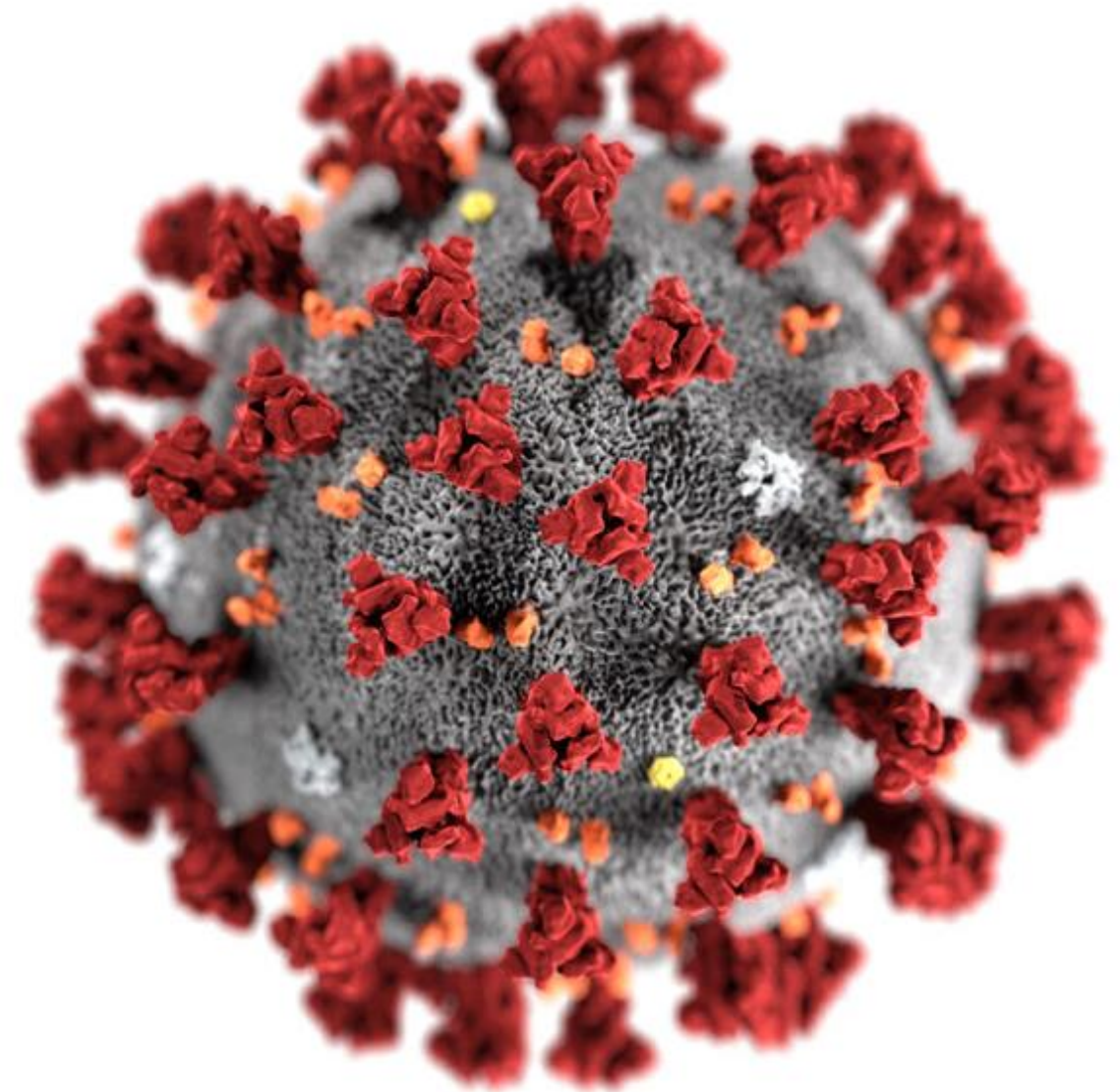


Predicting COVID-19 Using Demographic Data

Caroline Clark, Feras Atwal, James Lee
October 30th, 2020



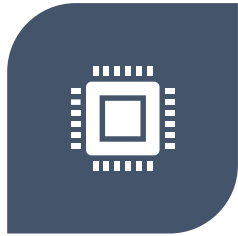
Can we predict COVID-19 severity using demographic data?



Project Pipeline



DATA
COLLECTION



DATA PRE-
PROCESSING



DATA
VISUALIZATION



MODELING



MAKING THE DATA
INTERACTIVE

Data Collection

County-level



Area

- Population Density

Demographics

- Age
- Gender
- Race

Economic Indicators

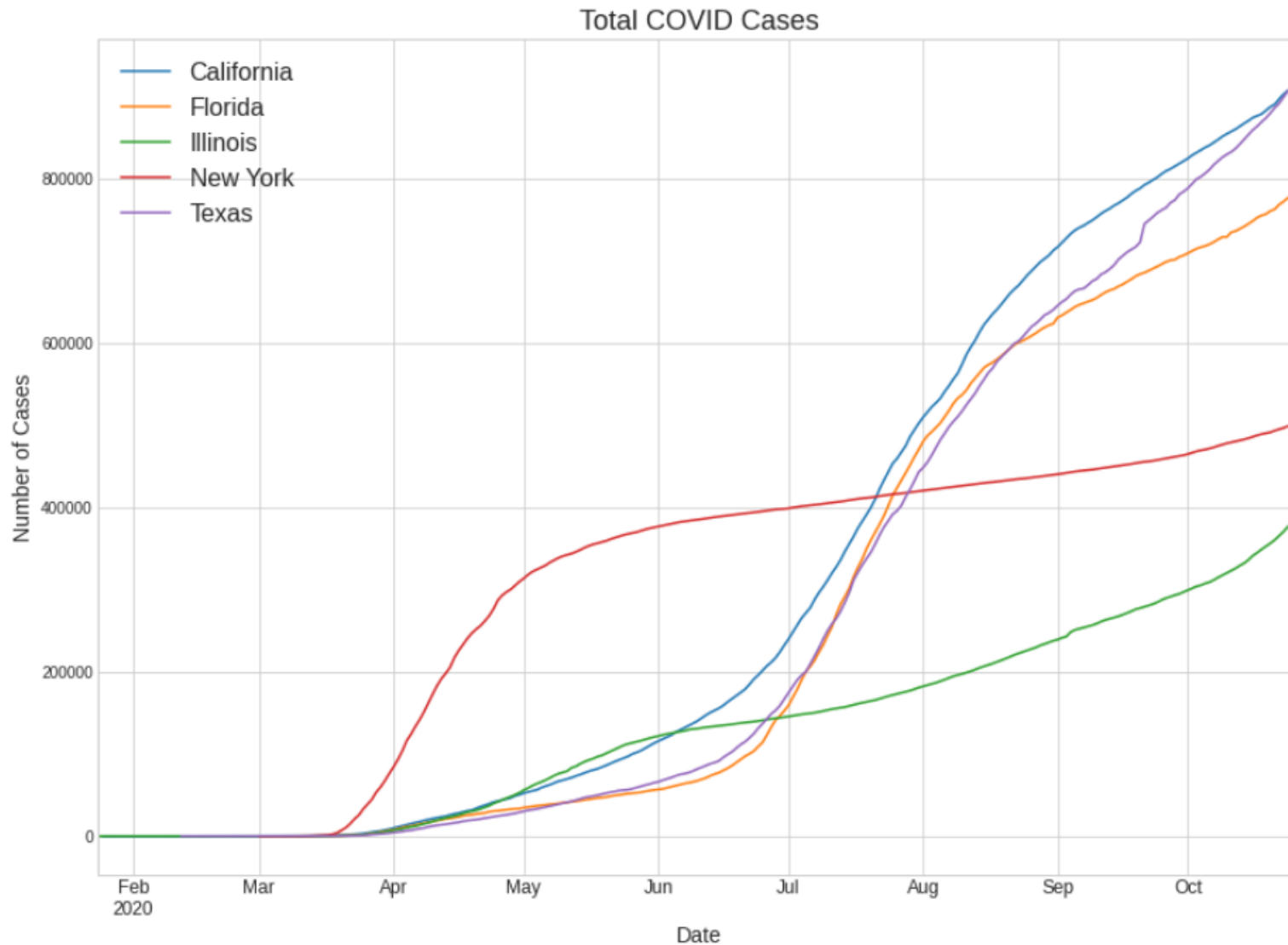
- Income Per Capita
- Household Income
- Median Worker Income

Health Indicators

- Obesity Rates

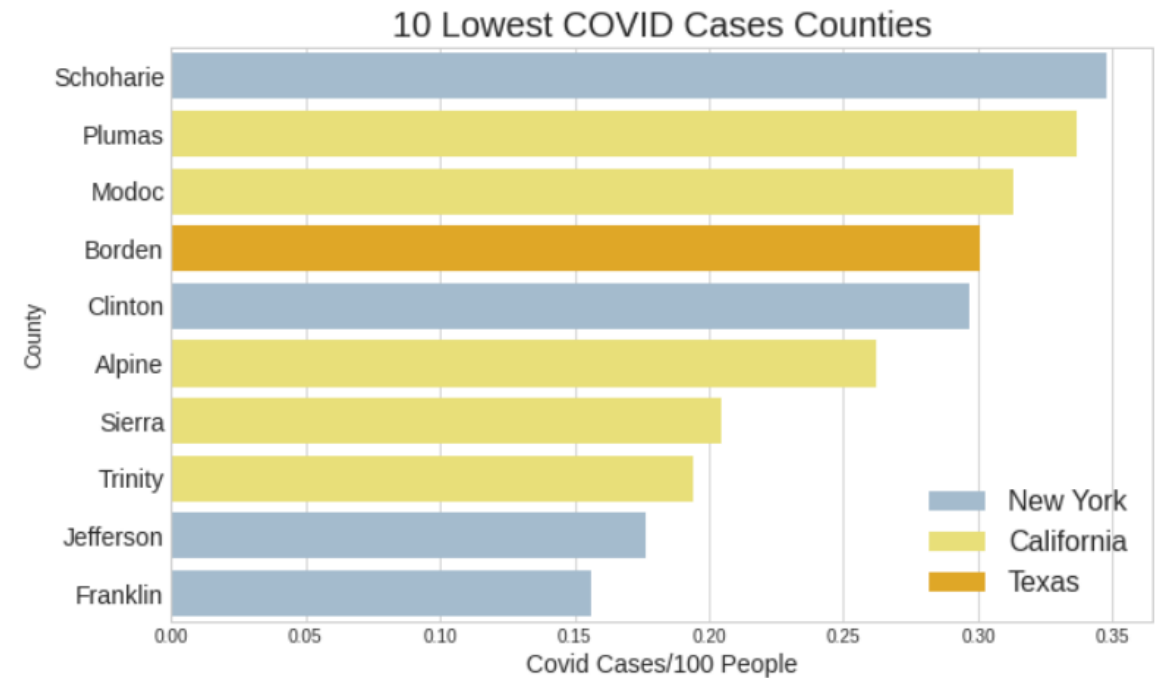
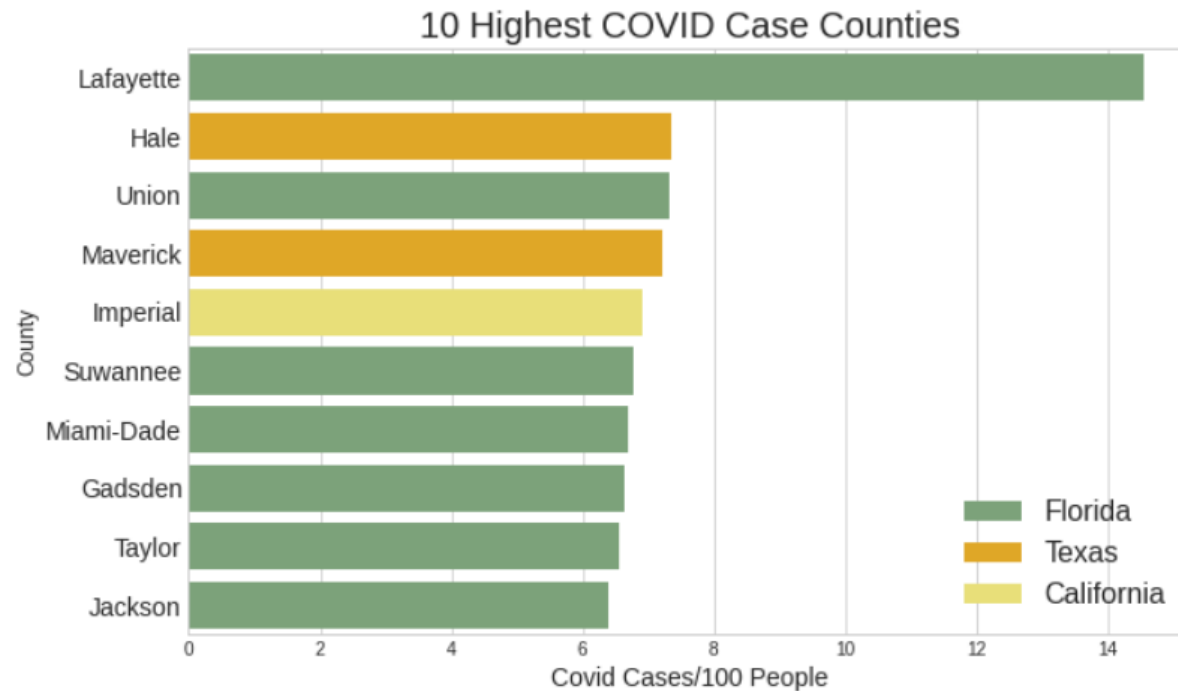
COVID-19

- Tests
- Cases
- Fatalities

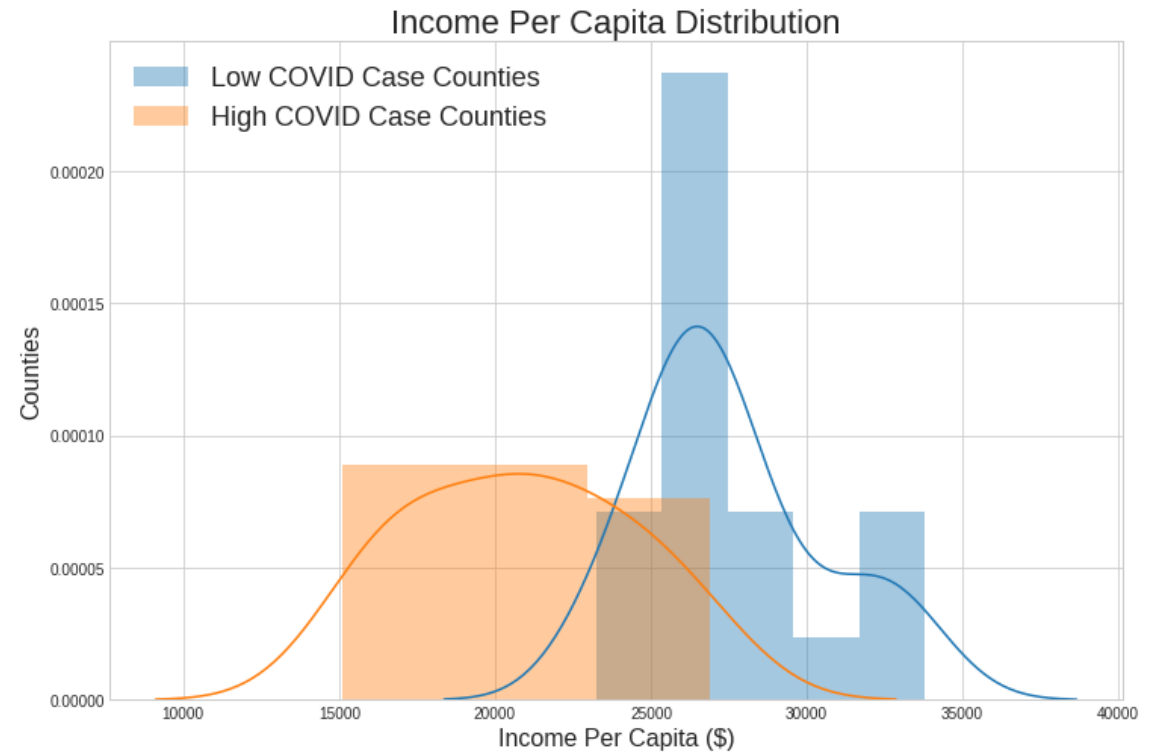
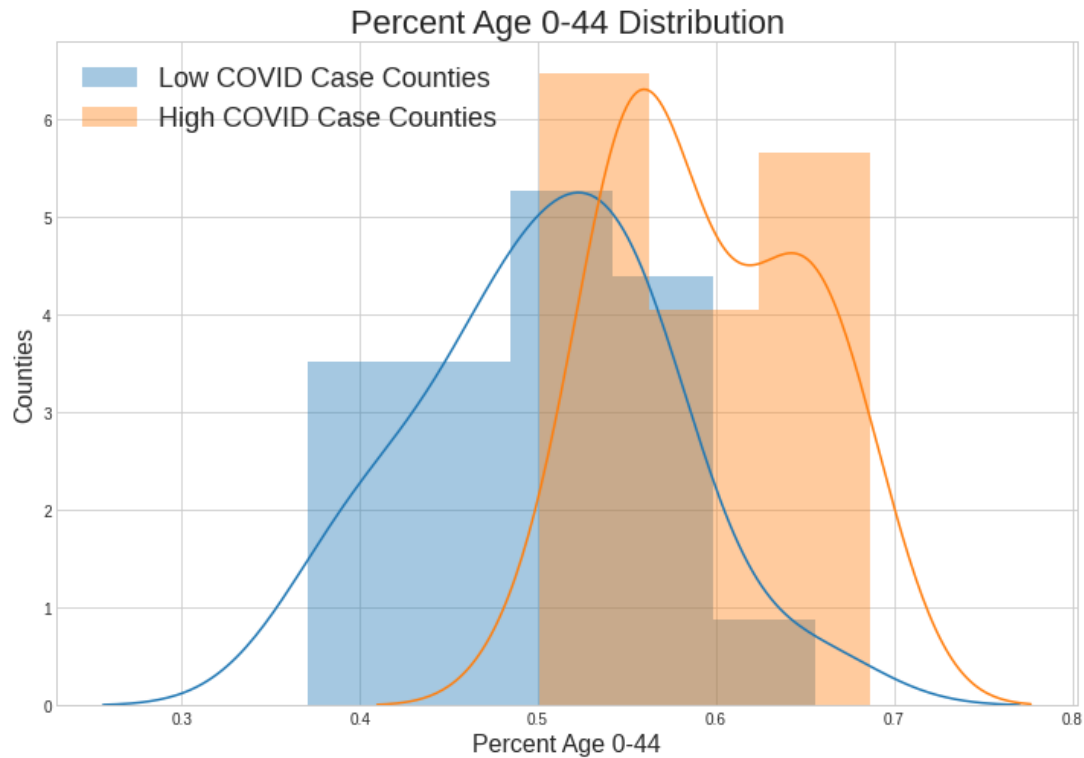


Five
States
with the
Most
COVID-19
Data

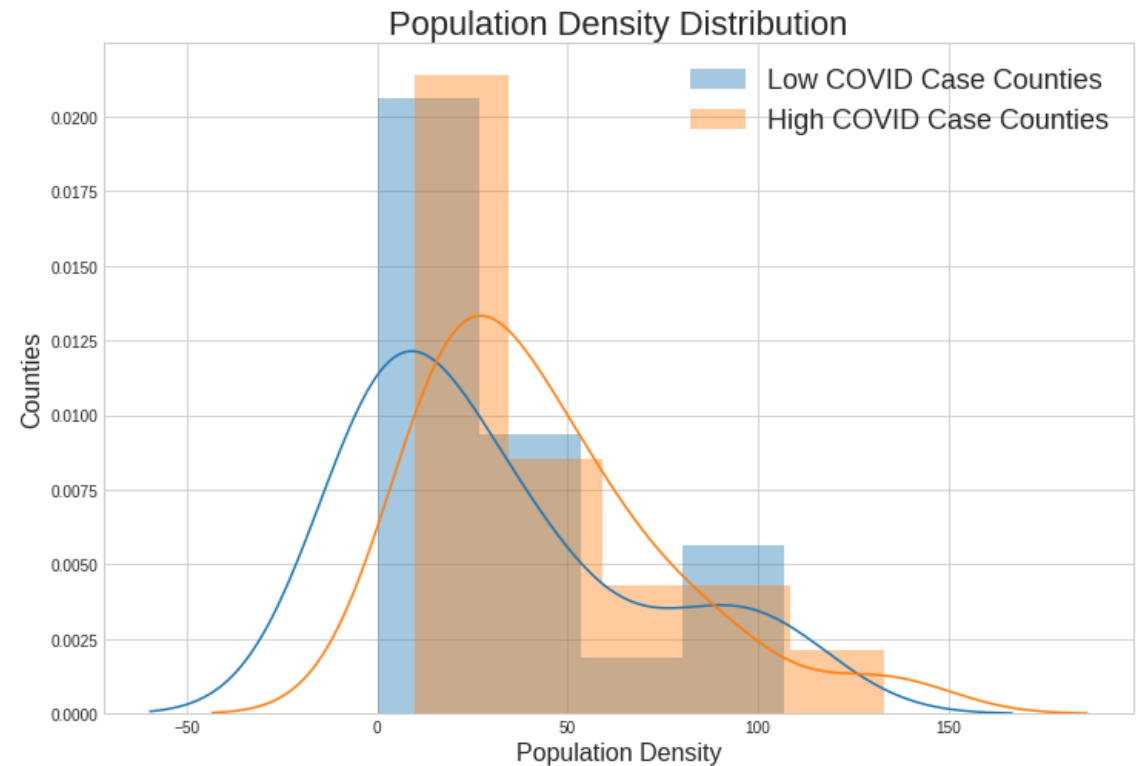
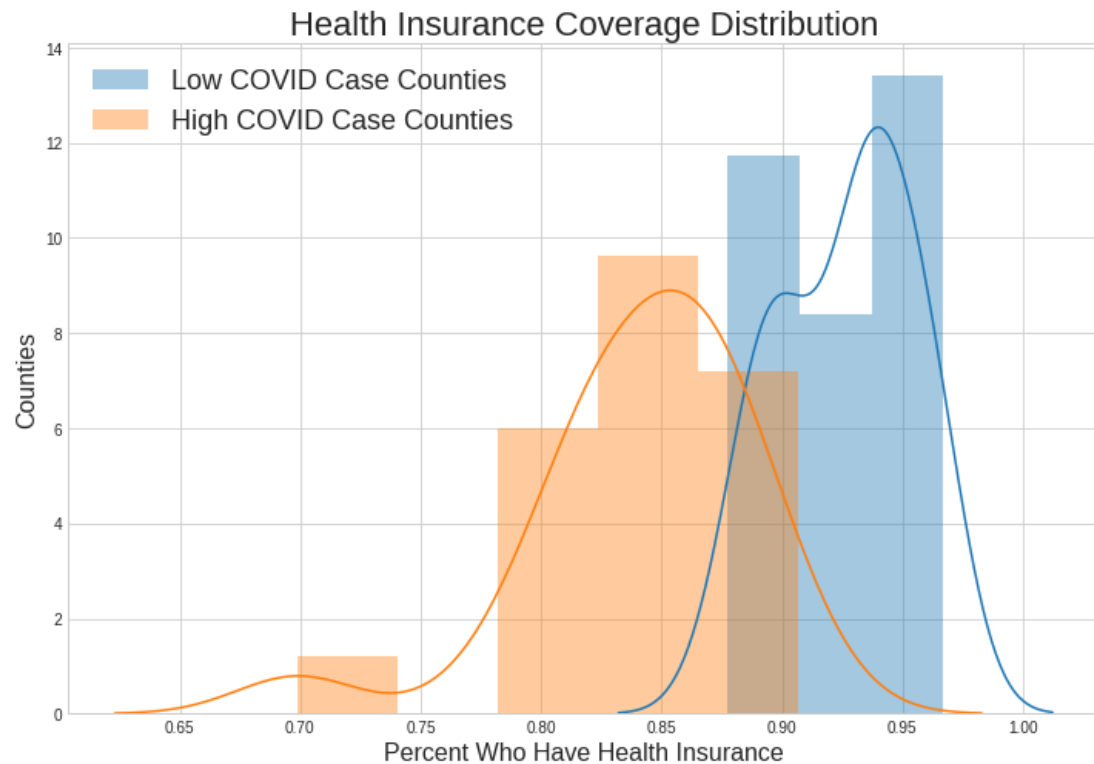
COVID-19 Statistics Vary Widely Among Counties



High COVID Counties Likely to be Younger, Have Lower Income Per Capita



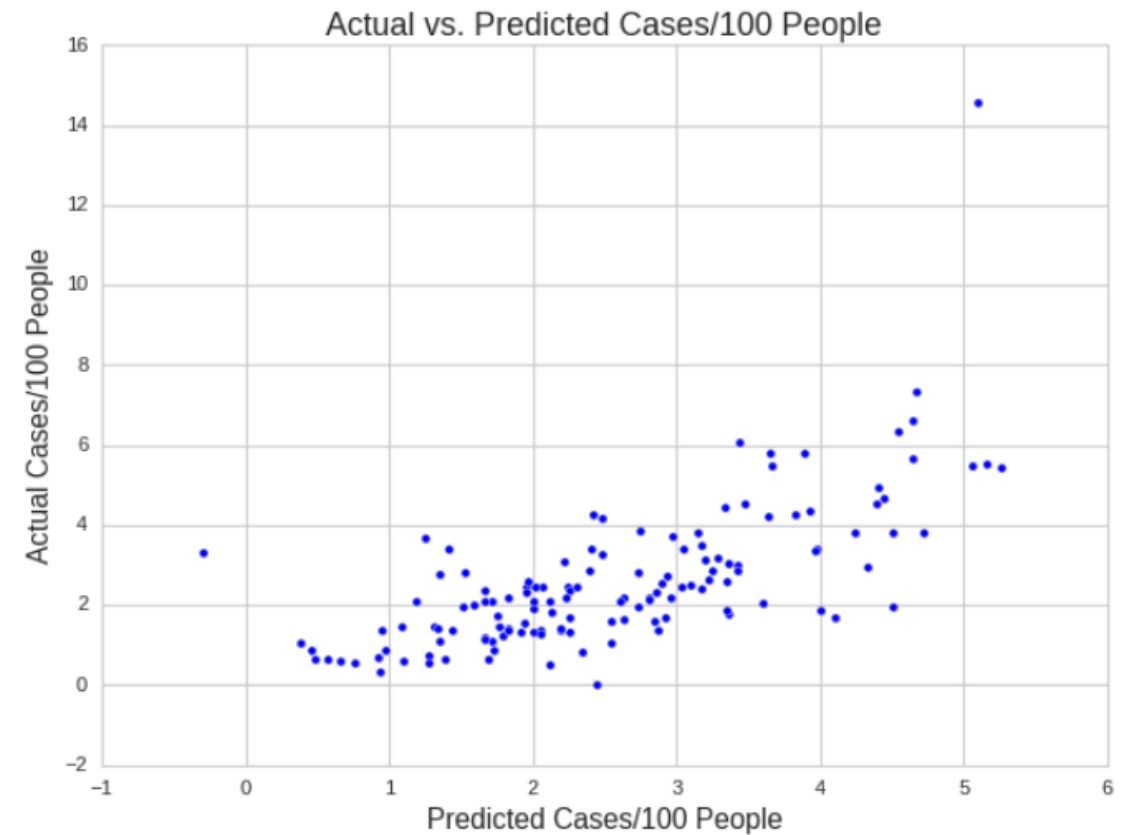
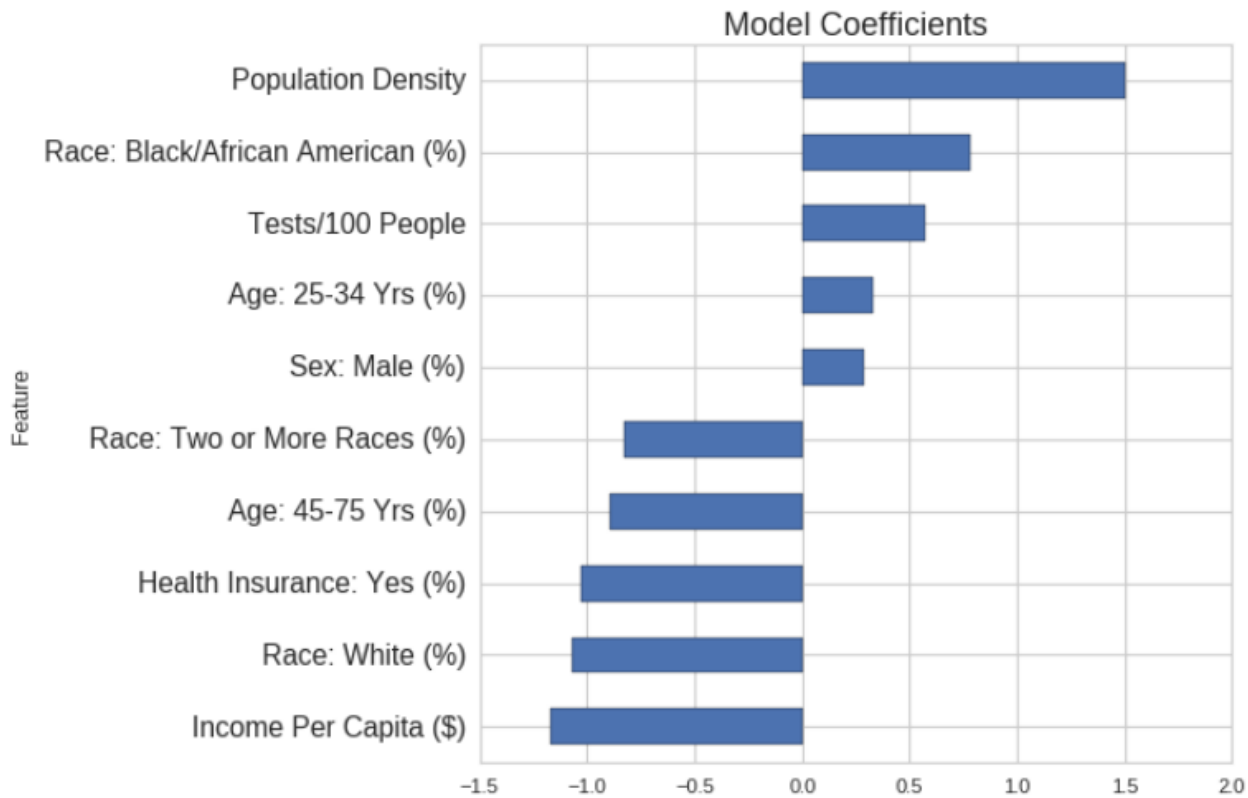
Low COVID Counties Likely to have Insurance Coverage, Lower Pop. Density



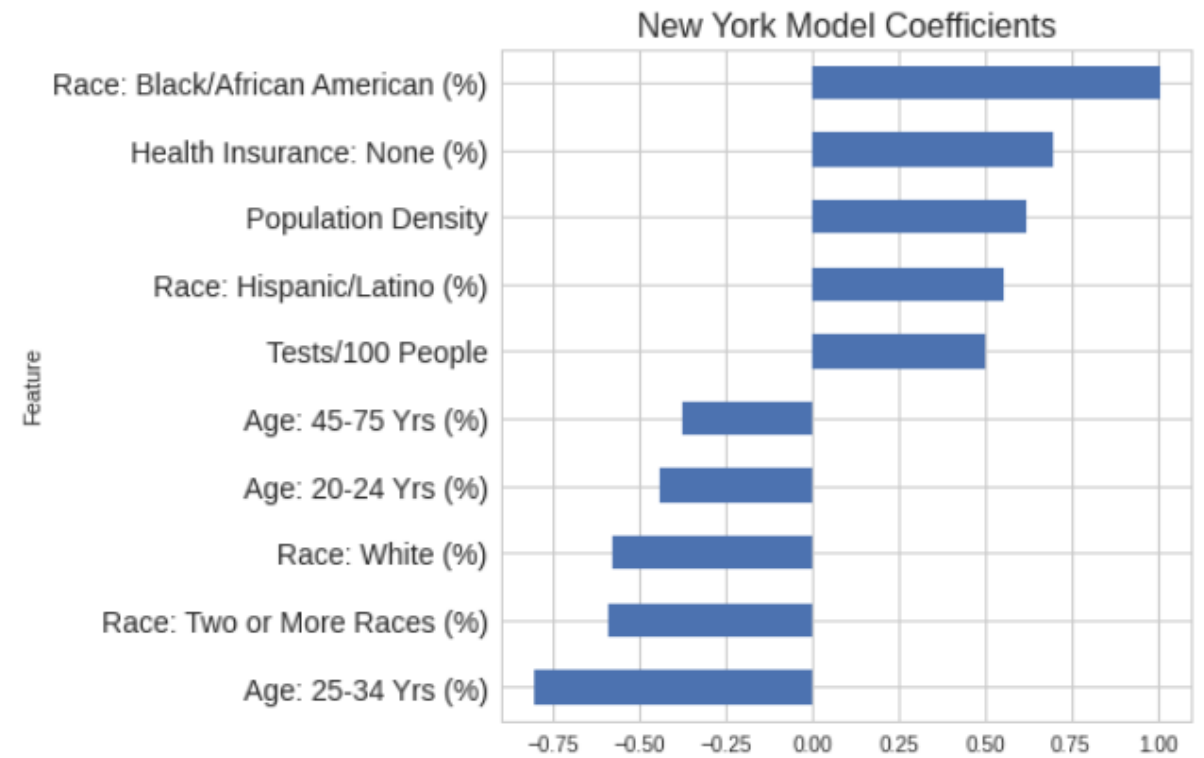
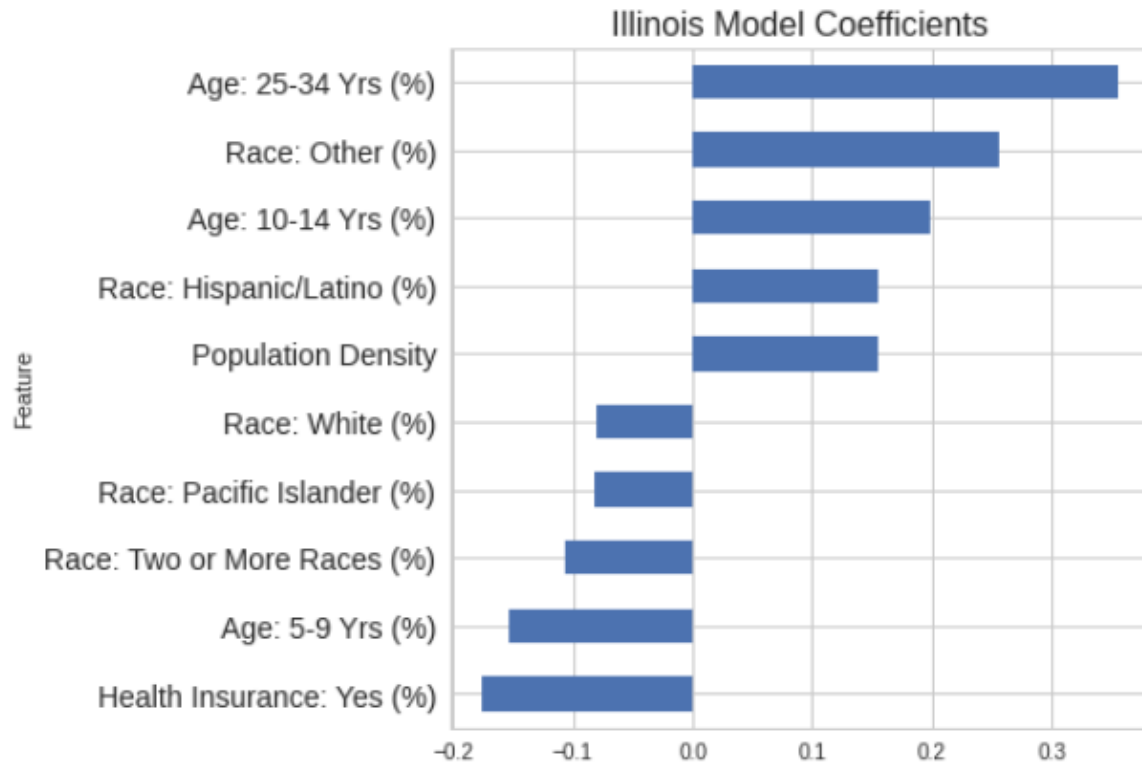
Modeling Successes and Challenges

Region	Best Regression R2 Score	Best Classification Accuracy Score	Classification Baseline
All Five States	47%	63%	42%
California	75%	93%	66%
Florida	76%	71%	71%
Illinois	32%	73%	54%
New York	81%	94%	81%
Texas	49%	59%	40%

Population Density and Income Strongest Factors when Modeling All Five States



Predictors Varied in State-Level Models



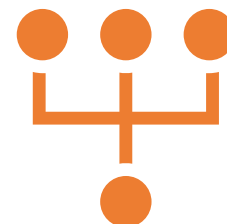
Conclusions and Key Challenges



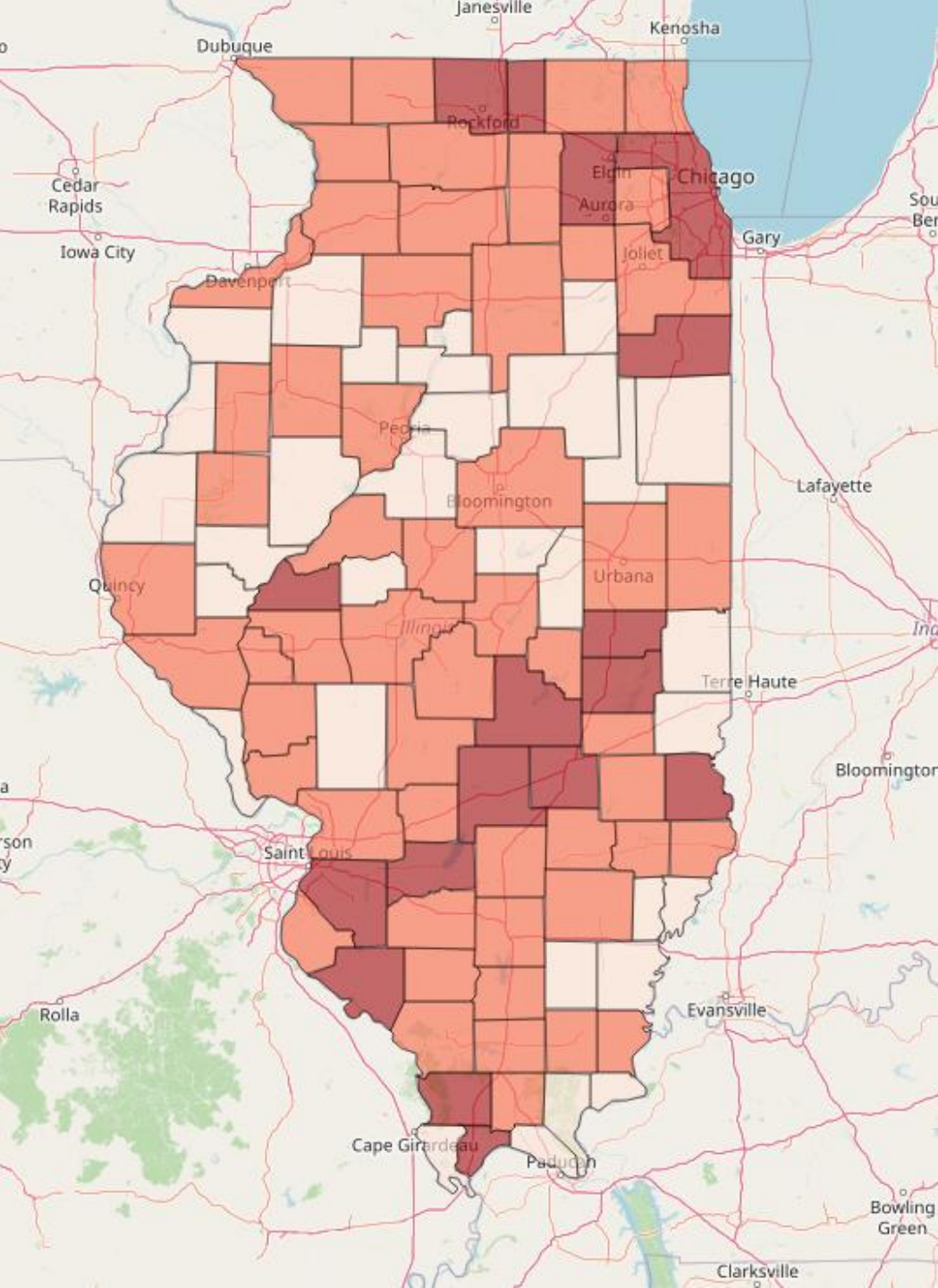
Ongoing event



Widely varying data



More features



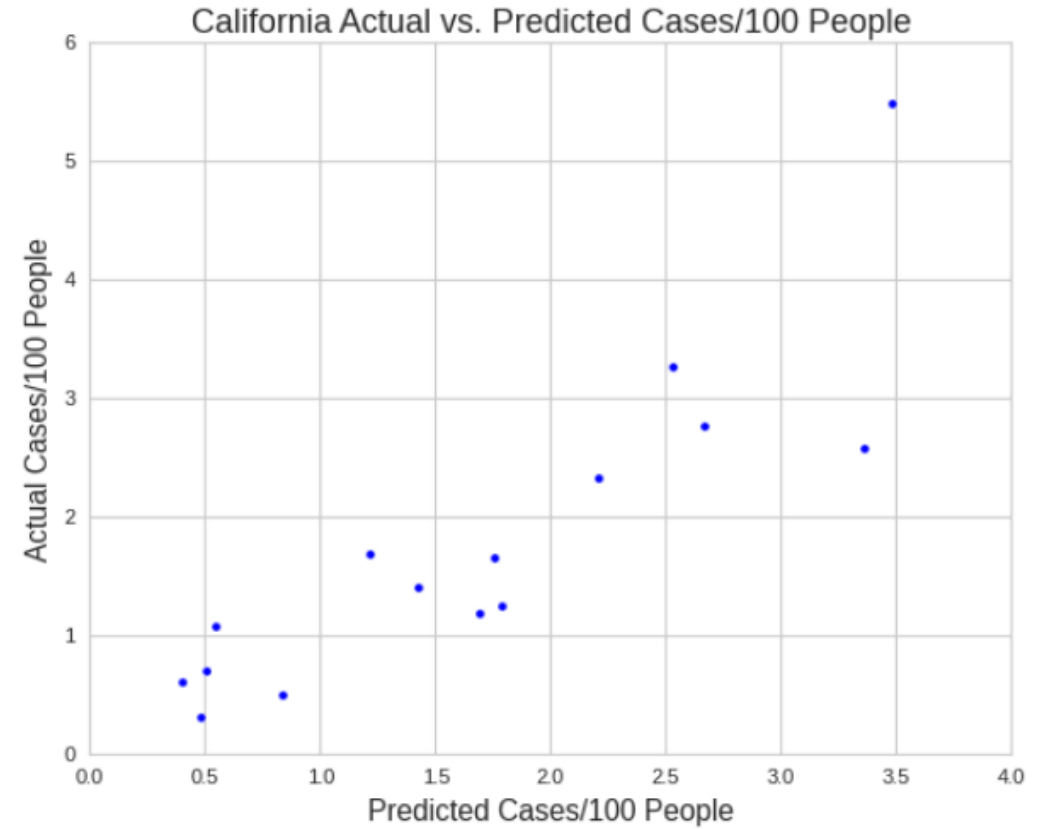
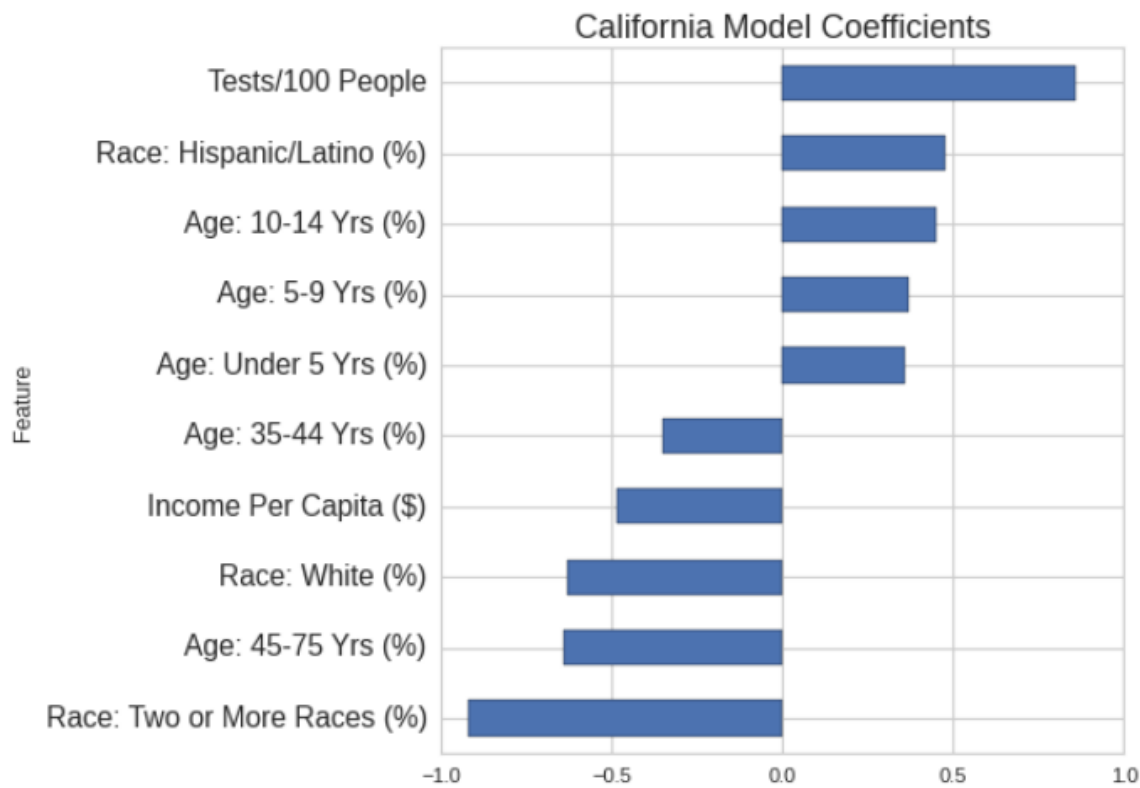
Demo: Interacting with Demographic Data and Classification Model

Thank you



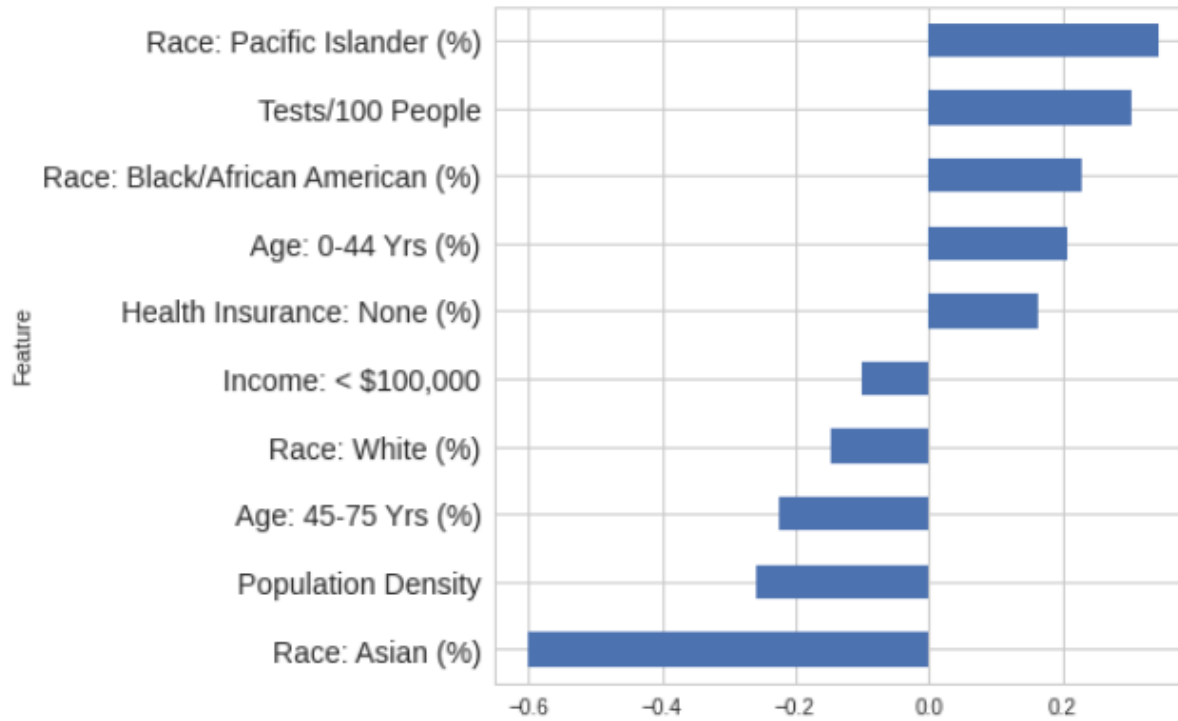
Appendix

In California, Testing and Race Emerged as Strongest Predictors

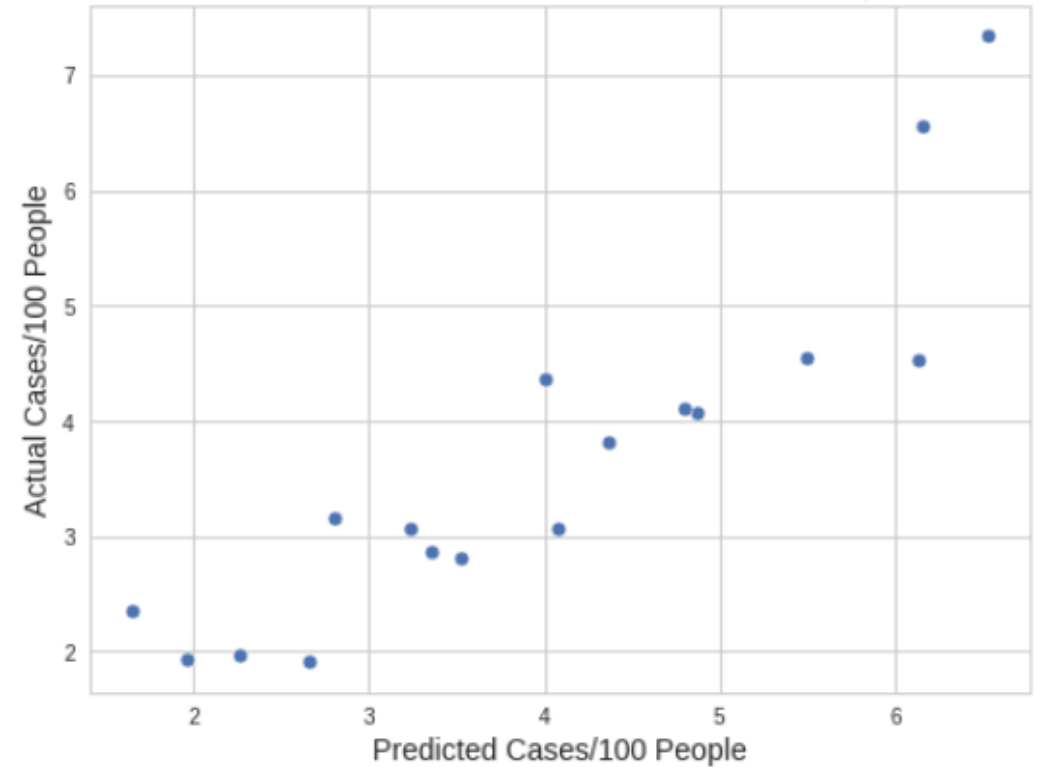


In Florida, Race Emerged as Strongest Predictors

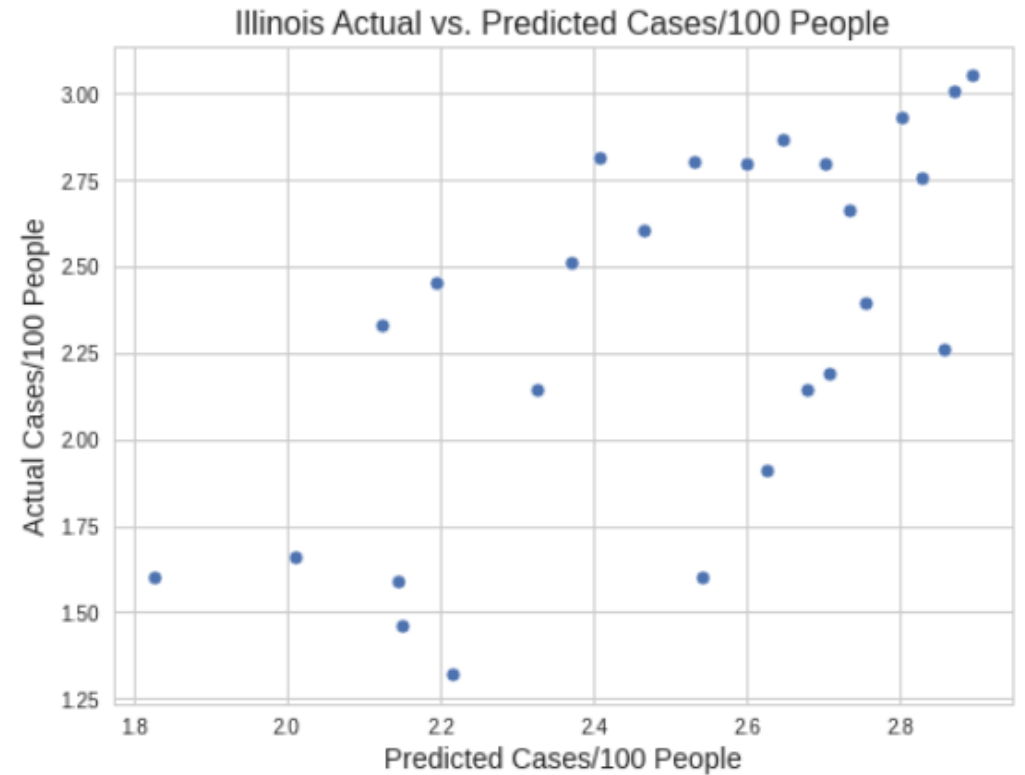
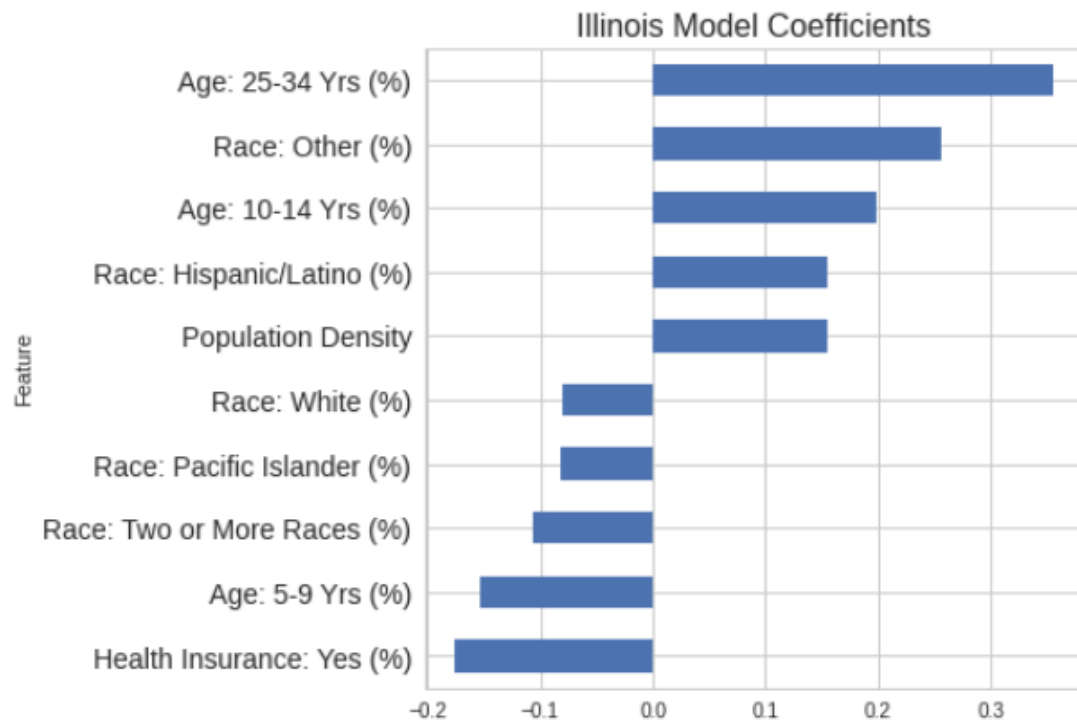
Florida Model Coefficients



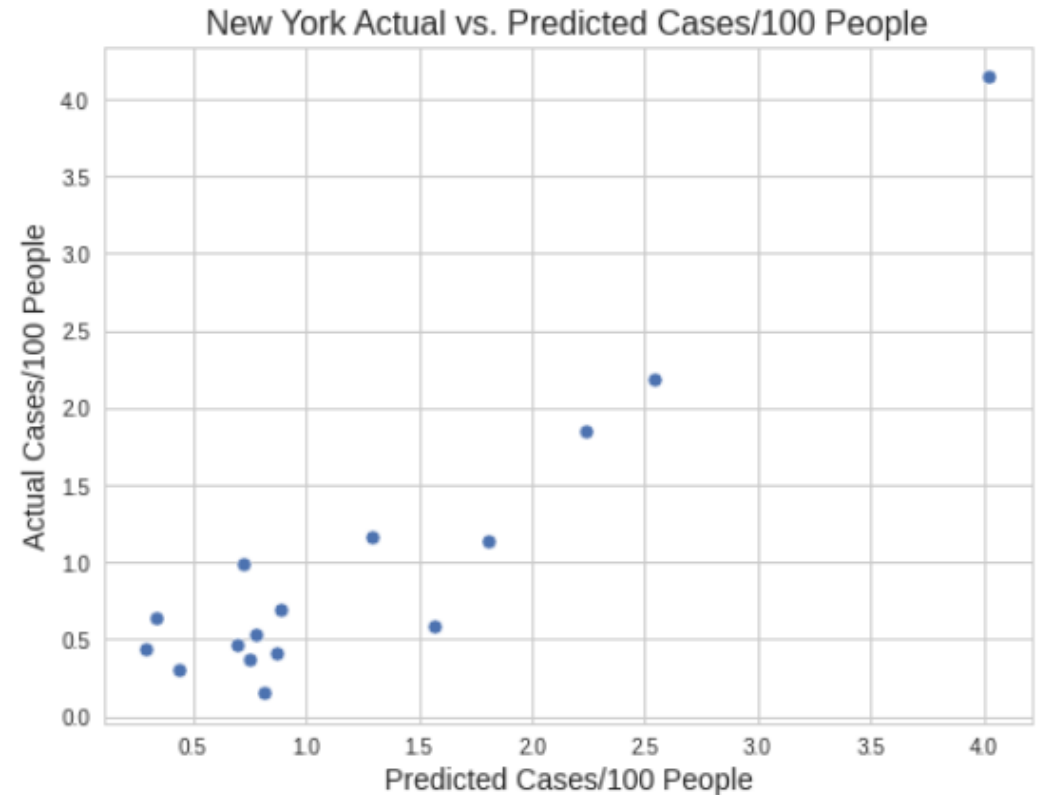
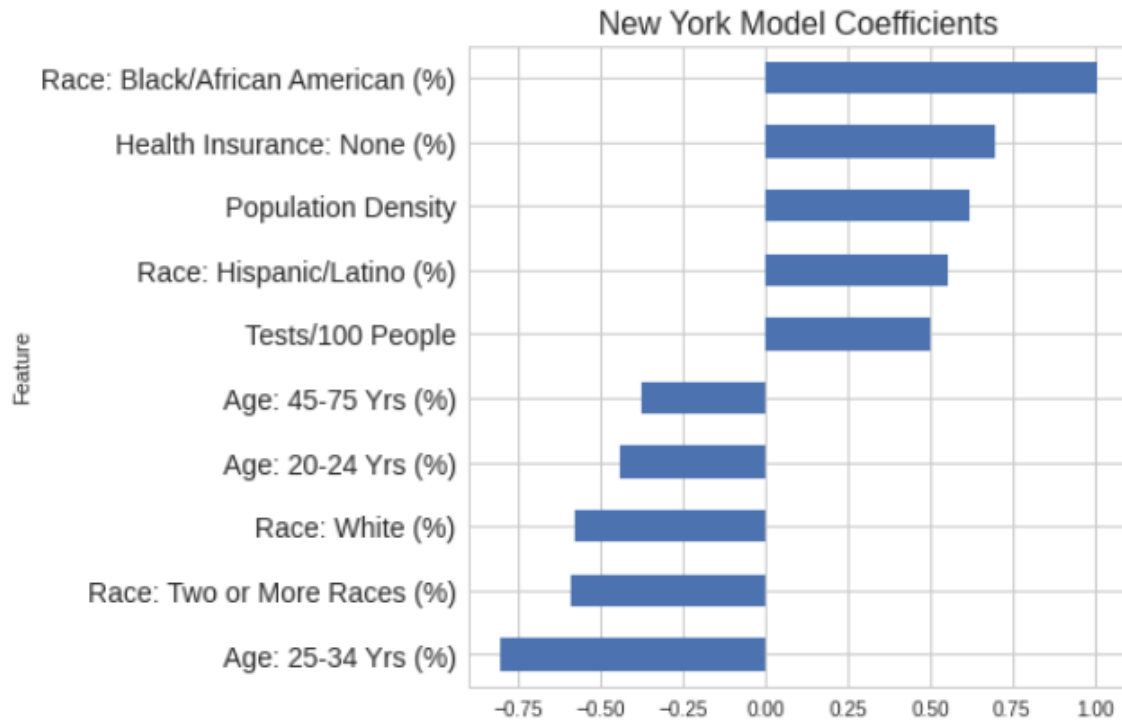
Florida Actual vs. Predicted Cases/100 People



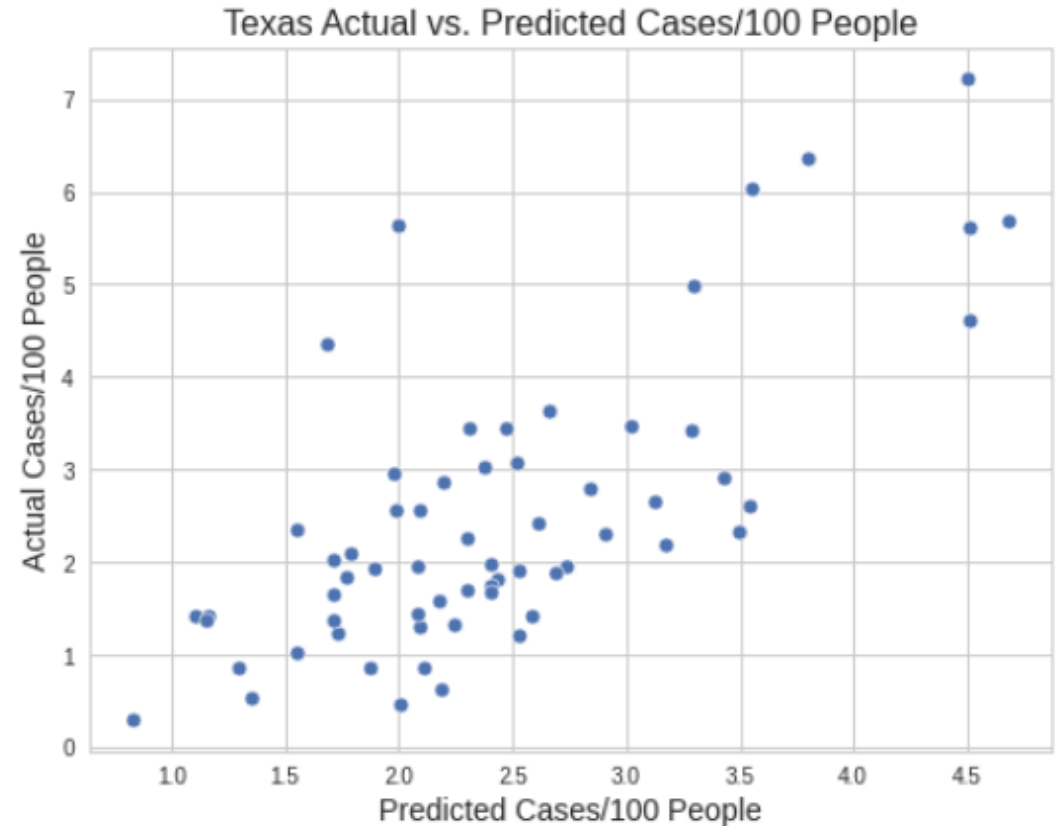
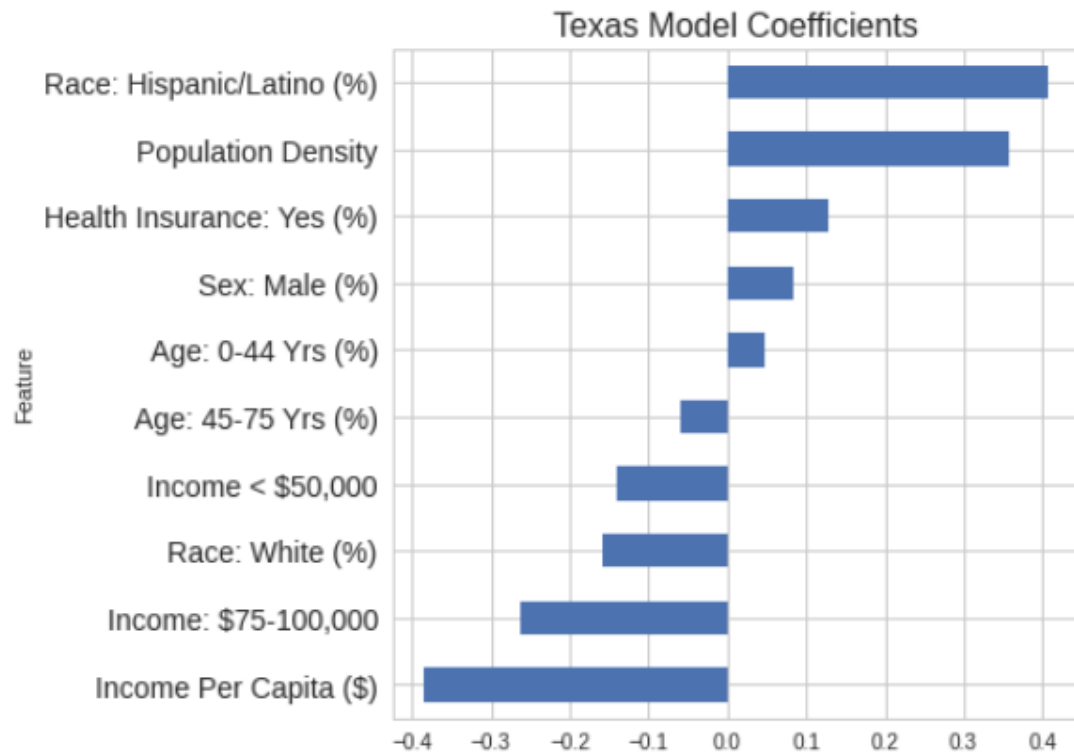
In Illinois, Age and Being Insured Emerged as Strongest Predictors



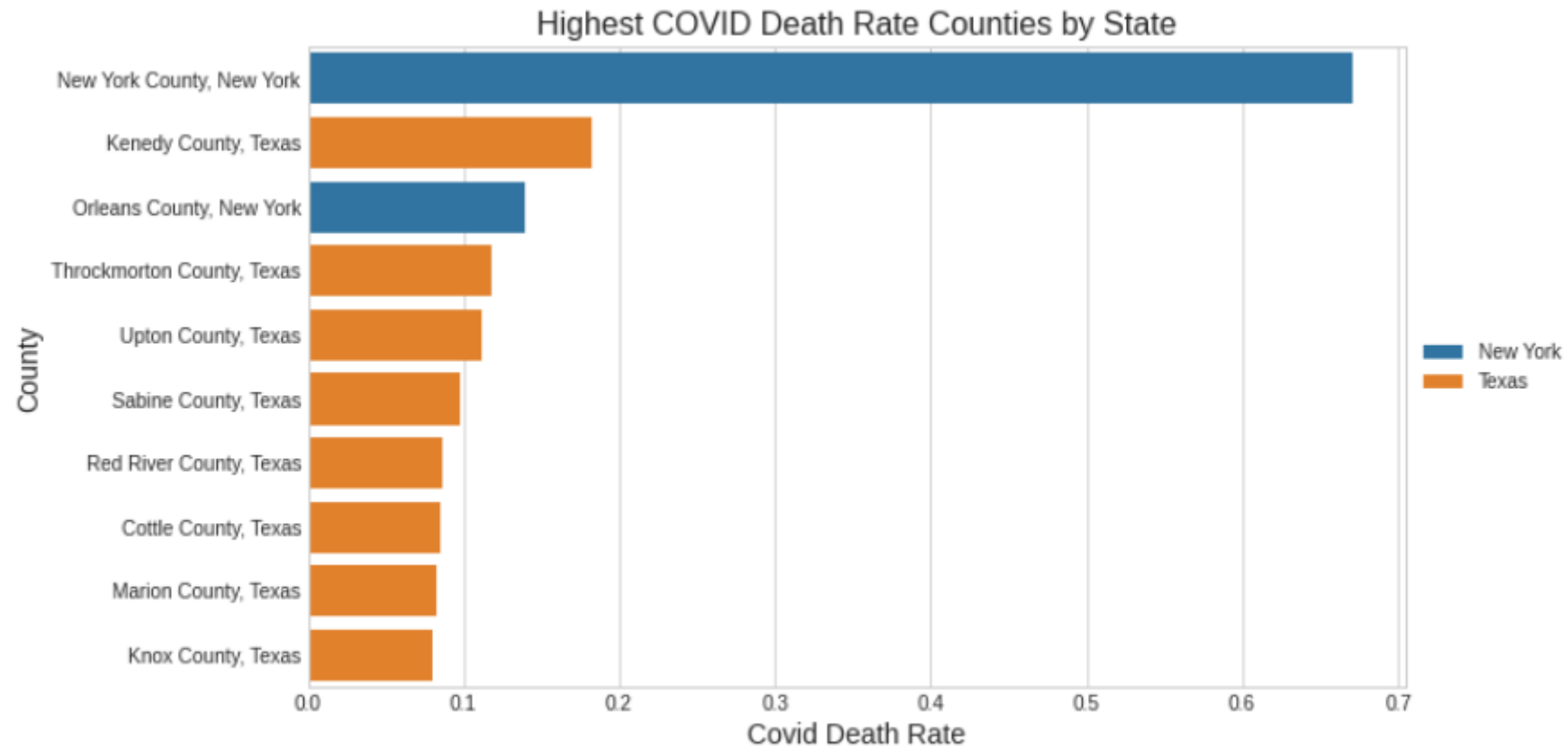
In New York, Race and Age Emerged as Strongest Predictors



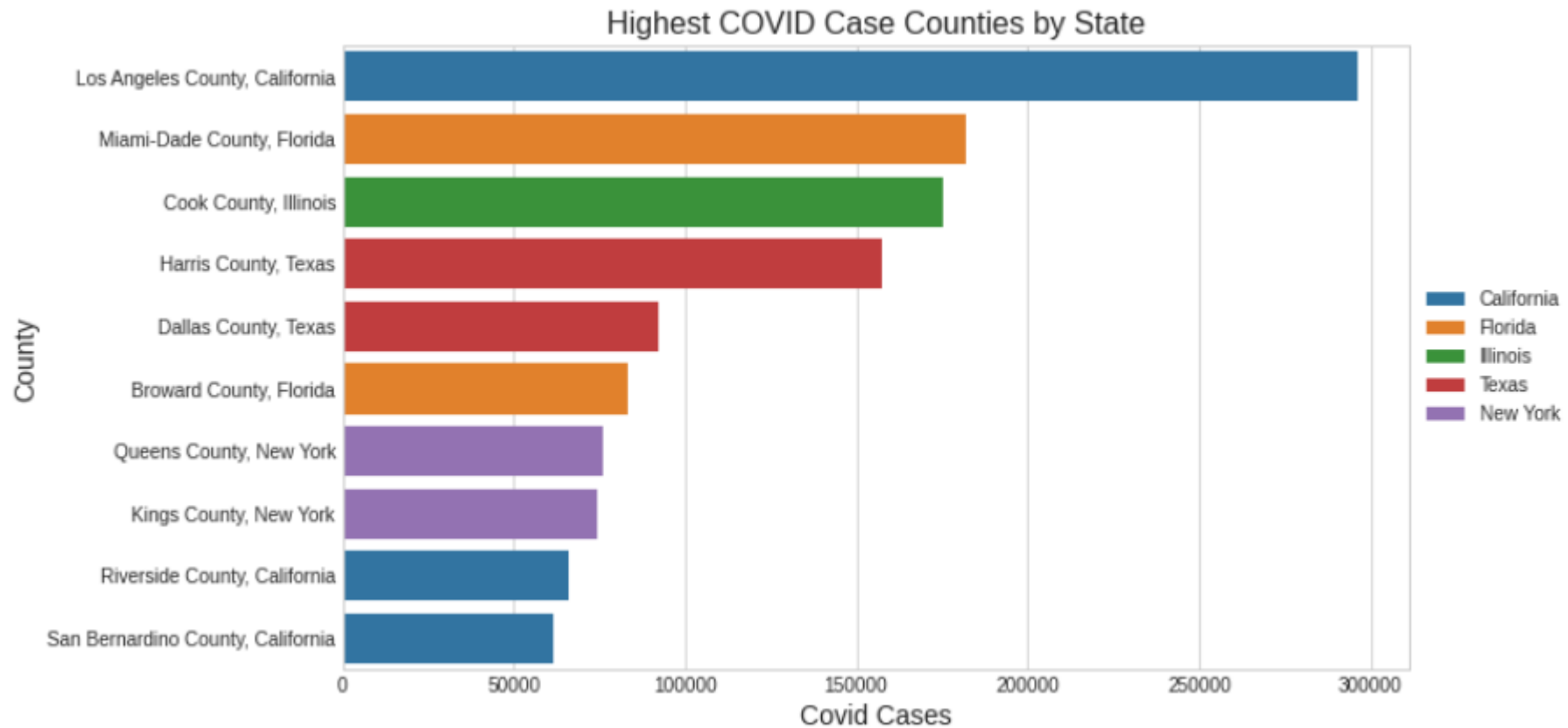
In Texas, Race and Income Emerged as Strongest Predictors



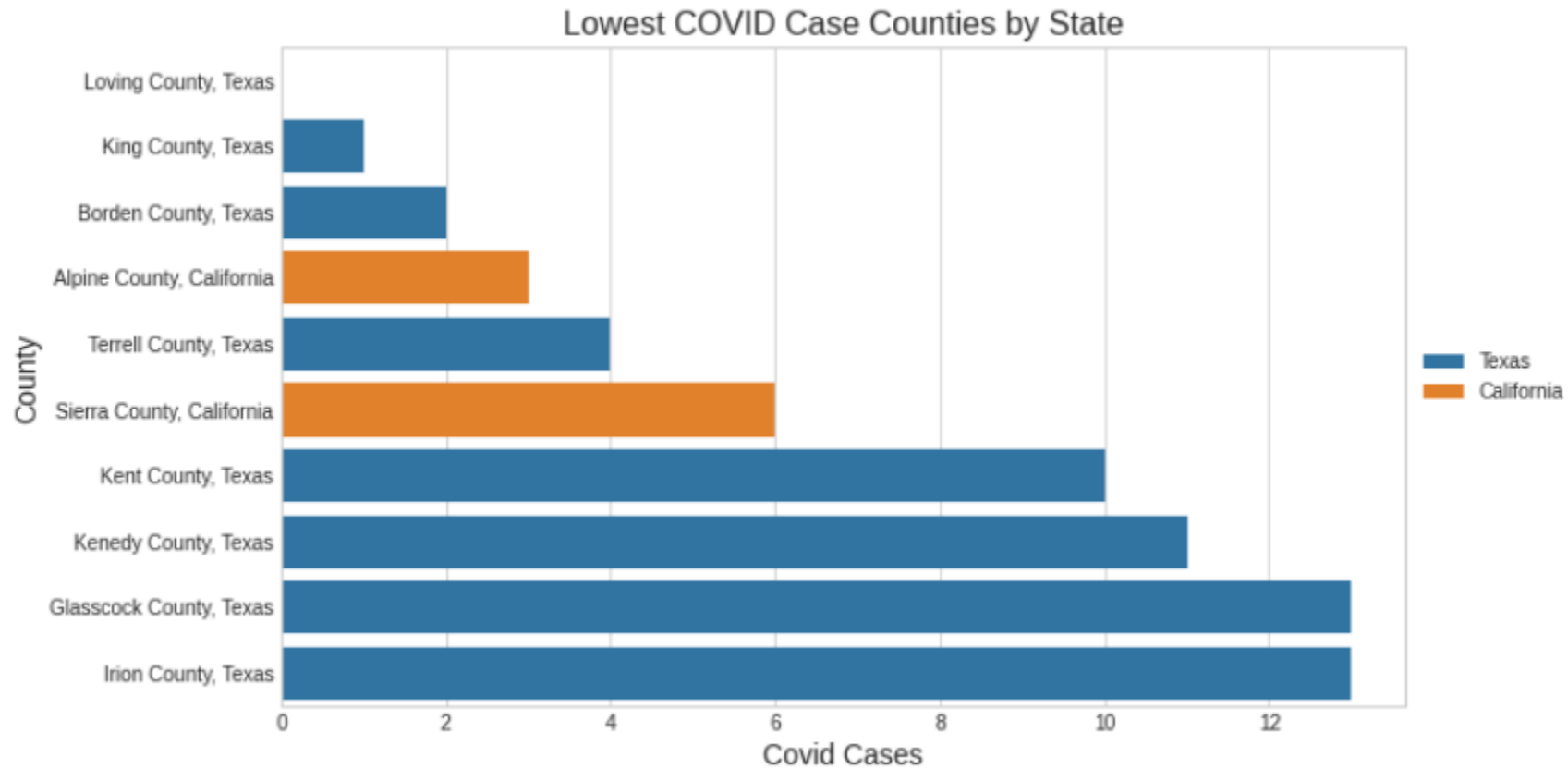
Highest Death Rate Counties by State



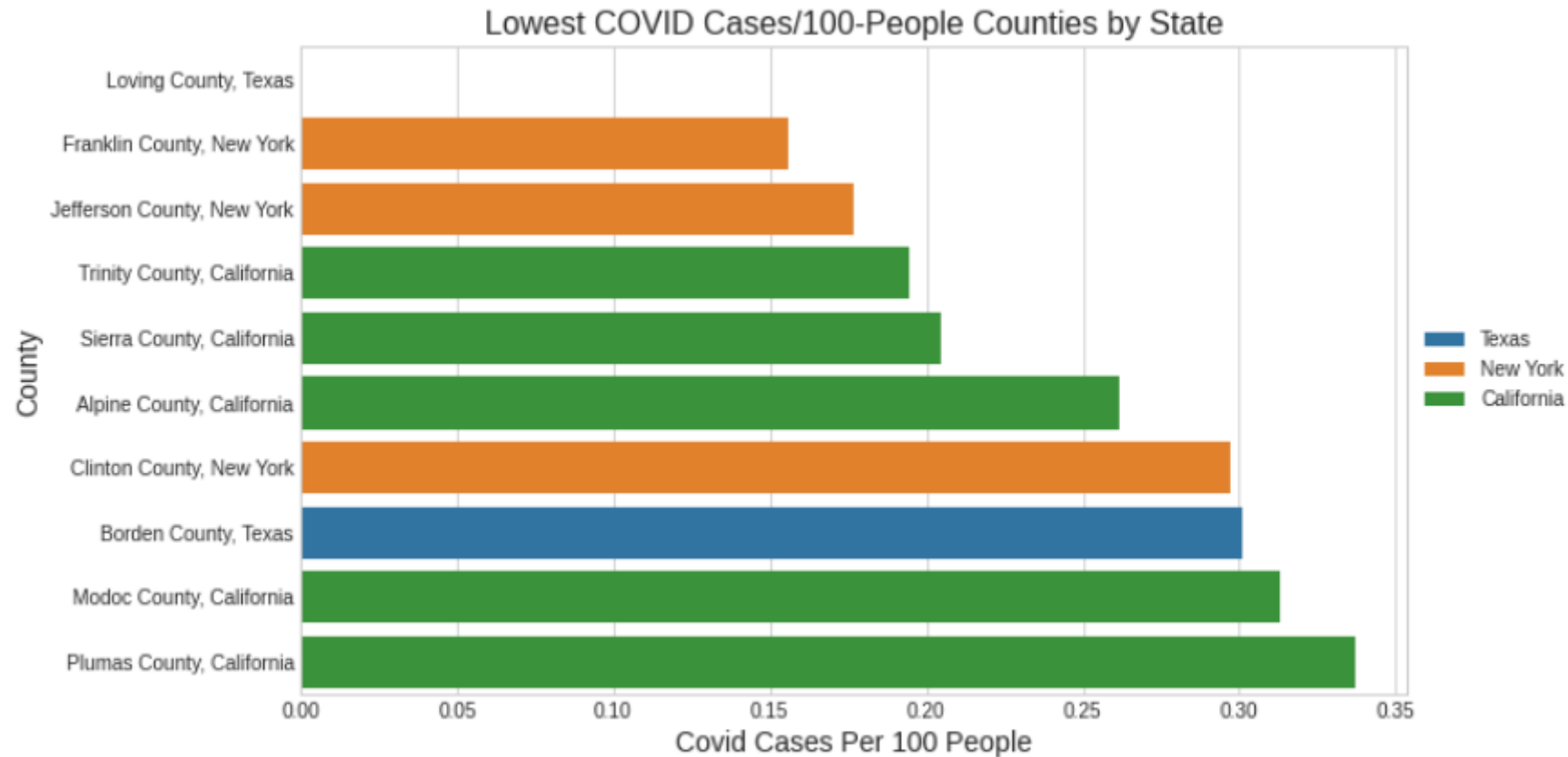
Highest Case Counties by State



Lowest Case Counties by State



Lowest Cases/100 People Counties by State



Highest Cases/100 People Counties by State

