Tallahassee Crime Map

Munawar Ali, Çağatay Ayhan, Ece Karaçam, Abdullah Malik, and Mao Nishino

April 17, 2024

Outline

Introduction

Write two goals of the project: 1) to create a crime map of Tallahassee, and 2) to analyze the crime data using traditional machine learning techniques.

TOPS Data Collection

Write a brief description about how we collected the data from TOPS

Data Processing

Write a short description about how we create our map dataset

Spatial Analysis

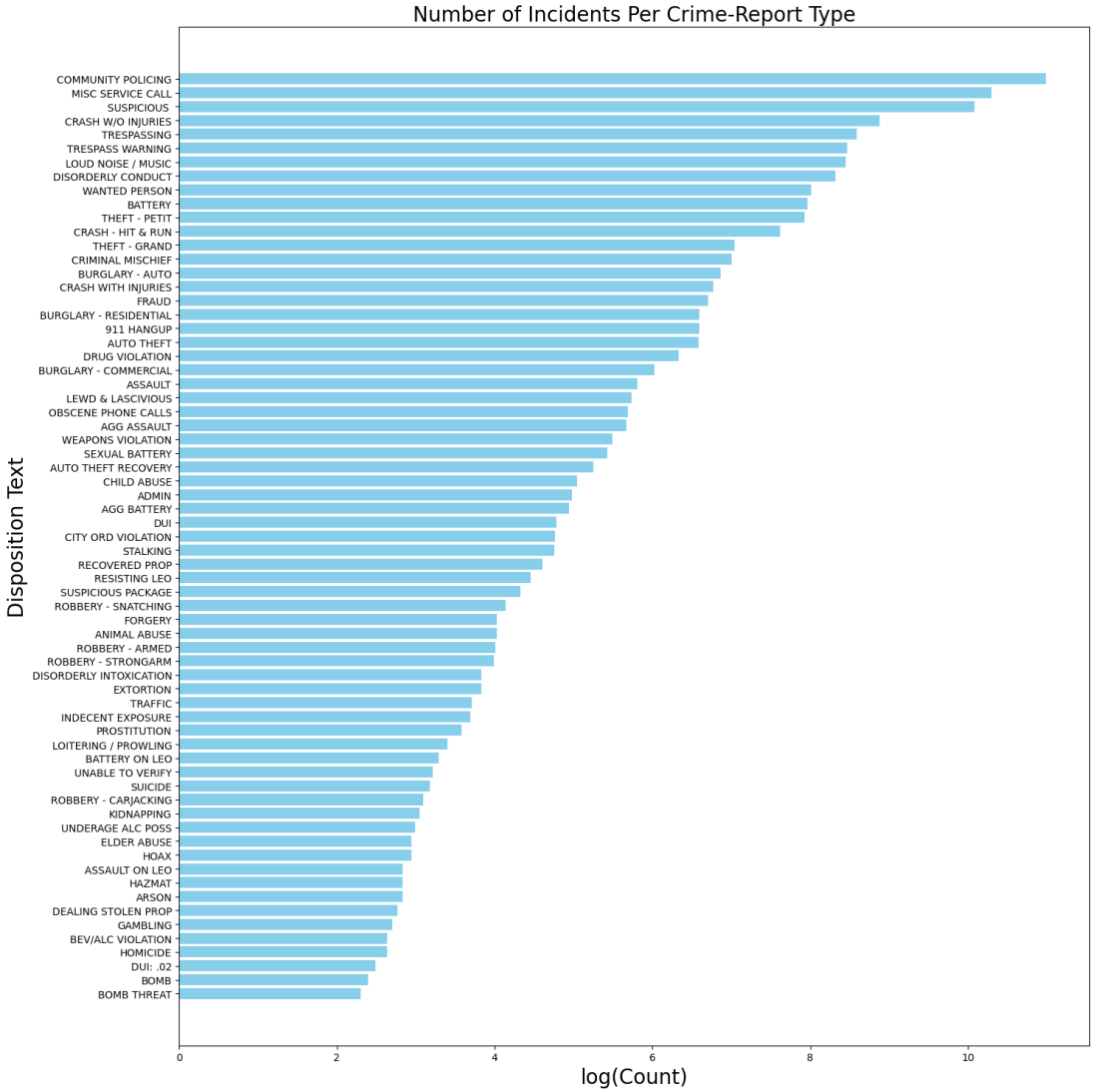


Figure: A bar chart for each type of crime report.

- The values on the x-axis correspond to the log of the actual count for visual purposes.
- On the y-axis all different types of crime reports are listed.
- There are 67 types of reports.
- We will filter out some from our analysis. For example, community policing occurs most often and it is not of interest for our purposes.

Temporal Analysis

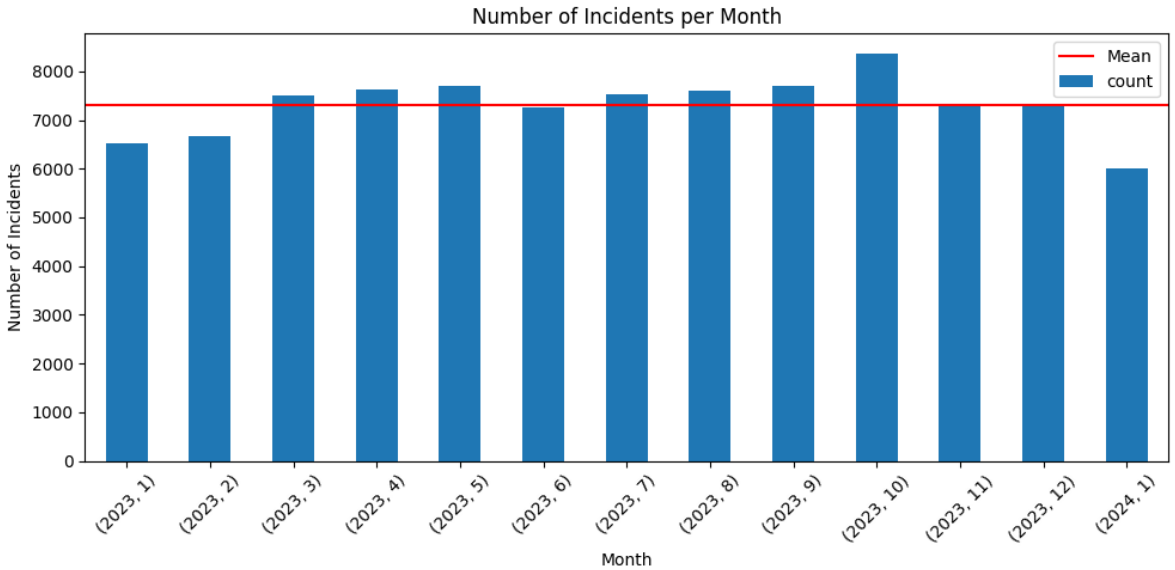
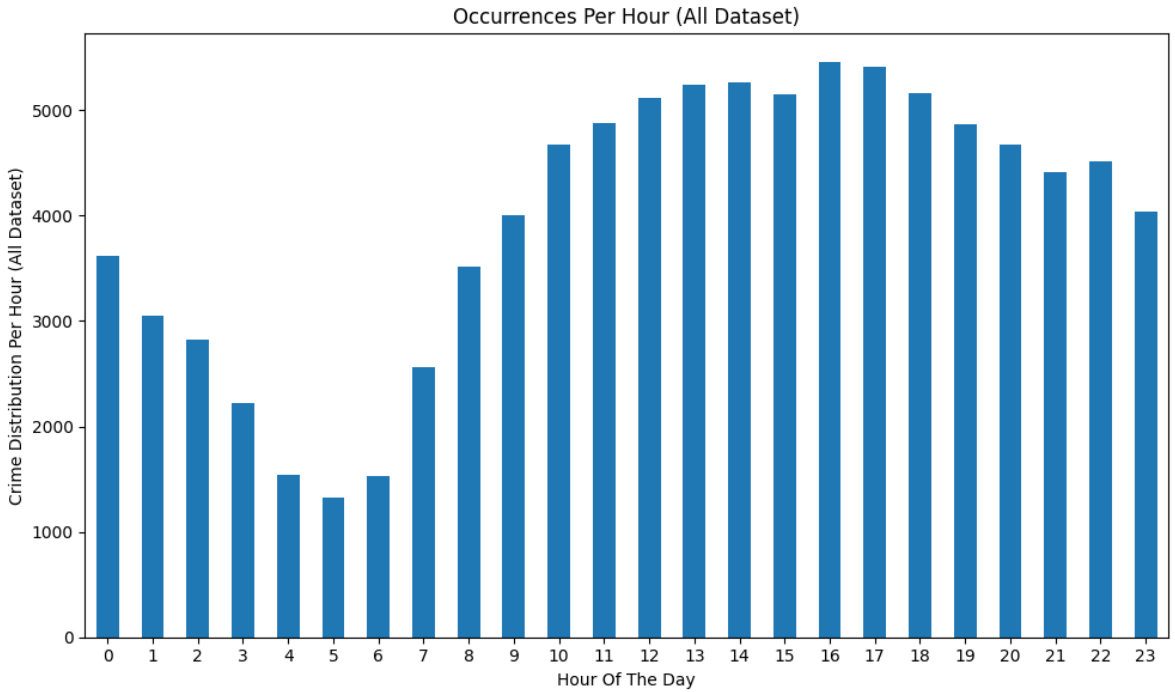


Figure: Crime Distribution Per Month

- Average # of reported crimes per month is 7311.
- Data includes all of 2023 and the first month of 2024.

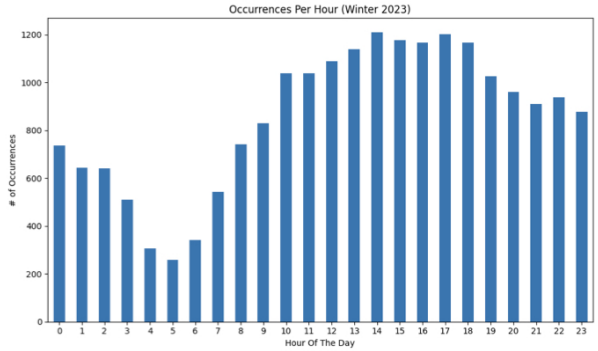
Temporal Analysis

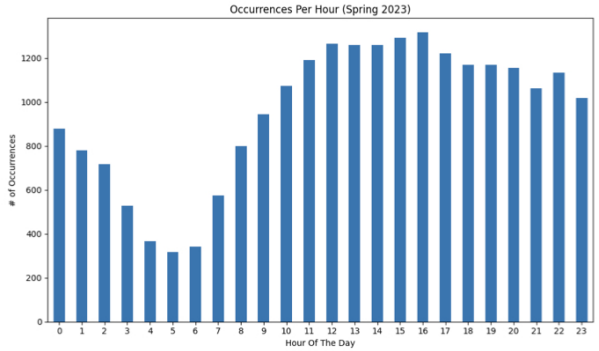


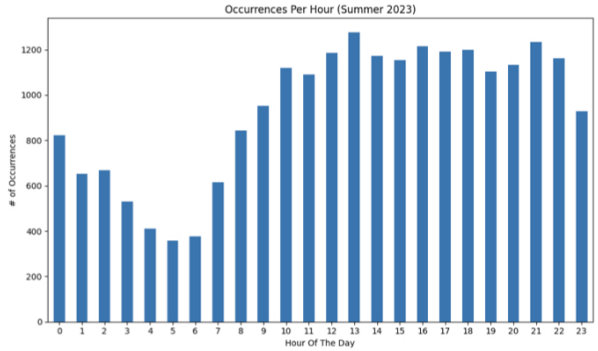
- Hourly analysis of the data reveals a fluctuating trend with peak hours.
- Data includes all of 2023.

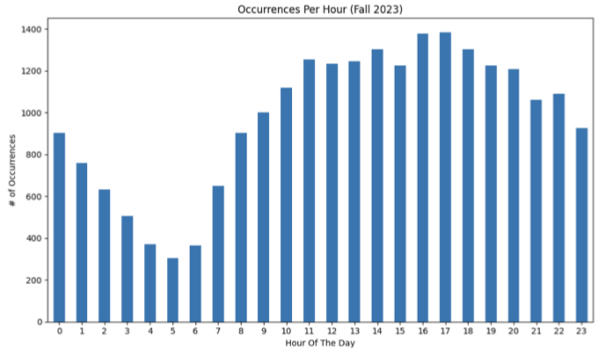
Figure: Crime Distribution Per Hour – All 2023

Temporal Analysis



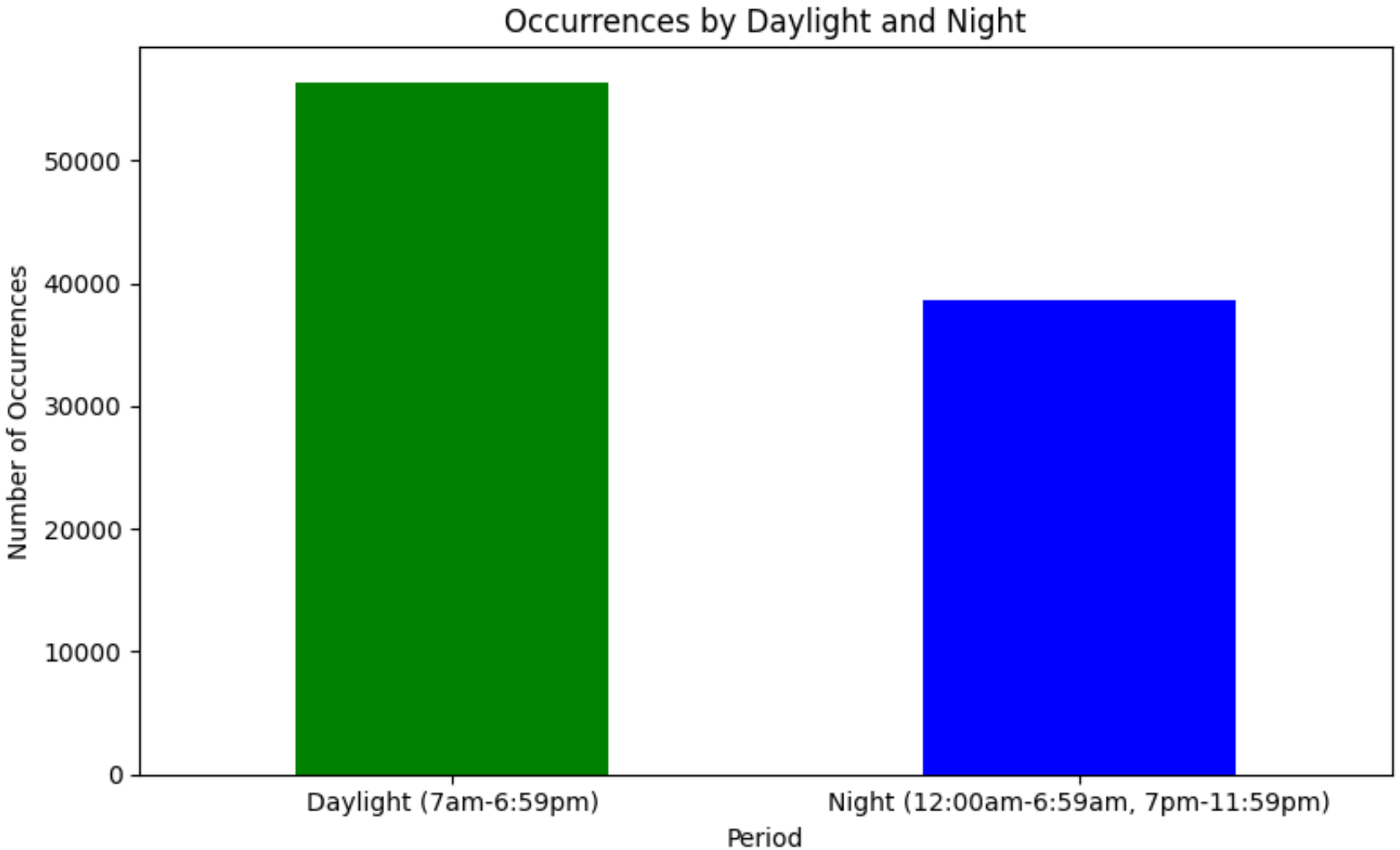






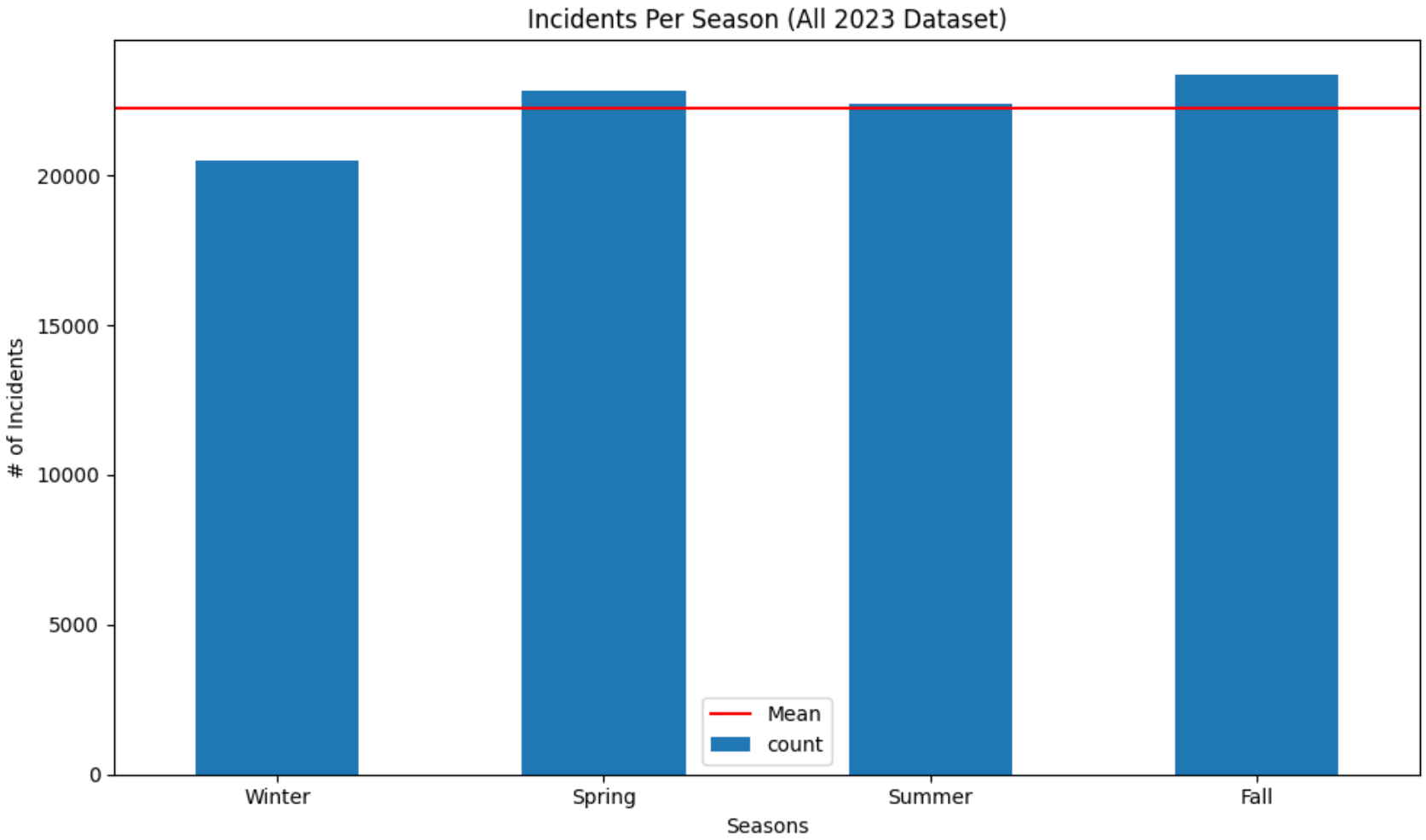
- Hourly crime distribution using portions of the data.
- Same trend across different seasons of the year 2023.

Temporal Analysis



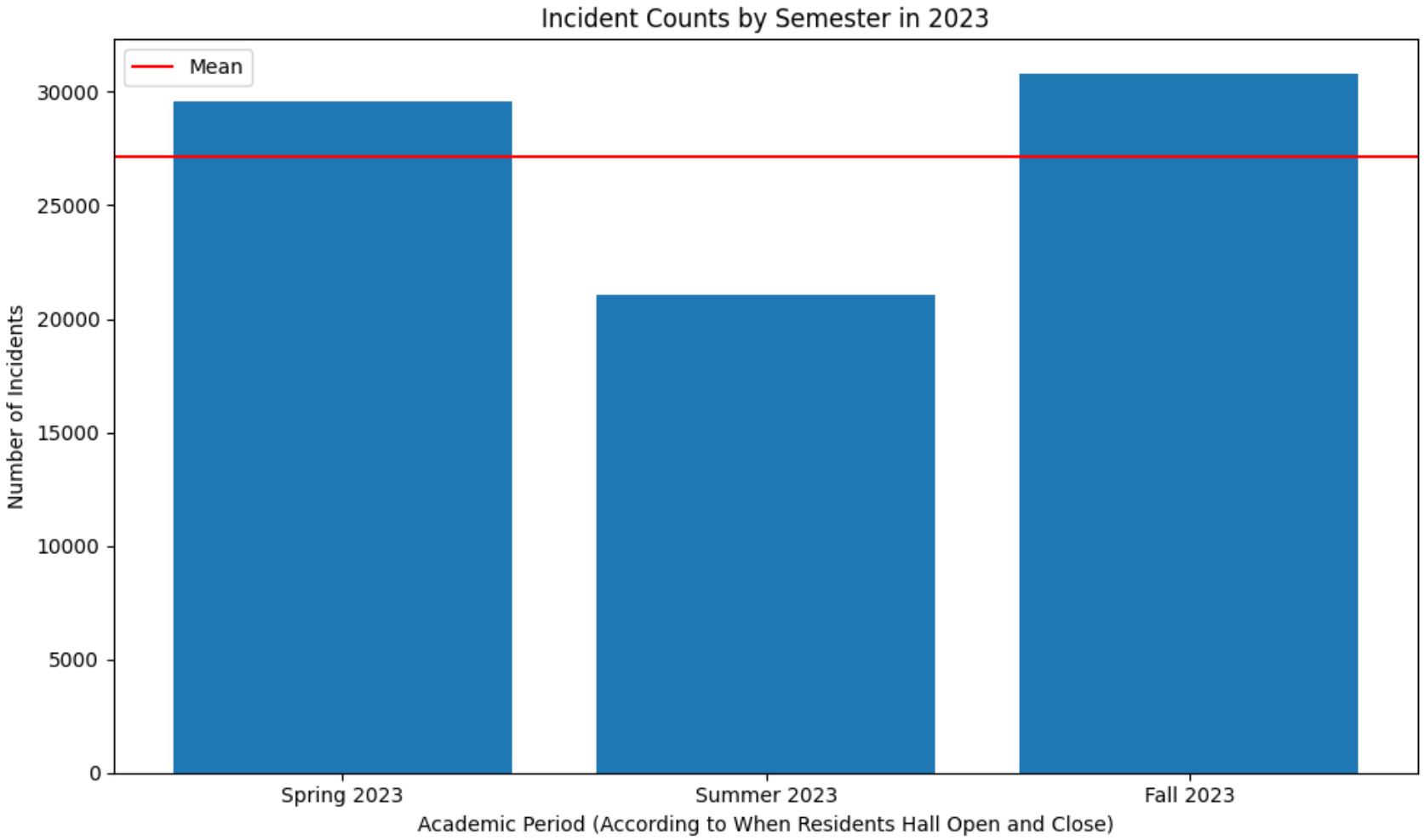
- Daylight vs no daylight. When is an incident more likely to occur?

Temporal Analysis



- Crime-report distribution based on seasons.

Temporal Analysis



- Tallahassee is a college town. (FSU & FAMU & TCC)
- Do students affect the number of crime reports?

pix2pix

Brief explanation of GAN and pix2pix

Results

Put the results of the pix2pix model, i.e., the generated heatmap and accuracy

Improving the city via generated heatmap

Edit a geographical map and reduce the crime rate predicted by the model Explain how it can be used by city planners

Conclusion

Summarize the results and a bit of future work (like a web app for the model)