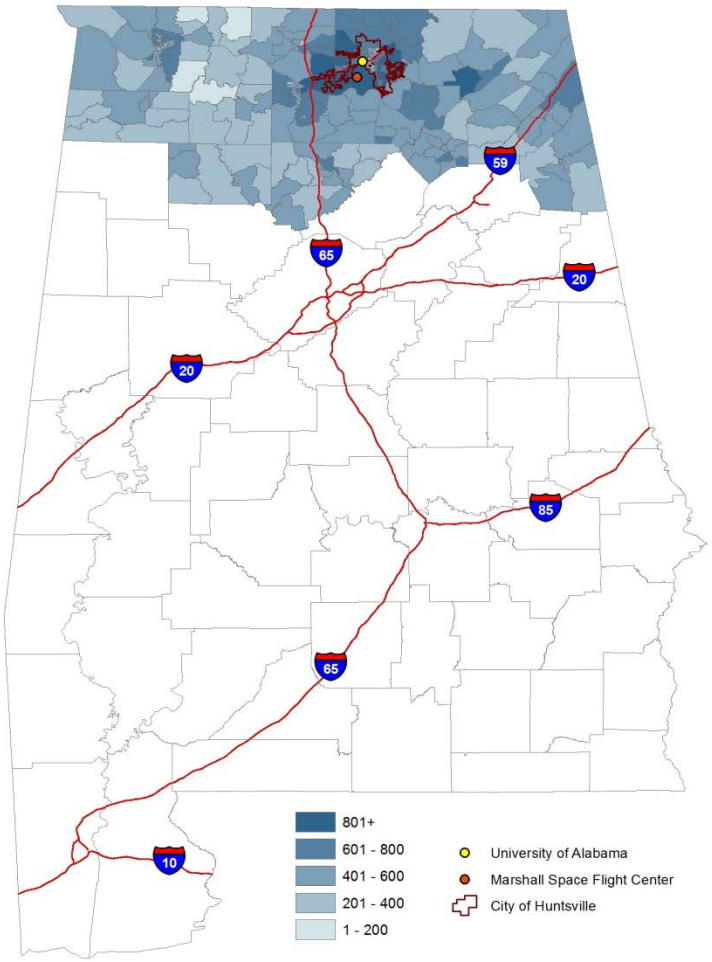
Figure 59: Wired Broadband Connectivity and Providers in West Virginia Counties, 2012



Source: Indiana Business Research Center, using 2012 Federal Communications Commission data

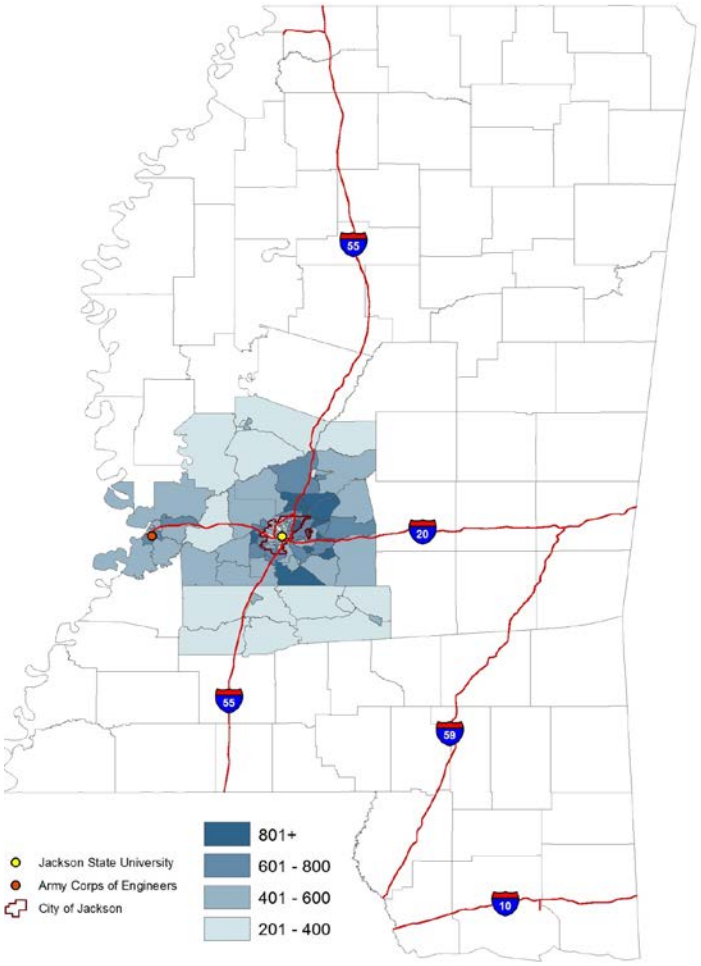
Appendix D: Wired Broadband Connections by Census-Tract for Peer Regions

Figure 60: Alabama: Wired Broadband Connections per 1,000 Households, 2012



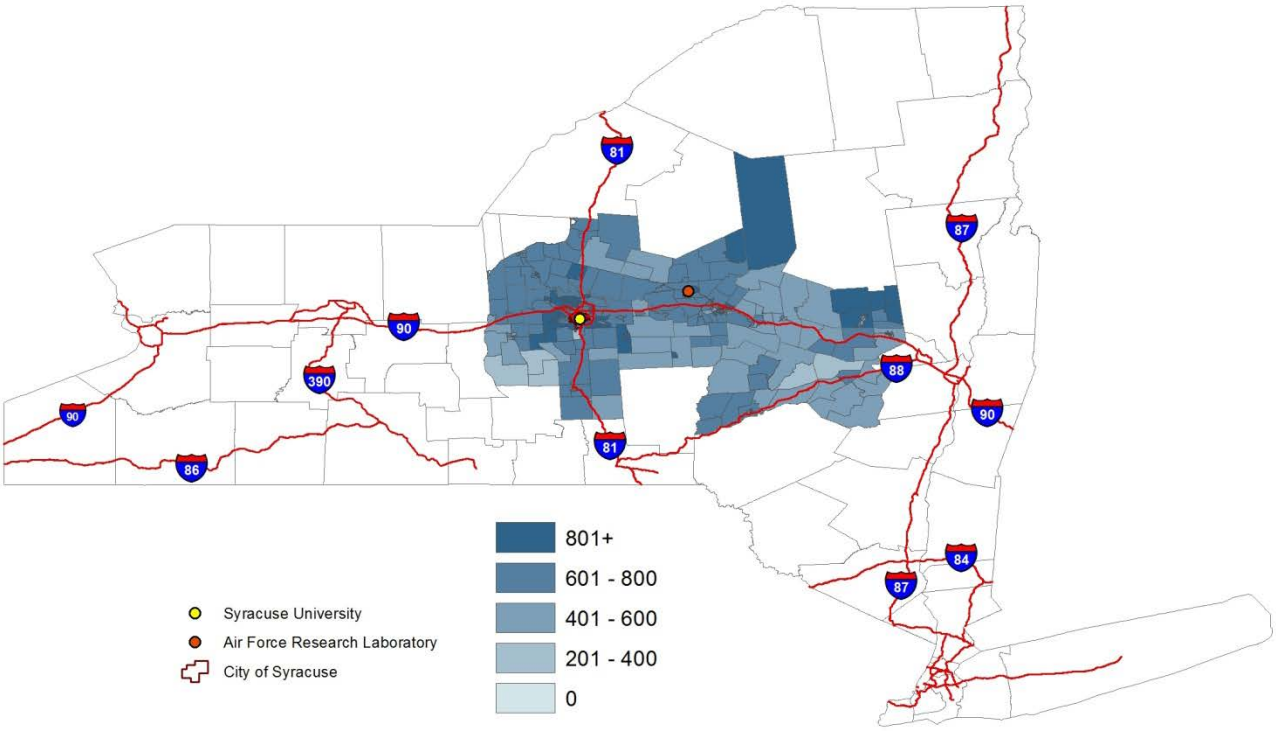
Source: Indiana Business Research Center, using Federal Communications Commission data

Figure 61: Mississippi: Wired Broadband Connections per 1,000 Households, 2012



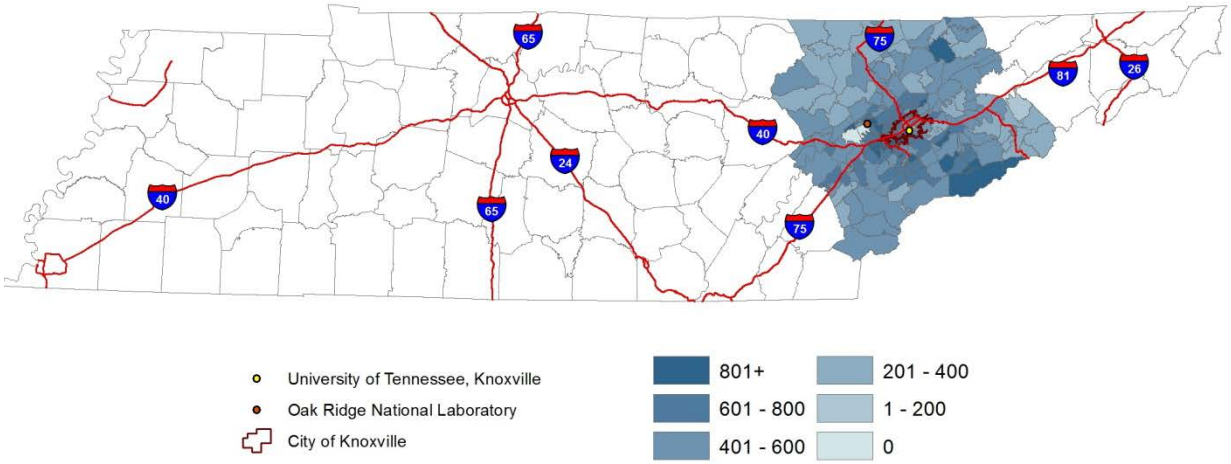
Source: Indiana Business Research Center, using Federal Communications Commission data

Figure 62: New York: Wired Broadband Connections per 1,000 Households, 2012



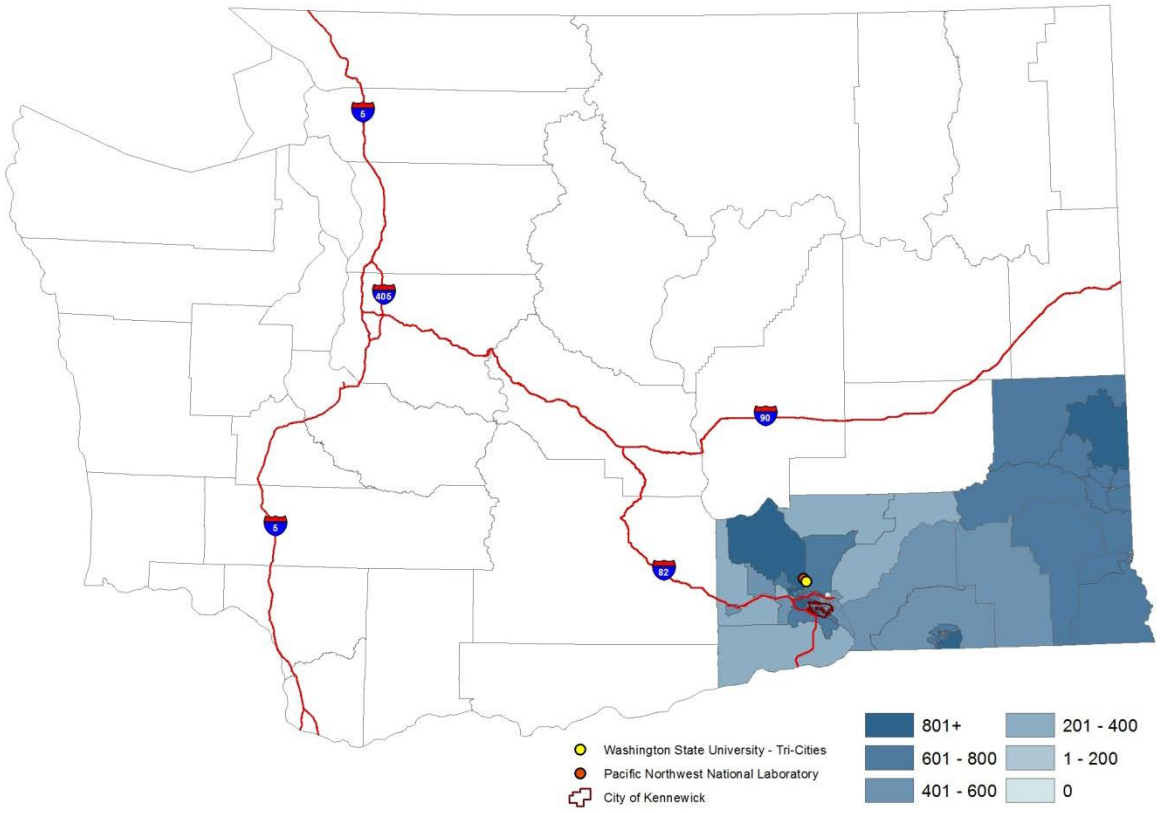
Source: Indiana Business Research Center, using Federal Communications Commission data

Figure 63: Tennessee: Wired Broadband Connections per 1,000 Households, 2012



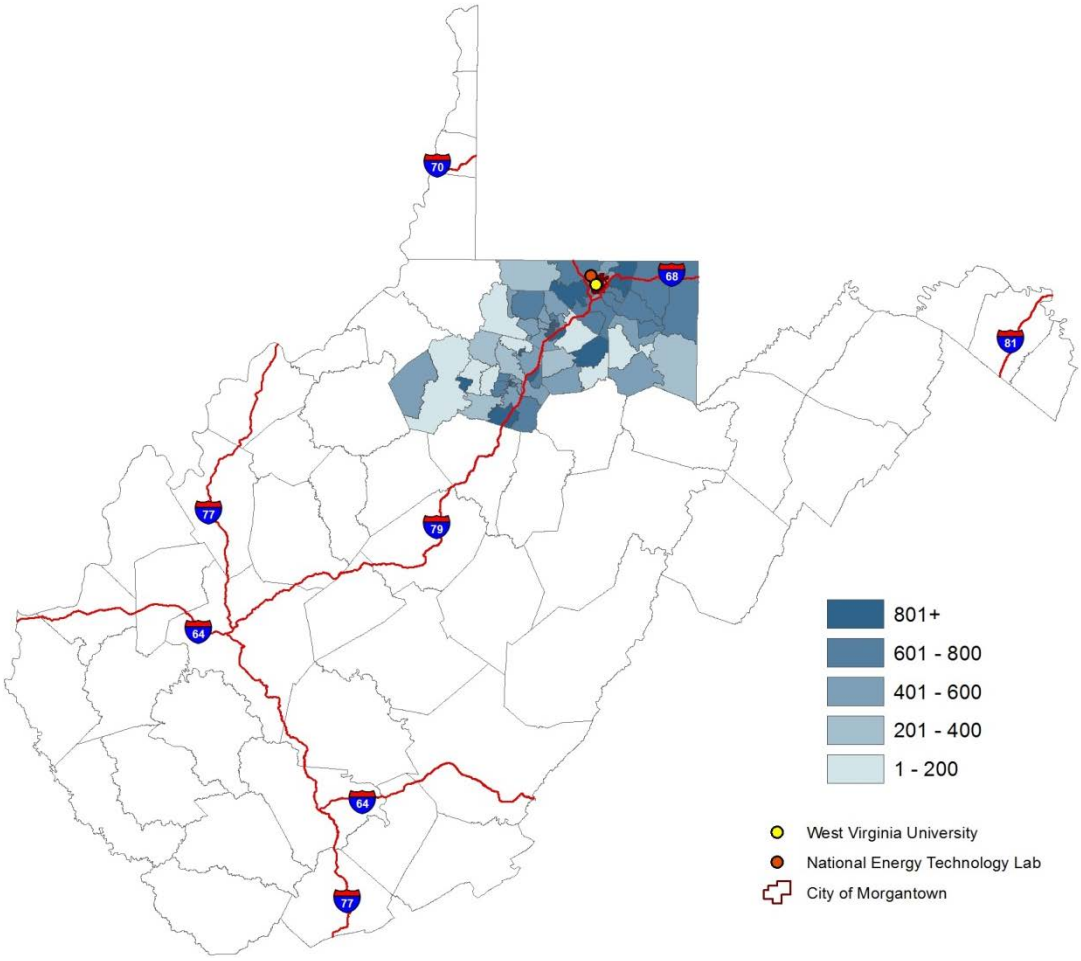
Source: Indiana Business Research Center, using Federal Communications Commission data

Figure 64: Washington: Wired Broadband Connections per 1,000 Households, 2012



Source: Indiana Business Research Center, using Federal Communications Commission data

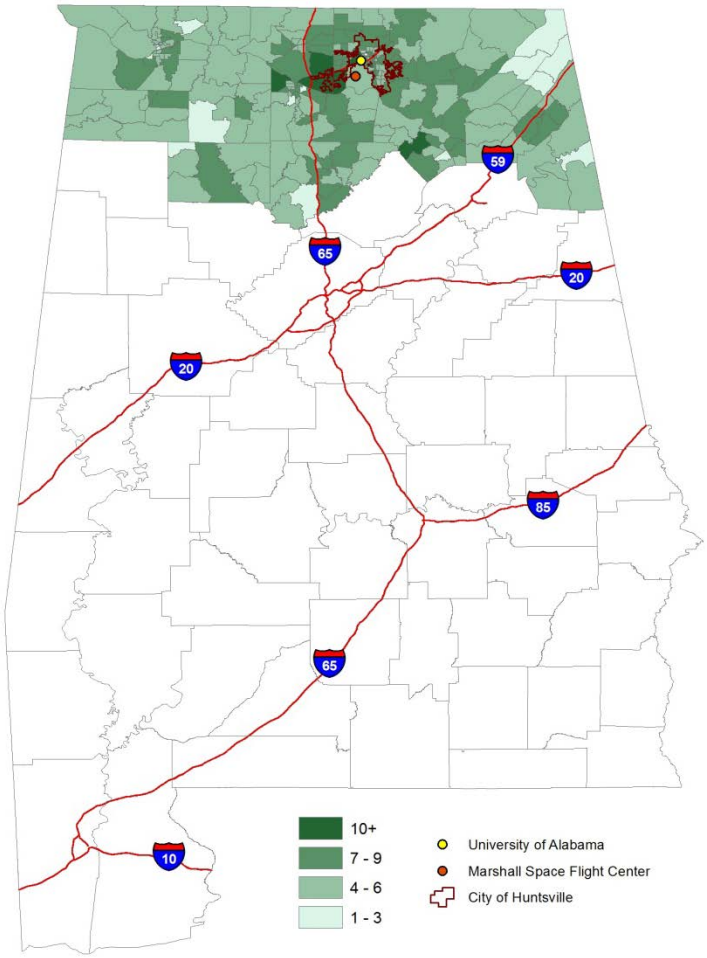
Figure 65: West Virginia: Wired Broadband Connections per 1,000 Households, 2012



Source: Indiana Business Research Center, using Federal Communications Commission data

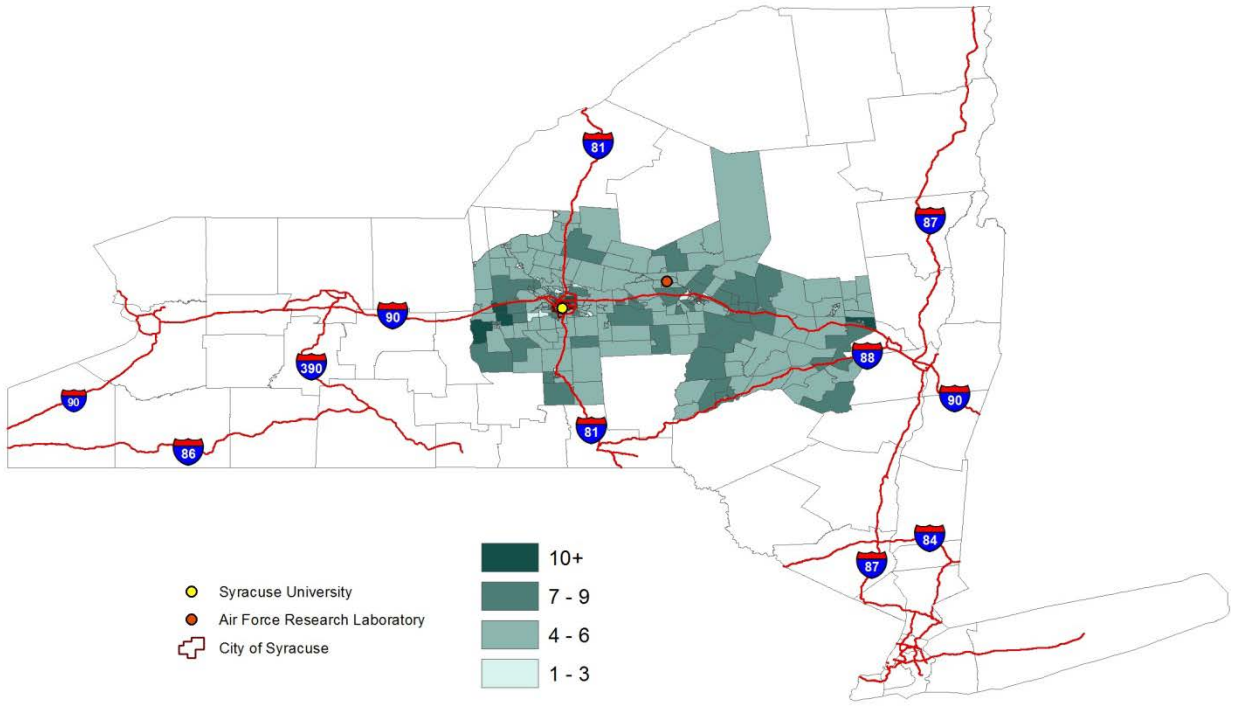
Appendix E: Total Wired Broadband Providers for Peer Regions

Figure 66: Alabama: Total Wired Broadband Providers, 2012



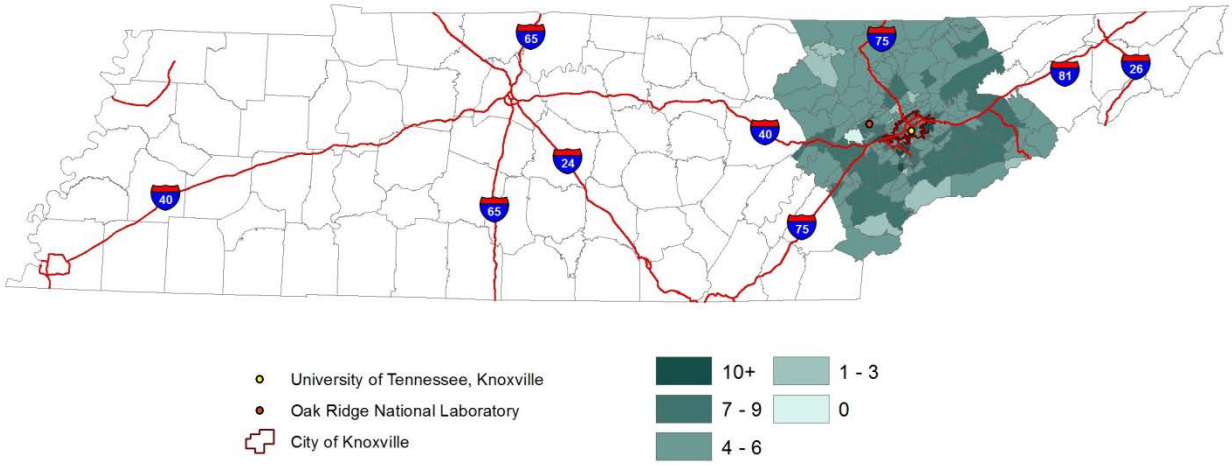
Source: Indiana Business Research Center, using Federal Communications Commission data

Figure 67: New York: Total Wired Broadband Providers, 2012



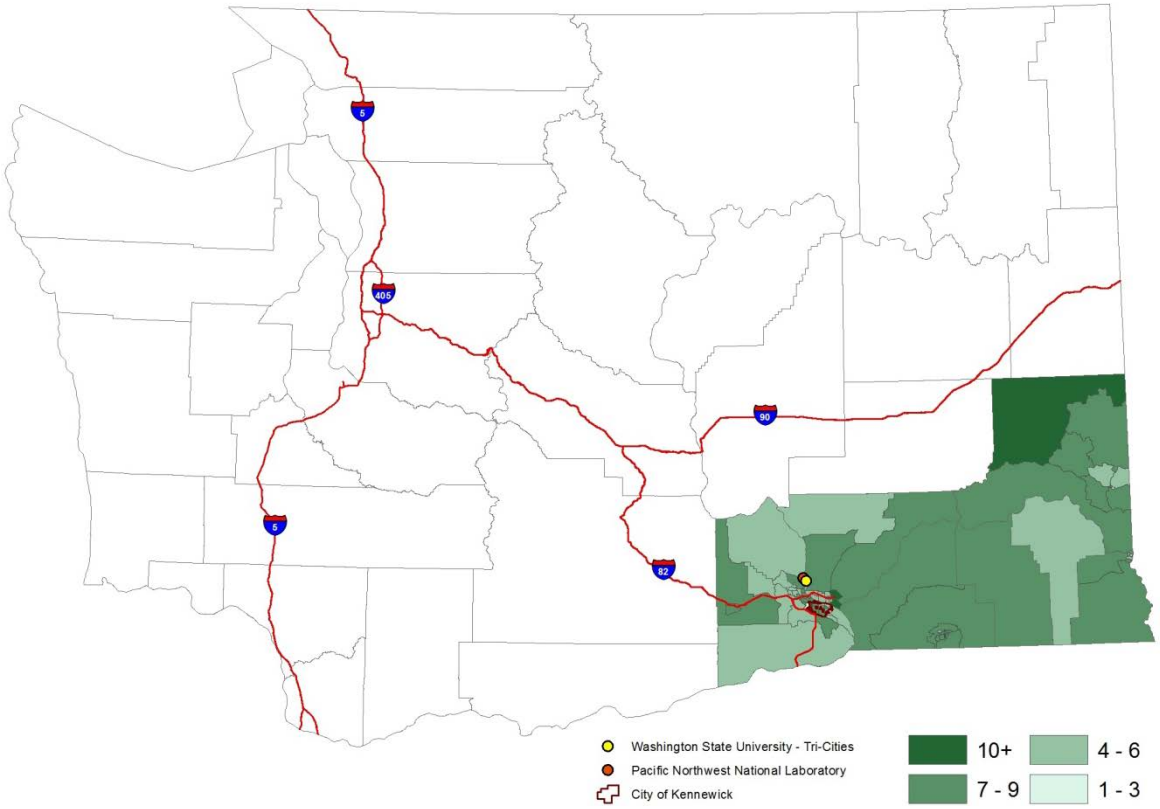
Source: Indiana Business Research Center, using Federal Communications Commission data

Figure 68: Tennessee: Total Wired Broadband Providers, 2012



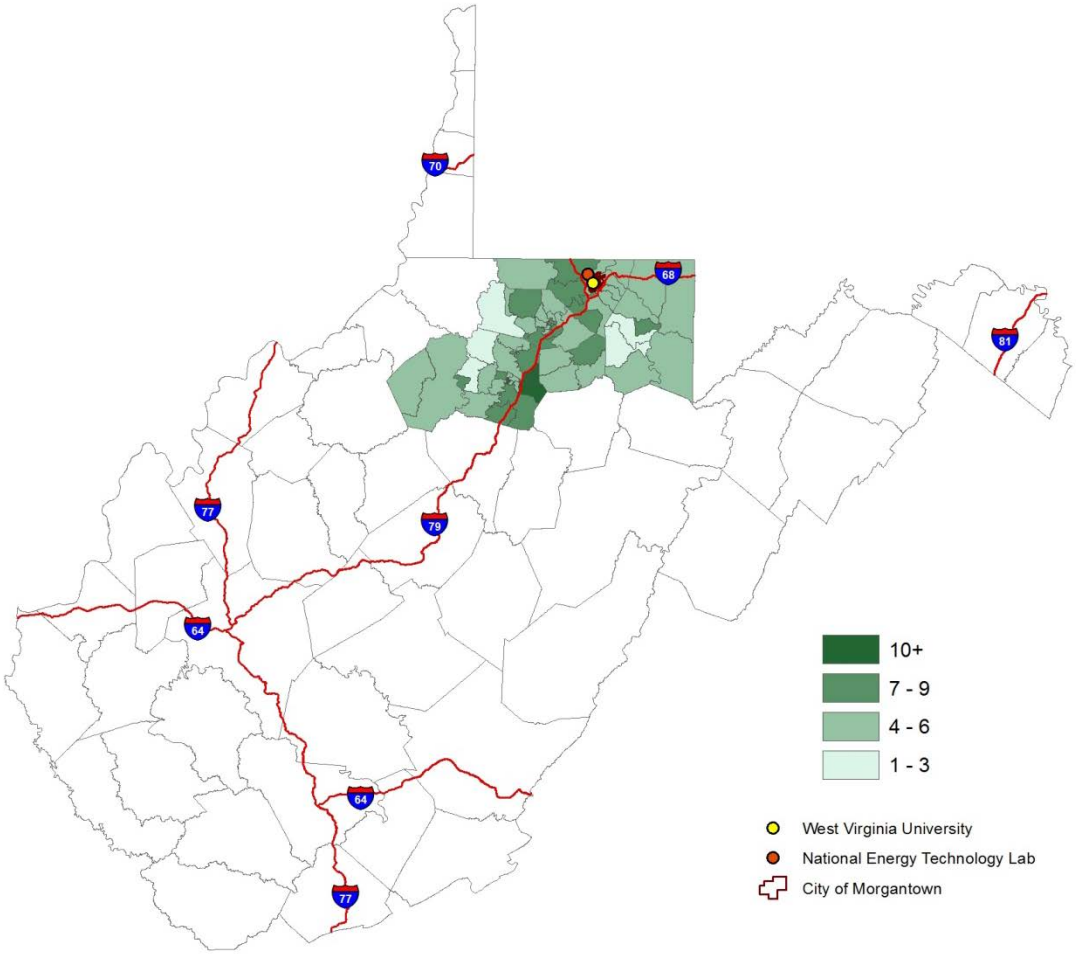
Source: Indiana Business Research Center, using Federal Communications Commission data

Figure 69: Washington: Total Wired Broadband Providers, 2012



Source: Indiana Business Research Center, using Federal Communications Commission data

Figure 70: West Virginia: Total Wired Broadband Providers, 2012



Source: Indiana Business Research Center, using Federal Communications Commission data