

## US Executions Trends in Rate, Demographic and Region

**Research Questions:** Are there any change in trends of execution rate and characteristics (race or age) over time? Are there any demographic correlations with execution rate per state?

The United States of America's justice system reinstated the death penalty in 1976. 1442 people were executed in the United States of America between 1976-2016 for committing murder. My overall aim is to examine race and execution rates through area and time. I wanted to visually show execution rates per state with the categorical variable of *race*. I then wanted to show the trends of execution rate over time through *race* and *age*. Other categories of *method* and *region* were easy to incorporate if needed

I obtained my data set through Kraggle as a CSV file which was a collection from the execution database of the United States Supreme Court, Department of Corrections and NAACP Legal Defence Fund. It was compiled by the Death Penalty Information Centre.

<https://www.kaggle.com/usdpic/execution-database> URL

kaggle datasets download -d usdpic/execution-database API key

### Method

The whole process is quite simple; however, I will acknowledge the steps that I go through were done out of order or with different versions of the same data set, attempted multiple times or in a way too complicated than necessary way. Therefore, I will outline my method in the best order and quickest route for reproduction, without going into too much detail on mistakes.

My first step was removing unwanted columns and reducing it from 17 to 6, just using Excel. The remaining columns were date, age, sex, race, state, region and method. I have a relatively clean data set, which I checked with OpenRefine using the *facet*, *text filter* on each column to avoid inconsistencies. I had to correct the format of the date on OpenRefine so it would display correctly on Palladio. There were no issues in the other columns I needed, so I was able to begin my analysis. I wanted to use Palladio to get a visualisation of population/race on a map using the *Race* and *State* columns. However, the states did not have coordinates, so I had figure out a way to do so.

[This](#) PDF was incredibly useful and helped me understand how to Geocode and use Palladio.

The most time-consuming part was geo-coding. The best method I found was reading the above PDF for guidance and installing a geo-coding program that attached to Excel. I downloaded CDX, obtained the API key then another API key for Bing Maps. But first I had to get addresses to use then convert to coordinates with CDX GeoData. I initially tried to Google coordinates for each state, but Palladio wouldn't recognise them. Nor did I think of finding a separate CSV file of the states' geocodes/coordinates, which would've have saved me an immense amount of time. I used Google Maps to randomly select an address in a central location of each of the 34 states listed. I had opened a new spreadsheet and pasted the *State* column in and created a *Coords* column where I entered the addresses. Then I ran the CDX GeoData Zip Finder and it created a new table.

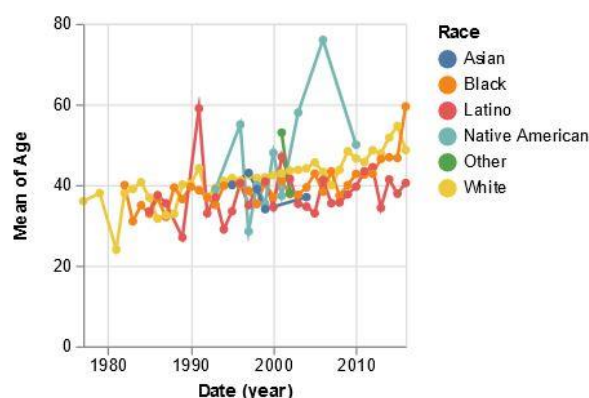
However, my addresses were in one cell per row and had to manually spread them out in the corresponding column (street, town, zip etc) which took a lot of time. I ran it, got my coordinates and pasted them in the *Coords* column and made sure they were in one cell per row, that way Palladio would recognise it.

On Palladio I uploaded my dataset and corrected the format of the date and added a table to the tab *State* with the places/coords CSV. Then I ran the map function, added the *State* as a new layer, ticked sizing and made sure it was using data related to population and place. It worked, and I fiddled with the appearance. I then created the timeline, which was super easy and interactive. Then for another variation of visualisation I used the graph function to show *race* and *state* relationships. I still wanted to show another bit of information using the age category and played around on Voyager. I was able to show population, race and average age over a timeline which I found useful is showing average characteristics and trends.

## Results

Trends in population, race, age over time were shown through various visualisations. My results showed an execution spike in the mid-90's which dropped approximately around 2007 and has slowly decreased. As for racial data, the most notable change was the *white* variable with large increases and decreases. *Black* was relatively consistent, as were the others but all increased during 1995-2007. 1999 appears to show the highest number of executions of prisoners (*white, black, Latino and Native American* sans *others* and *Asian*).

The map demonstrates the overall highest number of executions performed per state, with Texas being the highest. There's a trend of the South-East having the highest number. This can most likely be related to population density rather than a higher percentage of murder rates. However, further research into the percentages of criminals given the death penalty may also indicate a variety of reasons for this higher number. The network graph gives a little more insight into demographic information per state. Lastly, the Voyager graph shows the average mean per race over 1976-2016, with the majority lying in the 40's category. There is an outlier of a Native American aged late 70's. The calculated mean of age is 41.5.



My data showed that white prisoners had the highest rate of execution, double the amount of black, followed by Latino, Native American and Asian populations. This data alone appears to suggest there is no bias towards the prosecution of non-white ethnicities, as I would have presumed. However, my data set does not consider the correlation between race and execution rate and does not reflect the wider demographic population of each state.

We can see that south states, particularly Texas, have the highest amounts of executed prisoners. To demonstrate this with an example, a 2000 Texas census (American Fact Finder, 2000), shows a huge difference in demographic numbers with white being 71% (14,799,505) and black 11.5% (2,404,566). My data shows 19 white and 16 black executed prisoners in Texas during 2000.

If we calculate:

$$X \text{ prisoners demographic} / \text{demographic population in Texas} \times 100,000,000$$

We can see that 1.2 people per 1 million white people are executed, vs 6.6 black people per 1 million that are.

While it may not delve into overall demographics and ratios, it does accurately demonstrate trends of race, age and state related to my research questions. Any further analysis would require additional data or research. It would also have to refine the timeline and/or area, as a timespan would be difficult due to changing population per year.

## **Future Analysis**

Ideally, any further developments with this dataset mentioned above, would be accompanied by any data related to demographics by state or year. From there I would be able to really discuss racial correlations and demonstrate an accurate ratio for a deeper analysis if that is the direction I would take it.

In conclusion, this analysis is useful in aid of research papers about racial issues, socio-economics and justice/legal systems. I emphasise *in aid of*, as it is useful for visualisations and quantative evidence. It is, as discussed, limiting in answering questions such as, motivation for crime, socio-economics, any tangible evidence of racial prejudice (data alone), who sentenced them, who they were and so forth. Added datasets would be required to expand analysis on racial, socio-economics and state/area information. It doesn't answer a *why* but will show evidence to support the *why* and through trends and population.

## **References**

American Fact Finder. (2000). *Profile of General Demographic Characteristics: 2000 more information Census 2000 Summary File 1 (SF 1) 100-Percent Data*. [online] Available at: <https://www.census.gov/census2000/states/tx.html> [Accessed 17 Dec. 2018].

Palladio Tutorial <https://cpb-us-w2.wpmucdn.com/blogs.baylor.edu/dist/7/7192/files/2015/12/Palladio-160pp6r.pdf>