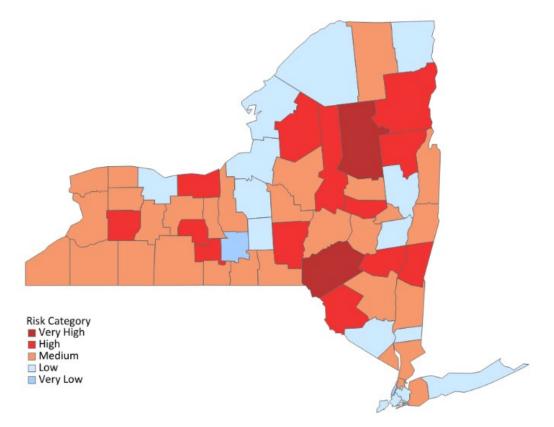## New York State's Rural Counties Have Higher COVID-19 Mortality Risk

Shannon M. Monnat and Yue Sun

Although New York State's rural counties have experienced lower rates of COVID-19 infection and mortality thus far than their urban counterparts (thanks in large part to their lower population density), several of NY's rural counties are at risk of high COVID-19 fatality rates should infections start to spread. The map below shows variation across NYS in prevalence of underlying chronic health conditions that increase risk of becoming severely ill and/or dying from coronavirus if infected. The health risk index is comprised of county-level percentages of adults with chronic obstructive pulmonary disease, obesity, diabetes, high blood pressure, heart disease and who are age 65 and older. The index is standardized to have a mean of 0 and ranges from a high of 3.64 in Hamilton County (highest risk) to a low of -2.78 in Tompkins County (lowest risk). The average standardized index score among NY's metropolitan counties is -0.378, compared to 0.599 among NY's nonmetro counties. Eleven of NY's 24 nonmetro counties have scores that are categorized as very high or high. Only four metro counties are in the high score category. As the state's regions continue to move through the various phases of reopening businesses and recreation activities, policymakers and residents should be mindful of the underlying health vulnerabilities and the higher COVID-19 mortality risk in several of NY's rural counties.

Risk Category
- Very High
- High
- Medium
- Low
- Very Low

Index of Severe Health Risk Associated with COVID-19 Mortality

Note: to view an interactive map, including the rank for each county, and the values for the variables that went into the scoring, click here. Methodological details and data sources are reported below.

Data and Methods

The COVID-19 Health Risk Index for New York State is a weighted sum of county-level values for the following variables: estimated percentage of adults ever diagnosed with chronic obstructive pulmonary disease, emphysema, or chronic bronchitis (2017); estimated percentage of adults ever diagnosed with diabetes (2017); estimated percentage of adults ever diagnosed with heart disease (2017); estimated percentage of adults ever diagnosed with high blood pressure (2017); estimated percentage of adults reporting to be obese (a body mass index of 30 or greater) (2017); and estimated percentage age 65 and older (2014-18). The chronic health indicators are from PolicyMap (https://www.policymap.com/). Percentage age 65 and older is from the Census American Community Survey (https://www.census.gov/programs-surveys/acs).

Values for each risk indicator were standardized (among NY counties) to have a mean of 0 and standard deviation of 1. Each standardized indicator was then weighted by its correlation with the total group of indicators and then summed (Cronbach's alpha=0.91, indicating very high internal consistency). The summed total (which represents the New York State COVID-19 Health Risk Index) was then standardized to have a mean of 0 and standard deviation of 1. In the map, counties are categorized as follows: Very High (2+ standard deviations above the mean), High (between 0.5 and 2 standard deviations above the mean), Medium (between 0.5 standard deviation above and 0.5 standard deviation below the mean), Low (between 0.5 and 2 standard deviations below the mean), Very Low (2+ standard deviations below the mean).

About the Authors

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