Analyzing New York State Crimes Over the Last Decade

George Mason University
AIT-580-001 | Prof. Dr. Harry Foxwell

Akhil Arekatika
George Mason University
Fairfax, Virgina
aarekati@gmu.edu

Abstract

This research conducts a thorough analysis of New York State crimes over the past decade, exploring the distribution of male and female offenders across counties, identifying crime hotspots, determining prevalent crime types, and investigating the interplay between geographic location and the nature of crimes committed. The research uses a set of information with important details and, by carefully examining it, reveals nuanced patterns in gender distribution, identifies the location with the highest crime rate, highlights the most commonly occurring crime, and establishes connections between location and crime characteristics. The findings contribute valuable insights for law enforcement, policymakers, and community stakeholders, guiding targeted interventions and resource allocation to enhance public safety and address the diverse challenges posed by criminal activities across New York State.

Introduction

In contemporary society, understanding the dynamics of criminal activities is crucial for effective law enforcement and policy making. The state of New York has witnessed a diverse range of crimes over the past decade, necessitating a comprehensive analysis to unravel patterns and inform targeted interventions. Recognizing the complexities surrounding crime distribution, offender demographics, and their geographic interplay is paramount to developing context-specific strategies for public safety.

The importance of this research lies in its potential to provide actionable insights for law enforcement, policymakers, and community stakeholders. By deciphering patterns in gender distribution, identifying crime hotspots, and establishing connections between location and crime characteristics, this study aims to contribute valuable information that can guide targeted interventions. Enhancing our understanding of crime patterns in New York State is vital for addressing the unique challenges posed by criminal activities across different regions.

This paper will explore the following research questions, setting the stage for a nuanced exploration of crime dynamics and providing a foundation for informed decision-making in the realms of law enforcement and public policy:

1. To what extent does the distribution of male and female offenders vary across different counties based on crime rates?
Analyzing the gender distribution of individuals involved in criminal activities

provides insights into the vulnerabilities and challenges faced by different age cohorts. Understanding these patterns is vital for tailoring intervention and rehabilitation programs.

2. Which location has the highest crime rate?

Geospatial analysis of crime data allows us to identify hotspots and areas of concern. Pinpointing locations with higher crime rates facilitate targeted law enforcement efforts and the implementation of community-based initiatives aimed at fostering safer neighborhoods.

3. What is the most commonly occurring type of crime?

Examining the nature of crimes committed helps uncover prevalent criminal trends. Identifying the most common types of offenses informs law enforcement priorities and resource allocation to address specific criminal activities effectively.

4. Is there a noticeable connection between the location and the nature of the crime?

Investigating the relationship between the location and the nature of crimes committed provides insights into patterns that may inform targeted interventions and policies.

This analysis uses New York State's rich crime data and advanced analytics to provide better understanding of crime patterns. Breaking down crimes by attributes like gender, location, and type, it investigates relationships between these variables. The findings aim to assist lawmakers, law enforcement, and community programs in developing more targeted policies and initiatives for enhanced public safety focused on areas most impacted by specific crime trends statewide. Overall the goal is safer New York communities informed by data-driven insights into long standing crime issues.

Literature Review

There are limited studies related to crime analysis, especially in New York State, USA, that comprehensively investigate the interplay between offender demographics, geographic locations, and crime patterns. Previous research has explored related aspects but often within specific contexts or regions.

In a study titled "Gender Perspective of Victimization, Crime, and Penal Policy" (Cruz, Lukić, & Strand, 2023), the focus was primarily on European countries, emphasizing gender differences in crime, victimization, and penal policies. While providing valuable insights into the treatment of female offenders and considering factors like race, ethnicity, and criminal records, the study does not directly address the specific distribution of male and female offenders across various counties in New York State. Nevertheless, it underscores the potential existence of gender discrimination in crimes, highlighting the need for further examination within the context of different geographic locations.

Addressing the question of which location has the highest crime rate, insights were drawn from an article titled "Which states have the highest and lowest crime rates?" (USAFacts, 2023). The reports consistently indicate regional variations in crime rates across the United States, emphasizing higher rates in states in the South and West compared to the Northeast. This regional perspective aligns with the broader understanding that crime rates are influenced by geographical location. However, this literature does not delve into the specific county-level variations within New York State, providing a foundation for our research

to explore these nuances and contribute to a more detailed understanding of crime dynamics.

Regarding the most commonly occurring type of crime, an article discussing the 20 most common crimes in the United States sheds light on the diversity of criminal activities (Sands, 2023). This information broadens our understanding of the types of crimes that frequently occur nationally. While the article offers a comprehensive overview, it does not specifically address the prevalence of crime types within New York State or variations across its counties. Our study aims to build upon this broader perspective by focusing on the specific types of crimes occurring in different counties, providing more localized insights that can inform targeted interventions.

Examining the connection between location and the nature of crime, a paper titled "Why is There More Crime in Cities?" by Glaeser and Sacerdote (1999) explores how the size of a city is linked to the occurrence of crime, emphasizing the influence of factors like economic incentives, policing effectiveness, and population demographics. While this paper establishes a general connection between location and crime, it does not delve into the detailed analysis of specific crimes across counties in New York State. Our research seeks to complement this understanding by investigating the nuances of crime patterns at the county level, offering a more granular perspective that can inform localized strategies for crime prevention.

In summary, the existing literature provides valuable insights into broader aspects of crime analysis, gender perspectives, regional crime rates, and common crime types. However, there is a notable gap in the literature concerning a comprehensive analysis of crime patterns specifically within New York State, particularly at the county level. Our research aims to address this gap by exploring the distribution of male and female offenders, identifying high-crime locations, determining prevalent crime types, and establishing connections between location and the nature of crime within the diverse counties of New York State.

Strategy & Methods & Tools

We got this information from the Data.gov website, and it originally came from the NYS Department of Corrections and Community Supervision. This data was available to the public on the internet. The information we're looking at is about people who were released on parole, and it tells us things like when they were released, the type of release, where they were committed, where they first lived after release, their gender, race, age, and the most serious crime they committed.

This information was in a CSV file, which is a type of file that's easy to use in different tools. In total, there were 3,122,566 pieces of data, and each row represents something that happened between January 2008 and December 2022. Because we had a lot of information in this big dataset, we could learn a lot about crime in New York State.

First, we had to clean up the data, which means we got rid of things we didn't need. We used a program called R for this. We removed columns that weren't related to our research questions, like race, residency code, and month code. We also took out any duplicate or empty information. After cleaning it up, we got a new CSV file that was perfect for analysis.

Next, we did a statistical summary of our dataset. We used a package called ggplot2 in R to make graphs and understand the data better. We focused on the distribution of male and female offenders across different

counties based on crime rates. We made interactive bar plots to show this information for the top 10 counties. We also did chi-squared tests. We used Python to find out which locations had the highest crime rates and made bar plots to visualize it, considering only the top 10 locations. Then, we found the most common types of crimes using bar plots for the top 10 crimes. Finally, we looked at the connection between location and the nature of crimes using a heatmap, which is like a map that shows patterns. Again, we used only the top 10 values to make sure our graphs were clear.

Our strategy combined the use of R and Python for cleaning, analyzing, and visualizing the data. This combination allowed us to do a detailed analysis of how male and female offenders are distributed, where crime rates are highest, what the most common crimes are, and the connection between location and crime type. This comprehensive approach contributes to a full understanding of crime dynamics in New York State over the last decade.

In addition to programming languages like Python and R, we also utilize SQL to further work with our dataset. We create a new SQL database and relevant tables tailored to our data. After importing the dataset into these tables, we run a variety of SQL queries to derive more insights from the information. Using SQL allows us to improve our understanding and skills with database manipulation and querying.

Additionally, we leverage Amazon Web Services (AWS) capabilities to visualize aspects of our data. We first log into our AWS account and launch a new EC2 cloud computing instance, connecting it to our local environment. After uploading the dataset, we execute initial queries to continue enriching our comprehension. We also run targeted queries such as identifying the counties with the highest crime counts to answer specific research questions.

To practice data visualization, we upload the dataset as a table into the AWS Relational Database Service (RDS) and utilize available tools to generate graphical representations of columns of interest. Going through these workflows has augmented our proficiency with AWS offerings for analytics and visualization.

Results

Data Cleaning and Transforming:


```
> # Checking the column names
> colnames(crime_data)
 [1] "RELEASE.YEAR"              "RELEASE.MONTH"
 [3] "MONTH.CODE"                "RELEASE.TYPE"
 [5] "COUNTY.OF.COMMITMENT"      "FIRST.KNOWN.RESIDENCE.COUNTY"
 [7] "SEX"                       "RACE.ETHNICITY"
 [9] "AGE.AT.RELEASE"            "MOST.SERIOUS.CRIME"
> # Select specific columns requried for my research questions
> selected_data <- crime_data %>%
+ select(`RELEASE.YEAR`, `RELEASE.MONTH`, `RELEASE.TYPE`, `COUNTY.OF.COMMITMENT`, SEX,
`AGE.AT.RELEASE`, `MOST.SERIOUS.CRIME`)
> # Assuming your dataset is a data.table named 'your_dataset'
> setnames(selected_data, c("RELEASE.YEAR", "RELEASE.MONTH", "RELEASE.TYPE",
+                           "COUNTY.OF.COMMITMENT", "SEX", "AGE.AT.RELEASE",
+                           "MOST.SERIOUS.CRIME"), new_column_names)
> # Remove duplicates
> my_data <- distinct(selected_data)
> # Re-Checking the column names
> colnames(my_data)
[1] "Year"                "Month"              "Release_Type"
[4] "County_of_Commitment" "Sex"               "Age_at_Release"
[7] "Most_Serious_Crime"
> # Print missing values column-wise
> print(colSums(is.na(my_data)))
               Year             Month          Release_Type County_of_Commitment
                  0                 0                     0                     0
                Sex     Age_at_Release    Most_Serious_Crime
                  0                 0                     0
> |
```

Data preparation is an important first step before analyzing the dataset to answer research questions. The goal is to have a clean, simple dataset to work with for the analysis.

To start, any extra columns unrelated to the analysis should be removed from the dataset. The analysis will only use specific columns, so removing the other unnecessary ones makes the data less complicated.

The columns kept are those that will help answer the defined research questions. These necessary columns may currently have confusing or unclear names. Renaming them to more descriptive labels make them easier to understand - for example, a column called

"crime_type" could be renamed "type of crime".

The next step is checking if there is any repeated data or missing data in the dataset. Duplicates or gaps in the data could negatively impact later analysis. Any redundant rows that provide the same information should be deleted. For missing data, either the gaps can be filled based on patterns in the dataset, or those rows can be removed as needed.

After removing unnecessary columns, renaming columns for clarity, and addressing duplicate and missing data issues, the dataset will be clean and ready for analysis! Taking the proper time to prepare the raw data helps ensure that research questions can be answered accurately during analysis. Proper data preparation is key for reliably using datasets in research studies and analyses.

```
> # Summary and statistics of given data
> summary(cleaned_data)
      Year         Month        Release_Type      County_of_Commitment
 Min.   :2013  Length:184788   Length:184788     Length:184788
 1st Qu.:2015  Class :character Class :character  Class :character
 Median :2017  Mode  :character Mode  :character  Mode  :character
 Mean   :2017
 3rd Qu.:2019
 Max.   :2022
      Sex          Age_at_Release  Most_Serious_Crime
 Length:184788   Min.   :17.00    Length:184788
 Class :character 1st Qu.:28.00    Class :character
 Mode  :character Median :35.00    Mode  :character
                  Mean   :36.84
                  3rd Qu.:45.00
                  Max.   :91.00
> str(cleaned_data)
'data.frame':   184788 obs. of  7 variables:
 $ Year              : num  2013 2013 2013 2013 2013 ...
 $ Month             : chr  "JANUARY" "JANUARY" "JANUARY" "JANUARY" ...
 $ Release_Type      : chr  "PAROLE" "PAROLE" "PAROLE" "PAROLE" ...
 $ County_of_Commitment: chr  "ALBANY" "ALBANY" "ALBANY" "ALBANY" ...
 $ Sex               : chr  "MALE" "MALE" "MALE" "MALE" ...
 $ Age_at_Release    : int  34 35 36 42 48 51 18 20 20 28 ...
 $ Most_Serious_Crime : chr  "BURGLARY 3RD" "SEXUAL ABUSE 1ST" "BURGLARY 3RD" "RAPE 1S
T" ...
```

Once data cleanup is complete, R programming can be used to print out the structure of the cleaned dataset. This shows all the column names and associated data types. Printing a summary of statistics like the mean, minimum, and maximum values for each column is also helpful. These summaries further assist in understanding details about the data that will be used to answer the defined research questions.

In summary, properly cleaning the raw dataset helps prepare it for analysis. Removing unnecessary columns, fixing confusing names, dealing with duplicate and missing data issues, and producing summaries of the final cleaned dataset helps ensure quality data is ready for research analysis. The necessary data cleaning and preparation steps can be carried out efficiently through R programming and scripts before diving into answering research questions and conducting analysis. Taking the required time to thoroughly clean datasets leads to higher quality analysis and more accurate, trustworthy results.

Univariate Analysis:

1. To what extent does the distribution of male and female offenders vary across different counties based on crime rates?
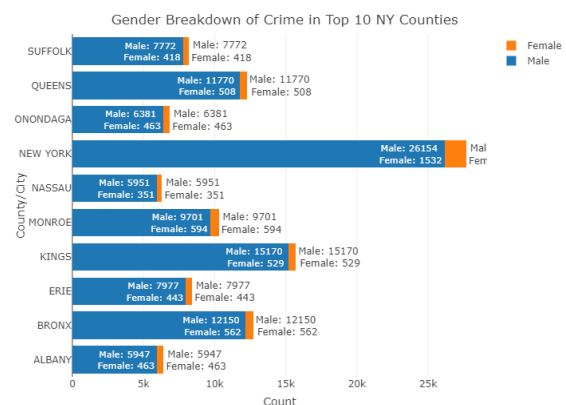

Fig 1. Interactive Bar Plot: Gender Breakdown of Crime in Top 10 NY Counties

Beginning with the exploration of the research question, "To what extent does the distribution of male and female offenders vary across different counties based on crime rates?" our focus was directed specifically to the top 10 cities. Utilizing bar graphs for precision, our examination uncovered a notable trend, showcasing New York City as the city with the highest crime rates for both males and females, with 26,154 incidents for males and 1,532 for females. Following closely, Kings City had the next highest male crime rate with 15,170 incidents, succeeded

by Bronx and Queens. Subsequently, Monroe, Erie, Suffolk, and Onondaga follow in order with the highest male crime rates, while Nassau and Albany have the lowest rates for men.

Shifting the focus to female crime rates, starting with New York, Monroe emerges with the second-highest crime rate, succeeded by Bronx and Queens. Both Onondaga and Albany have equal numbers, followed by Erie, Suffolk, with Nassau having the lowest female crime rates in the entire state. Through this analysis, it becomes evident that New York has the highest overall crime rates, while Nassau and Albany consistently exhibit the lowest rates for both men and women. This detailed analysis provides insights into the varying distribution of male and female offenders across different counties based on crime rates in New York State.

Diving deeper into the data, a consistent pattern surfaced across all cities—males consistently exhibited a higher proportion of crime rates compared to their female counterparts. This gender-based pattern persisted uniformly across the varied urban landscapes under examination.We also did the Chi-Squared test for this research question.

> chisq_test

Pearson's Chi-squared Test

data: table(Crime_data$County_of_Committment, Crime_data$Sex)
X-squared = 3018.8, df = 62, p-value < 2.2e-16

In summary, our findings indicate a noteworthy tendency for males to engage in criminal activities at a higher rate than females in New York State.

This insight, derived from an examination of the distribution of male and female offenders across diverse counties, not only highlights the prominence of New York City in terms of crime rates but also underscores a gender-based disparity in criminal involvement. The

visual clarity provided by the bar graphs enhances our understanding, presenting a clear and interactive representation of the observed trends in crime rates across the top 10 cities in New York State.

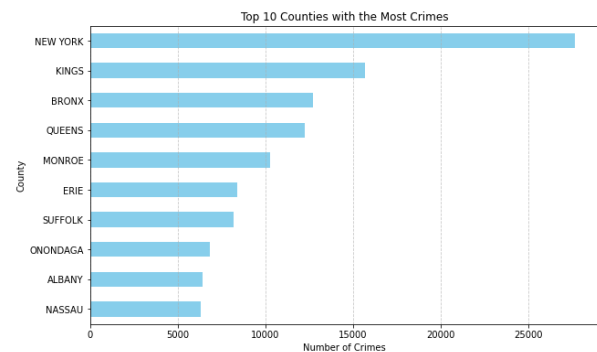2. Which location has the highest crime rate?

Fig 2. Bar Plot: Top 10 Counties with the Most Crimes

Expanding on our previous research question, this study aims to gain a more comprehensive understanding of crime patterns by delving deeper into locations characterized by the highest crime rates. Our investigation took a focused approach, concentrating on the top 10 cities and employing bar graphs for precise visualization. The meticulous analysis unveiled a consistent trend, unequivocally identifying New York City as the municipality with the highest crime rate in the state.

This discernible pattern persisted uniformly across all cities, with New York City and Kings City emerging at the forefront in terms of crime rates, closely trailed by Queens and Bronx. The subsequent order of cities, organized by crime rates, included Monroe, Erie, Suffolk, Onondaga, Albany, and Nassau. In summation, our findings underscore New York City as the epicenter of the highest overall crime rate among the municipalities under scrutiny.

This nuanced exploration not only sheds light on the prevalence of high crime rates in specific cities but also provides a comparative perspective, revealing the varying degrees of criminal activities across the top 10 cities in the state. The utilization of bar graphs enhances the visual representation, offering a detailed and accessible portrayal of the observed trends. By narrowing our focus and employing precise visualization techniques, we have achieved a more intricate and insightful examination of crime patterns in these key urban centers.

3. What is the most commonly occurring type of crime?
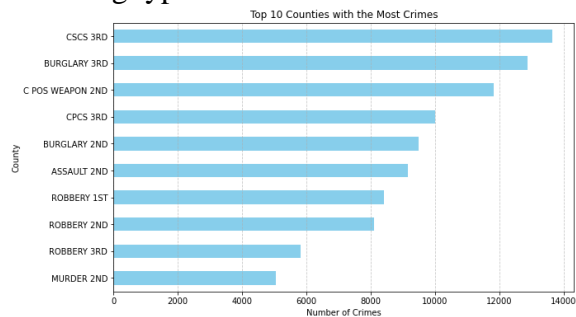
Fig 3. Bar Plot: Top 10 Counties with the Most Crimes

This research question aims to identify the most frequent crimes in New York state over the last ten years. We used a bar plot to present the information clearly. After analyzing the data, we found that the most common crime is "Criminal sale of a controlled substance 3rd degree (CSCS 3rd)," involving the illegal sale of drugs to someone younger than twenty-one. The second most common crime is Burglary 3rd Degree, which includes theft or harm during a break-in. The third most common crime is Second Degree Criminal Possession of a Weapon (C POS Weapon 2nd), where someone possesses a loaded gun outside their home or business without the right

permission. The fourth most common crime is Criminal Possession of a Controlled Substance in the Third Degree, involving the possession of illegal drugs. Following these, the most common crimes are Burglary 2nd, Assault 2nd, Robbery 1st, 2nd, 3rd, and Murder 2nd. Examining these crime types shows that drug-related offenses and burglary occurred most frequently in New York state over the last decade.

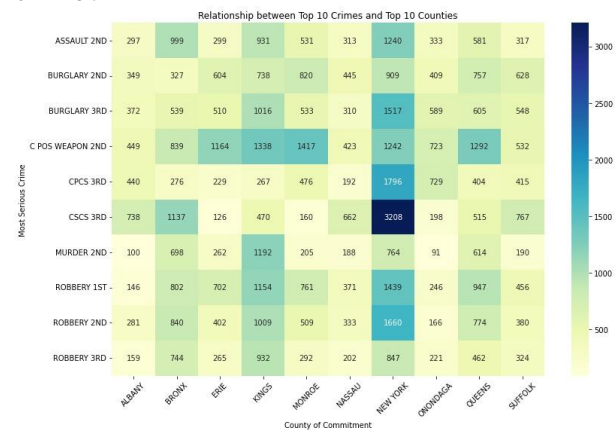## 4. Is there a noticeable connection between the location and the nature of the crime?

Fig 4. Heatmap Plot: Relationship between Top 10 crimes and Top 10 Counties

In the end, we examined 10 different types of crimes and their locations. I used a specialized graph with colors to illustrate the correlation between the location and the type of crime. This study tackled two main questions: what types of crimes occur where, and how are they interconnected?

The graph reveals that the sale of illegal substances is predominantly concentrated in New York City, where most crimes in the state of New York take place. Following illegal substance sales, the crimes with the highest occurrences in New York City involve possessing illegal weapons and committing murder and robbery. After New

York, Kings stand in second place for different types of crimes, where C POS Weapon 2nd degree is the highest crime, followed by murder and robbery, and CPCS 3rd is the lowest crime in this city.

The information regarding other cities and their crimes is clearly shown using a heatmap graph, helping us understand and connect between types of crimes and cities. From the graph, it's evident that CPOS 2nd degree is the most commonly happening crime in all major cities of New York state. There are many insights we can examine from this graph. We used colors to show the increasing levels of respective crimes in respective cities.

Essentially, the graph functions as a map, pinpointing where each type of crime is most prevalent. For instance, some counties experience a higher incidence of illegal weapon-related crimes, while others witness a greater occurrence of murder and robbery. Armed with this information, officials can strategically focus their efforts on addressing specific types of crimes in particular locations, ultimately enhancing the safety of these areas for residents.
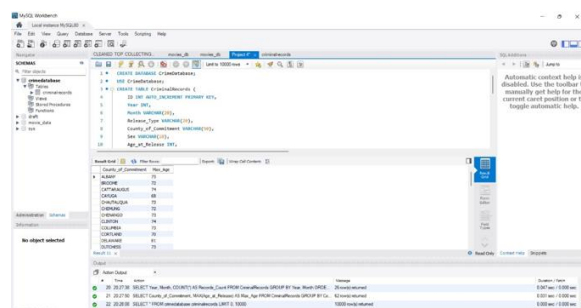
Executed in SQL:

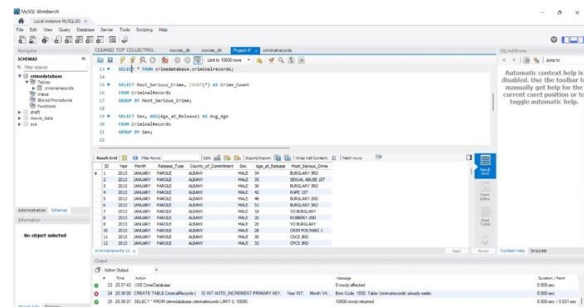Fig 5. Creating New Database and Table

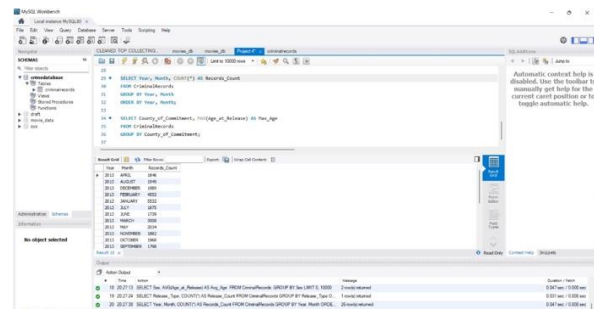Fig 6. Imported files into table
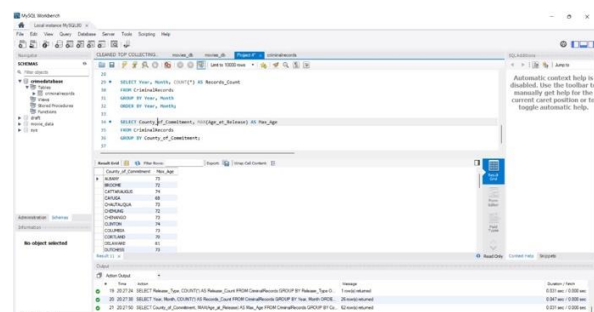

Fig 7. Running Few Queries

Fig 8. Running Queries

We employ various tools to analyze data, and one of our key tools is SQL (Structured Query Language). SQL helps us organize and interact with databases effectively. To tailor our data management to our specific needs, we create a dedicated SQL database called "CriminalDatabase" along with specialized tables named "CriminalRecords." These tables are designed to accommodate the unique characteristics of our dataset.

Once our database and tables are set up, we import our dataset into these tables. The power of SQL comes into play when we run

queries, which are essentially requests for specific information from the dataset. These queries range from basic operations, such as counting the number of records in specific months or years, to more complex analyses aimed at extracting meaningful insights.

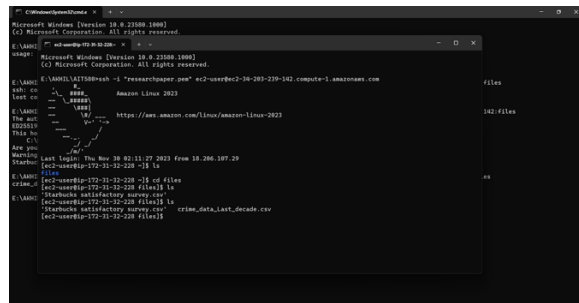**Executed in AWS:**

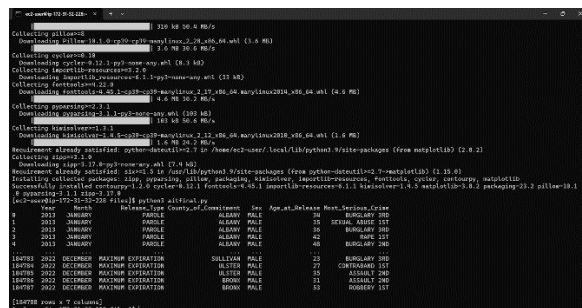Fig 9. Launched EC2 Instance and Connected Locally

Fig 10. Ran small query using Python in AWS
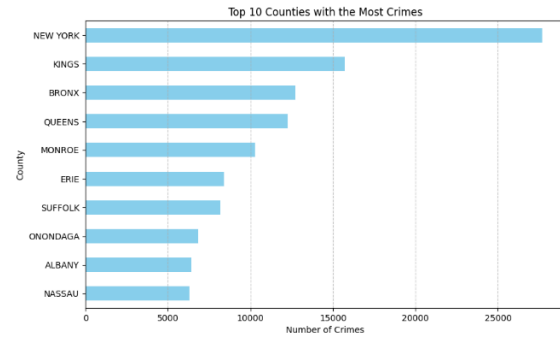

Fig 11. Ran This Code to get Output

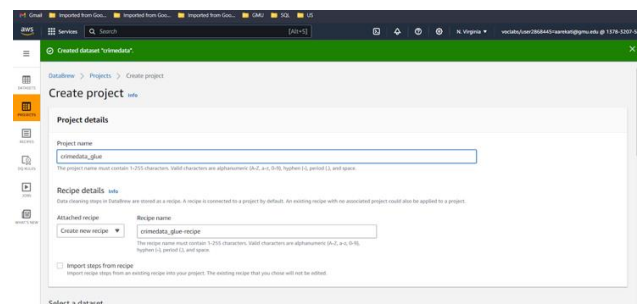Fig 12. Bar Plot: Top 10 Counties with Most Crimes
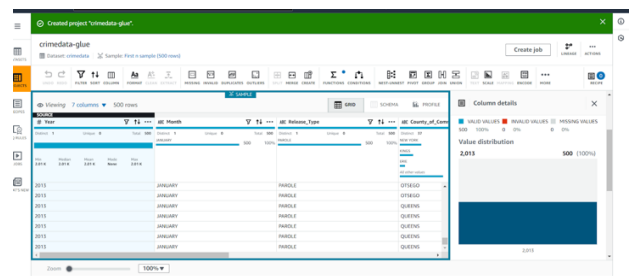

Fig 13. Created New Project

Fig 19. Launched S3, Uploaded Dataset, Used Glue for this visualization

In addition to SQL, we leverage the capabilities of Amazon Web Services (AWS) to enhance the visualization aspects of our data. Our journey begins by logging into our AWS account and launching an EC2 (Elastic Compute Cloud) instance. This virtual computing environment is seamlessly connected to our local setup. Once set up, we upload our dataset to AWS.

Our interaction with AWS goes beyond mere data storage. We execute queries within the AWS environment to deepen our understanding of the dataset. These queries are not just exploratory; we also conduct targeted analyses. For instance, we might use AWS to identify regions or counties with the highest crime counts, aligning our analytical efforts with specific research questions.

To enhance our data visualization skills, we utilize the AWS Relational Database Service (RDS). This service allows us to upload our dataset in a structured manner, akin to tables. Subsequently, we use the visualization tools available within AWS RDS to generate graphical representations of specific columns of interest. These visualizations, such as graphs and charts, enable us to communicate insights more intuitively.

This comprehensive approach not only improves our ability to manage and analyze databases through SQL but also demonstrates the versatility of AWS in handling complex analytical tasks. The combination of SQL and AWS facilitates a seamless workflow, from organizing and querying data to extracting insights and presenting them visually. This iterative process not only enriches our understanding of the dataset but also hones our skills in database manipulation and data visualization.

Limitations and further research needed

Our research faces certain challenges that underscore the need for more nuanced exploration in future studies. Firstly, the reliability of our findings hinges on the accuracy of the data we used, prompting a call for improved data collection methods to ensure precision and reflect actual scenarios more accurately. Moreover, our temporal focus on a specific timeframe limits the depth of our insights into the dynamic nature of criminal behaviors. Future research should embrace longitudinal studies, extending over more extended periods, to identify trends, cycles, and emerging patterns not immediately apparent within shorter-term analyses.

The geographical specificity of our study poses potential constraints on the generalizability of our findings. By concentrating on particular locations, we risk overlooking regional variations in crime patterns. To ensure broader applicability, future research should incorporate a more diverse representation of regions.

The simplification inherent in our categorization of crimes, while offering a broad overview, neglects the intricate nature of criminal activities. Future research could benefit from exploring more sophisticated classifications, delving into underlying motivations, contexts, and complexities associated with different types of crimes. This refined categorization would contribute to a more accurate and nuanced depiction of the multifaceted dynamics of criminal behavior.

Additionally, the absence of qualitative insights into the motivations behind criminal behavior is a notable limitation. Incorporating qualitative methodologies, such as interviews or surveys, could provide a deeper understanding of the human factors driving criminal activities. This qualitative perspective would complement quantitative analyses, yielding a more holistic comprehension of the root causes of crime.

Finally, incorporating an in-depth analysis of the age at which individuals commit their first crime, along with an exploration of their thoughts and motivations, is a critical avenue

for future research. Conducting character analyses could shed light on the psychological factors influencing criminal behavior, contributing to a more accurate and comprehensive understanding of the complexities associated with crime.

In conclusion, addressing the limitations related to data accuracy, temporal scope, geographic representation, and the simplification of crime categorizations is crucial for advancing our understanding of crime patterns. Future research should embrace more sophisticated methodologies, including longitudinal studies, qualitative approaches, and in-depth character analysis, to enrich our comprehension of the complexities associated with criminal behavior. These efforts are essential for informing more targeted and effective strategies for crime prevention and intervention.

Discussion and Conclusion

In summary, the data analysis carried out in this study has underscored the different facets of crimes and patterns in New York State over a decade. This discussion will delve into the previously described research questions, drawing upon the insights gleaned from the analysis results.

1.To what extent does the distribution of male and female offenders vary across different counties based on crime rates?
Our investigation aimed to understand the distribution of male and female offenders across different counties based on crime rates, focusing on the top 10 cities in New York State. Utilizing bar graphs for clarity, the data revealed a prominent trend—New York City stood out with the highest crime rate. Delving deeper, a consistent pattern emerged, indicating that males consistently exhibited higher crime rates compared to

females across all cities. This gender-based disparity persisted uniformly, highlighting a noteworthy tendency for males to engage in criminal activities at a higher rate than females in the state.

In conclusion, our findings not only emphasize the significance of New York City in terms of crime rates but also underscore a gender-based disparity in criminal involvement across diverse urban landscapes. The visual clarity provided by the bar graphs enhances our understanding of the observed trends in crime rates. These insights contribute to the ongoing discourse on the demographic aspects of crime, providing a foundation for future research and discussions on gender-specific patterns. Moving forward, this study provides valuable information for informed policy decisions and interventions aimed at addressing and mitigating gender-related disparities in crime rates for the betterment of community safety and well-being.

2.Which location has the highest crime rate?
This study represents an extension of our initial research question, delving into a more comprehensive understanding of crime patterns by focusing on locations with the highest crime rates. Employing a concentrated approach centered on the top 10 cities and utilizing bar graphs for visual clarity, our analysis unequivocally identifies New York City as the epicenter of the highest crime rate in the state. This discernible pattern consistently permeates across all cities, with New York City and Kings City leading, closely followed by Queens and Bronx. The subsequent ranking of cities by crime rates provides a nuanced exploration of criminal activities, including Monroe, Erie, Suffolk, Onondaga, Albany, and Nassau.

In conclusion, our findings accentuate New York City's prominence as the municipality with the highest overall crime rate among the scrutinized cities. This nuanced exploration not only sheds light on the prevalence of high crime rates in specific urban centers but also offers a comparative perspective, elucidating the varying degrees of criminal activities across the top 10 cities in the state. The incorporation of bar graphs enhances the visual representation, providing a detailed portrayal of observed trends. By narrowing our focus and employing precise visualization techniques, this study achieves a more intricate and insightful examination of crime patterns, laying the foundation for informed discussions and potential interventions in these key urban centers.

3.**What is the most commonly occurring type of crime?**
This research provides a comprehensive overview of the prevalent crimes in New York state over the past decade. Utilizing a bar plot for clarity, our analysis highlights "Criminal sale of a controlled substance 3rd degree (CSCS 3rd)" as the most common crime, involving the illicit sale of drugs to individuals under twenty-one. Burglary 3rd Degree and Second Degree Criminal Possession of a Weapon follow closely, illustrating theft or harm during break-ins and the possession of loaded firearms without proper authorization. Further analysis reveals the consistent occurrence of drug-related offenses and burglary as the primary crimes in the state. These findings underscore the need for targeted interventions and policy considerations to address the root causes of these prevalent criminal activities.

In conclusion, our study sheds light on the enduring patterns of crime in New York state, emphasizing drug-related offenses and burglary as the most recurrent over the last ten years. This insight provides a valuable foundation for informed discussions and strategic planning to enhance community safety and well-being. Addressing the identified trends is crucial for developing effective interventions that respond to the specific needs of the state's residents, fostering a safer and more secure environment for all.

4.**Is there a noticeable connection between the location and the nature of the crime?**
This research delved into 10 distinct crime types and their spatial distribution, employing a specialized graph for visual clarity. Addressing the dual inquiries of what crimes occur where and their interconnections, the study reveals a concentrated occurrence of illegal substance sales in New York City, aligning with the city's status as a hotspot for various crimes within the state. Beyond drug-related offenses, the graph highlights elevated occurrences of possessing illegal weapons, murder, and robbery in the city.

The graph functions as a comprehensive map, spotlighting the prevalence of each crime type across different counties. Noteworthy patterns emerge, indicating specific counties where illegal weapon-related crimes surpass others, while some witness a higher incidence of murder and robbery. This spatial insight equips officials with targeted information, enabling them to concentrate efforts on specific crime types in particular regions. Ultimately, this strategic approach aims to bolster community safety by addressing prevalent crimes in distinct locations.

In conclusion, our research provides a detailed spatial analysis of crime types in New York, emphasizing the significance of New York City as a focal point for various criminal activities. The graph's utility as a visual guide enhances our understanding of crime distribution, offering valuable insights

for officials to tailor interventions. By strategically focusing on specific crime types in particular locations, officials can work towards creating safer environments for residents. This study contributes to the broader discourse on crime prevention and intervention, emphasizing the importance of targeted strategies informed by spatial patterns.

References

[1] *Prison Releases: Beginning 2008 | State of New York*. (2023, September 18). https://data.ny.gov/Public-Safety/Prison-Releases-Beginning-2008/vcp4-2eiu

[2] Cruz, B., Lukić, N., & Strand, S. (2023). Gender perspective of Victimization, Crime and Penal Policy. In *Springer textbooks in law* (pp. 467–502). https://doi.org/10.1007/978-3-031-14360-1_14

[3] USAFacts. (2023, August 24). *Which states have the highest and lowest crime rates? - USAFacts*. USAFacts. https://usafacts.org/articles/which-states-have-the-least-and-most-crime/

[4] Sands, M. (2023, March 3). *Top 20 most common crimes in the United States - Husker Law*. Husker Law. https://www.huskerlaw.com/blog/2023/03/top-20-most-common-crimes-in-the-united-states/

[5] Glaeser, E. L., & Sacerdote, B. (1999). Why is There More Crime in Cities? *Journal of Political Economy*, *107*(S6), S225–S258. https://doi.org/10.1086/250109