Incidents Analysis in Hartford, Connecticut:

Patterns and Trends from May 2021 to June 2023

By : Adira Khansa Martin

What is Hartford?

Hartford is the capital city of the state of Connecticut in the United States. It is located in Hartford County and is situated on the Connecticut River. Hartford is known as the "Insurance Capital of the World" because many major insurance companies have their headquarters or regional offices in the city.

Crime In Hartford

Chances of Becoming a Victim of a Violent Crime	
1 IN 208 in Hartford	**1 IN 617** in Connecticut

Reflects 2021 calendar year; released from FBI in Oct. 2022 (latest available). Updated annually.

Objective

By knowing this analysis:

- Enhancing situational awareness
- Supporting policy and decision-making

About The **Data**

Data Columns
CaseNum
Date
Time
NibrsCode
NibrsDesc
OffenseDesc
Address
Neighbourhood
Geometry

HartfordData

https://data.hartford.gov/

Additional data also from same source

Incidents
Category

Non Crime

The police write code and offense description as no offense

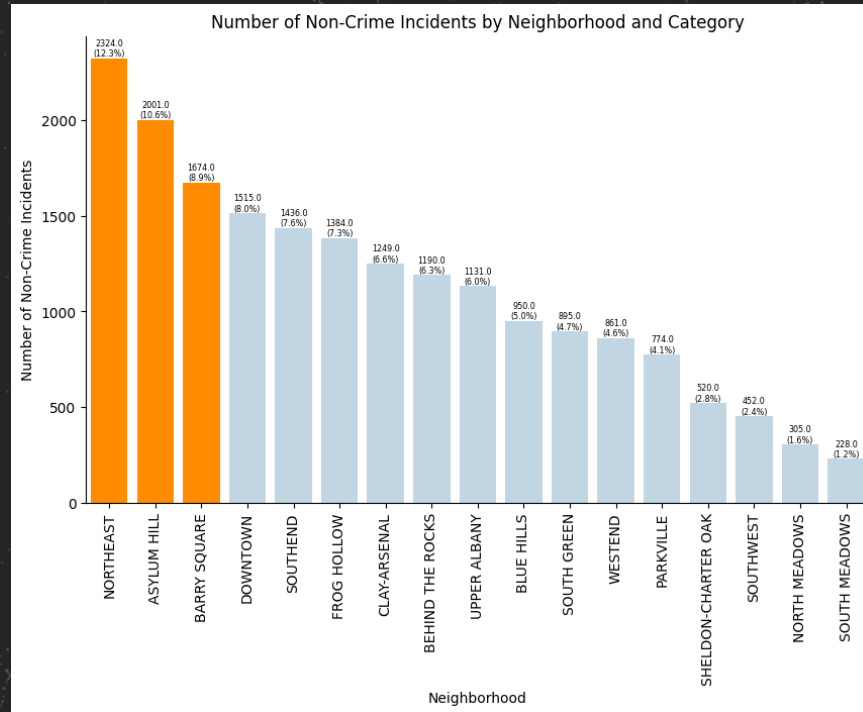## Offense

The police write the code and offense description clearly

Non Crime

Number of Non-Crime Incidents by Neighborhood and Category

These data represent the distribution of non-criminal incidents in different neighborhoods. The NORTHEAST neighborhood has the highest count of non-criminal incidents (2324), followed by ASYLUM HILL (2001) and BARRY SQUARE (1674) of total 18889 cases
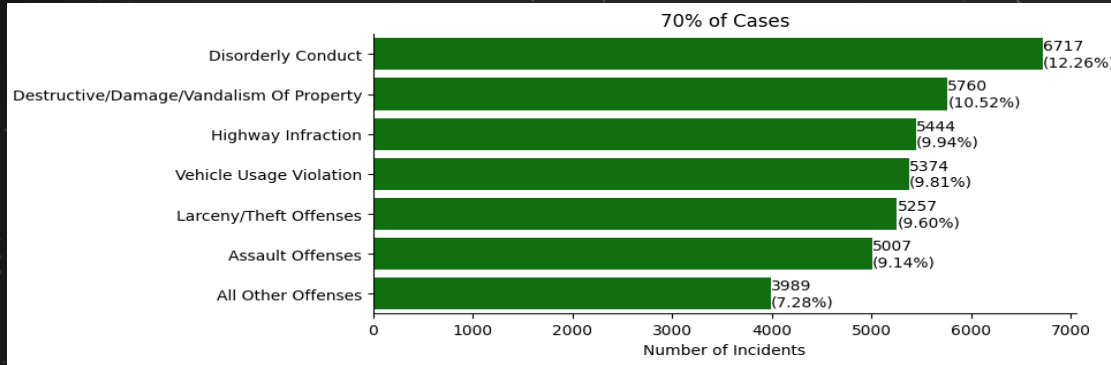
# Finding Dominant **Offense**

70% **20%** **10%**

Utilizing Pareto Analysis for Improved Insights: Distribution of Incidents by Category and Neighborhood

70% of Cases

70% of Cases

Offense	Number of Incidents
Disorderly Conduct	6717 (12.26%)
Destructive/Damage/Vandalism Of Property	5760 (10.52%)
Highway Infraction	5444 (9.94%)
Vehicle Usage Violation	5374 (9.81%)
Larceny/Theft Offenses	5257 (9.60%)
Assault Offenses	5007 (9.14%)
All Other Offenses	3989 (7.28%)

Percentage of First 70% Offense Incidents in Neighborhood

|	NORTHEAST	DOWNTOWN	BARRY SQUARE	ASYLUM HILL	SOUTHEND	FROG HOLLOW	CLAY-ARSENAL	UPPER ALBANY	BEHIND THE ROCKS	SOUTH GREEN	PARKVILLE	BLUE HILLS	WESTEND	SHELDON-CHARTER OAK	SOUTHWEST	SOUTH MEADOWS	NORTH MEADOWS
Disorderly Conduct	2.12	1.57	1.8	1.92	1.41	1.61	1.33	1.15	1.35	1.06	0.87	0.69	0.84	0.47	0.59	0.12	0.27
Destructive/Damage/Vandalism Of Property	1.56	1.89	1.42	1.53	1.5	1.14	0.86	0.78	0.81	0.6	0.71	0.77	0.97	0.45	0.49	0.27	0.28
Highway Infraction	1.61	1.04	1.28	0.83	1.23	1.01	0.97	0.9	0.59	0.53	0.41	0.53	0.33	0.24	0.21	0.32	0.18
Vehicle Usage Violation	1.86	0.53	1.47	0.83	1.23	1.15	1.51	1.01	0.63	0.5	0.52	0.78	0.27	0.24	0.16	0.24	0.09
Larceny/Theft Offenses	1.04	1.72	1.15	1.43	1.36	0.92	0.7	0.62	1.11	0.52	0.86	0.76	0.96	0.38	0.47	0.43	0.43
Assault Offenses	1.58	1.02	1.32	1.55	1.1	1.16	1.09	0.95	0.75	1.03	0.57	0.58	0.53	0.32	0.23	0.08	0.12
All Other Offenses	1.04	2.63	0.84	0.86	0.54	0.78	0.68	0.49	0.65	0.53	0.49	0.25	0.31	0.24	0.15	0.08	0.15

Neighborhood

The data shows variations in crime rates across different neighborhoods, highlighting the importance of neighborhood context in influencing crime. Neighborhoods like Downtown have higher crime rates across multiple offense categories, while neighborhoods like North Meadows and South Meadow have relatively lower crime rates.
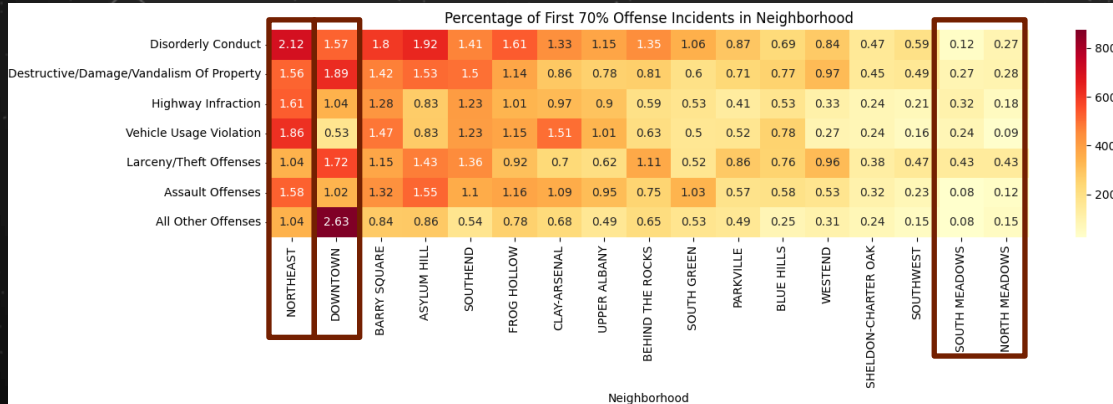
Notheast stands out with a significant count of Disorderly Conduct cases, suggesting a challenge related to maintaining public order and peaceful coexistence in the area.

Next 20% of Cases
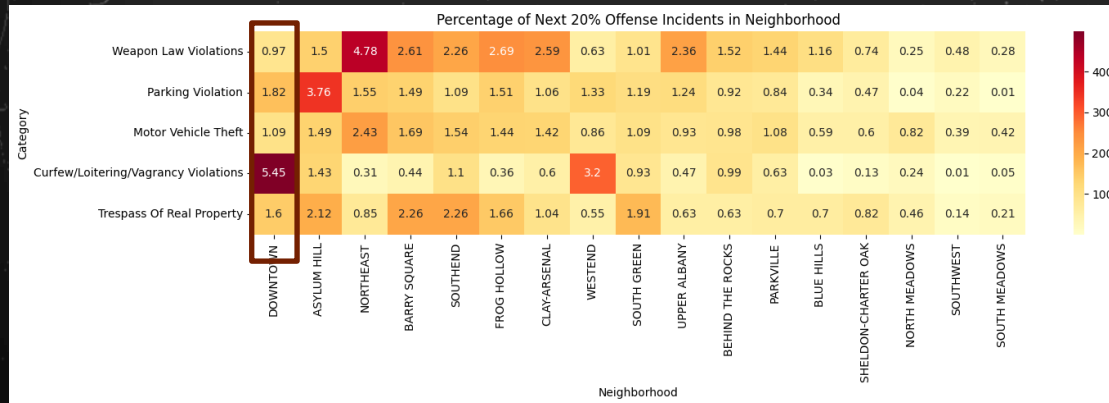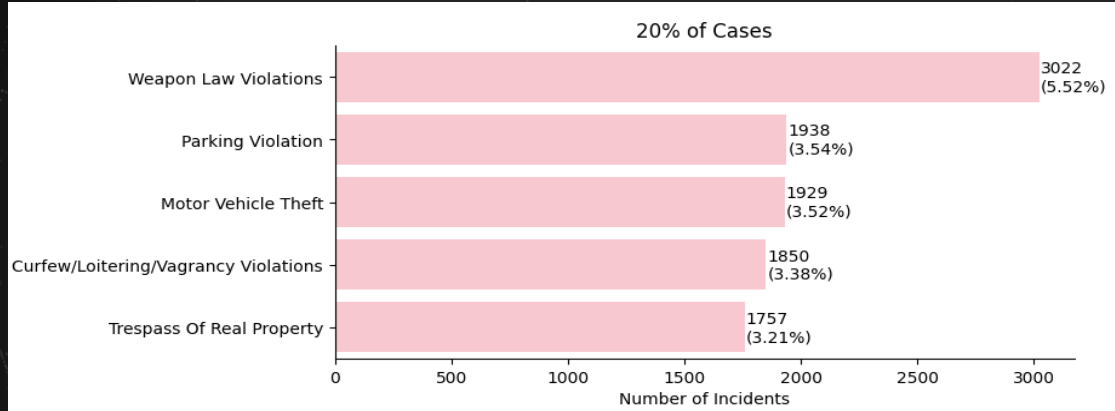
Despite "Weapon Law Violation" being the most prevalent incident category among the next 20% of total incidents, the dominance of "Curfew" issues in DOWNTOWN stands out significantly, accounting for 5.45% of the incidents.

Last 10% of Cases
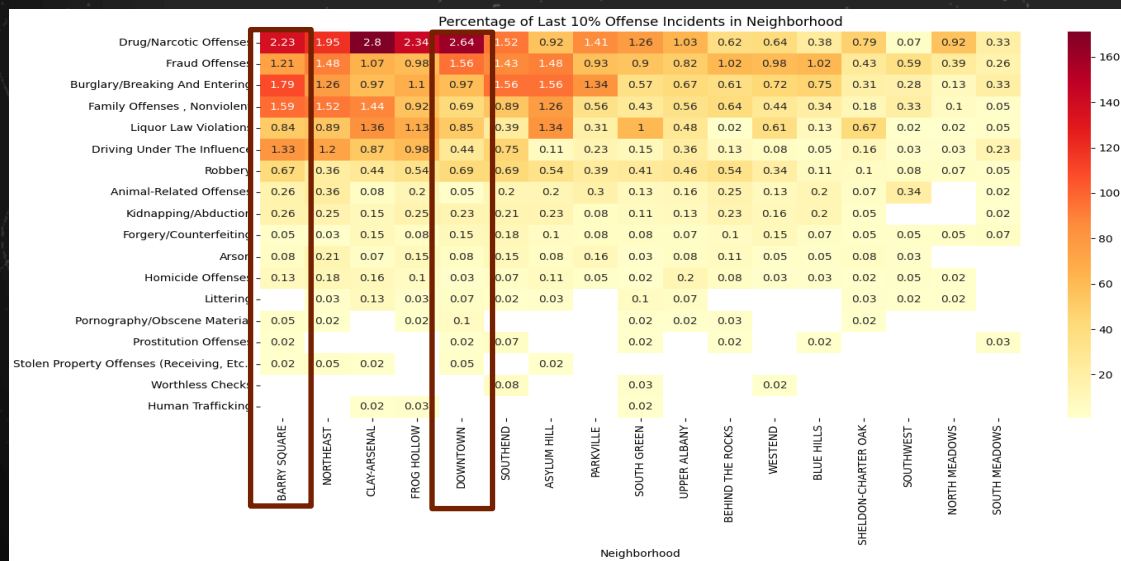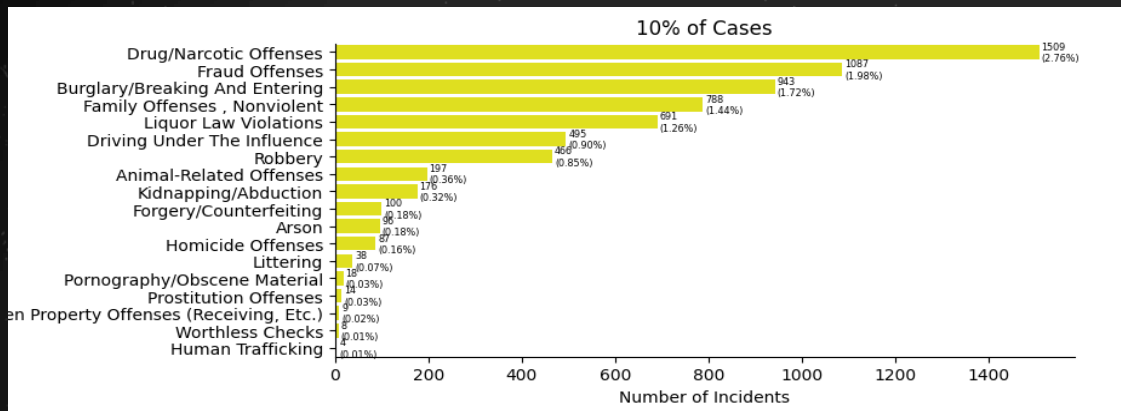
Although Barry Square has the highest number of offenses in the Last 10% of the data, the neighborhood Clay-Arsenal is predominantly dominated by drug/narcotic offenses.

Furthermore, it's interesting to observe that Downtown has a substantial number of various offenses across multiple categories, including drug/narcotic offenses, fraud offenses, and burglary/breaking and entering. This suggests a diverse range of criminal activities taking place in the Downtown area.

Time
Analysis

Incident by Season

Number of Incidents by Season
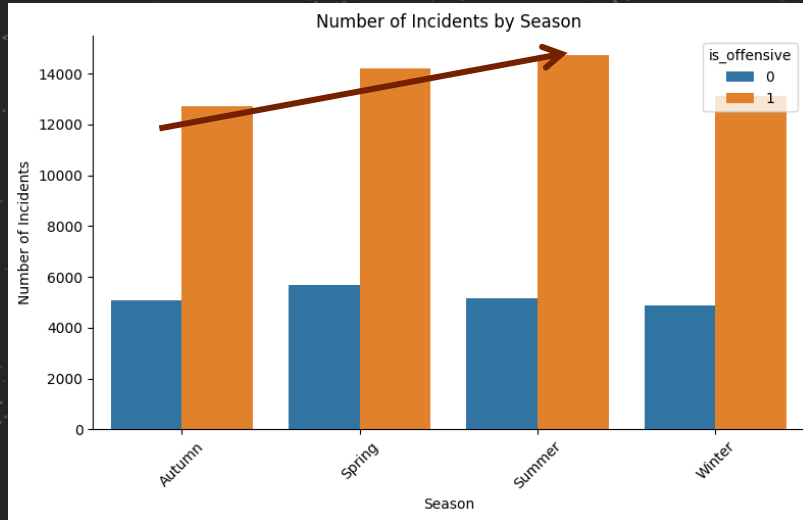
The frequency of incidents increases as the temperature rises in that area.

According psychology, higher temperatures can affect a person's emotional and psychological state. Hot temperatures can increase restlessness, fatigue, and irritability, which can in turn influence a person's behavior and increase the likelihood of criminal actions.

Note :The relationship between temperature and crime is complex and can be influenced by various other factors as well.

Hourly Non Crime

Non Crime Volume: Weekdays (blue) vs Weekend (orange)
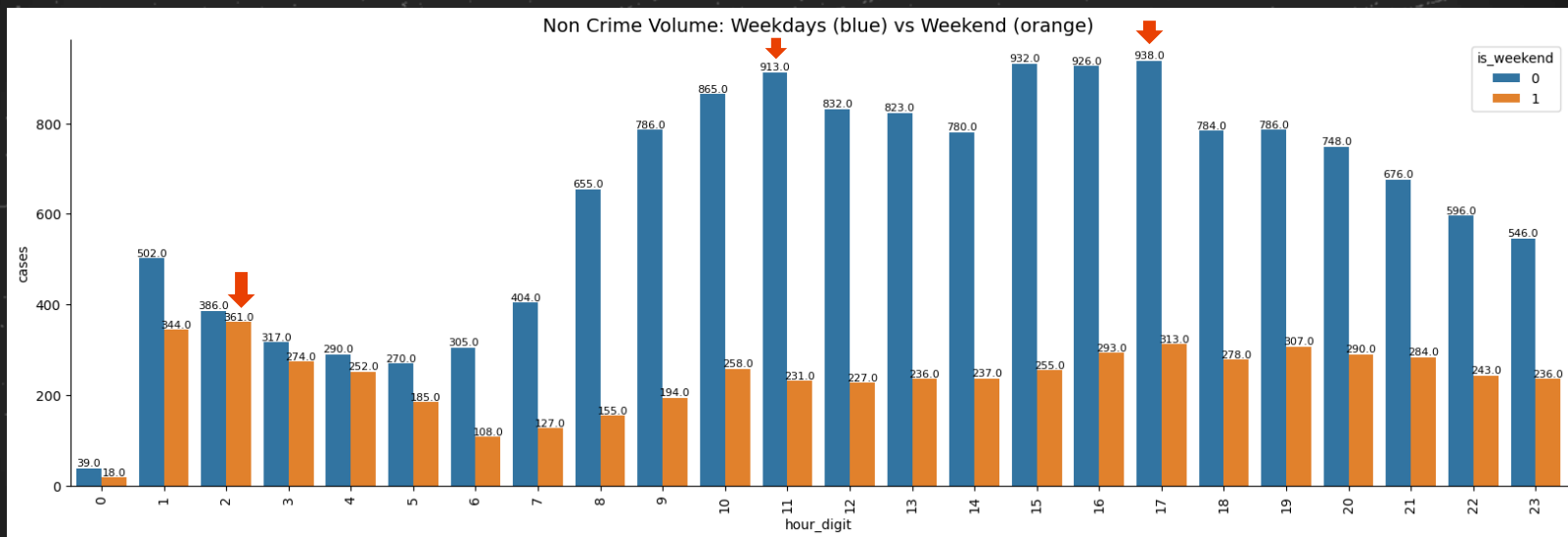
The data reveals an interesting trend: during weekdays, non-crime incidents peak at 11 PM and 5 PM, while on weekends, the peak hours shift to around 2 AM and 5 PM. This pattern suggests that the community shows heightened awareness and responsiveness to incidents that are not classified as crimes during late-night hours.

Based on this analysis, it can be inferred that the community is particularly attentive to incidents that may not be officially classified as crimes but still require attention during the late-night period.
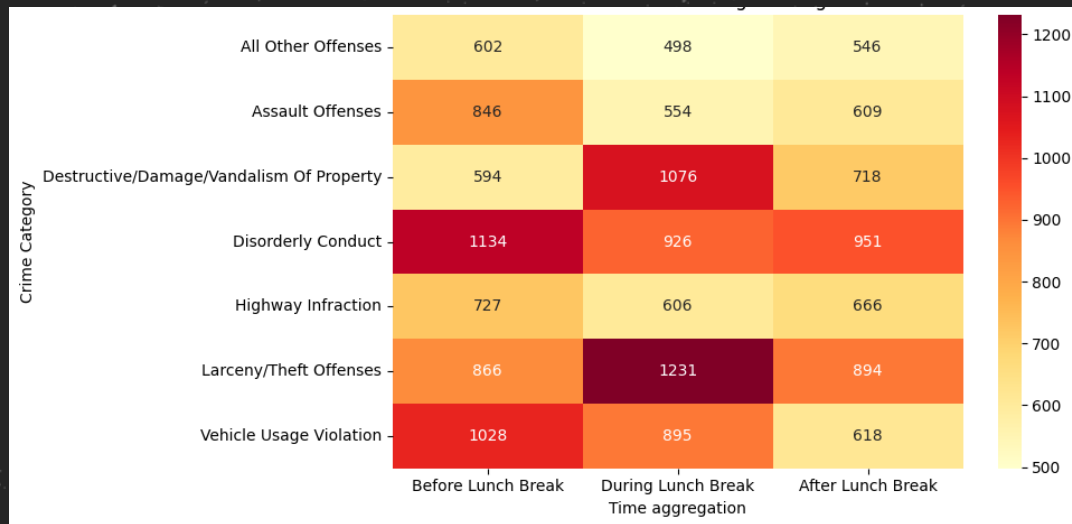
Offense
using time aggregation

Crime and Offensive Frequency: Weekdays vs Weekends
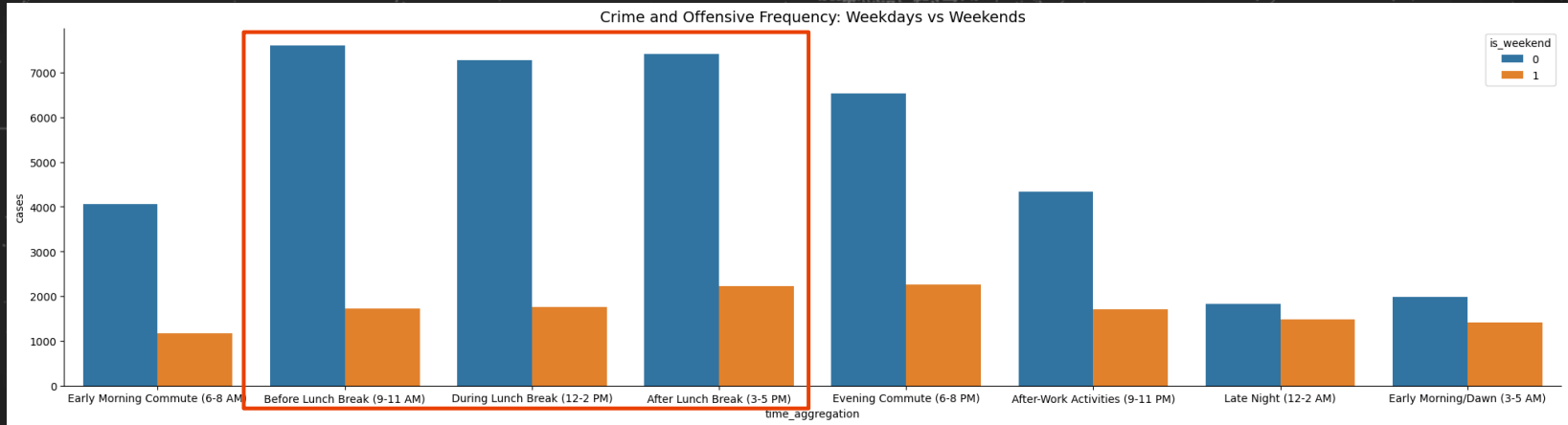
For crimes and offenses, it is evident that they occur predominantly during working hours. Specifically, before lunch (9-11 AM), during lunch (12-2 PM), and after lunch (3-5 PM) are the periods when crimes are most pronounced.

Crime On Working Hours

Based on the top 70% of crime types in the dataset

This graph shows that the category of larceny/theft offenses is most prevalent during the lunch break, followed by vandalism. The categories of disorderly conduct and vehicle usage violation occur before the lunch break, while the level of crime seems to decrease after the lunch break.
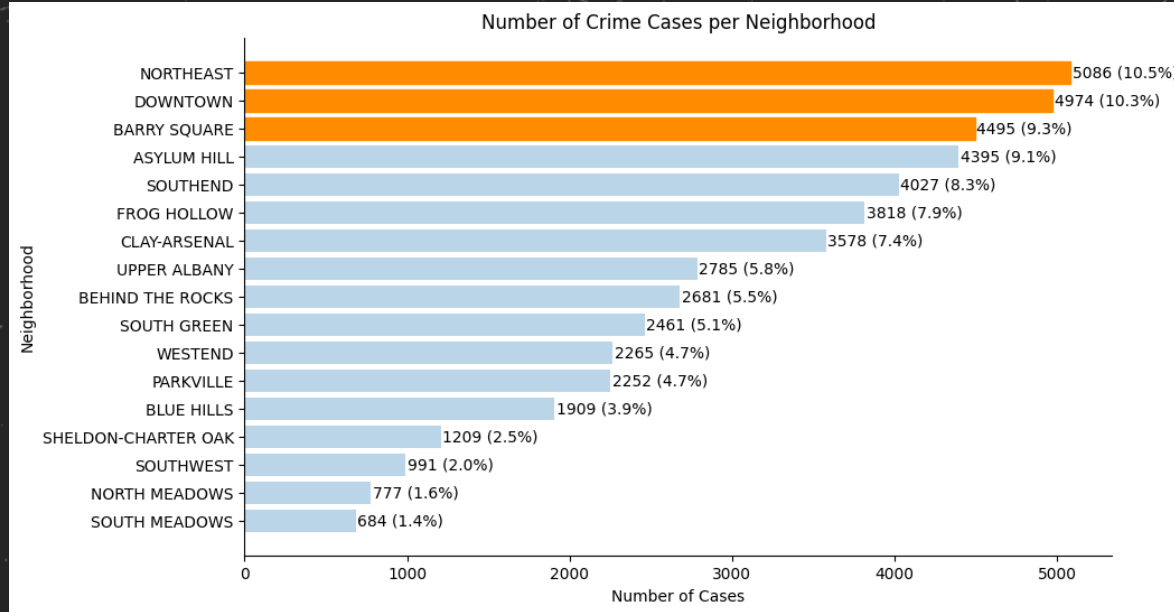
The routine activity approach suggests that crime is more likely to occur during midday due to the convergence of three elements: a motivated offender, suitable targets, and the absence of capable guardians. During midday, there may be an increase in potential offenders who are active and looking for opportunities to commit crimes. Additionally, there may be more potential targets available during this time, such as unattended homes or businesses.

Crime In Neighborhood

Which Neighbourhood has the higher crime?

Number of Crime Cases per Neighborhood

Neighborhood	Number of Cases
NORTHEAST	5086 (10.5%)
DOWNTOWN	4974 (10.3%)
BARRY SQUARE	4495 (9.3%)
ASYLUM HILL	4395 (9.1%)
SOUTHEND	4027 (8.3%)
FROG HOLLOW	3818 (7.9%)
CLAY-ARSENAL	3578 (7.4%)
UPPER ALBANY	2785 (5.8%)
BEHIND THE ROCKS	2681 (5.5%)
SOUTH GREEN	2461 (5.1%)
WESTEND	2265 (4.7%)
PARKVILLE	2252 (4.7%)
BLUE HILLS	1909 (3.9%)
SHELDON-CHARTER OAK	1209 (2.5%)
SOUTHWEST	991 (2.0%)
NORTH MEADOWS	777 (1.6%)
SOUTH MEADOWS	684 (1.4%)

The neighborhood with the highest number of crime cases is Northeast with a total of 5086 cases. Following closely behind is Downtown with 4974 cases, and Barry Square with 4495 cases. These three neighborhoods have the highest crime rates in the area

Neighborhood Offense Characteristics

Neighbourhood	Top Crime 1	Worried Time 1	Top Crime 2	Worried Time 2	Top Crime 3	Worried Time 3
ASYLUM HILL	Parking Violation	During Lunch Break	Larceny/Theft Offenses	Before Lunch Break	Destructive/Damage/Vandalism Of Property	Early Morning Commute
BARRY SQUARE	Disorderly Conduct	After Lunch Break	Highway Infraction	Evening Commute	Vehicle Usage Violation	Before Lunch Break
BEHIND THE ROCKS	Disorderly Conduct	After Lunch Break	Larceny/Theft Offenses	After Lunch Break	Disorderly Conduct	During Lunch Break
…	….	…	…	…	…	…

Check out my simple web app on https://hartford-incidents-analysis.streamlit.app/ for more

Conclusion

- Although Downtown is not among the top three neighborhoods with the highest offenses, it has the highest diversity in types of crimes committed.
- The meadow area is known for its peaceful environment.
- The Northeast neighborhood of Hartford has a higher prevalence of non-criminal incidents, closely followed by Asylum Hill. These incidents peak at 5 PM on weekdays and around 2 AM or 5 PM on weekends, indicating specific times when non-criminal issues are more likely to occur.
- Regarding offense incidents, the Northeast neighborhood also stands out with the highest number of occurrences.
- Disorderly conduct is the most common crime in Hartford, mainly happening between 9 AM and 5 PM, aligning with regular working hours.

Recommendation

- Increase police presence: Deploy more officers in high-crime areas to deter criminals and increase community safety.
- Enhance environmental design: Adopt crime prevention principles like clear visibility, minimal hiding spots, and well-maintained premises to discourage criminal activities.
- Foster community outreach: Encourage businesses to engage with the community, participate in local events, and support initiatives to build positive relationships and prevent crime.
- Implement targeted policing: Use data analysis to identify high-crime areas and focus law enforcement resources where they are most needed.

- Strengthen community-police partnerships: Foster collaboration through community policing programs and regular meetings between residents and law enforcement.
- Embrace surveillance and technology: Invest in cameras, smart sensors, and crime mapping tools to enhance situational awareness and improve response capabilities.
- Support at-risk individuals and communities: Provide resources such as job training, education, mental health, and substance abuse services.
- Promote community resilience: Encourage community engagement, social gatherings, and events to strengthen social bonds and discourage criminal behavior

Thank You

Appendix

Python code: Click here

Data Set:
Main Data : Click here
Additional data : Click here

Streamlit : Click here