

# Homework 1 - Replicating Covid Charts

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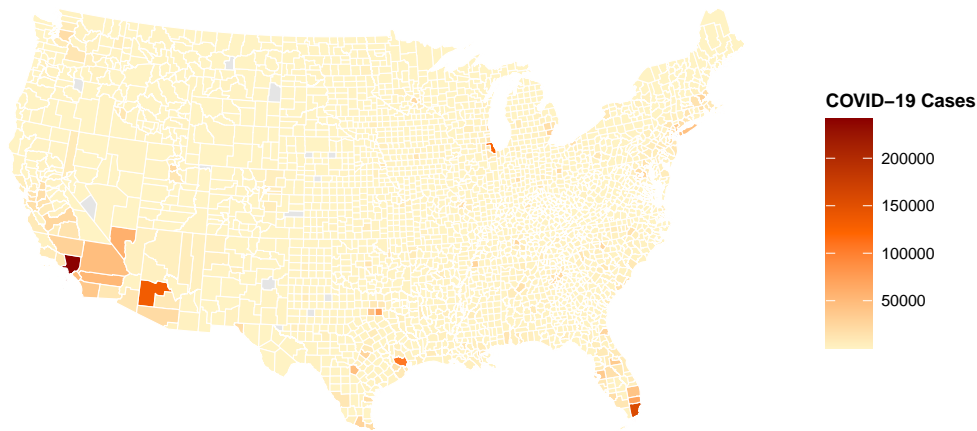
2025-08-25

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**Figure 1: Data over Space—County-wise COVID Cases**

*Data used: us-counties-2020.csv, 2020 TIGER County Shapefiles*

**COVID-19 Cases by County on 2020-08-31**



Source: <https://www.nytimes.com/interactive/2021/us/covid-cases.html>

**Question: What patterns do you notice in this map?**

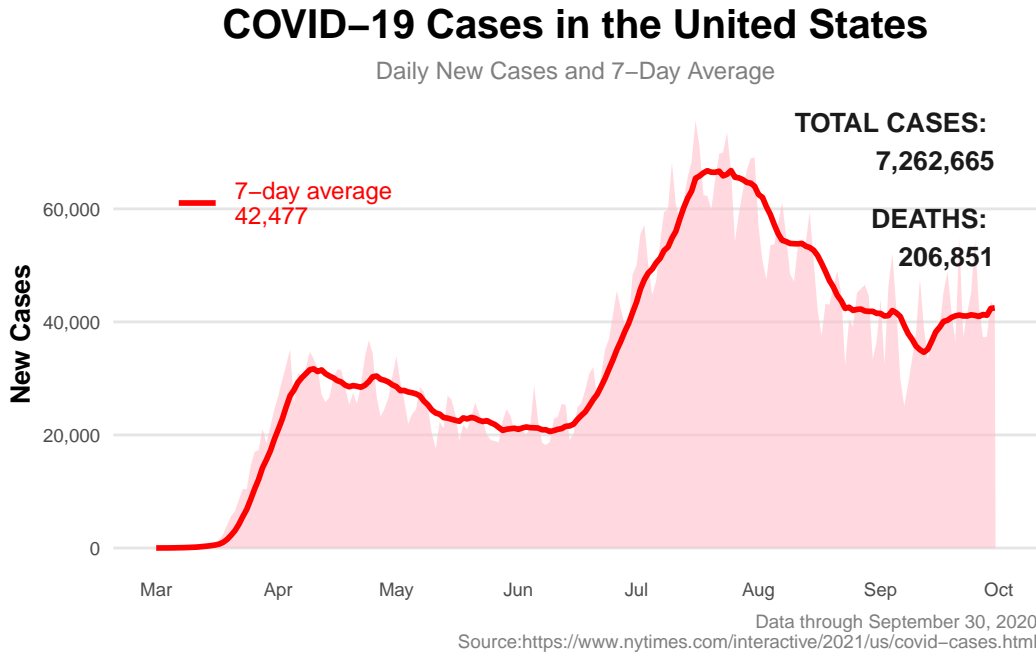
It appears that urban areas have far greater case counts than rural counterparts, particularly in the American South. For instance, LA County, Miami-Dade county, Maricopa (Phoenix, AZ) County, Clark (Las Vegas, NV) County, and Harris (Houston, TX) County, appear to be hotspots.

I also notice the presence of spatial clustering of both high- and low-count counties. Often, suburbs form gradients from low to high case count areas between high- and low-clusters.

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**Figure 2: Data over Time—US COVID Case Time Series**

*Data used: us.csv*



Question: Looking at this time series, what future behavior would you expect?

Extrapolating qualitatively, it is difficult to say. One hypothesis is that a third, higher peak will emerge before leveling off like the two previous peak-decline cycles. We may expect this to happen with the onset winter. Alternatively, it is possible in the near future that the leveling off will continue, or that only modest increases in cases occur. Because of the nature of disease, we should expect smooth changes in case counts, no matter which direction the case counts move.

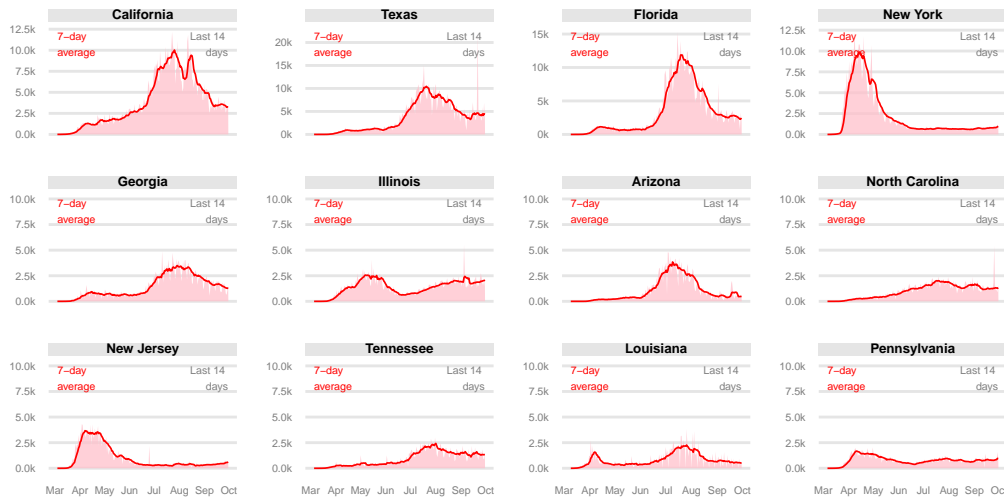
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**Figure 3: Data over Space & Time—State-partitioned COVID Case Time Series**

*Data used: us-states.csv*

## COVID-19 Cases by State

Daily New Cases and 7-Day Average, March 01--September 30, 2020



7-day average shown in red line  
Source: <https://www.nytimes.com/interactive/2021/us/covid-cases.html>

Question: Do all states follow the same pattern, or do some rise and fall earlier than others?

It does not appear that all states follow the same pattern. However, neighboring states appear to have more similarity in their patterns. This homogeneity could have a number of causes; regardless of cause, it is important that states observe their own data, as well as their neighbors' data in order to construct policy effectively for mitigating the spread of disease.