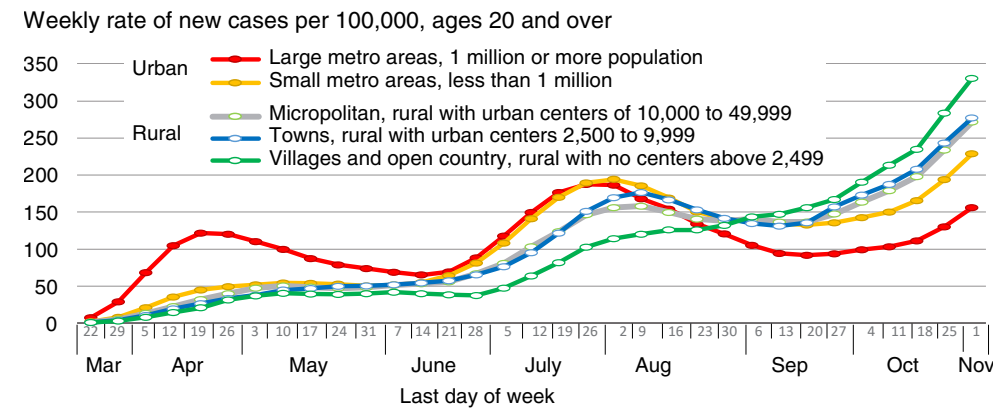


The Spread and Severity of COVID-19 Across Urban and Rural Areas

The coronavirus COVID-19 pandemic currently besetting the United States, with over 9 million confirmed cases and 230,000 deaths as of November 1, 2020, has displayed an uneven and constantly evolving geography across the rural-urban continuum. The virus arrived in the United States in early winter and spread quickly in major metro areas. Despite some spread beyond major metro locations, cases remained centered on urban areas over the next several months. In May and June, the rate of new COVID-19 cases declined in large metro areas and stabilized in smaller cities and rural areas, only to surge again in July. This time, the surge involved rural areas as well as large metro areas. More notably, when the weekly case rate subsequently declined in large metro areas in August and September, the decline was echoed only partially in rural areas. In the most recent surge beginning in late September, the highest incidence rate for new infections was in completely rural counties, while the lowest was in major metro areas.

Nonmetro COVID-19 case rates rose sharply during the summer of 2020, eventually surpassing metro rates

Three-week moving average of weekly new COVID-19 cases per 100,000 adults (ages 20 and older) by county urban-rural category, March 22 to November 1, 2020



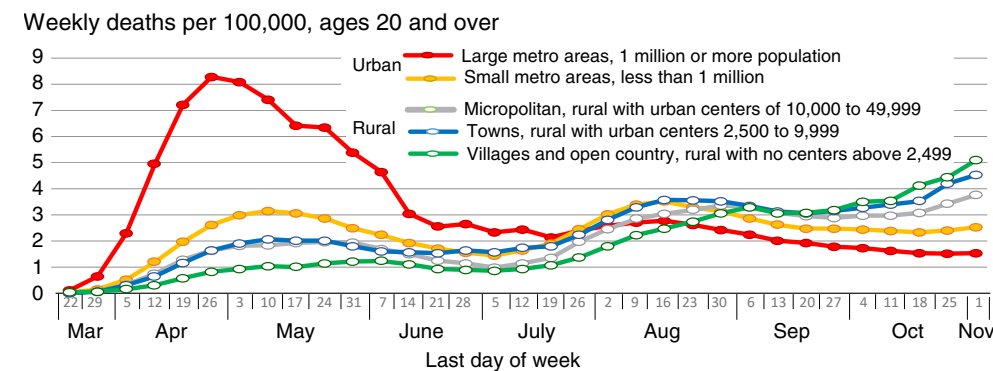
Note: The graph presents weekly rates, averaged over the 3 weeks preceding the dates at the bottom, consistent with the accompanying chart of COVID-19 death rates. Micropolitan includes adjacent rural counties when inter-county commuting is substantial.

Source: USDA, Economic Research Service using data from Johns Hopkins University, replacing missing information with data from the New York Times, Covid in the U.S. dataset.

Comparing COVID-19 case rates across time and space is sometimes problematic because infection with the coronavirus can result in a wide range of outcomes, ranging from no symptoms to serious illness and death. Deaths per county adult (since children have so far rarely died from COVID-19) may provide a better gauge of the extent to which serious COVID-19 infections are affecting the population and the likely demand on rural healthcare resources. Over time and across urban and rural areas, three COVID-19 death flare-ups are evident. The first flare-up occurred primarily in large metropolitan counties, like the pattern with case rates. The pandemic centered on these areas over the next several months before declining as the healthcare system learned more about the virus, how to treat it, and how to prevent its spread.

Nonmetro death rates from COVID-19 surpassed metro rates starting in late August

Three-week moving average of weekly deaths from COVID-19 per 100,000 adults (ages 20 and older) by county urban-rural category, March 22 to November 1, 2020



Note: The graph presents weekly rates, averaged over the 3 weeks preceding the dates at the bottom, consistent with the accompanying chart of COVID-19 case rates. Micropolitan includes adjacent rural counties when inter-county commuting is substantial.

Source: USDA, Economic Research Service using data from Johns Hopkins University, replacing missing information with data from the New York Times, Covid in the U.S. dataset.

The second flare-up, which began with a rise in cases in early July and a rise in deaths two weeks later, was different in two respects. First, it fully involved both rural and urban areas as the virus spread from major urban areas. Second, while the increase in the weekly rate of infections was larger than in the initial flare-up, the spike in deaths was much smaller because testing was more widespread, the infected population was younger and less vulnerable, and treatments were more effective.

The third flare-up, ongoing as of this writing, presents an urban-rural geography exactly the opposite of the initial flare-up, being higher the more rural is the type of area across the urban-rural scale. Rural rates of COVID-19 mortality were never previously higher than they were in late October, and the rise in cases during this period suggests that rural mortality is likely to continue increasing. In contrast, rates in large metro areas were the lowest since the beginning of the pandemic, although their recent rise in case rates suggests that this situation may change.

COVID-19 and Rural Healthcare Resources

Several factors likely help explain recent higher rural COVID-19 adult death rates in late October. The first is that rural areas had more cases of infection per 100,000 adults than urban areas in early September. This is not the whole story, however, as there were 2 average weekly rural deaths per 100 cases of infection 2 weeks prior (to account for lag between infections and deaths) in late October, 40 percent higher than the corresponding urban death rate of 1.4. The rural population appears to be more vulnerable to serious infection in several ways. The Centers for Disease Control and Prevention (CDC) identified two personal characteristics of people highly vulnerable to the coronavirus: (1) old age, especially very old age (over 75); and (2) the presence of underlying health problems. People may also be more vulnerable when they have difficulty accessing healthcare, measured here as lacking health insurance and residing far from hospitals. In each case, rural residents are much more likely to live in a high vulnerability county (top 20 percent of all counties) than are metro residents.

Nonmetro population characteristics and hospital distance indicate ways the rural population is more vulnerable to severe illness or death from COVID-19 infection than the metro population

Percentages of nonmetro and metro adult populations in U.S. high vulnerability counties (in top 20 percent) defined by each source of vulnerability

Vulnerability Source	Nonmetro	Metro
	Percent	
Underlying health problems (ages 20 to 84)	23.7	3.0
Old adult population scale	15.9	4.0
Lacking health insurance (ages 25-64)	20.2	10.5
Distance to hospital with intensive care unit (ICU)	11.3	0.3

Note: Underlying health problems are measured as the average yearly age-standardized mortality rate in 2014-18 from natural causes (excludes accidents, including overdoses; homicide, and suicide). The old adult population scale is measured by the percent of adult population ages 60 to 74 plus double the percent ages 75 and over. Distance is measured between county geographic population centers. Both nonmetro and metro population percentages can be under 20 when vulnerability is greater in counties with relatively small populations.

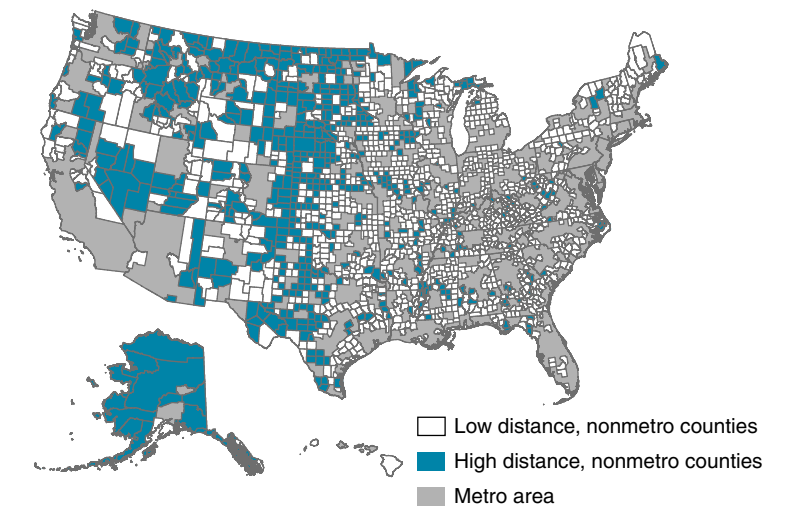
Sources: USDA, Economic Research Service using National Center for Health Statistics Detailed Mortality file, the U.S. Department of Commerce, Bureau of the Census, American Community Survey 2018 5-year data, and the Kaiser News Foundation.

Not all counties have medical care facilities. In 2016-17, 116 counties (4 percent) in the United States were without a clinic, Health Maintenance Organization medical center, Rural Health Clinic, or hospital to provide basic medical care to residents. Ninety-seven of these counties (83 percent) are nonmetro, and most of them (73 counties, or 63 percent) are without a town or city larger than 2,500 people. Additionally, residents in 22 percent of counties must drive outside the county to receive hospital care, and only 60 percent of counties with hospitals also have an intensive care unit (ICU). The majority of counties without a hospital or an ICU are also nonmetro (67 percent and 77 percent, respectively).

Some COVID-19 patients can quickly develop serious symptoms, and rural residents who are remote from intensive care hospitals may have difficulty receiving care in a timely manner. The map shows nonmetro counties in the 20 percent of counties with the longest average distance to an intensive care hospital. On average, the residents of these counties are more than 32 miles from such a hospital. People living in these counties, particularly the elderly and those with underlying health conditions, may have worse outcomes for severe cases of COVID-19 due to the difficulty of accessing medical care quickly.

Intensive care unit (ICU) facilities are harder to reach for residents in the Great Plains and Mountain West

Nonmetro counties in the upper quintile of distance to a hospital with an ICU, 2017



Note: Counties are considered high distance if they are at least 32.4 miles from the county with an intensive care unit in their healthcare service area. This is the cutoff for the 20 percent of counties with the longest distances as the crow flies, measured between population centers.

Source: USDA, Economic Research Service calculations in ArcGIS using U.S. Department of Commerce 2010 Decennial Census Geographic Reference Files and Kaiser News Foundation calculations from the 2018-19 Healthcare Cost Report Information System (HCRIS).

Rural average weekly COVID-19 mortality rates in the last 3 weeks of October were much lower than those of major metro areas during the first COVID-19

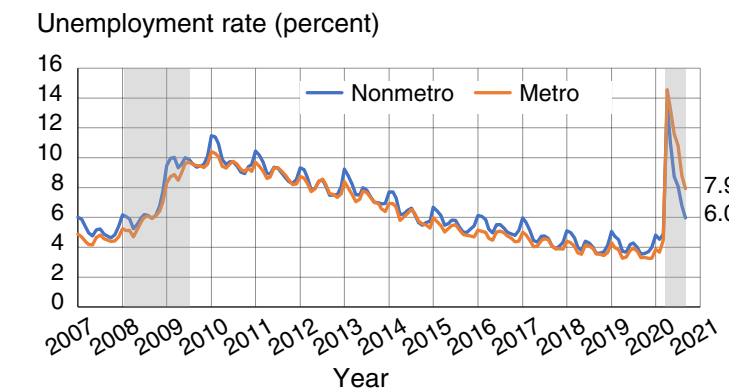
flare-up in March. However, this does not mean that rural health services are not under pressure. The average weekly number of nonmetro COVID-19 deaths in the last 3 weeks in October was equivalent to 14 percent of weekly overall nonmetro deaths over the same period in 2018 (the last year of available data). COVID-19 deaths are spread very unevenly, especially across rural areas. For instance, taken together, the populations in the 2 most rural categories had an average weekly number of COVID-19 deaths in the last 3 weeks of October equivalent to 15 percent of their overall weekly average number of deaths in October 2018. However, nearly half (48 percent) of these counties had no COVID-19 deaths during the last 3 weeks in October. Considering only the population in these rural counties that had any COVID-19 deaths, the above ratio of COVID-19 deaths to total 2018 deaths in this period was 25 percent. This ratio suggests there may be increased stress on healthcare resources in many of these counties, particularly when other counties in their hospital service areas were also experiencing flare-ups.

Rural Unemployment During the Pandemic

Prior to the COVID-19 outbreak, the unemployment rate in nonmetro areas had followed a 10-year decline, from a peak of 11.5 percent in January 2010 to a low of 3.5 percent in September 2019. After the beginning of the pandemic, U.S. unemployment surged to levels not seen since the Great Depression in the 1930s. The nonmetro unemployment rate began to rise in March and peaked at a (not seasonally adjusted) rate of 13.6 percent in mid-April.

Unemployment in 2020 surged well above the 2010 peak following the Great Recession

U.S. monthly unemployment rates in metro and nonmetro areas, January 2007 to September 2020



Notes: Data are not seasonally adjusted. Unemployment rate estimates for September 2020 are preliminary. Shaded area indicates recession period.

Source: USDA, Economic Research Service using data from U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics program (accessed October 29, 2020).

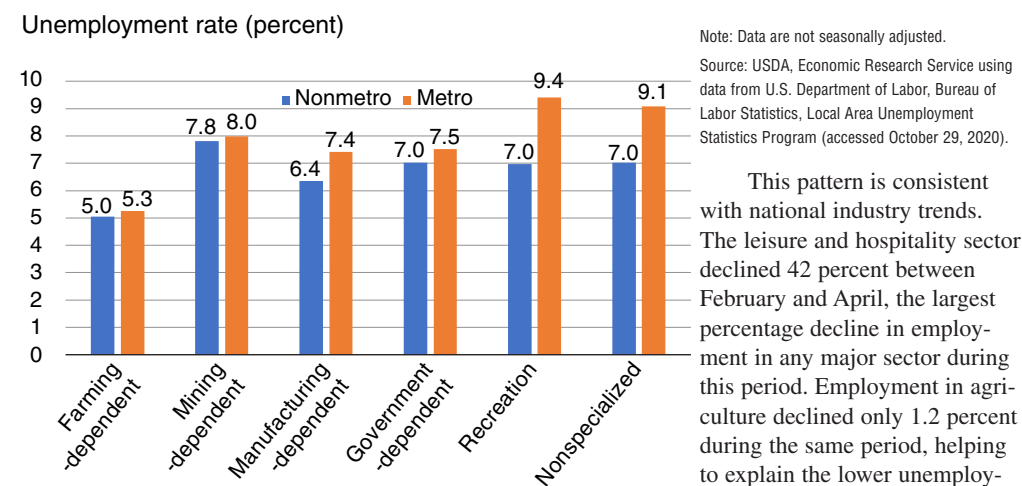
Nonmetro unemployment rates tracked slightly higher than in metro areas during the Great Recession of 2008-09 and throughout the 2010s but have been lower

during the pandemic. Metro unemployment peaked at 14.6 percent in mid-April, 1 percentage point higher than in nonmetro areas. An even wider metro-nonmetro unemployment gap during the early months of the pandemic might have been expected given the almost exclusively urban initial outbreaks. However, the unemployment surge resulted largely from government restrictions on non-essential economic activity, social distancing requirements, voluntary decisions by consumers to

limit travel, and other measures applied well beyond initial outbreak sites to help limit the spread of the virus. Some of these restrictions and consumer decisions appear to have had less impact in nonmetro areas. By the week of September 12, the unemployment rate had fallen to 7.9 percent in metro areas and 6.0 percent in nonmetro areas. Declining unemployment occurred as the Coronavirus Aid, Relief, and Economic Security (CARES) Act, other new Federal laws, and the Federal Reserve made trillions of dollars in funds available as part of efforts to address the recession. Several States also relaxed restrictions put in place to control the pandemic, and consumers began to increase spending. On any given date, the impact of the pandemic on unemployment rates varied across different county types and was, in part, tied to the dominant economic sector in local economies. In mid-August, nonmetro unemployment rates were highest in mining-dependent counties (7.8 percent) and lowest in farming counties (5.0 percent). Nonmetro county economic types dependent on other industries experienced unemployment rates ranging from 6.4 to 7.0 percent.

Unemployment in nonmetro areas was highest in mining counties, lowest in farming counties

U.S. unemployment rates by county economic type and metro status, week including August 12, 2020



This pattern is consistent with national industry trends. The leisure and hospitality sector declined 42 percent between February and April, the largest percentage decline in employment in any major sector during this period. Employment in agriculture declined only 1.2 percent during the same period, helping to explain the lower unemployment rate in farming-dependent

counties. High rates of COVID-19 cases in many nonmetro areas were associated with economic activities that did not shed jobs, most notably farming and meatpacking.

COVID-19 Cases in Meatpacking-Dependent Counties

Just over 500,000 people work in the meatpacking industry in the United States. Many plants are in cities such as Sioux Falls, SD, where meatpacking is just one of many major employers. However, several other plants are in much smaller municipalities such as Dakota City, NE, and Worthington, MN, where meatpacking is the primary employer in the county. In 56 counties in the United States—49 nonmetro counties and 7 metro counties—meatpacking is estimated to account for more than 20 percent of all county employment.

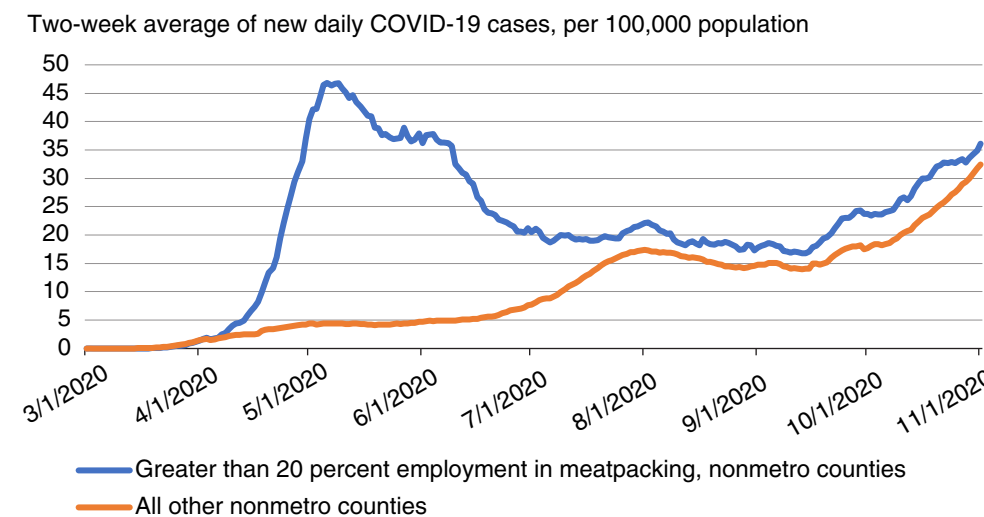
While these counties make up 2.5 percent of all rural counties and 0.6 percent of urban counties, they represent 19.0 percent and 2.9 percent, respectively, of all meatpacking employment in the United States. The employment dependence of these counties on a single industry makes meatpacking a unique manufacturing industry in the United States. A manufacturing industry accounts for at least 20 percent of county employment in only 91 other counties. Motor vehicle parts manufacturing, for example, employs at least 20 percent of the workforce in 12 counties compared with meatpacking's 56 counties; other industries have even less geographic concentration. Beginning in mid-April, the confirmed number of cases of COVID-19 in meatpacking-dependent counties began to outpace those seen in all other counties across the country.

The 2-week moving average number of new daily cases rose in meatpacking-dependent counties through the remainder of April, reaching a peak of nearly 50 cases per 100,000 population by the end of the month, more than 10 times the prevalence seen in other rural counties. Even though cases in meatpacking-dependent counties started to decline in May, they remained significantly higher compared to other rural counties, falling to just under 7 times the number of average daily cases per 100,000 population by the end of May. Partial plant closures and increased social distancing protocols were implemented at meatpacking plants across the country starting in late May. These measures appear to have slowed infection rates, as June saw a sharp reduction in cases in meatpacking-dependent counties. As the pandemic began to spread more widely throughout rural America in July, rates in meatpacking-dependent counties leveled off and then declined slightly in August. Both meatpacking-dependent and other rural counties saw modest declines in the 2-week moving average number of new daily cases per 100,000

through mid-September. Since September 15, all rural counties have seen a surge in average new cases per 100,000. This surge in rural new cases does not appear to be driven by new outbreaks in the meatpacking industry, as meatpacking-dependent counties have maintained an almost identical pattern to other rural counties for the 4 most recent months of data.

COVID-19 case rates remained much higher in meatpacking counties compared to other nonmetro counties from May through mid-July

Two-week moving average of new daily COVID-19 cases per 100,000 population since March 1, 2020, in nonmetro counties with 20 percent or more employment in meatpacking compared to all other rural counties in the United States



Sources: USDA, Economic Research Service using data from Johns Hopkins University U.S. County Level COVID-19 Tracking Map (downloaded November 2, 2020); U.S. Department of Commerce, Bureau of the Census population estimates for 2019; and Imputing Missing Values in the U.S. Census Bureau's County Business Patterns, F. Eckert, T.C. Fort, P.K. Schott, and N.J. Yang, National Bureau of Economic Research Working Paper #26632-2020.

ERS Website and Contact Person
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Rural America at a Glance

2020 Edition

By: John Cromartie, Elizabeth A. Dobis, Thomas P. Krumel, Jr., David McGranahan, John Pender



Overview

The U.S. population in rural (nonmetro) counties stood at 46.1 million in July 2019, essentially unchanged from 46.2 million in 2010.¹ Prior to the onset of the COVID-19 pandemic, rural America showed modest signs of a strengthening economy but had underperformed compared with urban areas. Rural population grew by 0.02 percent in 2018-19, a small increase after 6 prior years of population decline, but still well below the urban increase rate of 0.6 percent. Rural counties added jobs every year during the past decade but at less than half the rate of urban counties during most years, including 2018-19 (0.6 percent growth in rural counties compared with 1.4 percent growth in urban counties). Rural poverty rates dropped from a 2013 rate of 18.4 percent to 16.1 percent in 2018, still well above the urban rate of 12.6 percent.

Nonmetro population and economic trends lagged metro areas prior to 2020

Indicator	Nonmetro	Metro
	Percent	
Population increase, 2018-19	0.02	0.6
Employment increase, 2018-19	0.6	1.4
Poverty rate, 2018	16.1	12.6

Sources: USDA, Economic Research Service using U.S. Census Bureau's Population Estimates Program and Small Area Income and Poverty Estimates; Bureau of Labor Statistics' Local Area Personal Income and Employment data.

Given the dramatic turn of events starting in the winter of 2019-20, this edition of Rural America at a Glance focuses on recent conditions resulting from the COVID-19 pandemic and the ensuing economic recession. With 14 percent of the adult population, rural areas had about 14 percent of total confirmed COVID-19 cases and 11 percent of all deaths as of November 1, 2020. However, the rural share of cases and deaths increased markedly over time as the virus spread. In the 3 weeks leading up to November 1 (i.e., the last 3 weeks of October), rural residents accounted for 21 percent of new cases. COVID-19 deaths became even more concentrated in rural areas, with rural residents accounting for 27 percent of the nation's deaths from COVID-19 during the last 3 weeks of October. Several factors likely contributed to the higher recent rural share of COVID-19 deaths than cases, including a population that is older and living farther away from hospitals, more likely to have underlying health issues, and less likely to have health insurance. Government restrictions on economic activity, social distancing requirements, and other measures in response to the pandemic adversely affected certain sectors of the U.S. economy. In March and April, U.S. unemployment rates rose to levels not seen since the 1930s. Rural unemployment peaked at 13.6 percent in mid-April, which was 1 point lower than in metro areas, and fell to 6.0 percent by mid-September. The spread of the pandemic varied across rural counties, shaped in part by their dominant economic sector (e.g., recreation or manufacturing-dependent). In rural counties with a high proportion of jobs in meatpacking operations, COVID-19 cases peaked at the end of April at nearly 50 per 100,000 population, compared with roughly 5 per 100,000 in other rural counties.

¹Rural areas are defined here using nonmetropolitan (nonmetro) counties. The terms "rural" and "nonmetro" are used interchangeably as are the terms "urban" and "metro." Statistics are calculated from county-level data using the 2013 nonmetro definition provided by the Office of Management and Budget. For more information on these definitions, visit the Economic Research Service "What Is Rural?" topic page.