

# Rural Employment in Four States: A Story of Specialization and Change (2010 through 2019)

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The media are full of stories about rural areas suffering from economic stagnation or withering away from depopulation, but do these stories represent all of rural America (Swenson, 2019)? The short answer is no. While some rural places have experienced long-term employment loss, others have experienced employment growth. Whether facing employment gains or losses, a region’s success depends on its resilience or ability to prepare for, adapt to, and thrive in changing economic environments. This report looks at employment trends in the nonmetropolitan counties in the Fourth District and their dominant industries. Several trends emerge from the analysis. One is the tendency for these nonmetropolitan places to specialize in either manufacturing or natural resources and mining. Another indicates deep cause for concern for eastern Kentucky’s economy. Yet, there are initiatives within these regions that build on their assets and work toward adapting to economic change. These initiatives range from workforce retraining to building a talent pipeline to supply local industries.

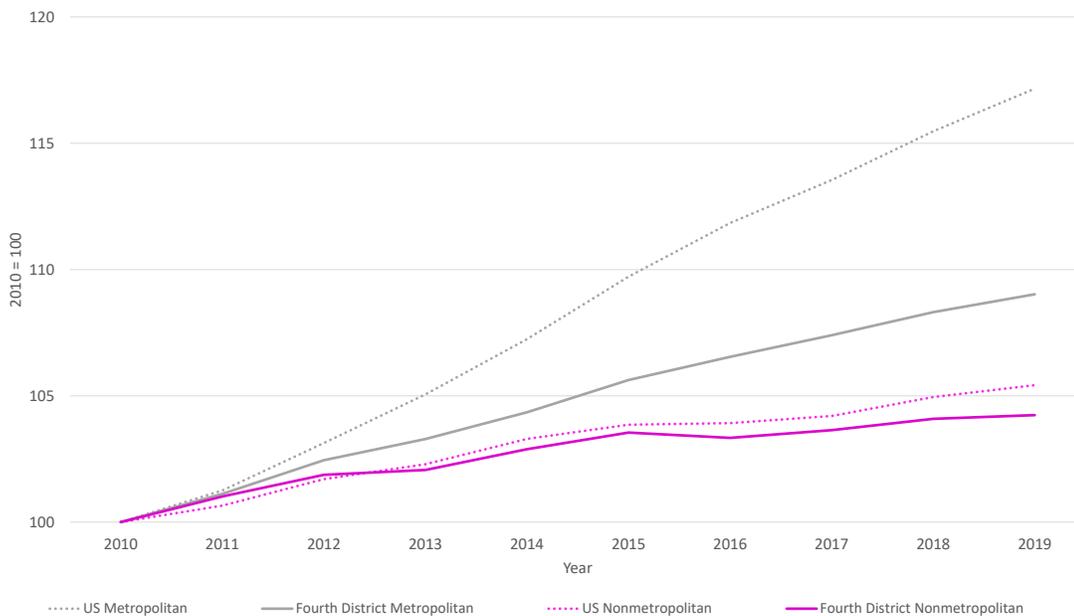
When analyzing data, selecting the geographic level, such as county or state, can sometimes be the most important decision. Focusing on trends at only higher levels of geography can obscure regional variations and impact the story one is trying to tell. For this report, the focus is nonmetropolitan counties in the Fourth District,<sup>1</sup>

a geography comprising a relatively small share of the District’s employment and population (17 percent and 22 percent, respectively), but the majority of its land (61 percent). This report compares metropolitan counties to nonmetropolitan counties in the Fourth District, poses a question based on observed trends, and uses commuting zones (CZs)—a more granular geographic unit based on economic connections—to develop an answer to the question posed.

## The Big Picture

Figure 1 shows a total employment index for metropolitan (gray) and nonmetropolitan (pink) counties in the Fourth District, along with their national counterparts (dashed lines), for 2010 through 2019. The rate of growth in Fourth District nonmetropolitan counties (4.2 percent) was comparable to that of nonmetropolitan counties across the United States (5.4 percent). However, this rate was significantly less than the 9 percent growth in Fourth District metropolitan counties and well below the national metropolitan average of 17 percent. From this figure comes a question: From 2010 through 2019, why is total employment growing more slowly in nonmetropolitan Fourth District counties than in their metropolitan counterparts in the District?

**Figure 1: Total Employment Index (2010 through 2019)**



Source: Bureau of Labor Statistics Quarterly Census of Employment and Wages

<sup>1</sup> The Fourth Federal Reserve District comprises Ohio, western Pennsylvania, eastern Kentucky, and the northern panhandle of West Virginia.

## Taking a Closer Look Using Commuting Zones

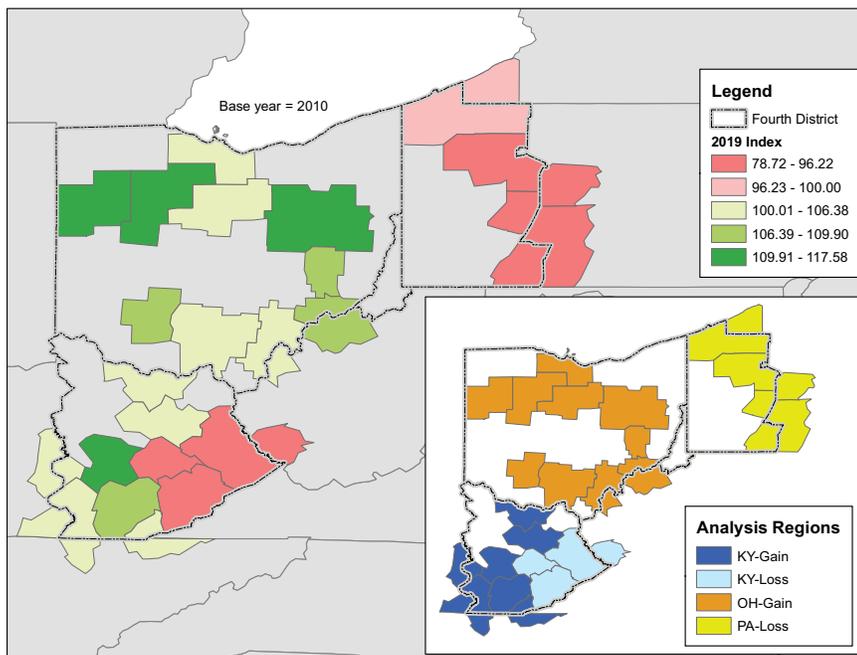
While the overall employment trend in nonmetropolitan areas is lower than metropolitan areas, some nonmetropolitan areas are doing notably better than others. To provide a clearer picture of the local economies within nonmetropolitan areas, we looked at CZs rather than counties.<sup>2</sup> CZs provide a better representation of local economies because they capture where people live and work and are not based on arbitrary political boundaries like counties are. Of the 33 CZs in the Fourth District, only those in which at least 40 percent of the population is nonmetropolitan were used, and these CZs are aggregated based on the change in total employment from 2010 through 2019. Figure 2 shows the 2019 total employment index for each nonmetropolitan CZ using a base year of 2010. Shades of green indicate CZs that gained employment over that period, while shades of red indicate those that lost employment. The inset map shows the CZs aggregated into the four regions that are the focus for this report analysis:

- Kentucky Gain: 7 CZs (KY-Gain)
- Kentucky Loss: 3 CZs (KY-Loss)
- Ohio Gain: 10 CZs (OH-Gain)
- Pennsylvania Loss: 3 CZs (PA-Loss)

The map highlights differences in outcomes that smaller geographies such as CZs enable us to see. While the aggregation of all Fourth District nonmetropolitan counties (Figure 1) would suggest slower employment growth across the counties compared to metropolitan areas, mapping at the CZ level shows there is more nuance to the matter; not all areas are losing employment, and many rural areas are growing.

To understand why total employment is growing more slowly in nonmetropolitan Fourth District counties than in their metropolitan counterparts, we examine three factors for 2010 through 2019. First is the total employment index (Figure 3) for the four regions identified in Figure 2. The index highlights a troubling trend in the KY-Loss region (light blue). Its total employment fell sharply from 2011 to 2016 and then leveled out. Such activity points to a region undergoing severe economic difficulties.

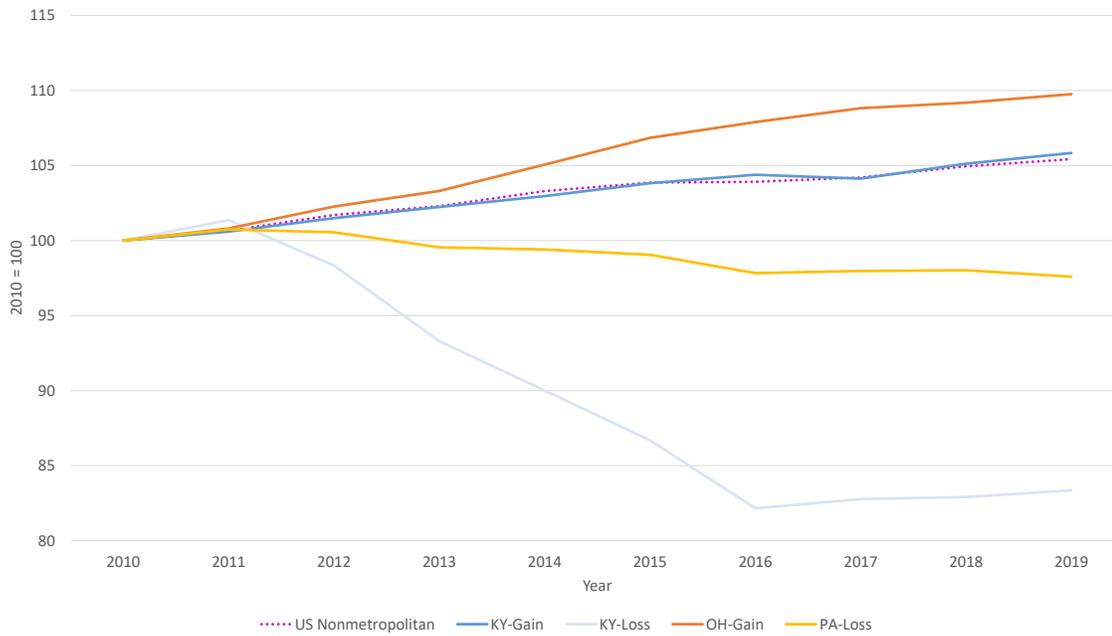
**Figure 2: Nonmetropolitan Commuting Zones Total Employment Index (2019) and Analysis Regions (inset)**



Sources: Office of Management and Budget, USDA Economic Research Services (ERS), and Pennsylvania State University.

<sup>2</sup> Commuting zones—that is, geographic units of analysis intended to more closely reflect the local economy where people live and work—were first developed in the 1980s by the USDA Economic Research Services as a way to better delineate local economies. The 2010 boundaries used in this report were created by Pennsylvania State University, which replicated the USDA's methodology and then identified and corrected some discrepancies.

**Figure 3: Analysis Regions' Total Employment Index (2010 through 2019)**



Source: Quarterly Census of Employment and Wages (Bureau of Labor Statistics)

To better understand why the KY-Loss region is struggling (and why the OH-Gain region is doing better), it is helpful to take a closer look at the second factor that helps explain the trends in total employment: industries in which the region specializes. Local areas are dependent on their industry mix for much of their growth (or loss) trajectory. Table 1 shows the 2019 location quotients for the four regions identified in Figure 3. Location quotients are a common way to measure industry specialization by comparing the share of an industry in one region against the share of the same industry in a larger geographic area, usually the United States. A number greater than 1.0 indicates industry specialization.

Table 1 highlights three important things about the industry specialization in each of the four regions under examination

in this report. First, in the nonmetropolitan portions of the Fourth District, two employment sectors tend to dominate: manufacturing and natural resources and mining. For example, KY-Loss is overwhelmingly built around natural resources and mining employment, with a share more than five times greater (5.63) than the national average, while OH-Gain is built around manufacturing with rates over twice the national average in 2019 (2.55). Next, the table shows that regions with growth in total employment tended to see their levels of specialization increase rather than their economies diversify. Lastly, these regions are specialized in export industries rather than service industries. In other words, these industries produce goods that are sold or exported outside of the region in which they are produced.

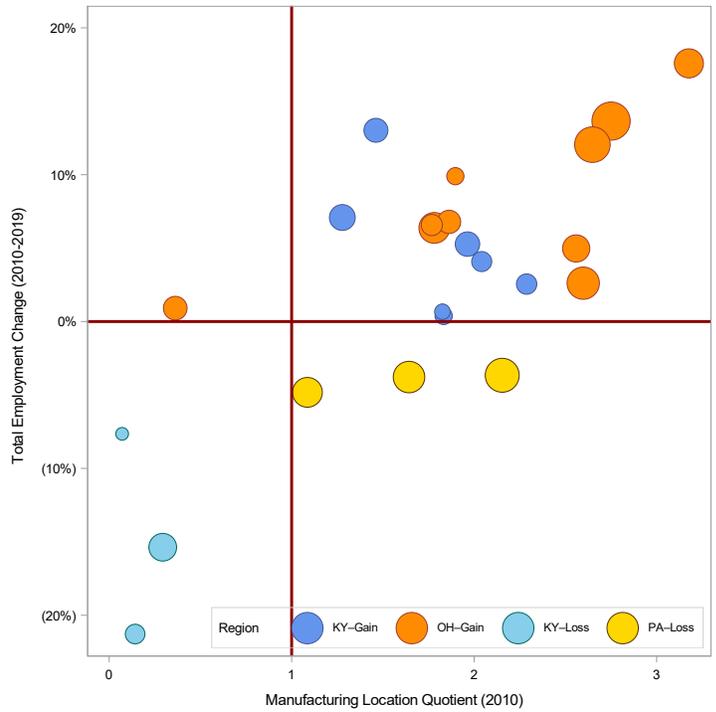
**Table 1: Location Quotients (2010 and 2019)**

| Employment Sector                    | OH-Gain     |             | KY-Gain     |             | KY-Loss      |             | PA-Loss     |             |
|--------------------------------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|
|                                      | 2010        | 2019        | 2010        | 2019        | 2010         | 2019        | 2010        | 2019        |
| Construction                         | 0.81        | 0.82        | 0.56        | 0.59        | 0.69         | 0.44        | 0.81        | 0.75        |
| Education and health services        | 1.04        | 1.00        | 1.12        | 1.11        | 1.14         | 1.56        | 1.15        | 1.10        |
| Financial activities                 | 0.55        | 0.52        | 0.56        | 0.55        | 0.52         | 0.54        | 0.53        | 0.55        |
| Information                          | 0.47        | 0.30        | 0.59        | 0.47        | 0.65         | 0.55        | 0.47        | 0.41        |
| Leisure and hospitality              | 0.87        | 0.84        | 0.89        | 0.92        | 0.69         | 0.79        | 1.06        | 1.02        |
| <b>Manufacturing</b>                 | <b>2.28</b> | <b>2.55</b> | <b>1.75</b> | <b>1.91</b> | <b>0.23</b>  | <b>0.20</b> | <b>1.90</b> | <b>2.11</b> |
| <b>Natural resources and mining</b>  | <b>0.94</b> | <b>1.26</b> | <b>0.86</b> | <b>0.49</b> | <b>10.84</b> | <b>5.63</b> | <b>1.92</b> | <b>1.74</b> |
| Professional and business services   | 0.46        | 0.46        | 0.56        | 0.57        | 0.48         | 0.41        | 0.43        | 0.37        |
| Trade, transportation, and utilities | 1.00        | 1.03        | 0.99        | 0.98        | 1.05         | 1.11        | 1.03        | 1.03        |
| Government                           | 1.05        | 0.95        | 1.24        | 1.29        | 1.26         | 1.51        | 0.97        | 1.04        |

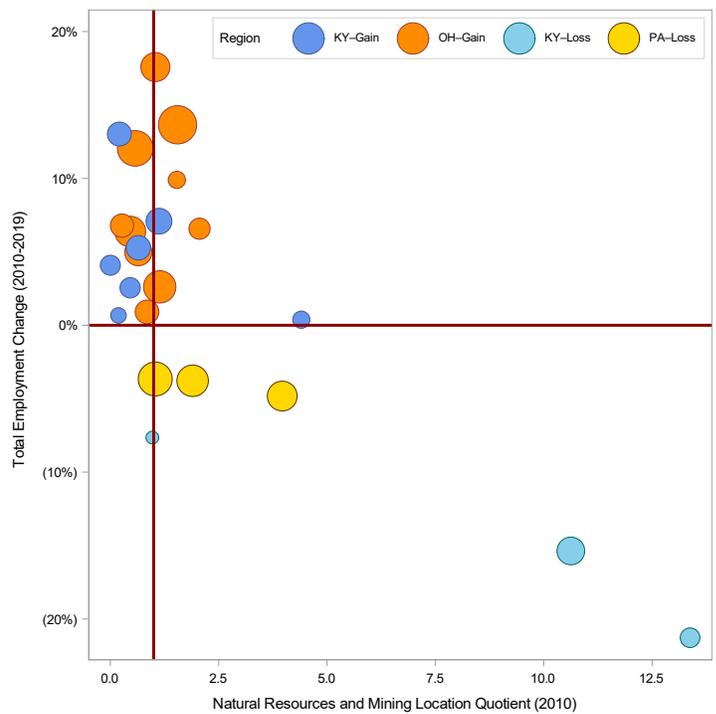
Source: Quarterly Census of Employment and Wages (Bureau of Labor Statistics)

The final factor that helps explain the trends in total employment requires a closer look at the two primary employment sectors in each of the CZs in the four regions: manufacturing and natural resources and mining. Figures 4 and 5 plot the percent change of total employment from 2010 through 2019 along the y-axis (vertical) and the 2010 location quotient along the x-axis (horizontal). The size of the circle indicates total 2019 employment (larger circles indicate larger level of total employment). In Figure 4, most OH-Gain CZs (orange circles) experienced strong growth in total employment, and growth was particularly strong in those CZs most specialized in manufacturing. Figure 5 shows trends in the natural resources and mining sector. Several PA-Loss CZs have specialization in that sector because of the oil and gas industry. However, this industry saw a big drop off in drilling activity in Pennsylvania, a decline of 74 percent from January 2019 to January 2020 (Holland, 2020). This drop in drilling activity likely contributed to declines in total employment. The KY-Loss region has extremely high levels of coal mining employment and is also experiencing sizeable declines in total employment. From 2010 through 2019, the region has seen the loss of over 18,000 jobs, of which 55 percent were in natural resources and mining.

**Figure 4: Manufacturing**



**Figure 5: Natural Resources and Mining**



Note: Larger bubbles indicate greater total employment (2019)  
 Source: Quarterly Census of Employment and Wages  
 (Bureau of Labor Statistics)

## Answers and concluding thoughts

So, what *is* behind the slower employment growth in nonmetropolitan Fourth District counties? The short answer is that it has to do with specialization. As shown in this analysis, not all nonmetropolitan areas have experienced slow employment growth; focusing the analysis on CZs helps to draw this out. CZs also help to illustrate the impact of specialization when a region's economy is built on a single employment sector. This is important because nonmetropolitan areas are particularly sensitive to industry changes given their tendency to have economies focused on a single sector (US Congress Joint Economic Committee, 2017).

When this works, an economy can see strong, stable growth. The nonmetropolitan counties in Ohio and parts of Kentucky are good examples of specialization working for an economy; both manufacturing-centric regions experiencing growth in total employment of 10 percent and 6 percent, respectively, from 2010 through 2019. Traditionally, manufacturing occurred in cities (Lazette, 2020), but as transportation costs declined, it began to migrate to rural areas to take advantage of lower wages, property taxes, and land prices (Low, 2017). By the 1980s, the share of manufacturing employment in nonmetropolitan areas began to exceed the share in metropolitan areas, which were becoming more service-oriented (specializing in education, medical services, and information technology, for example) (Groshen and Robertson, 1993). The nonmetropolitan areas began cultivating their manufacturing economies through programs such as sector partnerships. These partnerships, such as those of the West Central Ohio Manufacturing Consortium, typically involve employers from a particular industry collaborating with representatives from economic development offices, educational institutions, and nonprofits that serve individuals seeking employment. The goal of sector partnerships is to make a particular industry more stable, allow it to remain competitive, and attract and retain companies in a region (Klesta, 2016). The partnerships appear to be working: Research has shown that plants located in rural areas survive longer than those located in urban areas, suggesting rural areas are better able to retain manufacturing jobs (Low, 2017).

While it may seem that specialization is the ideal situation, such regions do need to exercise caution. Research has

also shown that an overreliance on export-based sectors such as manufacturing has led to lower growth, persistent unemployment, and a labor market that is slow to adapt to change (Goetz et al., 2017). In addition, global trade can quickly wipe out the wage and land cost advantages for rural areas (Goetz et al., 2017).

Indeed, specialization can lead to economic challenges. One example is eastern Kentucky's longstanding reliance on coal mining. This region has seen a sustained and significant loss of natural resources and mining jobs—a 60 percent decline from 2010 through 2019. And these losses will likely continue: A Bloomberg Green article highlights a projection from Morgan Stanley that by 2033, coal will no longer be used in the US power grid as the country transitions to carbon-free electricity generation (Wade, 2021). It is clear that the move away from coal is accelerating. From 1984 through 2010, coal production in eastern Kentucky declined by 1.6 percent per year, but from 2010 through 2019 production declined by 8.9 percent per year. With a still-sizeable portion of its population employed in natural resources and mining (6,735 jobs, or 7 percent of its total employment, in 2019), the region still has further to fall.

There is hope, though, for this region as it weathers a sustained economic storm. Programs are in place that seek to build a workforce that is resilient and able to withstand many year-to-year changes. This could be through retraining, capitalizing on broadband infrastructure, or growing small businesses. Hiring Our Miners Everyday (HOME), administered by the Eastern Kentucky Concentrated Employment Program, Inc. (EKCEP), retrains former coal miners and their spouses so they are better able to secure employment in a new field (Fee, 2016). Teleworks USA, also begun by EKCEP, takes advantage of the region's high-speed fiber-optic network to connect job seekers to work-from-home opportunities (Blankenship and Klesta, 2019), opportunities that are particularly valuable given COVID-19's impact on how and where work is accomplished. Since 2011, the program has created 3,270 jobs.<sup>3</sup> App Harvest, one of the largest indoor farms in the United States, is based in Appalachia Kentucky. It employs more than 300 at its flagship 60-acre farm, and the farm has broken ground at two other locations.<sup>4</sup>

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<sup>3</sup> [www.teleworksusa.com](http://www.teleworksusa.com)

<sup>4</sup> [www.appharvest.com](http://www.appharvest.com)

When specialization works, a region built around one industry can experience strong and stable employment growth. That is the experience in nonmetropolitan parts of Ohio in manufacturing. However, eastern Kentucky's experience with natural resources and mining is considerably different. For decades, its economy was built around coal mining, but as demand continues to increase for cleaner energy production, its economy is now foundering and serves as a cautionary tale for any region built on a single sector. As tastes, preferences, and demand evolve, efforts such as those organized by the West Central Ohio Manufacturing Consortium, HOME, Teleworks USA, and App Harvest will become essential for ensuring good jobs are maintained in nonmetropolitan areas and that there are new opportunities for growth, too.

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