Predicting COVID-19 Using Demographic Data

Caroline Clark, Feras Altwal, James Lee

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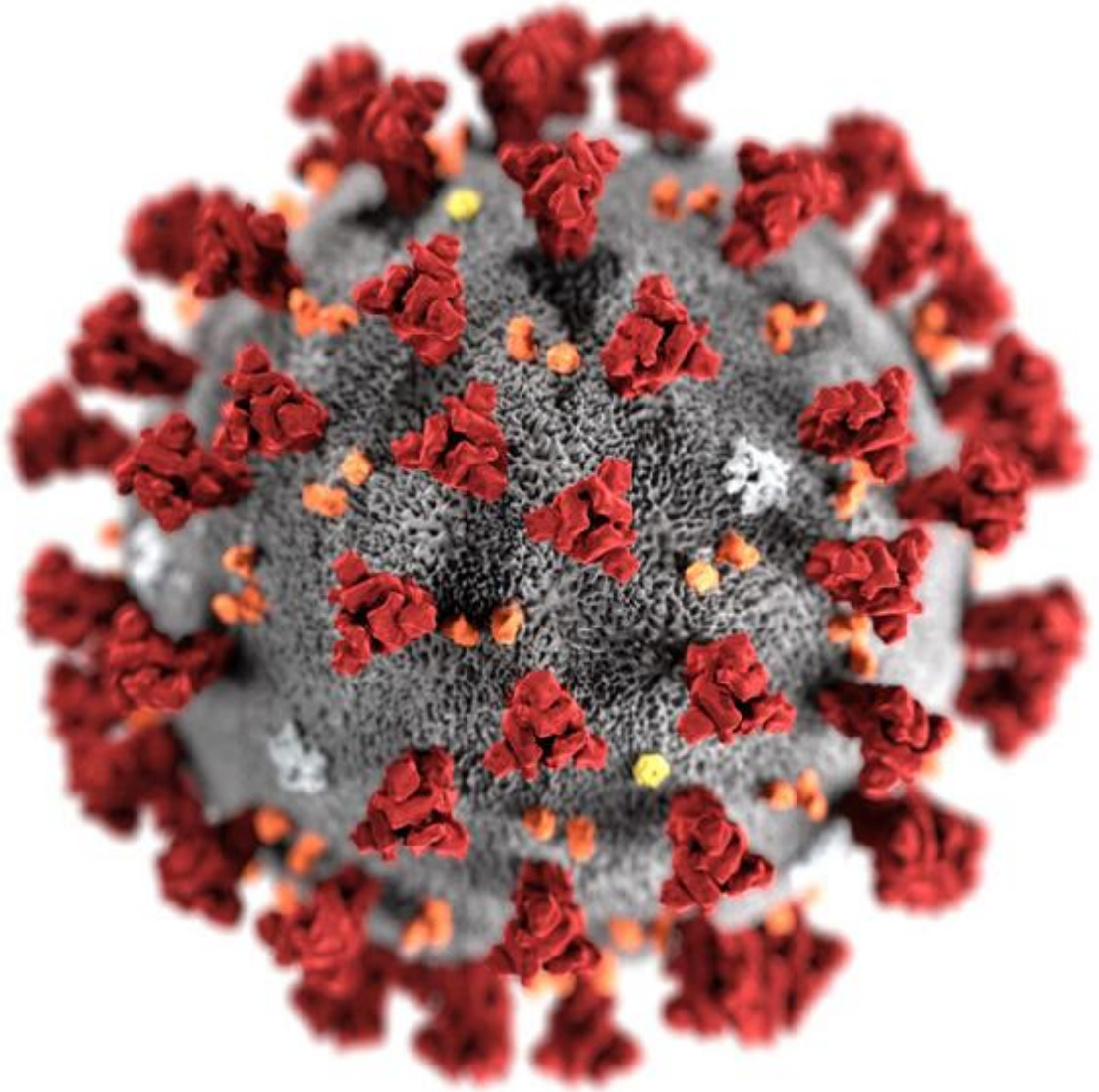
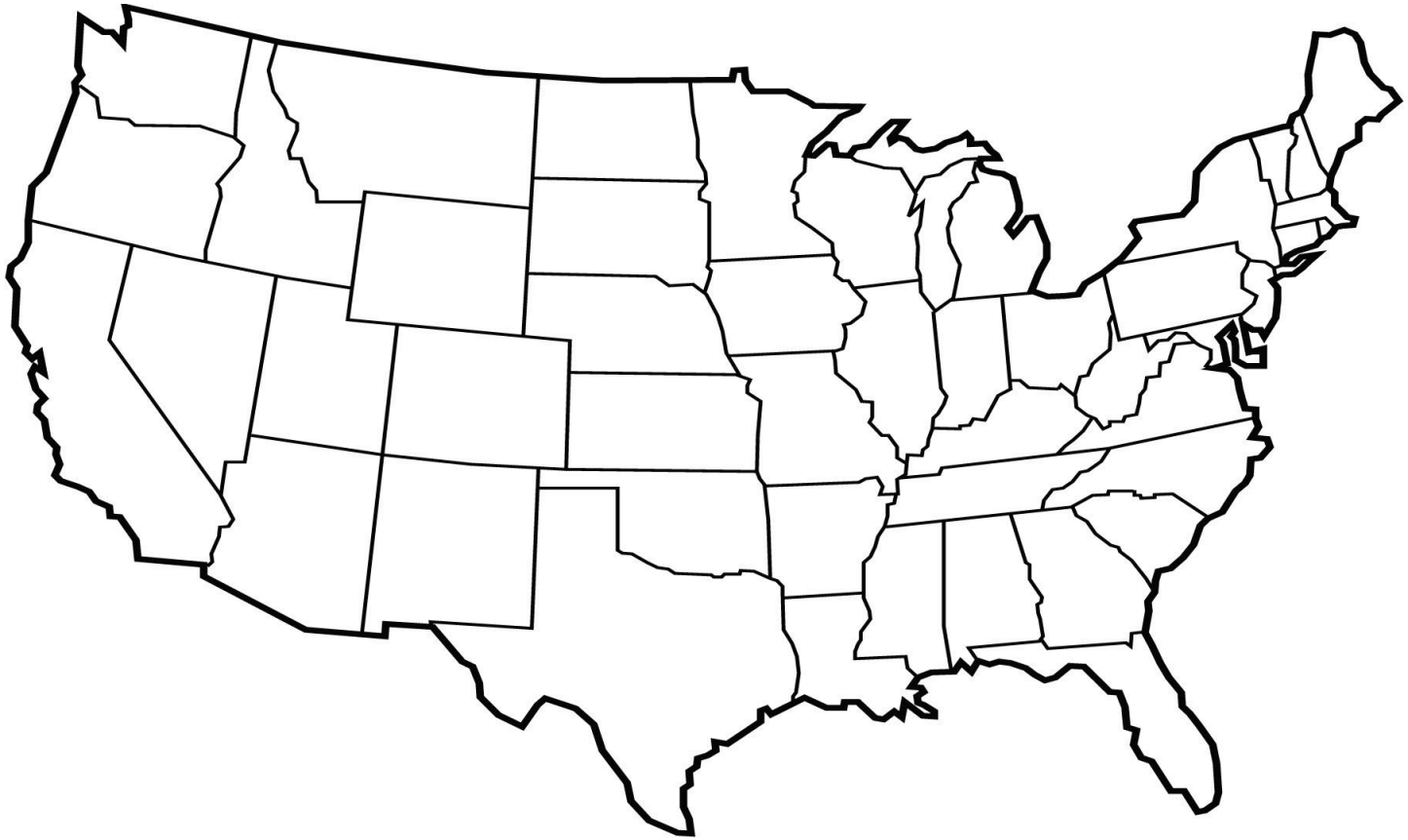


Can we predict COVID-19 severity using demographic data?



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
- Health Insurance
- Household Income

COVID-19

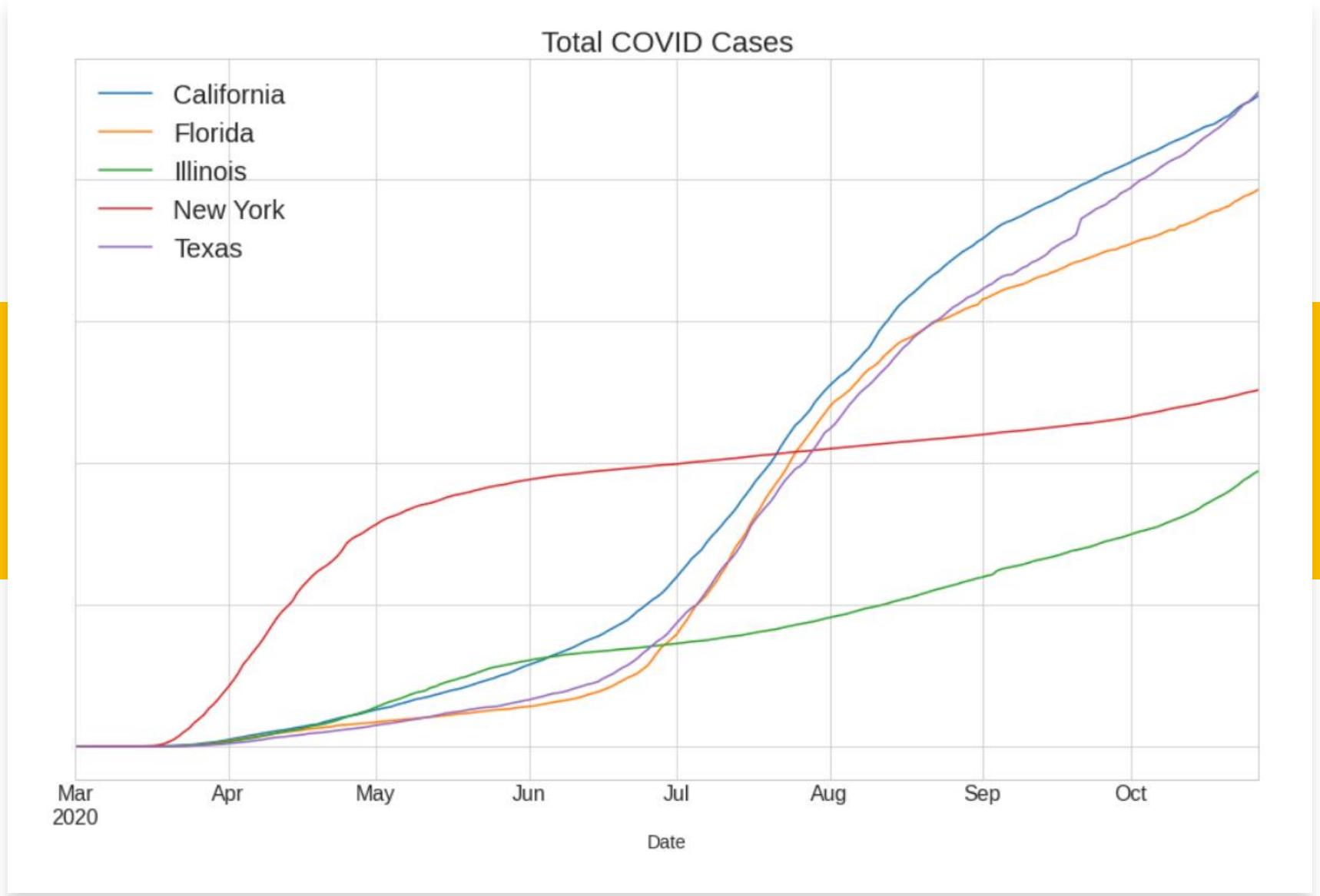
- Total Tests
- Total Cases
- Total Deaths

Health Indicators

- Obesity Rates

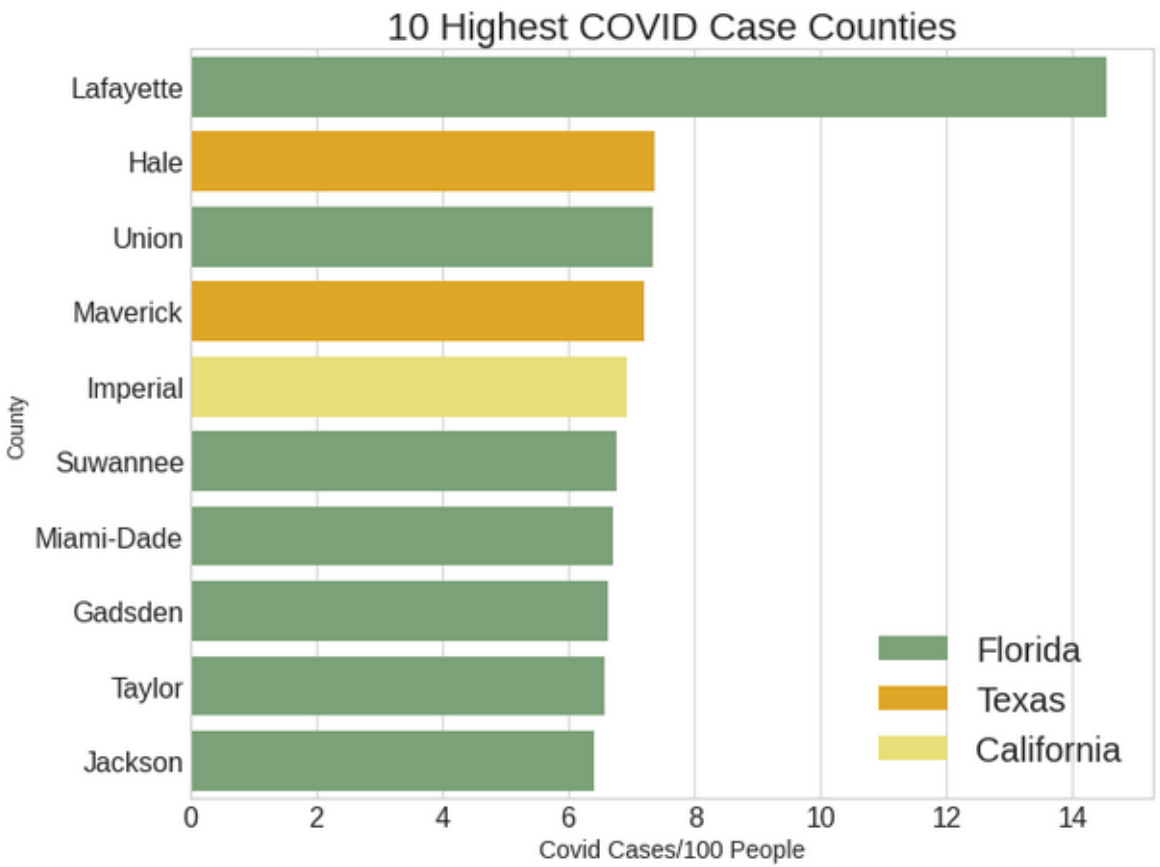
United States™ Census Bureau

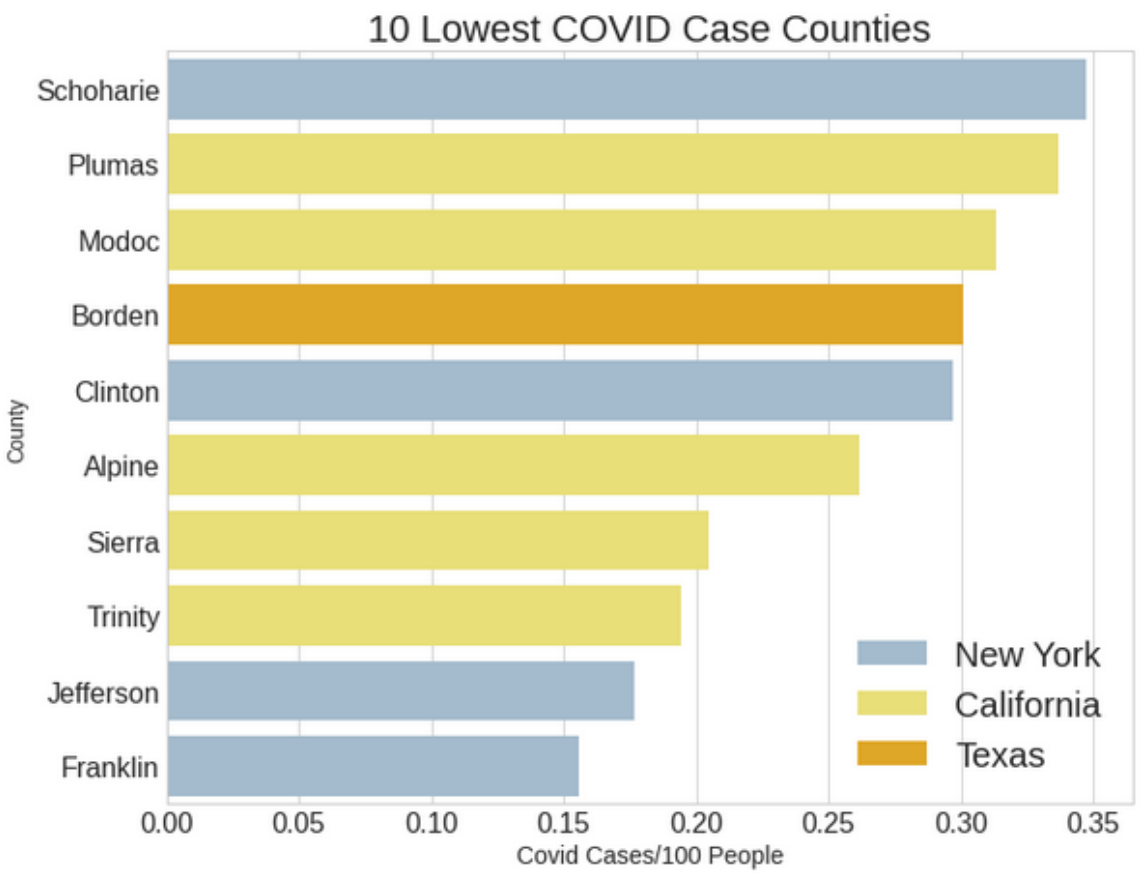
CDC
CENTERS FOR DISEASE™ CONTROL AND PREVENTION



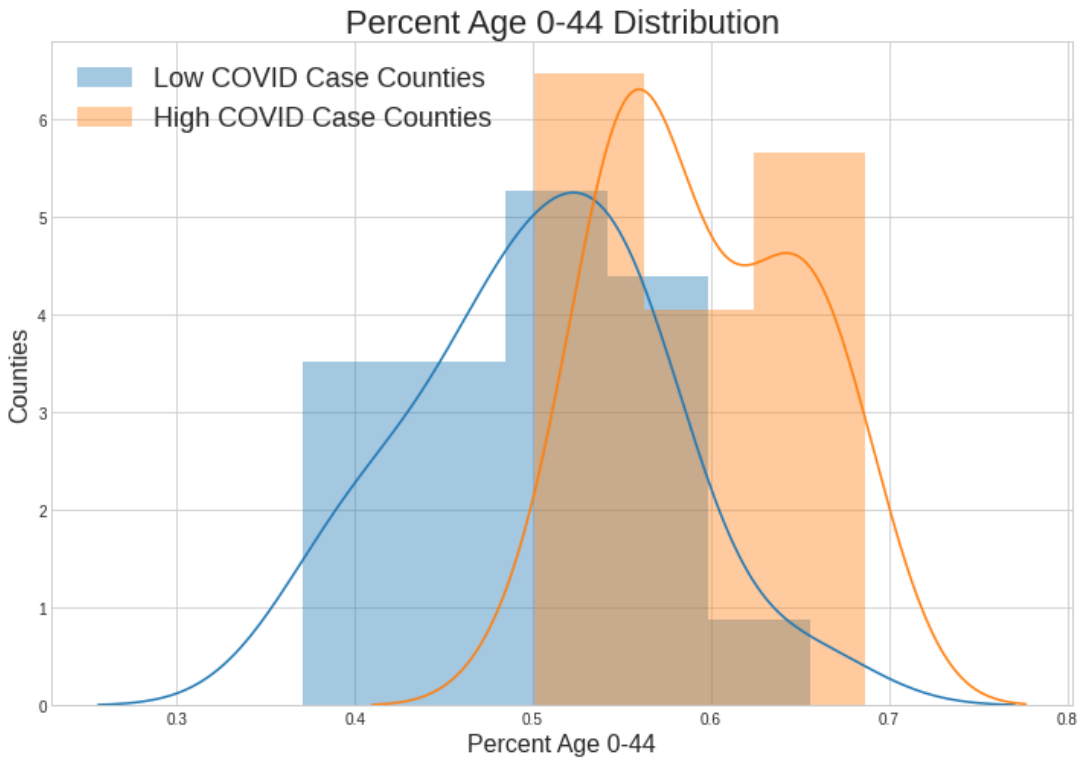
Five States with the Most COVID-19 Data

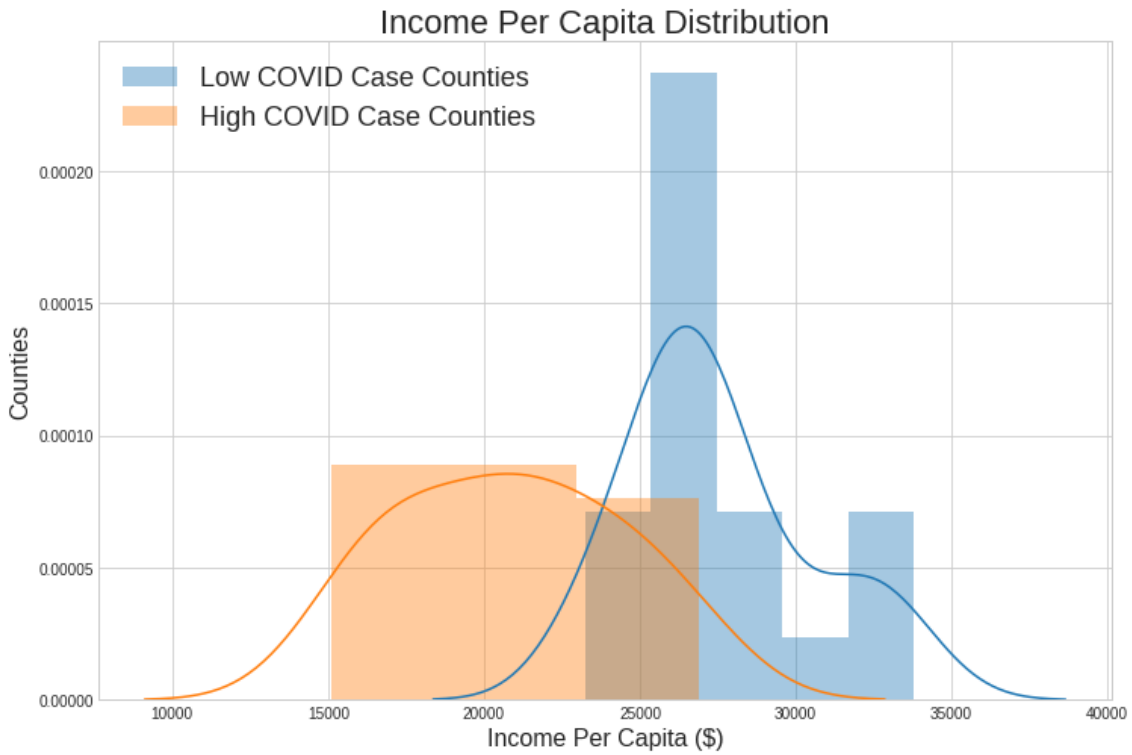
COVID-19 Statistics Vary Widely Among Counties



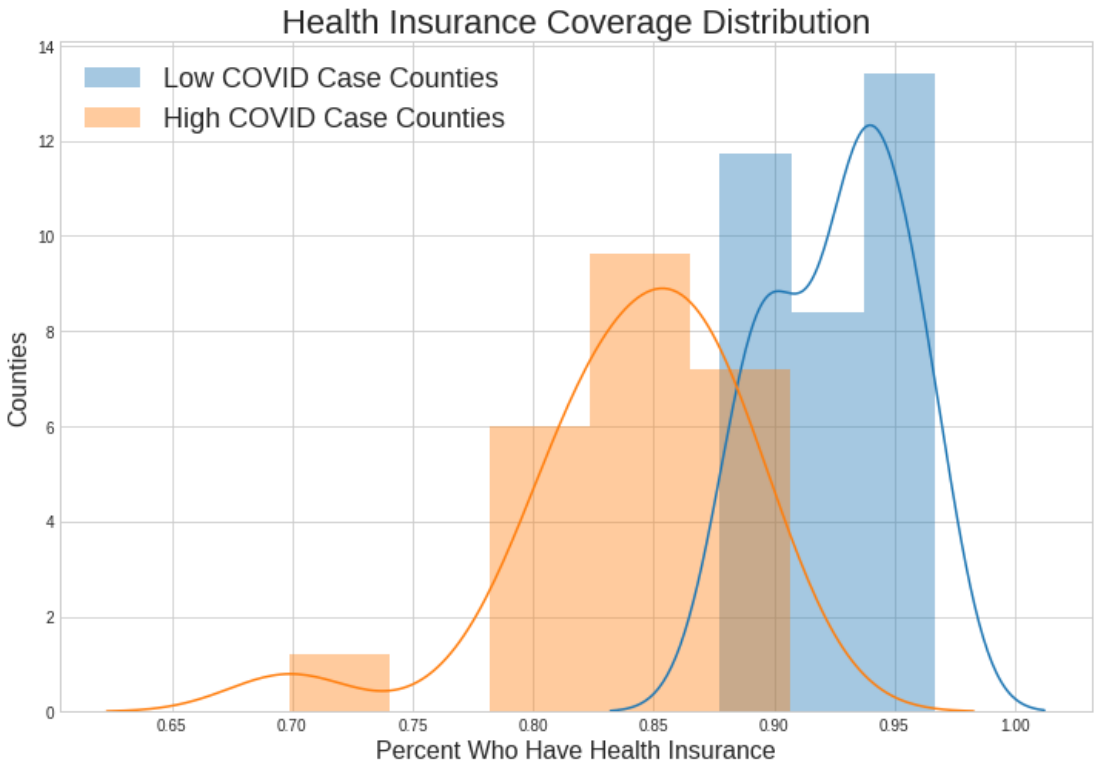


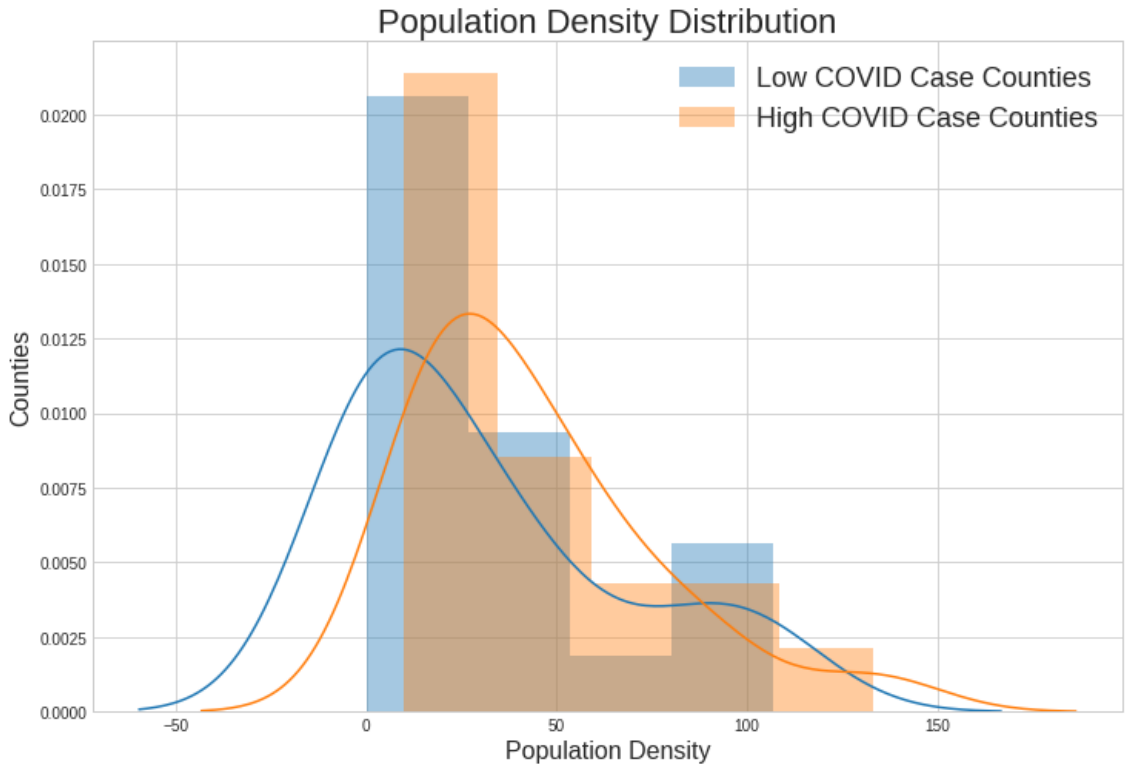
High COVID Counties Likely to be Younger, Have Lower Income Per Capita





Low COVID Counties Likely to have Insurance Coverage, Lower Population Density

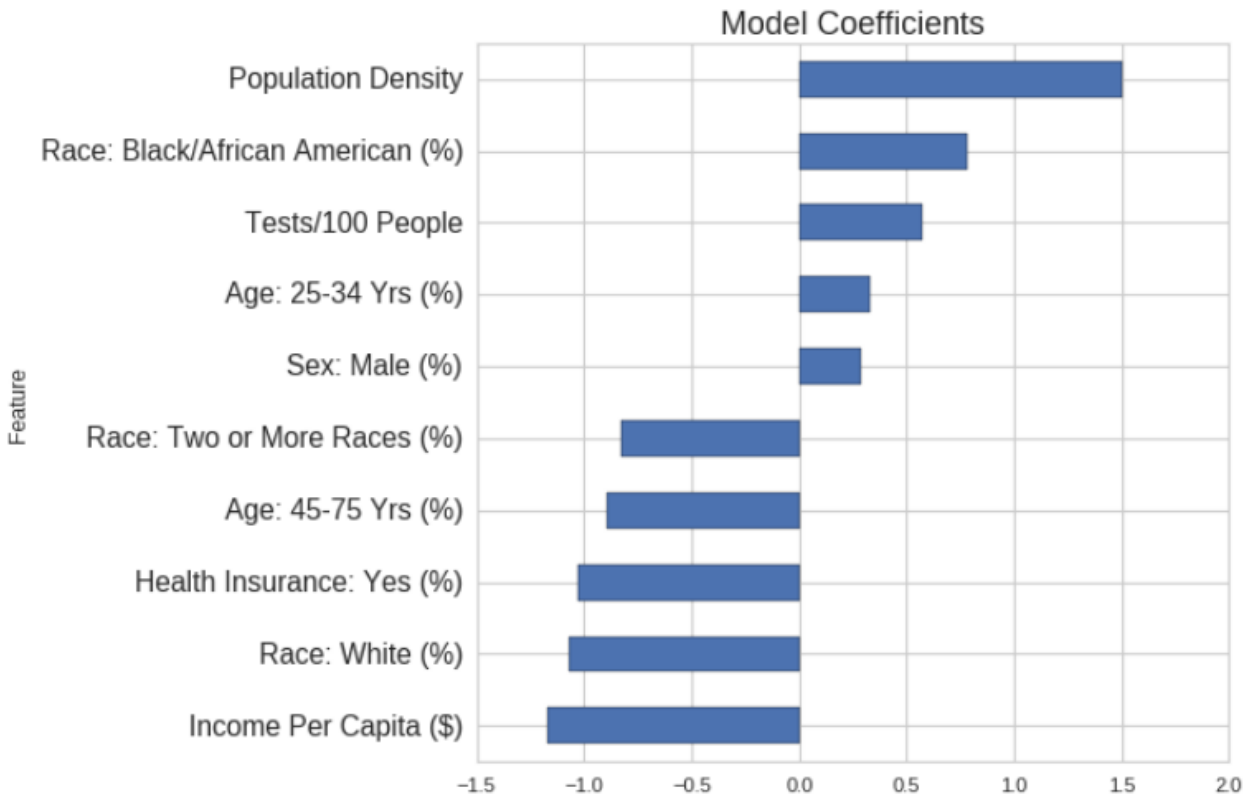


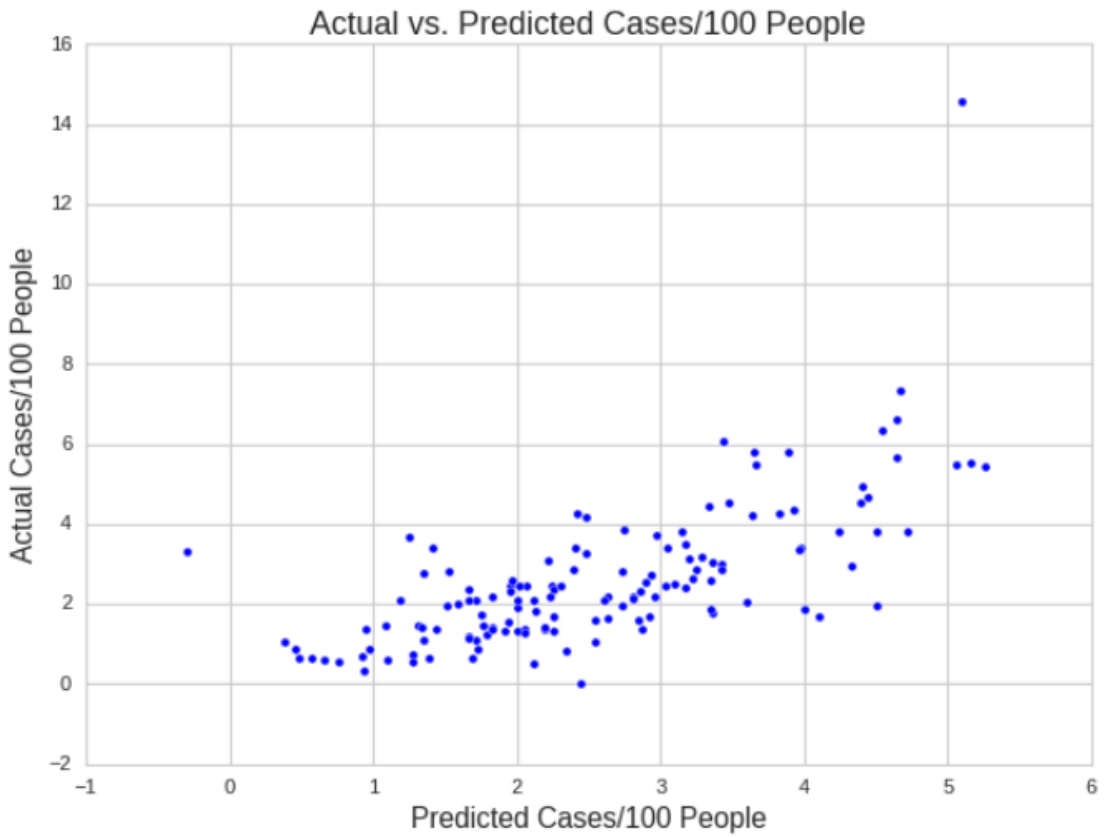


Modeling Successes and Challenges

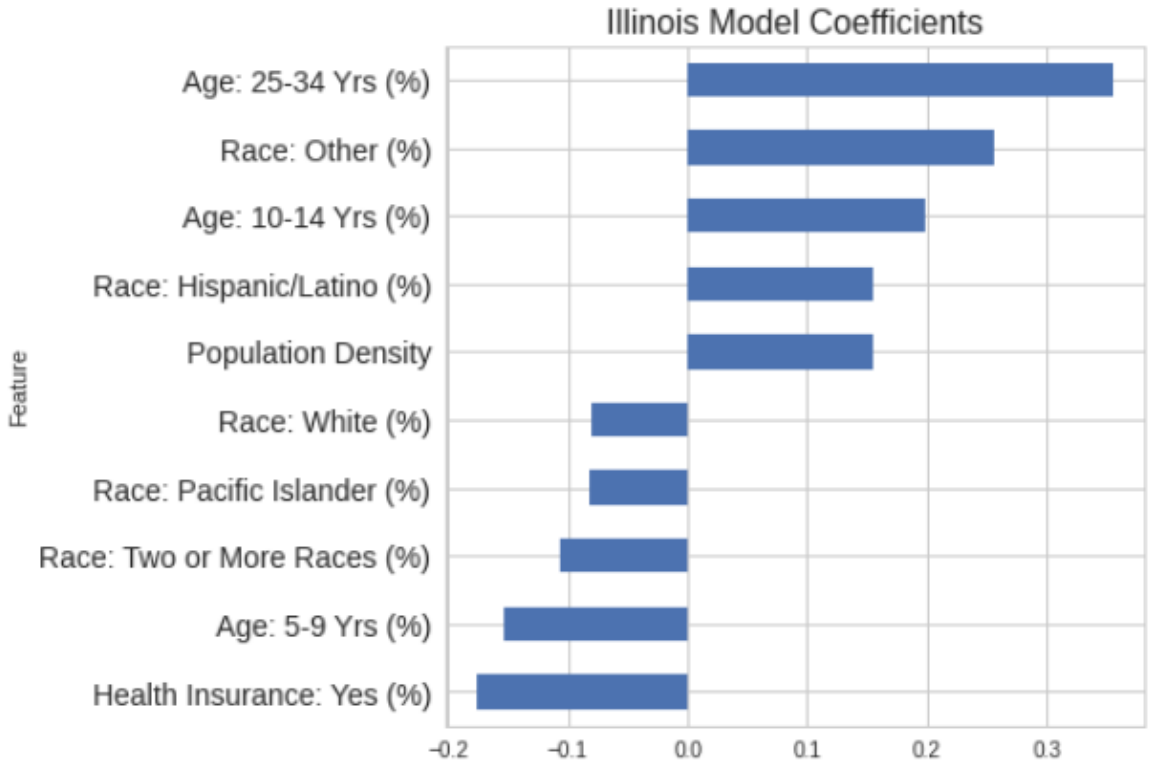
Region	Best Regression R2 Score	Best Classification Accuracy Score	Classification Baseline
All Five States	47%	63%	42%
California	75%	93%	66%
Florida	76%	71%	71%
Illinois	32%	73%	54%
New York	81%	94%	81%
Texas	49%	59%	40%

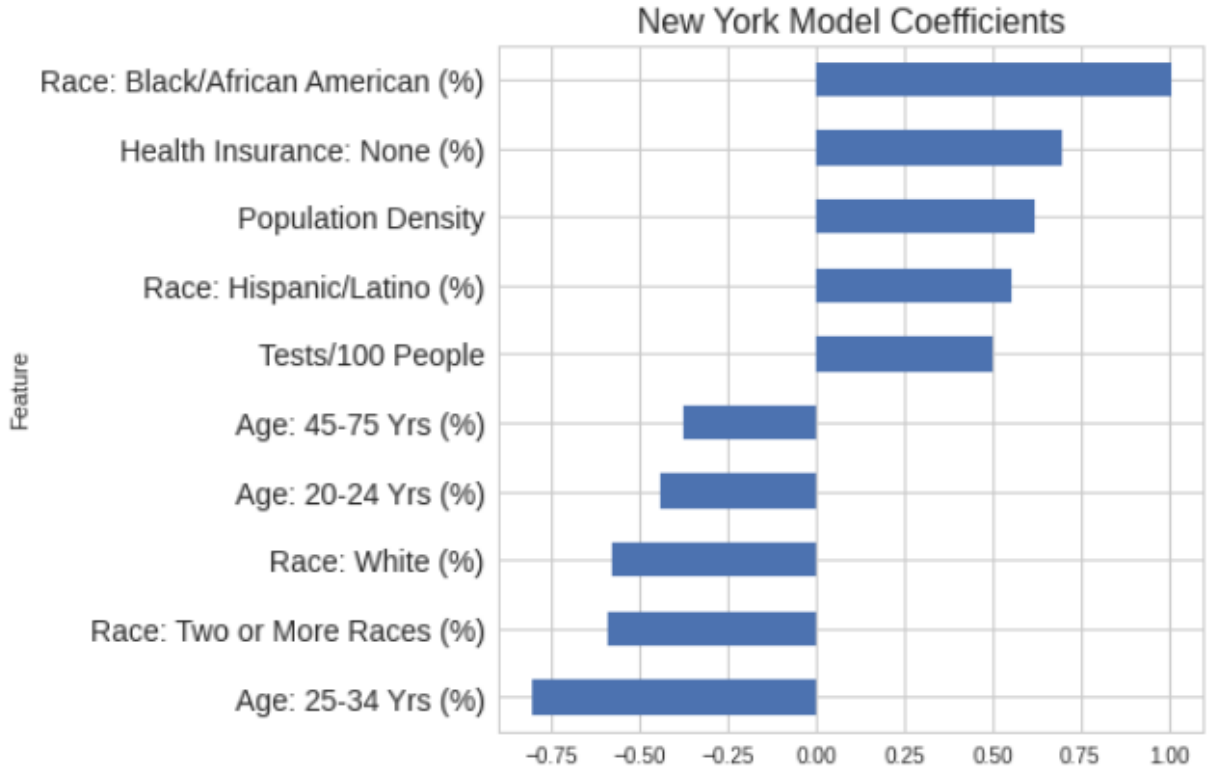
Population Density and Income Strongest Factors when Modeling All Five States





Predictors Varied in State-Level Models

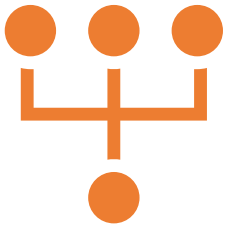




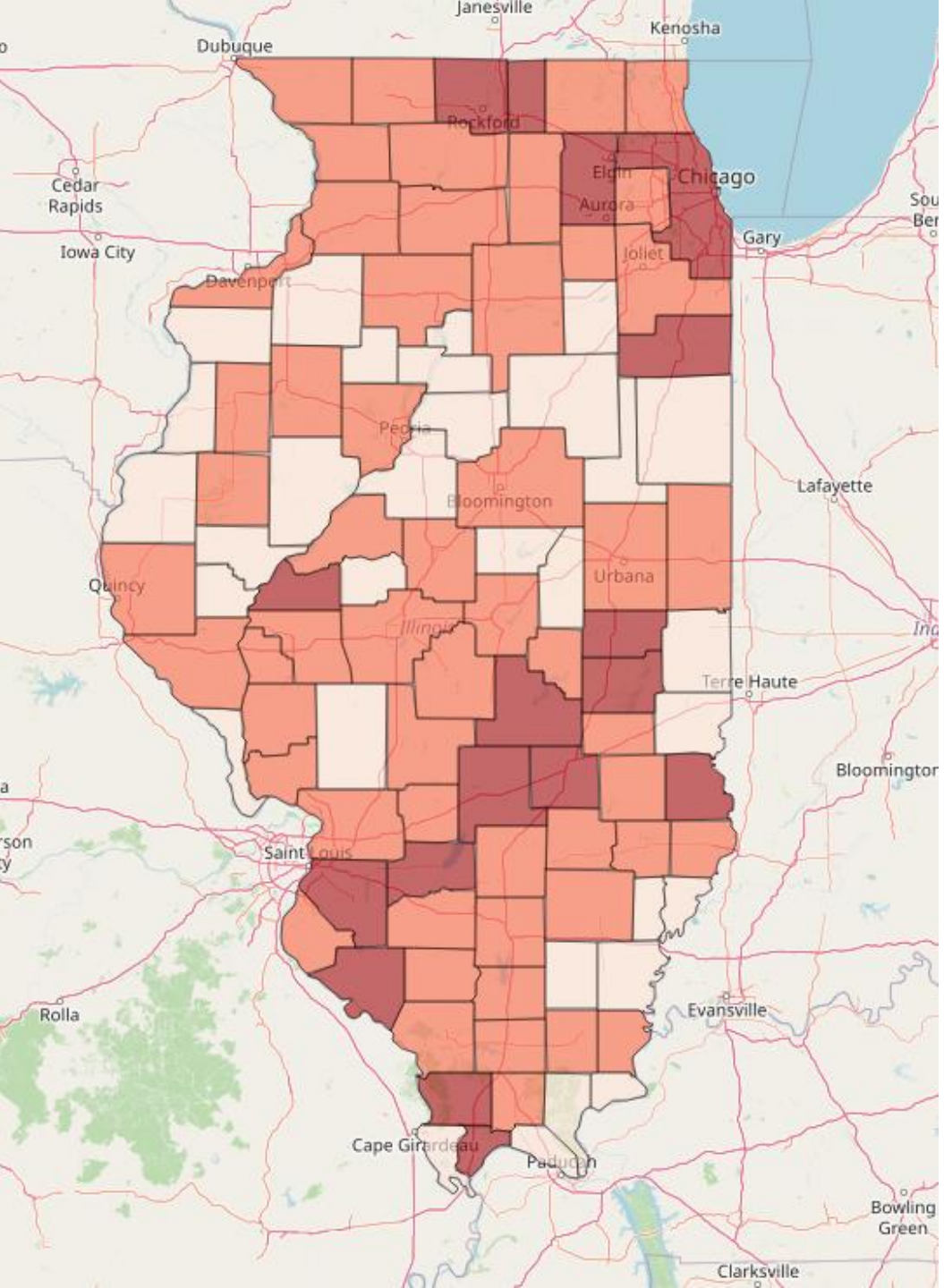
Conclusions and Key Challenges

Ongoing event

Widely varying data



More features

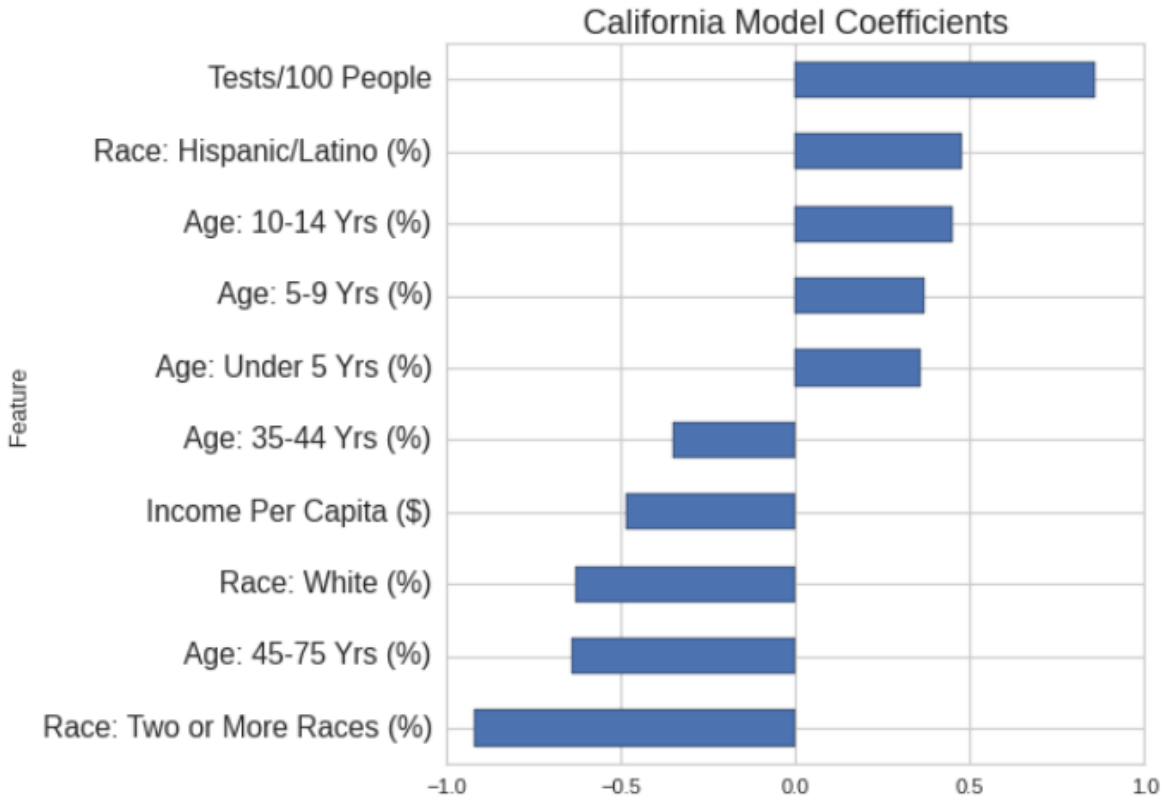


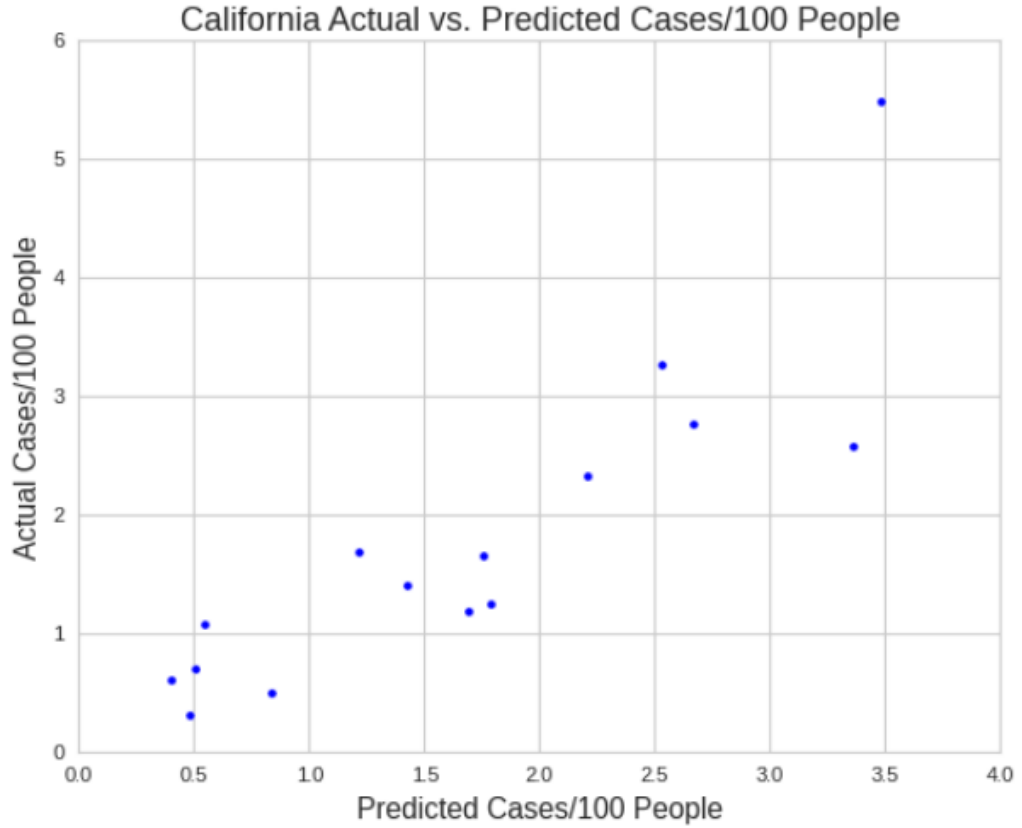
Demo: Interacting with Demographic Data and Classification Model

Thank you

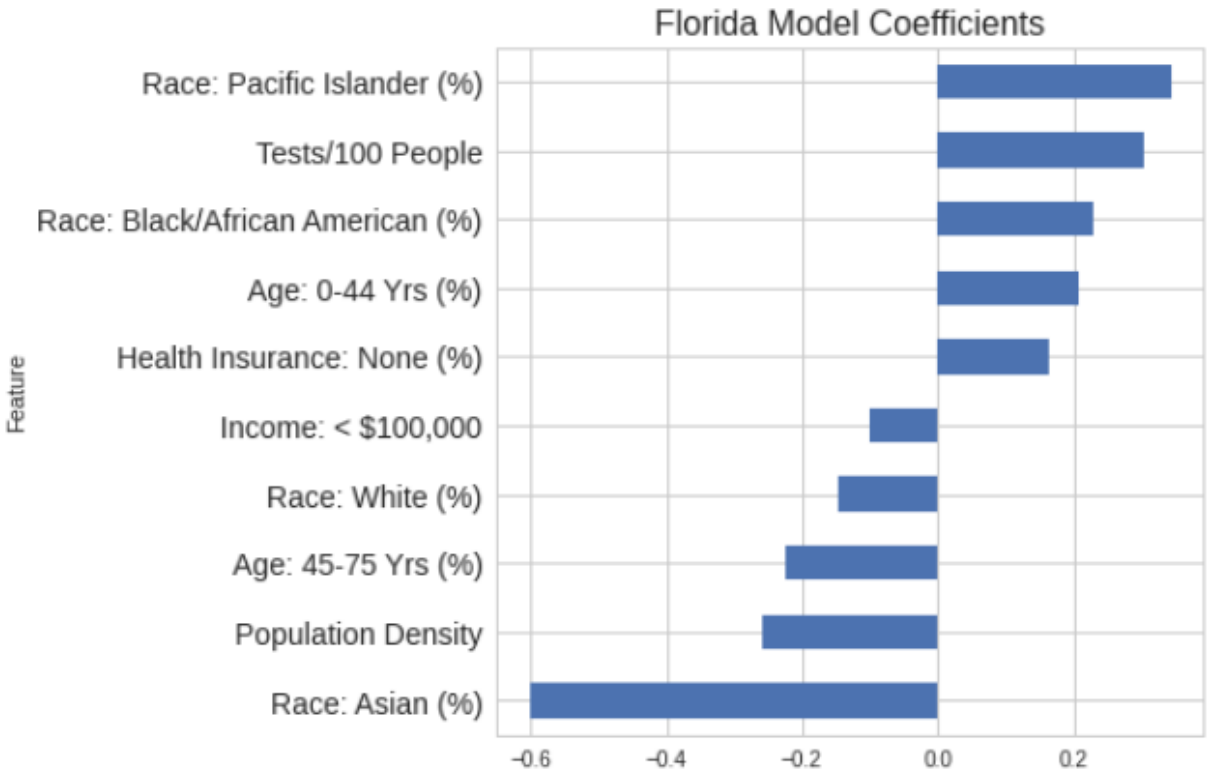
Appendix

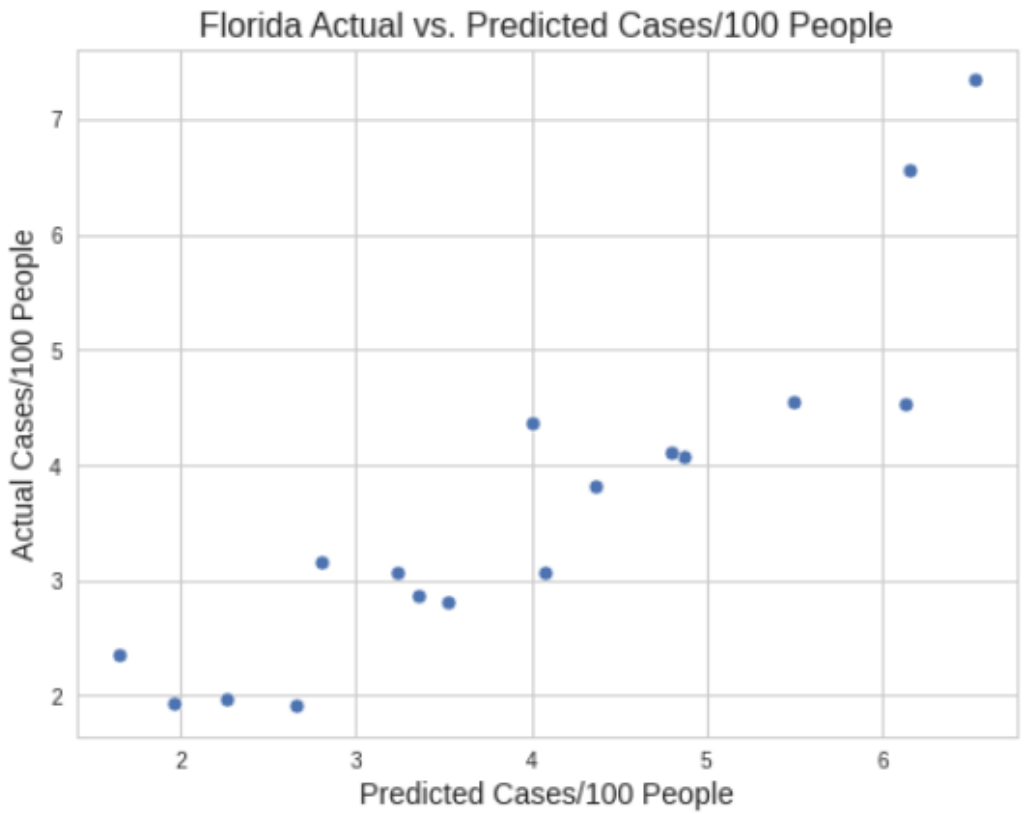
In California, Testing and Race Emerged as Strongest Predictors



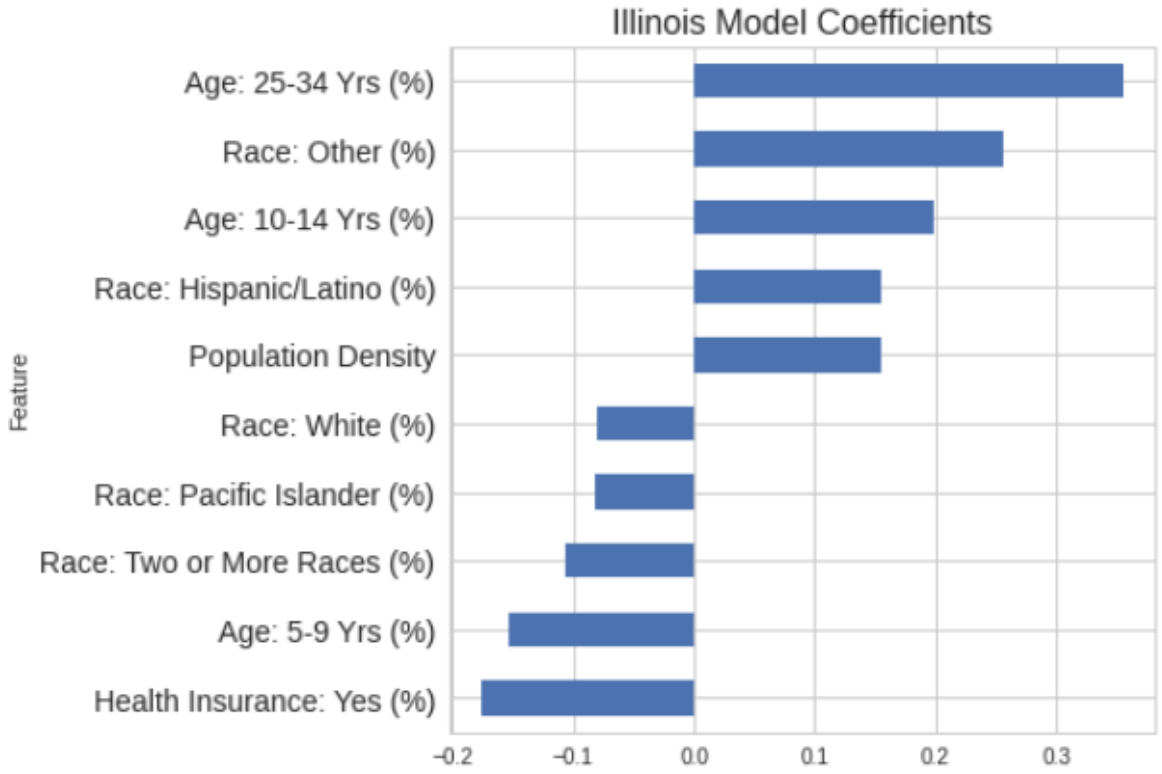


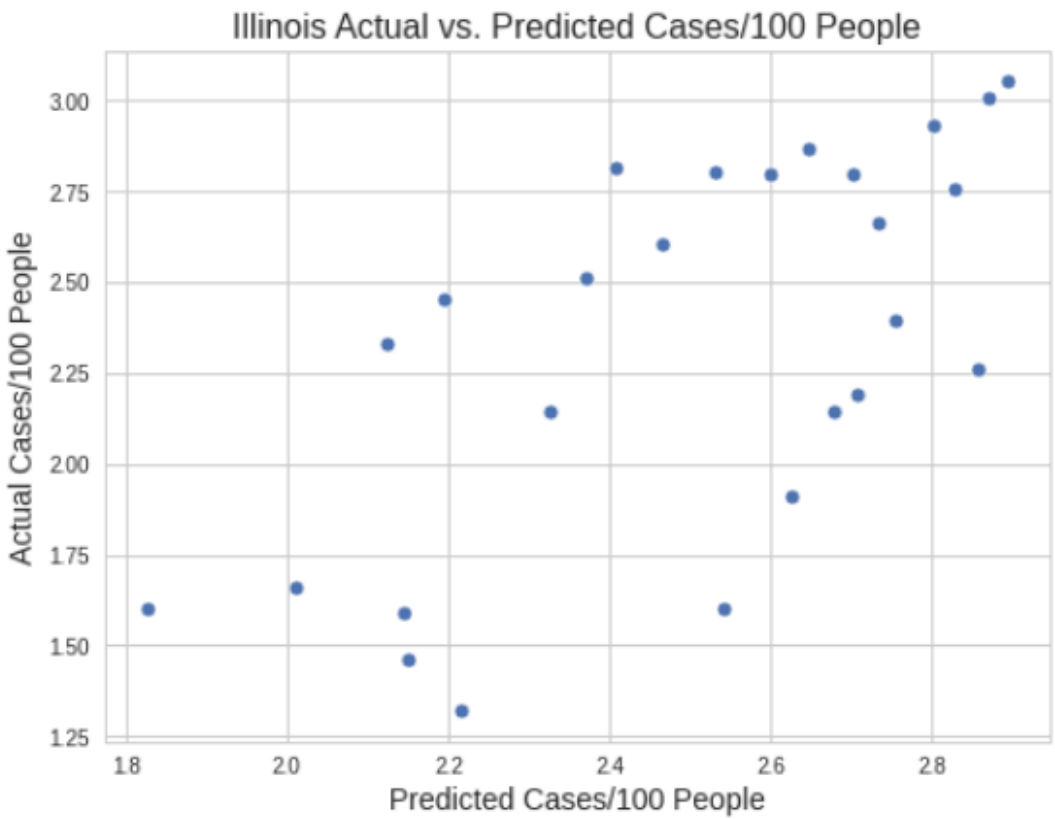
In Florida, Race Emerged as Strongest Predictors



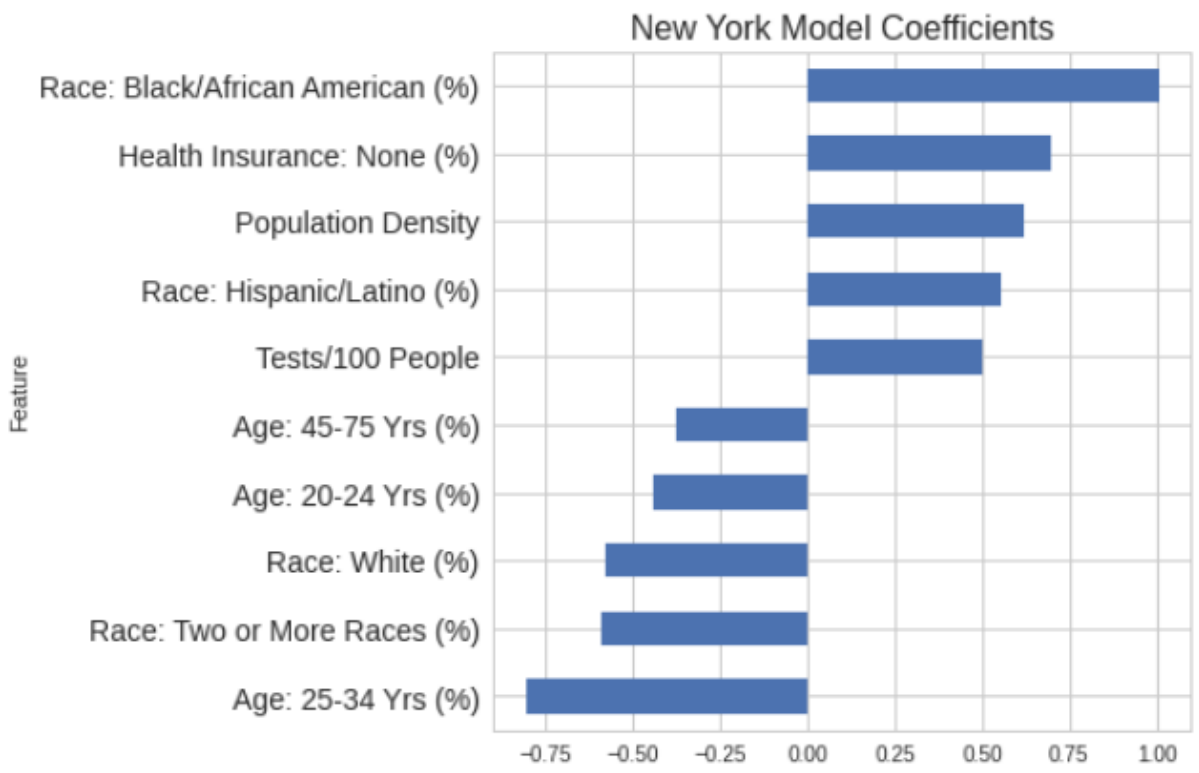


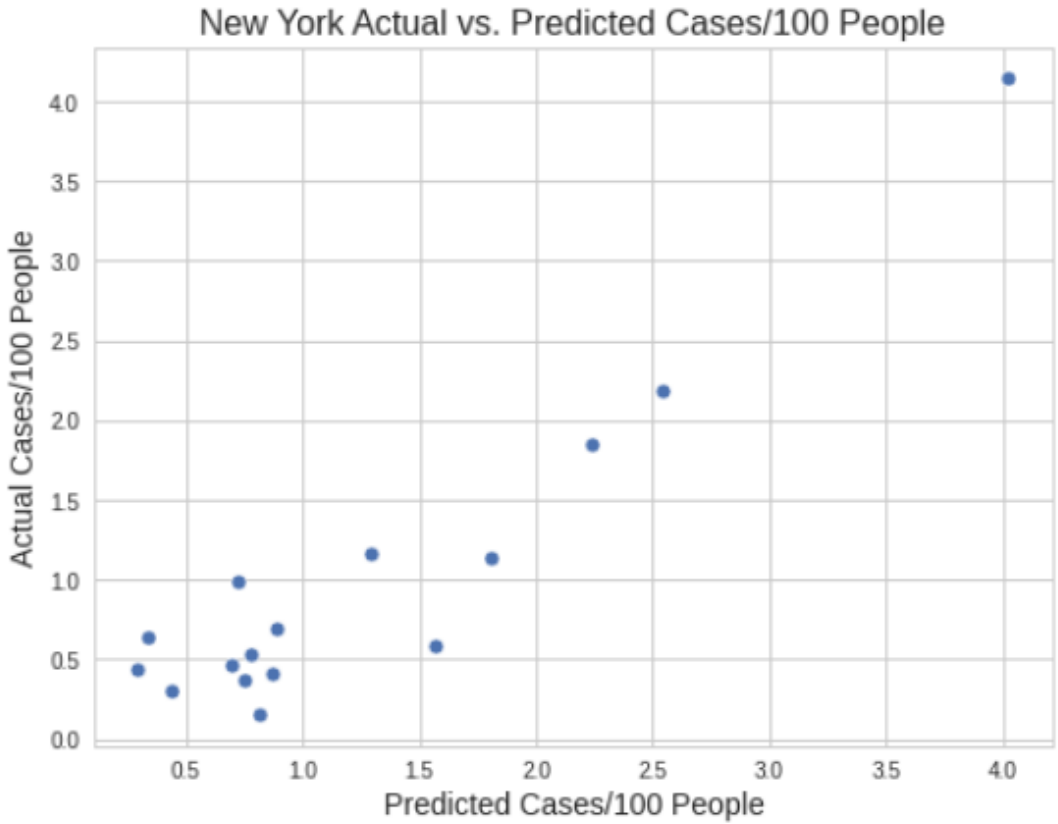
In Illinois, Age and Being Insured Emerged as Strongest Predictors



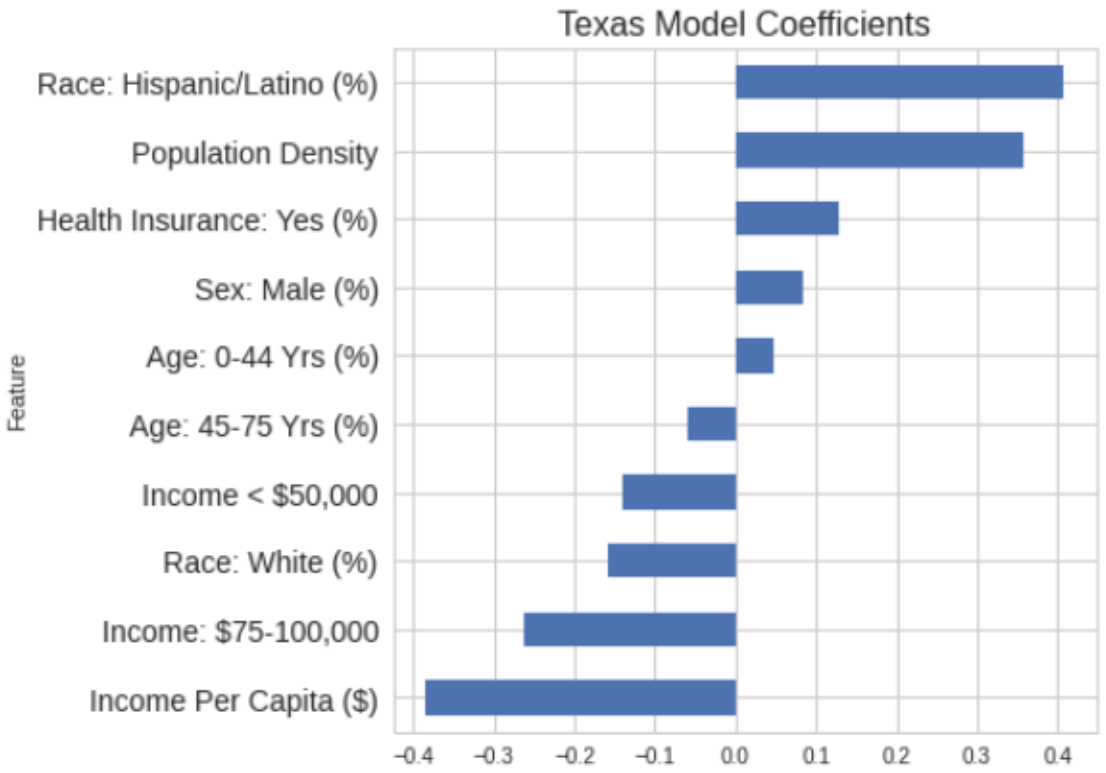


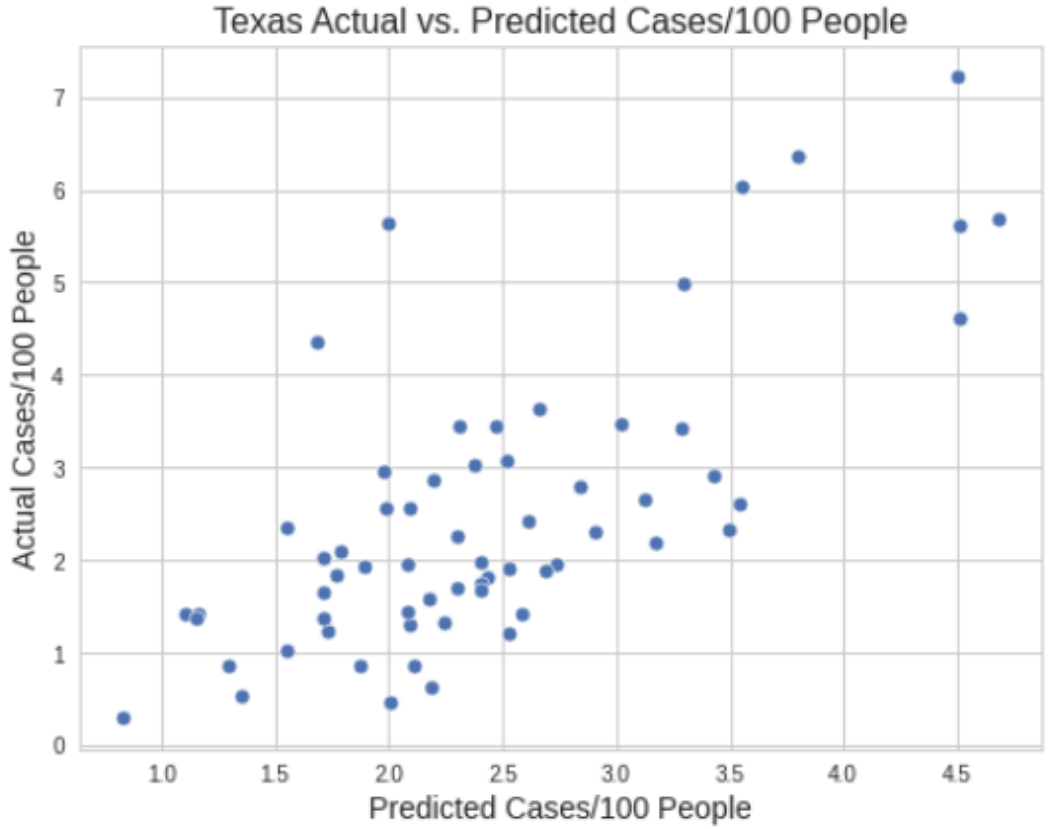
In New York, Race and Age Emerged as Strongest Predictors



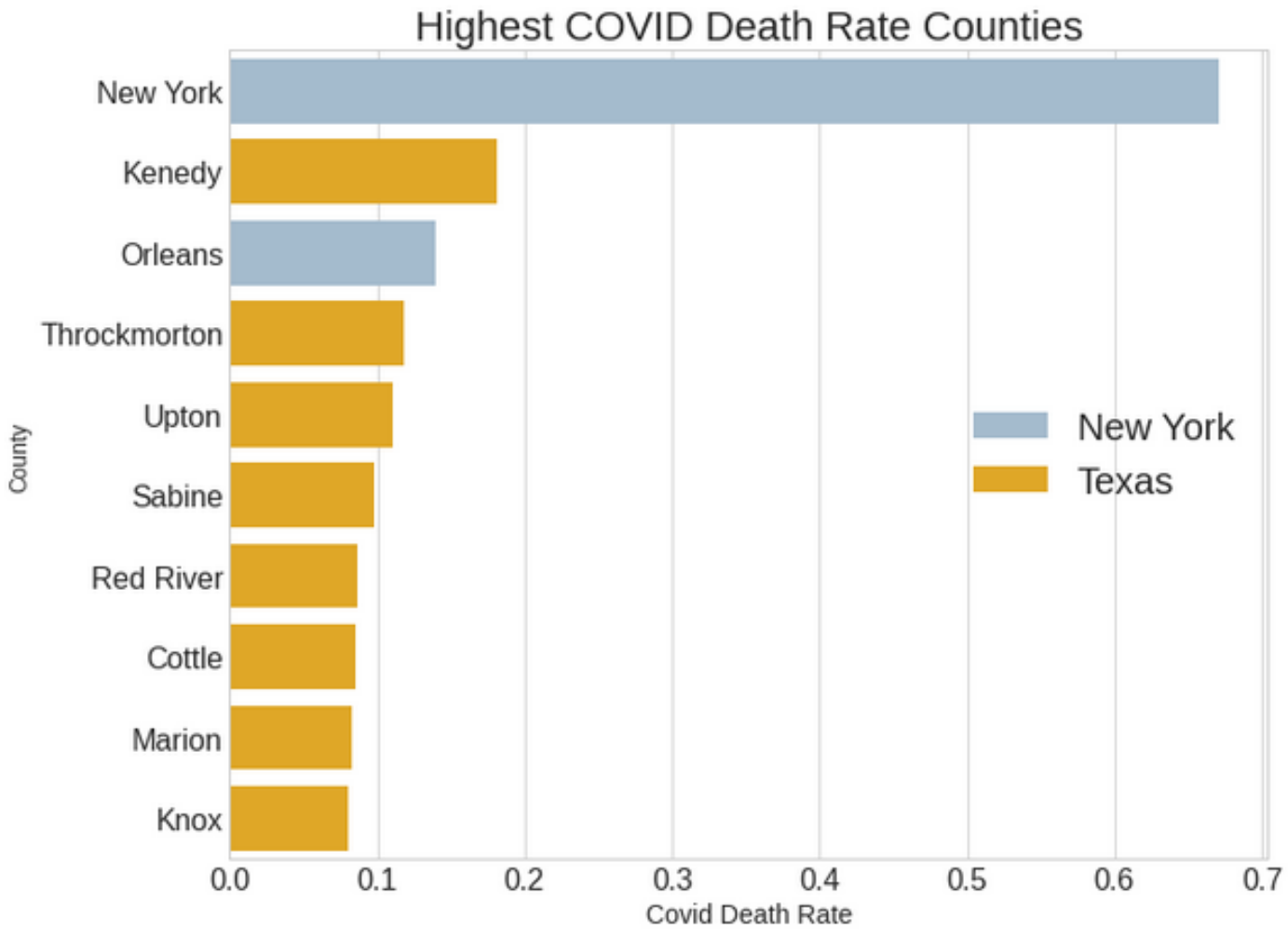


In Texas, Race and Income Emerged as Strongest Predictors

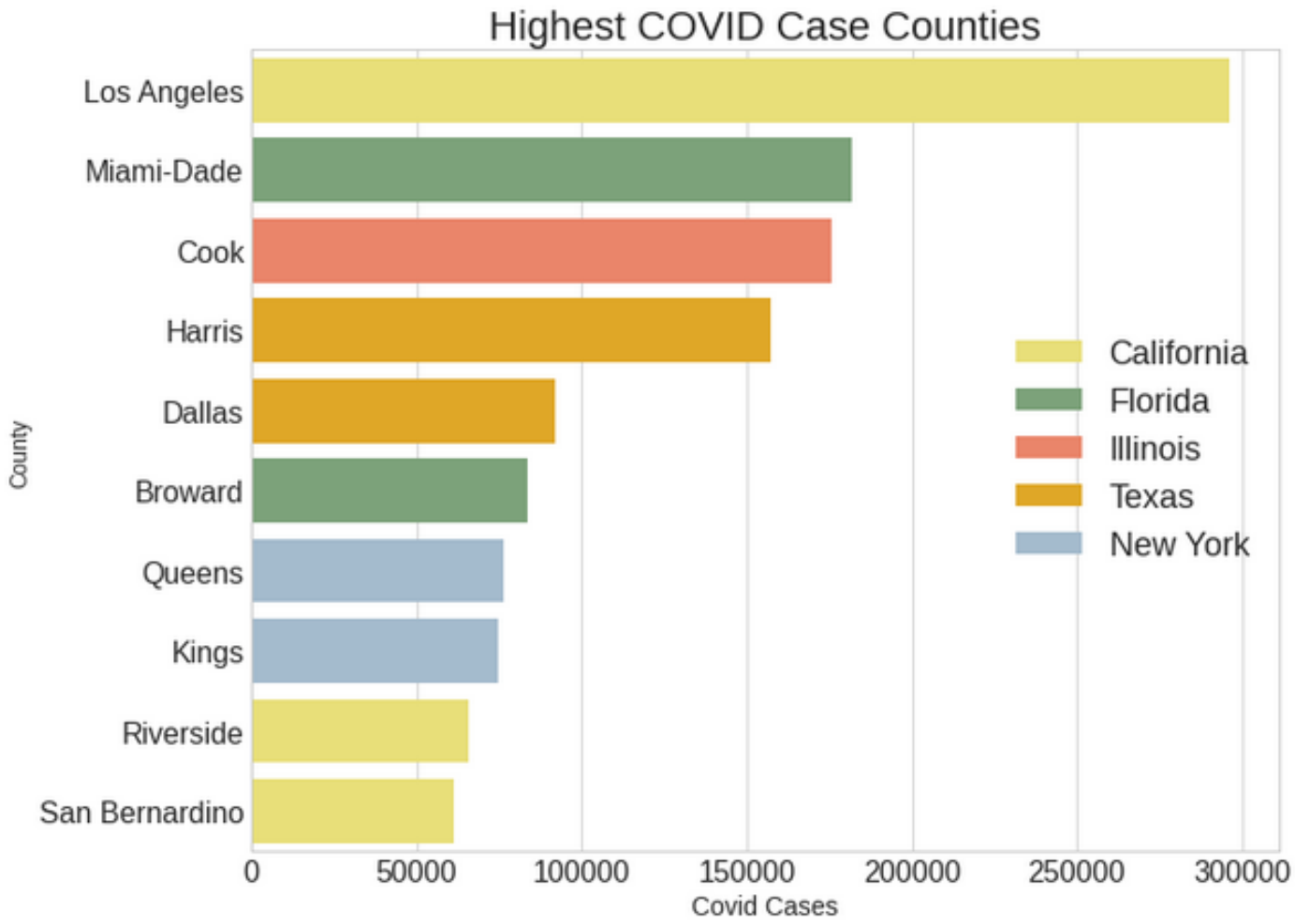




Highest Death Rate Counties



Highest COVID Case Counties Overall



Lowest COVID Case Counties Overall