Module 5 Assignment

Spatial Data

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EAI 6120: AI Communication/Visualization

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Introduction

For this analysis of spatial data, we chose US census data for Annual Population Estimates, Estimated Components of Resident Population Change, and Rates of the Components of Resident Population Change for the United States, States, District of Columbia, and Puerto Rico: April 1, 2020 to July 1, 2021. The dataset contains information of Birth Rates, Death Rates, Immigration, and Immigration Rates. We made the decision to not include the states of Alaska, Puerto Rico and Alaska in the analysis.
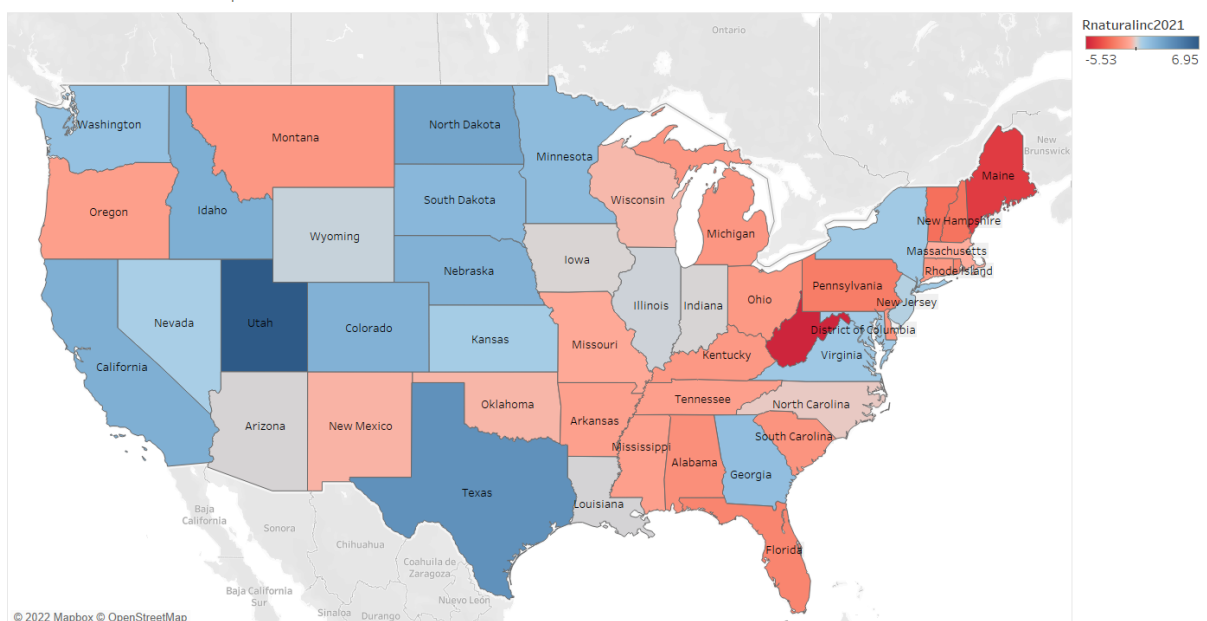
Maps, Themes and Analysis

The first map shows the population of each state in form of a dot plot. I chose this type

of plot as it provides an easy comparison of the population at a glance.
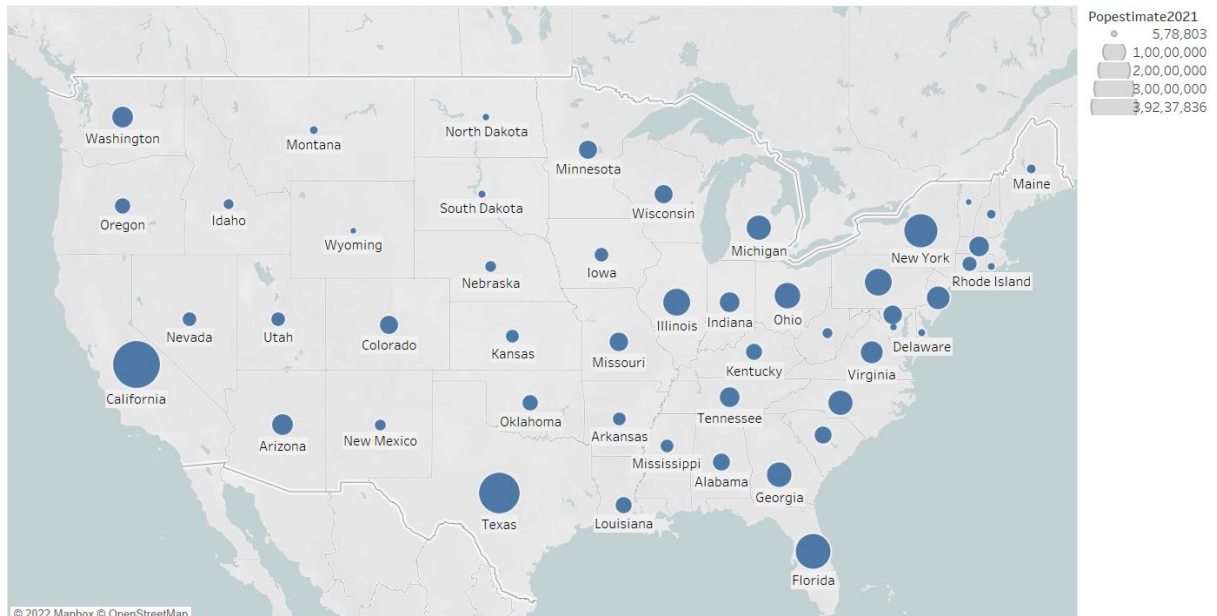
Next, we visualize the change in population due to natural causes. Maine has seen the most

drop in population, whereas, Utah has the most increase due to natural causes.

The total number of births is highest for California and Texas. I chose a dot plot with light

colors for this plot as the difference in numbers is high which translates well to a dot plot and

light colors are due to the theme of birth.
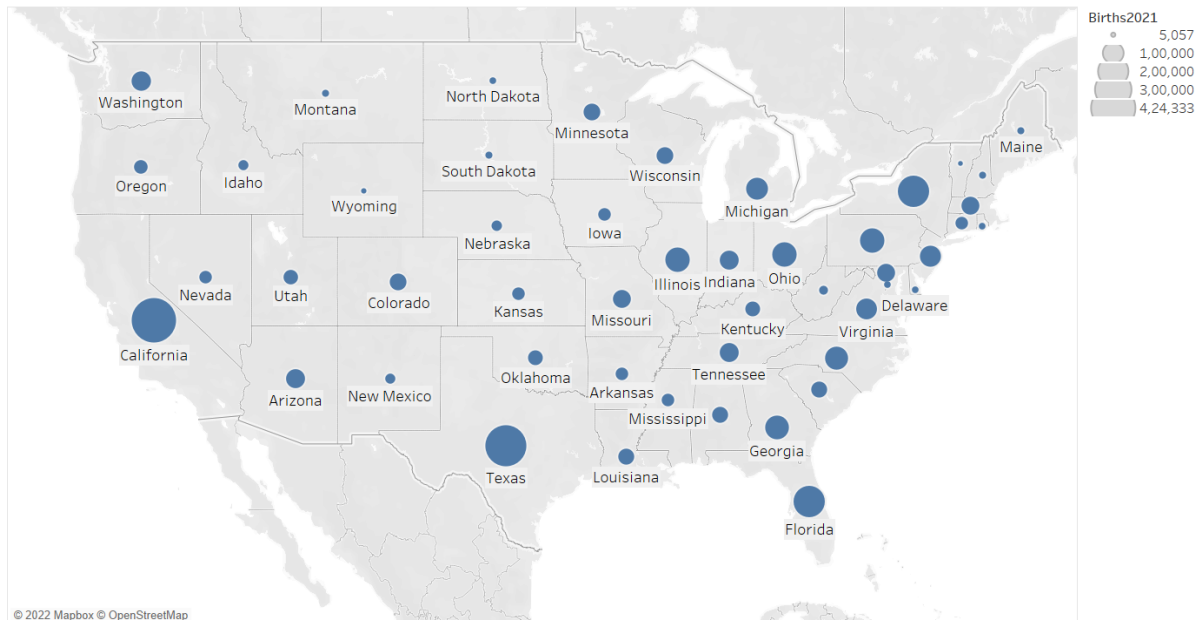
In contrast to the previous plot, if we look at the birth rate per unit of population, it is highest

for the State of Utah. We chose a choropleth map for this as the difference in value is better

visualized in this form.
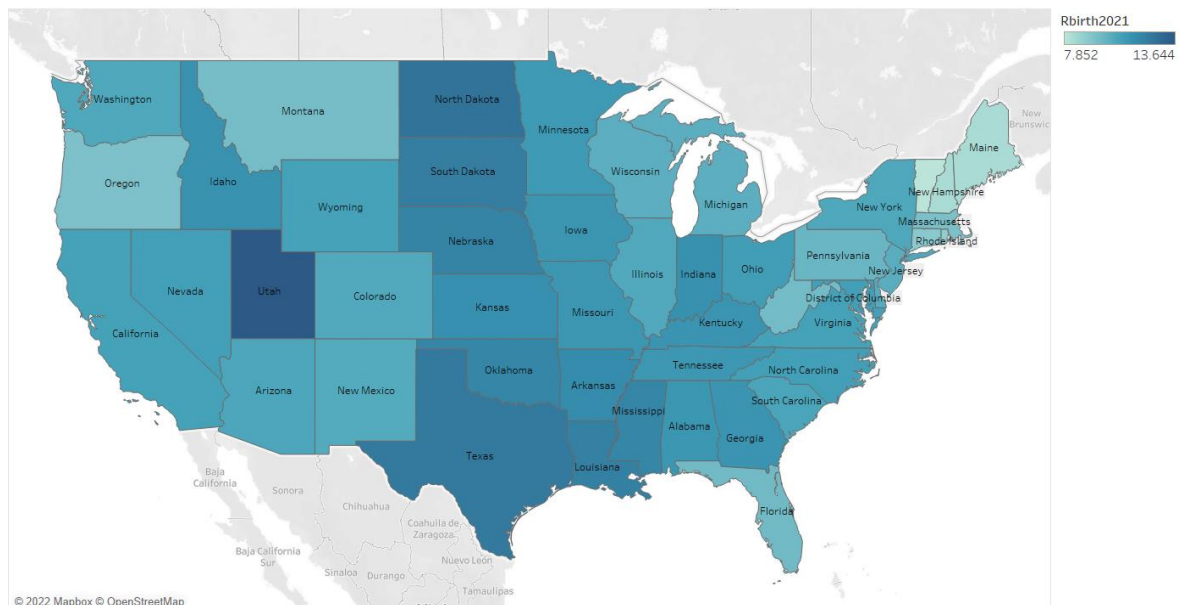
Also considering the number of deaths, we chose a darker them for this one as the topic of death is quite morbid and so the dots of the plot are red colored for danger. This one show California, Texas and Florida and New York having the highest number of deaths.

Total Number of Deaths
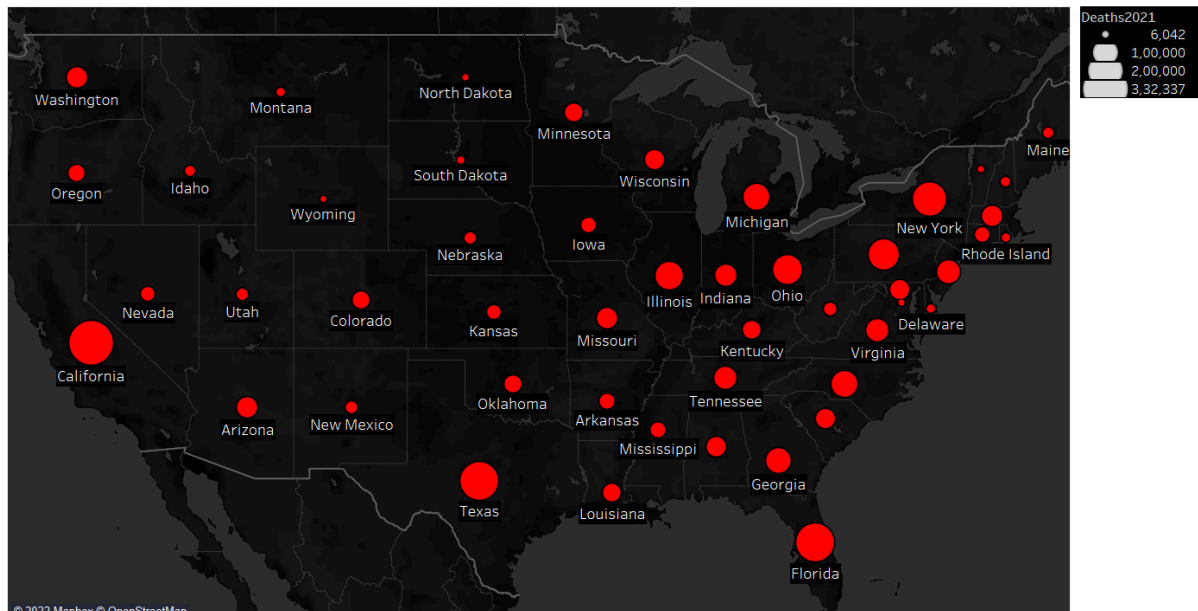
Looking at the of rate, this follows a similar color scheme of the previous one but is in form of a choropleth. This map gives a better idea of death per population of the state. The states highlighted in the previous map have lower values as they also have a high population.

Rate of Death
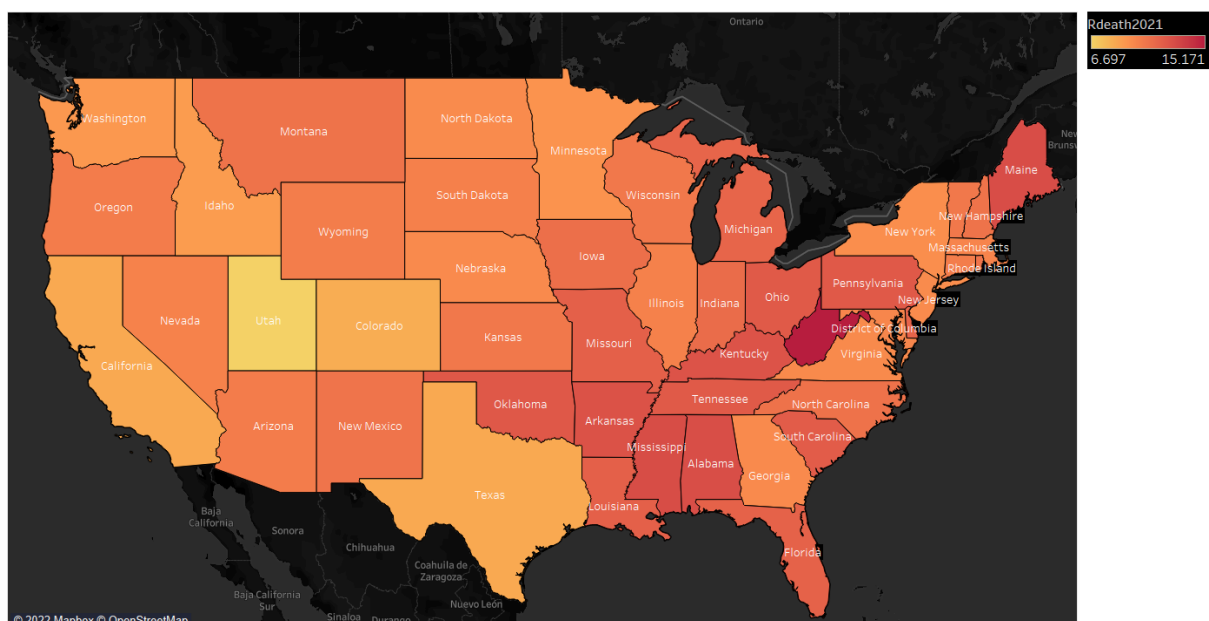
Now, we look at changes in population due to immigration within the country and from outside the country. The maps below show domestic and international immigration respectively.

Rate of Domestic Immigration
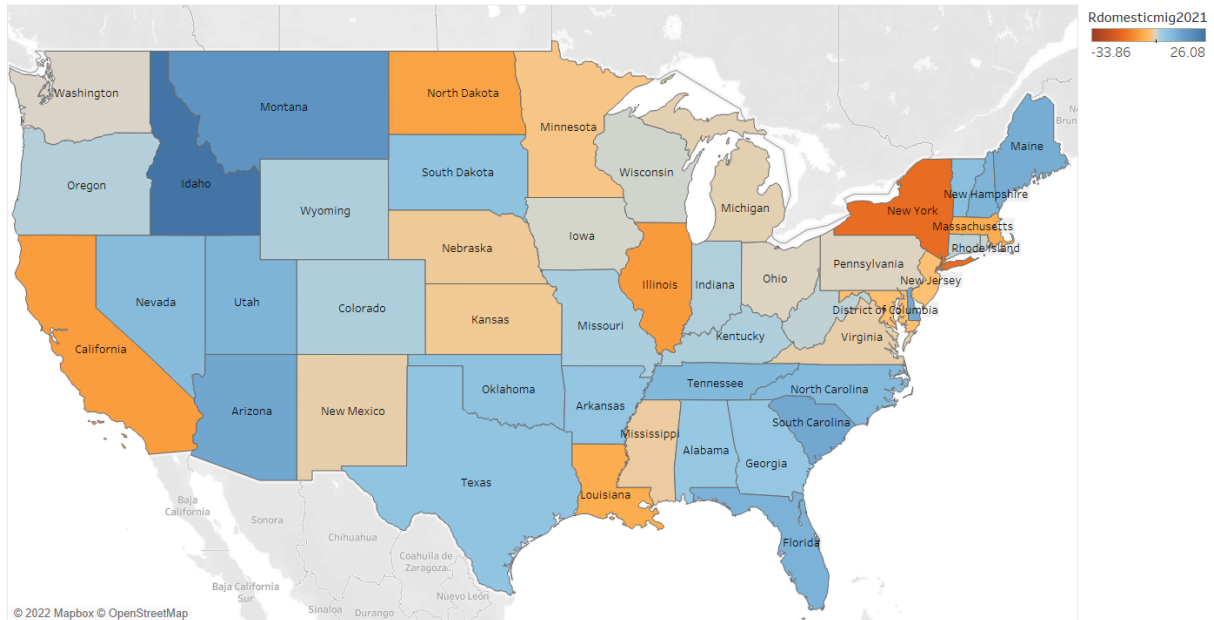
An interesting observation of these two graphs is that domestic immigration varies a lot between positive and negative values, but international immigration is positive. I again used Choropleth and orange to blue gradient to contrast negative and positive values.

Rate of International Immigration
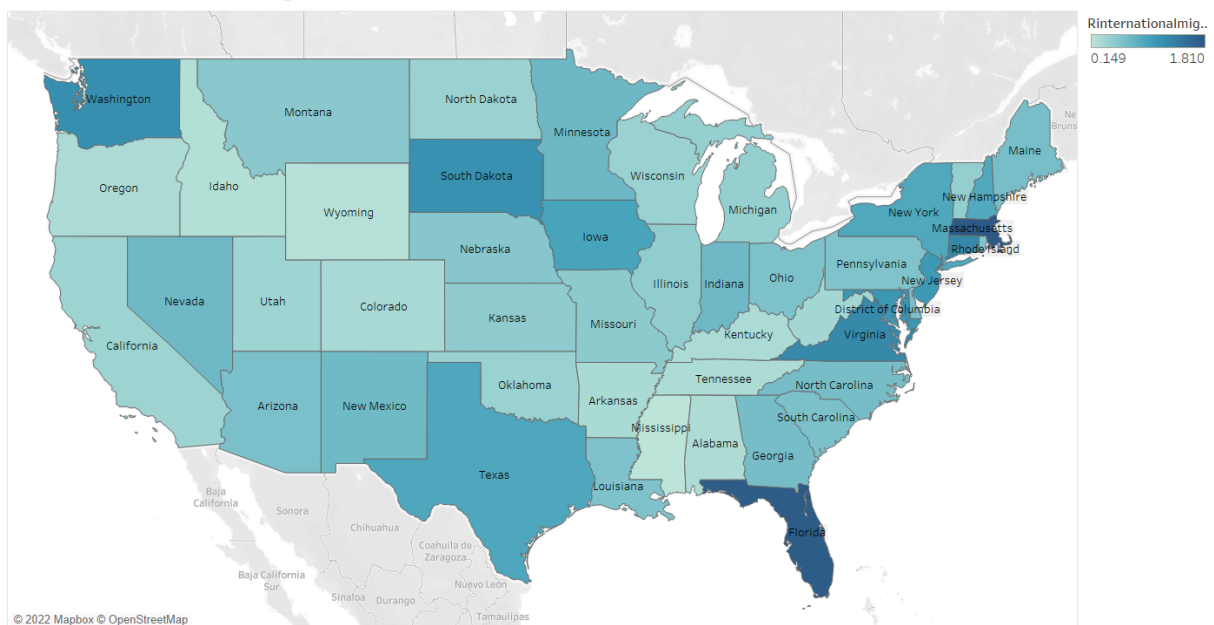
The final map shows the total rate of immigration. California and New York have very high

domestic immigration and as a result the net immigration is pretty high for both states.

Rate of Total Immigration