Analysis of Hate Crime

By: Patrick, Rohan, Sophia, Jason, David

Context

According to the FBI's 2021 hate crime statistics, hate crimes in the U.S. rose by 11.6% from 2020-2021

Our aim is to:

State what factors are most predictive of hate crimes

Show why this problem is significant to the general public

Determine effective strategies to control hate crime rates

Q1 : Qualitative thoughts

We are approaching this data as a government agency
Our goal is to identify factors that relate to hate crimes across the country

Questions

- How do hate crimes vary across states?
- How does the percentage of non-white adults with a high school degree relate to average hate crime rates?
- How is the Gini Index correlated with hate crime rates?

Q2 : Data

Our group decided to use the hatecrimes.csv provided through Canvas

There were 51 observations given.
Some observations had NA values. We tried to find data online to fill in the blanks, but were unable to, so we omitted those observations and were left with 45.

We have 12 variables in our dataset that are shown below:

State	Median household income	Gini-index	Hate crime per 100k
Share of population that is unemployed	Share of the population that is non-white	Share of the population that are non-citizens	Share of the population that voted for President Trump
Share of population that obtained a highschool degree	Average annual hate crimes per 100k	Share of white residents living in poverty	Share of population that resides in metropolitan areas

Q2: Data continued

- Our data was gathered from: The Kaiser Family Foundation, Census Bureau, United States Elections Project, and Southern Poverty Law Center

- Method: By using R studio we imported and analyzed the hate crime data set. We tried looking through databases to fill in our NA values, but were unable to. We ended up removing the states that had NA values in the dataset.

Q2: Data Summary 1

MDS Plot of Hate Crimes

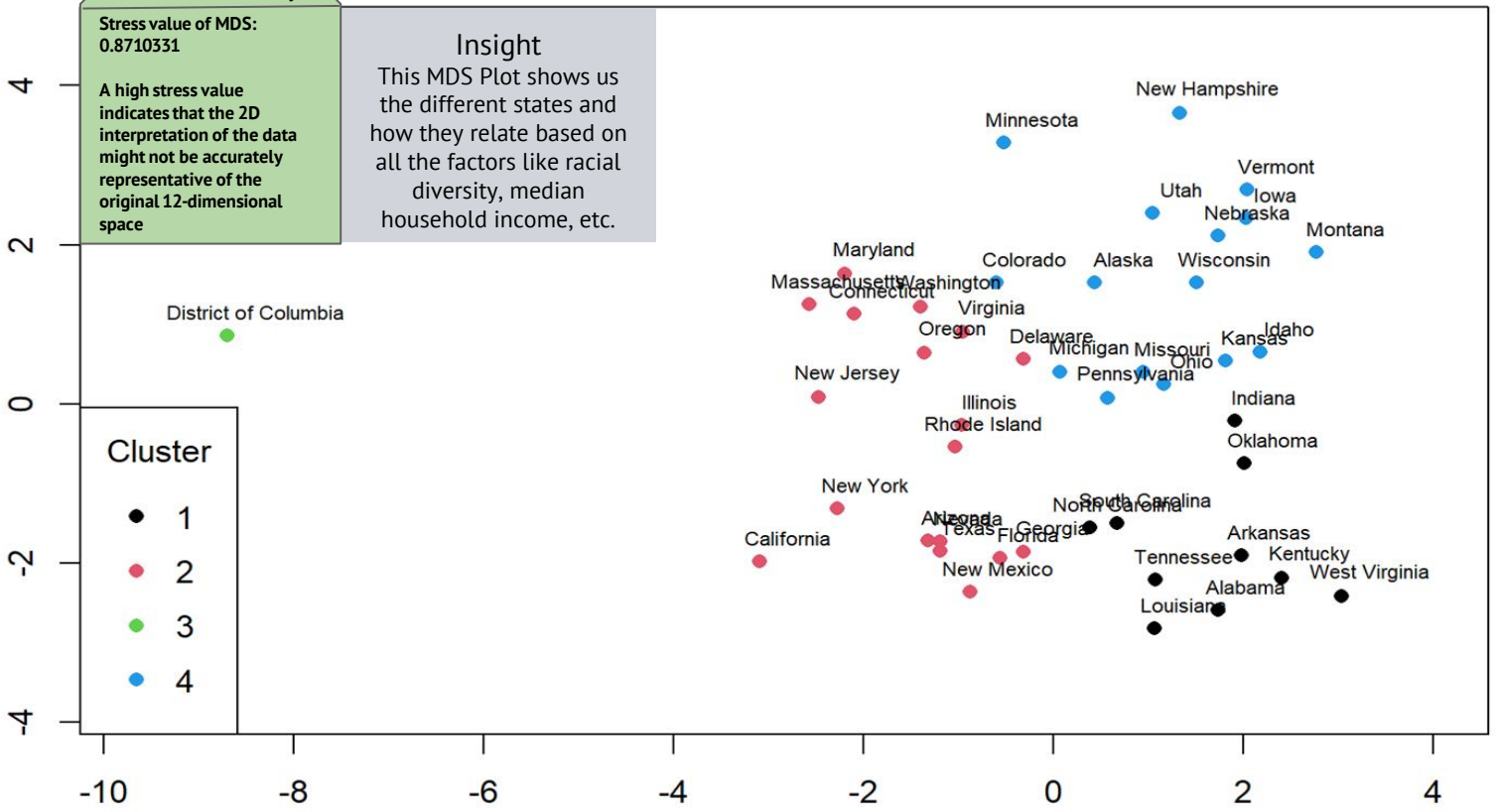
Numeric Summary

Stress value of MDS: 0.8710331

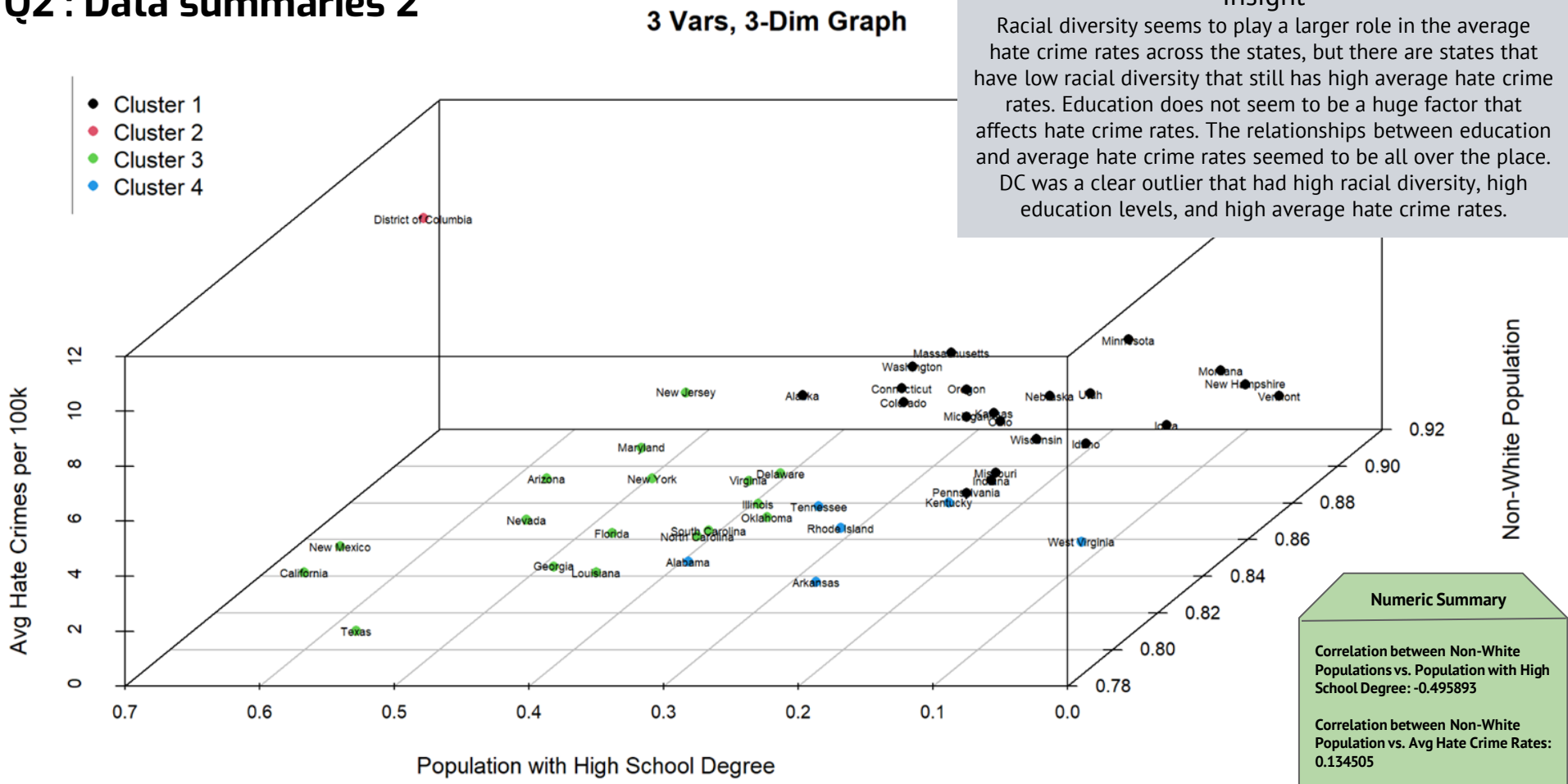
A high stress value indicates that the 2D interpretation of the data might not be accurately representative of the original 12-dimensional space

Insight

This MDS Plot shows us the different states and how they relate based on all the factors like racial diversity, median household income, etc.



Q2 : Data summaries 2



Insight

Racial diversity seems to play a larger role in the average hate crime rates across the states, but there are states that have low racial diversity that still has high average hate crime rates. Education does not seem to be a huge factor that affects hate crime rates. The relationships between education and average hate crime rates seemed to be all over the place. DC was a clear outlier that had high racial diversity, high education levels, and high average hate crime rates.

Numeric Summary

Correlation between Non-White Populations vs. Population with High School Degree: -0.495893

Correlation between Non-White Population vs. Avg Hate Crime Rates: 0.134505

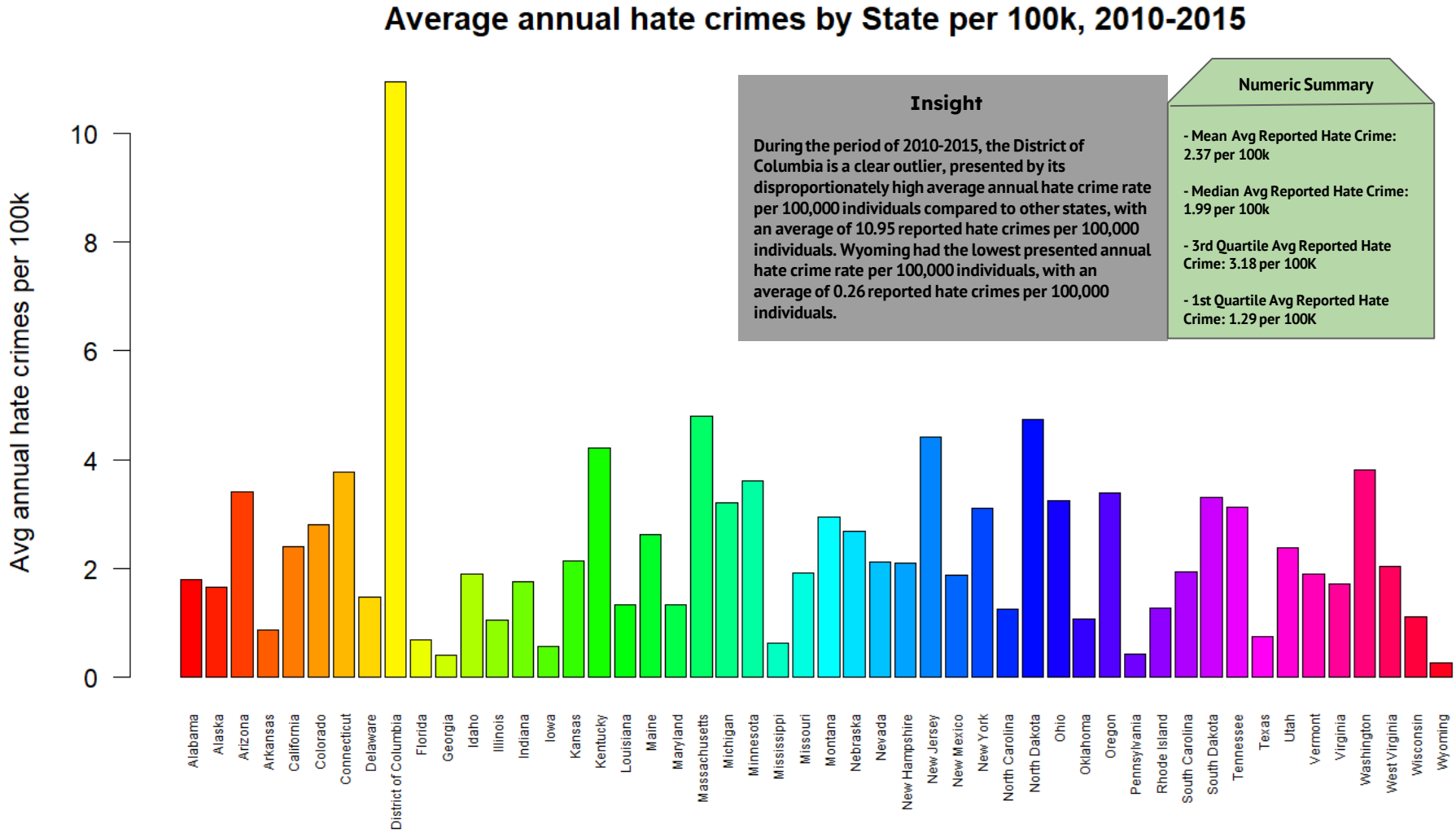
Population with High School Degree vs. Avg Hate Crime Rates: 0.140568

Correlation Coefficients for 3 Variable Graph

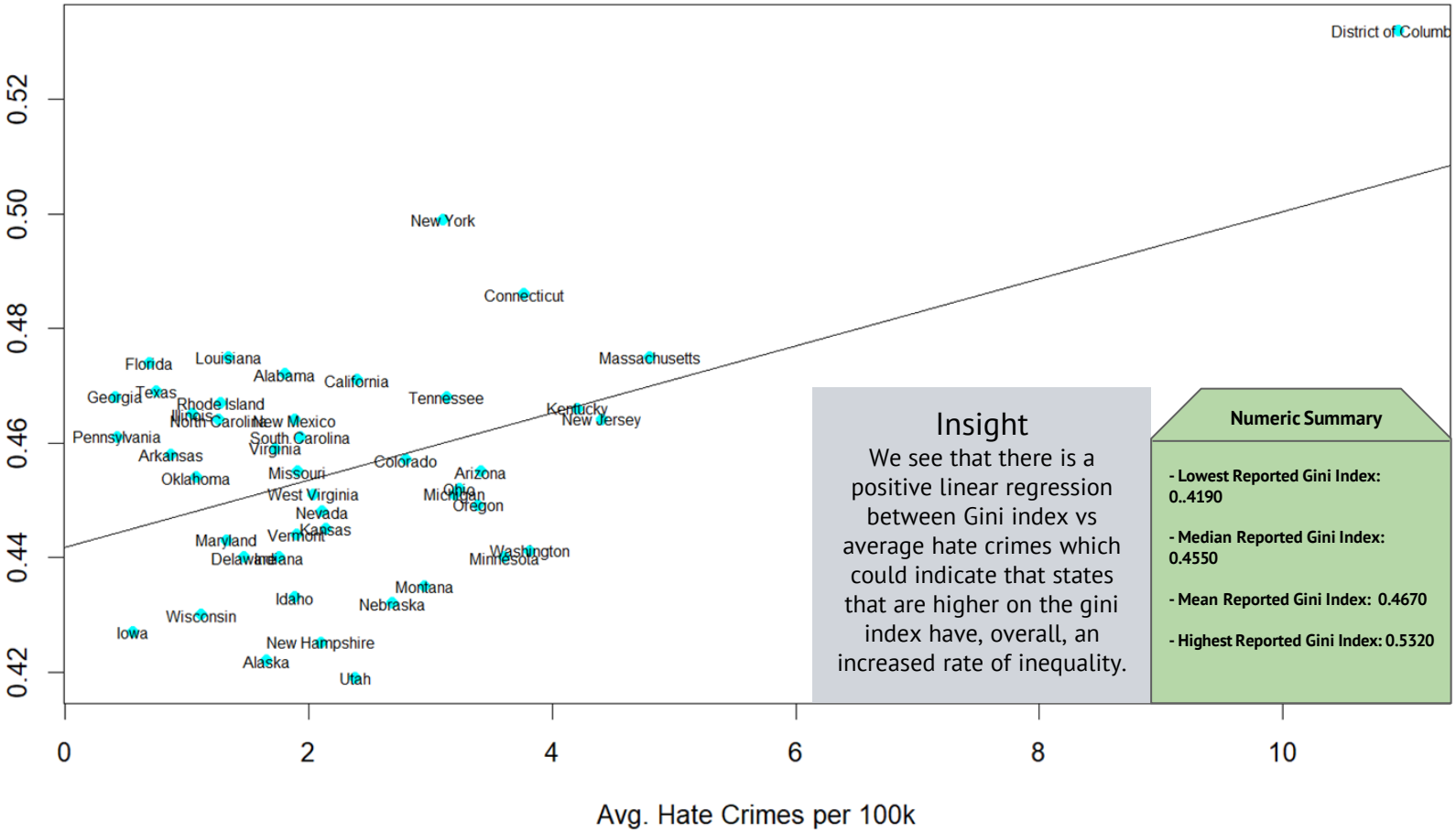
$0 \leq r \leq 1$	Positive correlation between variables
$-1 \leq r \leq 0$	Negative correlation between value
$r = 0$	No correlation at all

Variables	Population of Non-White Residents	Population w/ High School Degree	Avg. Hate Crimes per 100k
Population of Non-White Residents	1.00000	-0.495893	0.134505
Population w/ High School Degree	-0.495893	1.00000	0.140568
Avg. Hate Crimes per 100k	0.134505	0.140568	1.00000

Q2 : Data summaries 3



Gini Index vs. Avg. Hate Crimes per 100k



Insight

We see that there is a positive linear regression between Gini index vs average hate crimes which could indicate that states that are higher on the gini index have, overall, an increased rate of inequality.

Numeric Summary

- **Lowest Reported Gini Index: 0..4190**
- **Median Reported Gini Index: 0.4550**
- **Mean Reported Gini Index: 0.4670**
- **Highest Reported Gini Index: 0.5320**

Q3 : Qualitative thoughts

Reflection

- DC was a major outlier
- The relationship between gini index and average hate crimes per 100k was not as linear as we had expected
- East Coast states seemed to have higher hate crime rates

Potential Limitations

- Compare highly populated cities instead of entire states
- If we excluded D.C. our results could be different
- If our dataset had all the information, our analyses could've been different

Conclusion

Mitigating hate crimes in America requires a unique and delicate approach involving individuals, communities, law enforcement, and policymakers.

In order to further understand the relationships between factors and be able to pinpoint major issues, further research and analysis must be done

To find a solution to our problems we must encourage the reporting of hate crimes by making reporting procedures more accessible and confidential

Advocate for clear guidelines on hate speech and misinformation on social media

Virginia Tech does a good job encouraging community organizations to celebrate diversity and promote understanding. Let's make sure the organizations we are apart of in the future uphold the same values!

Thank you!