Applied Statistics & Visualization for Analytics

MID-TERM REDESIGN PROEJCT REPORT

Education Vs Prison Costs and Handgun Homicides by state in USA

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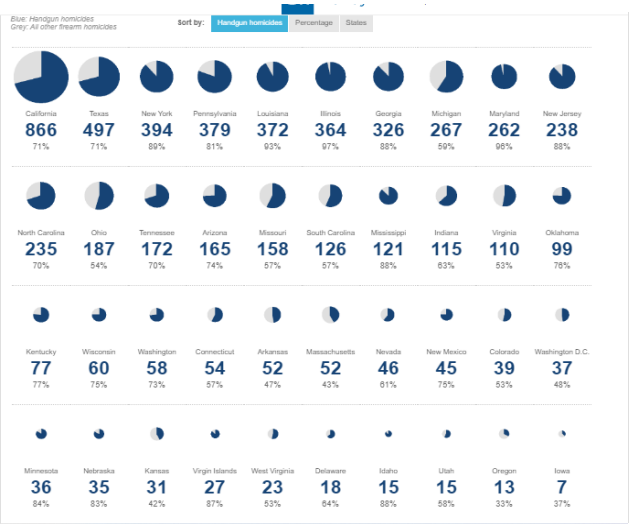
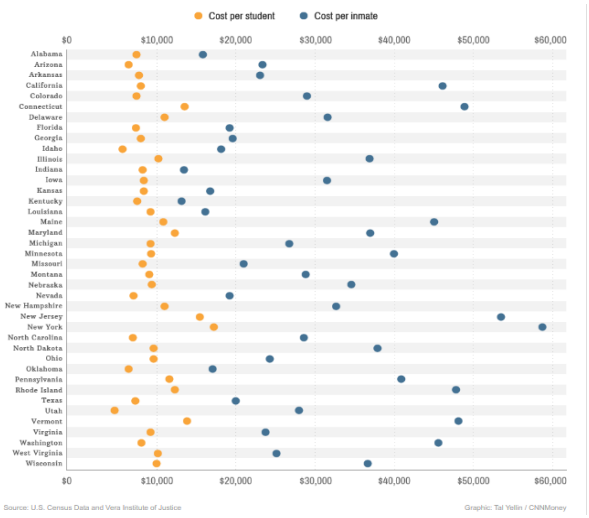
Introduction:

Many individuals across the globe doesn't receive any education and gets addicted towards committing different crimes. Some of them become victim of that crime by getting shotted or by committing suicide. In United States there are 51 states in which many of them doesn't receive any stipend from government to study, but at the same time government spend more amount on an jailer or inmate to feed him, on the same side that jailer might be a student in past who didn't receive any fund to study there by ended up committing crimes. It has been observed that 68% of inmates who receive fund in jail are victims who didn't get help from during their studies.

On the other hand, there are many crimes happening in open public spaces where common people are been shotted to death by these inmates. It has been observed per 1,00,000 population 800 are shot death per quarter in USA, there by that states are still living under poverty. Some states like California, Texas, and East Coasts regions are prone to these handgun homicides. However, few states in Midwest of USA are not affected by these deaths but it can be inferred that funds given to these states remains constant over the year, but eventually the inmate fund was linearly rising over the year, there by keeping this region above the line in terms of poverty.

The original BAD GRAPHS:





Analysis of the above original graphs:

a) From the dot graph (Edu vs Inmate cost), we can only infer that.

- How much amount is funded by government to each student and prisoner for that state.
- The range of amount is not exactly given.

From the bad graph these below things can be extracted, which was not shown in original graph: -

- We can obtain the highest amount given to a student and prisoner for each state and, which state is funded more amount totally, and how is it divided into education cost and prisoner cost, what is the exact ratio.
- It can be observed whether the fund given for both remains constant or increasing over that period.

b) From the pie graph (Handgun Homicides), it can be only inferred that.

- The count of deaths per state due to gun shots and percentage of firearm accidents.

From the bad graph these below things can be extracted, which was not shown in original graph:-

- We can obtain the highest gun rate happened over that period for each state. Rather than concentrating on firearm homicides, we can extract the death count for each state and visualize it in a USA map along with the poverty rate in that state, because it can be generally taught as if poverty rate is more for that state, gun shots can be more as well.

Scope for improvement/ Special efforts:

The data from both the original graphs was extracted and combined. Some data like poverty percentage for each state has been added to the dataset along with us map attributes.

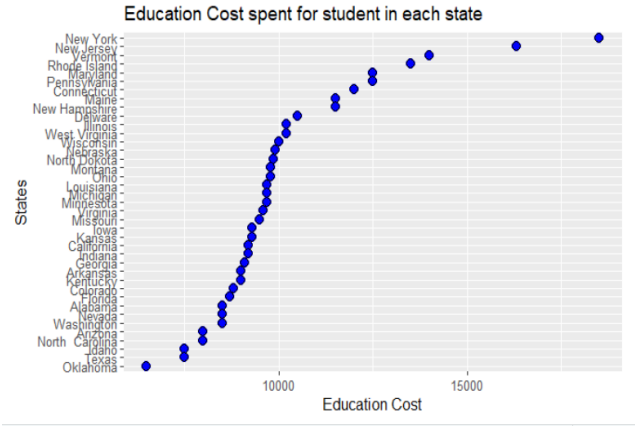
The dataset was created in such a way that dependent and independent values both can be visualized using the Map. [here handgun homicide and prisoner cost can be considered as independent variables when we consider poverty rate as dependent variable because poverty was depending on both handgun and prisoner attribute].

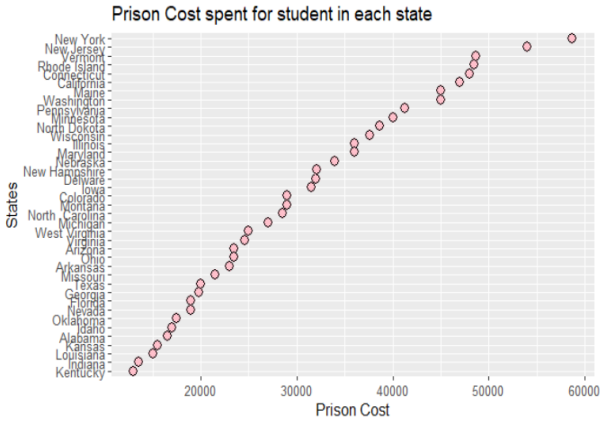
Later on divided the entire map into 4 regions or directions (North east, Midwest, Gulf coast, East Coast). Visualized in each region separately.

Software used:

We used R studio for redesigning the graphs. The libraries used are ggplot2, maps, usmap and dplyr for visualizing the graphs, also used viridis library to fill in colors into the map. Map libraryhas few attributes like state, lat, long and group which can be used for our exact which is extracted from the bad graphs. Therefore, Using all this we have done a simple redesigning project.

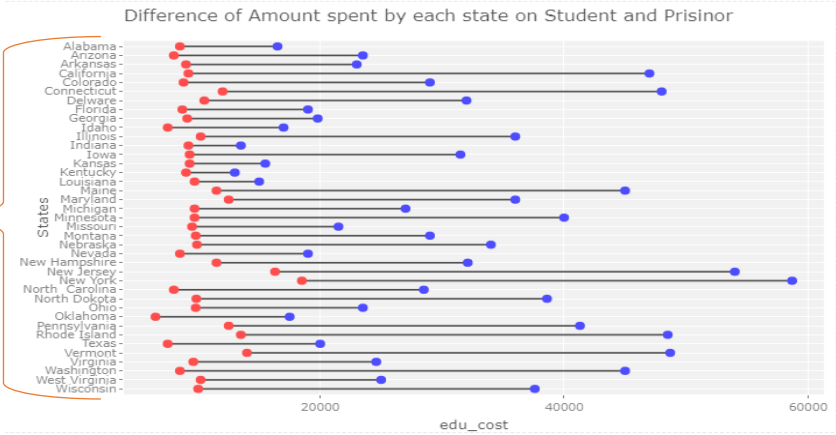
Redesign Graphs:

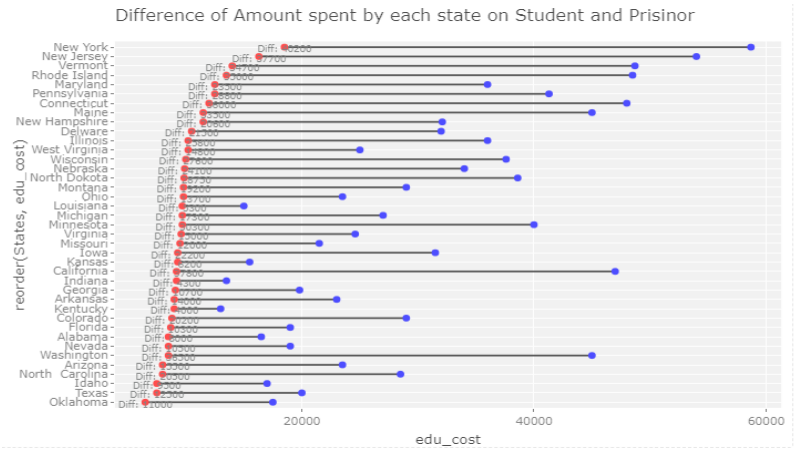




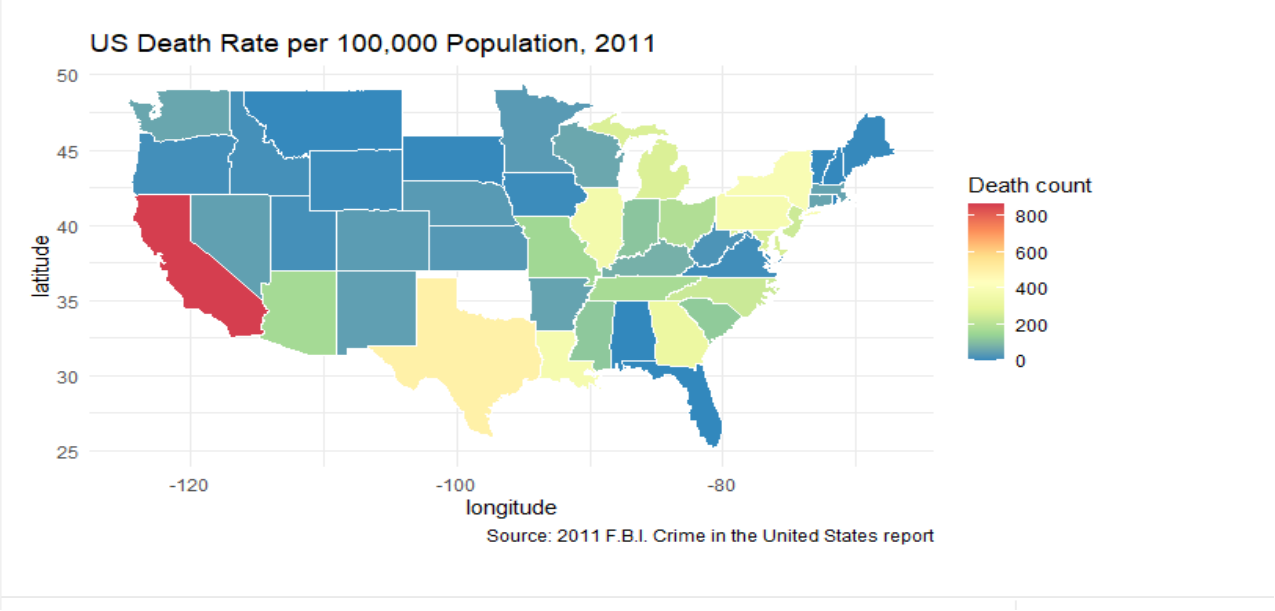
From the above graphs it can be observed that first 4 states received highest funds for education and for inmate, but the difference of funds is quite higher. It clearly shows that more than half of the states didn't receive any funds (<10k), whereas it is quite opposite on the other graph where each inmate at least receives 15k or more than that in each state and the funds for prisoners are always increasing over the same period.

On the other hand, it can be inferred that 50% of states were sponsored less that 30k for students as well as inmate. Similarly, other half of states shows a great bias on education fund and prisoner fund (i.e., if student is given 10k, inmate was given 50k)



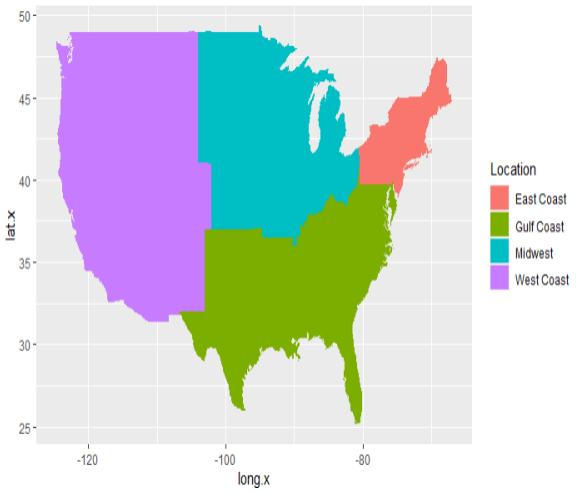


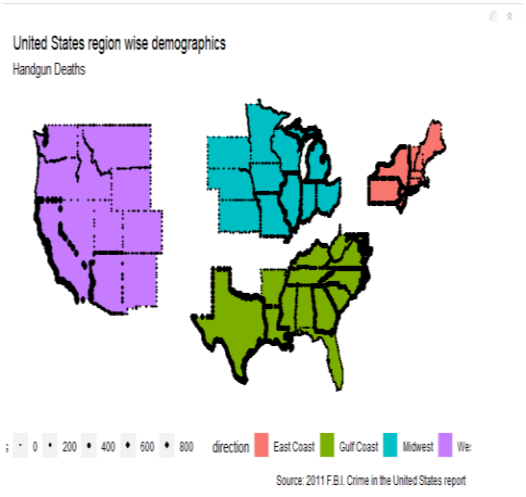
In here the graph shows the difference between the fund given to each state. However, from here it can be only inferred that first four states show no difference in leading, but the other states such as California and Washington are greatly biased in terms of difference also when compared to over graph.



If we had to talk about the death rate or count in each state caused by gun shots. The above graph shows the number of deaths happened in each state. From here it can be inferred that California, Texas and some regions towards east side have high number of counts. Whereas middle region has minimum or have very few deaths happened.

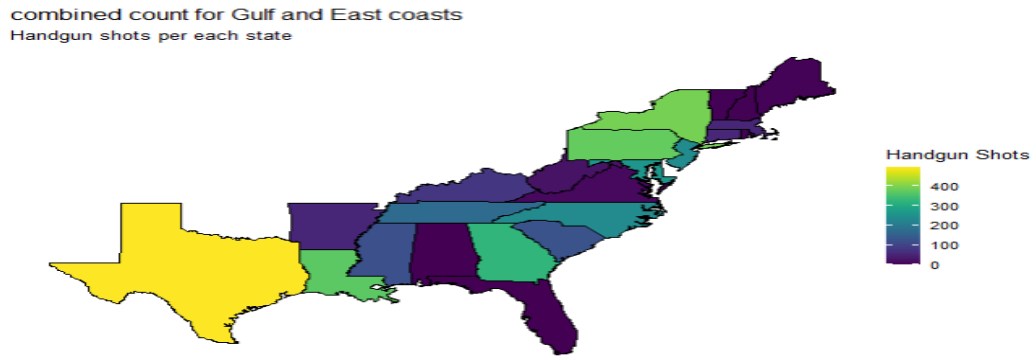
In order to visualize in detail, we have divided entire map into 4 regions and separated then based on their directions.

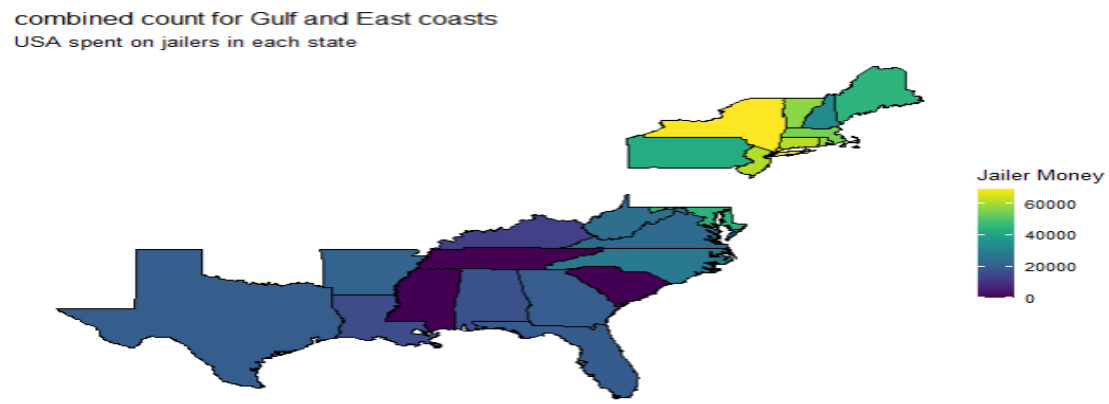




Dots on the right separated represents the death count on the state borders because, the illustration is that thick state borders represent a greater number of gun shots were made compared to the state

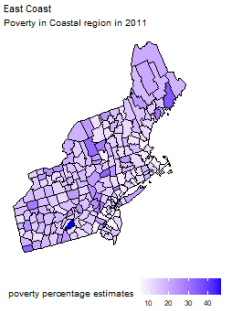
which has thin border. We can also observe that Gulf coast, East Coast have more death count. In order to dig deeper we have separated these two regions.

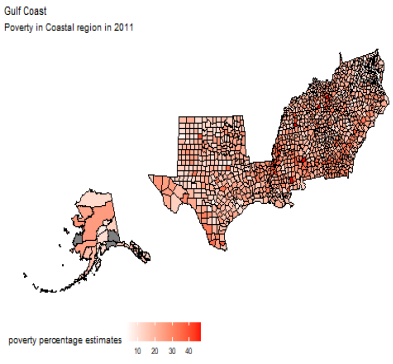




In the above two graphs, the death count is reached peak in Texas and states in East coast has 50% deaths.

On the other hand it can be inferred that each jailer in Texas has received more than 20K whereas, the jailers in east coast has received more than 50k. If we had to talk about poverty in these regions, below graphs shows that poverty in Gulf coast regions is higher compared East coast regions.





Conclusion:

Finally, the data that is extracted and added has been completely utilized to infer the valuable information from the plotted graphs. It can be said that the states in which death counts are high is hit by poverty, on the other side the states in which prisoner cost is high has low education rate and it is greatly biased.

Both regions Gulf and East coast are drastically affected with high crime rate with more funds, more median death rate and vice versa.

References: -

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