Proposal_New

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Comparing Covid-19 in Rural vs Urban Areas

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Introduction:

Covid-19 is a pathogen that transmits through aerosol particles produced by infected individuals. This means that areas of high-density are much more likely to have high rates of infection than areas with low-densities. Mask usage and vaccination have also been proven to cut down on Covid rates. However, many high-density areas have a higher probability of taking preventative measures than more low-density,rural areas, meaning that rural areas may now show a higher percentage of sick individuals than more crowded areas. While some studies have looked into Covid-19 rates, many are outdated and published before the vaccine was made widely available. This study would seek to examine covid rates post vaccination as well as provide a more up to date comparison of the number of cases in rural vs urban areas.

Data Source:

Data required would be covid rates as well as covid rates per county. Population data per county would also be required to compare population densities. Finally, a study In January of 2021 predicted the infection rate of each county (Ives and Bozzuto).

Actual population data per county as well as population density would be taken from https://www.census.gov/data/datasets/time-series/demo/popest/2010s-counties-total.html

Covid rates would be taken from the recorded nytimes data: https://github.com/nytimes/covid-19-data

R0 data for comparisons would be taken from Ives and Bozzuto (2021): See reference below

Questions:

What is the Covid-19 infection rate per county?

What is the Covid-19 mortality rate per county?

Do urban areas have higher covid rates than rural areas?

Do predicted R0 values for each county we have today correctly match the covid rates we see today?

Analysis:

- Pull covid-19 infection and mortality rates from the New York Times data and graph per county
- Calculate Covid-19 rates based on population density to compare between rural and urban values
- Compare the difference in Covid-19 rates based on vaccination rates and mask rates
- Use R0 data from old study to estimate new rates based off current predictions

Sources:

Ives, A.R., Bozzuto, C. Estimating and explaining the spread of COVID-19 at the county level in the USA. Commun Biol 4, 60 (2021). https://doi.org/10.1038/s42003-020-01609-6