



Coronavirus icon by dDara from the Noun Project

## Nonmetro COVID-19 Case Growth Higher in Metro-Adjacent Counties, but Case-Fatality Ratio is Lower so Far

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Z. Tian, S.J. Goetz, NERCRD and Penn State University, and L. Goetz-Weiss

New COVID-19 cases are generally growing more rapidly in nonmetro than in metro areas at this time, but there is an important distinction. In all three non-metro county types, categorized by population sizes (20,000 population or more; 2,500-20,000; and 2,500 or smaller urban populations), the caseload growth is higher in counties that are adjacent to metropolitan areas compared to counties that are not adjacent (Fig. 1). Non-metro counties that are adjacent to metro areas tend to benefit from this

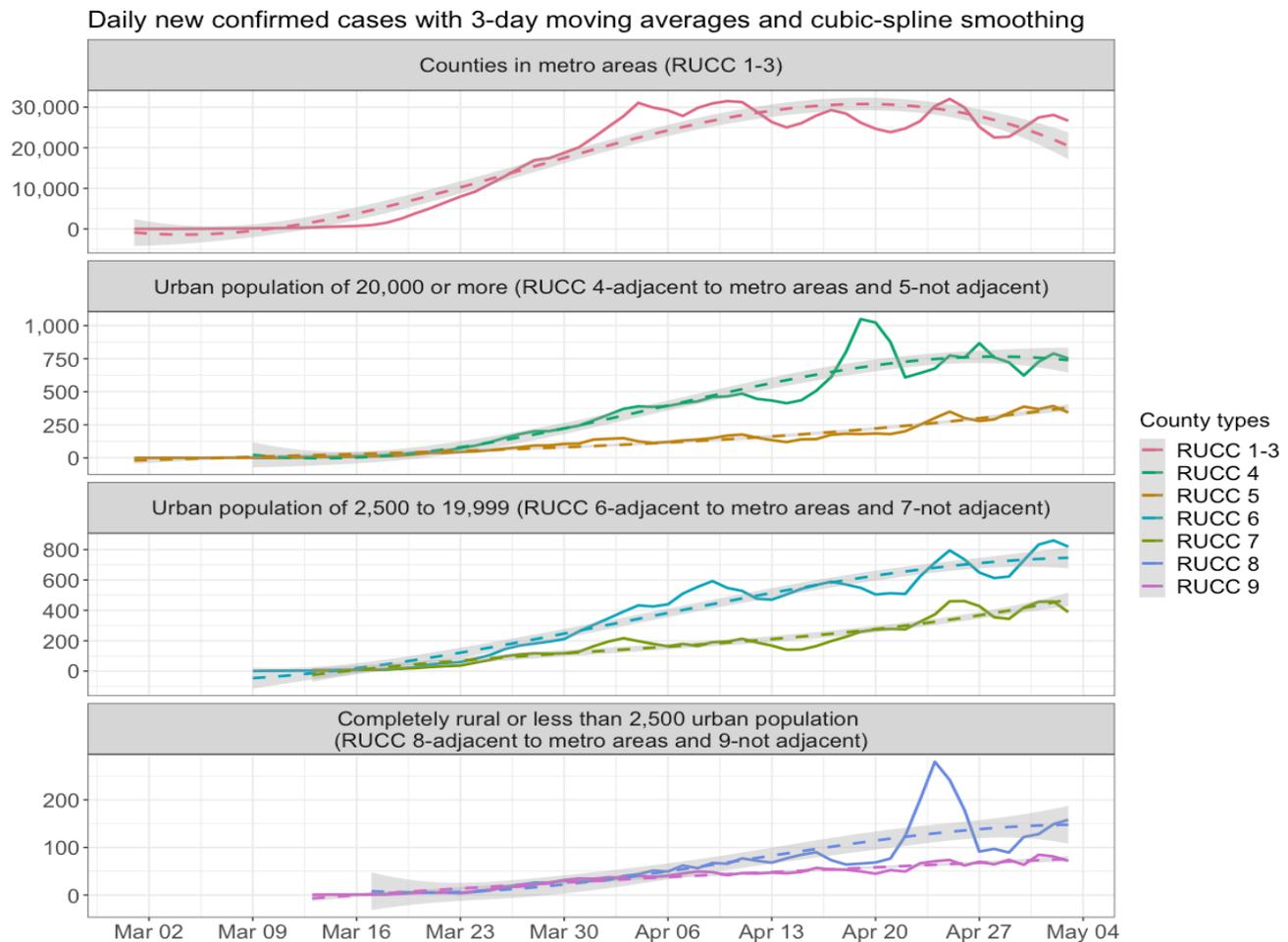


Figure 1. Daily new confirmed cases of COVID-19 by county type.

Data source: New York Times, Economic Research Service, U.S. Dept. of Agric., and authors' calculations.

proximity both in terms of access to employment as well as urban amenities and other services. At this time it appears that this same proximity to metro areas is also hurting them, through greater exposure to the coronavirus. These lines and our interpretation is subject to the usual caveats about the data (e.g., many infected cases likely go unreported). There is also considerable day-to-day variation (noise) in the data, even with three-day moving averages.

Even so, the data suggest that in all of the non-metros, the non-adjacent counties mostly had smaller and more gradual increases in cases, while the adjacent smaller counties especially saw more rapid increases around mid-April, which have since declined again. In the smallest-sized category of non-metro, cases were rising at almost similar rates in both adjacent and non-adjacent county types until about April 20, and since then they have converged again.

New daily cases of death show distinct differences in the growth patterns for larger and mid-sized non-metro counties, whereas in the smaller non-metro counties these lines crisscross one another and the fitted cubic-spline function shows similar trends for adjacent and non-adjacent counties (Fig. 2). It is noteworthy the mid-sized non-metros have higher death cases per capita than either of the other two types of non-metros.

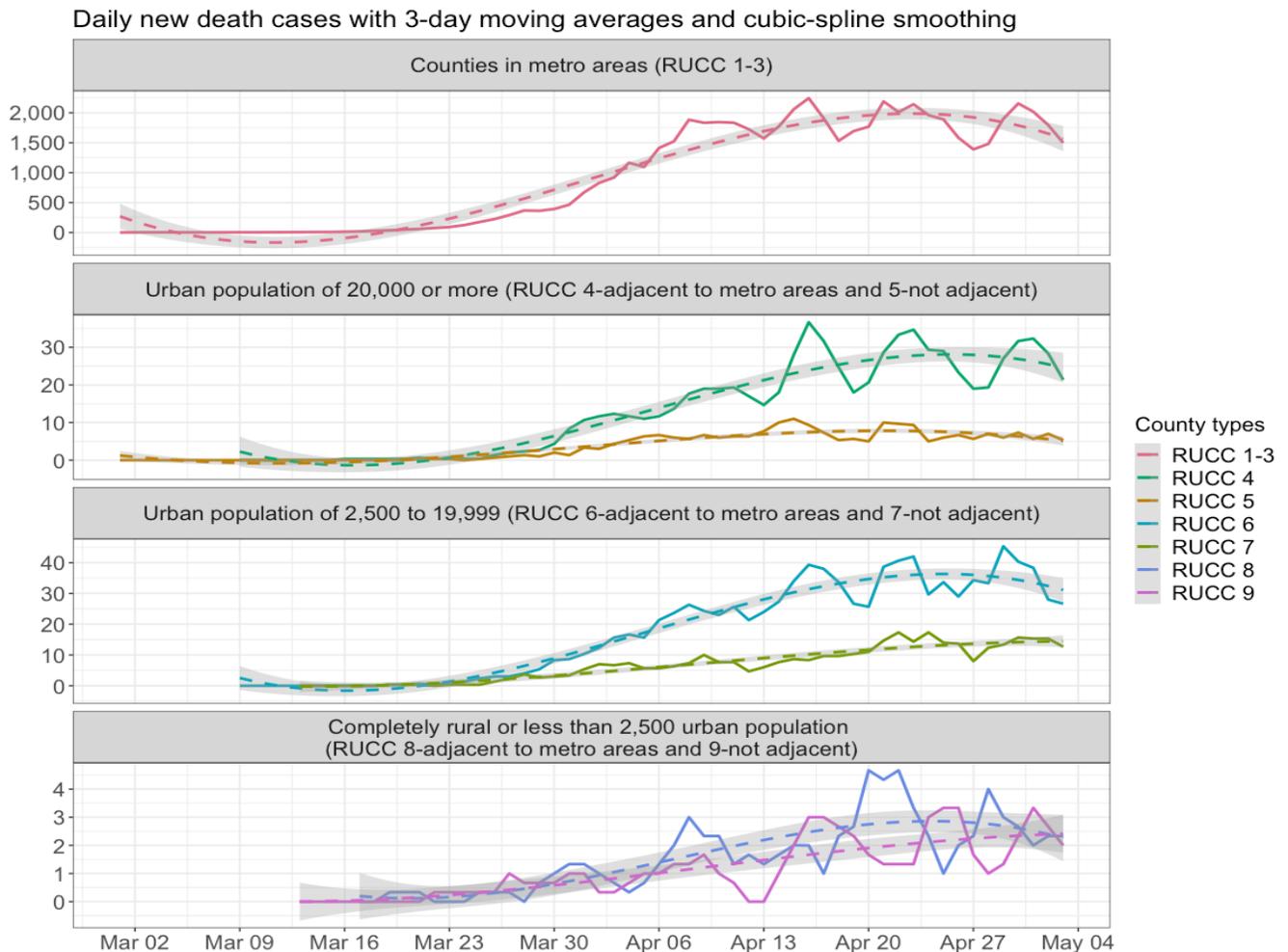


Figure 2. Daily new death cases of COVID-19 by county type.

Data source: New York Times, Economic Research Service, U.S. Dept. of Agric., and authors' calculations.

Despite widely reported early concerns<sup>1</sup> that rural areas would be hit especially hard by the coronavirus, the case-fatality ratio – the number of deaths divided by the number confirmed cases – is generally lower in non-metro than metro areas (Fig. 3, Table 1). These early concerns were based on a more elderly and thus more vulnerable rural population as well as on proportionately lower medical care capacity (EMS, hospitals, doctors per capita). Of the four county types shown, the largest non-metros appear to be doing best in terms of bringing the curves down, while in the smallest the movement is more sideways.

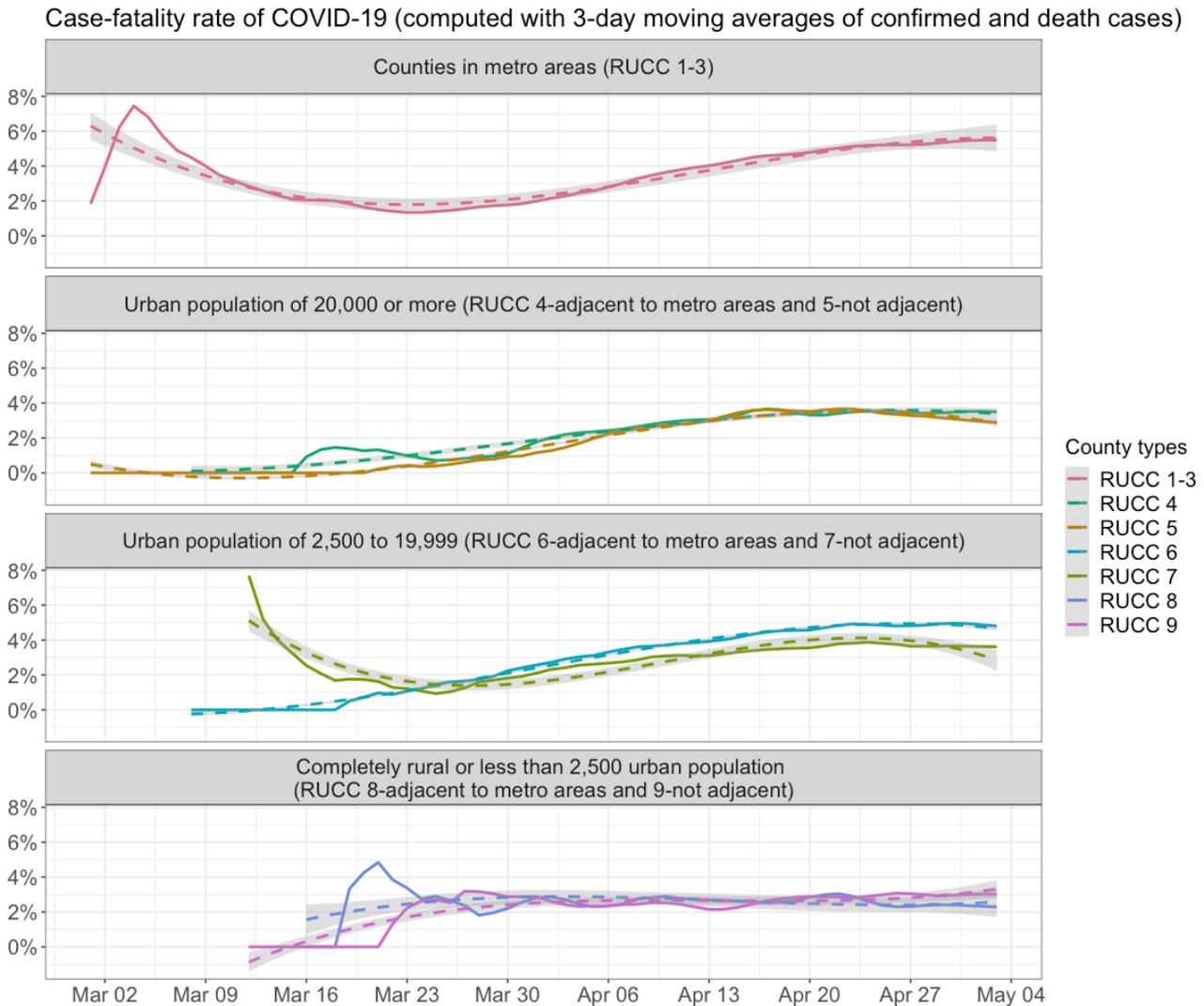


Figure 3. Case-fatality rates of COVID-19 by county type.  
 Data source: New York Times, Economic Research Service, U.S. Dept. of Agric., and authors’ calculations.

<sup>1</sup> Shannon Monnat, “Research Update: Why Coronavirus Could Hit Rural Areas Harder,” The Daily Yonder, March 24, 2020, available at <https://www.dailyyonder.com/research-update-why-coronavirus-could-hit-rural-areas-harder/2020/03/24/>; Lois Parshley, “The coronavirus may hit rural Americans later – and harder,” Vox, March 28, 2020, available at <https://www.vox.com/2020/3/28/21197421/usa-coronavirus-covid-19-rural-america>.

Table 1. Confirmed and death cases and case-fatality rate on May 1 by county type

County types	Confirmed cases (3-day moving averages)	Death cases (3-day moving averages)	Case-fatality rate
RUCC 1-3	1,003,196	54,837	5.47%
RUCC 4	19,867	699	3.52%
RUCC 5	7,112	214	3.01%
RUCC 6	18,782	929	4.95%
RUCC 7	9,005	328	3.64%
RUCC 8	3,060	72	2.36%
RUCC 9	1,830	55	3.01%

Data source: New York Times, Economic Research Service, U.S. Dept. of Agric., and authors' calculations.

It remains to be seen whether this conclusion will be robust over time, but at present it appears that the higher density in metropolitan U.S. areas is associated with a greater case-fatality ratios, and thus lethality of the coronavirus.

Note: Click here for a map of counties classified according to the rural urban continuum code (RUCC). <https://www.ers.usda.gov/webdocs/charts/57748/rucc2013.png?v=6330.1>

**About the Authors:** Zheng is a postdoctoral scholar at the Northeast Regional Center for Rural Development; Goetz is Director of NERCRD and Penn State Professor of Agricultural and Regional Economics. Contact: [sgoetz@psu.edu](mailto:sgoetz@psu.edu)

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