

Clustering Results

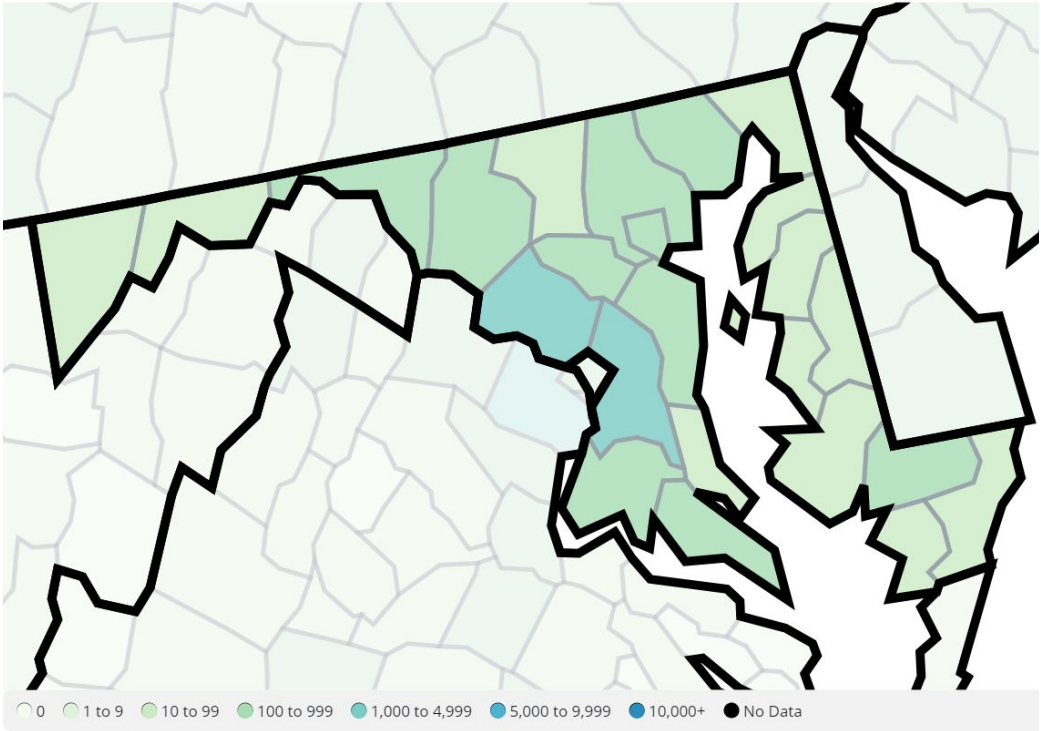
CMSC 478 - Hamin Han

Maryland

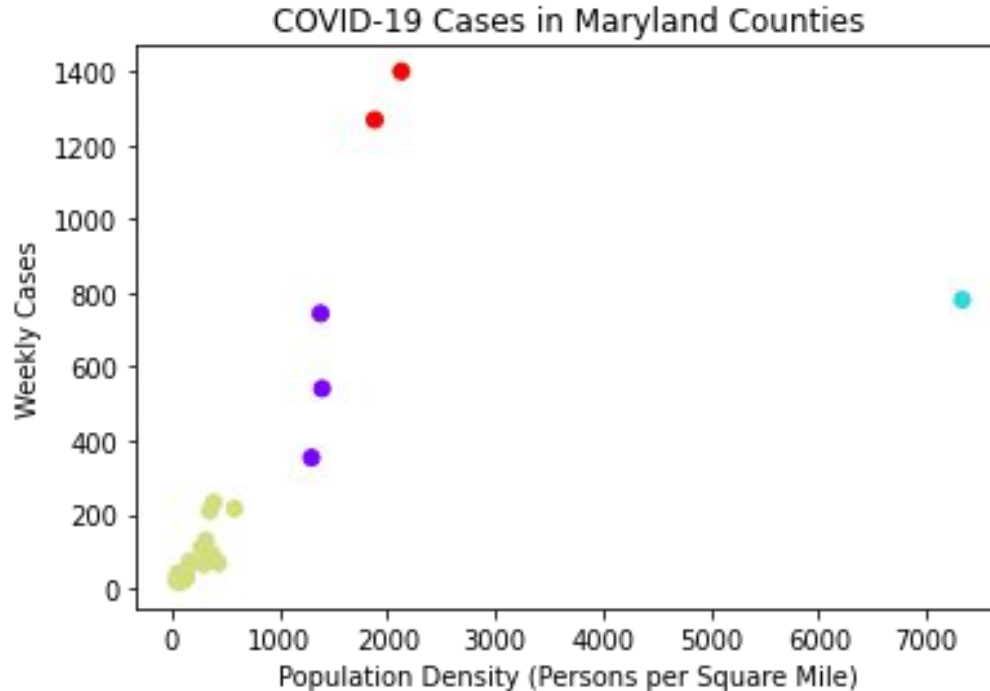
7-day Metrics

Cases	6,608
% Positivity	10-14.9 %
Deaths	51
% of Population ≥ 5 Years of Age with a Completed a Primary Series	83.6%
New Hospital Admissions (7-Day Moving Avg)	58

Reported cases in Maryland



Maryland Results



- **Yellow:** Less populated counties that have less cases as expected.
- All the other counties are nearby DC or Baltimore.
- **Purple:** Counties near Baltimore City. The closer the county is to the city, the more cases it has.
- **Red:** Montgomery County and Prince George's County that are right next to DC.
- **Cyan:** Baltimore City. Still a lot of cases but expected more with the population.

Clusters that are easily identifiable and shows the direct relationship between population and COVID cases.

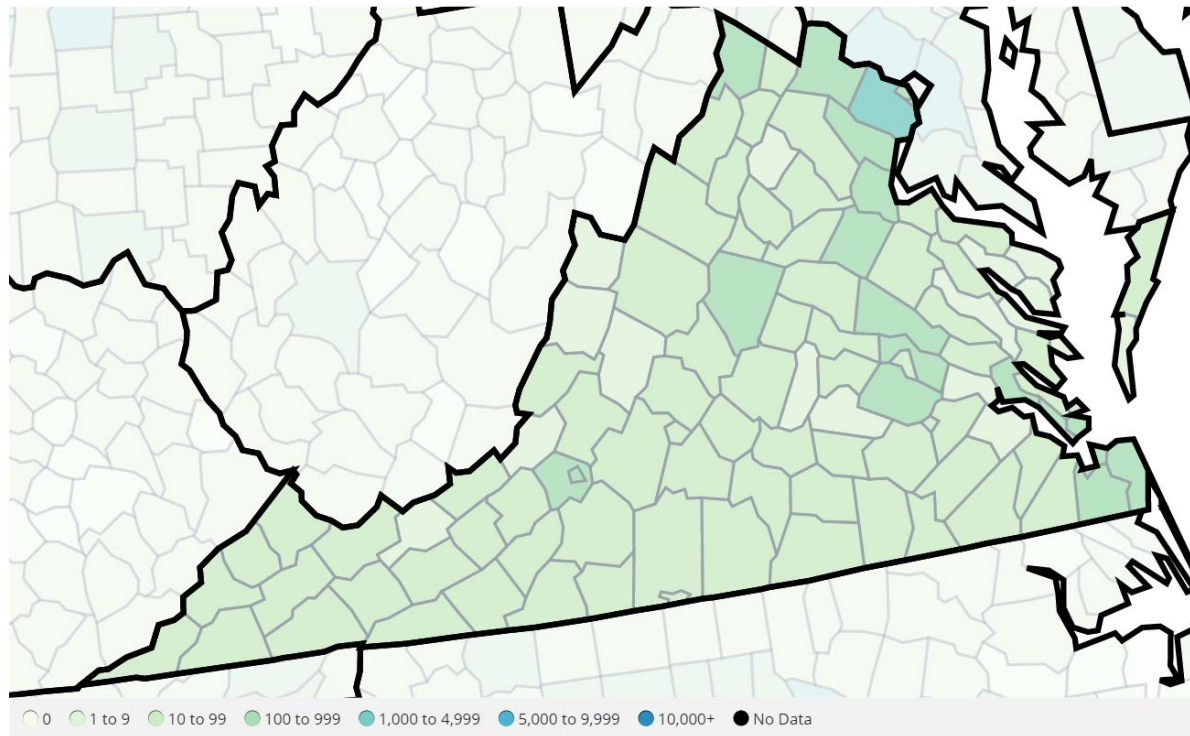
Average Silhouette Score over All Samples: 0.770

7-day Metrics

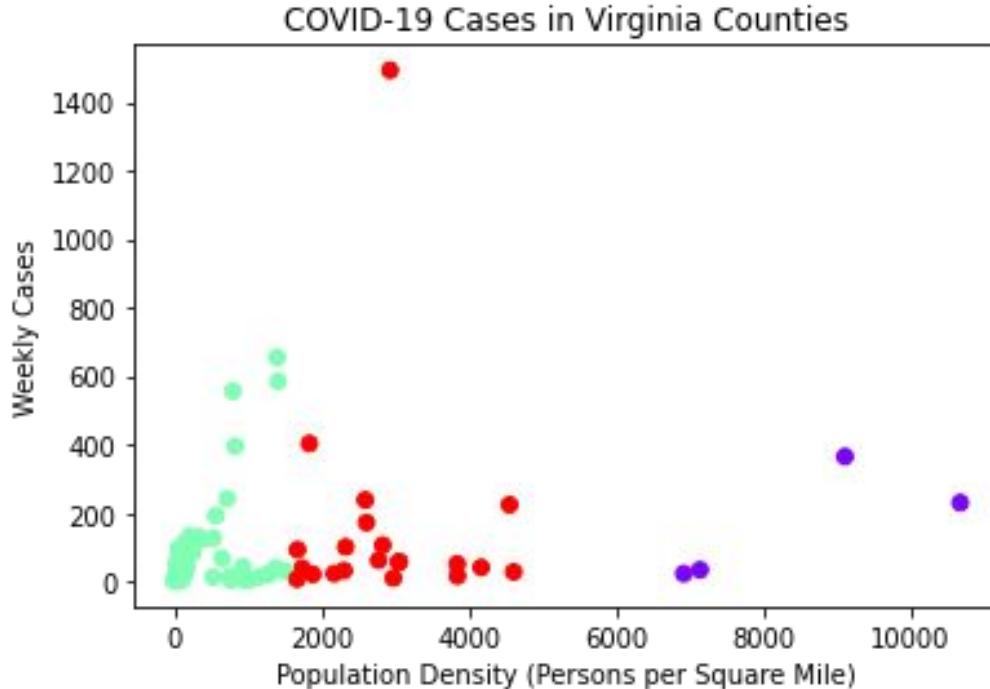
Cases	10,208
% Positivity	10-14.9 %
Deaths	92
% of Population ≥ 5 Years of Age with a Completed a Primary Series	80.5%
New Hospital Admissions (7-Day Moving Avg)	86.14

Virginia

Reported cases in Virginia



Virginia Results



- **Purple:** Mostly counties near DC.
- **Green:** A lot of the other counties that aren't close to nearby cities.
- **Red:** A mixture of counties near cities such as Virginia Beach, Chesapeake City, and Richmond.

There are clusters being formed and divided into geographical regions but doesn't show a great relationship between population and COVID cases.

This could be due to the data being collected in the recent 7 day period so there might be a lot of outliers.

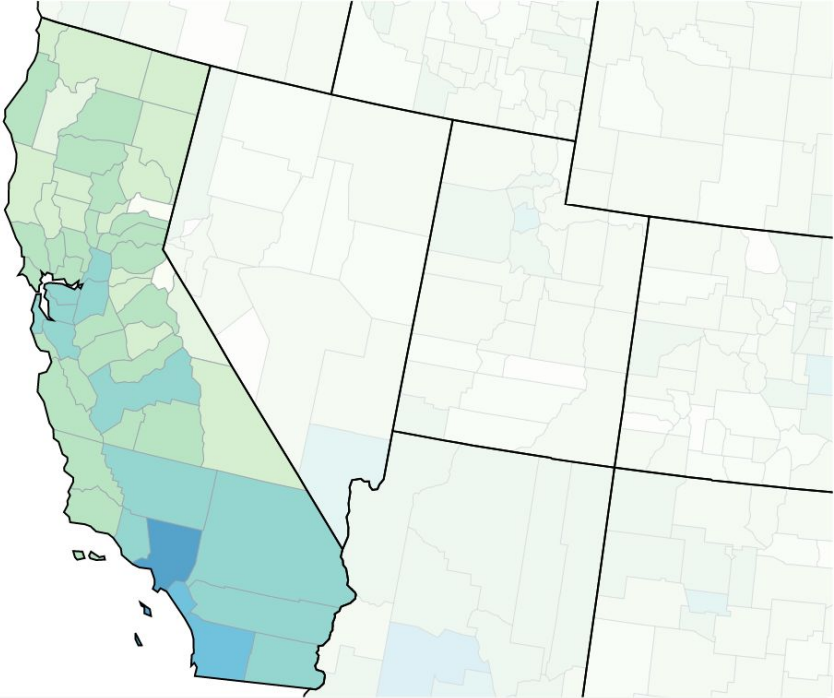
Average Silhouette Score over All Samples: 0.779

California

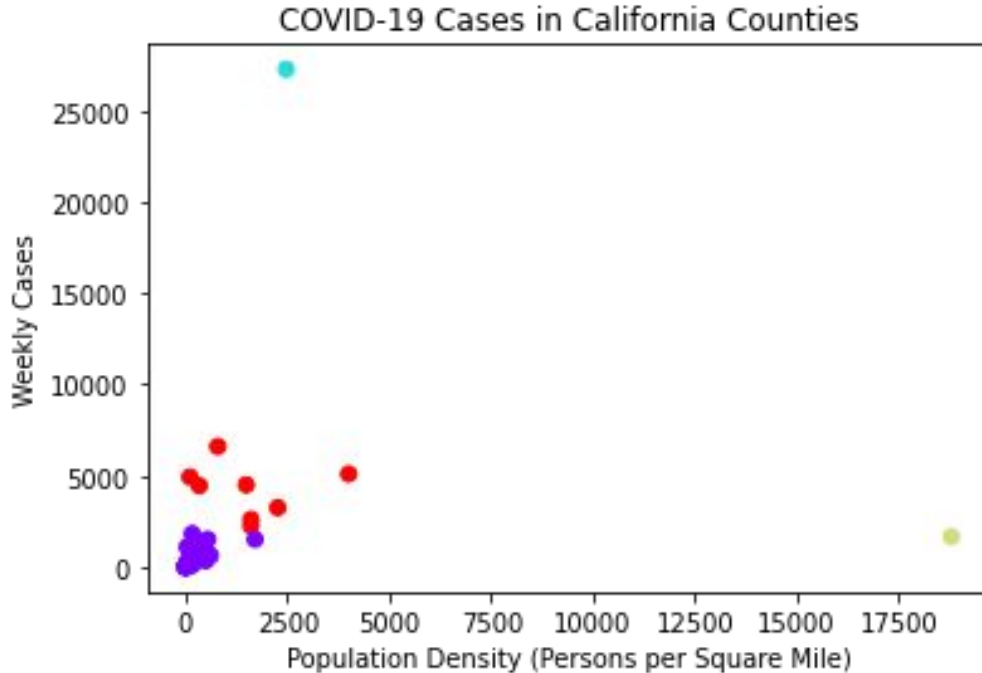
Reported cases in California

7-day Metrics

Cases	80,581
% Positivity	N/A %
Deaths	192
% of Population ≥ 5 Years of Age with a Completed a Primary Series	78.5%
New Hospital Admissions (7-Day Moving Avg)	597.14



California Results



Average Silhouette Score over All Samples: 0.763

- **Yellow:** San Francisco County with the most population density.
- **Cyan:** Los Angeles County with the incomparably high number of COVID cases.
- **Red:** These are mostly counties in the southern parts of California, parts of them are near LA and a handful are near San Francisco.
- **Purple:** The rest of California. Mostly on the northern parts of California or the outer borders of California where it's far from the big cities.

Clusters that are easily identifiable by geographical location, particularly around LA and San Francisco.

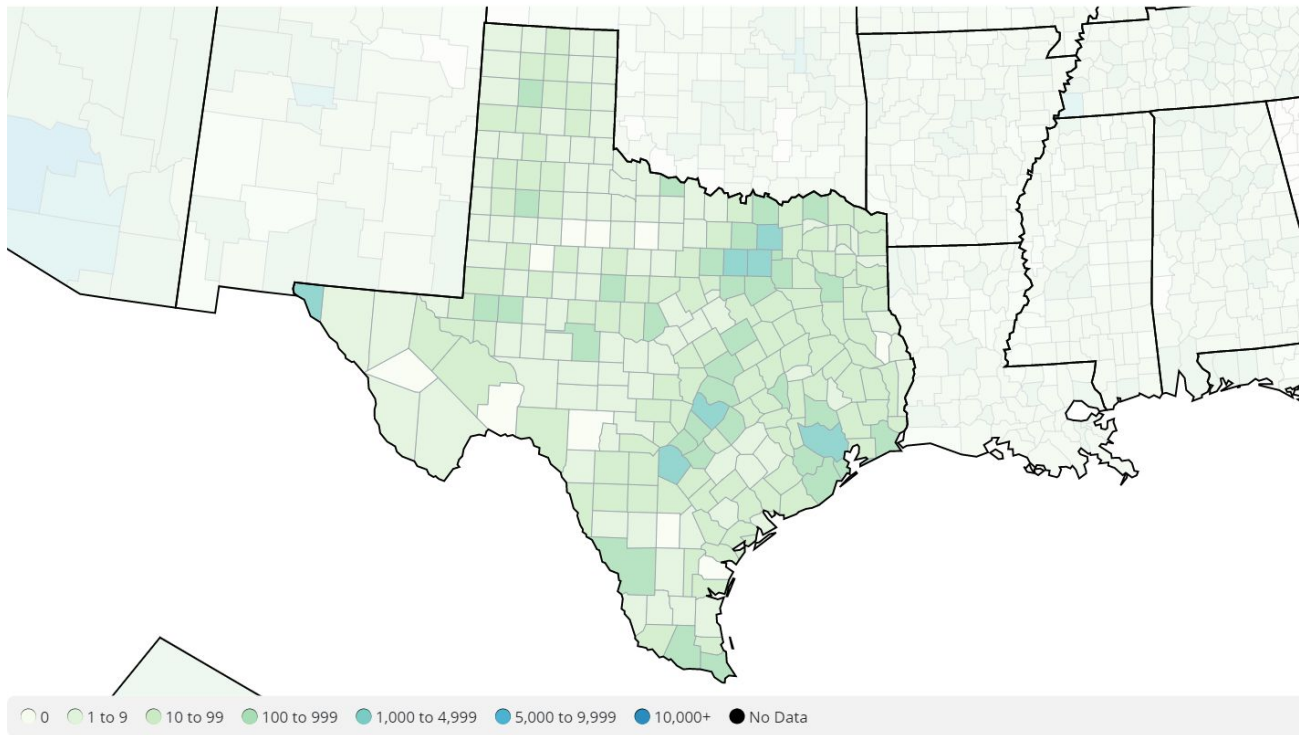
Surprisingly, San Francisco County has a small number cases compared to its population density while LA county is on another level with COVID cases

Texas

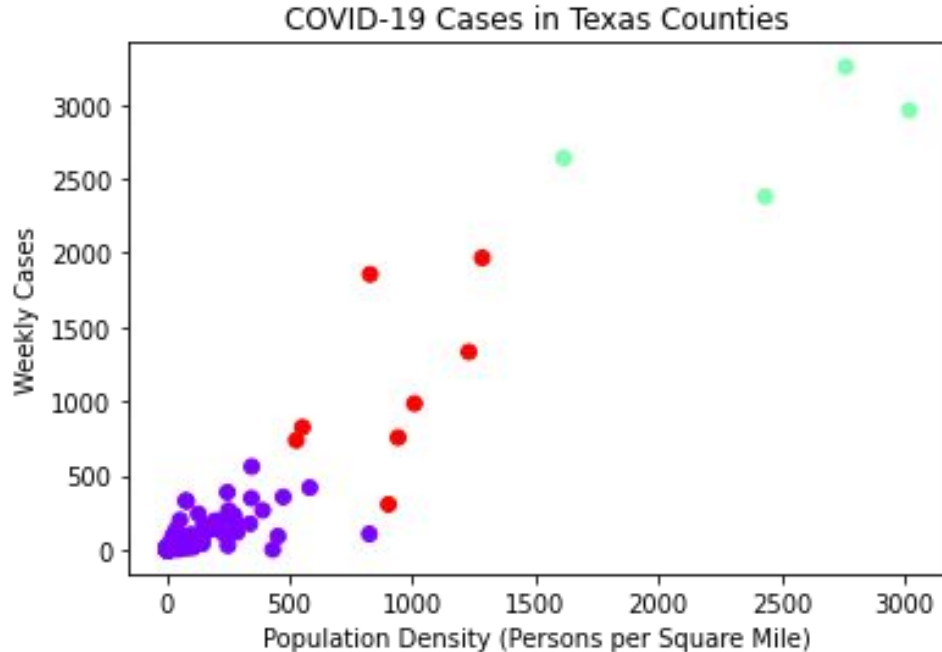
7-day Metrics

Cases	30,651
% Positivity	15-19.9 %
Deaths	87
% of Population ≥ 5 Years of Age with a Completed a Primary Series	67.5%
New Hospital Admissions (7-Day Moving Avg)	339.29

Reported cases in Texas



Texas Results



- **Green:** These counties aren't exactly near each other but they all contain big cities such as Dallas, Houston, Austin, and El Paso.
- **Red:** This is the second group of counties that are still nearby one of the big cities.
- **Purple:** All the rest of counties that aren't exactly near any populous cities.

Clusters that are easily identifiable and shows a clear and direct relationship between population and COVID cases.

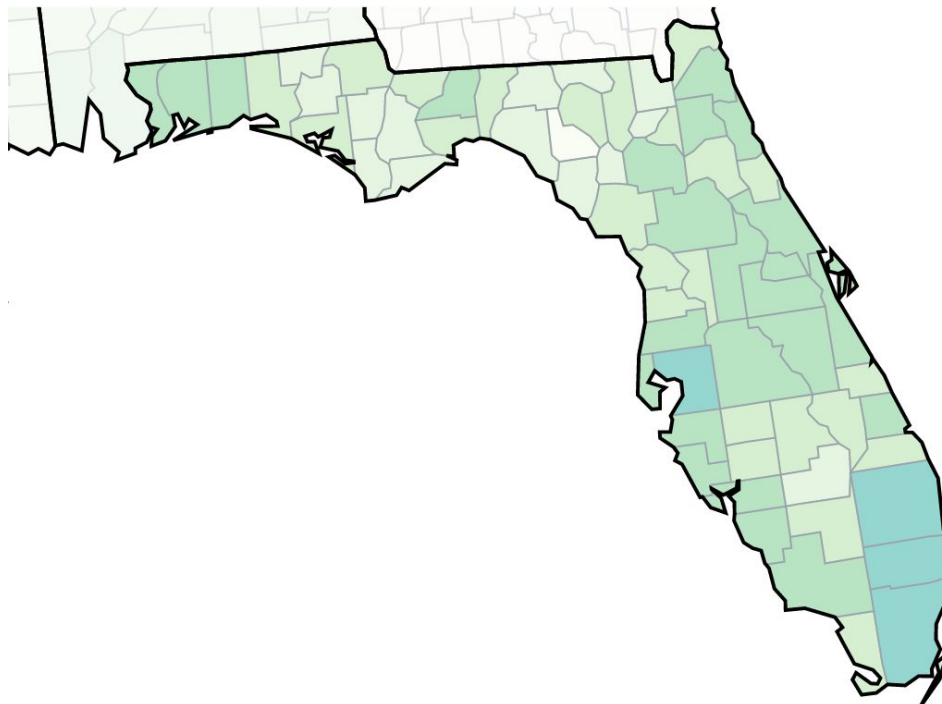
Average Silhouette Score over All Samples: 0.893

7-day Metrics

Cases	18,091
% Positivity	10-14.9 %
Deaths	100
% of Population ≥ 5 Years of Age with a Completed a Primary Series	72.8%
New Hospital Admissions (7-Day Moving Avg)	239

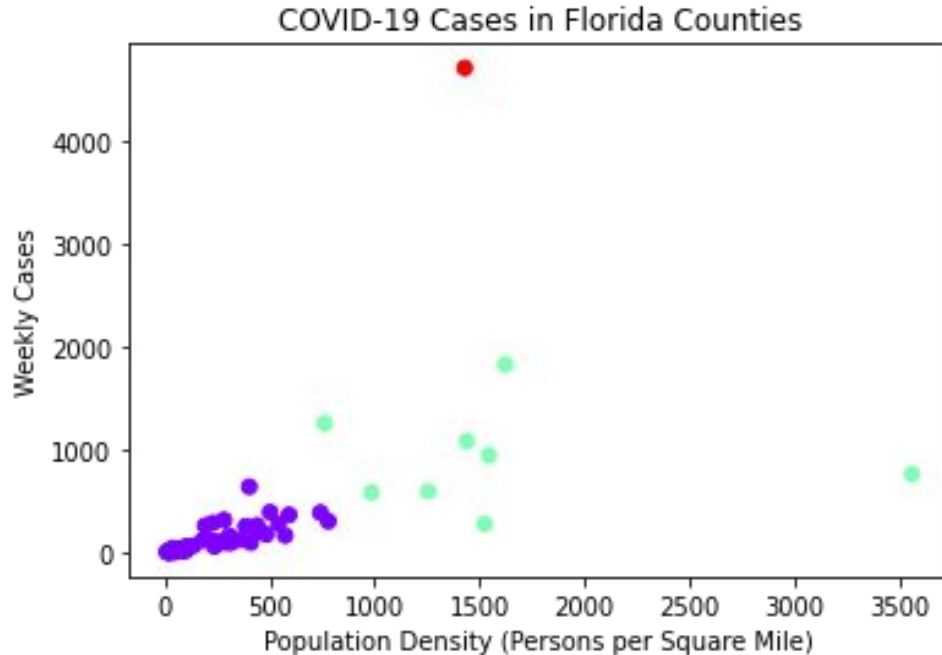
Florida

Reported cases in Florida



0 1 to 9 10 to 99 100 to 999 1,000 to 4,999 5,000 to 9,999 10,000+ No Data

Florida Results



- **Red:** Miami-Dade County with the most cases. Most likely due to having a big city like Miami
- **Green:** Counties with or near big cities such as Orlando, Hollywood, and Tampa. These are also the counties with more population density.
- **Purple:** Rest of the counties that are far from big cities and less population densities.

Clusters that are easily identifiable and shows the direct relationship between population and COVID cases. Although there is an outlier with Miami-Dade with the enormous amount of cases while not having the most population density. Most likely due to a big city like Miami being there and spreading COVID easily.

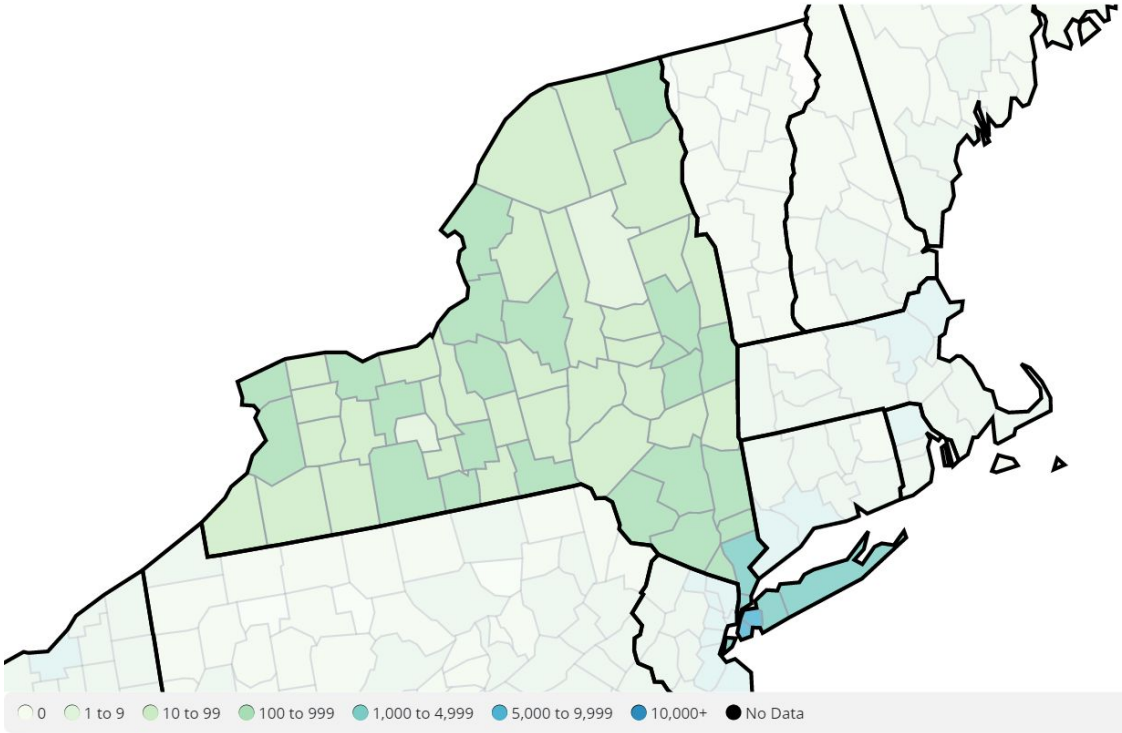
Average Silhouette Score over All Samples: 0.754

New York

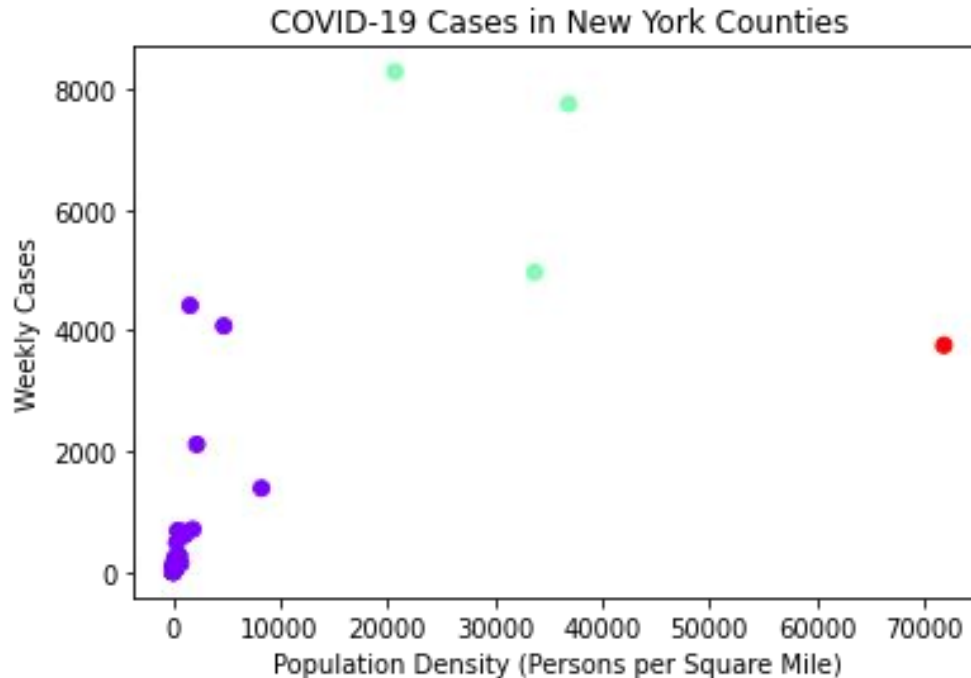
Reported cases in New York

7-day Metrics

Cases	18,027
% Positivity	10-14.9 %
Deaths	109
% of Population ≥ 5 Years of Age with a Completed a Primary Series	84.9%
New Hospital Admissions (7-Day Moving Avg)	396.86



New York Results



- **Red and Green** are the counties of NYC
- **Red:** New York County with Manhattan with the most population
- **Green:** Bronx, Kings, Queens counties with Bronx, Brooklyn, and Queens.
- **Purple:** All the other counties.

Clusters that are easily identifiable and shows the direct relationship between population and COVID cases. Large population density with a lot of cases where NYC is. Although New York County with the most population seem to be an outlier, could be because the data is only from the recent 7 days.

For the purple cluster, more cases as the counties get close to NYC towards south of the state

Average Silhouette Score over All Samples: 0.932

US States

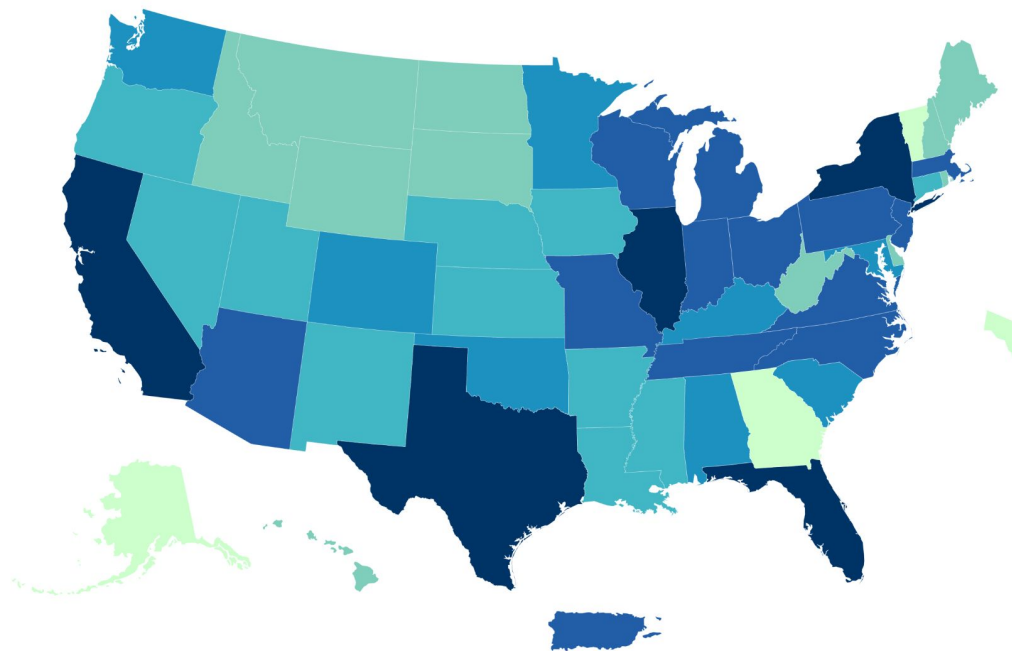
TOTAL CASES
99,241,649

NEW CASES IN PAST WEEK
458,986

TOTAL DEATHS
1,080,472

CDC | Data as of: December 7, 2022. Posted: December 8, 2022

US COVID-19 Cases Reported to the CDC in the Past Week, by State/Territory



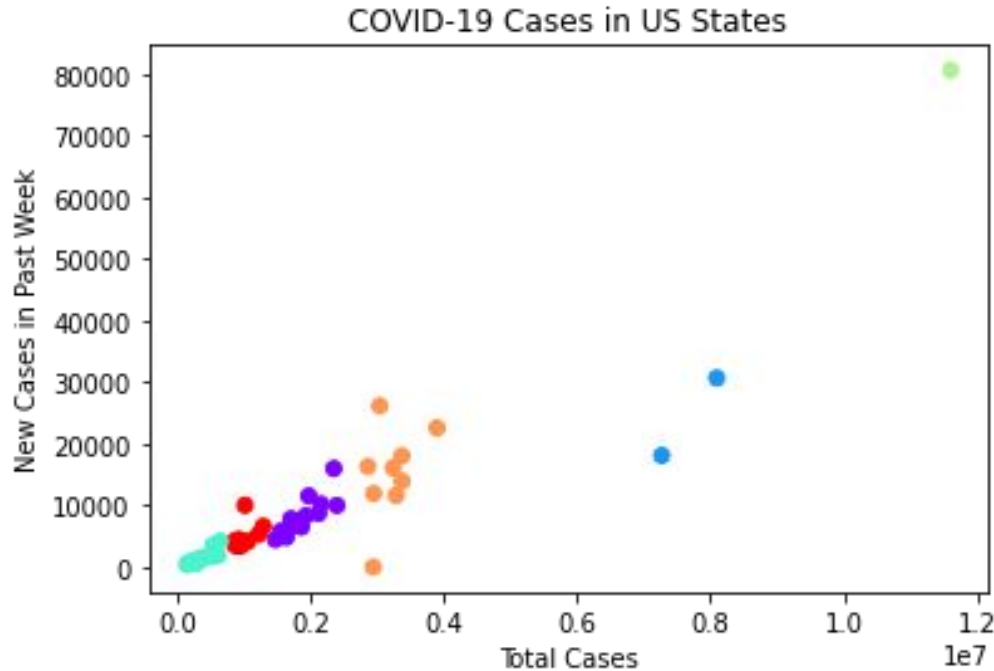
Territories



New Cases in Past Week



US States Results



- **Green:** California
- **Blue:** Texas and Florida
- **Orange:** New York, New Jersey, Pennsylvania and other States. Mostly in the Mideast and Midwest.
- **Cyan:** Mountain-Prairie area
- **Red and Purple:** Everything in between. With more cases for states with or near large cities

Clusters that are easily identifiable and shows the direct relationship between population and COVID cases.

Although California is skyrocketing with the number of cases.

Average Silhouette Score over All Samples: 0.661