RUPRI Center for Rural Health Policy Analysis
Rural Data Brief

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COVID-19 Cases and Deaths, Metropolitan and Nonmetropolitan Counties Over Time *(update)*

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Purpose

This data brief compares 7-day moving average COVID-19 incidence and mortality rates between metropolitan, micropolitan, and noncore counties in the United States. It contains a table, plots, and maps depicting metropolitan and nonmetropolitan incidence and mortality rates as of October 1, 2021.

Data

Data on confirmed COVID-19 cases and deaths were obtained from the Johns Hopkins University COVID-19 Data Repository[1]. 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[2], 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[3]. Metropolitan counties are those with one or more urban areas with 50,000 or more people; or outlying counties economically tied to core counites 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).[4]

Results

Following the peak in Winter 2020-2021, COVID-19 case and mortality rates sharply declined until March 2021 when there was a 2-3 month plateau. Rates then continued their decline until July 2021 when another steep increase began. Case and mortality rates in the current surge appear to have peaked in late September.

The earliest surge in the pandemic (Spring 2020) largely took place in metropolitan areas (both incidence and mortality). The second surge (Summer 2020) saw increases in incidence and mortality in both metropolitan and nonmetropolitan areas. However, it was at that time that nonmetropolitan incidence and mortality rates surpassed those in metropolitan areas. Both rates were higher in nonmetropolitan areas during the third surge until its peak in January 2021. Following that peak, metropolitan and nonmetropolitan rates declined in similar fashion with incidence rates (for both geographies) levelling off in the spring and then declining until July 2021. At that time incidence rates started rising sharply with mortality rates following suit in August. Although that surge appears to have peaked in late September, incidence and mortality rates remain much higher in nonmetropolitan counties than those in metropolitan counties.

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Table 1: Cumulative and 7-day incidence and mortality rates*, metropolitan/nonmetropolitan

Period Ending...	Metropolitan				Nonmetropolitan			
	Cases		Deaths		Cases		Deaths	
	Cumul.	7-day	Cumul.	7-day	Cumul.	7-day	Cumul.	7-day
04/01/2020	75.54	7.44	2.02	0.23	16.23	1.65	0.36	0.04
04/15/2020	223.42	10.17	10.58	0.69	57.60	3.14	2.14	0.15
05/01/2020	376.92	9.17	21.51	0.68	137.63	5.37	5.31	0.19
05/15/2020	486.03	7.28	28.96	0.48	209.13	4.94	8.20	0.22
06/01/2020	600.97	6.51	36.37	0.33	297.92	5.66	11.17	0.17
06/15/2020	692.94	6.71	39.82	0.23	379.05	5.92	13.23	0.15
07/01/2020	880.47	14.26	43.51	0.27	508.29	9.14	15.34	0.12
07/15/2020	1,140.65	20.11	46.59	0.25	686.61	14.85	17.48	0.17
08/01/2020	1,488.41	19.44	51.87	0.35	985.07	17.78	22.46	0.36
08/15/2020	1,714.43	15.95	56.24	0.31	1,212.62	15.97	27.21	0.36
09/01/2020	1,923.53	12.22	60.65	0.25	1,457.87	15.58	33.24	0.37
09/15/2020	2,077.74	11.25	63.82	0.25	1,658.68	14.71	37.72	0.35
10/01/2020	2,272.83	11.86	67.23	0.20	1,947.86	17.99	43.16	0.33
10/15/2020	2,472.54	15.08	69.95	0.20	2,267.40	24.71	48.33	0.39
11/01/2020	2,832.86	24.38	73.55	0.22	2,840.47	39.37	56.61	0.50
11/15/2020	3,370.73	43.35	77.45	0.30	3,626.94	61.78	65.67	0.66
12/01/2020	4,169.54	48.82	84.23	0.43	4,659.25	59.72	79.69	0.87
12/15/2020	5,075.15	66.03	93.57	0.71	5,643.59	69.43	97.00	1.32
01/01/2021	6,129.86	61.09	106.58	0.75	6,649.60	55.71	117.20	1.09
01/15/2021	7,176.31	72.23	119.79	1.00	7,589.15	61.64	135.46	1.33
02/01/2021	8,030.45	45.35	135.09	0.95	8,325.22	41.35	154.10	1.16
02/14/2021	8,447.59	28.75	145.91	0.76	8,700.54	25.23	166.91	0.85
03/01/2021	8,761.01	21.25	154.78	0.63	8,954.66	17.90	175.67	0.65
03/15/2021	9,027.67	19.67	160.99	0.39	9,187.25	20.22	181.55	0.40
04/01/2021	9,362.97	21.17	166.23	0.28	9,419.94	14.17	187.03	0.26
04/15/2021	9,667.64	22.41	169.75	0.23	9,634.83	16.18	191.76	0.21
05/01/2021	9,949.42	15.59	173.24	0.21	9,852.57	13.14	195.04	0.22
05/15/2021	10,113.98	10.48	175.90	0.18	10,004.83	10.05	197.71	0.19
06/01/2021	10,225.04	5.29	178.68	0.18	10,116.79	5.36	201.05	0.26
06/15/2021	10,284.86	4.35	180.15	0.09	10,188.01	5.23	203.20	0.15
07/01/2021	10,342.90	3.91	181.34	0.07	10,260.99	5.07	204.90	0.10
07/15/2021	10,433.48	8.14	182.21	0.07	10,358.71	8.57	206.26	0.12
08/01/2021	10,754.21	24.80	183.39	0.09	10,649.34	23.40	208.02	0.13
08/15/2021	11,260.01	39.26	185.15	0.16	11,189.79	44.44	211.35	0.28
09/01/2021	12,047.43	48.50	189.89	0.32	12,265.76	67.40	220.45	0.59
09/15/2021	12,658.16	43.66	195.03	0.42	13,185.65	67.09	230.94	0.88
10/01/2021	13,227.89	32.03	202.10	0.42	14,114.64	54.46	245.76	0.87

* All rates are reported per 100,000 population.

Nebraska stopped reporting county-level case and mortality data on 5/25/2021. Florida stopped reporting county level mortality data on 6/3/2021. Therefore, total cases/deaths for metropolitan and nonmetropolitan counts are undercounts.

Figure 1. COVID-19 Metropolitan and Nonmetropolitan Incidence Rates

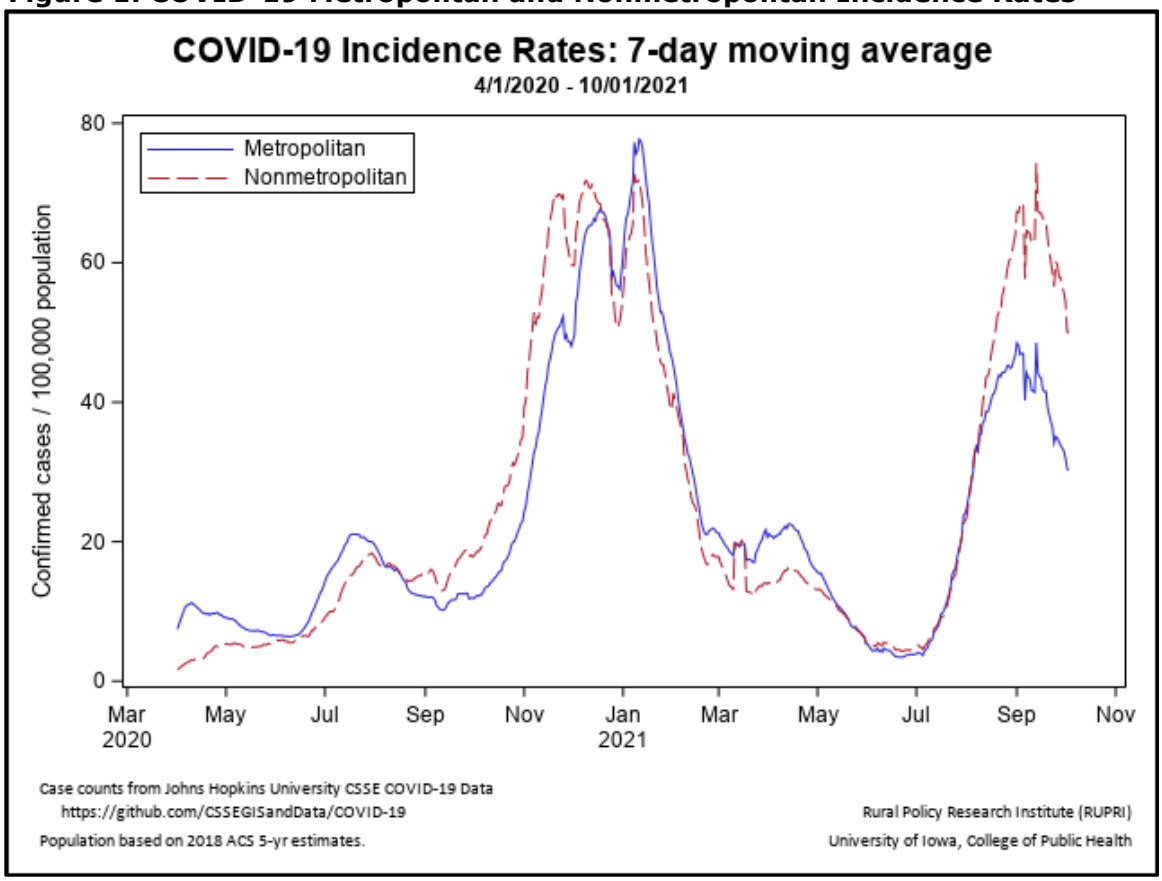


Figure 1b. COVID-19 Metropolitan and Nonmetropolitan Incidence Rates, Last Three Months

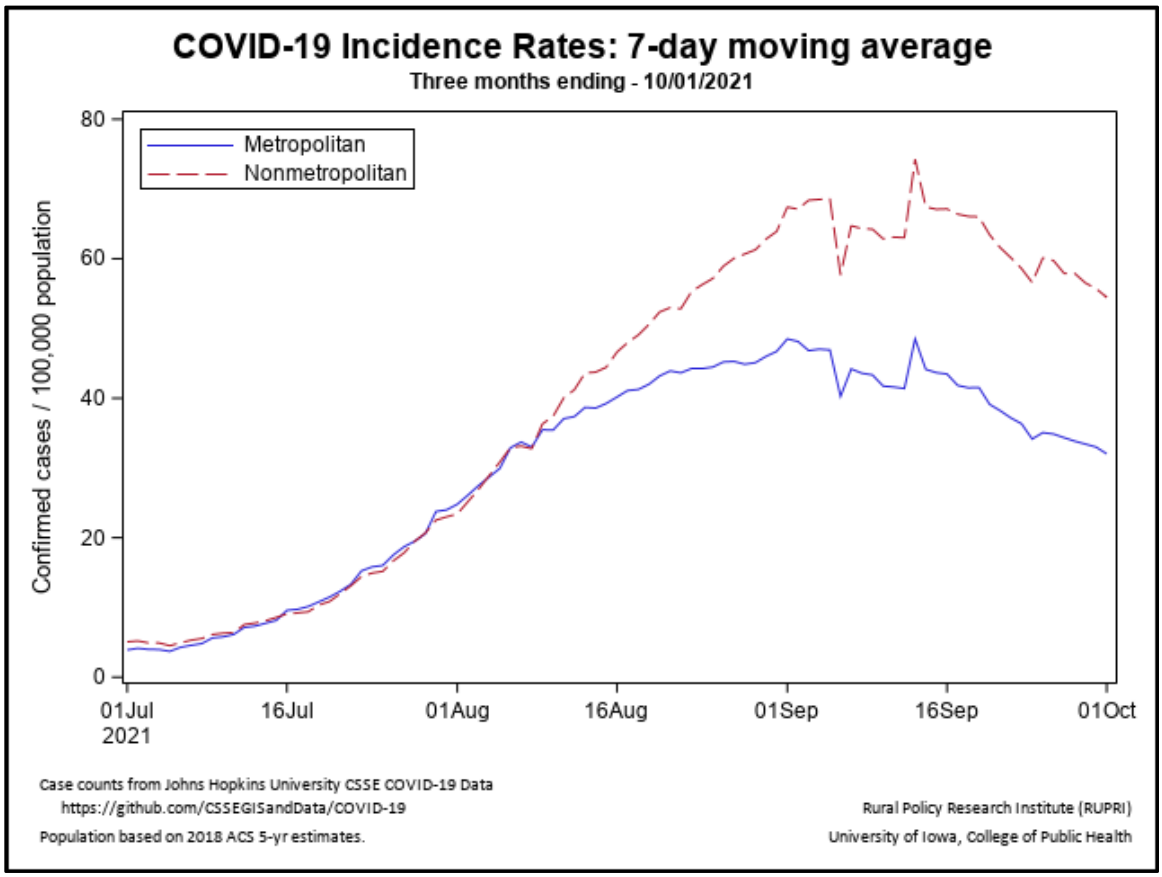


Figure 2. COVID-19 Metropolitan, Nonmetropolitan, and Noncore Incidence Rates

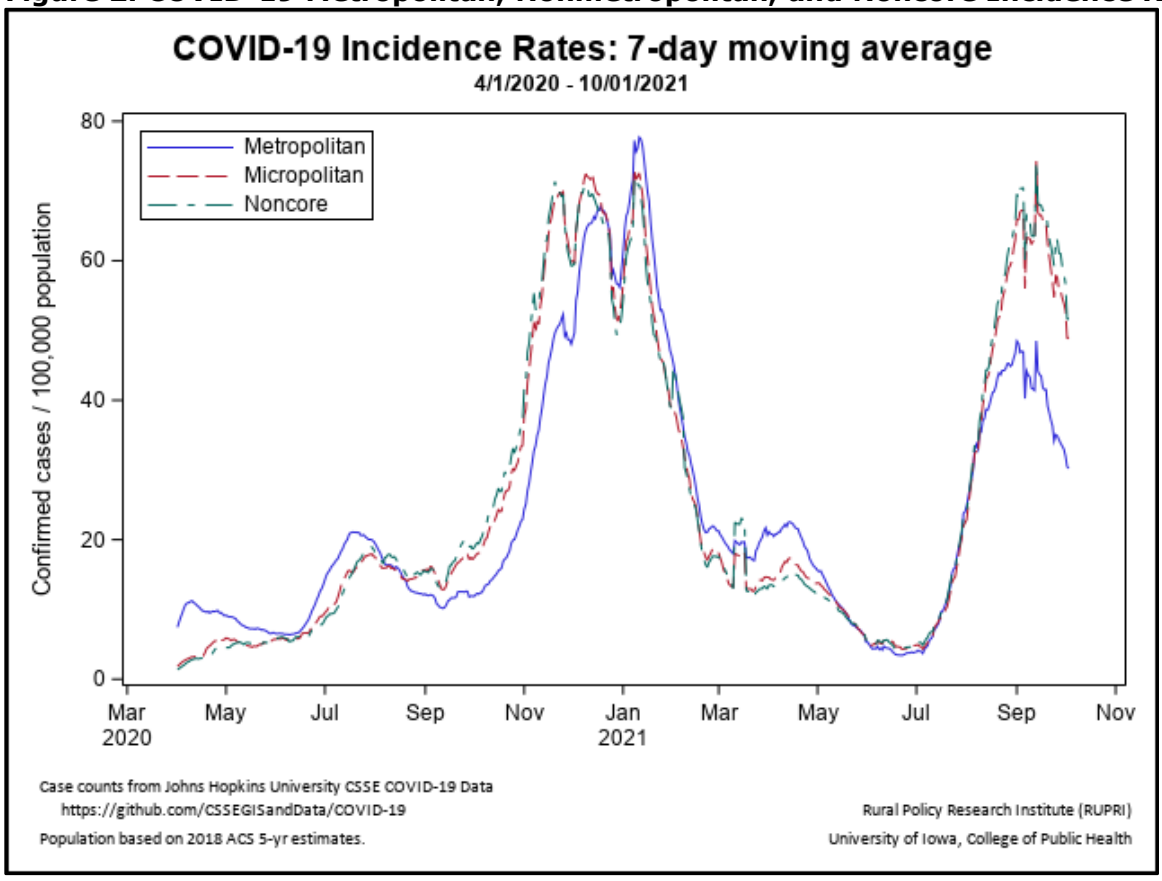


Figure 3. COVID-19 Metropolitan and Nonmetropolitan Mortality Rates

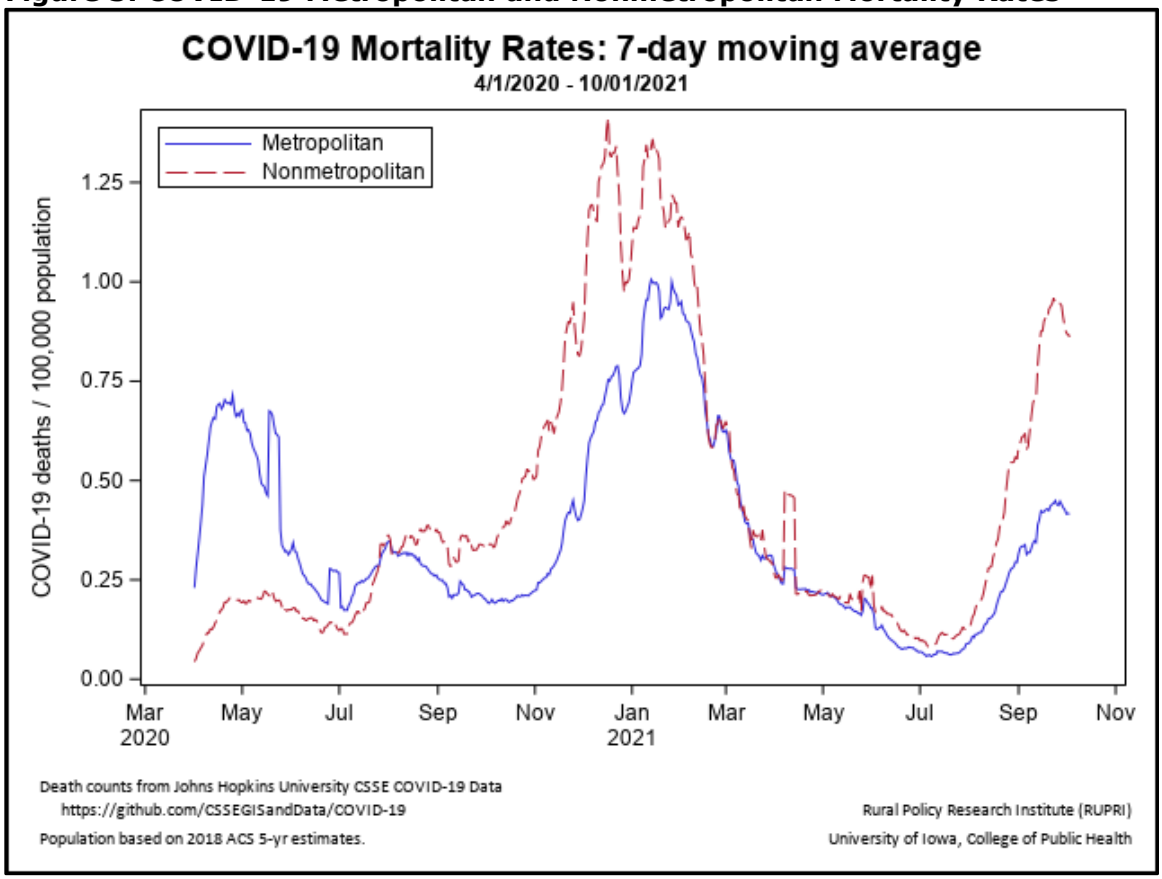


Figure 3b. COVID-19 Metropolitan and Nonmetropolitan Mortality Rates, Last Three Months

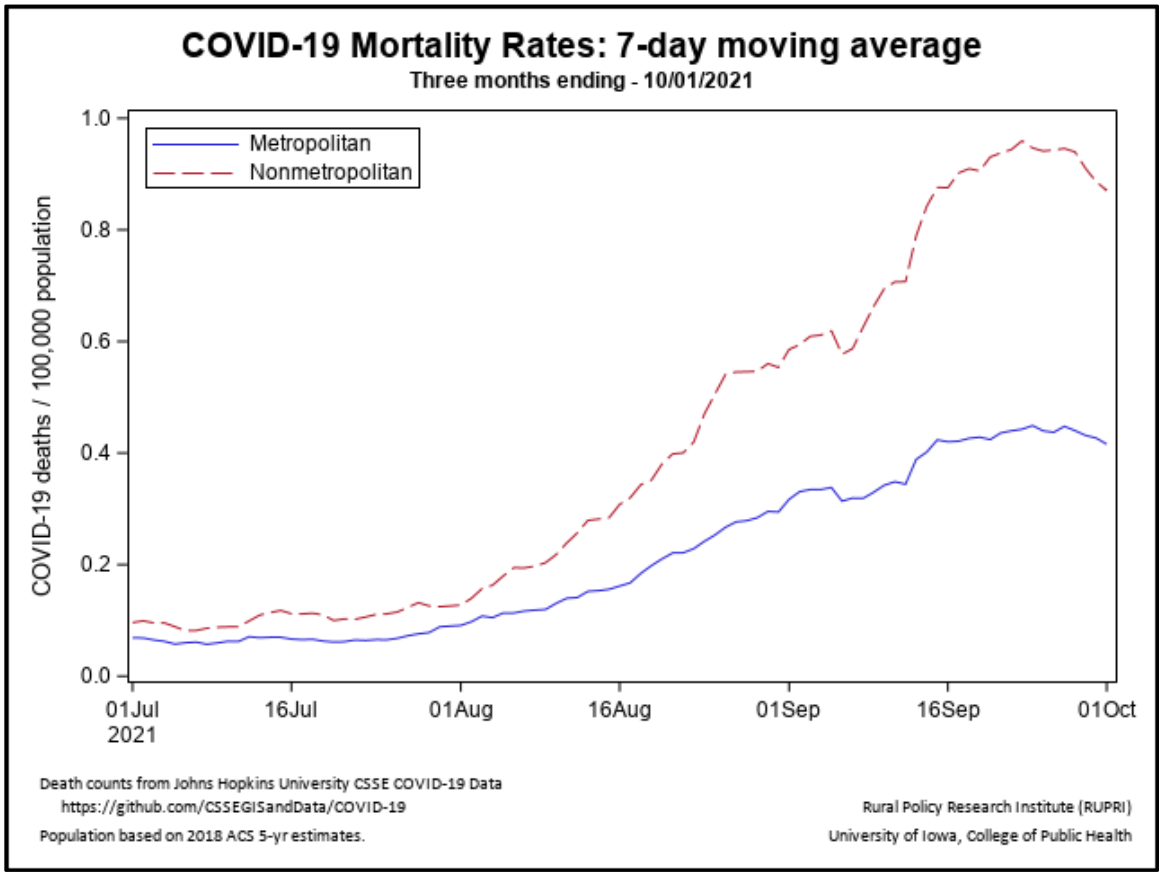
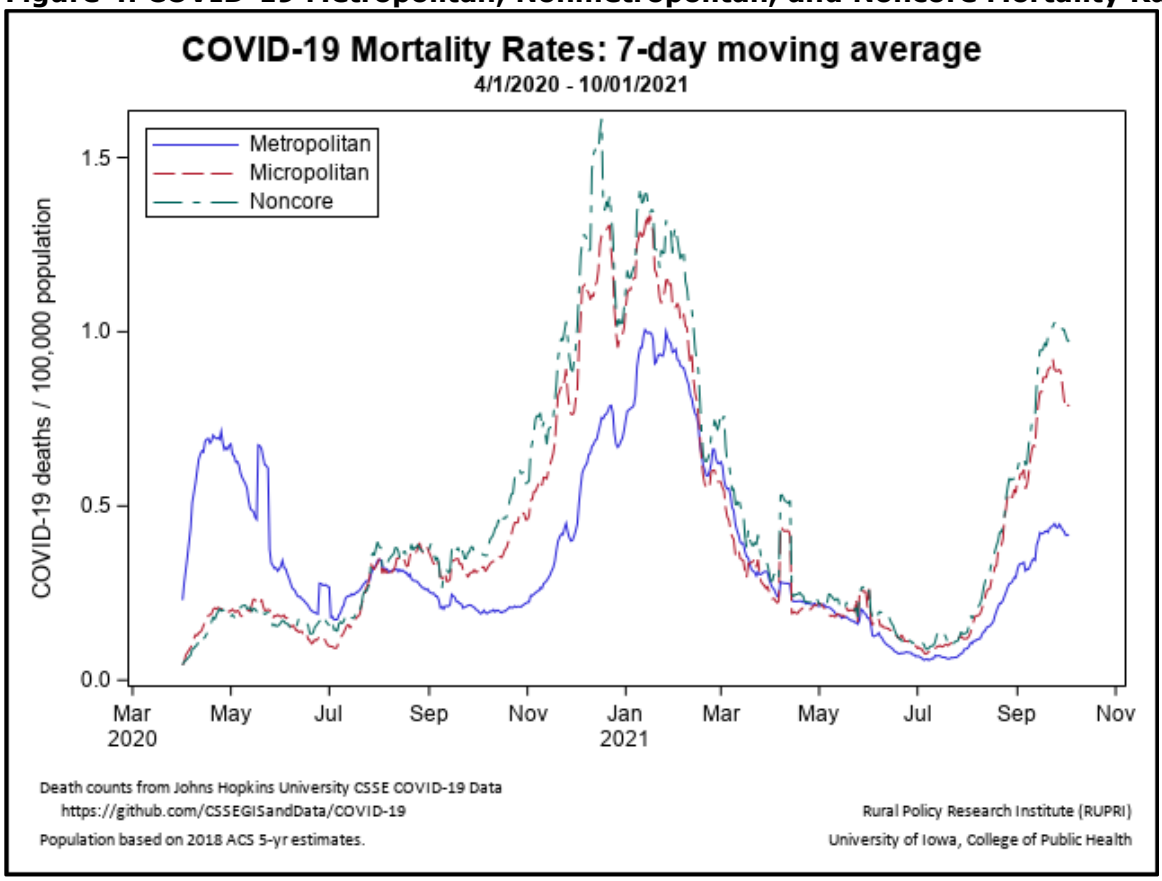
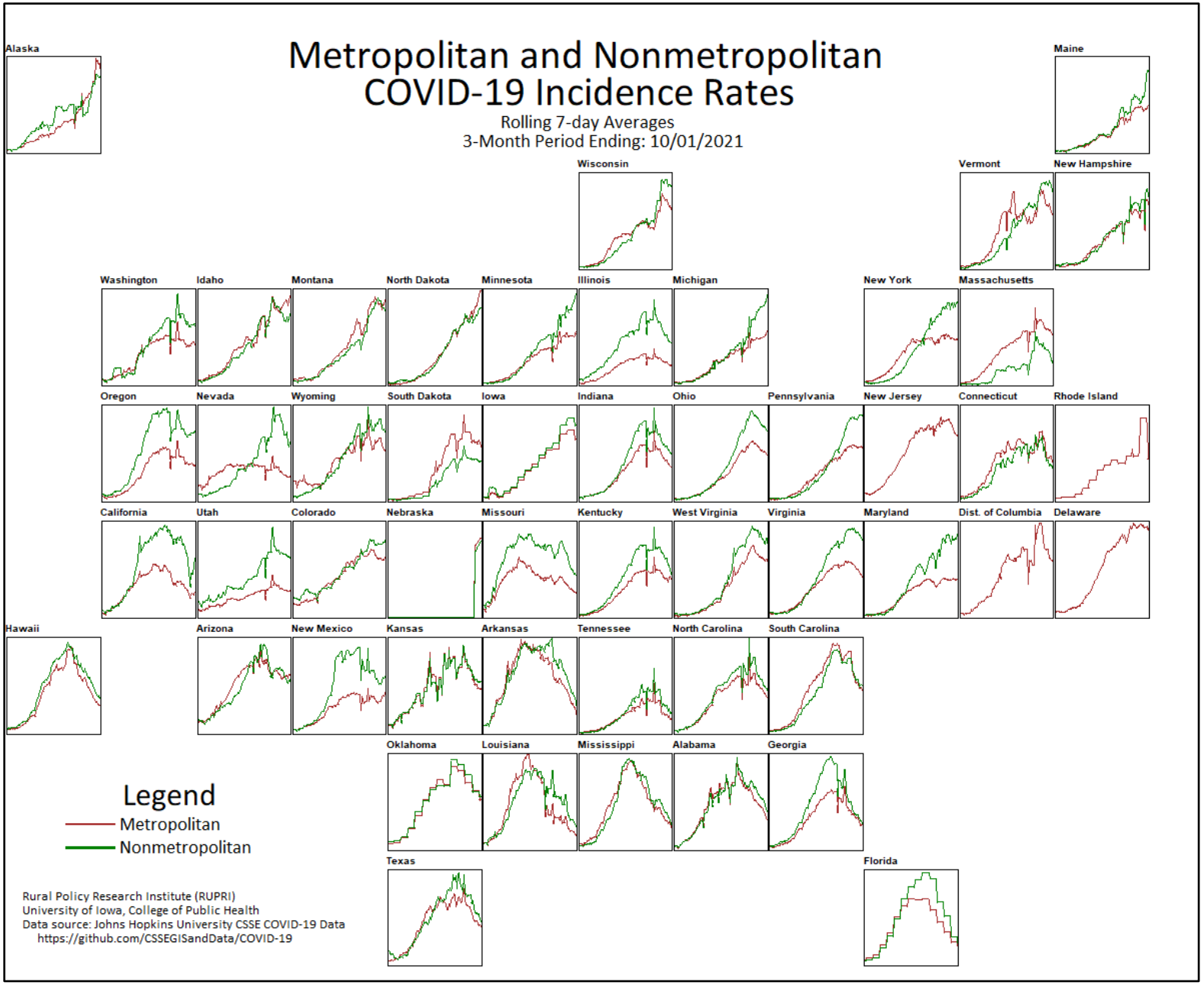


Figure 4. COVID-19 Metropolitan, Nonmetropolitan, and Noncore Mortality Rates

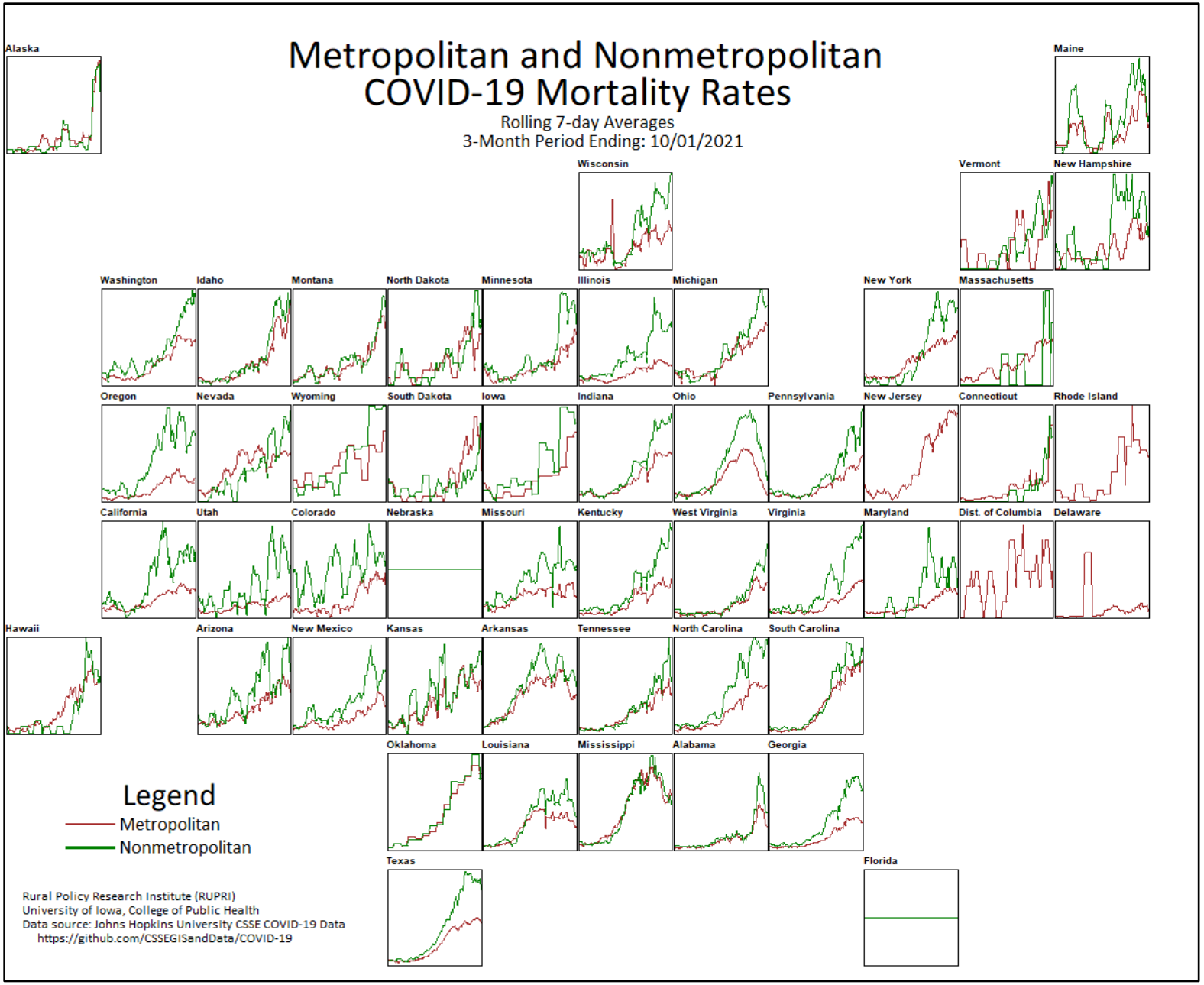


References

1. COVID-19 Data Repository by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University. https://github.com/CSSEGISandData/COVID-19.
2. United States Census Bureau. American Community Survey (ACS). https://www.census.gov/programs-surveys/acs.
3. U.S. Department of Agriculture, Economic Research Service (2019). "Urban Influence Codes." Retrieved May 20, 2020 from https://www.ers.usda.gov/data-products/urban-influence-codes/.
4. U.S. Department of Agriculture, Economic Research Service (2019). "What is Rural?". Retrieved May 20, 2020 from https://www.ers.usda.gov/topics/rural-economy-population/rural-classifications/what-is-rural/.



Notes: 1. 'Y' scales vary between states. Graphic is not intended for comparison of absolute rates between states, but is intended to show general trend directions.
2. Delaware, District of Columbia, New Jersey, and Rhode Island have no nonmetropolitan counties.
3. Plots for states with relatively low counts will appear blocky.
4. Nebraska stopped reporting county-level case data on 5/25/2021. Therefore, total cases for metropolitan and nonmetropolitan counts are undercounts.



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2. Delaware, District of Columbia, New Jersey, and Rhode Island have no nonmetropolitan counties.

3. Plots for states with relatively low counts will appear blocky.

4. Nebraska stopped reporting county-level mortality data on 5/25/2021. Florida stopped reporting county level mortality data on 6/3/2021. Therefore, total deaths for metropolitan and nonmetropolitan counts are undercounts.