Health Insurance Coverage Rates and the Opioid Crisis

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Project Summary

Through our project, we aimed to shed light on the opioid crisis that continues to grip the United States. We sought to discover whether health insurance coverage rates and pills per capita volume have an influence on opioid related deaths (ORD's). In addition, we looked for commonalities between county multiple cause of death data. We investigated using linear regression and density based spatial clustering.

Approaches

To distinguish ourselves from others in the field, we elected to merge three distinct, publicly available datasets by county to study ORD's and health insurance coverage rates. In addition, we created a data visualization that allows the user to choose two variables of interest to gain insight into the breadth of the opioid epidemic. This visualization allows the user to do a side-by-side comparison of two variables, such as deaths per 100,000 people and pills per 100 people.

Data

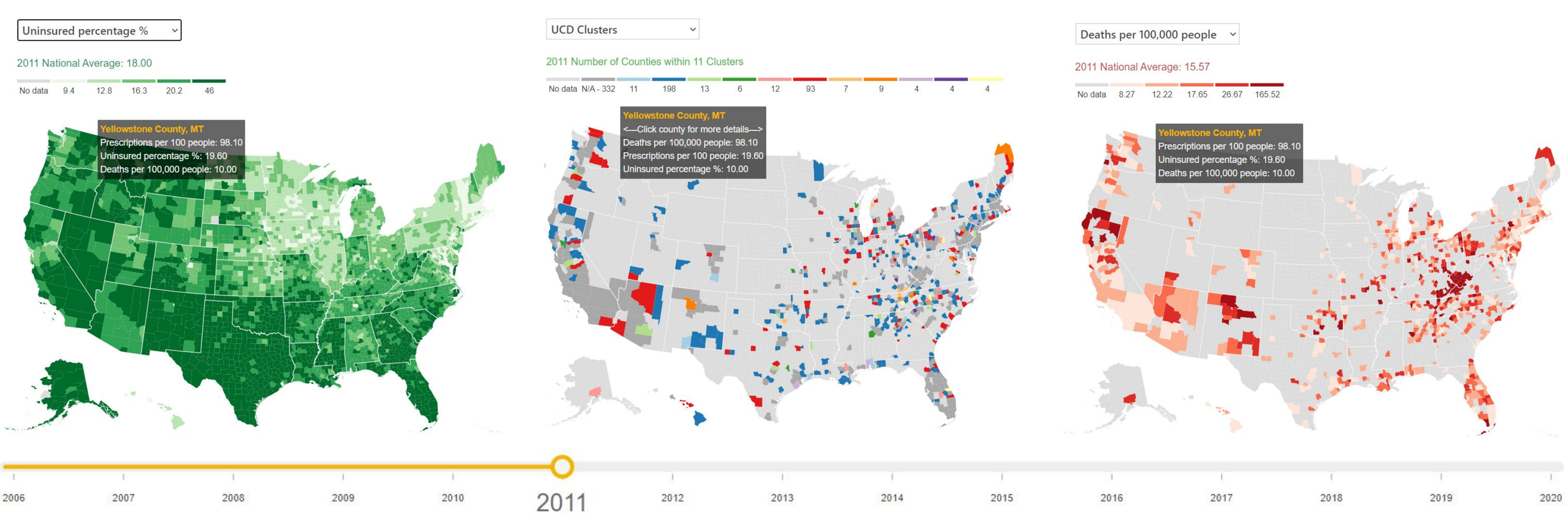
The data from the three datasets was cleaned and loaded into a database on Google Cloud Platform. We have six distinct tables within Big Query: CDC data about pills dispensed, MCD (multiple cause of death), MCD decoded, SAHIE, UCD (underlying cause of death), and DEA.

Experiments

Our experiments involved working with several variables of interest to see how they affected ORD's. We used the interactive map above to compare results.

Results

The opioid crisis is complex, and many of our results were unexpected. One of our main takeaways was that the quality of the data was poor or not present in many counties that we investigated. Additionally, we found that a significant number of deaths that are reported in the data have an unknown cause. When density based spatial clustering was implemented, we found that roughly 50% of the counties were assigned to no clusters. Further research into this topic would be focused on broadening the number of predictors to see if further insights could be gleaned to aid in this ongoing crisis.



Figures 1, 2, 3: Our interactive map compares deaths per 100,000 people, uninsured percentage, prescriptions per 100 people, underlying cause of death clusters, and multiple cause of death clusters in an interactive map that has data from the years 2006 to 2020. A tooltip displays relevant statistics and popout charts display death across genders on a county level.