

LAW & ORDER

SQL

THE TEAM

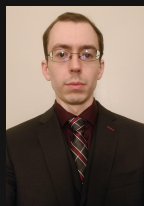
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RESEARCH QUESTIONS

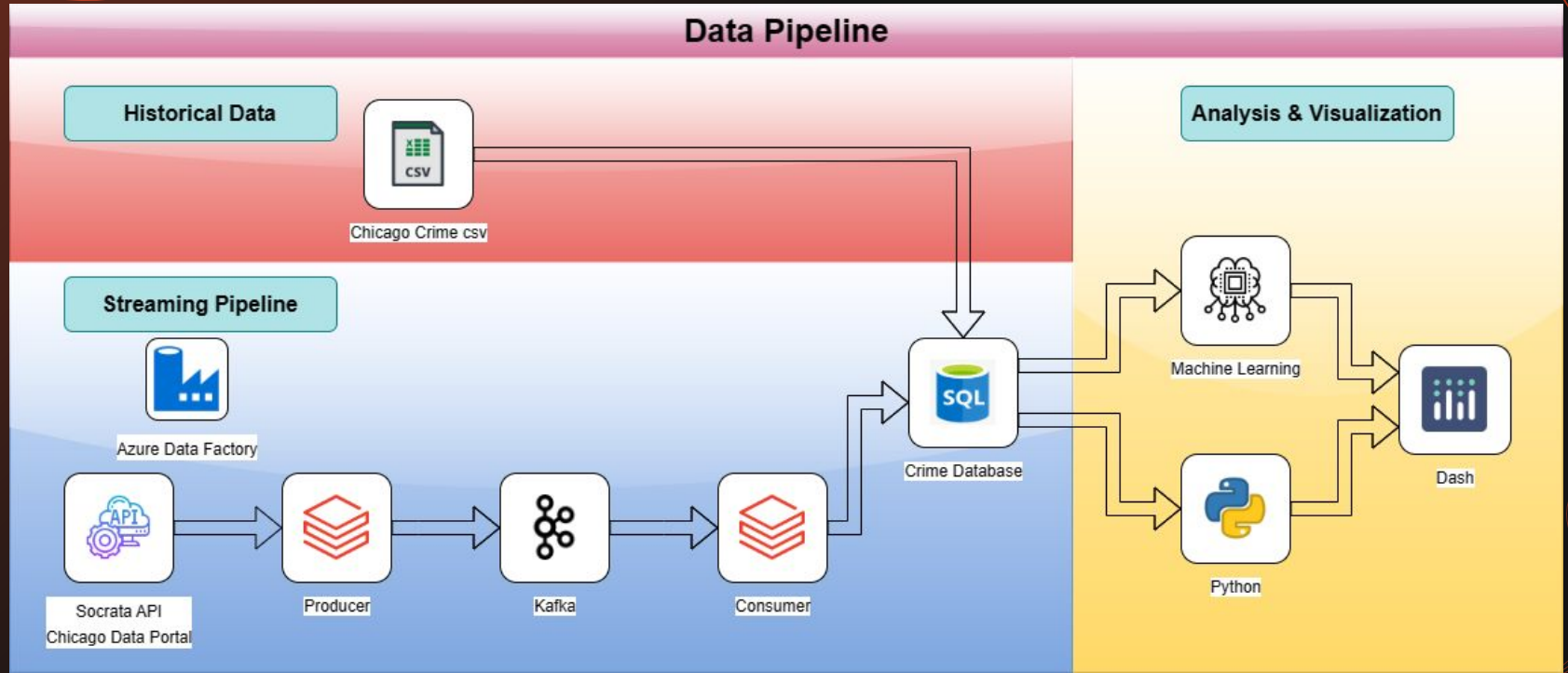
1. Has crime in Chicago increased or decreased over the last decade?
2. How has crime in Chicago affected education and students?
3. Do students feel safe in Chicago public schools?
4. Is there a correlation between reported crime in Chicago and behavioral issues (i.e., misconduct, suspensions, etc.) within the Chicago public schools?
5. What effect has crime in Chicago had on the safety, academic performance, and behavior of students?
6. Are graduation rates at Chicago schools affected by crime in those areas?
7. Are there any connections between students' demographics and the reported misconducts?

DATA

Data we used:

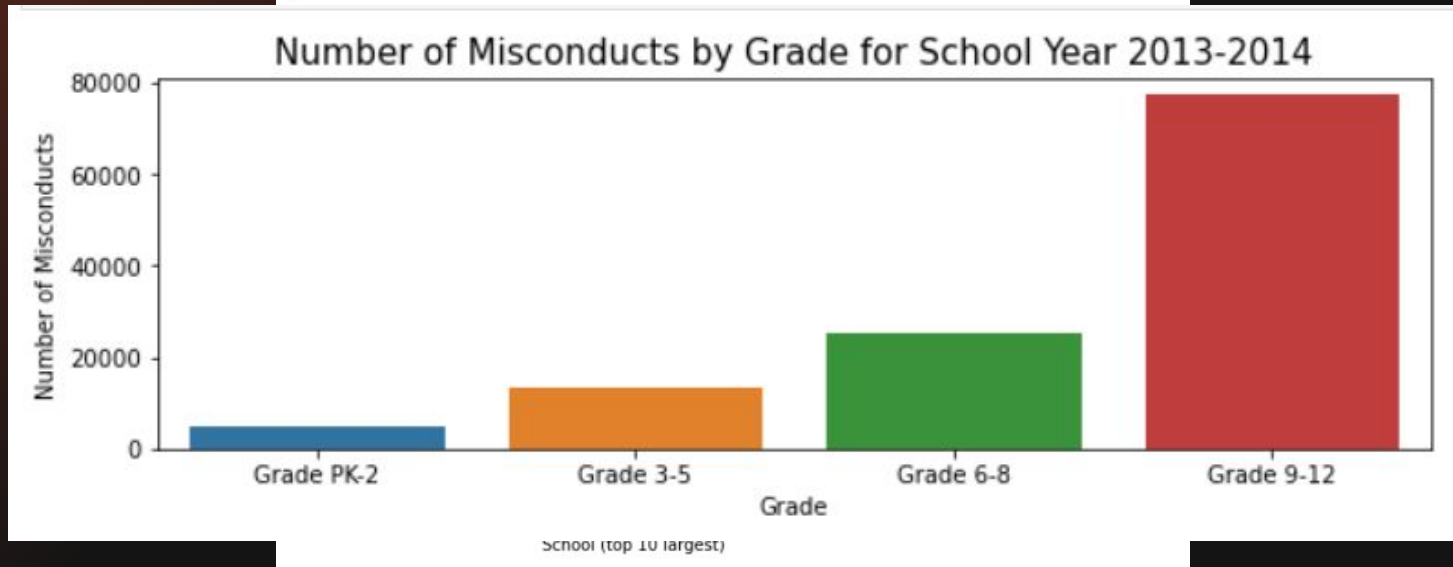
- Chicago Public Schools Profile Information School Year 2022-2023
- Chicago Public Schools - Progress Report Cards (2011-2012, 2022-2023)
- Chicago Public Schools - Metrics (cps.net)
- Crimes (2013-2023) City of Chicago Data Portal

DATA PIPELINE



EXPLORATORY DATA ANALYSIS

- Visualizations within Chicago Data Portal
- Cleaning - remove columns, create aggregate columns, subsets, check for nulls
- Merging



TIME TO LOOK AT THE EVIDENCE



MACHINE LEARNING

Full data set shape: 15,093,883 rows and
37 columns

Test data set shape: 15,093 rows and 37
columns

Initial Model: Linear Regression

Training Accuracy: 0.472

Testing Accuracy: 0.453

Mean Cross-Val Score: 0.45

Root Mean Square Error: 409.99

Final Model: XGBRegressor

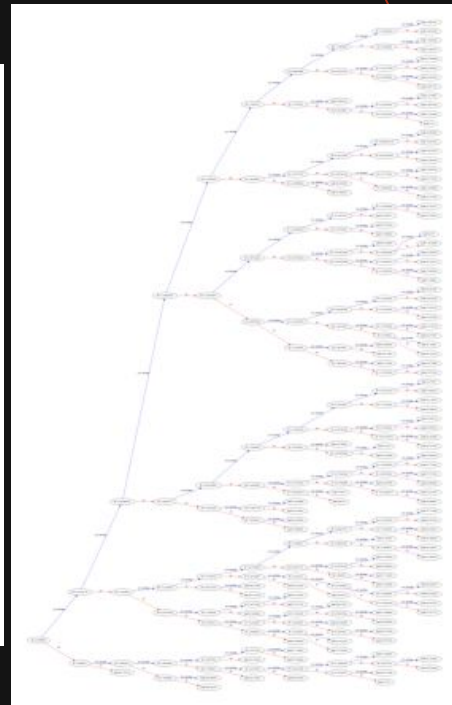
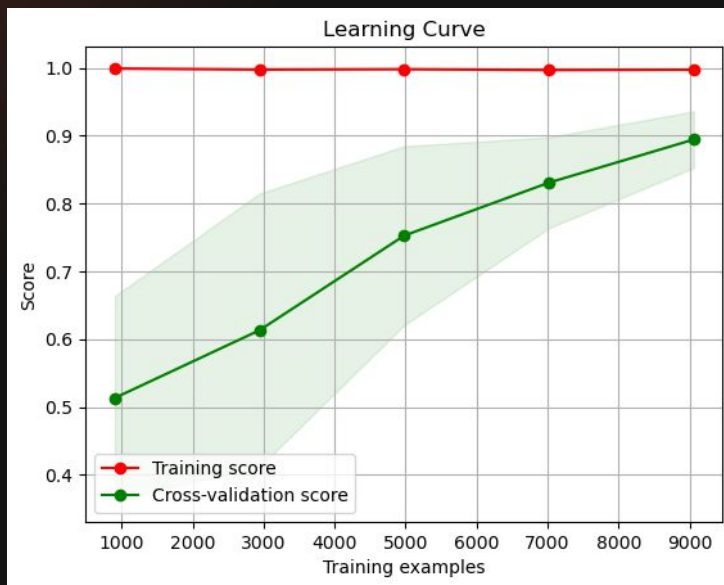
Training Accuracy: 0.997

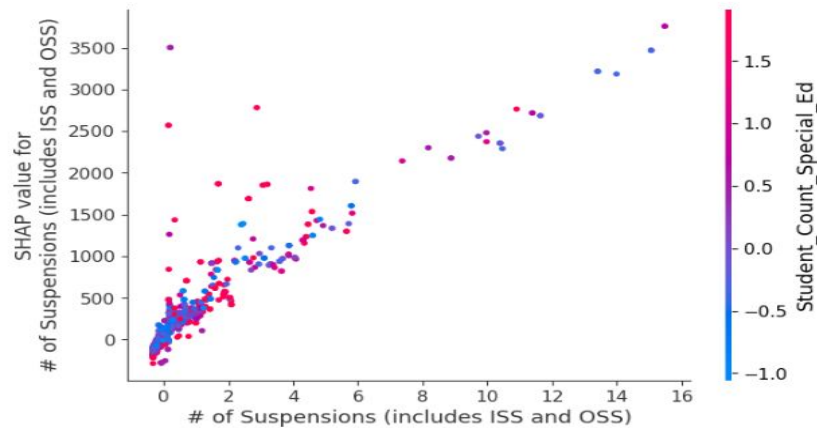
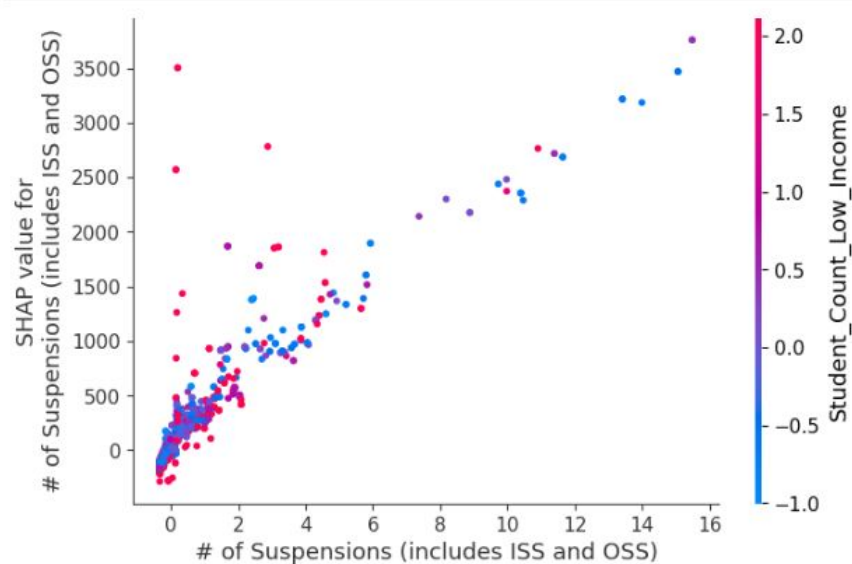
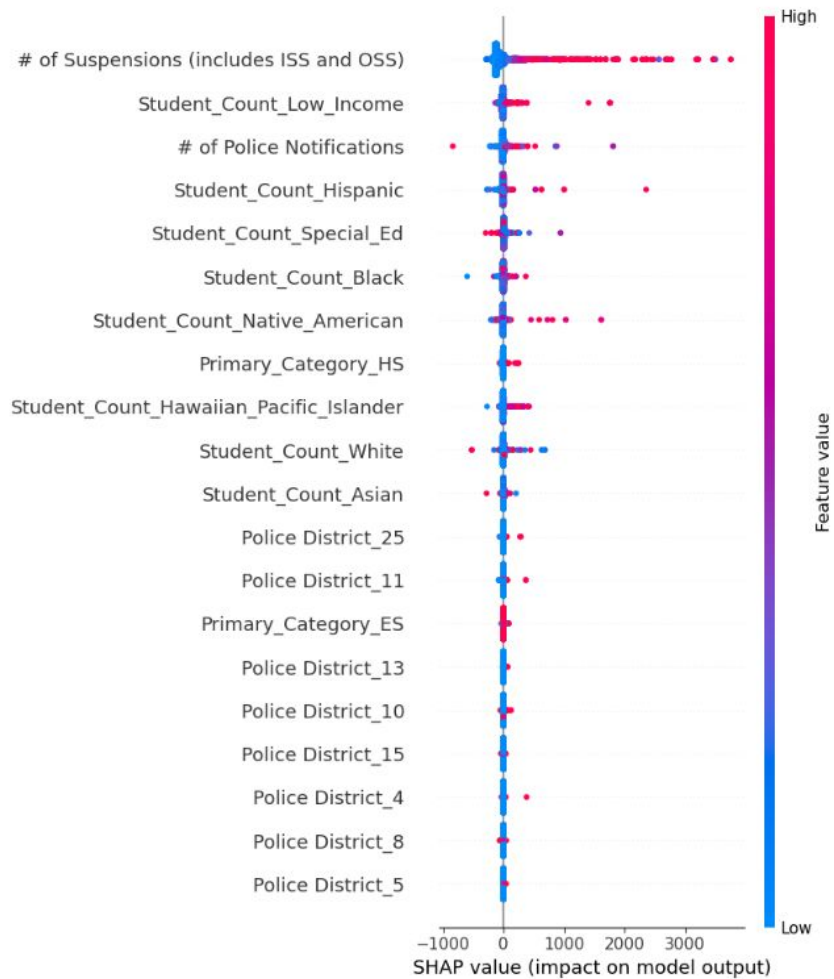
Testing Accuracy: 0.978

R-Squared: 0.978

Mean Cross-Val Score: 0.89

Root Mean Square Error: 82.32





CONCLUSIONS

- Crime in Chicago is generally decreasing in frequency in Chicago.
- Certain crimes like motor vehicle theft and assault are experiencing increases in frequency.
- Homicide rates are high but still on a downward trend.
- Students overwhelmingly do not feel safe in Chicago public schools.
- There is a small, negative correlation between number of crimes and graduation rates.
- There is a moderate, positive correlation between number of crimes and number of misconducts and suspensions in schools.
- The data suggests that crime in Chicago does have some effect on the safety, performance, and behavior of students in Chicago public schools.

QUESTIONS?

For any additional questions, comments, or concerns, please contact us at:

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Feel free to check out the full project at: <https://github.com/CMatador/capstone>

DASH

Topics

Click on each topic to find relevant visuals related to each topic.

Home

Crime in Chicago

Education

Machine Learning

Crime and Education in Chicago

Examining Crime and its Possible Effects on Education and Students in Chicago Public Schools.

Infamously known as 'Chiraq', Chicago's reputation as a violent, crime-infested city precedes it. But is crime in Chicago truly that concerning? This project explores crime in Chicago by analyzing crime statistics to understand crime trends in Chicago.

Concurrently, we explore any effects that crime rates and violence in Chicago can have on the state of education and the behaviors of students in Chicago Public Schools.

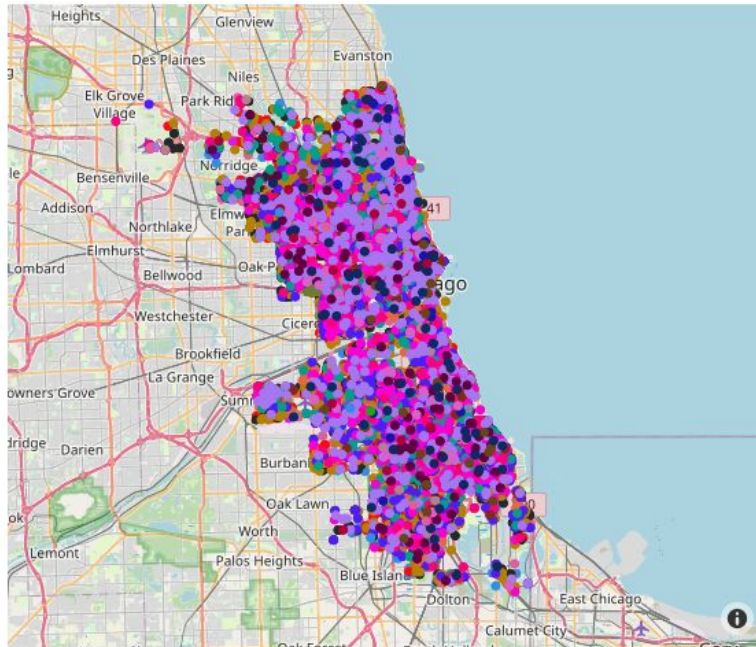
Presented by Law and Order: SQL - Chris Kusha, Clara McGrath, Albert Prouty, Jassleen Bhullar



Has crime in Chicago increased or decreased over the last decade?



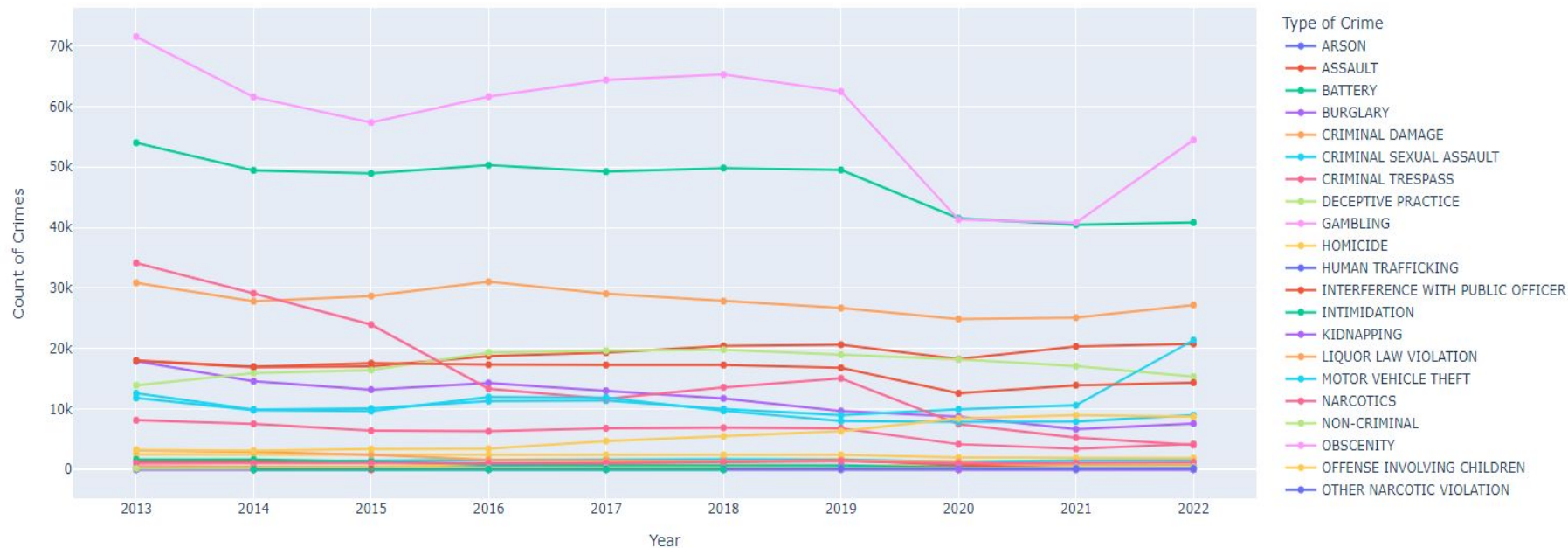
Crimes in Chicago (2023)



Type of Crime

- MOTOR VEHICLE THEFT
- OTHER OFFENSE
- HOMICIDE
- CRIMINAL DAMAGE
- NARCOTICS
- BATTERY
- THEFT
- SEX OFFENSE
- WEAPONS VIOLATION
- ASSAULT
- BURGLARY
- ROBBERY
- CRIMINAL TRESPASS
- PUBLIC PEACE VIOLATION
- PROSTITUTION
- CONCEALED CARRY LICENSE VIOLATION
- STALKING
- DECEPTIVE PRACTICE
- OFFENSE INVOLVING CHILDREN
- INTIMIDATION
- ARSON
- INTERFERENCE WITH PUBLIC OFFICER
- CRIMINAL SEXUAL ASSAULT
- LIQUOR LAW VIOLATION

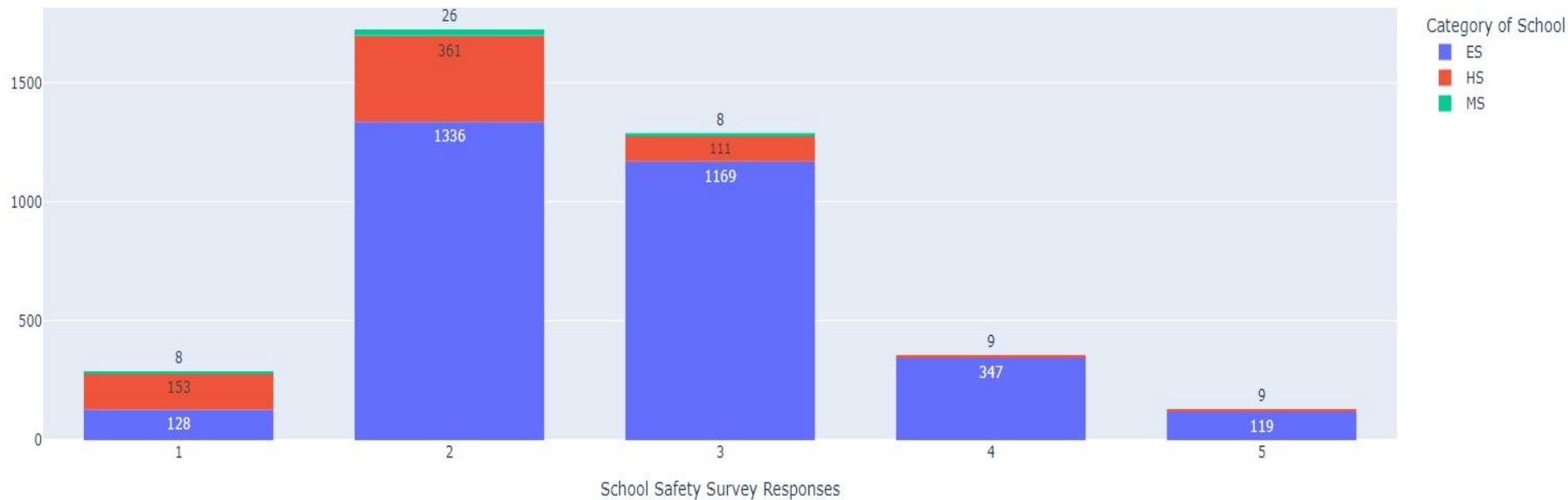
Crime in Chicago From 2013 to 2022



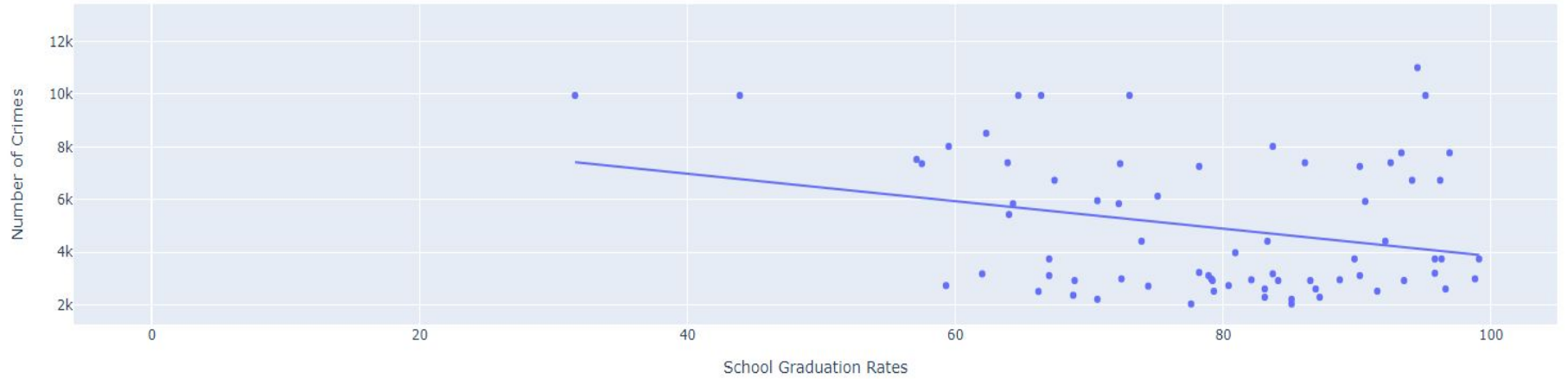
Domestic Crimes in Chicago From 2013 to 2022



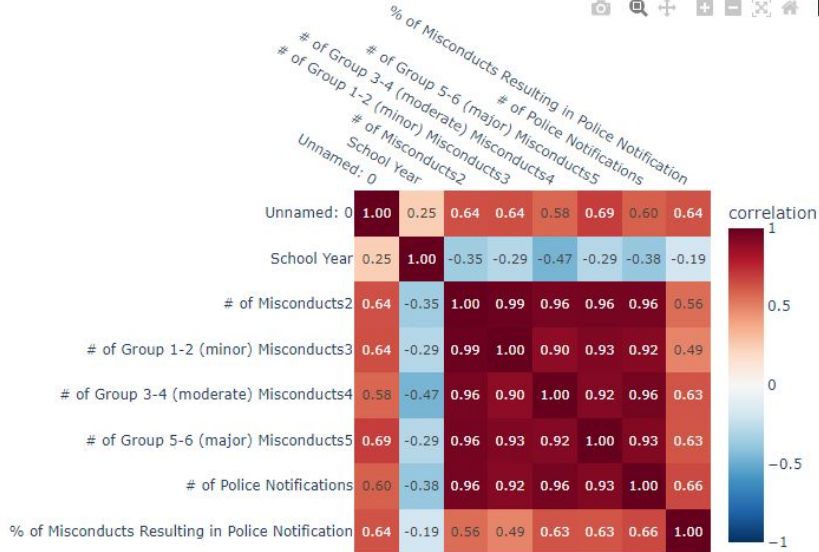
Count of Student Responses to Safety Survey



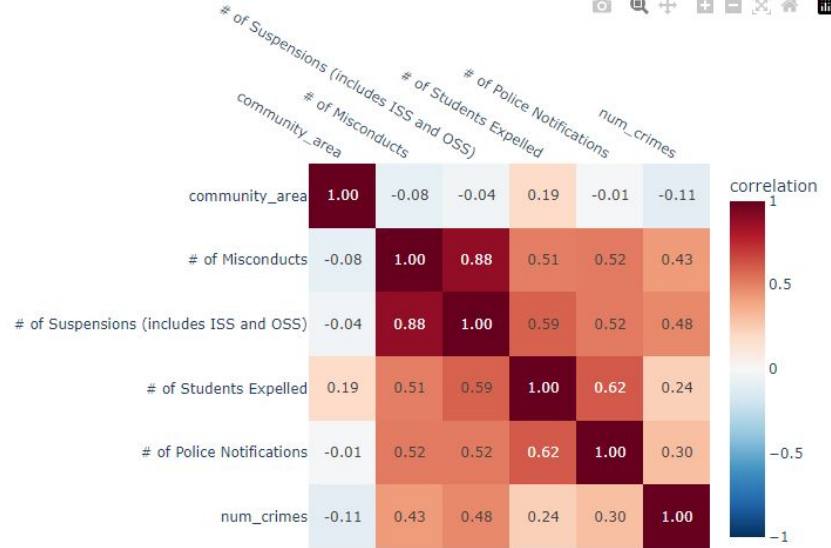
Graduation Rates vs. Number of Crimes in Ward Area (2022)



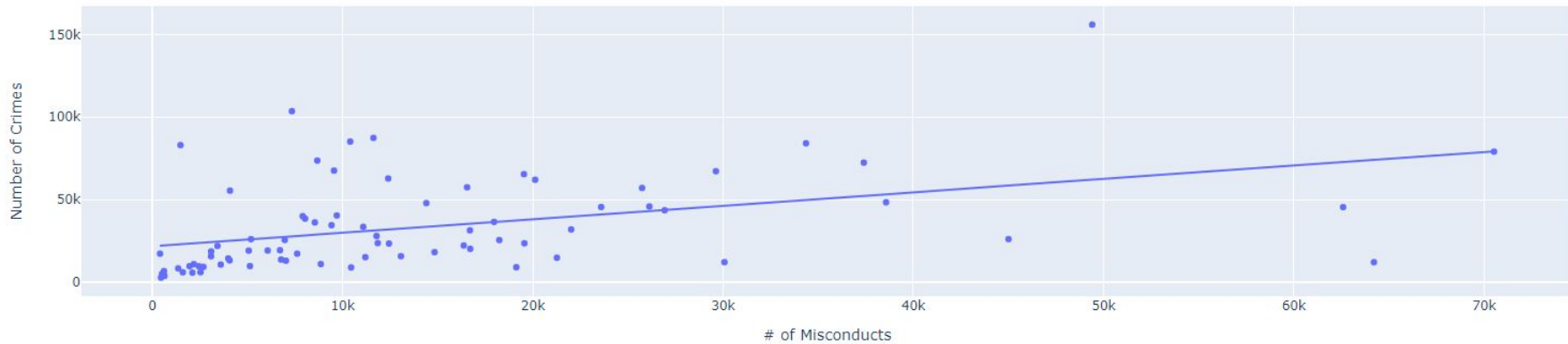
Correlations Between Misconducts and Police Notifications in Chicago Public Schools



Correlations Between Student Incivilities and Crime in Chicago



Number of Misconducts vs. Number of Crimes in Ward Area (2022)



Number of Suspensions vs. Number of Crimes in Ward Area (2022)

