COVID-19 Cases and Deaths, Metropolitan and Nonmetropolitan Counties Over Time (update)
Fred Ullrich, BA; and Keith Mueller, PhD

Report
Fall 2020 saw a dramatic increase in COVID-19 case and mortality rates in the United States. Incidence rates appear to have peaked in January 2021 and have been declining since. This data brief compares 7-day moving average COVID-19 incidence and mortality rates between metropolitan, micropolitan, and noncore counties in the United States.

Analysis of incidence and mortality data shows that rural areas have been disproportionately impacted by the virus. There was a very modest decline in average 7-day incidence and mortality rates following the summer peak (in both metropolitan and nonmetropolitan areas), but in early August the nonmetropolitan incidence and mortality rates surpassed those of metropolitan areas. Metropolitan and nonmetropolitan incidence rates have tracked relatively closely with metropolitan rates surpassing nonmetropolitan in late December 2020. Nonmetropolitan mortality rates surpassed metropolitan in August 2021 and have remained higher since that time. Noncore mortality rates have been the highest of the three geographies since late September (figure 4).

Data
Data on confirmed COVID-19 cases and deaths were obtained from the Johns Hopkins University COVID-19 Data Repository. Daily case and death counts in counties were calculated using a 7-day rolling average and total population data, obtained from the 2018 American Community Survey 5-year estimates, were used to calculate rates. Counties (or equivalents) in the 50 states and the District of Columbia were classified as metropolitan, nonmetropolitan, or noncore based on Urban Influence Codes. Metropolitan counties are those with one or more urban areas with 50,000 or more people; or outlying counties economically tied to core counties as measured by labor-force commuting. All other counties are considered nonmetropolitan which may further be divided into “micropolitan” counties (those nonmetropolitan counties with an urban area with 10,000-49,999 people and economically-tied outlying counties) and “noncore” counties (those with no urban area of 10,000 or more people and not economically tied to metropolitan or micropolitan counties).

A table and plots depicting metropolitan and nonmetropolitan incidence and mortality rates are on the following pages.
Table 1: Cumulative and 7-day incidence and mortality rates*, metropolitan/nonmetropolitan

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<th>Period Ending...</th>
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<th></th>
<th></th>
<th>Nonmetropolitan</th>
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* All rates are reported per 100,000 population.

Figure 1. COVID-19 Metropolitan and Nonmetropolitan Incidence Rates
Figure 1b. COVID-19 Metropolitan and Nonmetropolitan Incidence Rates, Last Three Months

COVID-19 Incidence Rates: 7-day moving average
Three months ending - 2/14/2021

Confirmed cases / 100,000 population

01Nov 2020 16Nov 01Dec 16Dec 01Jan 2021 16Jan 01Feb 16Feb

Case counts from Johns Hopkins University CSSE COVID-19 Data
https://github.com/CSSEGISandData/COVID-19
Population based on 2018 ACS 5-year estimates.

Rural Policy Research Institute (RURRI)
University of Iowa, College of Public Health

Figure 2. COVID-19 Metropolitan, Nonmetropolitan, and Noncore Incidence Rates

COVID-19 Incidence Rates: 7-day moving average
4/1/2020 - 2/14/2021

Confirmed cases / 100,000 population

Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar 2020 2021

Case counts from Johns Hopkins University CSSE COVID-19 Data
https://github.com/CSSEGISandData/COVID-19
Population based on 2018 ACS 5-year estimates.

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Figure 3. COVID-19 Metropolitan and Nonmetropolitan Mortality Rates

COVID-19 Mortality Rates: 7-day moving average
4/1/2020 - 2/14/2021

Death counts from Johns Hopkins University CSSE COVID-19 Data
https://github.com/CSSEGISandData/COVID-19
Population based on 2018 ACS 5-year estimates
Rural Policy Research Institute (RUPRI)
University of Iowa, College of Public Health

Figure 3b. COVID-19 Metropolitan and Nonmetropolitan Mortality Rates, Last Three Months

COVID-19 Mortality Rates: 7-day moving average
Three months ending - 2/14/2021

Death counts from Johns Hopkins University CSSE COVID-19 Data
https://github.com/CSSEGISandData/COVID-19
Population based on 2018 ACS 5-year estimates
Rural Policy Research Institute (RUPRI)
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Figure 4. COVID-19 Metropolitan, Nonmetropolitan, and Noncore Mortality Rates

COVID-19 Mortality Rates: 7-day moving average
4/1/2020 - 2/14/2021

- Metropolitan
- Micropolitan
- Noncore

Death counts from Johns Hopkins University CSSE COVID-19 Data
https://github.com/CSSEGISandData/COVID-19

Population based on 2018 ACS 5-yr estimates
University of Iowa, College of Public Health

References