

Crime Analysis 2020

Gainesville Office of Strategic Initiatives

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Introduction

The goal of this report is to identify crime trends in the Gainesville metropolitan area. The hope is to aide in coordinating police resources more effectively, and generating ideas for how the community can be enhanced through programs, infrastructure changes and other social measures.

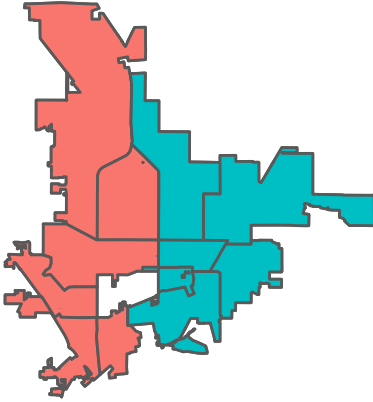
Data

The data for this exploration is based on the public “*Crime Responses*” dataset, which is available here. The version used in this report was last updated on November 3rd, 2020.

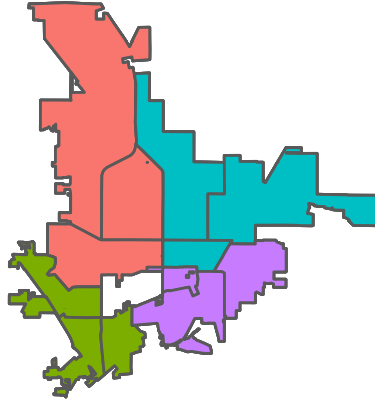
Additional information about districts is available [here](#).

Police

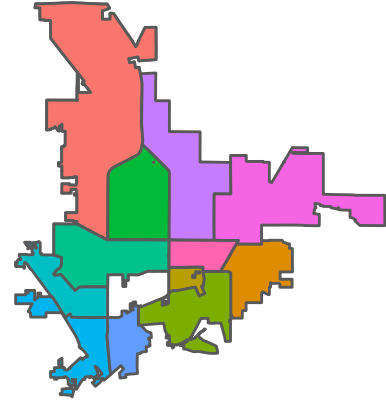
Districts



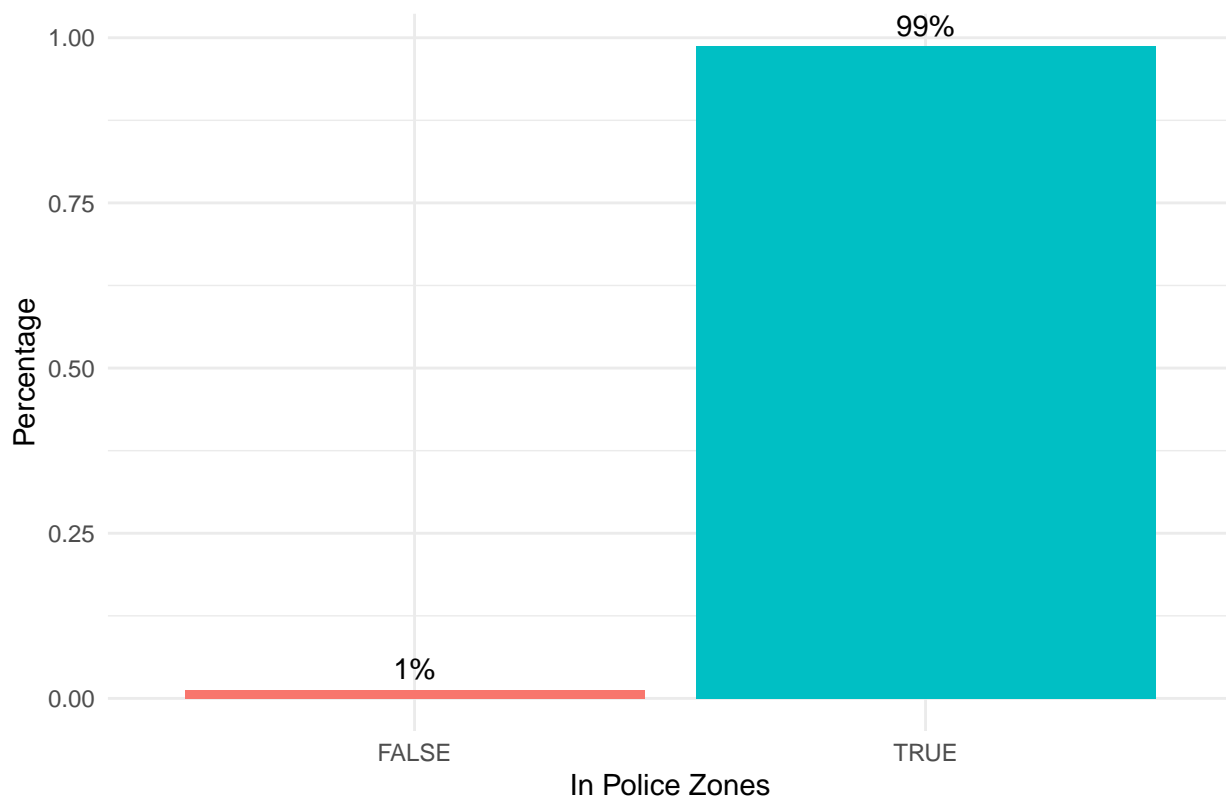
Sectors



Zones



Percentage of Incidents That Occured Within Police Zones



There is a small percentage of crimes that have locations outside of the given geographic areas. A small percentage of the crimes take place in other parts of Florida, with an even smaller percentage happening out of state. The focus is on improving life for the immediate community, therefore non-Gainesville records will be discarded for the time being.

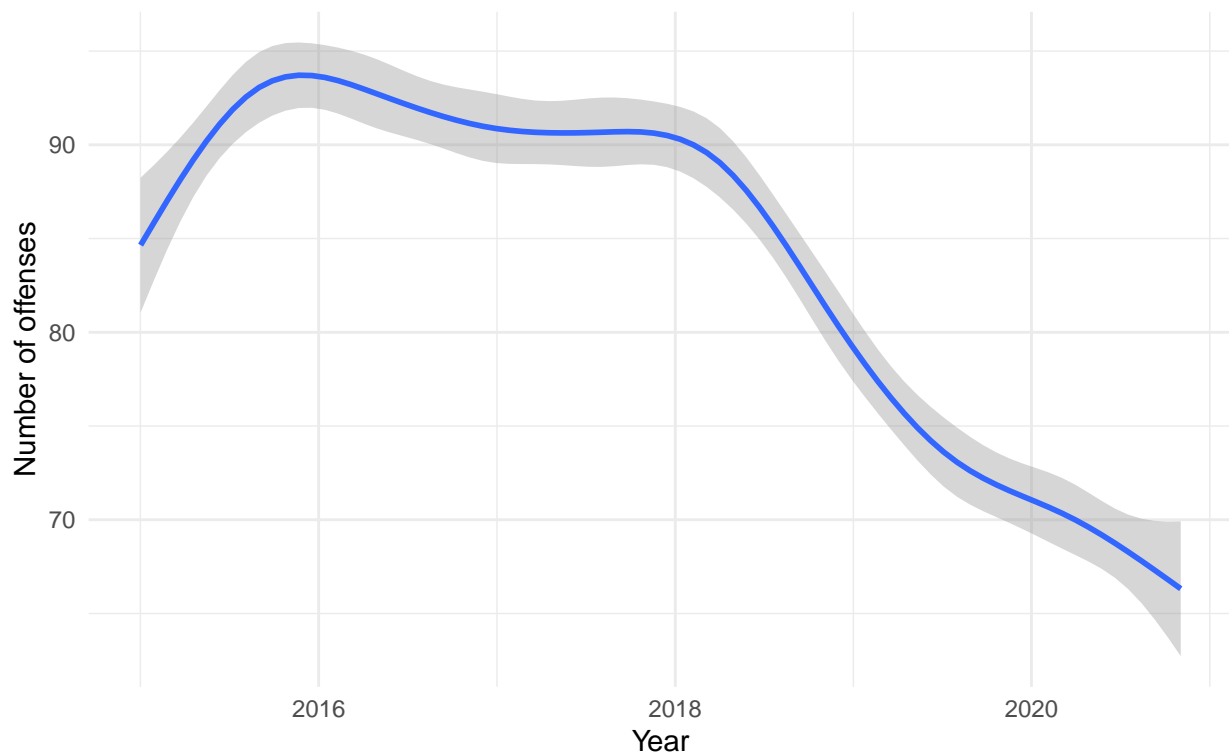
Common Crimes

A high level overview of crime patterns across multiple zones will allow for holistic insights into actions that might be taken to help reduce crime.

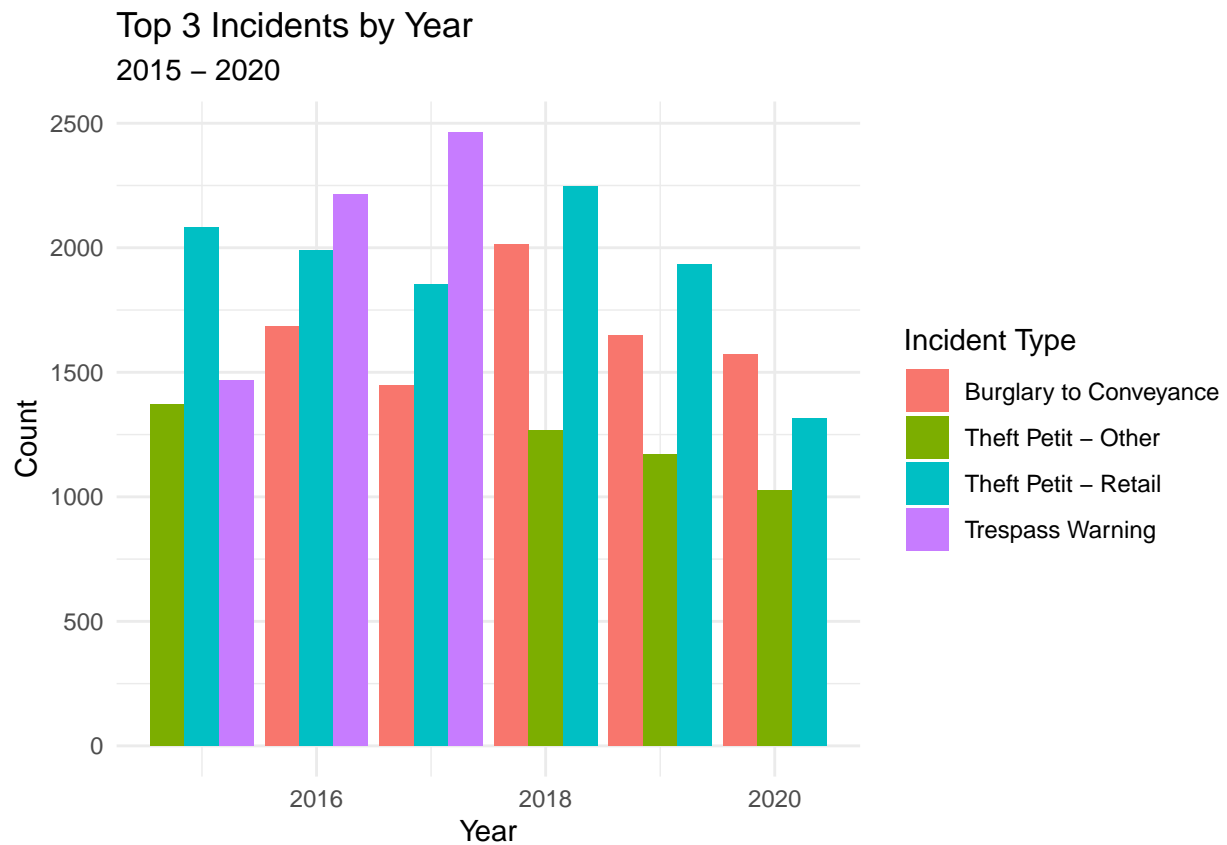
Time Trends

Offenses by Date

2015 – Present

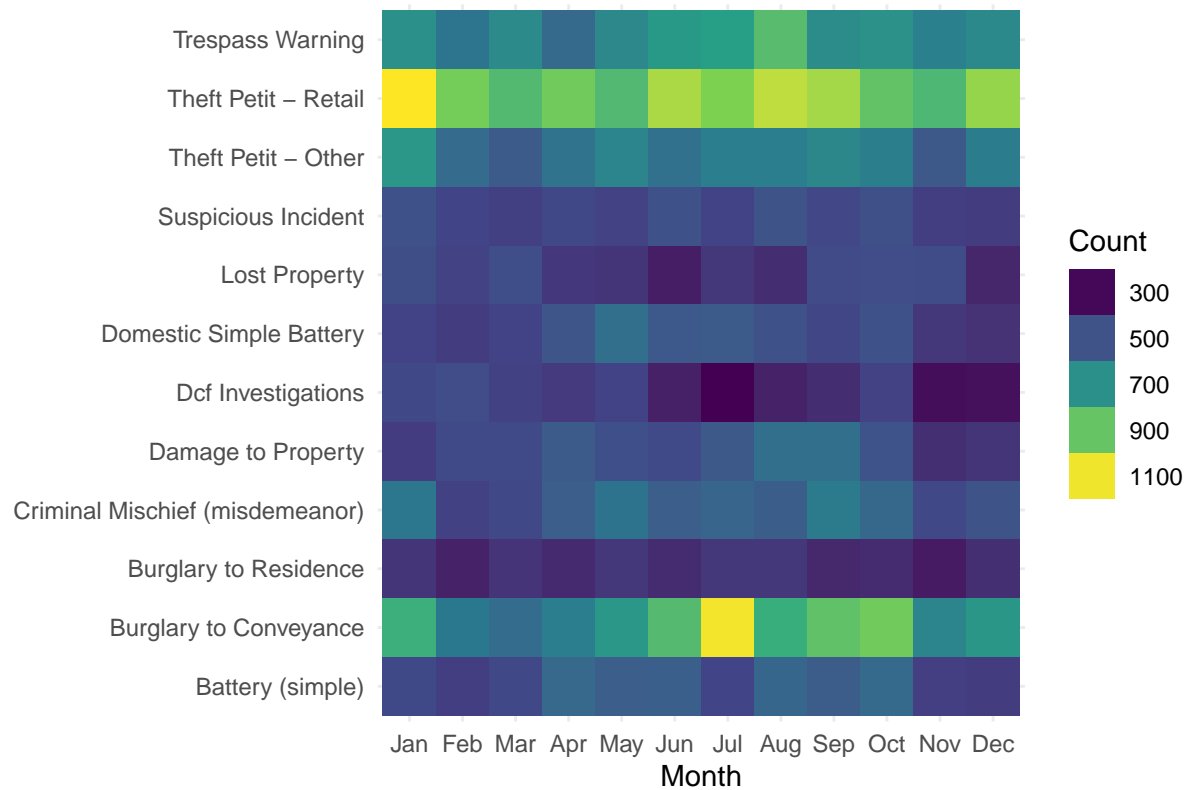


This graph displays that the steady crime decrease from 2015 to 2020.



Over the last 5 years the biggest plights to the community has been conveyance burglaries, retail theft, and *other* forms of petit theft. In agreement with the previous graph, it is evident that these crimes have been reduced in recent years.

Heatmap of Most Prevalent Crimes



Burglary to conveyance peaks drastically in July. Retail theft also seems to peak quite drastically in January. All other crimes tend to follow weak patterns throughout the year.

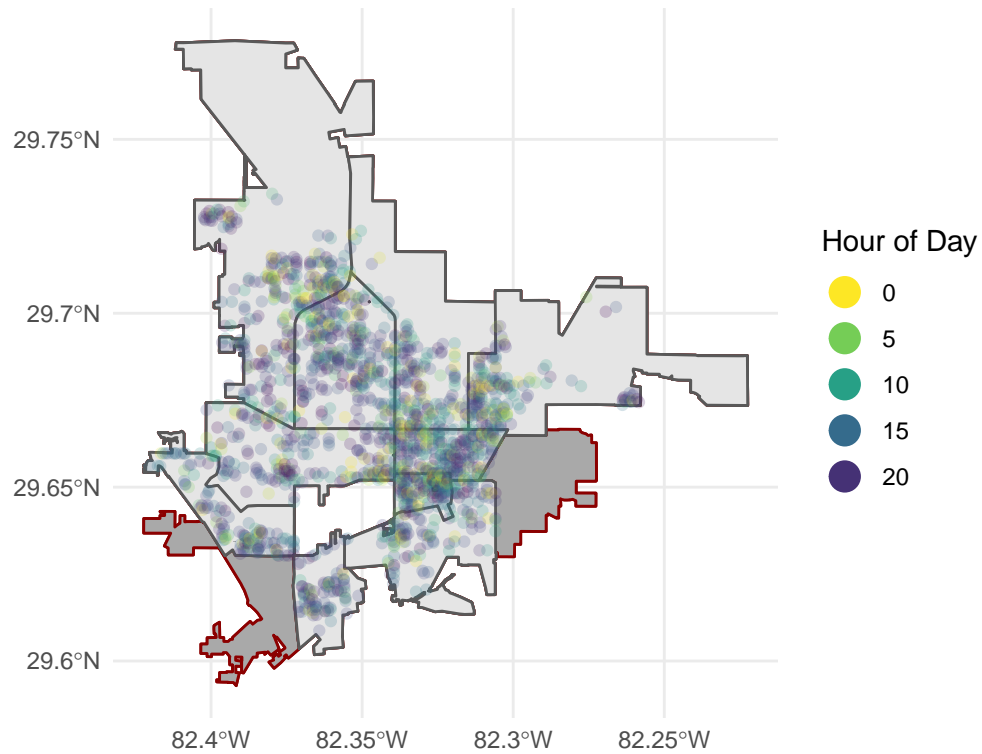
Burglary to Conveyance

The majority of zones suffer from burglary to conveyance as their most common crime.

Echo and Juliet are the only zones that deviate from this general trend.

Heatmap of Crimes

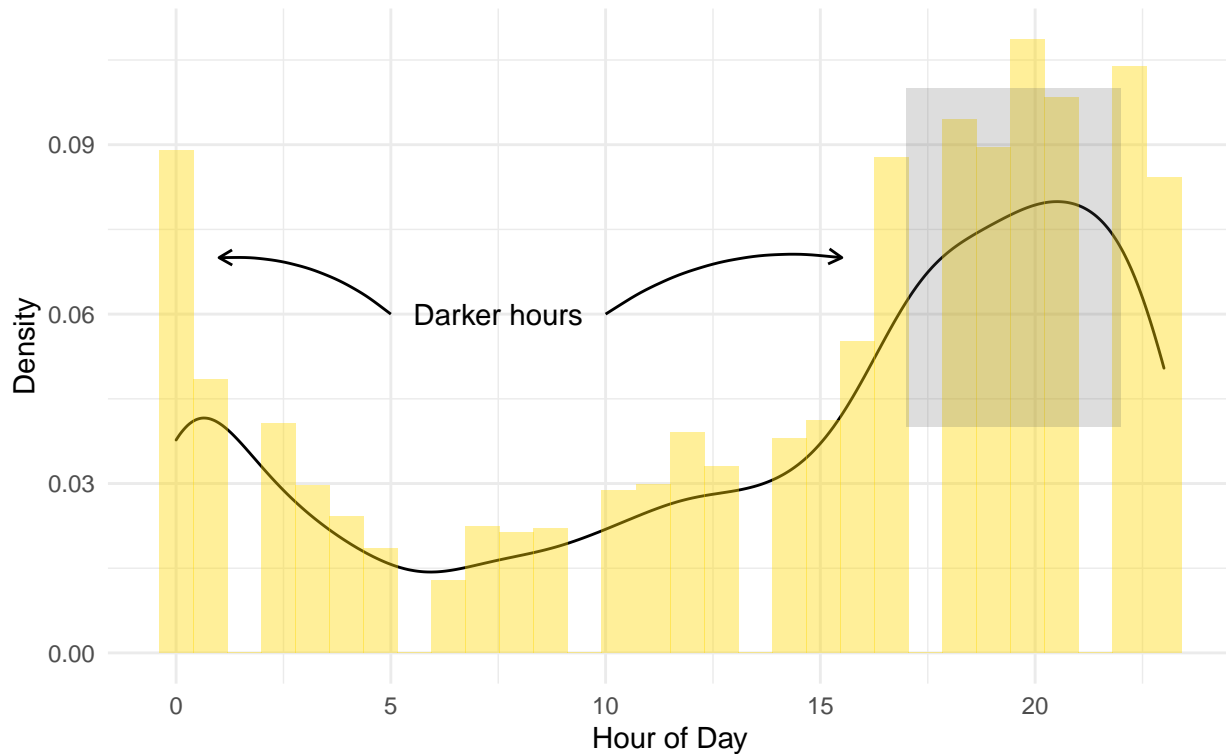
Burglary of Conveyance | Excluding Echo and Juliet



Observe that the majority of points on the map are dark, indicating that the crime occurred at a later hour in the day. Note the distribution of when these crimes are committed for all zones.

When do burglary of conveyances happen?

For all zones

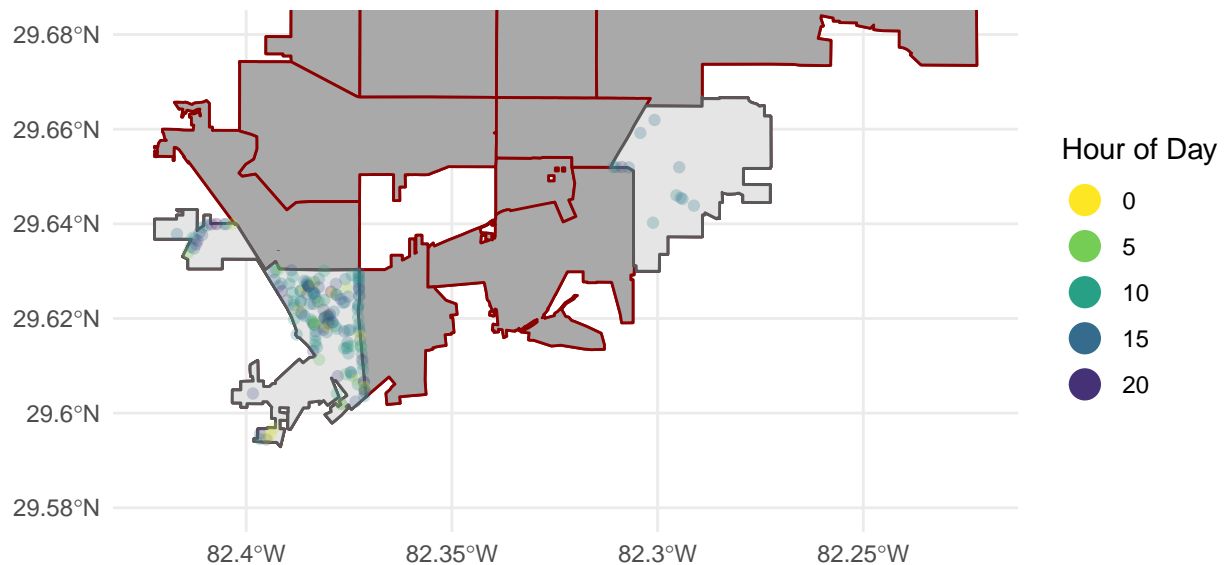


It is advisable to increase street side illumination, not only would it deter conveyance burglaries, it would also enhance the safety of pedestrians, increase civilian surveillance as well as increase driver awareness in streets, parking lots, and driveways.

Petit Theft - Retail

Heatmap of Crimes

Theft Petit – Retail | Zones Echo and Juliet



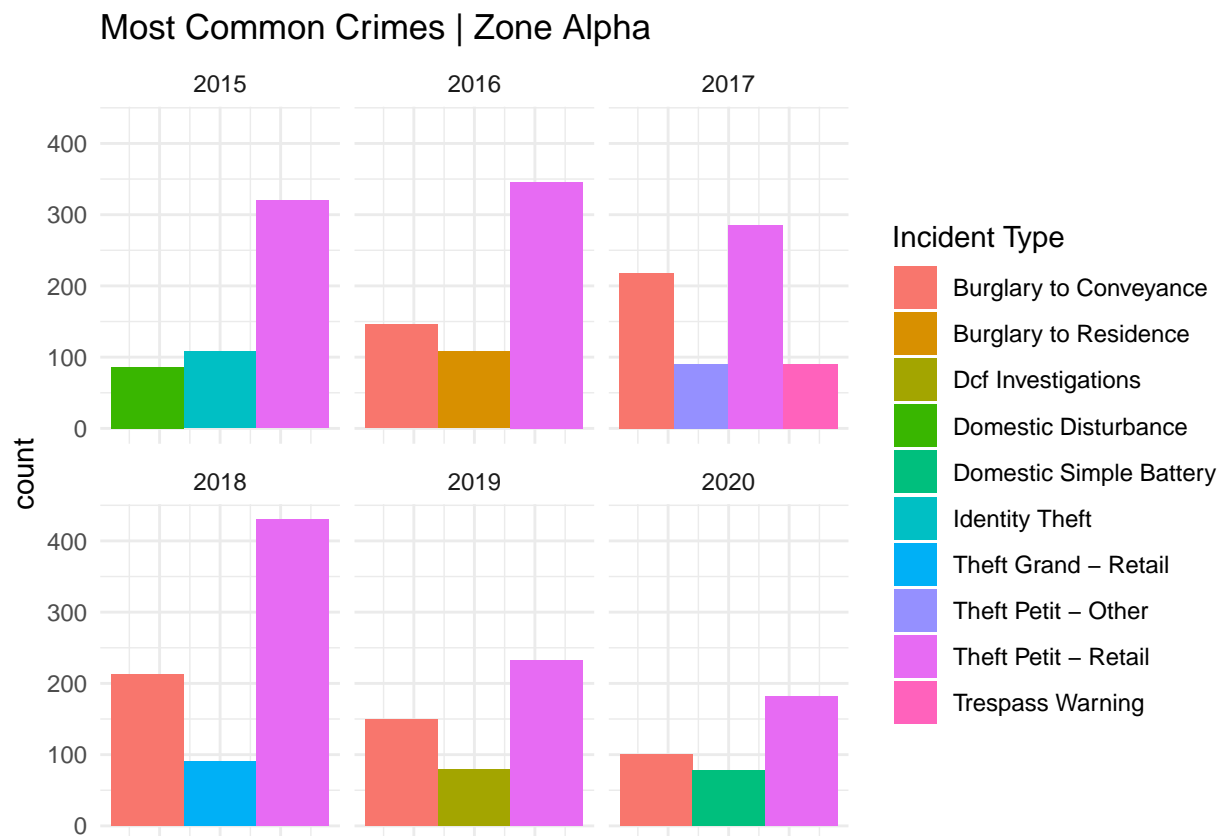
Zone Echo (bottom left) accounts for 30% of all petit retail theft. In the drill down later it's observed that there are three stores that almost account entirely for the retail theft. They are:

- Walmart
- Lowe's
- Target

Detailed Zone Analysis

The detailed zone analysis will provide specific insight into crimes for all the zones respectively. This allows for granular strategic planning within the aforementioned zones.

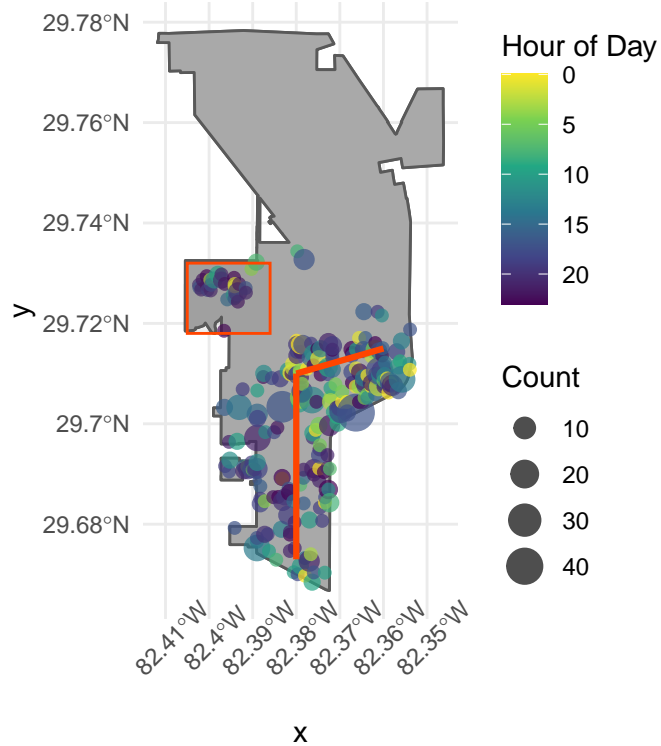
Alpha



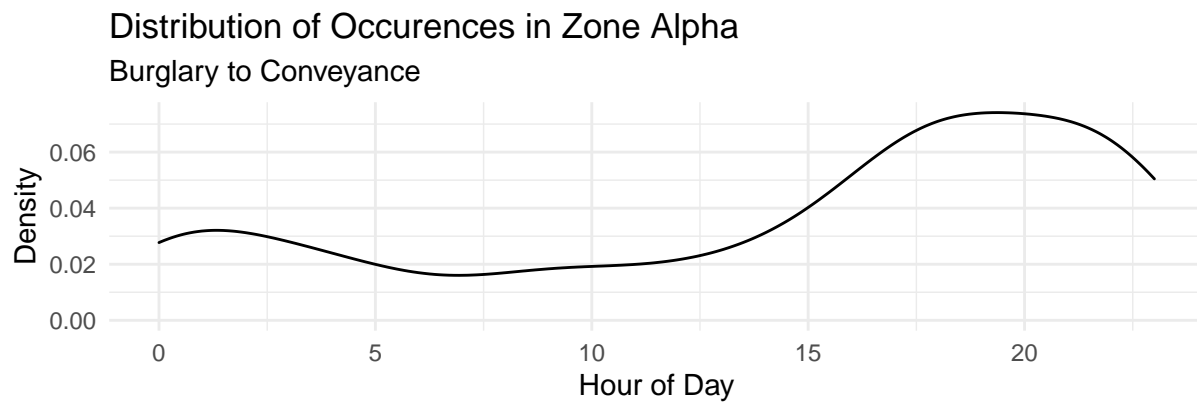
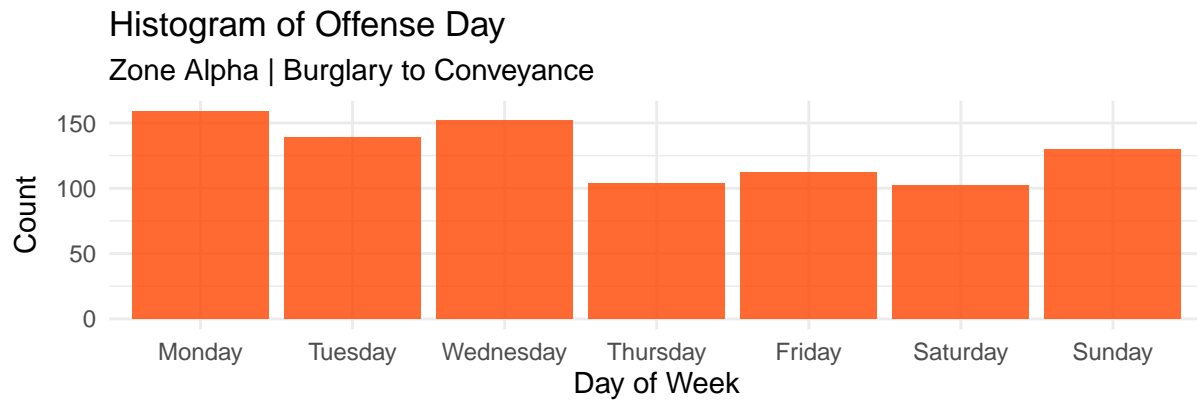
Since 2015 the rate of conveyance burglaries has slowly declined, however it still continues to be the main source of crime in zone Alpha.

Hotspots for Zone Alpha

Burglary to Conveyance



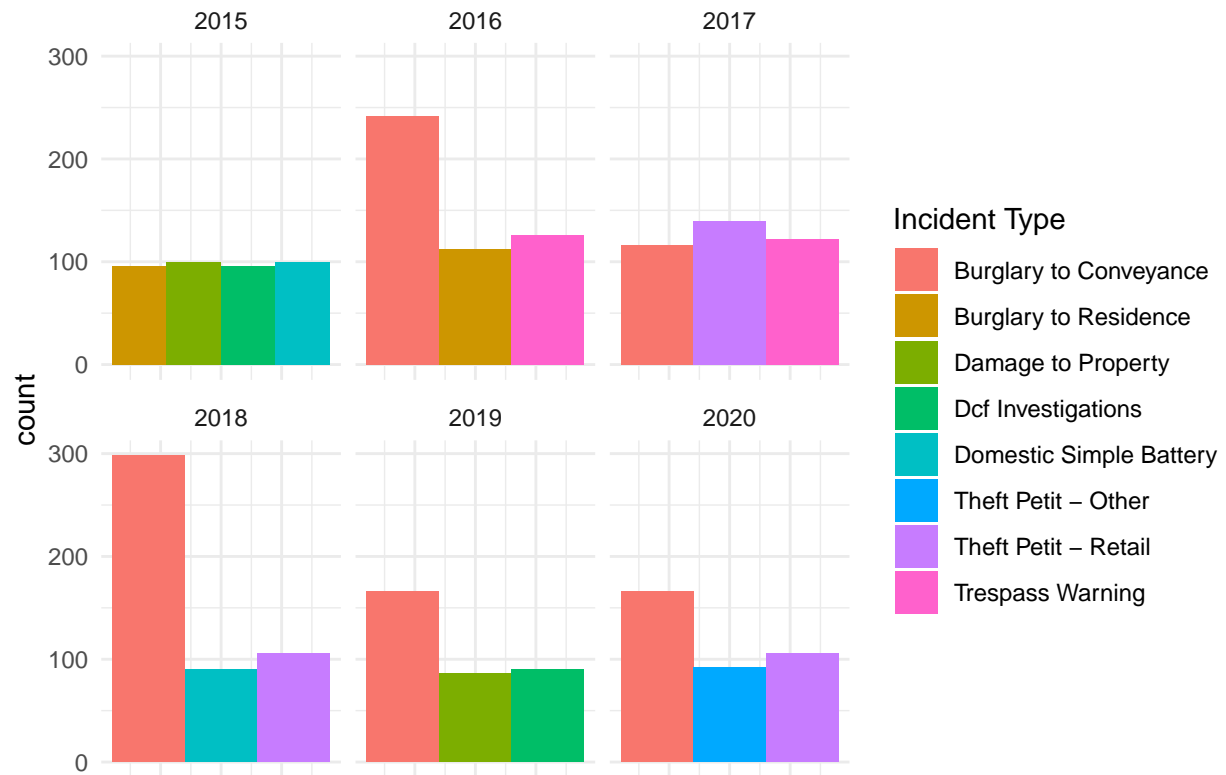
The orange-ish lines indicate suggested police routes for this graph and the subsequent graphs. The rectangle indicates a hotspot of conveyance crimes. This would be useful for the police responsible for patrolling this zone by guiding their routes to optimize their coverage.



The distribution of time that the burglaries occur agrees with the general trend shown earlier in the report; darker hours of the day lead to more crimes. There is not a significantly prominent day of the week that the crimes tend to occur.

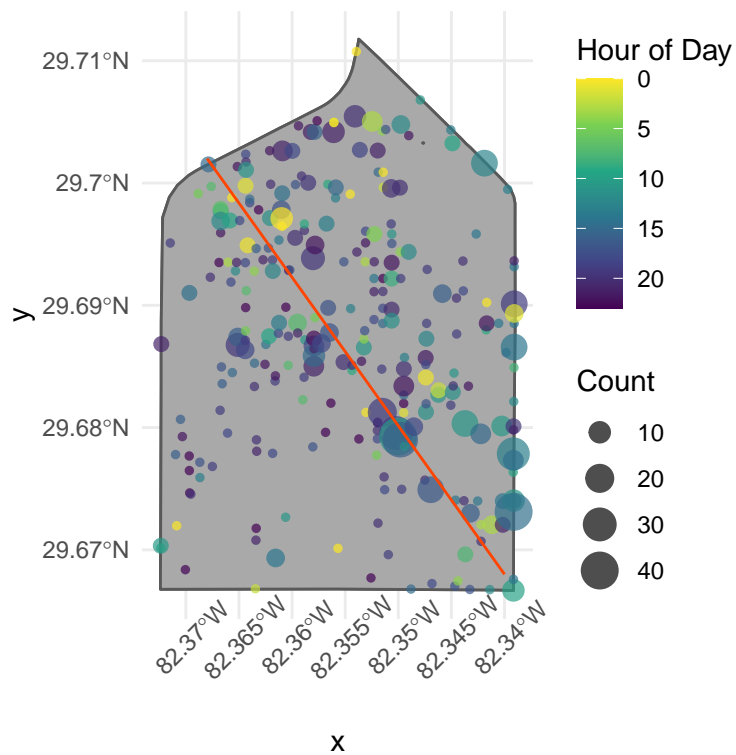
Bravo

Most Common Crimes | Zone Bravo

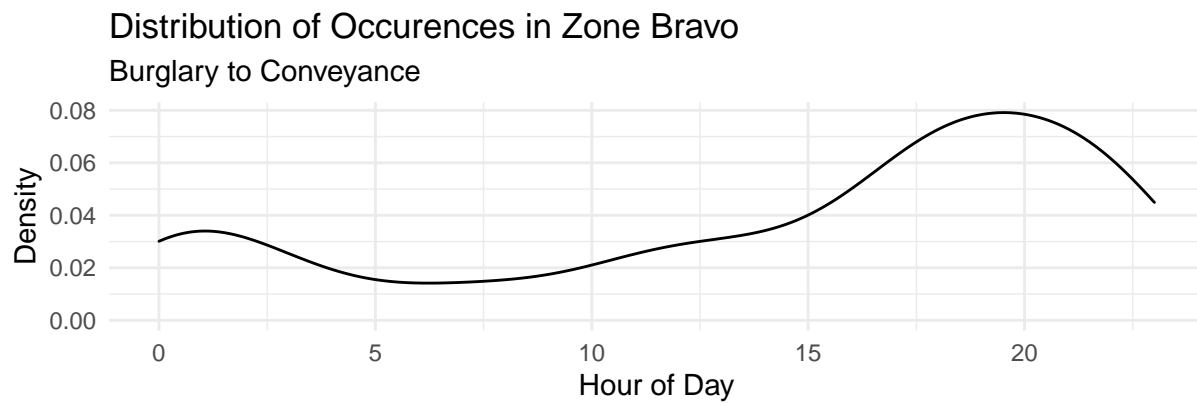
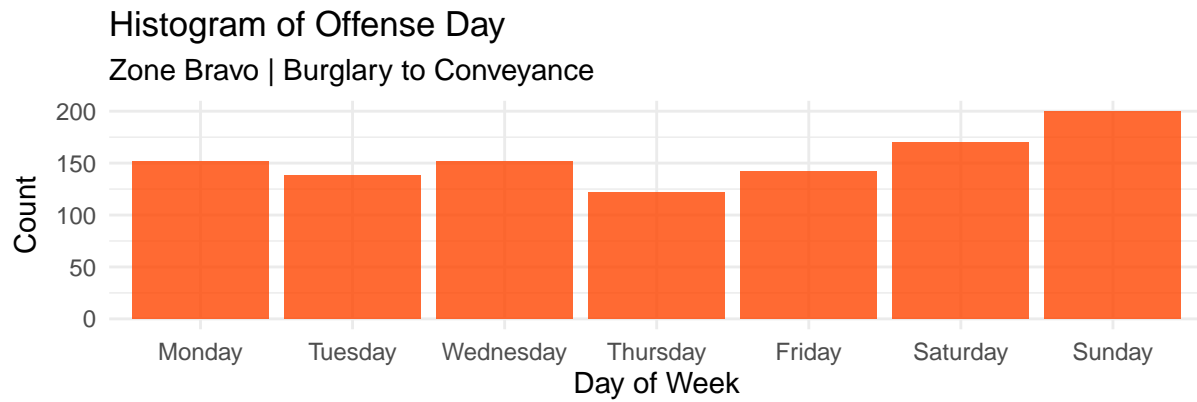


Bravo does not show a strong trend in crime change. However, observe that in recent years, burglary to conveyance has remained prominent and has even seen a slight increase from 2019.

Hotspots for Zone Bravo Burglary to Conveyance



This heatmap clearly shows a somewhat even distribution of crime that is skewed towards the North. A reasonable strategy could be to position police officers along the NW/SE diagonal from 29.705°N to 82.34°W. This way the most of the area is covered, or is within relatively close distance. Note these orange lines are created by hand are not exactly drawn to reduce residual distance from crime centers.



Sharing similarities with zone Alpha, and the overall trend, darker hours lead to more crimes. Additionally, observe a general trend that burglaries tend to occur later in the week. However, this is a very weak correlation.

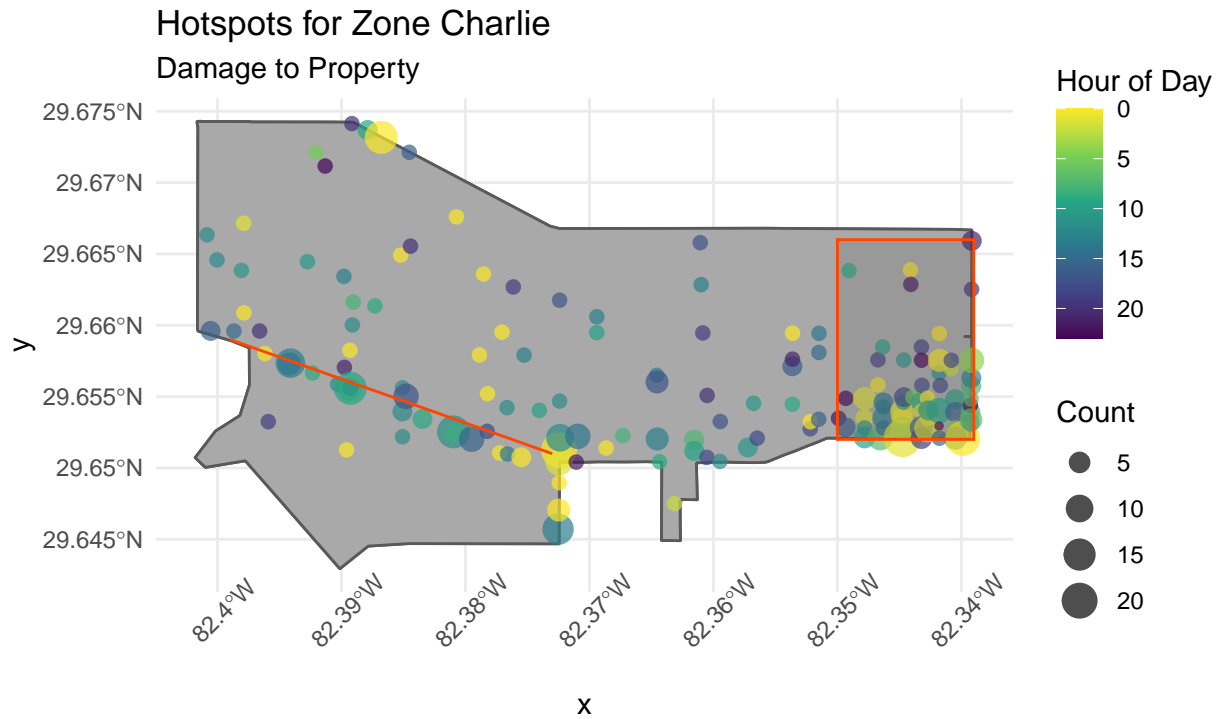
Charlie

Most Common Crimes | Zone Charlie

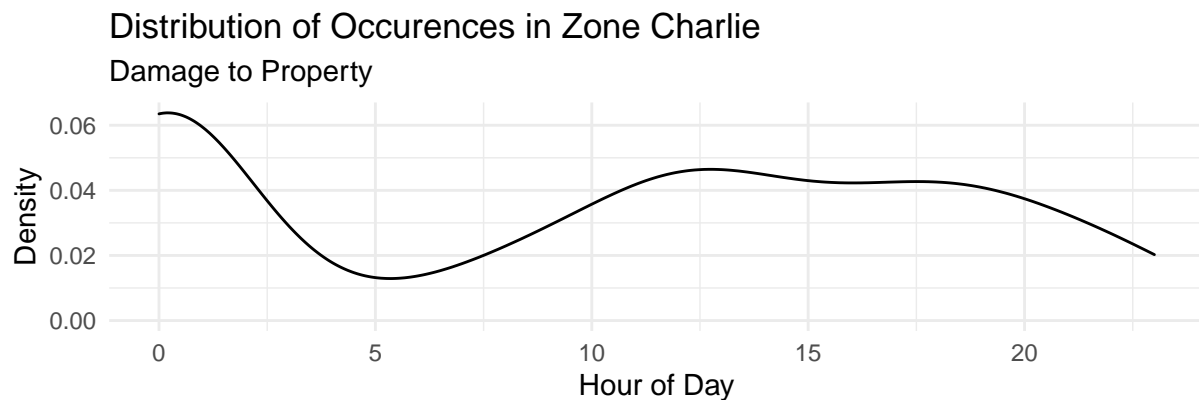
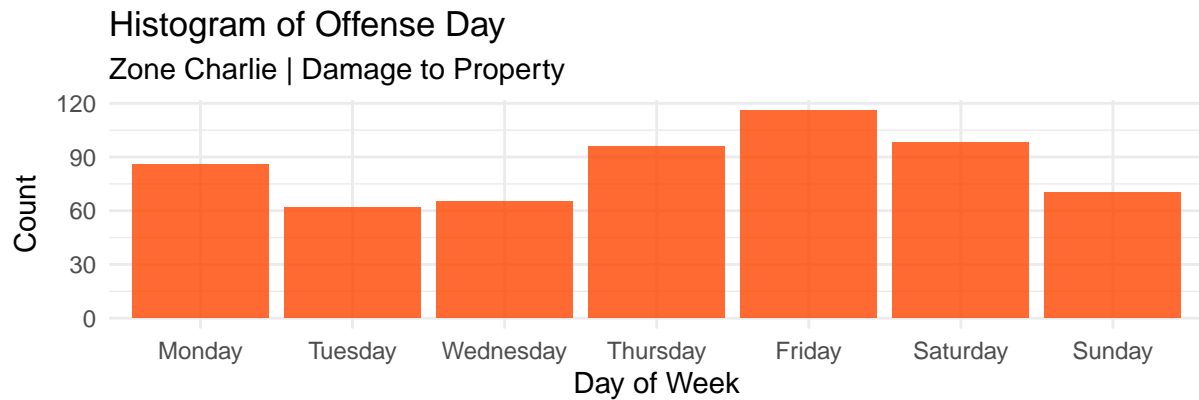


Zone Charlie has seen a massive decline in crime since 2018. There seems to be a nearly equal share of both burglaries to conveyance, criminal mischief, and damage to property in 2020. Clearly, whatever program or strategy was implemented to reduce burglary to conveyance in Zone Charlie should be considered, if possible, in other zones suffering from similar plights.

Damage to property



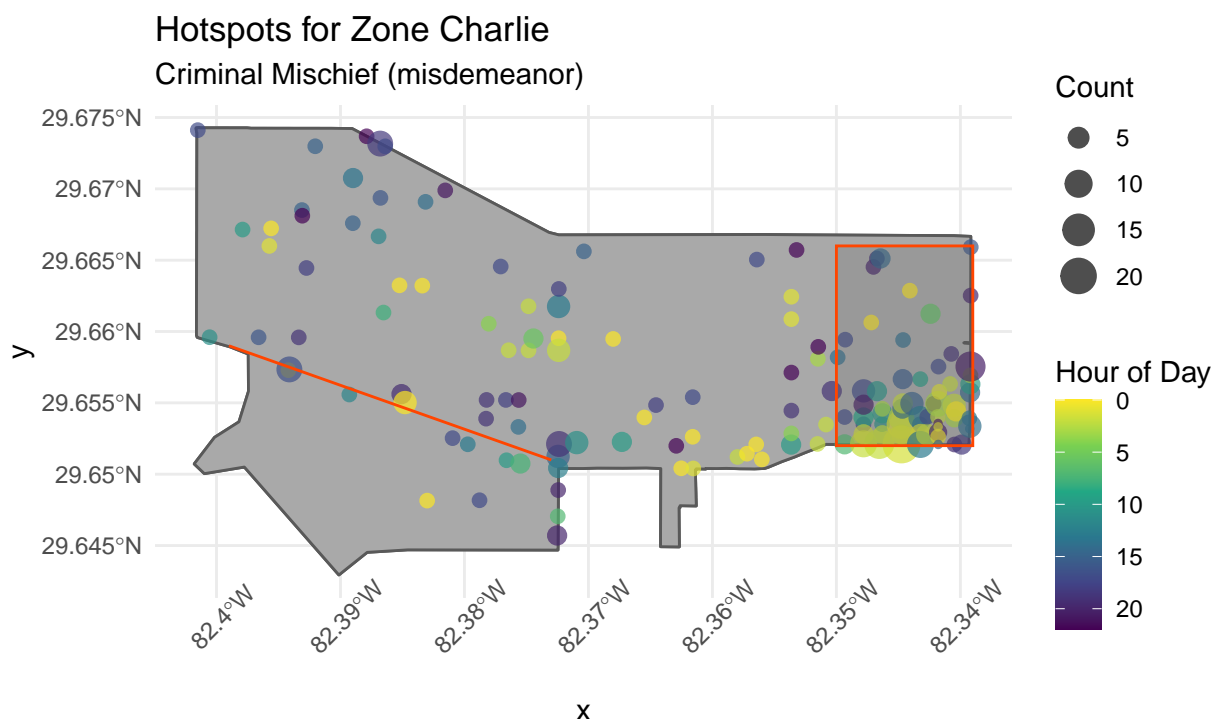
The majority of damage to property incidents occur in the Southeast corner of the area. Positioning a considerable amount of officers here would be effective. Maintaining a few officers occasionally patrolling along the NW/SE diagonal from 29.66°N to 82.375°W, would be effective.



Note that there are two high points in the day for damage to property incidents; for a short period in the early morning hours, then again around mid-day, from 12-5PM, tapering off as the night goes on. Again, it would be recommended that officers patrol the designated hot spots primarily during these hours to ensure the most effective use of their time.

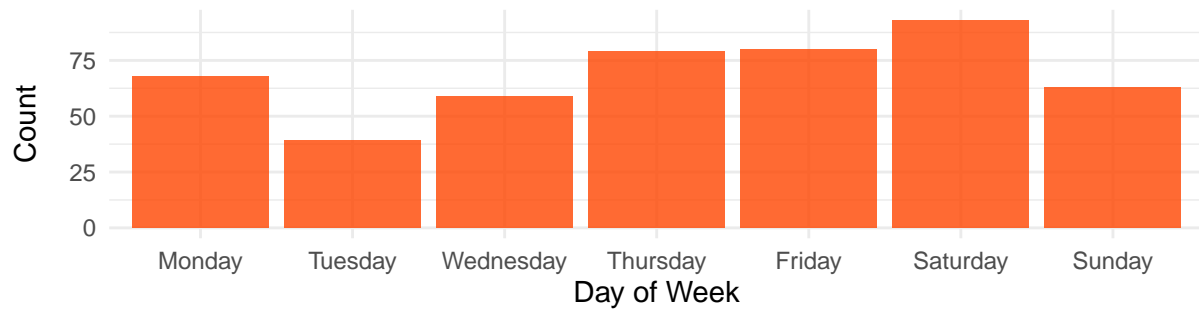
Friday is the most prominent day for these crimes to occur; albeit by a small margin. This is likely due to the fact that it is the start of the weekend. Children are getting out of school for the week and people are celebrating the weekend by drinking and partying.

Criminal Mischief

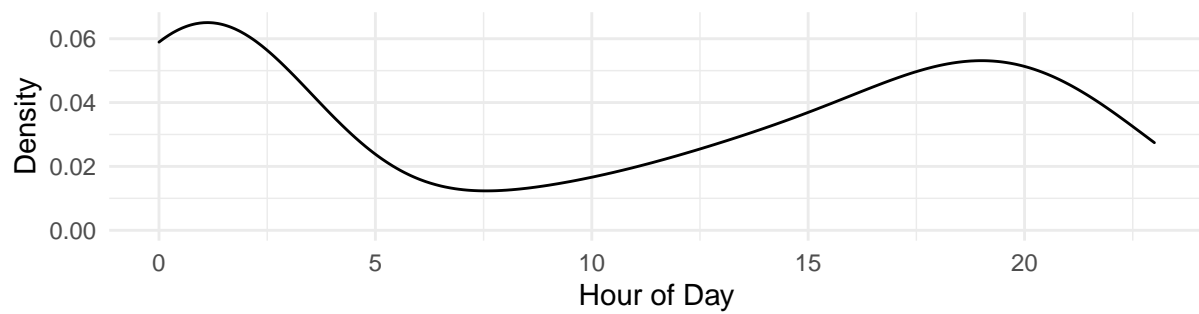


Similarly to the damage to property map, it is recommend that officers focus their attention to the Southeast corner of this zone with a few officers doing routine patrolling around the remainder of the zone.

Histogram of Offense Day
Zone Charlie | Criminal Mischief (misdemeanor)



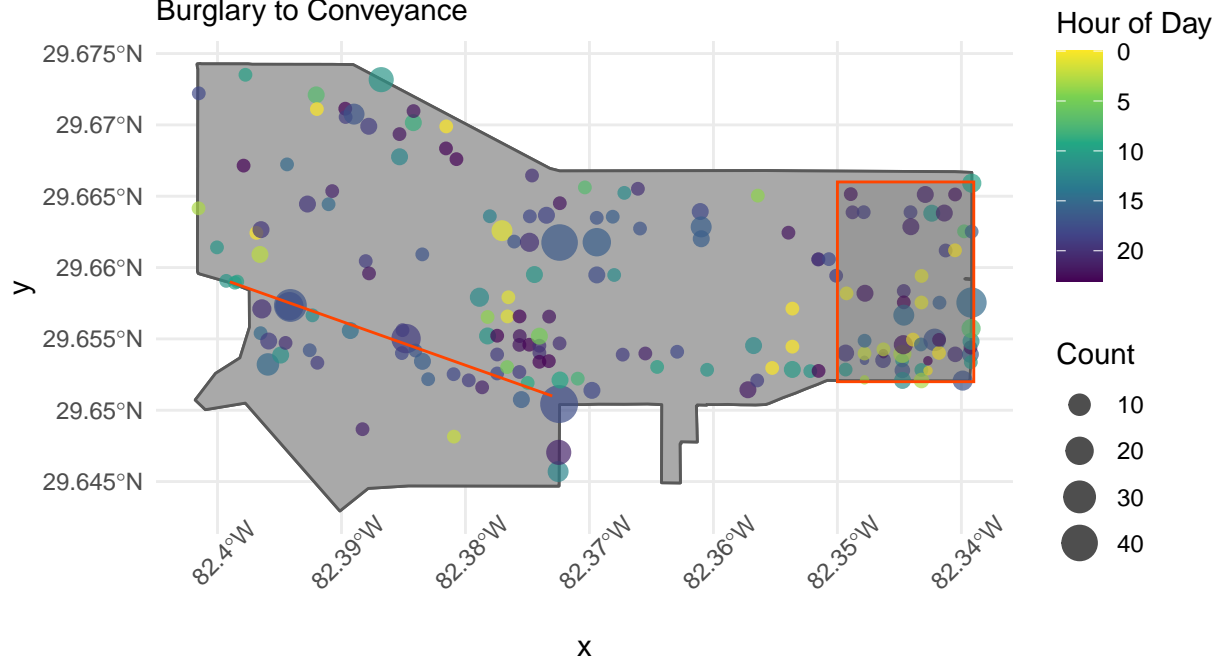
Distribution of Occurences in Zone Charlie
Criminal Mischief (misdemeanor)



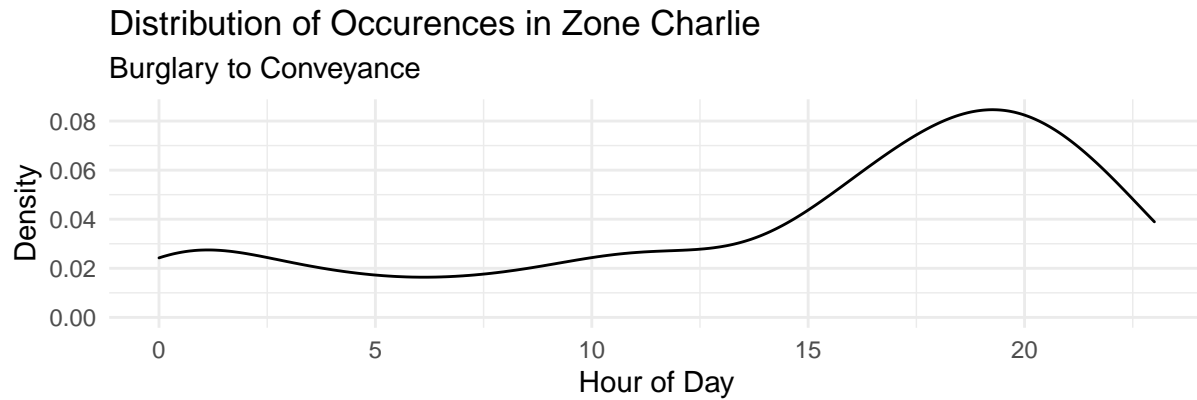
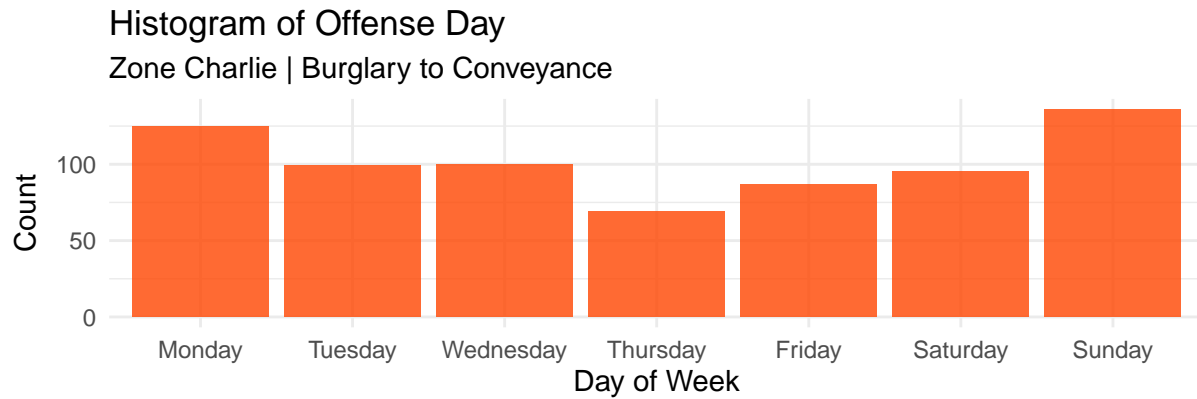
Criminal mischief follows similar time trends as damage to property. Following roughly the same schedule as the previous suggestion, officers should be able to cover those areas effectively.

Burglary of Conveyance

Hotspots for Zone Charlie
Burglary to Conveyance



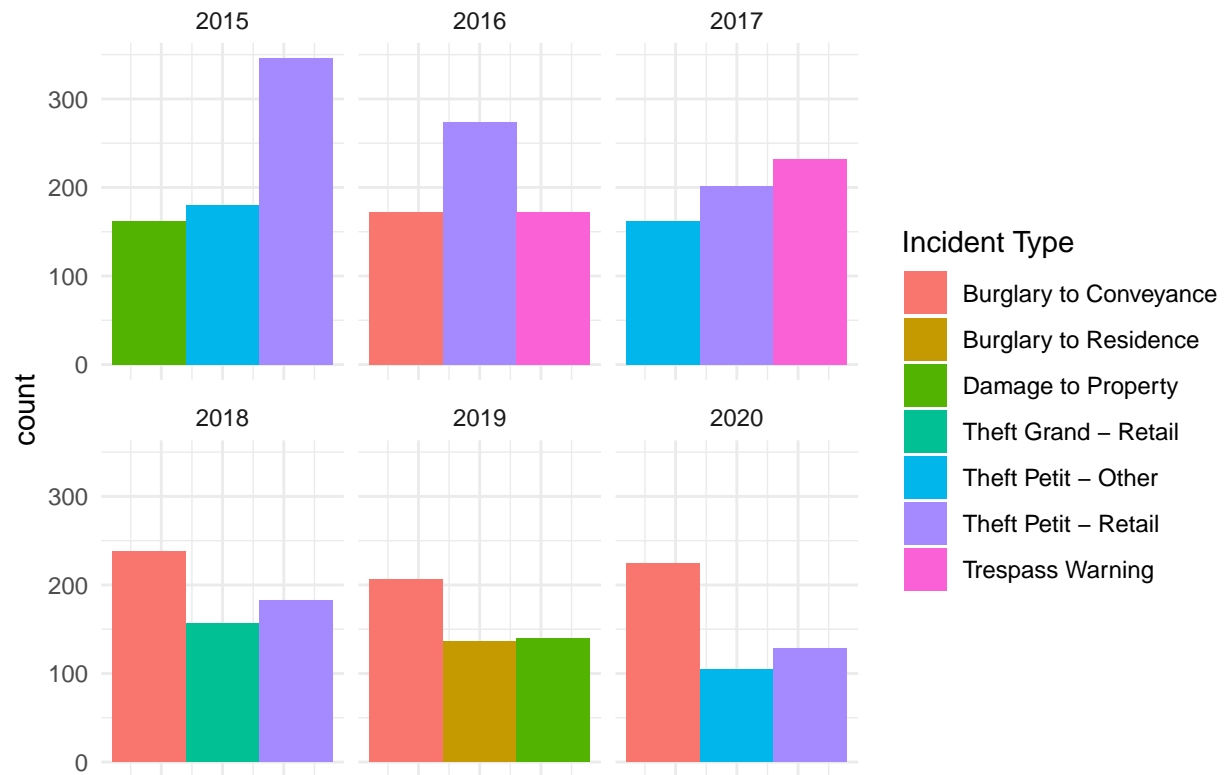
Yet again, a fair concentration of officers in the Southeast corner is advisable. Additionally, having a number of officers patrolling the NW/SE diagonal from 29.675°N to 82.38°W would cover the majority of instances. It's also advisable that officers patrolling that diagonal skew their routes south to maintain proximity to the central cluster of crimes.



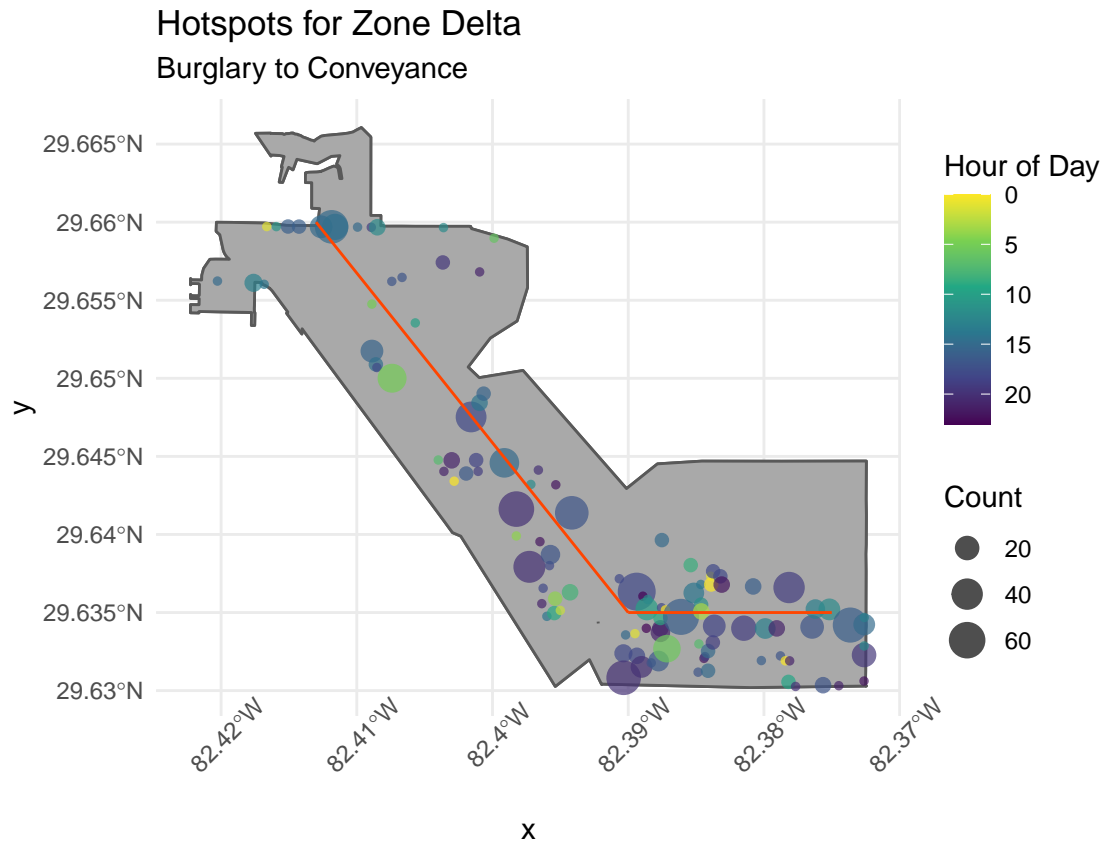
Continuing the trend of crimes being committed later in the day, starting around dusk.

Delta

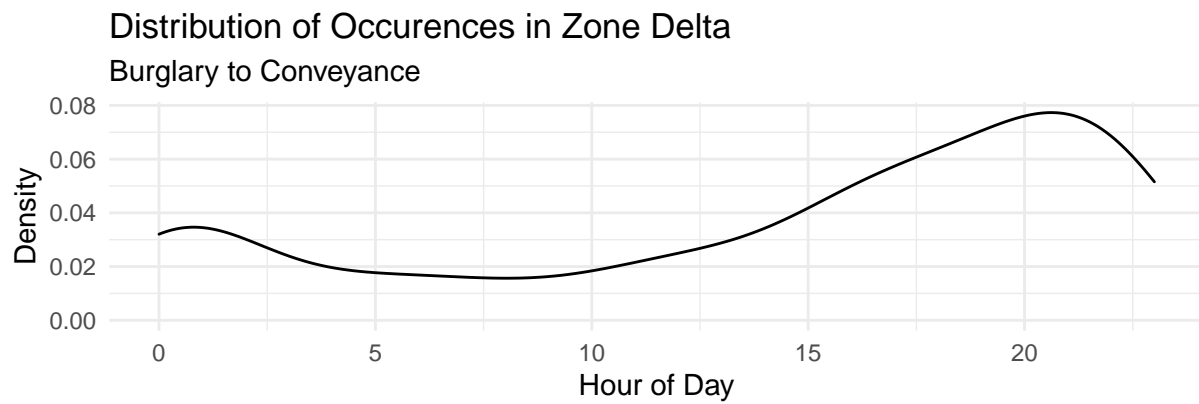
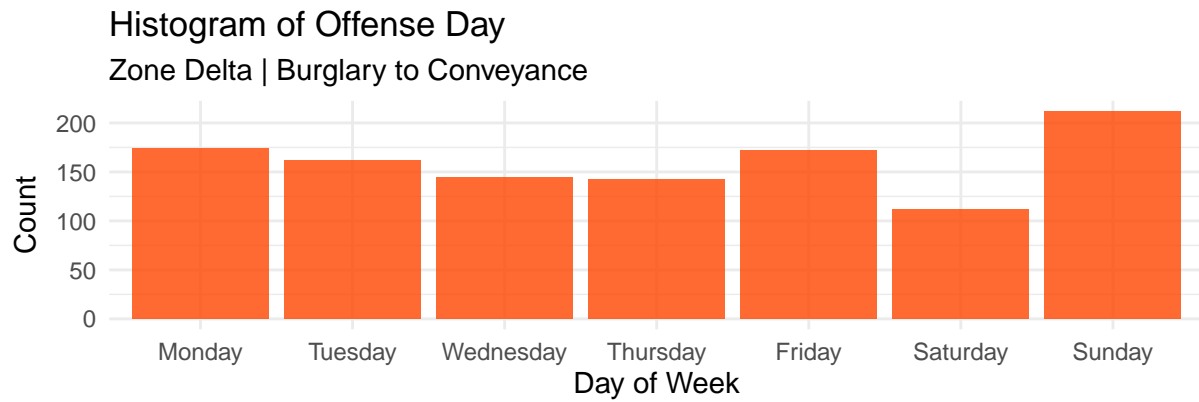
Most Common Crimes | Zone Delta



Retail theft has greatly been reduced in recent years with the new common culprit being burglary to conveyance for zone Delta. Emphasis will be placed on this crime since it is most prevalent.



Due to the somewhat awkward nature of this area, it would be advised that officers patrol the central line of the polygon starting from 29.66°N, 82.41°W moving southeast to 29.635°N, 82.39°W and then eastbound along 29.634°N. The overarching trend seems to be that the burglaries tend to be focused near the southeast quadrant.



The trend continues to follow that of the previous zones and the overall trend. Crimes happen at night time. It's also interesting to note that the day of the week graph skews slightly to Sunday. However, the difference is less than 50 incidents from Mon-Wed so it is not recommended to make any massive scheduling decisions based on this information.

Echo

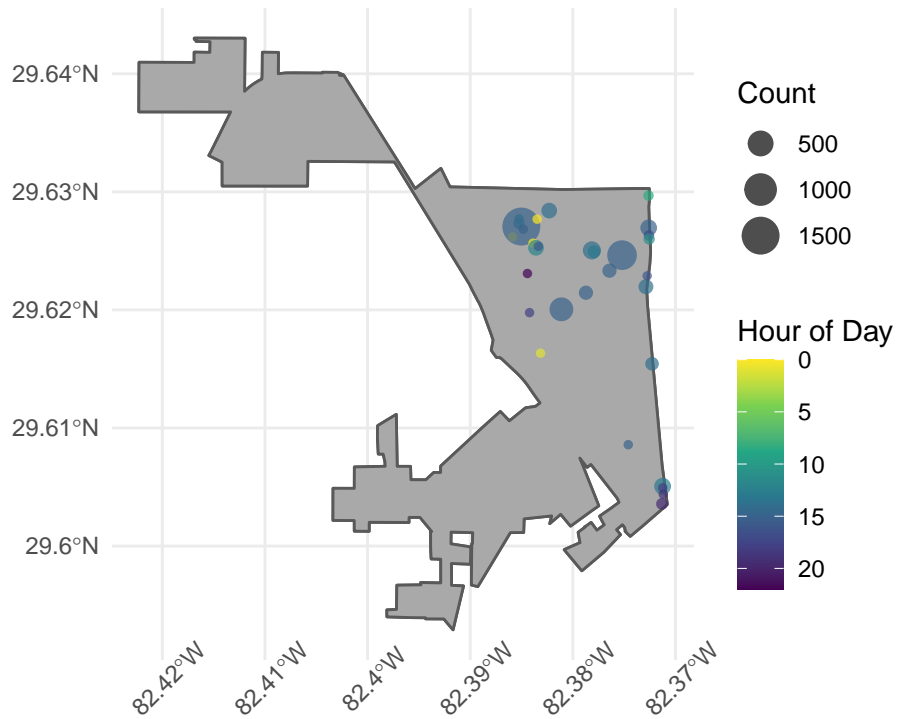
Most Common Crimes | Zone Echo



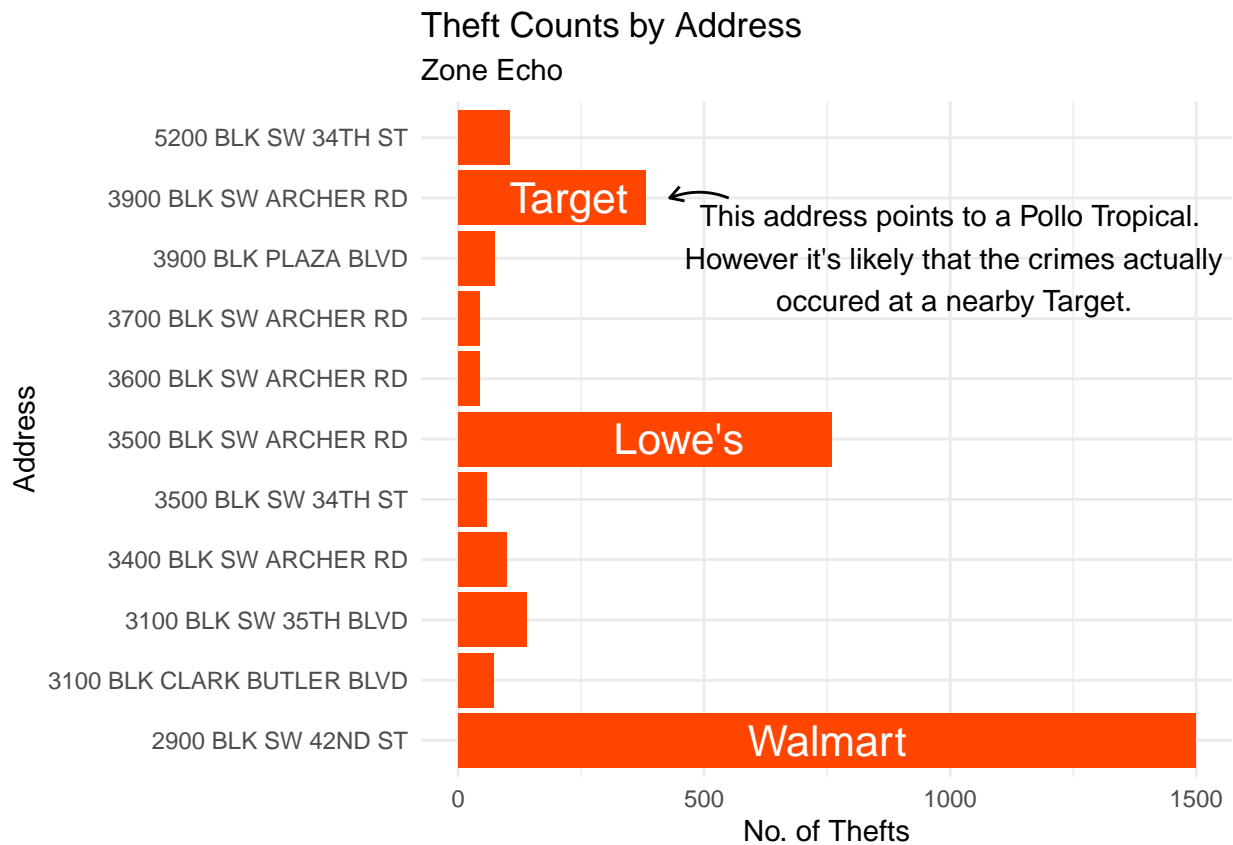
Breaking from the trend of the primary crime being burglary to conveyance, zone Echo has a massive problem with retail petit theft. Zone Echo alone accounts for nearly 30% of all petit theft among all zones. The crime rate has decreased slightly since 2019 but clearly it has been difficult to drastically subdue the number of these crimes.

Hotspots for Zone Echo

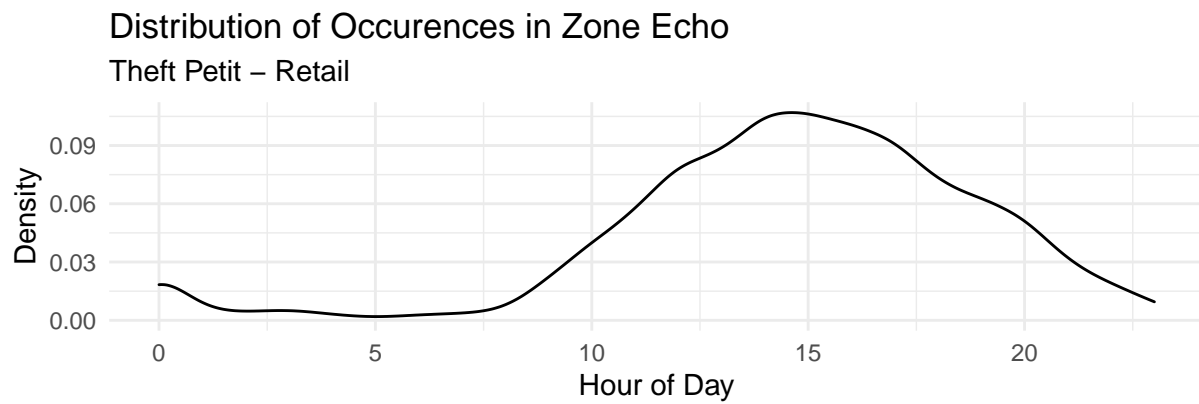
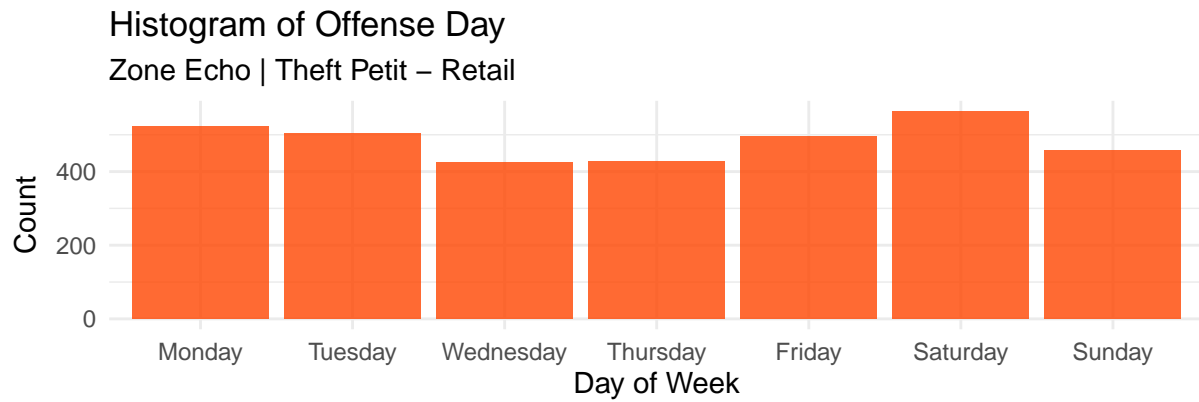
Theft Petit – Retail



The heatmap does not draw a representative picture of the data. There is large share of retail crimes in this zone, yet if compared it to some of the other maps it looks like this is possibly the safest zone. However, observing the legend for crime count on the left leads warrants examination of those locations more in depth.



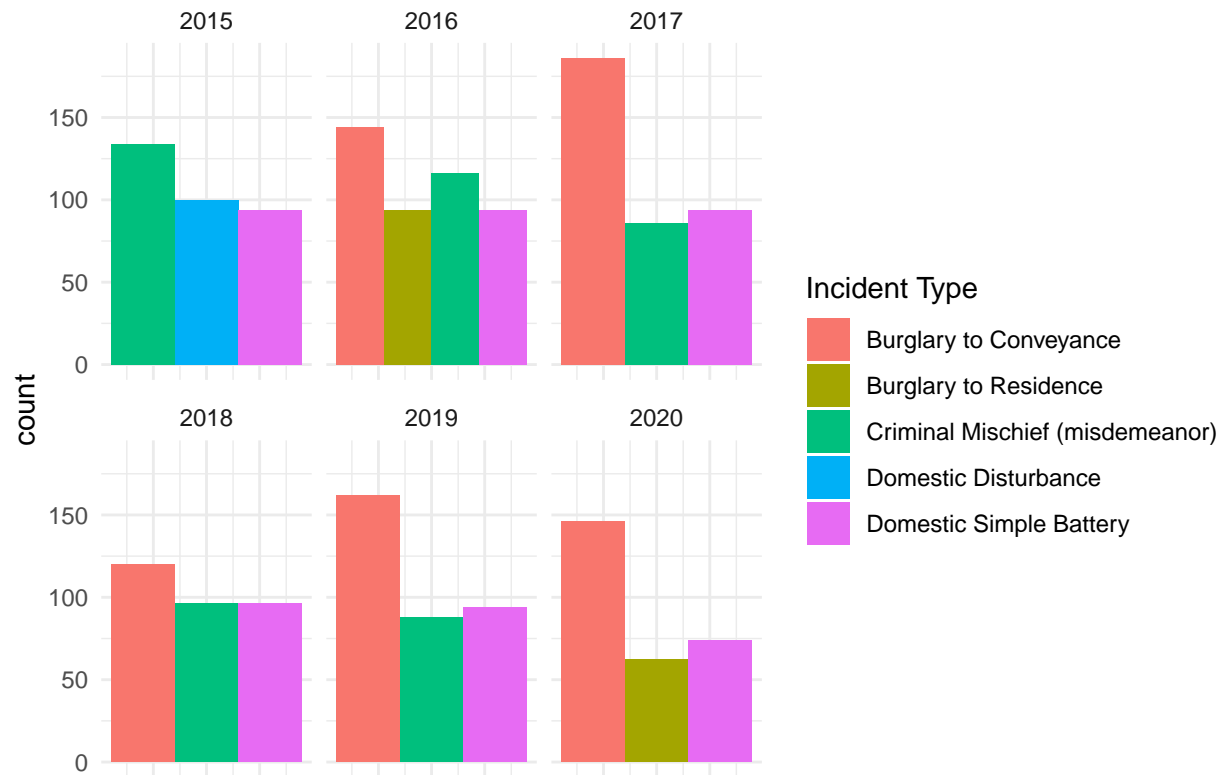
The majority of thefts occur at Walmart, Lowe's and Target. All of these are within relatively close proximity in the shopping district. The question is, how can theft be prevented in stores?



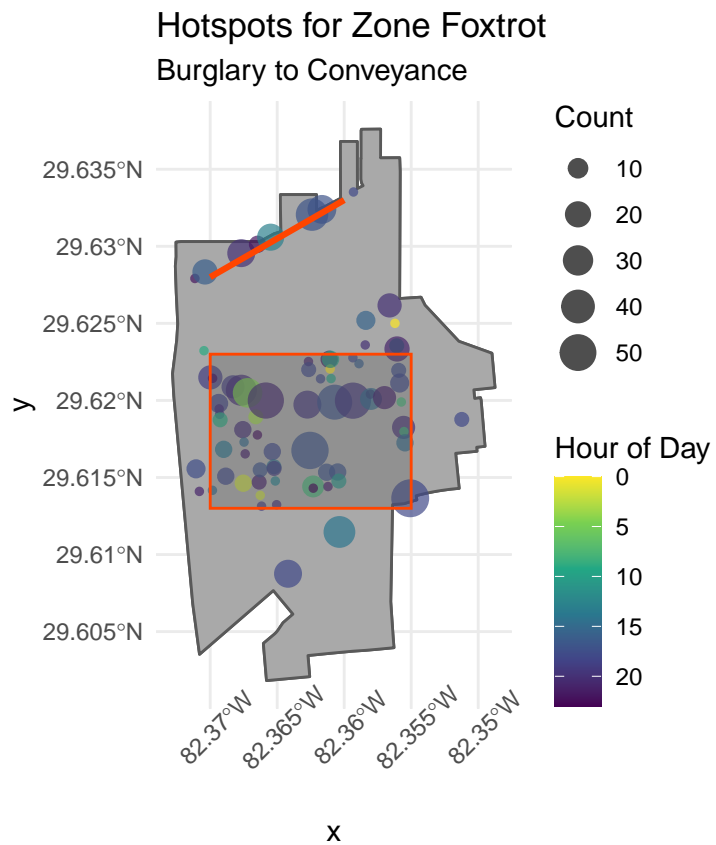
The offenses for retail theft are concentrated around 3PM. There is no clear pattern in the day of the week in which these crimes occur.

Foxtrot

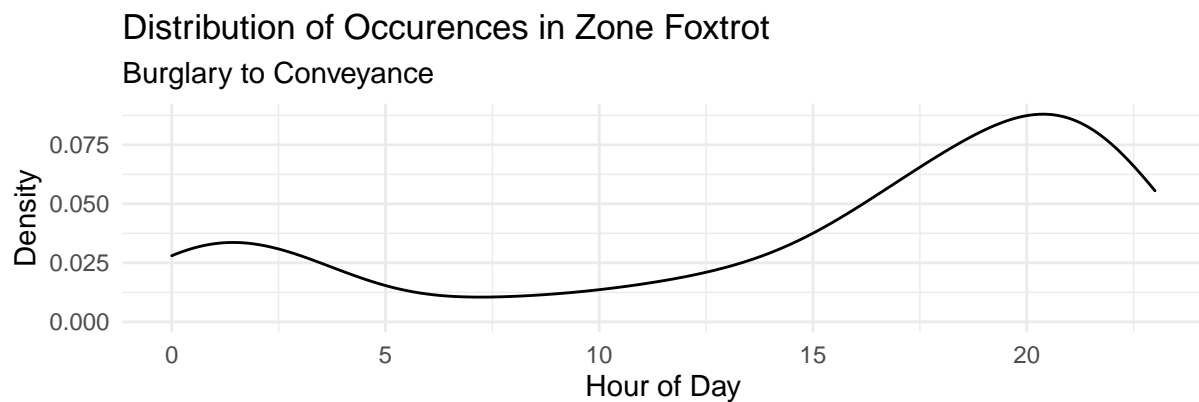
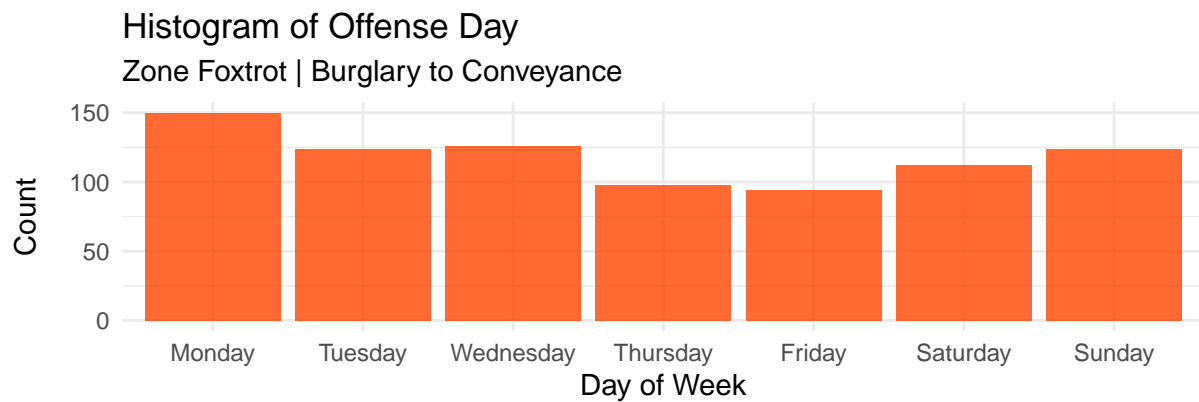
Most Common Crimes | Zone Foxtrot



Foxtrot observes a fairly steady level of crime for burglaries to conveyance. It is worth noting that this area has not seen a drastic decrease in crime, as is observed in other zones.

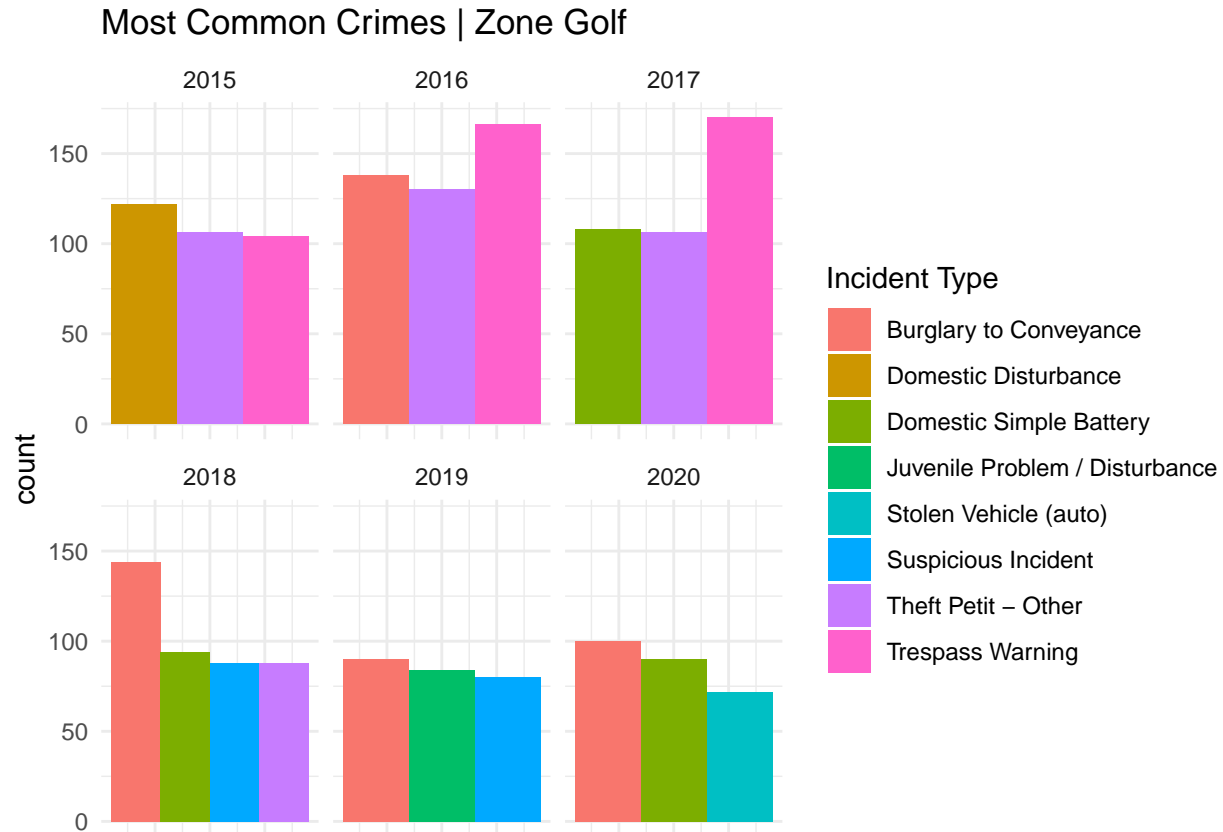


The hostpots are concentrated in the center with a small belt of crime on the Northern wall.



There is a continuation of the trend that burglaries to conveyance happen primarily during the darker hours of the day. The data does not indicate a strong relationship between day of the week and incidents for this crime.

Golf

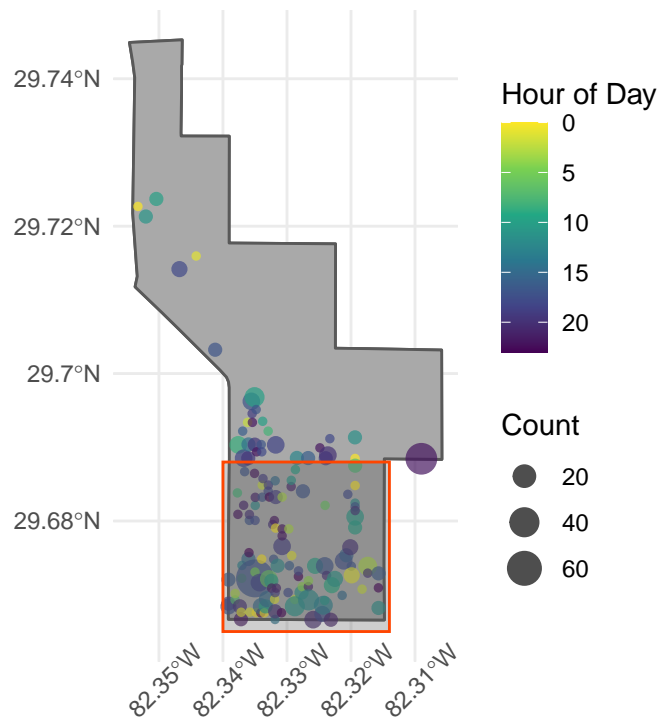


There has been a drastic theme shift in crime for Golf over the last 6 years. There has been a change from trespassing being a main crime to conveyance burglary being the most prevalent crime. Additionally, domestic battery has been prevalent in this zone for 2020; historically as well.

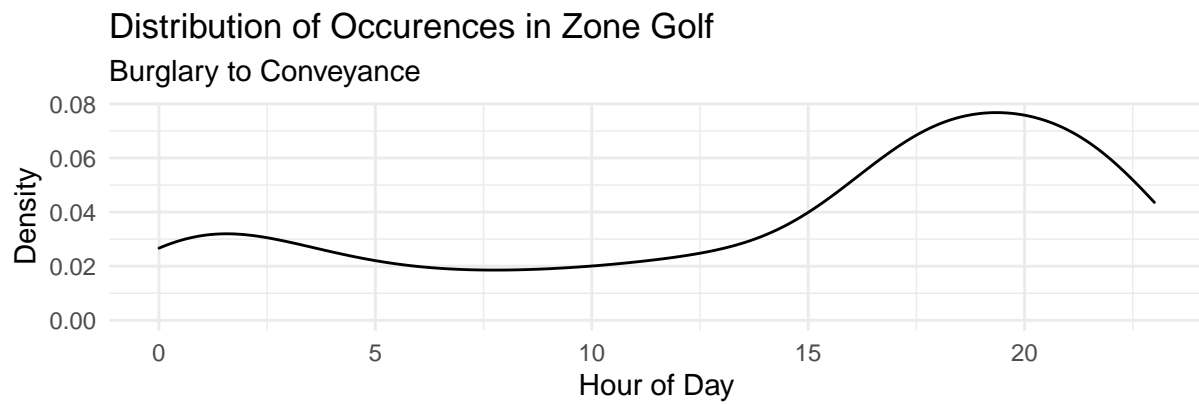
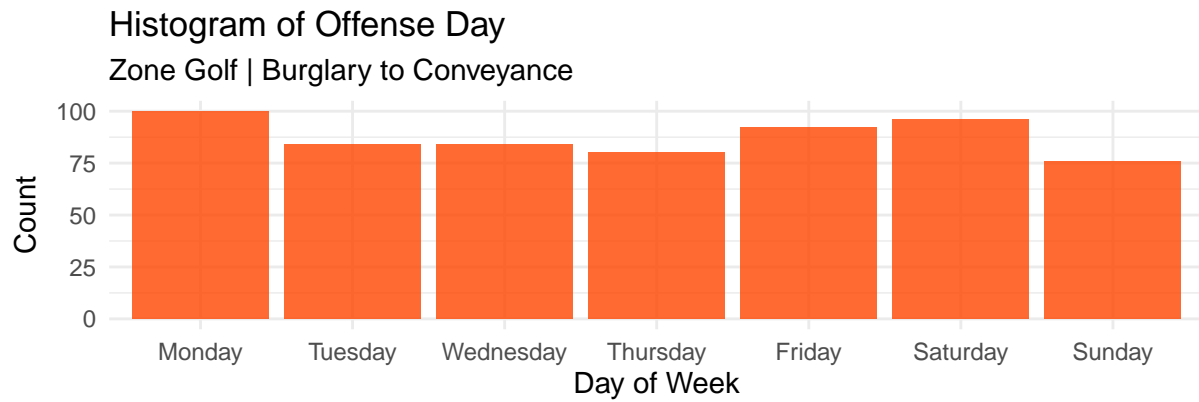
Burglary to Conveyance

Hotspots for Zone Golf

Burglary to Conveyance



The area of focus should be the lower sections of this zone. There is also a small hotspot near the eastern enclave.

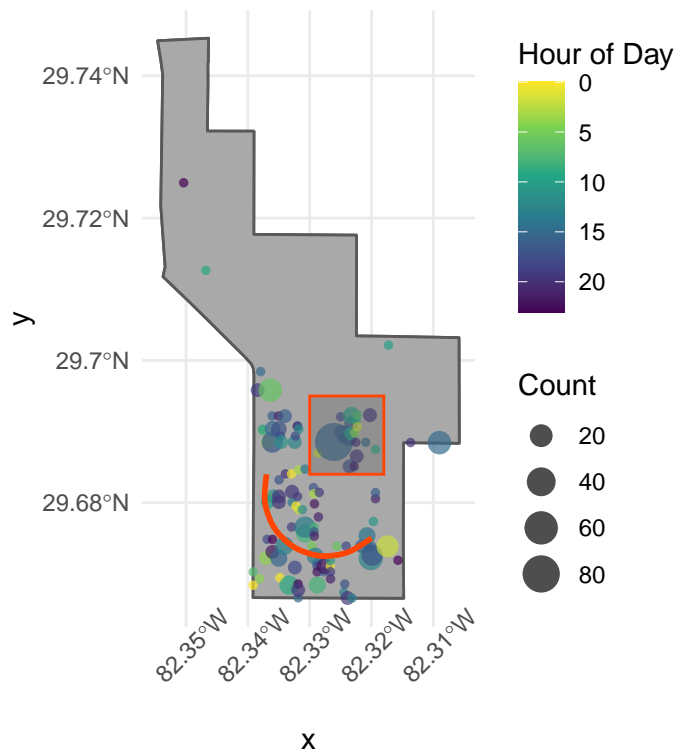


Unsurprisingly, the theme for burglary of conveyance during later hours is continued. No particular day is correlated with crime.

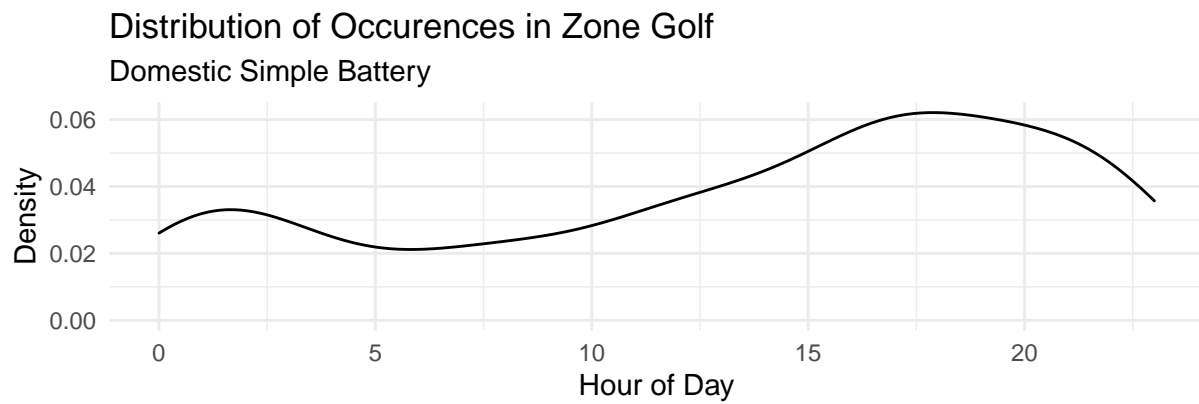
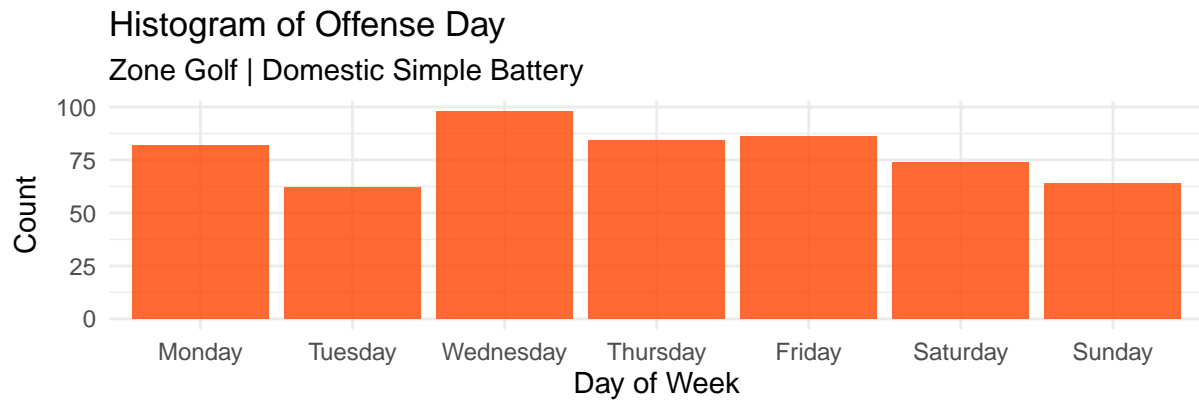
Domestic Simple Battery

Hotspots for Zone Golf

Domestic Simple Battery



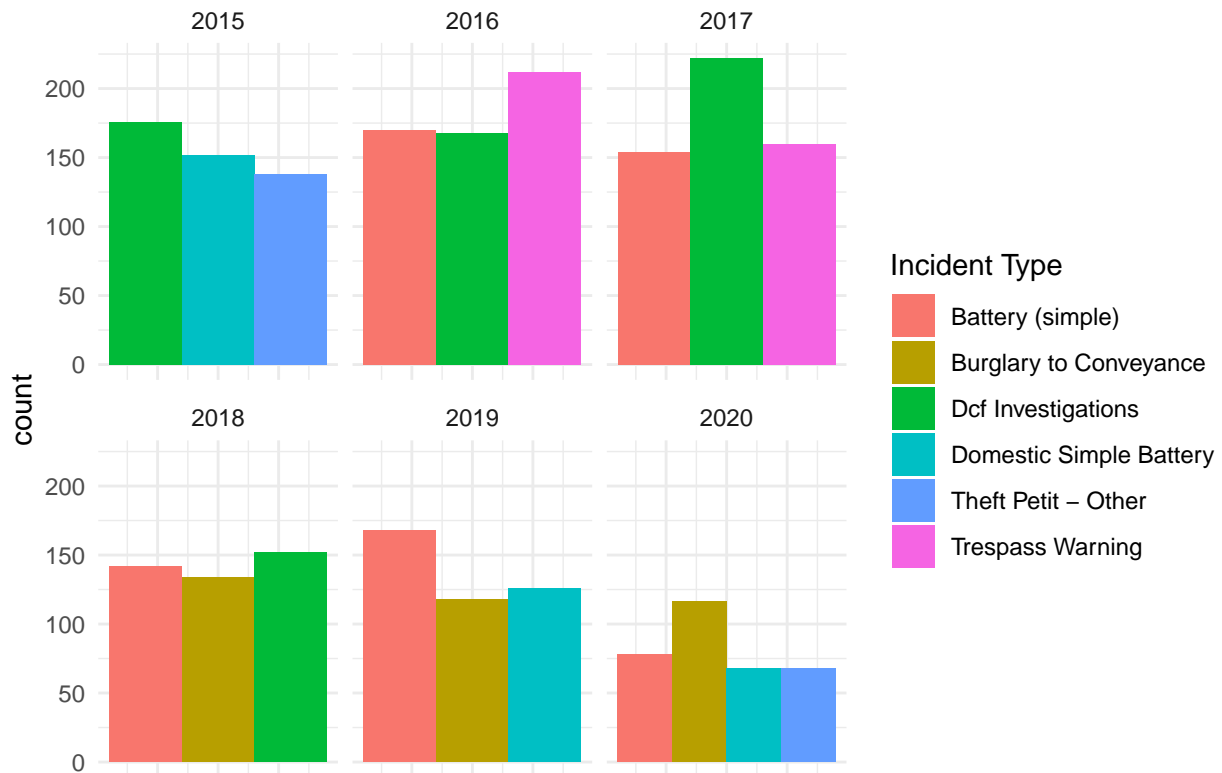
There is a notable hotspot in the center, signified by the orange rectangle, and a small belt that is centrally outlined by the curve.



There is not a strong pattern with respect to time that these crimes occur. Generally, domestic battery incidents happened later in the evening and there is not a strong relationship with the day of the week.

Hotel

Most Common Crimes | Zone Hotel

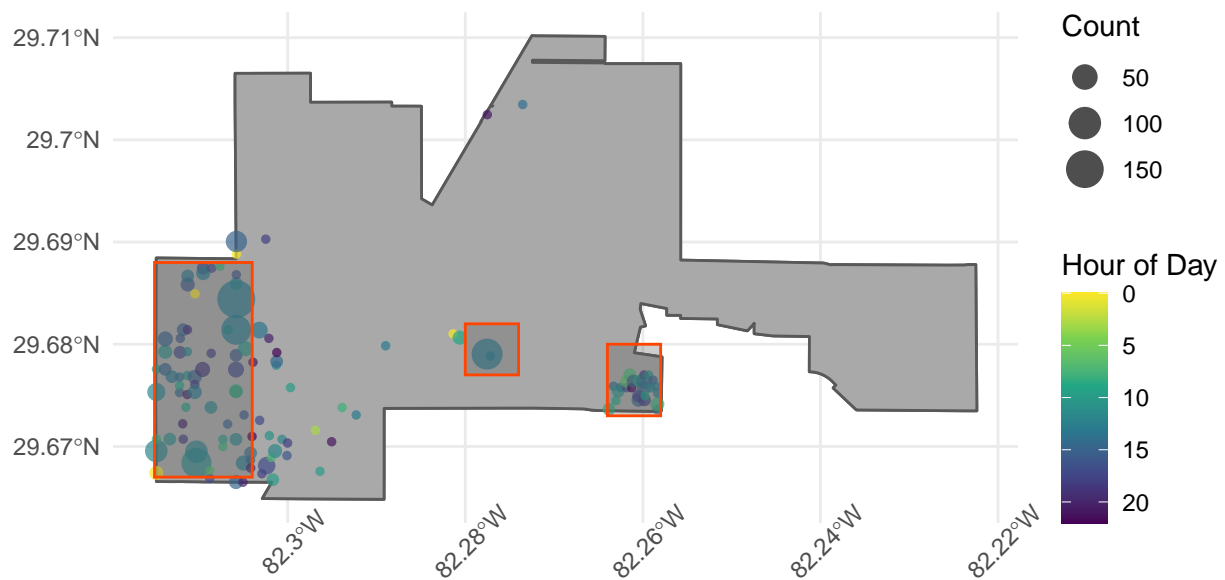


An interesting trend in zone Hotel is that Dcf investigations have been a major issue for a number of years. Additionally, the common crime of conveyance burglary shows up as a notable issue.

Dcf Investigations

Hotspots for Zone Hotel

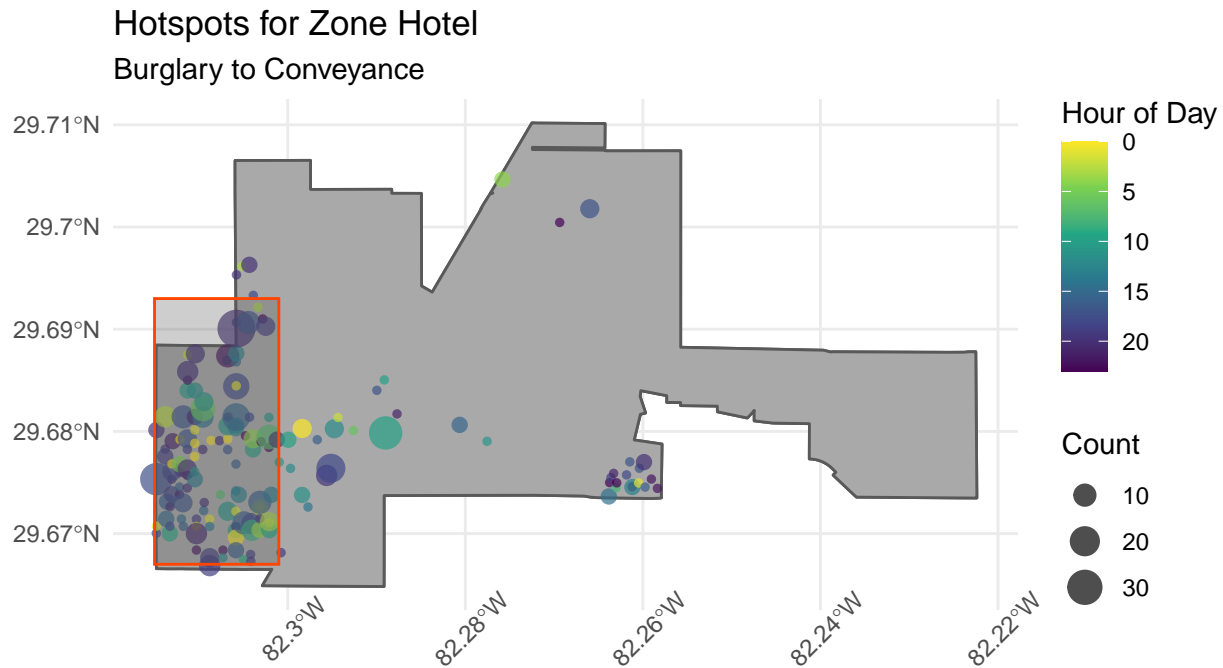
Dcf Investigations



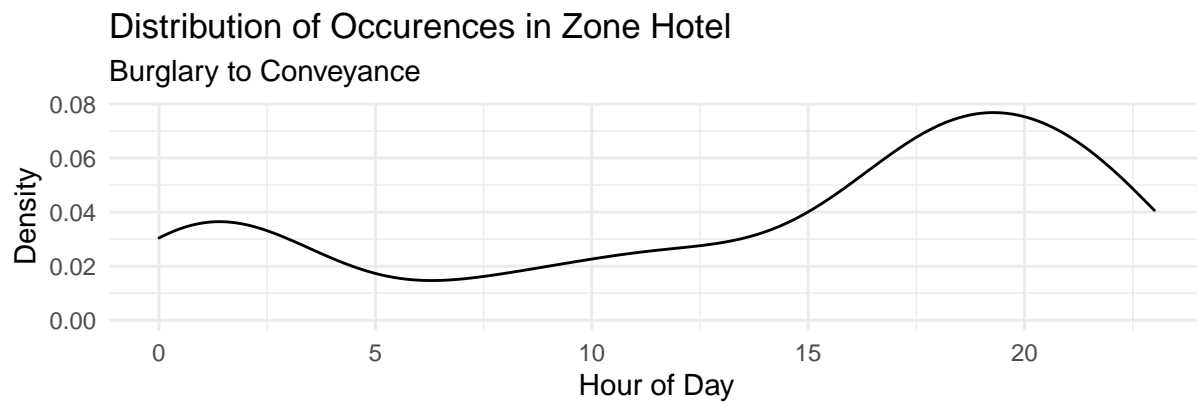
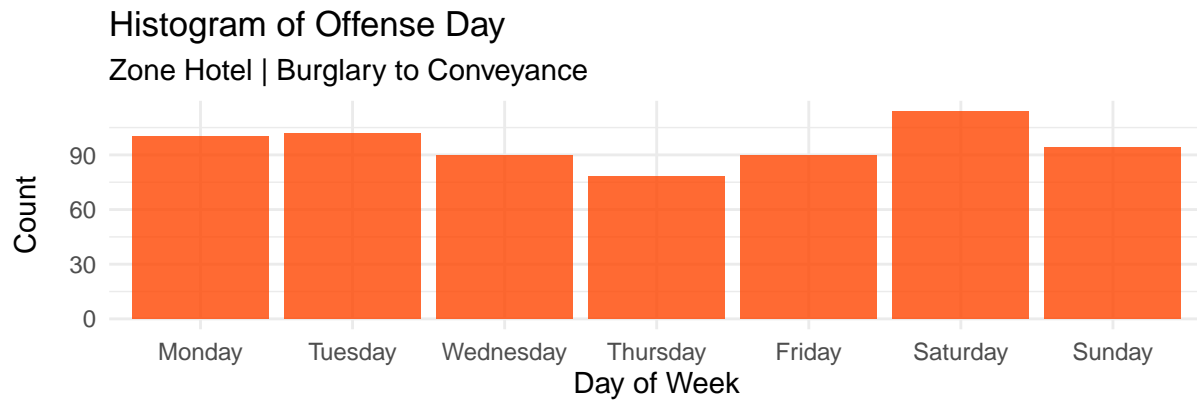
There are three major hotspots for dcf investigations. Since these investigation are social issues, it is important to consider what can be done to help families care for their children. It would be difficult to justify an increase in police patrolling as a means to improve the quality of life for children in troubled homes. Therefore, it is recommended that the community and local government help put in place programs to improve the overall environment in which these children are raised.

Since Dcf investigations are not necessarily a “on the spot” crime, not much insight would be gained by observing the time in which these investigations happen.

Burglary to Conveyance



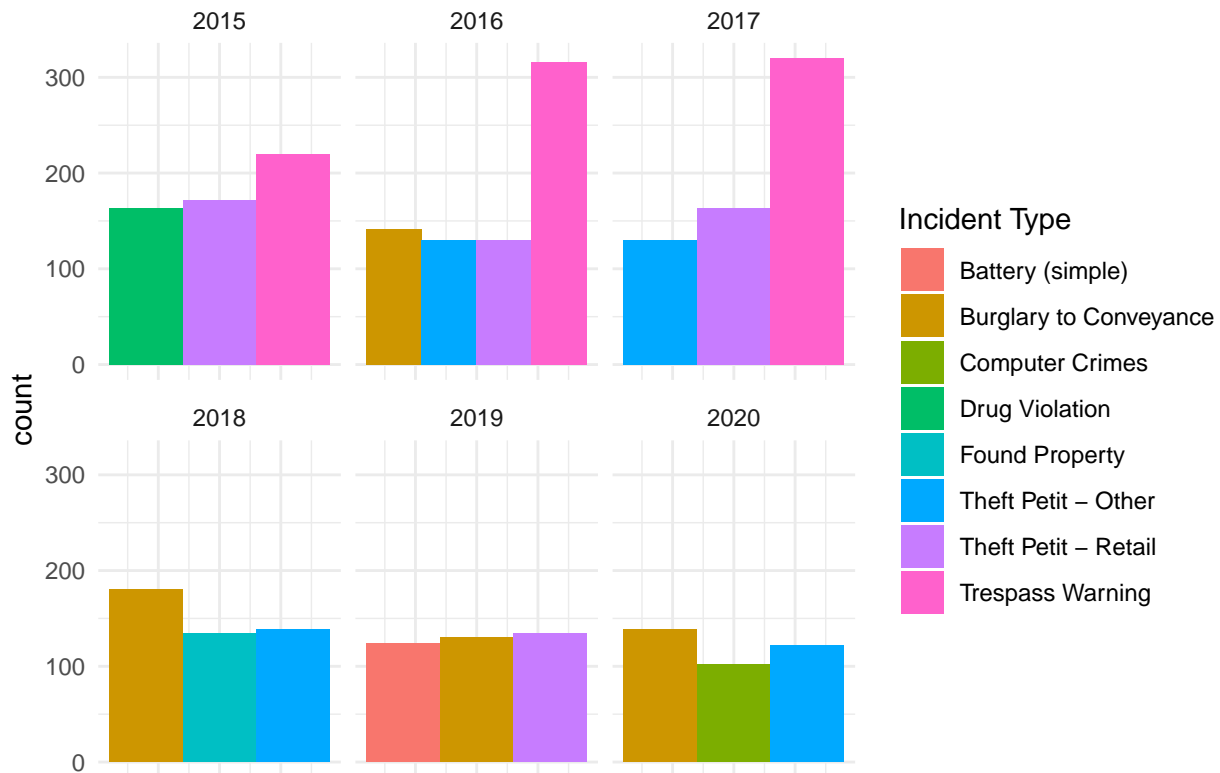
The majority of crimes occur in the western region of the zone. There are a few small spots that are nearby that also indicate issues, but the brunt of the crime happens within the rectangle.



Once more, observe that conveyance burglaries occur later in the day and hold no strong relationship with the day of the week.

India

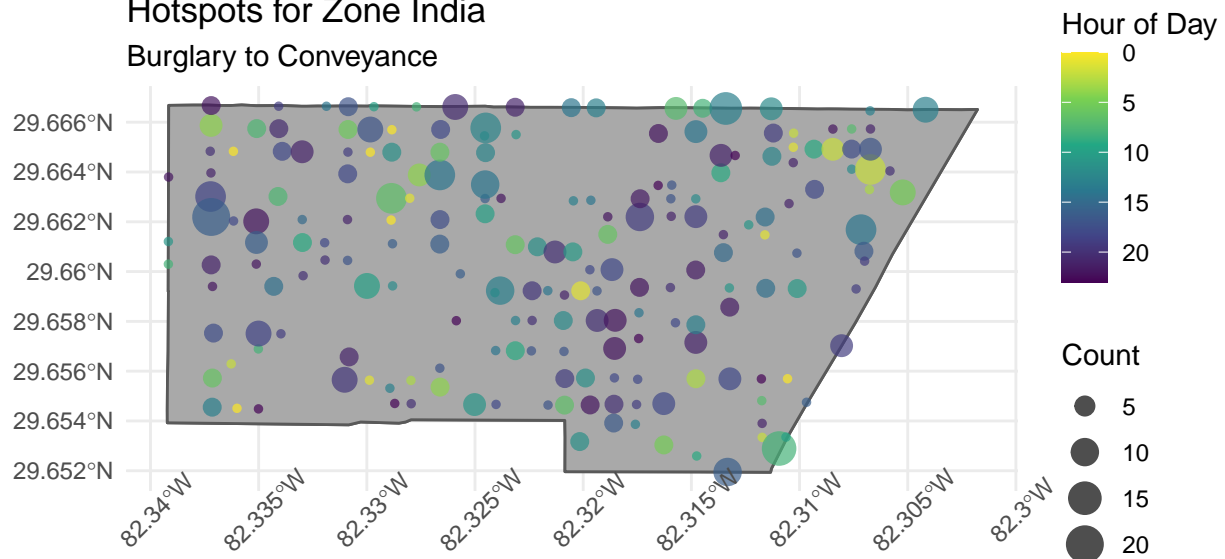
Most Common Crimes | Zone India



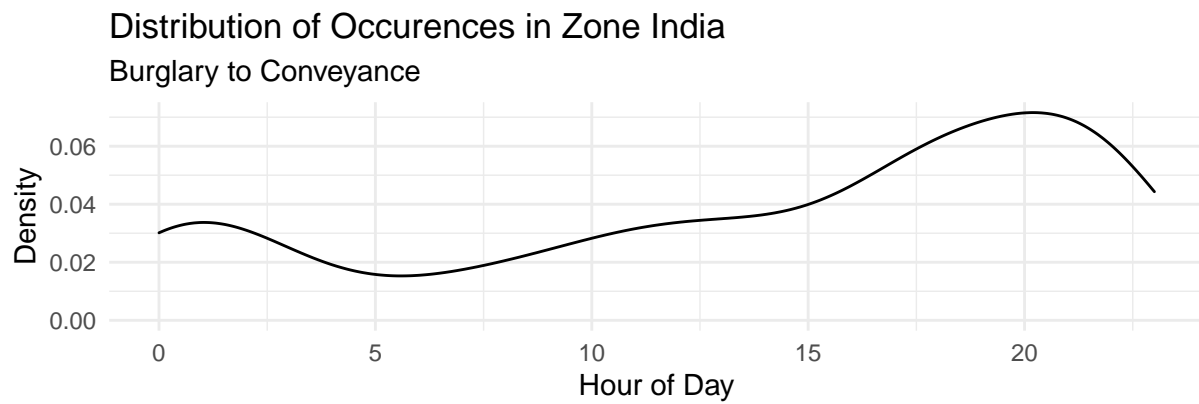
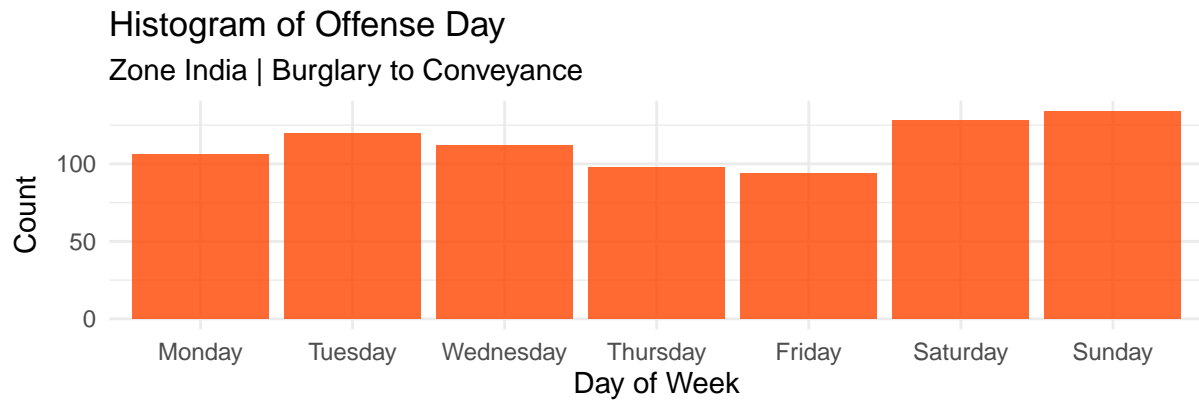
India has seen a massive decrease in crime since 2015. The main crimes were trespassing and retail theft. In 2020, for the most part, those have been greatly reduced. Now the main issue is burglary to conveyance.

Hotspots for Zone India

Burglary to Conveyance



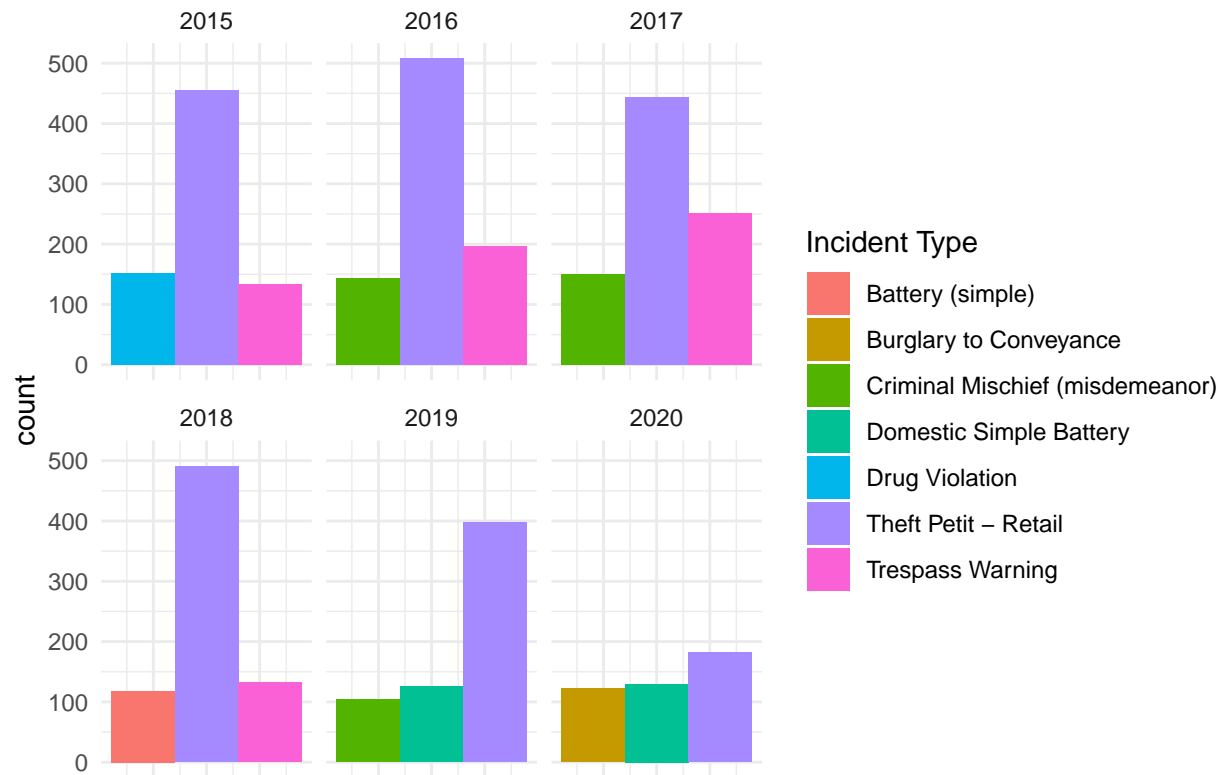
The overall spread is distributed fairly evenly across this area. Even the largest “hotspots” only account for twenty burglaries. Due to the sparsity of these crimes it could be surmised that increased police surveillance would not make a drastic difference.



The assumptions hold true to the overall trend, these crimes happen later in the day and it would be recommended to improve street side lighting.

Juliet

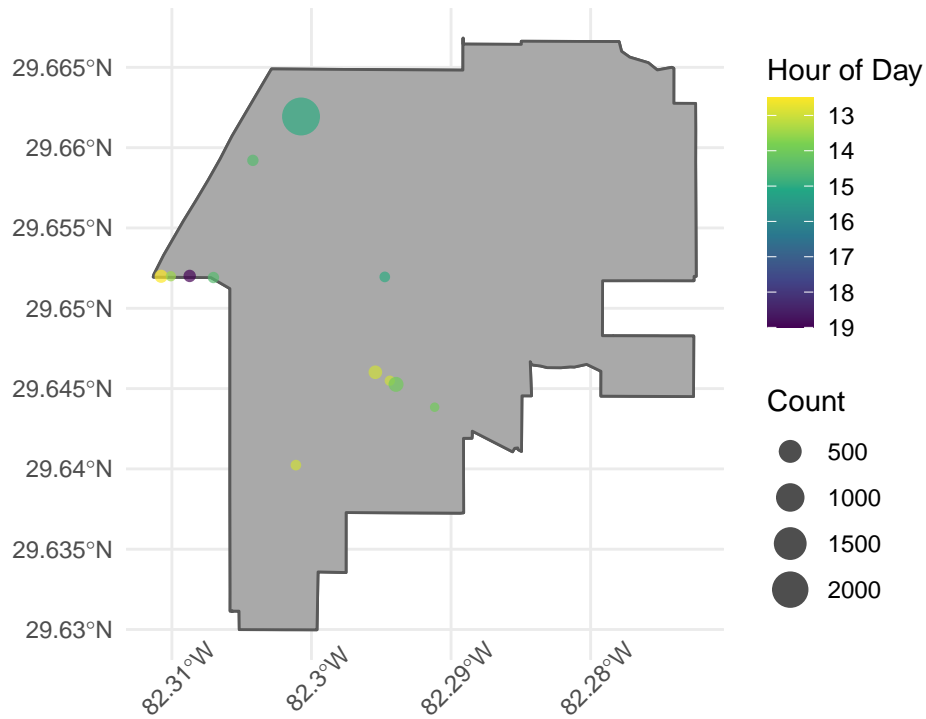
Most Common Crimes | Zone Juliet



As stated in the earlier sections of the report. Juliet sees a high number of petit retail theft. The numbers of these thefts have been reduced considerably in the last year, even though it continues to be the main issue.

Hotspots for Zone Juliet

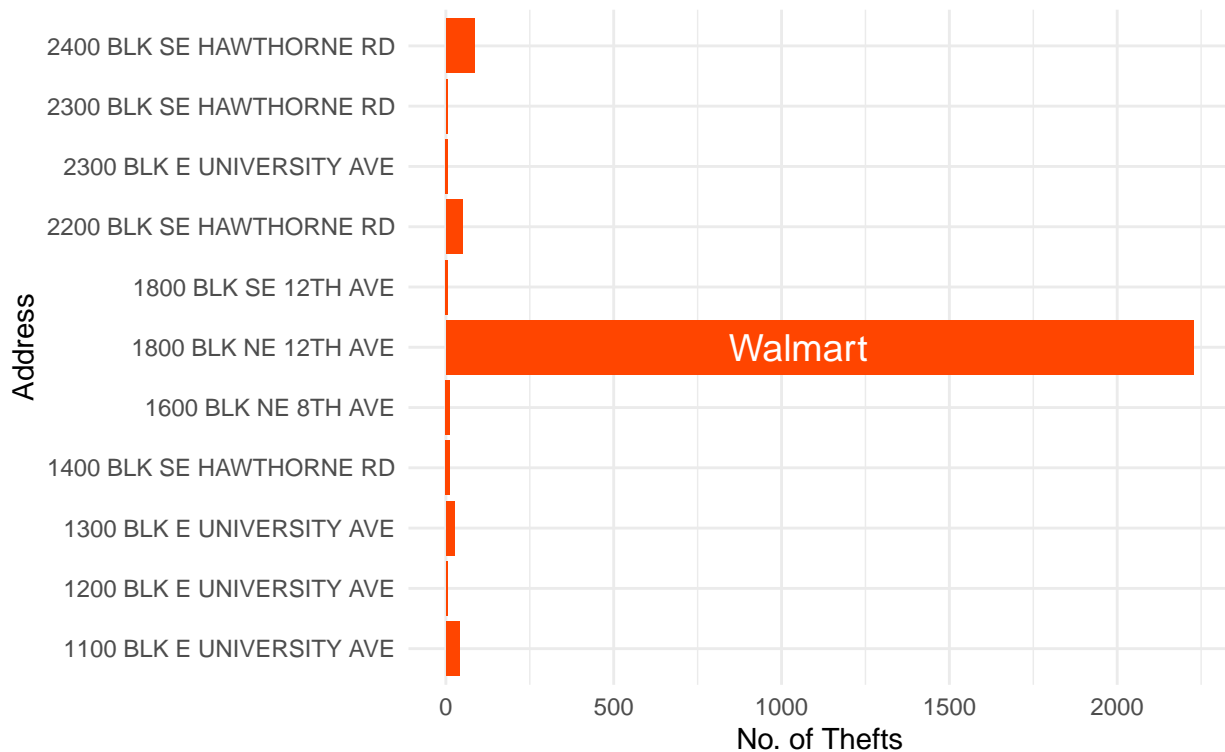
Theft Petit – Retail



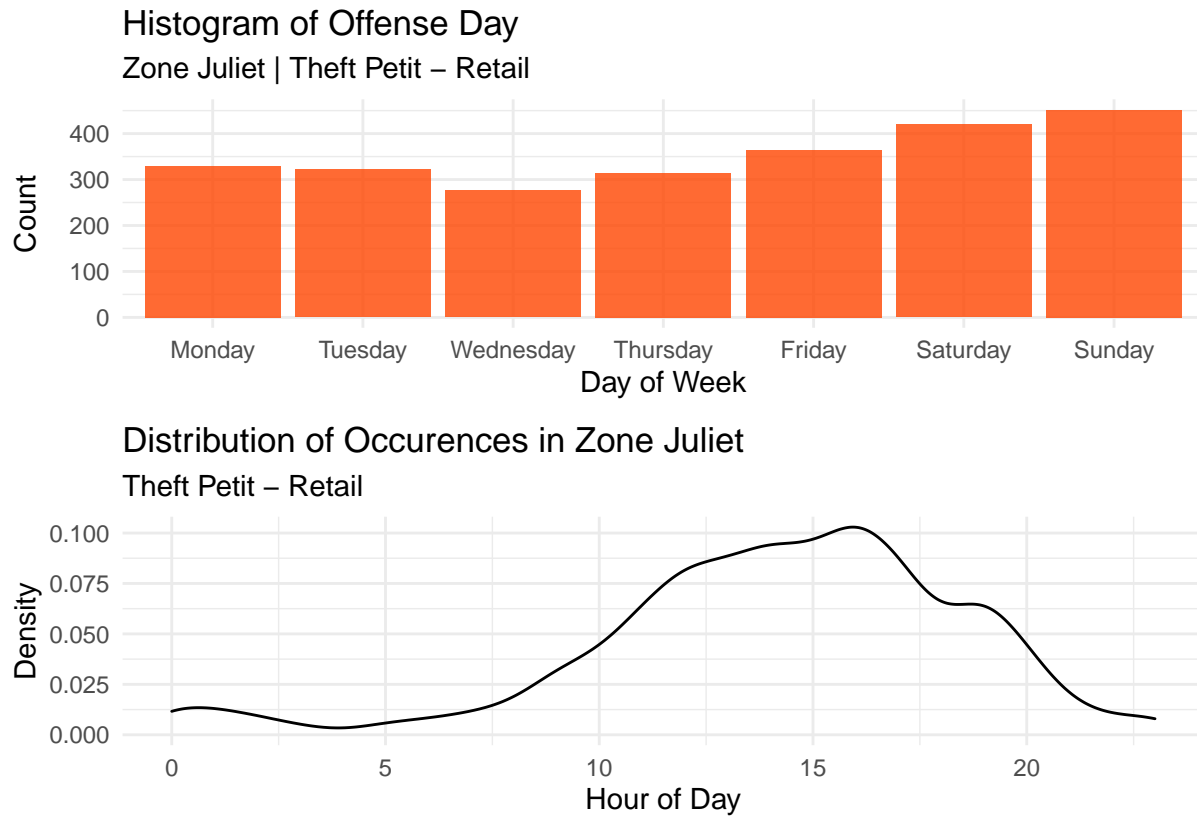
Similar to Echo, the hotspots seem to indicate a few key locations where the theft occurs.

Theft Counts by Address

Zone Echo



The skew here is quite jarring. Walmart accounts almost entirely for all retail thefts. Similarly to zone Echo, it is unsure if there is a simple solution to preventing in-store crimes.



The crimes happen typically later in the day, and closer to the weekend.

Mike

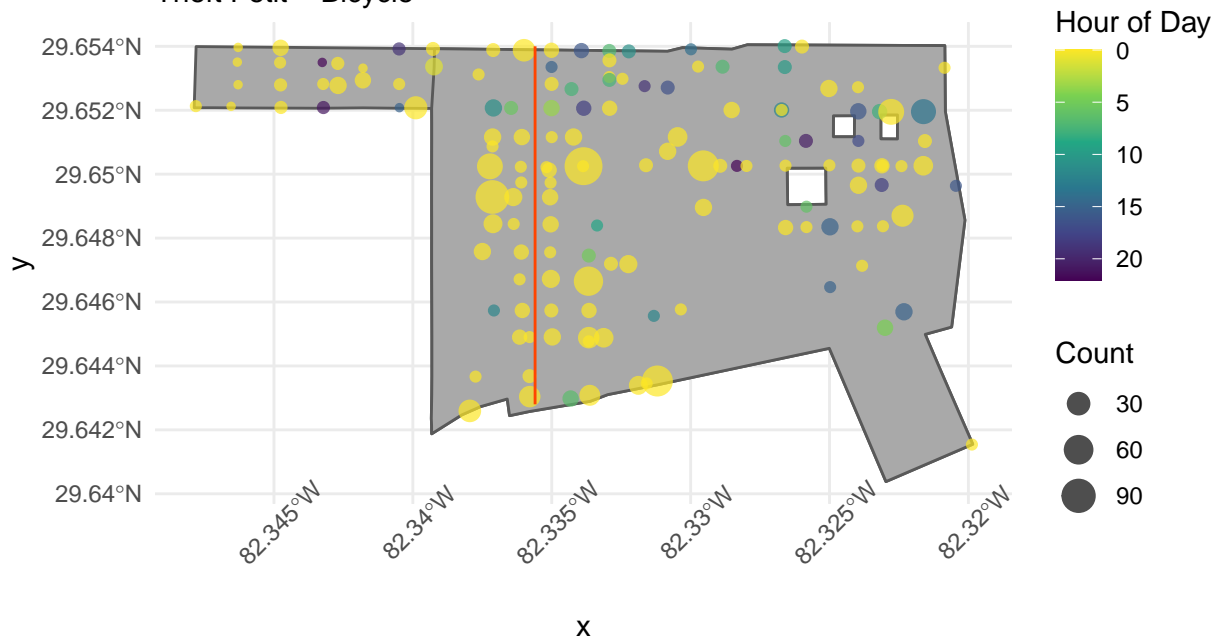
Most Common Crimes | Zone Mike



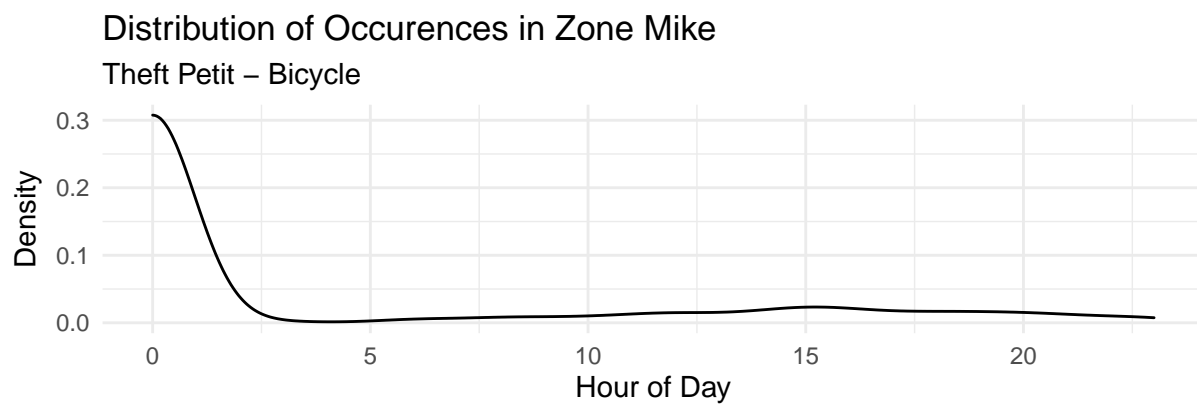
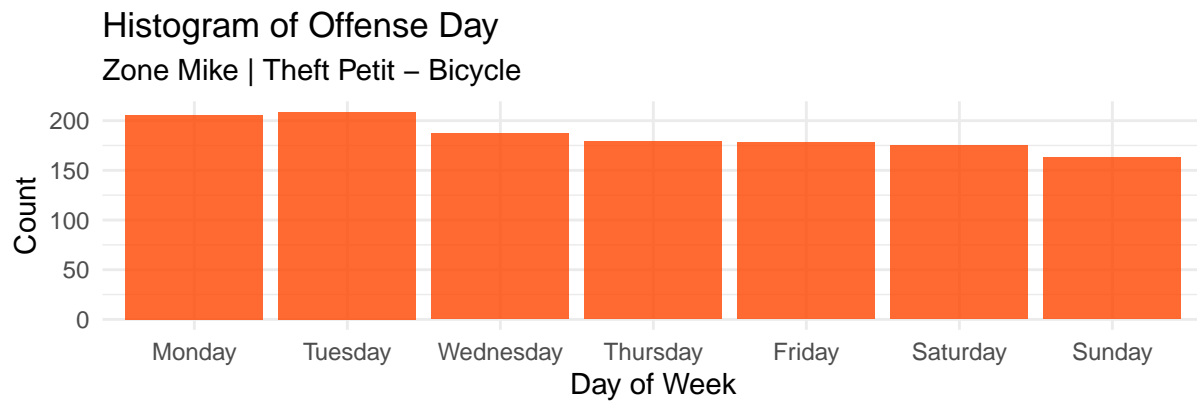
Zone Mike has also seen a drastic decrease in crime over the last couple years. Currently the biggest issue is, oddly, bicycle theft.

Hotspots for Zone Mike

Theft Petit – Bicycle



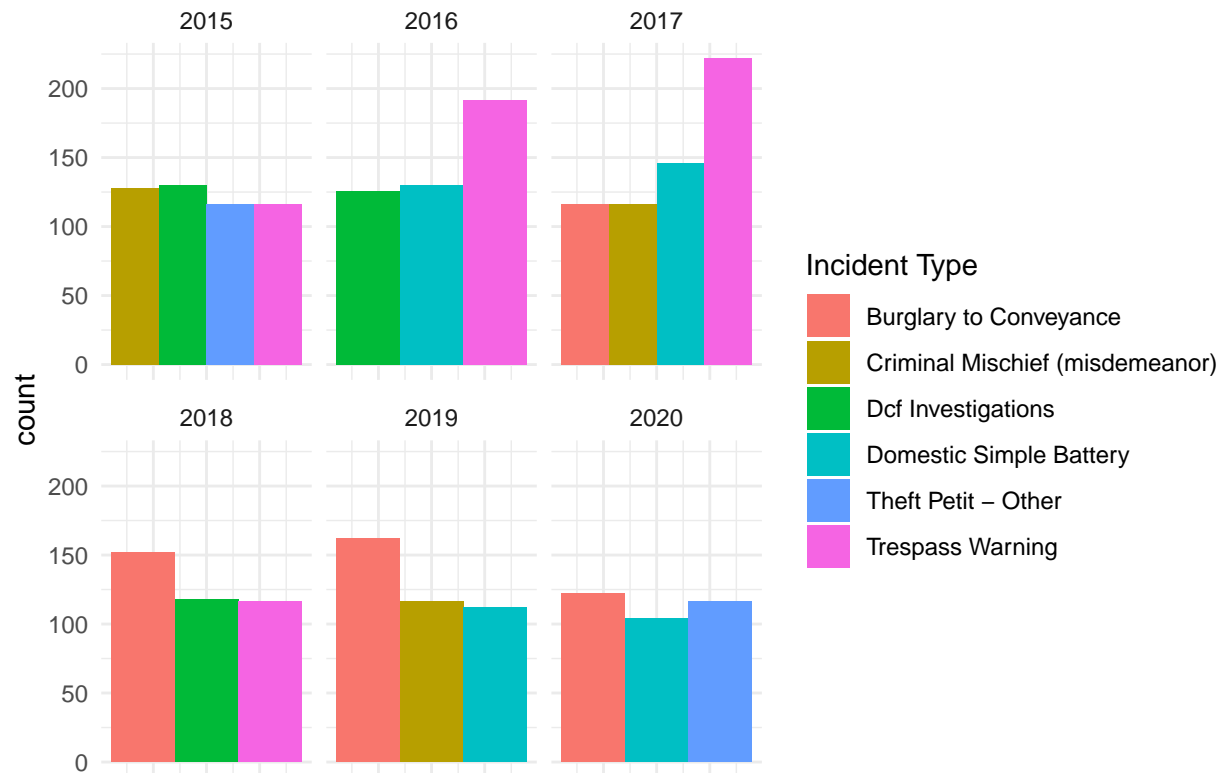
See that the spread of the crimes is fairly even with a majority of the crimes happening in proximity to the orange line.



Bicycle thefts peak in the early hours of the morning with no strong relationship to the day of the week.

November

Most Common Crimes | Zone November



For our final zone there is a steady decrease in crimes with the most common issue being conveyance burglary and domestic battery. However, the volume of these crimes is relatively low, which does not prompt further analysis.

Conclusions

Although crime has been greatly reduced in recent years, there is still a big issue with burglary to conveyance and petit theft. For burglary to conveyance it is recommended that enhanced street side illumination be developed in the problem areas that have been identified. The benefits are numerous, extending past just crime prevention.

For petit theft crimes it seems that there are four retail establishments that are the main areas where these crimes occur. Reducing retail theft is a complicated issue that doesn't have any simple solutions involving coordinating police within stores or around shopping districts. A good start may be to develop the local economy further and develop programs to distance the community from impoverishment. It should be acknowledged that looting and rioting due to 2020 political unrest likely has also contributed heavily to retail theft numbers.

Furthermore, the massive spike in unemployment also gives further reason to the observation of higher retail theft.

Dcf investigations are also a concerning problem, particularly in Zone Golf. Community programs should be explored with the expressed goal of enabling parents to take better care of their children, and allowing children to have better resources and safety if they belong to troubled homes.

Further Opportunities

- Use street data to plan police routes more precisely.
- Research into causes and methods of petit theft prevention.
- Forecast crime zones and areas for future planning.
- Use COVID-19 data in concert with crime data to possibly predict and model changes in criminal behavior.