

Assessing the Influence of Gambling on Public Safety in Massachusetts Cities and Towns During the COVID-19 Pandemic

Analysis of the influence of Encore Boston Harbor on its surrounding community

Crime Comparison covering periods before COVID-19 (pre-post casino opening), during closure and restricted opening, and the period since reopening

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Executive Summary

Encore Boston Harbor opened on 23 June 2019, drawing more than 3.5 million visitors during the first eight months of operation. As such, the facility reported various crimes, disorder, and arrests commensurate with a facility of that size hosting that many visitors. In the surrounding areas, various crimes increased and decreased. This COVID-19 pre-during-post period analysis provides us with a temporal and spatial view and perspective of crime in and around the Encore Boston Harbor Casino (EBH). While the casino closure would normally provide an opportunity to conduct a pre-post closure assessment using time series analysis; so many other factors come into play during this chaotic period in America. Key factors include the fact that all restaurants, bars, entertainment venues, and schools were closed; and restrictions on health care facilities and hospitals reduced the number of social interactions in our communities, including the possibility for criminal interactions and traffic volume. The social stress of COVID-19, political protests because of George Floyd, and political unrest surrounding the 2020 election, all, contribute to varying levels of crime. Any study looking at crime and disorder, or other human behaviors is simply challenged by the reality that these events collectively affected our lives. It is virtually impossible to control for these contributing factors; and as such, this report offers benchmarks for future research and a starting point for understanding the scope and nature of crime in the region. Patterns of crime in the State, the region and within comparable hotspots will allow us to monitor crime going forward.

This initial report has three specific goals in mind:

1. Conduct an analysis of the increases and decreases in activity in the communities surrounding Encore Boston Harbor over four distinct timeframes before and after COVID-19.
2. Provide insights into the temporal and spatial patterns of crime in the jurisdictions surrounding Encore.
3. Provides the researchers the opportunity to explore a range of methods, software and other tools that have been developed to analyze large volumes of crime and call-for-service data and establish optimal methodology for future analyses.

While this initial report provides insights and lays the foundation for further analysis regarding crime in and around Casinos, it also provides researchers with the opportunity to gather and get familiar with the crime and calls-for-service data within the Encore region and to determine benchmarks and methodology for future analysis. This preliminary report will be a description of the temporal and spatial distribution of crime across five different periods of time: (1) pre-opening, (2) open during pre-covid, (3) closed during covid, (4) the restrictive opening during the covid recover, and (5) reopening post covid. Since these periods do not lend themselves to the same timeframe, weekly averages will be compared in each period to determine the level of crime during each phase. While this is a rudimentary metric at best and given the plethora of causal factors (discussed above), this analysis will not attempt to address whether the casino causes or creates an environment that produces higher levels of crime. Instead, it will simply lay the groundwork for future investigations of this nature. What this report will offer is a temporal analysis across these varying degree of "openness" as compared to three spatial dimensions: (1) the full region, (2) each city or jurisdiction, and (3) four distinct hotspots identified through analysis (described under the methodology section). This initial document can be used to negotiate best practices in spatial and statistical analysis of crime

and place, particularly as it pertains to gaming venues. As a work in progress the researchers look forward to your input and suggestions for improvements and for an endeavor of building a knowledge base for improving public safety in and around casinos and to help them develop problem solving strategies to prevent crime and disorder.

Research Methods

The research methods used during this analysis included Geographic Information Systems (GIS) software called ArcGIS Pro, a spatial analysis tool for understanding crime and place, particularly crime hotspots and micro-level analysis. A technique we call Detailed Hexagon Clustering was used to identify and drill down on crime within these hotspots to better understand the scope and nature of crime within these areas. A technique called Risk Terrain Modeling is being assessed for future analysis to assess the risk and protective factors within communities as it relates to crime prevention and mitigation. A brief discussion of RTM can be found at the end of this report. Tableau data visualization software was utilized to evaluate the time series analysis over five distinct periods: (1) Pre-casino opening, (2) Open, (3) Closed due to COVID-19, (4) Restricted Reopening, and (5) Reopen. This report focused on the nature of crime and space, using these techniques to investigate various crime categories in the entire region, within each jurisdiction and, finally, at the micro-level of four crime hexagon hotspots. This deductive approach and its findings provide a step-by-step drill down into the data to look for trends and patterns in an historical, temporal, and spatial context. Here are the major findings of this effort.

Key Findings

- An important finding is that there was a significant increase in crime before the Encore Boston Harbor Casino reopened after the mandated COVID-19 closure. Figure 7 (p.36) shows this chronological ordering, which suggests that the casino is not a primary cause of crime, but that other social, economic, or psychological factors are likely playing a role in changes in crime patterns. For example, it is possible the strain of COVID-19 created an environment where motivated offenders sought relief from stress and/or economic hardship that led them to criminality, but a closed casino cannot be a factor.
- Vehicle crime (illustrated in Figure 13 p.42), including Stolen Autos, Theft From Vehicles and Theft of Auto Part; skyrocketed when the casino initially opened; and remained generally high since the closure and during restrictive reopening. Although Auto Crimes dipped at the early stage of reopening, it skyrocketed once again to a record high of 49 in January'22; and remained extremely high from October'21 throughout June'22.
- The literature review offers evidence that some crimes were more greatly impacted by COVID-19 than others. Theft from persons, shoplifting, robberies, and burglaries declined during the covid closures. Auto thefts and domestic violence exhibited increases over the same period. Vice and cybercrime increased over periods of closure.
- Crime and Calls-for-Service clearly reduced in frequency when establishments in the Region were closed due to COVID-19. But is peaked before the closure ended and returned to original casino opening levels.
- During the covid closures, crime dropped in all area communities, but rebounded substantially before covid closures were lifted.
- During the reopening period, some crimes rebounded but most remained low.
- Overall crime in the region has been steadily declining over the past 10 years until 2022. Figure 6 (p.33) shows the uptick in crime.

- The City of Lynn has been trending up the past three years as illustrated by Figure 18.C (p.54). Malden and Melrose each have experienced an upward trend while Everett, Chelsea, and Saugus have remained flat in the most recent years.
- The entire region shares crime-specific problems similar in nature. The top ten crimes within the region are consistent across jurisdiction. Table 10 (p.48) shows that Vandalism, Simple Assault, Other Theft, Theft from Vehicle, Burglary, and Aggravated Assault were within the top-ten crime types in each city under study.
- Three distinct hotspots in the region were identified and compared to the Encore hexagon cluster, see page 72 for a detailed discussion.
- The immediate areas around the casino showed few increases in crime.
- Violent crime clearly clusters more heavily in Lynn and to a lesser degree in Chelsea.
- Burglaries were more evenly distributed over the entire region.
- This report offers extensive details about the scope and nature of crime and can be used as a benchmark and threshold analysis in future studies.
- Additional micro-analysis is needed to fully ascertain crime and place, and the Risk Terrain Model will be employed in future reports to study risk and to assist agencies in developing crime prevention and Problem-Oriented Policing (POP) projects to improve their effectiveness of practice.
- Overall violent, property, and total crime followed a consistent pattern. Albeit crime behaves, or should we say criminals behave, in routine and demonstratable patterns. Crime ebbs and flows with peaks and valleys over time but stays within a range that must be managed. This report should better help us understand this phenomenon.

Conclusion

Overall crime around the Encore Boston Harbor Casino did not experience significant increases in crime, when compared to other areas in the region, thus concluding that the casino has limited impact on crime in the region.

Developing mitigation strategies and collaborative initiatives appears to be feasible, given the shared similarities in crime types and temporal patterns. It makes sense to collaborate and focus on specific crimes since evidence-based policing tells us the same prolific offenders operate and that crime clusters in distinct areas. Sharing timely intelligence and responding with effective and unified solutions represents a sound practice for the future. Putting officers in the right place at the right time is feasible when utilizing sound crime analysis.

Future research calls for critical thinking about certain crimes that are associated with the casino. Certainly as patrons visit the casino, cash related crimes like street jump robbery and theft from autos are more likely. Identity theft from thieves stealing documents from parked cars in structures and street parking have clear correlates. Large venues, like sporting events and conference championships draw wealthy clientele, and with-it certain types of crime and scams. Prostitution and human trafficking, as difficult as they are to discern and investigate, remain high priorities. Drunk driving merits ongoing attention given the strong relationship between adult entertainment and alcohol consumption. But as the data suggests, all the jurisdictions within the region, share common crime and disorder problems, and a collaborative and problem-solving approach merits strong consideration. It is very likely that each city is dealing with a similar pattern of a small number of prolific offenders, and hotspots with common contributing attributes.

Project Overview

The primary purpose of this report is three-fold.

- Number 1 - Conduct an analysis of the increases and decreases in activity in the communities surrounding Encore Boston Harbor over five distinct timeframes:
 - prior to the casino opening (Pre-Open),
 - while it was open pre-covid (Open),
 - during the covid closure (Closed),
 - during restricted operations, and
 - time since returning to full operations (Reopen) on May 30 '22.

The goal here is to establish metrics for the new normal now that Encore is open again. This report, like previous ones, will alert participating agencies to trends (whether or not “caused” by Encore), and to identify patterns for future detailed analysis in later reports.

The period covered by this report compares 7-day cycles for the 38 weeks before Encore opened (as a pre-opening baseline) to the 38 weeks the casino was open from June 23, 2019 until it closed on March 14, 2020 due to COVID-19. It will then compare weekly averages for crime counts using these same cycles for the 17-week period the casino was closed from March 15, 2020 until July 11, 2020 when it reopened with capacity and distancing restrictions. Finally, this report will compare these rates of activity since fully reopening on May 30, 2021 and compare it to crime and calls for service rates across these periods. This report provides a time series analysis of these different periods standardized by 7-days.

	Pre-Open	Open	Closed.	Restricted.	Reopen
Time Frame	9/30/18	6/23/19	3/15/20	7/12/20	5/30/21
	6/22/19	3/14/20	7/11/20	5/29/21	7/2/22
	38 Weeks	38 Weeks	17 Weeks	46 Weeks	57 Weeks

- Number 2 - Provide insight into the temporal and spatial patterns of crime in jurisdictions surrounding Encore. It begins with a broad analysis, followed by a drill down into the data at a local level and compares across them. It is a process of deductive reasoning, if you will, that allows us to compare Everett-Encore Boston Harbor to the overall average changes and to each of the surrounding jurisdictions. The spatial micro-analysis uses hexagons to drill down further into quarter-mile sections throughout the region.
- Number 3 - Provides the researchers the opportunity to explore a range of methods, software and other tools that have been developed to analyze large volumes of crime and call-for-service data and establish optimal methodology for future analyses.

This report does not generally attempt to answer broad questions about whether Encore “caused” increases, or its closure caused decreases in the area. It simply identifies the trends across our focused periods of pre-opening, open, closed, restricted and reopened cycles and looks for contributing factors and geographic explanations for high and low activity. Future analysis will attempt to ascertain the causal factors and correlates related to crime in proximity to the casino.

In addition, this report will conduct a spatial analysis of crime counts across the study area using hexagon polygons¹ of equal size – approximately one-quarter-mile square areas. It will use these sectors to compare high and low crime areas and describe the scope and nature of crime in them as compared to the hexagon encompassing the casino and those hexagons immediately contiguous to it. It will compare Encore to three (3) other crime hotspots identified in the region. Historical averages and spatial and temporal patterns for key crime categories were established for each agency and the region. They will be used as benchmarks for future analysis. This report will also provide a follow-up report on drunk driving as reported by the Massachusetts State Police as a follow-up report to previous research done on impaired driving.

Encore Boston Harbor opened on 23 June 2019, drawing more than 3.5 million visitors during the first eight months of operation. As such, the facility reported various crimes, disorder, and arrests that appear to be consistent with a facility of that size and number of visitors. In the surrounding areas, various crimes increased and decreased. This COVID-19 pre-during-post period analysis provides us with a temporal and spatial view and perspective of crime in and around the Encore Boston Harbor Casino. While the casino closure would normally provide an opportunity to conduct a pre-post closure assessment using time series analysis: so many other factors come into play during this chaotic period in America. Key factors include the fact that all restaurants, bars, entertainment venues, and schools were closed; and restrictions on health care facilities and hospitals reduced the number of social interactions in our communities, including the possibility for criminal interactions and traffic volume. The social stress of COVID-19, political protests because of George Floyd, and political unrest surrounding the 2020 election, all, contribute to varying levels of crime. Any study looking at crime and disorder, or other human behaviors is simply challenged by the reality that these events collectively affected our lives. It is virtually impossible to control for these contributing factors; and as such, this report offers benchmarks for future research and a starting point for understanding the scope and nature of crime in the region. Patterns of crime in the State, the region and within comparable hotspots will allow us to monitor crime going forward.

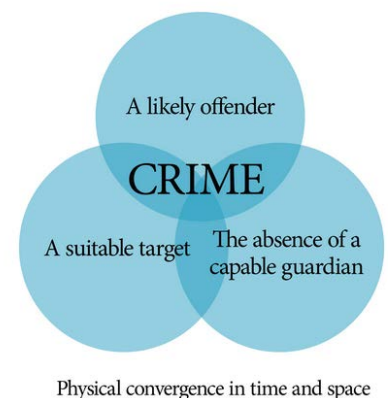
The following key concepts lay the foundation for our approach.

Crime Triangle



Like the elements of a fire (i.e., oxygen, fuel, and a spark), all three of these crime factors (Victim, Offender, and the lack of a capable guardian at the same time and place) need to be present for a crime to occur (Cohen and Felson, 1979; Clarke and Eck, 2016). Sherman et al. (1989) is one of the first to apply Routine Activity Theory to hotspots, consistently showing how crime congregates in succinct places.

ROUTINE ACTIVITY THEORY



¹ Documentation for why hexagons are considered best practice in spatial analysis can be found here: <https://pro.arcgis.com/en/pro-app/latest/tool-reference/spatial-statistics/h-whyhexagons.htm>

Best practice, according to the Problem Oriented Policing DOJ funded initiative, calls for solutions that are focused on distinct areas or hotspots and that are multifaceted in nature, which prove to be more successful. Future analysis will attempt to offer a more robust understanding of the scope and nature of crime in these hotspots so that local agencies can leverage their resources towards micro-solutions that can be measured and replicated (Scott & Kirby, 2012).

Background

In 2014, the Massachusetts Gaming Commission, to better assess the impacts of new gaming facilities across the state, commissioned a series of efforts to study, assess, and prepare for the social and economic impacts of gambling. Primary work in this area is being done by the Social and Economic Impacts of Gambling in Massachusetts (SEIGMA) study at the University of Massachusetts Amherst School of Public Health & Health Sciences, drawing upon research and experiences in many other states. For public safety issues specifically, however, the MGC felt it best to contract with someone with direct experience analyzing the crime, call-for-service, and collision records collected daily by Commonwealth police agencies.

While many studies had attempted to study the effects of gambling on overall rates for serious crimes, aggregated annually, hardly any studies have attempted to analyze more specific and minute changes in public safety activity following the opening of casinos, including variations by hour, month, and season, changes in patterns and hot spots, and changes in non-crime activity such as traffic collisions and calls for service. The MGC was interested in the answers to these questions—in analyzing public safety at a level of detail that would help the police anticipate and respond to emerging problems.

In 2014, the MGC contracted with a career crime analyst, the author of several previous reports, to extract data from the agencies likely to be affected by the opening of Massachusetts's new casinos, and to design a process for assessing changes in those agencies' activity on a periodic basis. Work began in 2015 with baseline and first-quarter analyses of the Plainville area, where Plainridge Park opened in June. A new phase began in 2018, when MGM Springfield opened in August, and a third in 2019, in anticipation of the opening of Encore Boston Harbor. This effort produced three (3) reports on Encore prior to this report.

In 2022, MGC contracted with JRA to continue this line of inquiry. JRA is a research consulting firm that specializes in applied research focusing on spatial and temporal analysis of crime and calls-for-service. We look forward to constructive feedback and guiding questions for future analysis. Up to this date, the following reports are available online at massgaming.com. JRA hopes to continue the research effort laid out by our predecessor and his fine work.

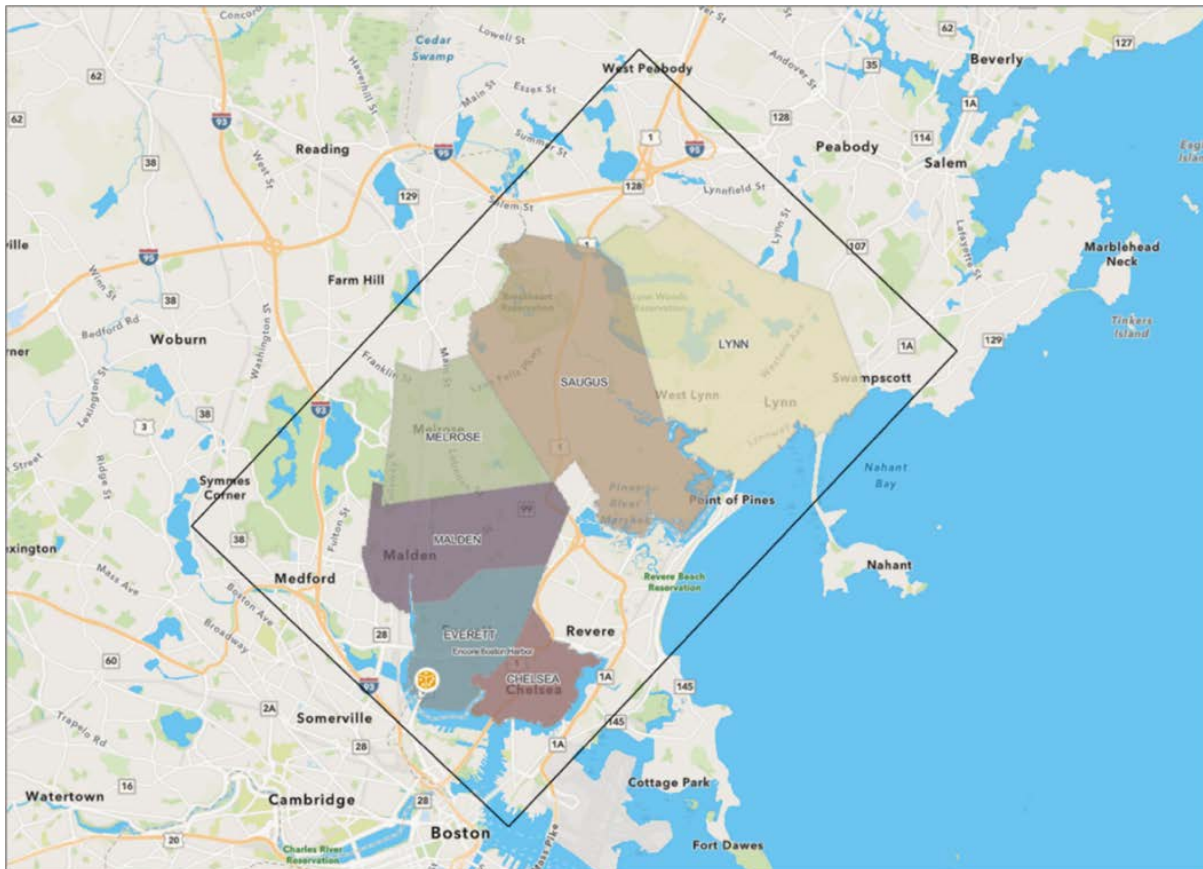
Table 1 below list all previous reports assessing changes in crime and police activity related to the three Massachusetts casinos, with this January 2023 report listed last.

Table 1: Publicly issued and planned reports on changes in crime and police activity

Issued	Report	Notes
August 2015	Report on baseline activity at Plainville area agencies	Established statistical measures for post-casino comparison
November 2015	Evaluation of change in police data after the first three months of Plainridge Park	Few changes discernible in the immediate 3 months.
April 2016	Analysis of changes in police data after the first six months of operation at Plainridge Park Casino	Identified traffic-related calls for service as likely related to PPC. Noted increases in fraud crimes.
December 2016	Analysis of changes in police data after the first year of operation at Plainridge Park Casino	Continued to note increases in traffic-related calls; established credit card fraud increases as “likely related.”
December 2017	Analysis of changes in police data after the first 2 years of operation at Plainridge Park Casino	Most comprehensive report so far. Included comparative analysis of control areas.
June 2018	Report on baseline activity in Springfield-area agencies	First report in preparation for MGM casino.
December 2018	Three-year analysis of Plainridge Park area.	Includes comprehensive traffic study
September 2019	Eight-month analysis of MGM Springfield	Showed increases in traffic collisions and complaints but few crimes increase.
September 2019	Baseline analysis of Encore Boston Harbor area	First report on this casino
October 2019	Four-year analysis of Plainridge Park	Final Plainridge Park reports shows few public safety issues attributable to the casino.
February 2020	One-year analysis of MGM Springfield	MGM is shown to be potentially related to some traffic issues and small patterns in specific communities.
March 2020	Six-month analysis of Encore Boston Harbor	Like MGM, Encore itself is busy, but has few detectable influences on surrounding area.
February 2021	18-month analysis of MGM Springfield	First report to cover COVID-era closings.
March 2021	1-year analysis of Encore Boston Harbor	Second report to cover COVID-era closings.
April–June 2021	Special reports on drunk driving, casino-based crime, and the MGM 2-year report	
January 2023	Assessing the Influence of Gambling on Public Safety in Massachusetts Cities and Towns During the COVID-19 Pandemic	Third report to cover COVID-era closings and the weekly time series analysis of pre-to-post Covid periods.

Involved Agencies

Figure 1: Agencies participating in the study area



The initial study area was limited to those agencies that signed a “surrounding community” agreement with the Massachusetts Gaming Commission: Boston, Cambridge, Lynn, Malden, Medford, Melrose, and Somerville. Together, these cities represent a population of nearly 1.3 million, although limiting the analysis of Boston to Charlestown effectively reduces that number to just over 600,000. Six cities agreed to submit data for analysis for this report, Chelsea, Everett, Malden, Melrose, Saugus, and Lynn. The remaining agencies in the region will continue to be contacted to add their data and include their jurisdictions in future reports.

Of the invited communities, Cambridge declined to participate by supplying the data necessary for this analysis. Medford expressed an initial willingness to participate but never supplied any data. Malden participated in the first analyses (published in March 2020), did not participate in the second report, but rebounded to share data for this report. Saugus Police Department was left out of the initial two reports but has participated in the last two. The remaining agencies have consistently participated.

Although the Massachusetts State Police did contribute their data for this report, its format makes it inconsistent with the local agency submissions and is thus analyzed in a later section of this report rather than in the totals offered below.

Crime Definitions

The following are definitions of the crime categories used in this report. These are mostly drawn without modification from the FBI's definitions for NIBRS (National Incident Based Reporting System) crime categories. In almost all cases, *attempts* to commit these crimes are counted equally with completed offenses. These crimes must, of course, be reported to the police to be included in this report.

Some crime types are grouped together based on common behaviors or themes. The FBI uses group categories for **Violent or Persons Crime** to include Murder, Rape, Robbery, and Aggravated Assault; and for **Property Crime** to include Burglary, Larceny and Motor Vehicle Theft (also called Stolen Vehicles). Others have combined crime groups to include **Vehicle Crimes** to include Motor Vehicle Theft, Larceny From Vehicles and Larceny of Auto Parts, Criminal Damage to Vehicles, and Tampering. **Vice Crimes** are grouped by specific crimes related to drugs, alcohol, gambling, pornography, and prostitution. These groupings will be utilized as part of this analysis and as categories throughout the report when appropriate.

Aggravated Assault: An attack by one person upon another for the purpose of inflicting severe bodily injury. Aggravated assault is either accompanied by the use of a deadly weapon (e.g., gun, knife, club) or some mechanism that would result in serious harm (e.g., pushing someone down a staircase), or by serious injury even with a weapon that isn't normally "deadly" (e.g., punching someone and breaking his jaw). If the incident involved neither a deadly weapon nor serious injury, it's coded as a simple assault instead.

Arson: Intentional burning of a structure, vehicle, or personal property.

Auto theft: Thefts of vehicles capable of operating under their own power, including automobiles, trucks, buses, motorcycles, and snowmobiles.

Bad checks: The issuance of checks on accounts with insufficient funds. This type of crime is typically only reported by police when an arrest is made, or an individual is charged.

Burglary: Unlawful entry of a structure, including residences, commercial buildings, and government buildings. The entry does not have to occur by force (e.g., a "break-in"). The usual motive for burglary is to steal something inside, but this isn't a necessary part of the definition.

Counterfeiting/forgery: Use or possession of an altered, copied, or imitated negotiable or non-negotiable instrument, including U.S. currency, checks, and money orders.

Credit card fraud: Use of a stolen credit card or credit card data to obtain goods or services.

Disorderly: Disorderly conduct that rises to the level of a criminal charge.

Drug offenses: Manufacturing, sale, trafficking, transporting, or possession of controlled substances. Typically, "incidents" of such crime are arrests, as the only way such incidents are reported is when they are discovered by the police.

Drunk driving: Operation of a motor vehicle while intoxicated; usually while above a state-designated legal blood alcohol level. As with many of the drug and alcohol categories, such incidents are only reported when discovered by the police, usually resulting in an arrest.

Drunkenness: Naturally, not all incidents of intoxication are a police matter. Police incidents that fall into this category are usually incidents of either public intoxication or individuals so dangerously intoxicated that they are placed into protective custody until sober.

Employee theft: Also, "embezzlement." Theft of an employer's property by an employee.

Extortion: Theft or attempted theft of money, goods, or services through non-violent coercion.

Family offenses: Unlawful, nonviolent acts by a family member that threaten the physical, mental, or economic well-being of another family member and are not classified under any other category. This category is only reported when someone is charged, and it almost always involves violations of restraining orders or child neglect.

Forgery: Forgery of personal checks, business checks, U.S. currency, or similar negotiable and nonnegotiable documents.

Fraud. Theft of property by lying in such a way that convinces a victim to surrender money or goods. It is theft through some kind of scheme, "con game," or ruse.

Gambling offenses: Crimes related to illegal gambling, promoting gambling, operating gambling machines, bookmaking, and sports tampering.

Identity theft: Representation of oneself as another (actual) person or use of another person's identifying information to obtain goods or services, housing, medical care, or status.

Kidnapping: The abduction of one person by another, whether through force or guile. Most incidents coded as such are "custodial" kidnappings involving a parent taking a child in violation of a custodial agreement.

Liquor law violations: Illegal manufacturing, sale, possession, or consumption of intoxicating drinks, often because the offender is below the legal age.

Murder: the killing of one person by another, including non-negligent homicides.

Other thefts: A general category that includes thefts of services (e.g., gas drive-offs), thefts from persons (e.g., pocket-picking), thefts from outdoor public areas. Essentially, any non-burglary, non-robbery theft that is not covered in one of the "theft" or "shoplifting" categories (below) is categorized here.

Pornography: Possession, sale, or manufacturing of illegal pornography. Since pornography is legal in Massachusetts, such incidents generally involve minors, either as the subjects or recipients of the pornography.

Property crime: An aggregate category that sums the totals of arson, burglary, thefts from persons, purse snatching, shoplifting, thefts from buildings, thefts from machines, thefts from vehicles, thefts of vehicle parts, other theft, auto theft, forgery, fraud, credit card fraud, identity theft, employee theft, extortion, stolen property, and vandalism.

Prostitution: Promotion or participation of sexual activities for profit. As with drug offenses, most "incidents" of prostitution are arrests, as the crime is rarely reported except when discovered by the police.

Purse snatching: A theft in which an offender grabs a purse off the arm of the victim. If any significant force, violence, or threats are employed, this crime becomes a robbery.

Robbery: Taking or attempting to take anything of value from another person by force or violence or threat of force or violence. "Muggings" and "hold-ups" are examples of robberies. A robbery requires a direct confrontation between the offender and victim; houses and buildings cannot be "robbed."

Sexual assault: Any sexual act directed against another person (of either sex), either by force or otherwise against the person's will, or non-forcibly but when the victim is incapable of giving consent because of temporary or permanent mental or physical incapacity. This category combines rapes, indecent assaults, molestation, and sexual penetration with an object.

Shoplifting: Thefts of items offered for sale at retail establishments.

Simple assault: An assault that does not involve a dangerous weapon and does not result in significant injury.

Statutory rape: Nonforcible sexual activity with an individual who is unable to give legal consent because of age.

Stolen property offenses: Possession or sale of property previously stolen including motor vehicles and personal property. Often, the person possessing the property is the one who stole it in the first place, but this category is used when the actual thief cannot be determined.

Thefts from buildings: Thefts of items from commercial or government buildings open to the public, where such entry does not constitute burglary. This often takes the form of thefts of employees' property at businesses open to the public.

Thefts from machines: Thefts from coin-operated machines, either for the coins or for the products inside.

Thefts from persons: Thefts of personal property from the direct control of the owner. These often take the form of pocket-pickings or thefts of or from diners' purses at restaurants. If any force, violence, or threats are employed, this crime becomes a robbery.

Thefts from vehicles: Thefts of items from motor vehicles. The category includes breaking into vehicles (e.g., smashing a window), unlocked entry, and thefts of items from a vehicle's exterior, such as pickup truck beds. Note that thefts of vehicle parts are in a separate category.

Thefts of vehicle parts: Theft of parts or accessories from motor vehicles, including wheels, license plates, and engine parts.

Threats: Threats to commit physical violence by one person against another. If any weapon is displayed or employed, or if an assault is attempted, the crime is categorized as a simple or aggravated assault instead.

Trespassing: Illegal entry to a non-public part of a residence or business. Such entry is rarely to the *interior* of the property, or it would be coded as burglary instead. Most reportable incidents of trespassing are either after notice (e.g., a repeat shoplifter who is ordered not to return to a store) or at posted locations (e.g., construction sites, abandoned buildings).

Vandalism: Destruction or defacement of public property, buildings, vehicles, or personal property.

Violent crime: An aggregate category that sums totals for murder, sexual assault, kidnapping, robbery, aggravated assault, simple assault, and threats.

Weapon offenses: Possession, sale, or manufacturing of illegal weapons. This is often an additional offense discovered by police during arrests for other crimes.

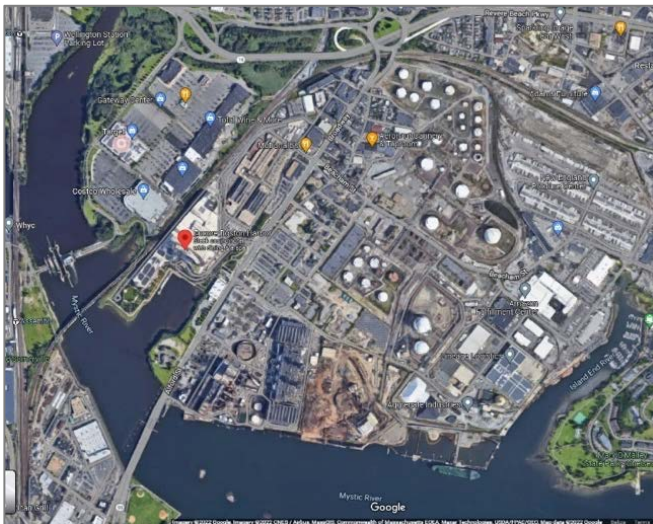
Literature Review

A small body of literature exists for criminological studies of gambling and crime. There has been no research to date to our knowledge that has studied crime around casinos during COVID-19. The previous methodology for inquiry ranges from entire cities being compared to control areas (Stitt et al., 2003; Barthe & Stitt, 2009; Ochrym. 1990). Ratcliffe & McCullagh (1999; 1998) has offered a technique referred to as Repeat Victimization and Geographical Analysis Machine (GAM) that offer promising results. These techniques will be reviewed and assessed for potential viability for future research. Given the plethora of social attributes in the recent past that could drive crime up or down accordingly, this report only seeks to lay the groundwork for future comparisons of correlation and possibilities for causation. Another promising technique under consideration will be to utilize the Risk Terrain Model (Kennedy, L. W. et al. 2016), which applies land use and the identification of different establishment or reference points that impact risk and protective factors that attempt to explain crime hotspots or the propensity for high volume crime areas. This technique will be assessed for future research as well.

The previous Encore Report (Bruce, 2021) concluded that

...few patterns and trends have shown any direct ties to the casino. COVID closures caused crime and crashes to plummet, and future analyses of the casino's impact will be difficult given how much COVID influenced society and economics.

Figure 2: Aerial photo - dense industrial area



This preliminary analysis offers the same conclusion: the casino has limited impact on crime in the region. Most of that appears to exist today because the casino is in an area with little commercial establishments. It is our understanding that economic development may be on the horizon and could change this dynamic of criminal activity. One could argue that drawing more people to a location raises the potential for suitable targets and, thus, an increase in crime. Others have argued that changing space into legitimate space with more activity lends itself to increased guardians (i.e., informal social control); therefore, the area is

extremely protected (e.g., strength in numbers). Clearly the casino offers place managers and digital surveillance that deters crime. This preliminary report will simply offer a description of crime and place during these difficult times and lay the groundwork for determining new benchmarks for crime and disorder over time and proximity. Future analysis (discussed at the end of this report) will attempt to monitor and assess certain impacts in the future.

Research on the effects of COVID-19 has been plentiful. Here are excerpts from recent research that offers a theoretical basis and the results on patterns of crime thus far. A full literature search was conducted using “crime and COVID” and keyword search criteria was utilized. Riddell et al (2022), following the lead of Cohen and Felson’s (1979) theory of routine activity and Agnew’s (1992) general strain theory [GST]; “proposes that a crime is more likely to happen when three necessary elements converge in time and place: the presence of a motivated offender, a suitable target, and the absence of a capable guardian; further arguing that if any one of these factors are absent, it reduces the likelihood that a crime will occur (Cohen & Felson, 1979). Riddell et al (2022) offer an eloquent description in their own terms, rather than paraphrase it, we offer their depiction verbatim:

It is particularly useful in how it explains that criminal offenses are related to the nature of everyday patterns of social interactions. Because of the focus on how characteristics, situations, and dynamics across space and time may generate crime conditions (Eck & Weisburd, 1995), it is possible that city wide shutdown mandates may have interrupted the required convergence of the three elements and as such we should expect a reduction of crime. In other words, the pandemic and the stay-at-home orders have disrupted the repetitive and often predictable nature of routine activities by increasing the number of citizens staying at home (providing capable guardians to protect property) and reducing day-to-day interactions in public spaces limiting the chances of potential victims encountering motivated offenders (Cohen & Felson, 1979; Kennedy & Forde, 1990).

... In short, GST [*i.e.*, *General Strain Theory*] would predict that the strains associated with the pandemic, including unemployment and the increasing costs and scarcity of household goods and groceries, as well as the perception of some that mask-mandates and stay-at-home orders are an unjust infringement on one’s rights, would heighten feelings of frustration and anger and, in turn, increase the risk of criminal coping.

Research exploring the impact of COVID-19 on the incidence and nature of crime and victimization will need to explore individual types of crime, disaggregated by location (Campedelli et al., 2020; Felson et al., 2020), and victim characteristics (Ashby, 2020) while also taking into account the differential response to the pandemic across states and cities. The incidence of some forms of property crimes during the pandemic is likely to be shaped by the timing and nature of COVID-19 restrictions and stay-at-home orders, and their financial consequences, including unemployment and economic hardships. Rates of home burglary should be largely insulated from increasing rates of victimization given that stay-at-home orders have created increased guardianship and control (Campedelli et al., 2020). Early research has found that in a number of cities, residential burglaries had declined, but that there has been little change in non-residential burglary (Ashby, 2020; Gerell et al., 2020). Ashby (2020) notes that while motor vehicle thefts have also declined, there have been diverging patterns of thefts from motor vehicles. He concludes that this

aligns with the routine activities approach, with stay-at-home orders and other movement restrictions leading to more residents and neighbors increasing guardianship of their property. Similarly, Boman and Gallupe (2020) note that there has been a reduction in these opportunistic crimes driven largely by decreases in minor offenses related to adolescent peer groups. Mohler et al. (2020) found similar results in two U.S. cities, Los Angeles, and Indianapolis, which exhibited a decrease in burglaries and robberies but an increase in auto thefts and domestic violence calls. Sutherland et al. (2021) corroborated the decrease in violence in Los Angeles, where shooting incidents dropped by 9.3% from 2019 and 10.3% from 2018. However, these results do not hold in other major U.S. cities; New York, Baltimore, and Chicago all saw increases in shooting incidents since the beginning of the COVID-19 pandemic...

...While property and economically motivated crimes have declined in the last several months, the same has not been found with respect to violent crime. Instead, violent crime has remained either relatively stable (Ashby, 2020) or has increased for specific forms of violence, including homicide and aggravated assaults (Rosenfeld et al., 2021), and intimate partner or domestic violence (Piquero, Jennings, et al., 2021; Roesch et al., 2020). For example, Boman and Gallupe (2020) report that violent crimes which are generally not committed with co-offenders (i.e., homicide and intimate partner violence) have either remained constant or increased (see also, Evans et al., 2021; Leslie & Wilson, 2020; Piquero et al., 2020). Roesch et al. (2020) found that high rates in income loss and general financial instability during lockdowns often places stress on relationships, resulting in crimes of intimate partner violence. Finally, in the most recent and authoritative review of crime during the pandemic inclusive of the year 2020, Rosenfeld et al.'s (2021) analysis of data from 34 cities found sharp increases in homicides, as well as smaller increases in aggravated assaults and gun assaults but decreases in most property and drug crime rates, while Piquero, et al.'s (2021) systematic review of studies exploring changes in domestic violence incidents before and after pandemic lockdowns revealed a sizable increase in studies using a range of measures for domestic violence and in different locations throughout the world.

Riddell et al. (2022) assessed property and violent crime indexes in relationship to COVID-19 stay-at-home regulations in Dallas, TX during the first half of 2020. These researchers tested for changes in violent and property crime over four key "intervention" periods. Two key findings: (1) both violent and property crime rose between the initial stay-at-home policy and the phase one re-opening; and (2) daily counts of property and violent crime were higher during the third phase of Dallas officially re-opening. Riddell et al. (2022) conclude that policy makers need to focus on allocation of all social services, not just law enforcement, particularly when "stay at home orders" are implemented.

Germane to Massachusetts's Gaming Commissions concerns regarding crime at and around casinos, Riddell et al. (2022) demonstrated that violent crime increased during times of general strain or stress, especially homicides, aggravated assaults, and domestic violence, while most

property crimes decreased due most likely to people staying at home (consistent with RAT), with non-residential burglary being an exception for obvious reasons. Riddell et al. (2022) offer possible explanations for violent crime increases due to Dallas PD operating at reduced capacity, fewer opportunities for offenders to commit other crime; however, the higher level of violent crime found during phase-3 could be indicative of accumulated strain.

Reid et al (2021) report on the consequences of COVID-19 on the psychological distress and antisocial behaviors of youth like aggression, frustration tolerance, school misconduct, substance abuse and suicide ideation and attempts. Balmori de la Miyra et al., (2021) and Lallie et al., (2021) report that evidence mounts that demonstrates the impact of COVID-19 on criminality and the criminal justice system's ability to respond to it. Reid et al. (2022) concludes that

Undoubtedly, the pandemic has altered crime rates, the operations of the criminal and juvenile justice systems, policing practices, and the availability of health and social resources (Abrams, 2021; Buchanan et al., 2020; Desai et al., 2021; Langton et al., 2021; Semukhina, 2021). COVID-19 mandates continue to create major disruptions in daily life of all persons involved in the criminal justice system from youth in detention to correctional officers. For example, diminished personal and community connections due to the pandemic has disrupted the lives of detained individuals and criminal justice professionals tasked with their supervision (Buchanan et al., 2020; Lockwood et al., 2021; Schwalbe & Koetzle, 2021). Concerns regarding the spread of COVID-19 in correctional facilities have resulted in changes in detention protocols and rates of early release (Abraham et al., 2020; Hamblett et al., 2022; Henry, 2020; Surprenant, 2020). Mandated responses to the COVID-19 pandemic have altered the frequency and types of interactions between criminal justice professionals and those involved in or impacted by crime (Lockwood et al., 2021; Schwalbe & Koetzle, 2021). Engagement in antisocial behavior and mental health deterioration are elevated due to the stressful and unstable conditions affecting every life domain (Best et al., 2021; Kira et al., 2021; O'Connor et al., 2021).

Changes in Crime Counts and Calls for Service

In the first four articles of the *Crime & Delinquency* 2022, Vol. 68 special issue (Issue 8), researchers delve into crime and calls-for-service counts. Riddell et al. (2021) takes a closer look at changes in property and violent crime offenses in Dallas, TX during the first 6 months of 2020. They lay the foundation for a time series approach to crime and police activity during different phases of the government's response during COVID-19. They succinctly divide time frames into four separate COVID-19-related phases: (1) stay-at-home order, (2) phase I re-opening allowing 25% capacity for restaurants, movie theaters, museums, libraries, non-essential retail, and shopping malls, (3) phase II re-opening of gyms office workplaces and manufacturing facilities to 25% capacity, and (4) phase III re-opening of businesses to 50% capacity. This research follows their lead.

Employing both Poisson regression leveraging daily crime counts and trend analysis using the start dates of each of the four phases of re-opening, Riddell et al. (2021)

found initial stay-at-home orders led to a 6.8% decrease in daily violent crime counts and a 7% to 10% decrease in property crime; yet found an increasing trend for both violent and property crime between the initial stay-at-home order and the phase I re-opening, and that phase III (reopen all businesses to 50% capacity) was associated with higher daily counts of both violent and property crime (18.5% increase in violent crimes and 12%–15% increase in property crimes). This study advances our knowledge surrounding the pandemic and associated governmental restrictions' influence on different crime types, but, more importantly, is one of the first to examine the influence of both restrictions and the easing of such restrictions on crime.

Dai et al. (2022) analyzed temporal patterns of calls-for-service data before, during, and after the initial COVID-19 lockdown in Hubei Province, China. They found that "violent, property, and dispute case crimes declined during the lockdown, while public order, domestic violence, and "other" crimes increased, and traffic-related crimes nearly disappeared." A critical conclusion was the fact that the extent to which the rates returned to pre-lockdown levels differed by crime type. Belshaw et al. (in press) report on patterns of credit card skimming hits prior to and during COVID-19 lockdown. These researchers used time series analysis to show that skimming hits were significantly and positively related to the period when COVID-19 restrictions were lifted and when gas prices rose.

Yang et al. (2021) illustrated that the numbers of crime significantly decreased in Chicago as the COVID-19 pandemic impacted the daily lives of its citizens. They investigated the spatial and temporal patterns of crime in Chicago. The Seasonal-Trend decomposition procedure (STL-Loess) was used to identify the temporal trends of different crimes, detect crime events outliers, and examine variations of crime distributions over time. The results showed a certain phase pattern in the trend components of assault, battery, fraud, and theft. The largest outlier occurred for components of burglary, criminal damage, and robbery. The spatial point pattern test (SPPT) compared distribution patterns of crime in 2020 to those in 2019, 2018, 2017, and 2016, and analyzed the micro scale changes in crime. Significant findings showed that the distributions of crime changed in 2020 and that theft, battery, burglary, and fraud clustered in downtown Chicago. These researchers conclude that "spatial and temporal patterns of crime changed significantly" as a result of COVID-19 and offered several suggestions for how local police departments should allocate available resources in their response to crime.

Hardford et al. (2022) succinctly proclaims that "it is natural to presume that crimes that rely on the interaction of people, such as violent and sexual offences, or those that require the presence of a capable guardian to prevent, such as burglary, were likely to reduce as a result of conditions that significantly restrict mobility. In addition, certain crimes require access to allow an offender opportunity to commit them, shoplifting being the most obvious. As a result, laws closing much of the shopping industry were likely to have reduced these offences. These predictions held true when subjected to early research. This researcher goes on to claim that "despite widespread international research, there has only been a limited number of studies within the UK" that continued to investigate the impact of COVID-19 (Buil-Gil et al. 2020; CSEW 2021; Dixon et al. 2020; Langton et

al. 2020; Neanidis and Rana 2021; Nivette et al. 2021). Most studies focused on the demand for services experienced by the police by analyzing recorded crimes.

Hardford’s (2022) current study focused the impact of COVID-19 on police demand, capacity, and capability, and how it directly affected the police; and attempted to provide solutions for future preparedness as it pertained to core functions such as 999 [i.e., equivalent of the U.S. 911 system] responding, criminal investigation, and community policing. The impact of COVID-19 was acutely felt in departments that were low capacity and high capability. The effects of these findings related to the impact on the satisfaction, trust, and confidence of the police due to the reduced ability of the police to meet the demands placed upon them. Drops in satisfaction, trust, and confidence were attributed to victims of cyber-crime and anti-social behavior, both crimes that suffered increases during the pandemic.

Figure 3: COVID-19 Effects on Police Officers

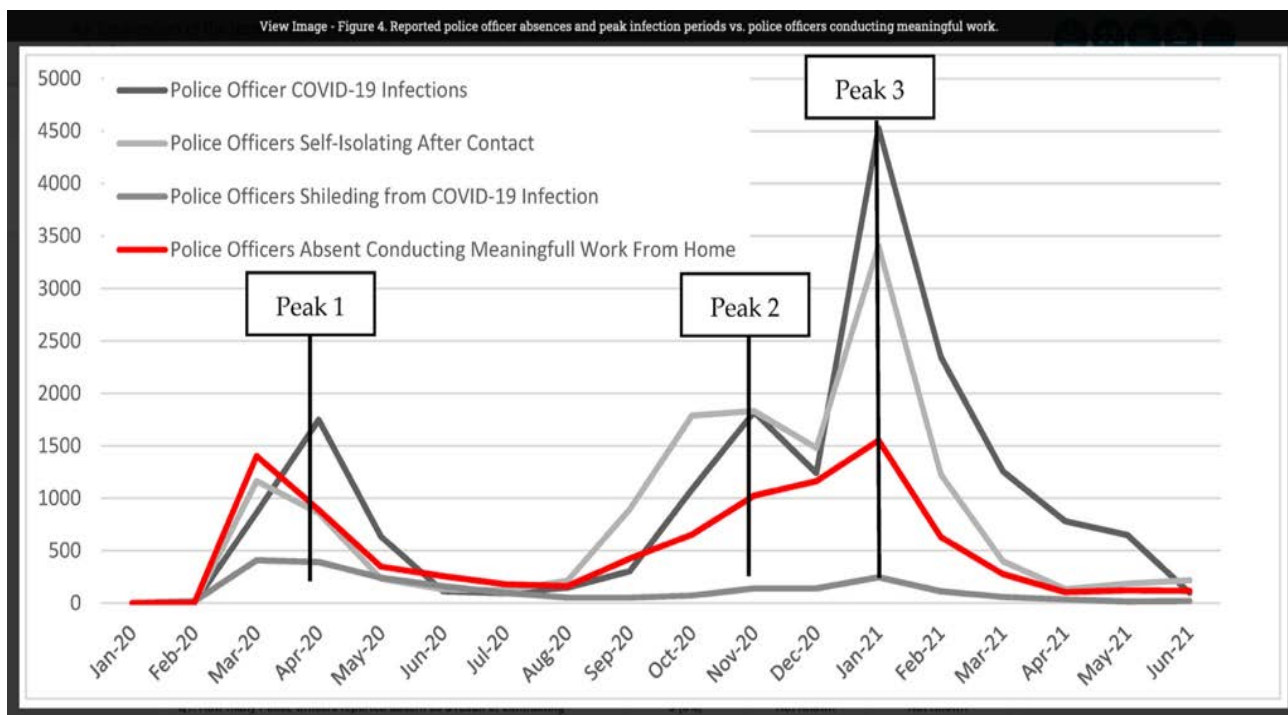


Figure 3 offered by Halford et al. (2022) depicts the direct impact on the policing ability to respond while many officers were absent after being infected by COVID-19, literally unable to address crime events; and investigate and charge offenders.

Table 2 below suggests that many police professionals shared the view that COVID-19 significantly reduced their ability to respond to crime both in terms of capacity and capability. These findings illustrate the perceived impact officers felt during COVID-19 limiting their capacity to respond.

Table 2: Capacity and Capability Impacts during COVID-19

Volume of survey respondents who believe access to available capacity or capability was significantly reduced due to COVID-19			
Capacity		Capability	
Policing Department	% of Respondents		Specialist Capability
999 Immediate Response	80.00%	60.38%	PIP 1 accredited investigators
Community Policing	43.64%	28.30%	Community Beat Managers
Force control room	38.18%	24.53%	Taser trained officer (TTO)
Criminal Investigation and Public/Child Protection	30.91%	22.64%	PIP 2 and PIP 3 accredited investigators
Intelligence	16.36%	9.43%	Police Analysts
Firearms	14.55%	16.98%	Authorized firearms officer (AFO)
Management of Series or violent offenders	12.73%	N/A	N/A
Roads Policing	10.91%	18.87%	Advanced Drivers
Public Order	10.91%	20.75%	Public order trained staff (including command courses)
		9.43%	Specialist search
Other	10.91%	24.53%	Other
Back Office i.e., HR/Finances etc.	10.91%		
Dog Handling	7.27%	7.55%	Dog Handlers
Surveillance of other covert activities	7.27%	7.55%	Exhibits officers
Digital Investigation	7.27%	15.09%	Digital media investigators
		11.32%	Digital forensic examiners
Force major incident i.e., homicide or counter terrorism	3.64%	3.77%	Holmes Indexer or other MIR specialisms
Mounted	3.74%	N/A	N/A

The following table (Table 3) drawn from Halford et al. (2022: Table A.1) provides a detailed list of the impact of COVID-19 on different crimes categories across Great Britain. It provides a sound basis on which we can understand what to expect in the United States, including the Encore Boston Harbor region (EBH). In essence, it should be no surprise that most of the street crime decreased during the pandemic. We look to this documented trend to understand the trends and patterns witnessed in the EBH region.

Table 3: Percentile Impact Identified from Studies on the Impact of COVID-19 on UK Police Reactive Demand (Recorded Crime and Disorder)

<i>Crime Type</i>	<i>Geographic Area</i>	<i>Impact</i>	<i>Additional Information</i>	<i>Data/Lockdown Period Examined</i>	<i>Source</i>
Theft from the Person	England and Wales	Decreased by 79.2%	Only examined 1 month during lockdown	April 2020	(Dixon et al. 2020)
	England	Decreased by 77.6% Decreased by 44.4%	During national lockdown After national lockdown	March 2020-May 2021	(Neanidis and Rana 2021)
Shoplifting	England and Wales	Decreased by 36%	Crime Survey of England and Wales	March 2020-March 2021	(CSEW 2021)
	England and Wales	Decreased by 55.9%	Only examined 1 month during lockdown	April 2020	(Dixon et al. 2020)
	Lancashire	Decreased by 61.6%	Only examined 1 week after lockdown	23 rd March-29 th March 2020	(Hartford et al. 2020)
Robbery	United Kingdom	Decreased by 60%	Gradual increase over 6 months but remained significantly lower	March 2020-August 2020	(Langton et al. 2020)
	England and Wales	Decreased by 34%	Crime Survey of England and Wales	March 2020-March 2021	(CSEW 2021)
	England and Wales	Decreased by 57.6%	Only examined 1 month during lockdown	April 2020	(Dixon et al. 2020)
	England	Decreased by 52% Decreased by 32.6%	During national lockdown After national lockdown	March 2020-May 2021	(Neanidis and Rana 2021)
	London	Decreased by 54%	Reductions are on daily counts	1 January 2020-30 April 2020	(Nivette et al. 2021)
Domestic Abuse	England and Wales	Increased by 6%	Crime Survey of England and Wales	March 2020-March 2021	(CSEW 2021)
	Lancashire	Decreased by 44.7%	Reduced citizen mobility	23 March-29 March 2020	(Hartford et al. 2020)
Burglary	United Kingdom	Decreased by 20%	Gradual increase over 6 months but remained significantly lower by 10%	March 2020-August 2020	(Langton et al. 2020)
	England and Wales	Decreased by 37.1%	Only examined 1 month during lockdown	April 2020	(Dixon et al. 2020)
	England and Wales	Decreased by 30%	Crime Survey of England and Wales	March 2020-March 2021	(CSEW 2021)
	England	Decreased by 24.3% Decreased by 19%	During national lockdown After national lockdown	March 2020-May 2021	(Neanidis and Rana 2021)
	London	Decreased by 41.6%	Reductions are on daily counts	1 January 2020-30 April 2020	(Nivette et al. 2021)
	Lancashire	Non-dwelling decreased by 25.6% Dwelling reduced by 25.4%	Only examined 1 week after lockdown	23 March-29 March 2020	(Hartford et al. 2020)
Vehicle Theft	England and Wales	Decreased by 28%	Crime Survey of England and Wales	March 2020-March 2021	(CSEW 2021)
	England and Wales	Decreased by 41.2%	Only examined 1 month during lockdown	April 2020	(Dixon et al. 2020)
	England	Decreased by 36.8% Decreased by 30.9%	During national lockdown After national lockdown	March 2020-May 2021	(Neanidis and Rana 2021)
	London	Decreased by 30.7%	Reductions are on daily counts	1 January 2020-30 April 2020	(Nivette et al. 2021)
	Lancashire	Theft of increased by 1.1% Theft from decreased by 43.3%	Reduced citizen mobility	23 March-29 March 2020	(Hartford et al. 2020)
Assaults	England and Wales	Decreased by 28%	Crime Survey of England and Wales	March 2020-March 2021	(CSEW 2021)
	London	Decreased by 12.3%	Reductions are on daily counts	1 January 2020-30 April 2020	(Nivette et al. 2021)
	Lancashire UK	Decreased by 35.6%	Reduced citizen mobility	23 March-29 March 2020	(Hartford et al. 2020)

Table 3. Cont.

Crime Type	Geographic Area	Impact	Additional Information	Data/Lockdown Period Examined	Source
Other Theft	United Kingdom	Decreased by 80%	Gradual increase over 6 months but remained significantly lower	March 2020-August 2020	(Langton et al. 2020)
	England and Wales	Decreased by 32%	Crime Survey of England and Wales	March 2020-March 2021	(CSEW 2021)
	England	Decreased by 36% Decreased by 24.4%	During national lockdown After national lockdown	March 2020-May 2021	(Neanidis and Rana 2021)
	London	Decreased by 54.4%	Reductions are on daily counts	1 January 2020-30 April 2020	(Nivet et al. 2021)
	Lancashire	Decreased by 52.4%	Reduced citizen mobility	23 rd March-29 th March 2020	(Hartford et al. 2020)
Homicide	England and Wales	Decreased by 16%	Crime Survey of England and Wales	March 2020-March 2021	(CSEW 2021)
	London	Decreased by 25%	Reductions are on daily counts	1 January 2020-30 April 2020	(Nivet et al. 2021)
Public Order	United Kingdom	Increased by 20%	Quickly increases and within 2 months returns to pre-COVID levels	March 2020-August 2020	(Langton et al. 2020)
	England and Wales	Decreased by 17.3%	Only examined 1 week after lockdown	April 2020	(Dixon et al. 2020)
Sexual Violence	United Kingdom	Decreased by 24%	Gradual increase to pre-COVID levels over 6 months	March 2020-August 2020	(Langton et al. 2020)
	England	Decreased by 19% Decreased by 4.3%	During national lockdown After national lockdown	March 2020-May 2021	(Neanidis and Rana 2021)
Criminal Damage	United Kingdom	Decreased by 20%	Gradual increase over 6 months to pre-COVID levels	March 2020-August 2020	(Langton et al. 2020)
	England and Wales	Decreased by 30.1%	Only examined 1 week after lockdown	April 2020	(Dixon et al. 2020)
	England	Decreased by 20.3% Decreased by 6.8%	During national lockdown After national lockdown	March 2020-May 2021	(Neanidis and Rana 2021)
Possession of Offensive Weapons	England and Wales	Non-dwelling decreased by 8.8%	Only examined 1 week after lockdown	April 2020	(Dixon et al. 2020)
	England	Decreased by 10.5%	During national lockdown	March 2020-May 2021	(Neanidis and Rana 2021)
Organized Crime (Inc. Drug Trafficking / Possession)	United Kingdom	Increased by 30%	Rapid after 2 months to statistically reduced level of 10%	March 2020-August 2020	(Langton et al. 2020)
	England and Wales	Increased by 9.8%	Only examined 1 week after lockdown	April 2020	(Dixon et al. 2020)
	England	Increased by 28.5% Increased by 8.6%	During national lockdown After national lockdown	March 2020-May 2021	(Neanidis and Rana 2021)
Cyber Crime	United Kingdom	Increased by 43.24%	Only includes cyber dependent crime and online fraud	May 2020	(Buil-Gil et al. 2020)
	England and Wales	Increased by 28%	Crime Survey of England and Wales	March 2020-March 2021	(CSEW 2021)
ABS	United Kingdom	Increased by 100%	Rapid after 2 months to statistically reduced level of 10%	March 2020-August 2020	(Langton et al. 2020)
	England and Wales	Decreased by 108.9%	Only examined 1 month during lockdown	April 2020	(Dixon et al. 2020)
	England and Wales	Increased by 28%	Crime Survey of England and Wales	March 2020-March 2021	(CSEW 2021)
	England	Increased by 65.5% Increased by 22.9	During national lockdown After national lockdown	March 2020-May 2021	(Neanidis and Rana 2021)
Breaches of Coronavirus (COVID-19) Legislation	England and Wales	Comparison not possible	117,213 individuals fixed penalty fines issued by Police	March 2020-20 th June 2021	(NPCC 2021)

Methodology

Data Collection

Data was collected from the records management systems of the Everett, Chelsea, Lynn, Malden, Melrose, Saugus, and the Massachusetts State Police Departments, but was not available at the time of this study for previous police agencies of Boston, Cambridge, Revere, and Somerville. Ongoing efforts will reach out to these other agencies to help paint a more robust picture of crime and calls-for-service (CFS) in the region in subsequent reports.

Thirty-three FBI crime offenses were included in this analysis based on Group A-Incident Based Reporting definitions. They were used because they represent person and property crimes commonly experienced by victims and consistently captured by the Federal Bureau of Investigations for their annual Crime in the United States Report since 1922. The offenses incorporated into this study and placed into six (6) distinct categories are listed below. These offenses were aggregated and tracked for patterns over the study period.

Table 4: FBI Group A Incident Based Crime Reporting Categories

VIOLENCE	VICE	FRAUD	VEHICLE CRIME	BURGLARY	LARCENY THEFT
Aggravated Assault	Drug Equipment	Credit Card Fraud	Theft from Vehicle	Burglary	Theft from Building
Kidnapping	Drugs	Forgery	Theft of MV Parts		Extortion
Murder	Drunk Driving	Fraud	Auto Theft		Purse-Snatching
Robbery	Drunkenness	Identity Theft			Shoplifting
Sexual Assault	Gambling	Bad Checks			Theft from Machine
Simple Assault	Liquor Laws				Theft from Persons
Threats	Pornography				Other Theft
	Prostitution				Employee Theft
	Weapons				

Disorder offenses and 'All Other' offenses were excluded from this analysis given variances in reporting across agencies and time periods.

The data used in this report was collected from the contributing agencies. For Chelsea, Lynn, Malden, Melrose, Revere, Saugus, and Somerville, an Open Database Connectivity (ODBC) connection to each of these agencies' records management (RMS) and computer-aided dispatch (CAD) databases, connected to the databases via Microsoft Access, and used a series of "make table" queries to copy the data into Access data tables. Records were copied to an Access database, password-protecting them in the process, but leaving original datasets on the agencies' networks so they could be updated by designated agency members when necessary. No information specific enough to identify any person (offender or victim PII) was collected, and, at each agency's requests, particular data elements of concern to them were excluded. These requests did not affect the integrity and completeness of the overall dataset.

Everett uses a records management system (RMS) that is incompatible with ODBC - a standardized data collection protocol. The RMS vendor provided support to perform regular extracts from the system but were otherwise able to supply a full dataset. At the current juncture (post COVID-19), Boston, Revere, and Somerville Police Departments were unable to participate

in data contributions, but efforts will be made to include them in the future. Additional Cambridge and Medford agencies will be invited to participate in future analysis.

After receiving the data from each agency system, a “master” database was established. This required translating each dataset into a common set of codes. The uniformity imposed by the National Incident-Based Reporting System (NIBRS) made the translation easy for crime tables; but it is a bit more difficult for Computer Aided Dispatch (CAD or 911 emergency system) tables, which have no uniform coding standards across jurisdictions. These master tables formed the data pool for most of the statistics in this report, except where indicated. The following map (Figure 4-A) depicts the jurisdictions that agreed to participate and were able to send data at the time of this report; they include: Chelsea, Everett, Malden, Saugus, and Lynn.

Crime and Calls For Service records were collected, and dates of reported activity noted. Tableau visualization software was utilized to discern the five study periods (Pre-Open / Open / Closed / Restricted / Reopen) for which these activities occurred. Weekly averages were calculated and graphed to illustrate the fluctuation of activity over the entire period and within each study period. Comparisons were made to ascertain the degree to which casino operations and general COVID-19 closures impacted crime and call levels. The findings from this effort are reported in the pages that follow.

In addition, this report will conduct a spatial analysis of crime counts across the study area using hexagon polygons of equal size – approximately one-quarter-mile square areas. It will use these sectors to compare high and low crime areas and describe the scope and nature of crime in them as compared to the hexagon encompassing the casino and those hexagons immediately contiguous to it. It will compare Encore to three (3) other crime hotspots identified in the region.

- For each agency and the region, historical averages and spatial and temporal patterns for key crime categories were established. They will be used as benchmarks for future analysis.
- Any significant increases were analyzed in more detail with available quantitative data.

Analytical Techniques - Identification of Hexagon Hotspots

Crime incidents for 52 full weeks from July 1, 2021 through July 2, 2022 was used for this analysis. Crime data was geo-referenced to specific addresses throughout the region and a process called geocoding was used to place them on a map using a geographic information system (i.e., ESRI’s ArcGIS Pro). The first figure (4.A) displays the results of this geocoding process. This technique uses hexagons² of the same size to normalize and compare across spatial distributions and respective hotspots. Figures 4-A through 4-D demonstrate the logic and technique used to identify hotspots.

² <https://pro.arcgis.com/en/pro-app/latest/tool-reference/spatial-statistics/h-whyhexagons.htm>

Figure 4-A: Hexagon Overlay Configuration

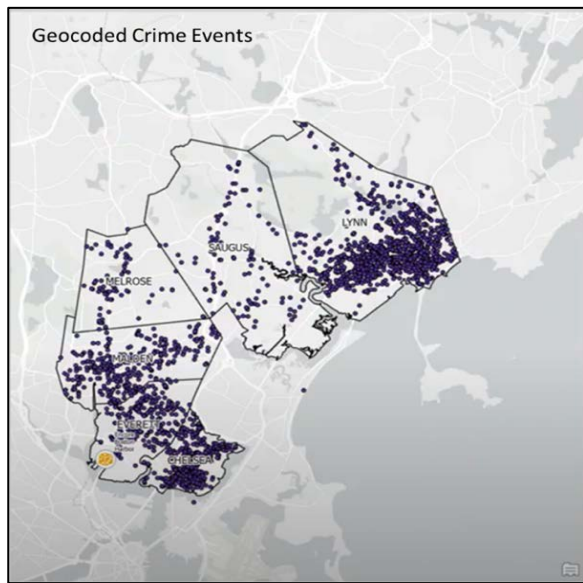
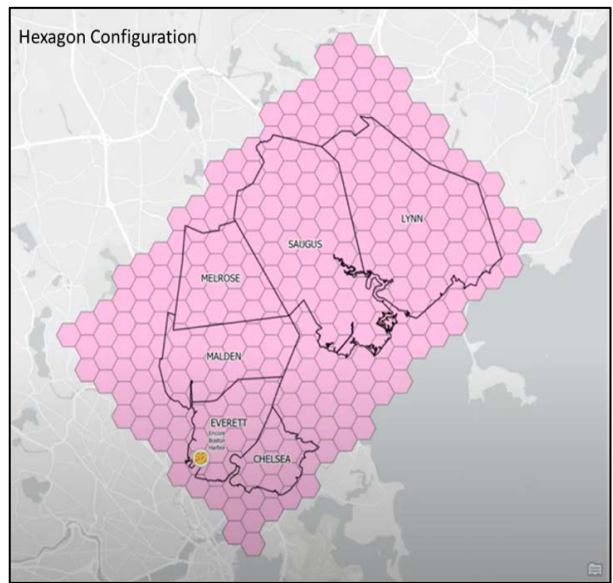
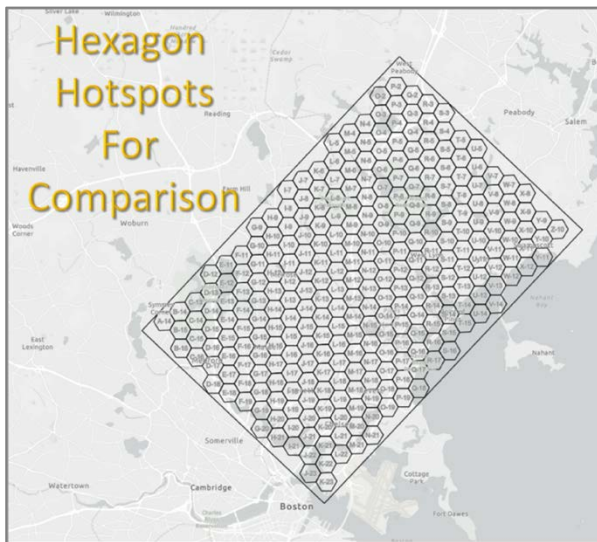


Figure 4-B



The next methodological step was to create a spatial overlay of hexagon polygons over the entire region of study. This approach offers a research technique that counts the number of incidents within each hexagon. These hexagons are labeled and used to identify hotspots or aggregate counts to discern high versus low volume. Five quantitative arrays are standards of practice used in Geographic Information Systems.

Figure 4-C



Hexagons layers were created to provide crime and CFS counts of standard size (0.25 square miles). These hotspots were used to identify four hotspots (Encore area and three consistent hotspots of high-volume activity).

The hexagons were overlaid onto the participating cities and crime and CFS counts were attributed to them.

Figure 4-D

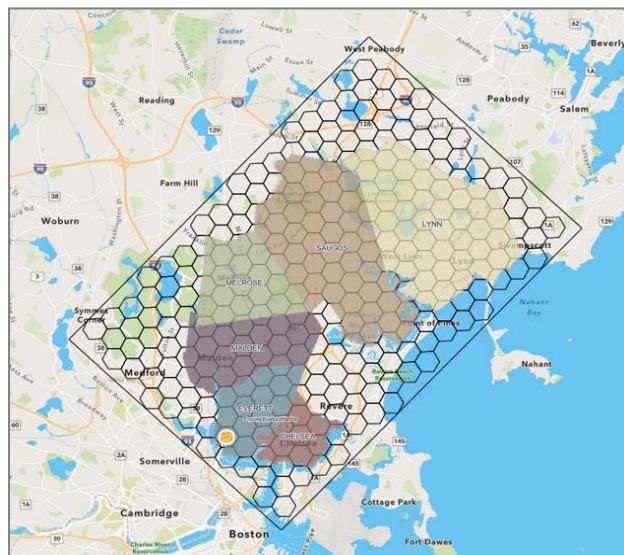
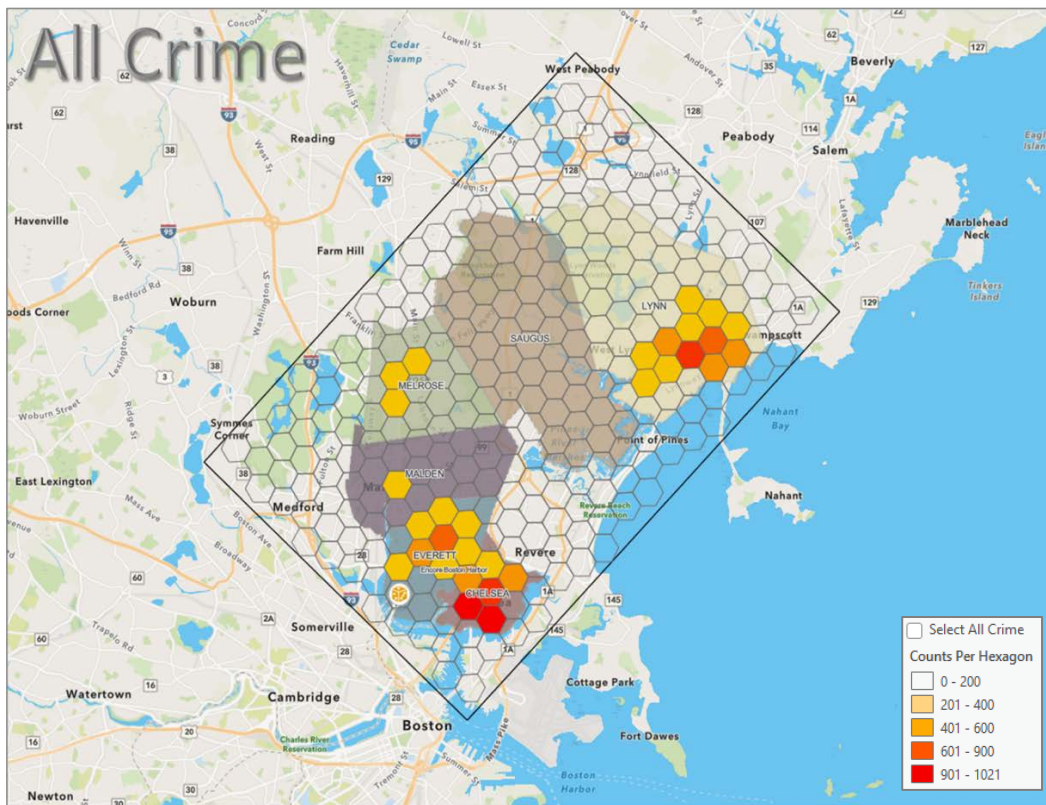
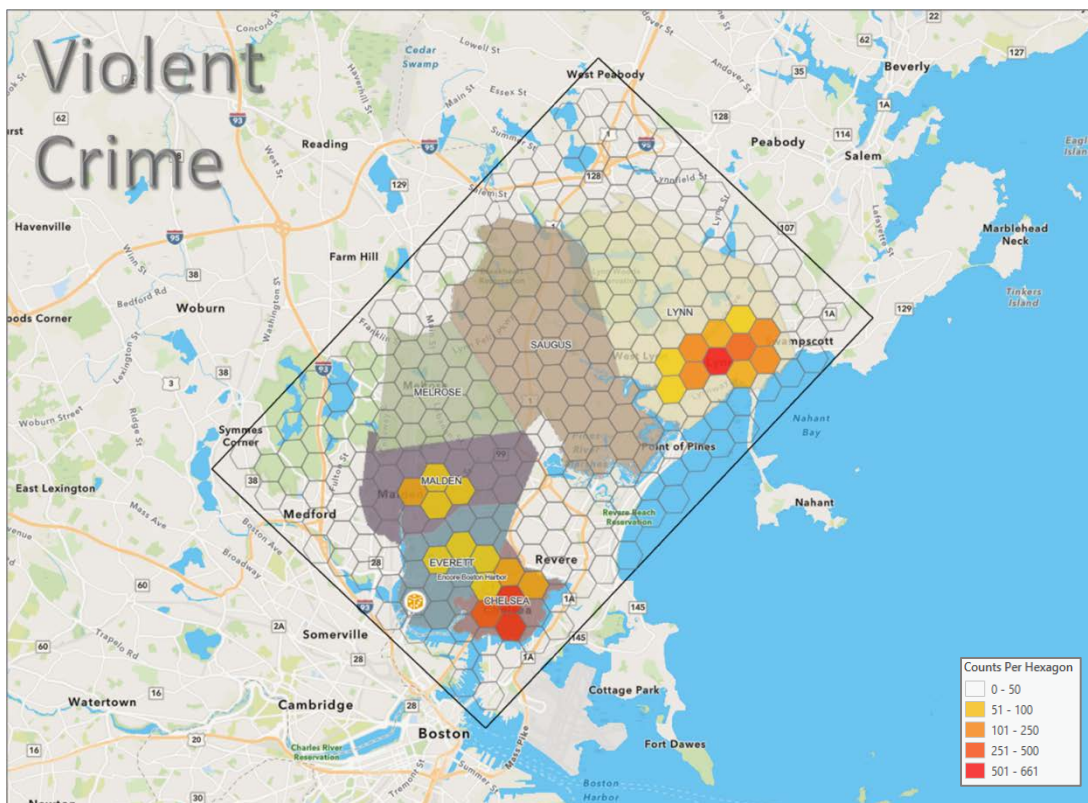


Figure 4-E: All Selected Crime



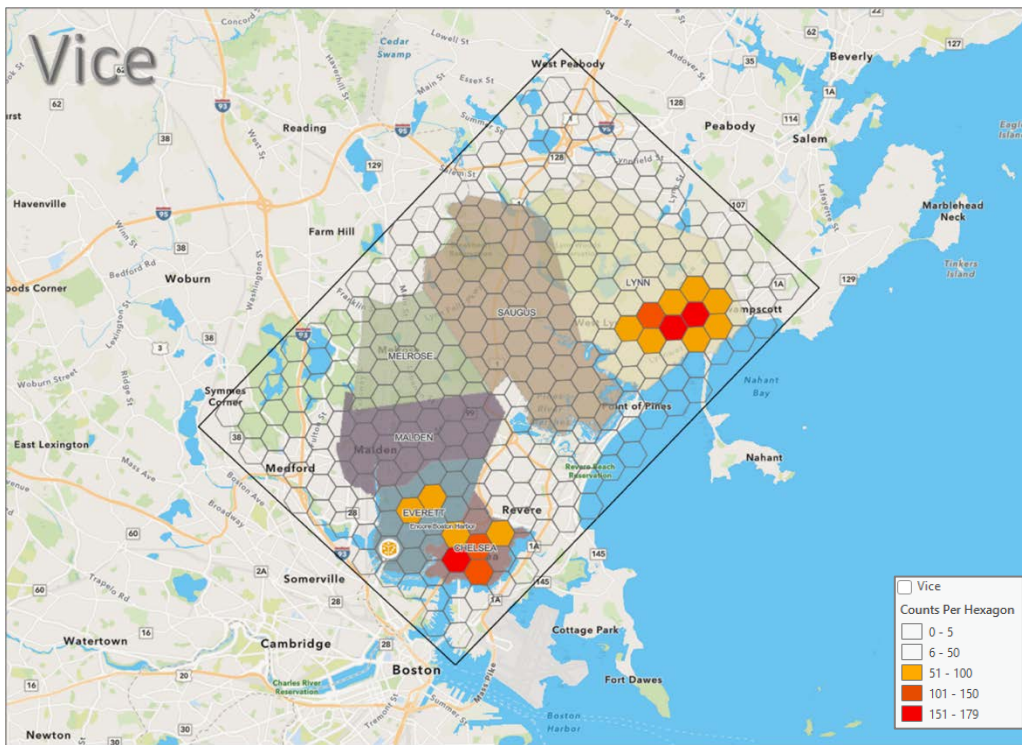
Beginning with an assessment of all selected crime, two or three distinct hotspots reveal themselves. An area in Lynn shows a relatively large volume area for crime. And another crime hotspot appears in Chelsea and a lower moderate area for crime occurs northeast of the casino in Everett.

Figure 4-F: Violent crime



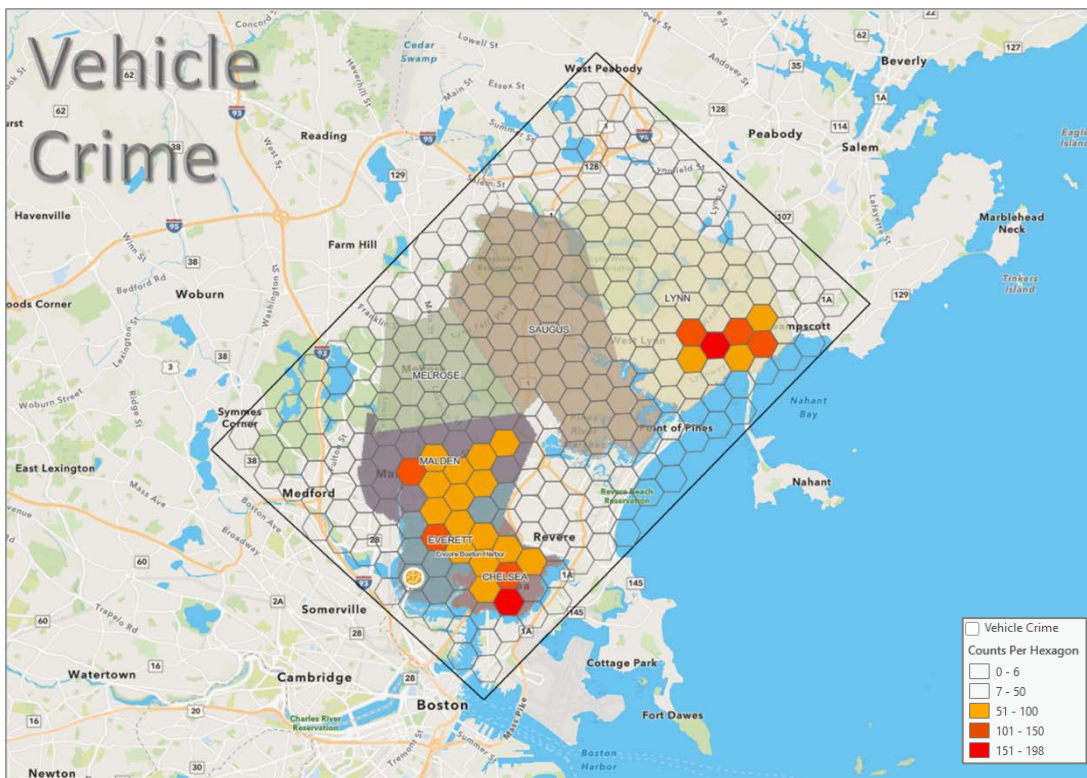
Violent crime appears to cluster in the same two or three locations in the region, particularly prevalent in Lynn and Chelsea, and a more moderate hotspot in Malden.

Figure 4-G: Vice



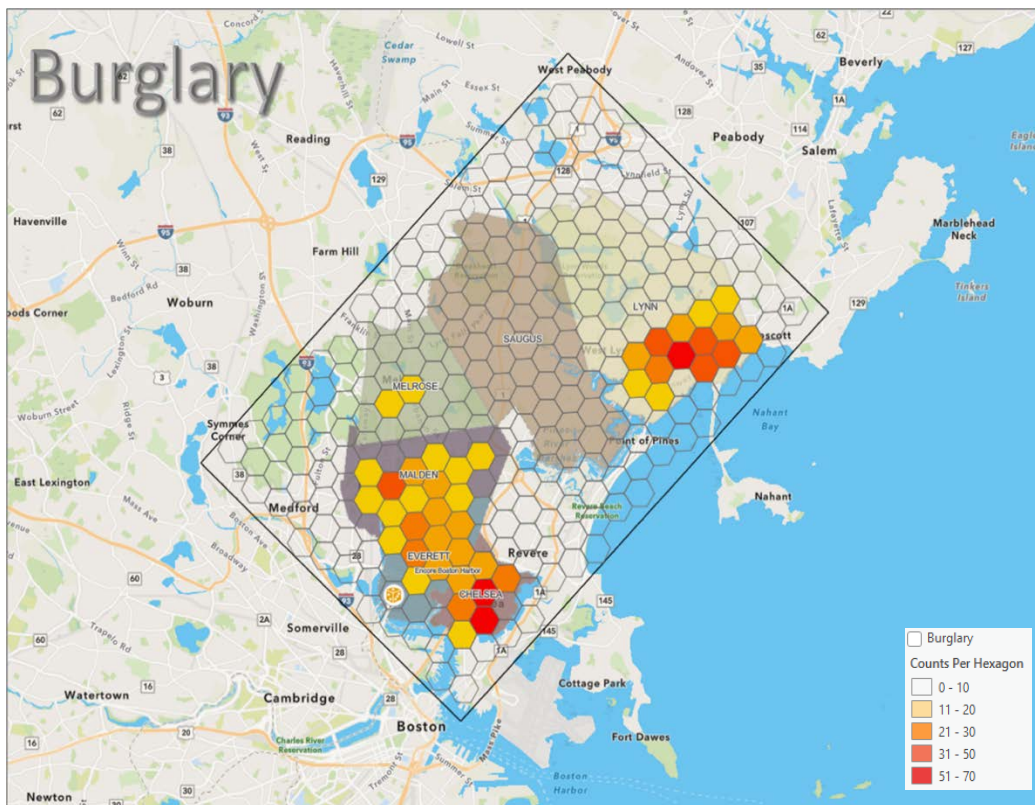
The crime of **Vice** was predominant in the Lynn and Chelsea hotspots, and relatively concentrated in a small set of hexagons. These hotspots did share spatial consistency with the other crime categories.

Figure 4-H: Vehicle Crime



Vehicle crime followed similar hotspot distributions but had a larger footprint in the Chelsea, Everett, and Malden area. Lynn appeared to be, once again, experiencing higher rates of this type of crime.

Figure 4-I: Vehicle Crime



Burglary in the region had a larger footprint with extensive hotspot covering a large region across Malden, Everett, and Chelsea. Lynn continues to experience a significant amount of crime in the same region of the City.

These four hexagon hotspots or clusters were selected for a micro-analysis (later in the report) based on the consistent high volume of crime in these locations. They will be used in subsequent reports to compare trends, patterns and unique contributing factors that attract crime at a greater rate than other areas within the region. Risk and protective factors of the respective areas will be assessed and used to perform the Risk-Terrain Modeling in subsequent reports.

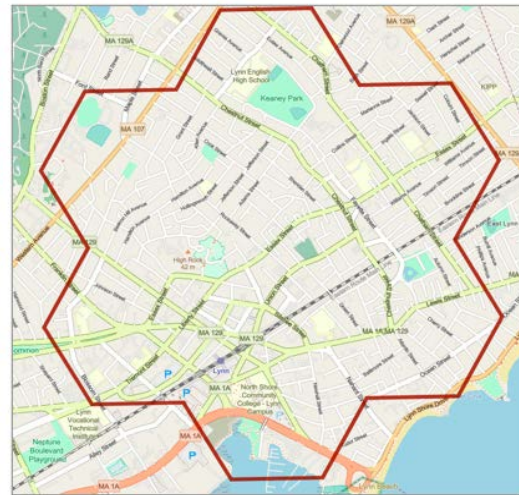
Cluster / Hexagons	Description
Encore Cluster Hexagons: G-19, G-20, H-19, H-20 , H-21, I-19, I 20	The casino and the immediate adjacent areas, including Broadway, a mixed industrial/residential area to the east, the Gateway Center shopping center to the west, Revere Beach Parkway (Route 16) between Sweeter Circle and Santilli Circle, and immediately adjacent residential areas north of Route 16.
Chelsea Cluster Hexagons: K-19, K-20, L-19, L-20 , L-21, M-19, M-20	Most of Chelsea, the smallest city in the state. The comparison is centered on Broadway at Crescent Avenue and includes almost all the city, except Admiral's Hill to the southwest and a portion of Prattville to the north.
Lynn Cluster Hexagons: U-10, U-11, V-10, V-11 , V-12, W-10, W-11	Downtown Lynn. The hex is centered on Essex Street and includes much of the eastern part of the city, including Central Square, High Rock Park, the eastern part of Lynn Commons, and densely packed commercial and residential areas along Essex Street, Broad Street, Washington Street, and Chestnut Street.
Malden Cluster Hexagons: G-15, G-16, H-15, H-16 , H-17, I-15, I-16	Western Malden. Centered on Route 60 at Malden Square, the comparison reaches almost to the northern, western, and southern border. It includes a dense cluster of restaurants and businesses around Malden Square and Center Street, and adjacent residential areas on the fringes.

Figure 5 shows the make-up of the four hexagon hotspots discussed in the Micro-Analysis section.

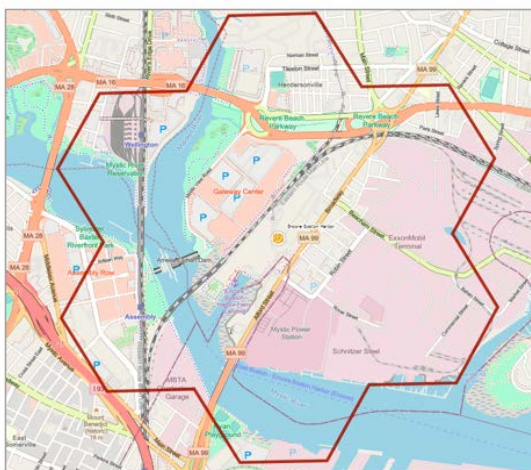
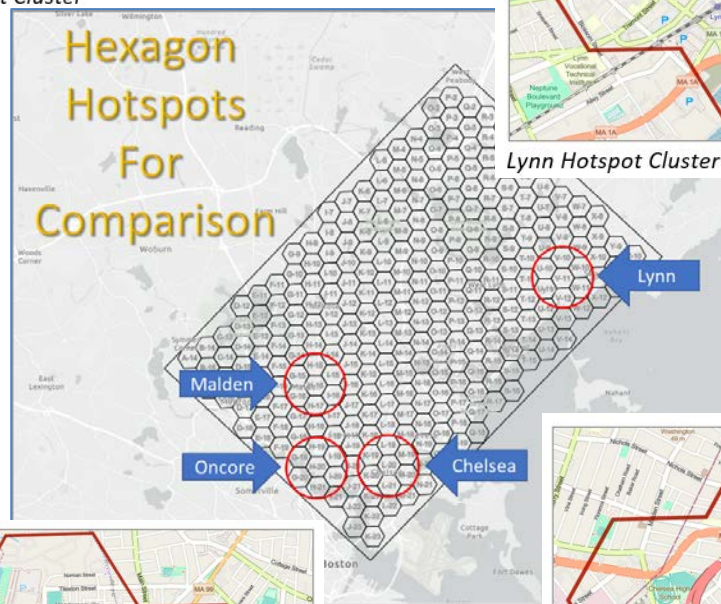
Figure 5: Hexagon Cluster Hotspots



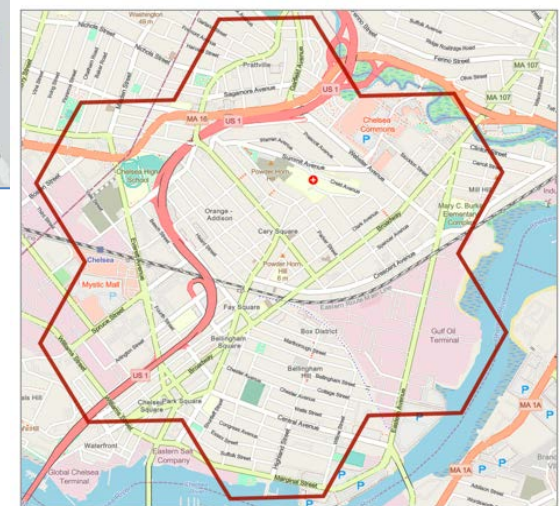
Malden Hotspot Cluster



Lynn Hotspot Cluster



Encore Hotspot Cluster



Chelsea Hotspot Cluster

Micro-analysis using Hexagons – Hotspot Analysis of Crime

The map in the middle of Figure 5 (above) illustrates the hotspots for all selected crime and depicts significant amount of crime in three distinct clusters (i.e., a center hexagon and the six (6) encircling hexagons). This clustering of hexagons was used to select four hotspots in the region for comparison purposes. The intention is to track these clusters over time and use Risk Terrain Modeling (discussed in the Future Direction section) to better understand the contributing factors that make up a crime hotspot and compare them to the Encore cluster. At this stage of analysis, counts per polygon (i.e., hexagons) were used to provide areas that had significantly higher crime counts than its neighboring areas, and were chose on a common-sense approach. These four hexagons will be used in the future and new hexagon hotspots will be assessed and incorporated when necessary.

Threats to validity

There are four different records management vendors represented among the eight contributing communities. Although three of the four coded crimes, according to the NIBRS standard, can create slight variances in their approaches and can make interpreting the data inconsistent between agencies. Some of the agencies switched records systems during the 8-year period represented by these statistics, and in each case, some immediate changes can be seen in crimes and calls for service, suggesting those changes have more to do with record-keeping than actual prevalence of social harms.

One records system, used by three of the contributing agencies, is notorious among local analysts for a data structure that makes it difficult to weed out duplications. The system also does not apply NIBRS standards correctly on the concept of “lesser included offenses³,” meaning that the agencies that use this system tend to over-report their crime totals.

Discussions with agency representatives - Agency Collaboration

Throughout the life of this series of reports, the Massachusetts Gaming Commission has regularly convened meetings with the police executives in the Everett area to review the results of these analyses and receive their comments and feedback, prior to publication of the reports. Their feedback is incorporated into each report. General agreement with these findings has been widespread, and where there has been disagreement an alternative perspective has been provided, and it has been noted in this report.

As a reminder and for cross-referencing purposes, here are the timeframes for each period again:

	Pre-Open	Open	Closed.	Restricted.	Reopen
Time Frame	9/30/18	6/23/19	3/15/20	7/12/20	5/30/21
	6/22/19	3/14/20	7/11/20	5/29/21	7/2/22
	38 Weeks	38 Weeks	17 Weeks	46 Weeks	57 Weeks

³ FBI historically called this the Hierarchy Rule and discussions can be found in the *Crime In The United States* annual report. In essence, the rule states that the most severe crime will be counted in incidents of multi-crimes events .

Key Limitations⁴

First, our focus was on overall crime trends and as such did not examine other factors that could be influencing crime throughout the region. Second, our study period includes the time of George Floyd's death (May 25, 2020) and the subsequent racial and social justice protests that occurred throughout the United States. Although some reports indicated some instances of looting and aggravated assaults, our data do not permit us to consider this further. Finally, while we think that examining policy changes is important, the short period between the key-dates in this study necessitated a short-term evaluation approach of the effect of COVID-19 related regulations.

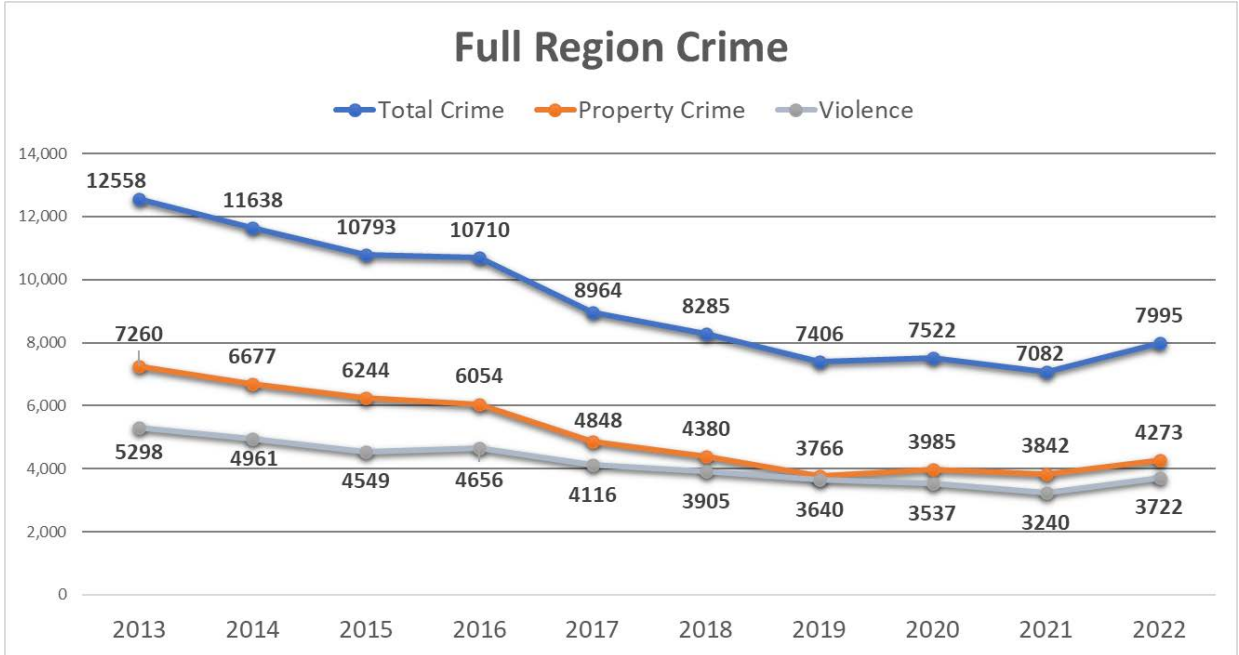
Future research should continue to monitor the re-opening over a longer period of time and consider historical crime patterns to better understand the effect of COVID-19 regulations on crime and continue to monitor such trends as well as crimes that are ancillary to COVID-19 related to masking even amid no apparent restrictions. It is possible that officials were unprepared for the toll such shelter in place orders would take or that would-be offenders saw new or different opportunities to commit crime. It was anticipated that re-opening efforts, especially from a RAT perspective, would lead to increases in the number of people leaving their homes and entering public spaces, creating potential opportunities for increases in crime. However, it may be the case that people remained somewhat sheltered because schools remained closed, businesses continued to encourage work from home policies, and people were still afraid of contracting the virus. Therefore, simply re-opening places did not mean that people would resume their pre-pandemic routines.

⁴ These limitations are attributed to Riddell et al. (2022), and fully embraced as relevant for our ongoing research as well.

Findings

The line graph⁵ below (Figure 6) shows that overall crime in the region has declined year over year for a decade but had a significant upturn in 2022. Overall selected crime occurred at frequencies above 10,000 incidents from 2013 until 2016. Each year for the next four years, crime dropped to around 7,500 incidents and hit its low watermark of 7,082 in 2021 during COVID-19, only to rebound to nearly 8,000 incidents in 2022. Violent crime and property crime counts have converged over the years in the region nearly mirroring each other in 2019. Crime in this region saw steep decreases in the decade before Encore until the past few years. In 2022, Property and Violent Crime combined rose by over 900 incidents in 2022. Crime does appear to have leveled off in the past five years.

Figure 6: Violent and Property Crime in Full Region



The remainder of this report will begin by reviewing crime at the regional level, provide a City-by-City breakdown and comparison, and conclude with a Hexagon Hotspot micro-analysis.

Major findings

- An important finding is that there was a significant increase in crime before the Encore Boston Harbor Casino reopened. Figure 7 illustrates this chronological ordering, which suggests that the casino is not causing crime to go up, but that other social, economic, or psychological factors are likely playing a role in changes in crime patterns. For example, it is possible the strain of COVID-19 created an environment where motivated

⁵ This annual data is calculated on a fiscal year basis to reflect the general opening of Encore, and the history of reporting. Encore reports will continue to use FY timelines for comparison purposes. For comparison purposes here, property and violent crime line graphs are superimposed for reference and do not reflect the broader axis.

offenders sought relief from stress and/or economic hardship that led them to criminality. But if crime rises while the casino is still closed, it demonstrates that the casino did not cause crime to go up, illustrating that other factors are at play.

- Overall crime around the Encore Boston Harbor Casino did not experience significant increases in crime, when compared to other areas in the region, this suggests that the casino has limited impact on crime in the region area.
- Overall violent, property, and total crime has consistently declined year over year, with the exception of Lynn and other slight increases in 2022.
- During the covid closures, crime dropped in all area communities, but rebounded substantially before covid closures were lifted.
- During the reopening period, some crimes rebounded but most remained low.
- The immediate areas around the casino showed few increases in crime or calls for service.
- The line graphs on the next two pages fully illustrate the five (5) study periods and the dates of demarcation. The following observations are highlights for a broader historical context of the impact of COVID-19.
- Additional highlights forthcoming as we review the report...

The temporal line graph on the next page shows the level of crime before Encore opened, and a significant increase upon opening the doors of the casino. When it closed (along with every other food and liquor establishment, schools, and entertainment venues), crime significantly reduced. What is interesting is that before Encore reopened under restrictions, the level of crime had already climbed to the average level over the entire period and peaked at 173 crimes in the weeks leading up to the restrictive reopening. This finding alone suggests that the casino as a primary contributing factor to crime simply does not explain criminal activity. Other factors must be at play or criminals simply operate out of need for money, thrill, or confrontation as a human reaction to social conditions.

During the restricted opening of the casino, crime went down for a period of several weeks only to climb again for the next 14 weeks in-a-row to achieve a near high-water mark for crime in the region. Somewhere around the 21st or 22nd week of restricted operations, crime once again plummeted well below average rates for the region. Crime counts returned to record low numbers for a few weeks before the casino fully reopened again on May 30, 2022 and remained below average for nearly 10 weeks before rebounding to above average levels—where it hovered around average for the following weeks ending this fiscal year well below average compared to the initial open operations prior to COVID-19. Actual figures are reported below in subsequent sections of this report. They are offered here simply as a broad overview of crime and calls for service.

Figure-7 (below) shows a rapid decline in overall crime to a record low in the region two weeks into the full closure. Crime ebbed and flowed below the overall average for 11 consecutive weeks but hit 149 in Week 12 and peaked at 173 in week 15 before the Casino reopened-- representing the 5th highest spike since the Casino opened. In the 4-5 weeks that followed into the restricted reopening period, crime remained low, and steadily climbed week over week until week 15 of the restricted reopening period, peaking at 194 crimes-only three lower than the record high in Week 2 of the original Casino opening. After five consecutive high weeks in row, crime dropped well below average for 25 weeks except for two higher than average weeks. The 57 weeks since the Casino fully reopened, it appears to have returned to level and fluctuations very similar to the period when the Casino originally opened. It appears that crime has normalized throughout the region to pre-covid activity since reopening.

Figure 7: All Crime Compared over the Entire Timeframe

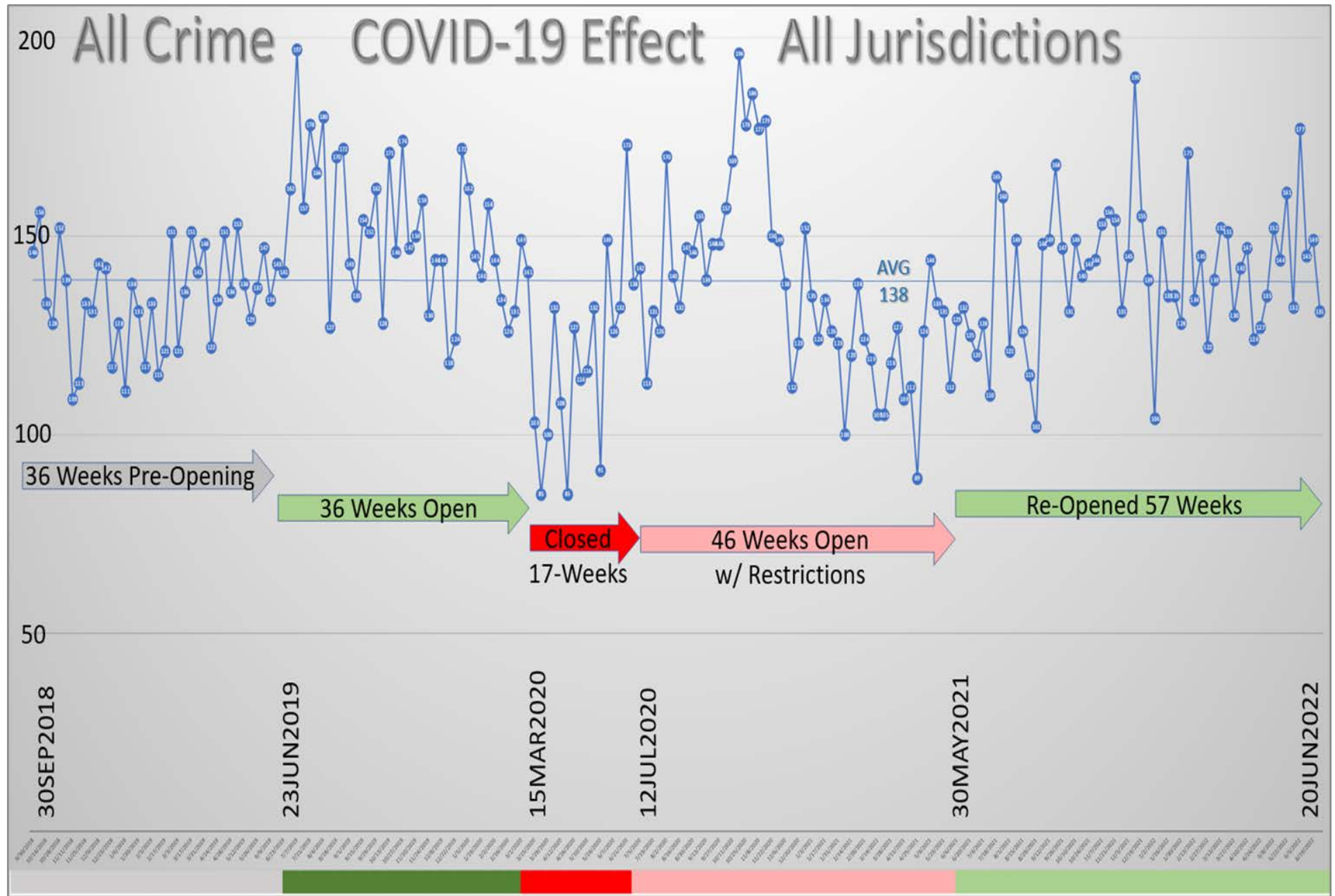
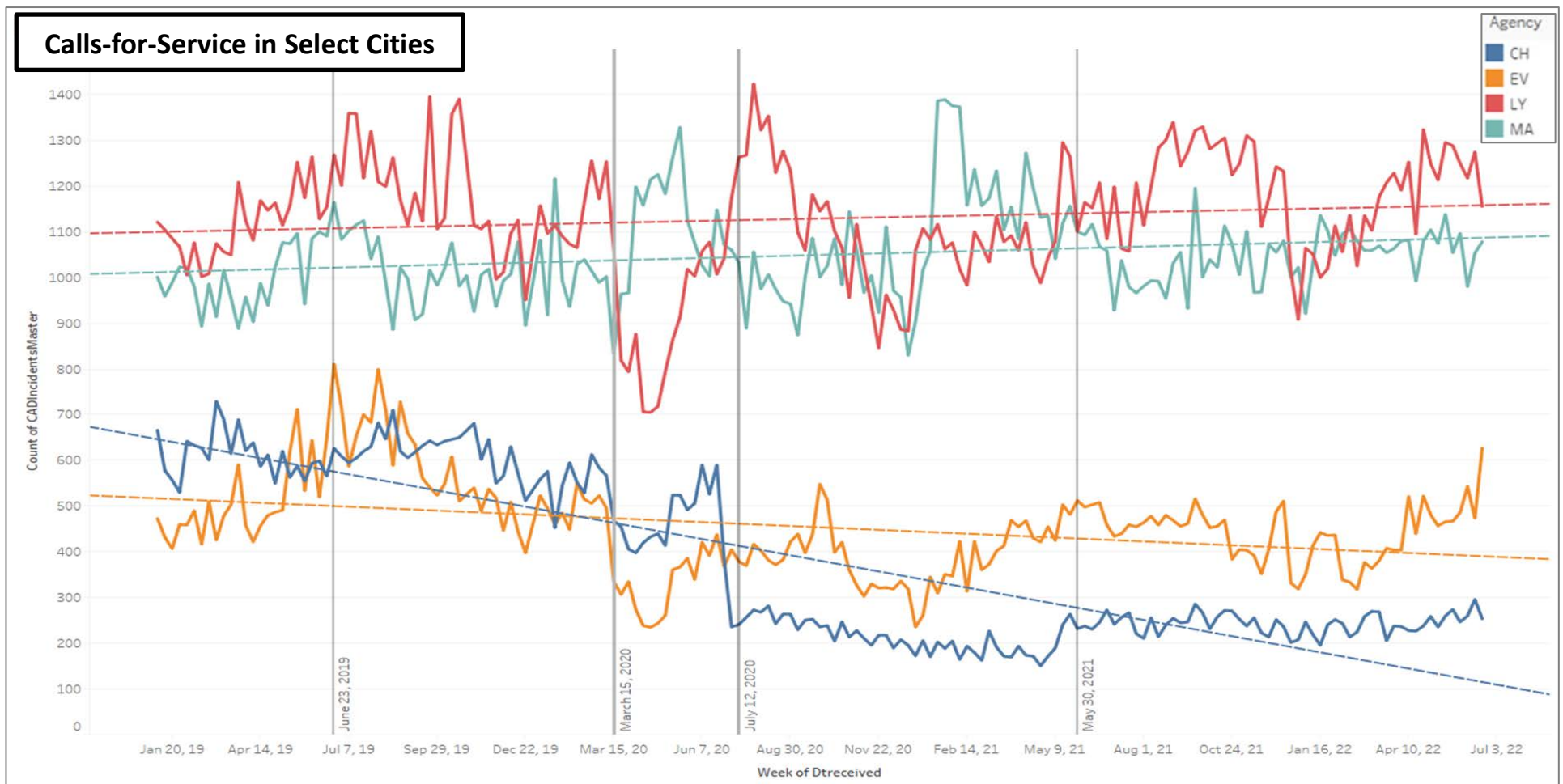


Figure 8 depicts a snapshot of calls-for-service (CFS) data for four jurisdictions we had preliminary data on over the full timeframe. A full comparison of CFS was not done for this report due to time constraints but will be investigated in future reports. It is simply offered here to illustrate the larger patterns of service requests over the full period of study that shows the extreme fluctuations in calls across the four agencies. All four agencies show a significant decrease during COVID-19, but a spike in activity before the casino reopened – thus, proof that the casino, while closed, could not have directly caused the ebb and flow. This offers limited evidence that the casino does not appear to be a causal factor in crime or calls-for-service. Other contributing factors must be at work. In three of the four cities reviewed, CFS initially went down but rebounded towards the end of the full closure period. Malden, for some unknown reason, spiked immediately after the casino closed only to dip for a significant number of weeks to follow. Lynn had a significant reduction in CFS followed by an extremely aggressive spike when the casino opened in a restricted manner.

Figure 8: Calls for Service over Timeframe



The line graph (Figure 9) above shows the average of 180.4 per week for all crimes under review and the number in the gray box reports the average for all crime in each distinct period. The following line graphs depict each crime category across the five (5) periods of study, demonstrating the ebb and flow of crime. Each category of crime has its own pattern distinct in its own way. Future analysis will drill down into each category and use these benchmarks as anchor points for determining if crime is within a normal range or is trending up or down accordingly. The orange line represents the average for the entire timeframe with the high and low watermarks shown as reference points—the peaks and valleys so to speak.

Figure 9: All Crime Compared over the Entire Timeframe

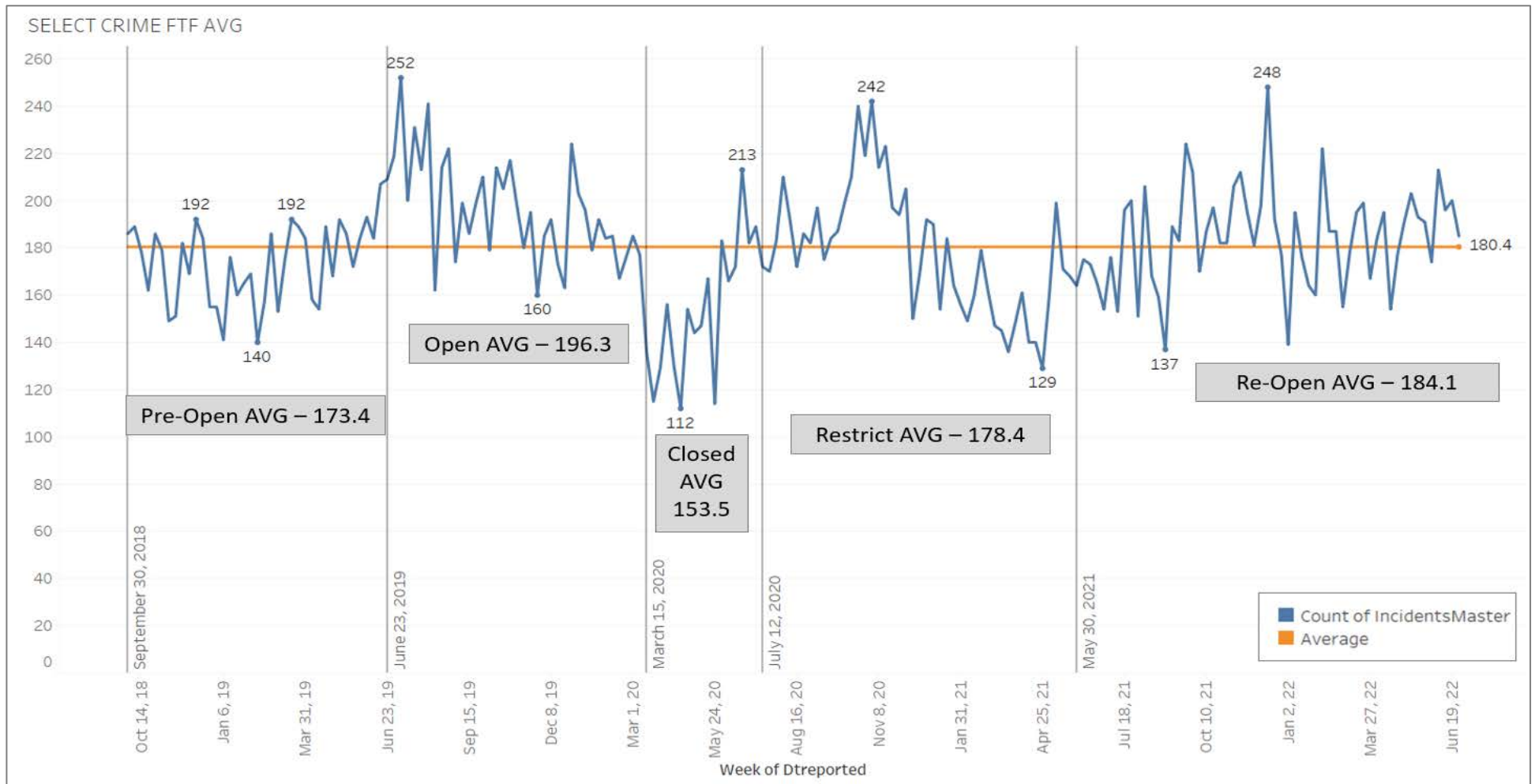
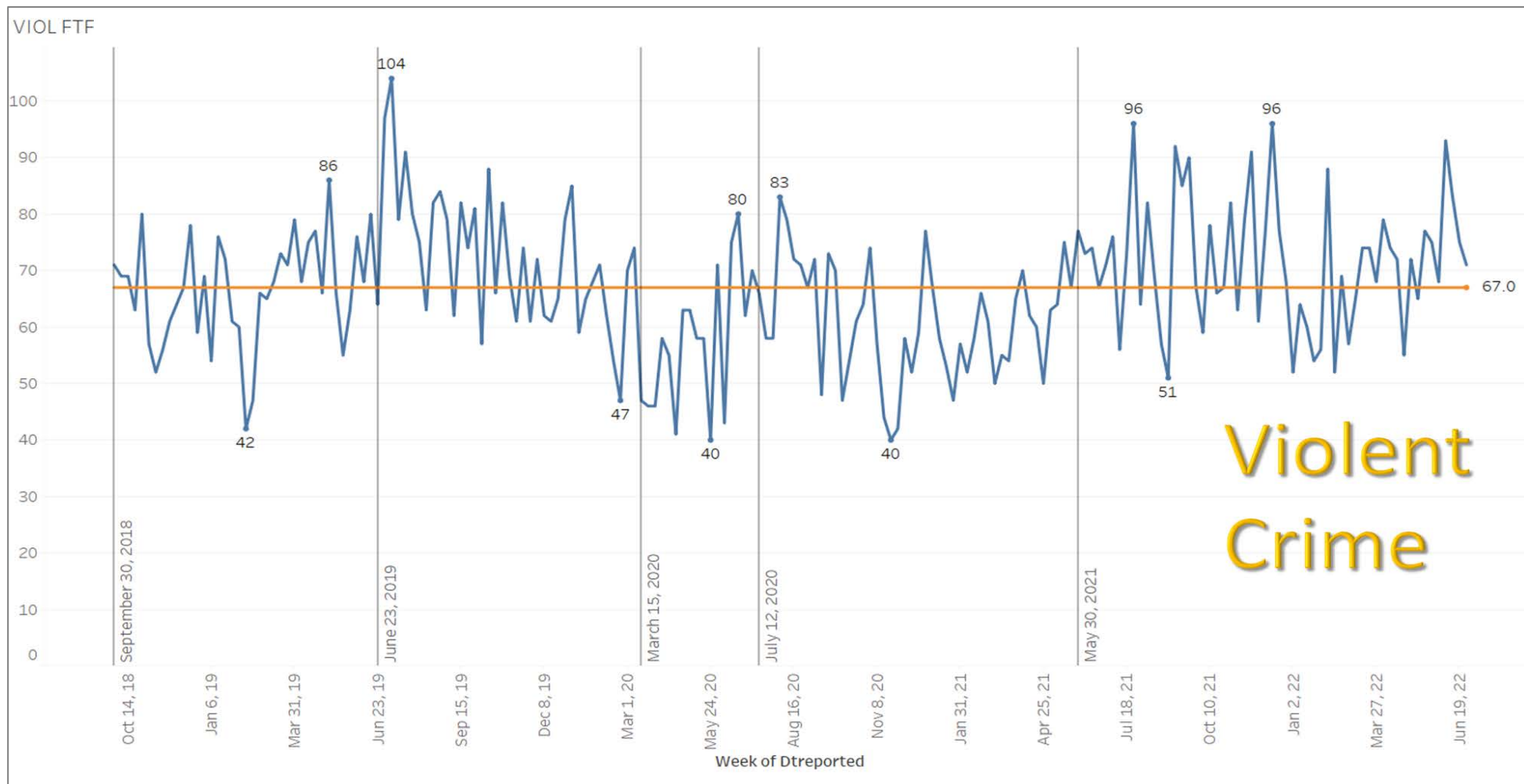


Figure 10 shows that violent crime occurred at higher rates while the casino initially opened and again when it reopened; and remained above the overall average consistently during both periods. And this graph illustrates that violent crime was below average consistently in the region when covid closures went into effect and remained low during the period when restrictions were being enforced. But to say that the closure and the restrictions demonstrate that the casino played some primary role by being closed is beyond our scope since violent crime rose to 80 and again to 83 at the end of the closure and at the beginning of the restricted use period. Something other than the covid closure and restricted use is at play here at least during this brief period in early summer, perhaps a seasonal effect and covid fatigue. As a reminder, bars and restaurants, stores and other venues were likewise closed and most likely had an impact of human interactions across the region.

Figure 10: Violent Crime Compared over the Entire Timeframe



Vice related crimes, depicted in Figure 11, rose significantly during the initial opening of the casino, and drastically dropped, as expected during the covid closure and restricted periods. Despite a highwater mark of 34 in the reopening period and three (3) additional peaks in this period, the remaining weeks remained at or below average since the casino and other establishments reopened on May 30, 2021. This crime category behaved as expected given the hypothesis that crime and disorder would diminish if people were interacting less frequently. Some crimes like domestic violence, and disorders like suicide and emotionally disturbances were anticipated to rise but general street crime, vehicle crime and theft was hypothesized to drop. See the following line graphs to visualize what in fact occurred in the region regarding Fraud, Vehicle Crime, Burglary and Other Theft, respectively.

Figure 11: Vice Crime Compared over the Entire Timeframe

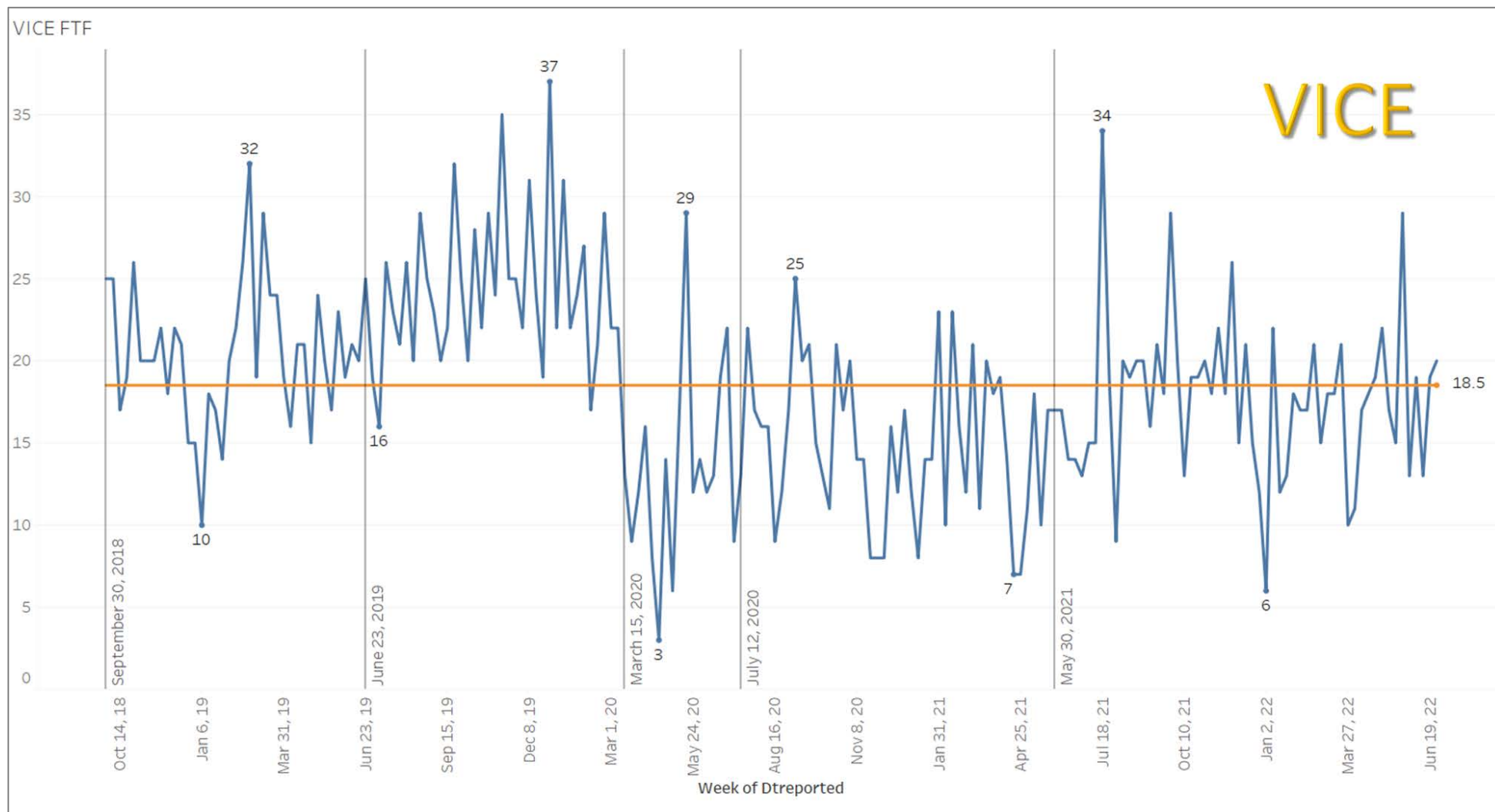
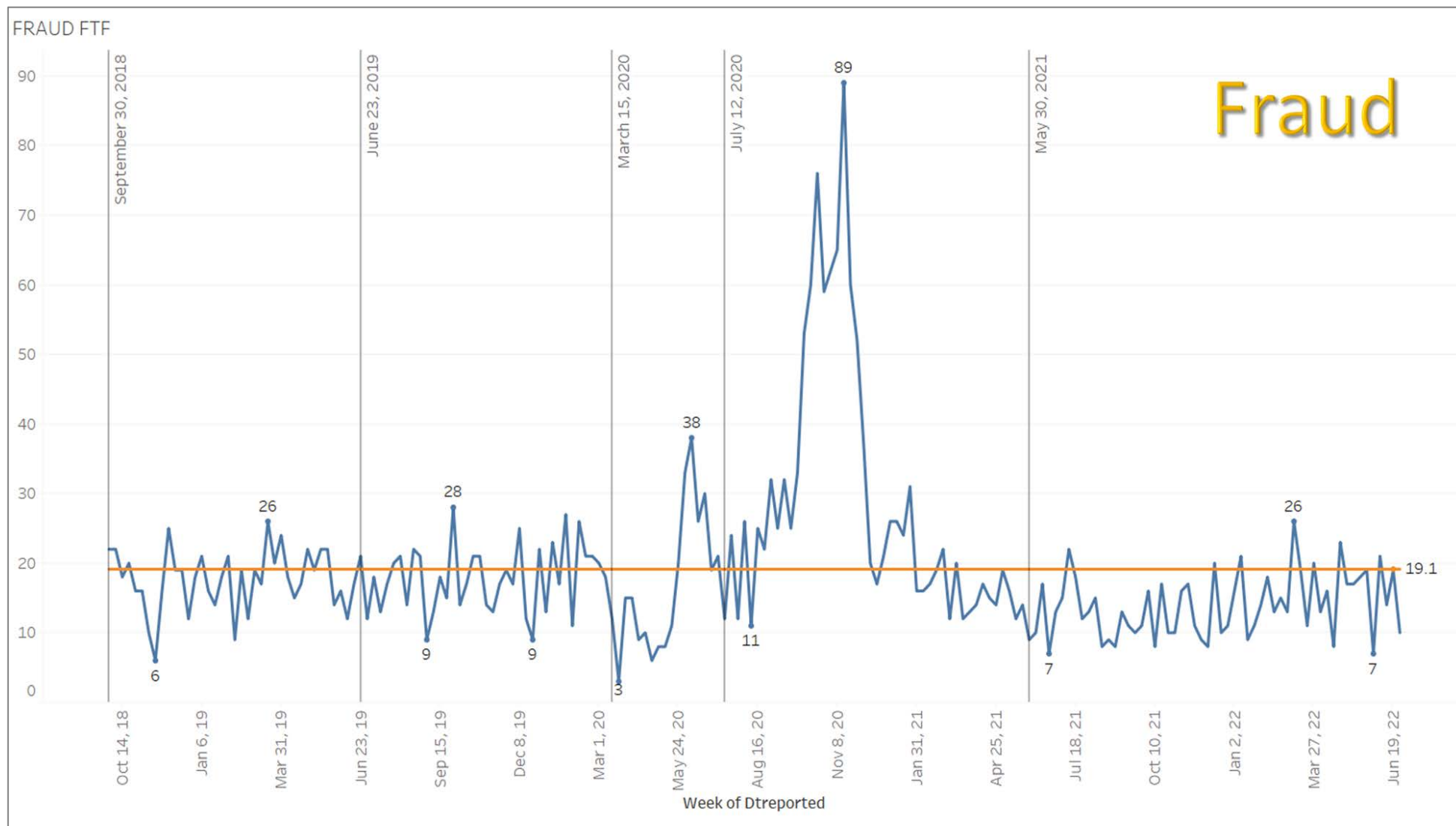


Figure 12 illustrates that fraud remained steady along or below the overall average with two distinct peaks in September and November. Further analysis is necessary to determine the root cause of this interesting phenomenon, and respective agencies are encouraged to look closer at these specific findings to gain some insight into the two extremely high spikes.

Figure 12: Fraud Crime Compared over the Entire Timeframe



Vehicle crime (illustrated in Figure 13), including Stolen Autos, Theft From Vehicles and Theft of Auto Part; skyrocketed when the casino initially opened; and remained generally high since the closure and during restrictive reopening. Although Auto Crimes dipped at the early stage of reopening, it skyrocketed once again to a record high of 49 in January'22; and remained extremely high from October'21 throughout June'22. This Auto Crime trend is a national pattern and particularly focuses on catalytic converter, air bags and rims-tires being stolen during night-time hours when people are sleeping. One theory is that as people drove less with their cars parked on the street and in parking structures for long periods of time and became vulnerable as owners were less attentive during times of teleworking. Lack of regular use and consistent guardians made vehicles easy targets for motivated offenders.

Figure 13: Vehicle Crime Compared over the Entire Timeframe

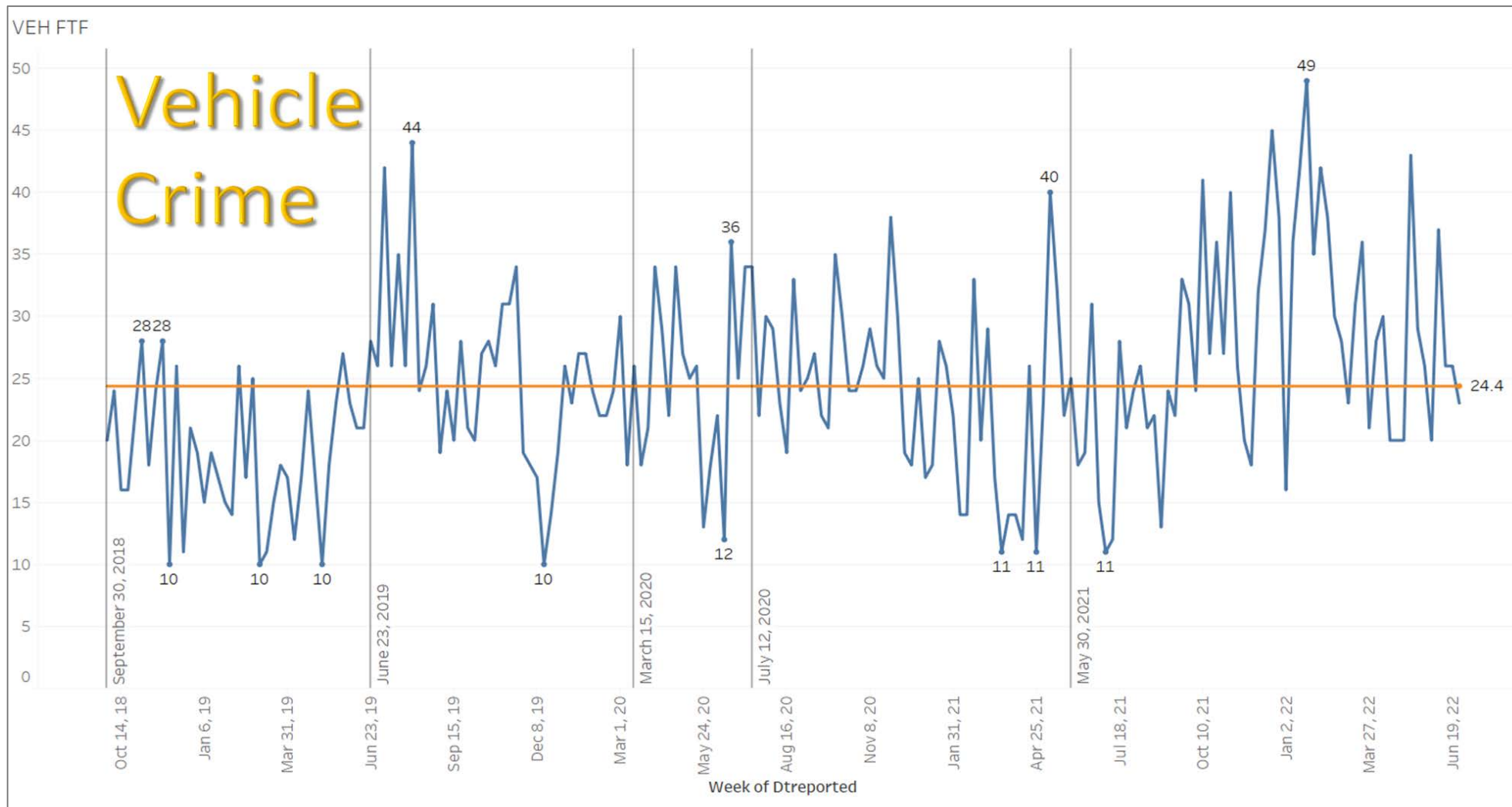
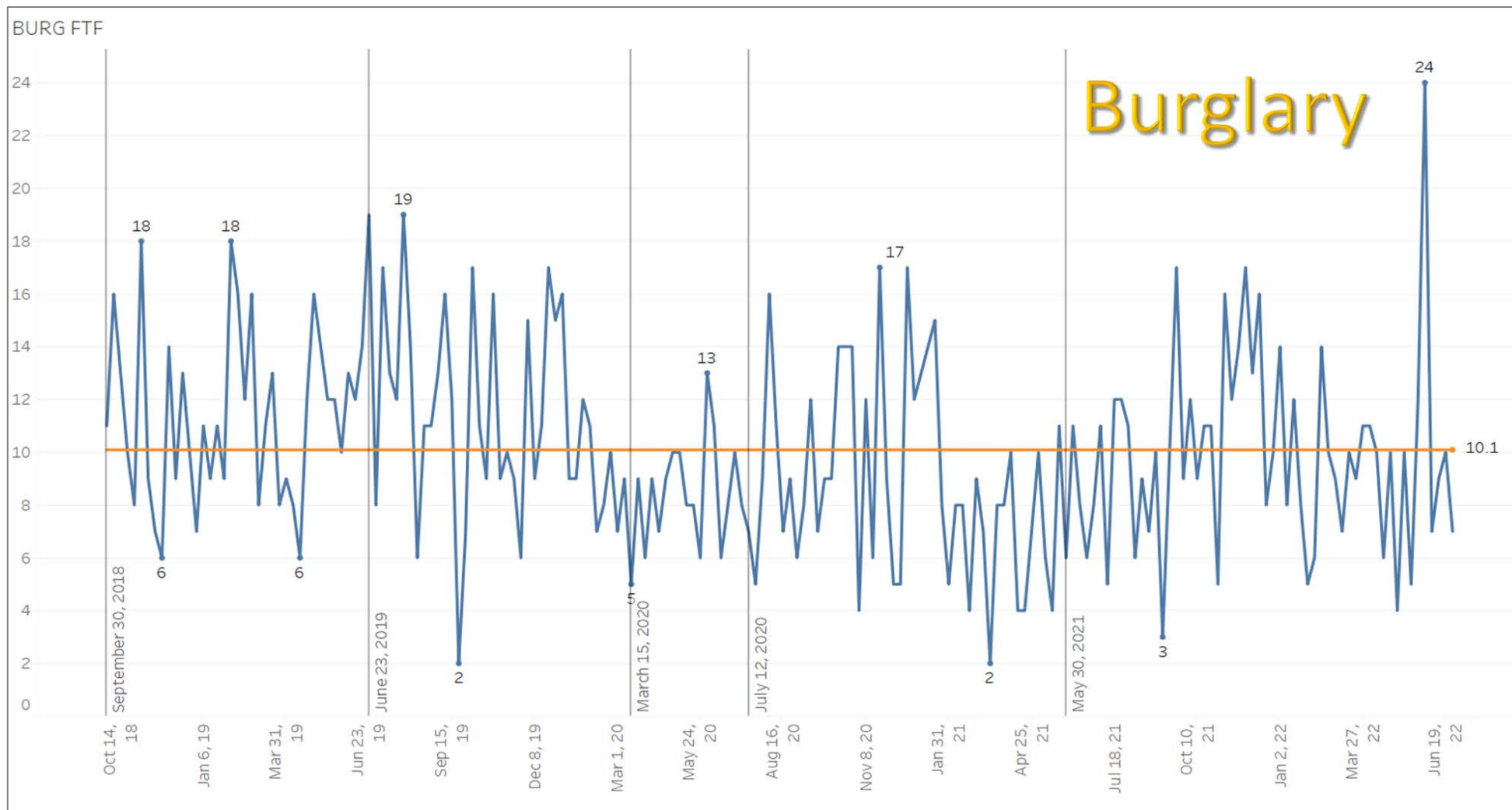


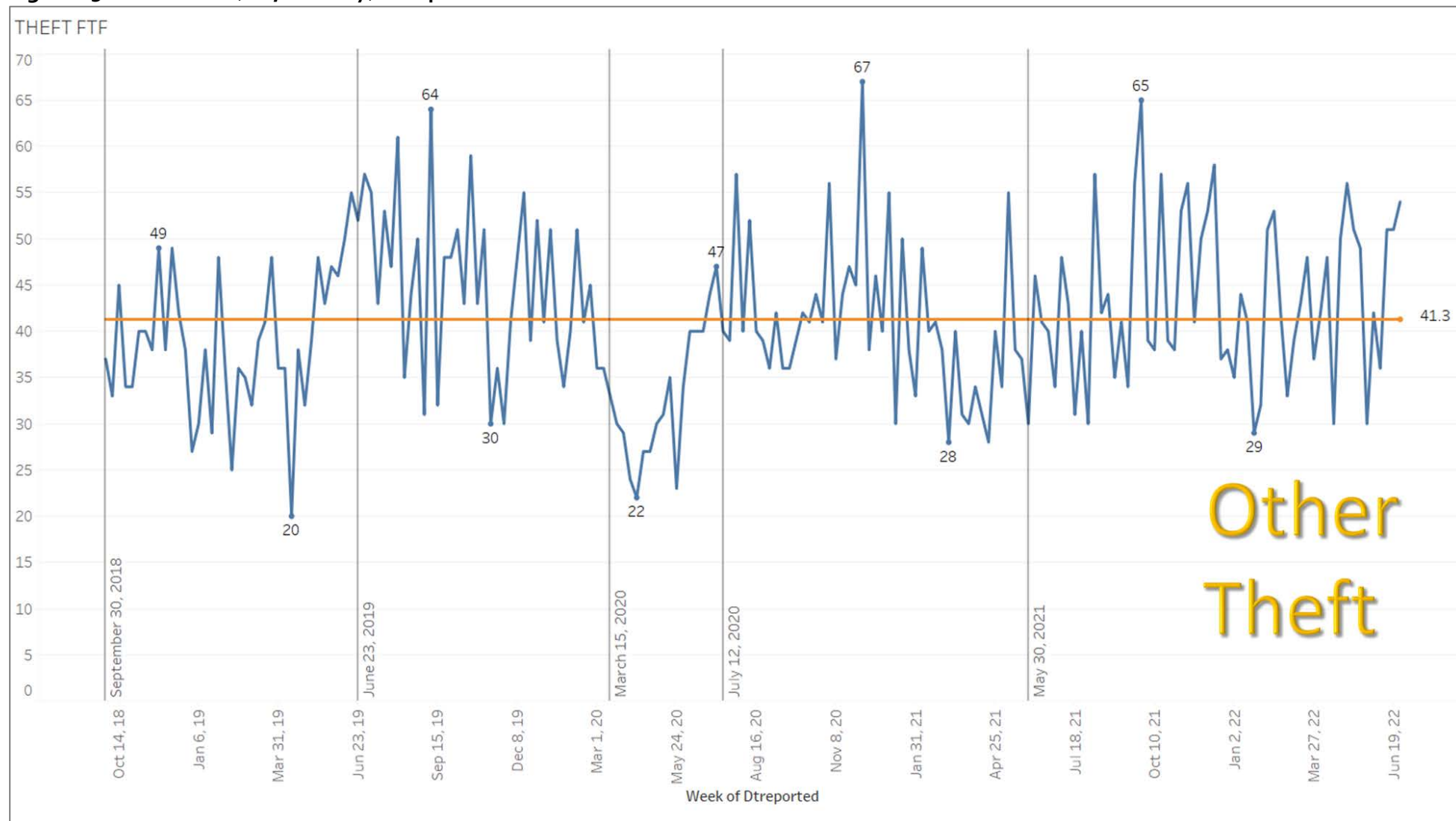
Figure 14 shows that burglary was high pre-opening and during the initial opening of the casino. And Burglary went down across the region and remained low for the better part of all three periods following the covid closure with a few periods of activity in the early weeks through the middle of the restricted period and again in the middle of the reopening period. It is speculated that when more people began working from home and remained home as employers allowed for extended periods of teleworking, homeowners and apartment dwellers alike acted as their own place managers or guardians, thus deterring burglars from targeting their residencies. There is a very distinct spike in burglaries over the winter months of 2021-2022 and again in July 2022 that needs explaining and future research into this spree or unique number of incidents by respective agencies is warranted.

Figure 14: Burglary Compared over the Entire Timeframe



Other Theft, seen in Figure 15, remained high during periods when the casino was open, during restricted opening and generally high during the reopening. All three periods experienced highwater marks of 64 thefts or above and had a low of 20 incidents in the pre-opening period and a low mark of 22 during the covid closure. The average weekly occurrence of theft over the entire timeframe was 41.3 thefts. With business and malls closed due to COVID-19, shoplifting and general larceny theft opportunities were abated.

Figure 15 Other Theft (i.e., Larceny) Compared over the Entire Timeframe



Region - Crime Breakdown

Table 5: All Selected Crime - Weekly Average

AVERAGE NUM OF CRIMES PER WEEK OVER STUDY PERIOD					
AVG	PRE	OPEN	CLOSED	RESTRICT	REOPEN
CHELSEA	36.3	37.2	28.1	24.6	28.7
EVERETT	17.6	22.1	15.6	18.7	18.1
LYNN	46.3	54.0	44.1	59.2	62.6
MALDEN	18.4	21.5	21.9	18.5	18.5
MELROSE	4.4	5.8	3.1	3.7	4.6
SAUGUS	11.7	10.6	8.1	12.7	8.2
ALL	134.7	151.3	120.8	137.4	140.7

Table 5 shows the average weekly number of crimes for the entire region. It clearly shows that crime dropped during the COVID-19 closure and rose again to pre-opening levels, by 30.5 fewer incidents than during the initial opening on average per week.

Table 6: Percent Change - All Crime

Table 6 shows the percent increases or decreases each period had on the preceding one in the first four columns. The last two columns offer the percent change from Open to Reopen and Pre-open to Reopen for comparison purposes.

AVG FULL PERIOD	PCT CHANGE Pre2open	PCT CHANGE Open2close	PCT CHANGE Close2Restr	PCT CHANGE Restr2reopen	PCT CHANGE Open2reopen	PCT CHANGE Pre2reopen	City
30.8	2.46%	-24.59%	-12.37%	16.59%	-22.96%	-21.06%	CHELSEA
18.7	26.09%	-29.57%	20.07%	-3.18%	-18.11%	3.25%	EVERETT
55.4	16.52%	-18.41%	34.36%	5.80%	15.98%	35.15%	LYNN
19.3	17.05%	1.78%	-15.46%	-0.24%	-14.16%	0.48%	MALDEN
4.5	31.36%	-46.63%	18.54%	24.85%	-21.02%	3.75%	MELROSE
10.4	-9.66%	-23.82%	58.08%	-35.41%	-22.22%	-29.74%	SAUGUS
139.1	12.27%	-20.16%	13.80%	2.39%	-6.97%	4.44%	ALL

Table 7: Crimes among all reporting agencies: Weekly averages by major category

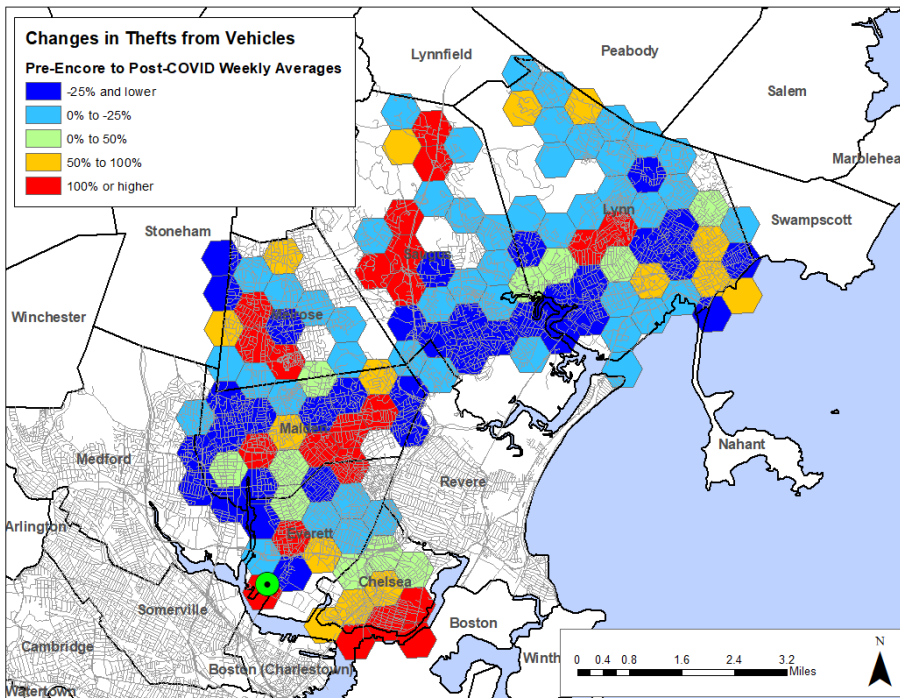
Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Burglary	11.46	11.37	8.41	8.85	9.88	-1%	-26%	5%	12%	-13%	-14%
Disorder	41.78	38.37	34.82	36.17	35.95	-8%	-9%	4%	-1%	-6%	-14%
Fraud	17.23	17.87	16.71	28.74	13.89	4%	-6%	72%	-52%	-22%	-19%
Theft	43.46	44.37	32.65	40.76	43.02	2%	-26%	25%	6%	-3%	-1%
Vehicle	23.07	25.11	24.82	23.83	27.68	9%	-1%	-4%	16%	10%	20%
Vice	22.94	24.13	13.41	14.76	17.52	5%	-44%	10%	19%	-27%	-24%
Violence	72.36	71.45	57.41	60.5	71.07	-1%	-20%	5%	17%	-1%	-2%

Table 7 statistics for the region in general suggest that the opening of Encore was barely felt, with all categories except vehicle crime either declining or showing increases of less than 5%. COVID-19 overwhelmed these small increases, with most categories dropping by double-digit percentages during the three months of full closure. Reopening, in both restricted and full form, caused a rebound, but not to the same level as before COVID-19, nor even to the same level as before Encore originally opened. Table 8 looks at Vehicle Crime.

Table 8: Vehicle crimes among all reporting agencies: Weekly averages by major category

Crime	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Auto Theft	9.34	9.03	8.94	8.96	10.14	-3%	-1%	0%	13%	12%	9%
Theft from	12.68	15.76	15.47	13.80	15.14	24%	-2%	-11%	10%	-4%	19%
Parts	1.05	0.32	0.41	1.07	2.39	-70%	28%	161%	123%	647%	128%

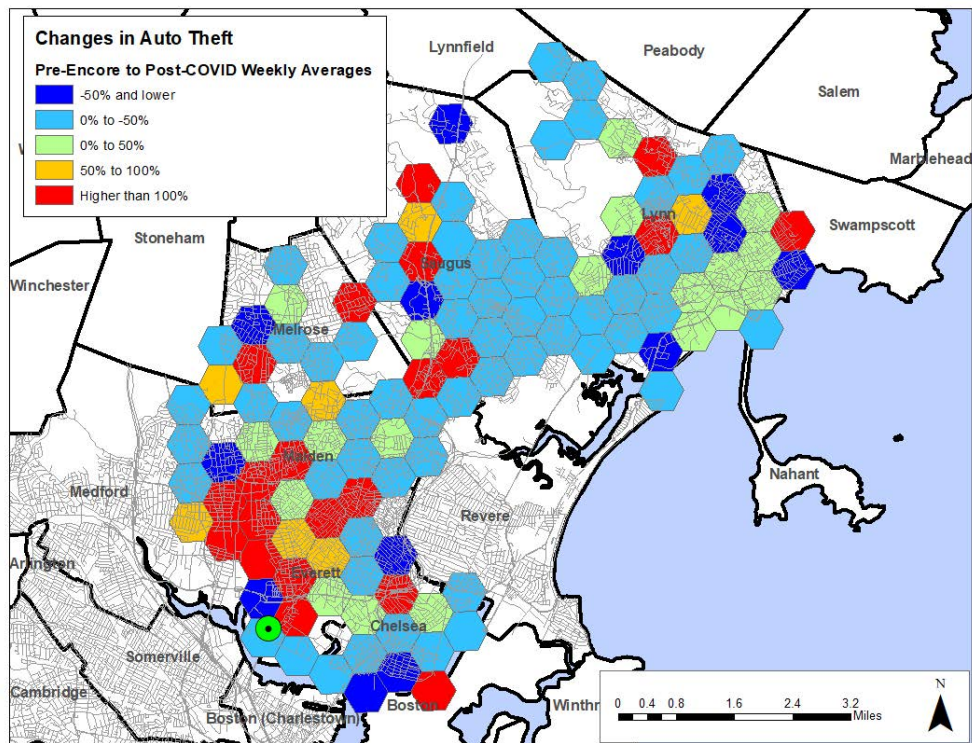
Figure 16: Theft from Vehicle



The increase in vehicle crimes throughout the region is seen in all three types of vehicle crime. Thefts from vehicles increased immediately as Encore opened. Auto thefts and thefts of vehicle parts did not, but both experienced significant increases during the period of full reopening. The auto theft increase affected all agencies except Chelsea and Saugus (and Lynn only slightly). Thefts from vehicles increased in all agencies except Lynn and Saugus. Thefts of vehicle parts were seen everywhere except Chelsea and Saugus. Figure-16 demonstrates the wide-spread effects of Theft from Vehicle crime.

Figure 17: Motor Vehicle Theft

Figure 17 shows that Auto Theft clustered in the Malden and Everett region, relatively close to the Encore Casino. Stolen cars are most likely clustered here because of the higher volume of cars left or parked in the area. Directed patrols are effective strategies for deterring Auto Theft but locking and being certain to take the keys serve as the most effective strategy.



Crime in this region has been on a downward decline for more than a decade—a decrease that continued despite Encore opening, with all three summary crime categories reaching historic lows in 2020. The following table, Table 9, offers the entire list of offenses for the entire region over the past decade.

Table 9: Crime by Crime Breakdown over the Past 10 Years - Total Region

All Offense in the Region (except Other) for the Past Decade in Decending Order											
DECADE OF CRIME	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Grand Total
Vandalism	2907	2680	2387	2466	2131	1772	1560	1479	1540	1550	20472
Simple Assault	2487	2388	2239	2279	2002	1834	1802	1766	1598	1868	20263
Other Theft	2467	2312	2148	2038	1651	1557	1309	1396	1477	1413	17768
Aggravated Assault	1127	1027	971	1021	903	894	829	830	807	924	9333
Theft from Vehicle	1327	1097	950	1097	804	763	557	826	716	801	8938
Burglary	1542	1152	1047	929	725	622	584	542	458	523	8124
Threats	881	790	625	659	609	545	525	485	424	498	6041
Shoplifting	712	742	824	747	645	494	440	387	375	529	5895
Auto Theft	681	709	614	734	533	497	471	460	471	542	5712
Drugs	618	694	578	564	425	385	328	324	270	237	4423
Fraud	423	417	447	411	372	336	404	378	463	334	3985
Robbery	542	533	482	465	355	358	254	227	175	213	3604
Family Offenses	317	331	389	372	379	388	338	331	353	333	3531
Disorderly	445	424	432	392	312	274	270	292	197	182	3220
Theft from Building	326	416	420	292	290	291	253	260	196	245	2989
Drunk Driving	261	203	244	248	239	288	249	262	210	300	2504
Trespassing	234	242	295	290	262	264	207	196	182	234	2406
Identity Theft	230	180	198	200	161	136	147	170	603	176	2201
Drunkenness	323	286	306	277	254	259	205	163	9	10	2092
Weapons	201	194	228	265	229	178	184	186	157	202	2024
Credit Card Fraud	170	205	223	228	293	230	201	184	175	106	2015
Sexual Assault	220	183	185	187	190	224	184	183	186	174	1916
Forgery	200	200	170	176	124	136	82	104	62	87	1341
Liquor Laws	93	99	119	96	111	104	89	100	88	127	1026
Theft from Persons	109	91	103	82	78	75	66	68	62	66	800
Theft of MV Parts	54	84	83	99	82	52	57	18	60	129	718
Stolen Property	94	80	78	69	44	57	40	63	54	40	619
Prostitution	150	105	105	88	35	22	11	19	5	8	548
Kidnapping	32	32	38	37	39	40	39	34	41	33	365
Bad Checks	43	46	42	53	44	36	21	28	9	7	329
Statutory Rape	12	19	21	20	27	26	35	48	7	12	227
Drug Equipment	18	29	22	19	24	28	19	27	12	6	204
Pornography	13	17	14	21	13	14	25	24	24	29	194
Purse-Snatching	21	28	35	9	23	12	11	15	3	10	167
Arson	26	21	16	14	10	16	8	8	11	17	147
Extortion	10	28	11	20	11	7	8	13	19	11	138
Murder	9	8	9	8	18	10	7	12	9	12	102
Employee Theft	11	18	9	6	6	10	8		5	4	77
Runaway	10	10	24	13	8	9					74
Gambling	4	2	2	4	1	2	7	5	2	9	38
Peeping Tom	1	3	2	2	2	1	2		2		15
Incest	1		1	1	4	1	1		1	3	13
Curfew/Loitering/Vagrancy	5	1	1		1	1		1			10
Bribery	2	1	2			1				4	10
Theft from Machine				1			2				3
Animal Cruelty					1					1	2

City by City Comparison

Table 10 Top Ranked Offenses across all Cities in the Region

RANK OF TOP TEN ACROSS CITIES	RANK						X OF 6
	CH	EV	LY	MA	ME	SA	
Vandalism	2	1	3	3	1	2	6
Simple Assault	1	6	1	1	3	4	6
Other Theft	7	2	2	2	2	1	6
Theft from Vehicle	6	3	6	4	4	5	6
Burglary	8	5	5	5	5	8	6
Aggravated Assault	4	8	4	6	9	9	6
Threats	3	9		9	7	10	5
Shoplifting		7		8		3	3
Auto Theft		10	8	7	10		4
Fraud				10	8	7	3

Table 10 shows the top ten specific crime classifications for each jurisdiction and how many times this crime was in the top ten. The predominant crime in the region was generally consistent across the different cities. Vandalism, Simple Assault, Other Theft, Theft from Vehicle, Burglary, and Aggravated Assault was within the top-ten crime types in each city under study. Threats, Shoplifting, Auto Theft, and Fraud rounded out the top-10 list of the most frequent crimes within the region. In the following pages a city-by-city offense breakdown will be offered and discussed. Apart from

assaultive behavior, the lion’s share of activity revolved around property crimes (occurring in all six cities) and fraudulent activity in three of the six cities as a top-10 offense.

The next section takes a closer look at crime in each distinct jurisdiction across the seven (7) crime categories: Burglary, Disorder, Fraud, Theft, Vehicle, Vice, and Violent crimes. The following analytical narrative focuses on those crime categories that demonstrated significant changes. Specific hexagon hotspots were created to demonstrate within each city, those areas most greatly impacted by certain crime categories. This information is offered for the sole purpose of providing actionable intelligence to each jurisdiction so they can begin to develop operational and crime prevention strategies to directly target these hotspots. Further analysis by their crime analysts is necessary to determine the time of day and day of week these areas are most impacted; and to look for specific prolific offenders and unique crime series. This portion of the report is offered to provide succinct temporal and spatial context as crime is continually monitored. The levels of crime that are the new normal or generally expected lay the benchmarks for future threshold analysis. Directing and redirecting limited police resources to the right place at right times is half the battle; establishing crime specific strategies that are effective, and assessing the outcomes in order to provide institutional knowledge for winning the ongoing fight against crime, represents the other half of the fight. For agencies that plan to conduct an in-depth problem-oriented policing project and design problem-specific solutions, Jerry Radcliffe (2022) offers evidence-based strategies and techniques for reducing crime in distinct locations. Area commanders are encouraged to read and contemplate the protocols that Dr. Ratcliffe proffers in his book, *Reducing Crime: A Companion for Police Leaders* and listen to his podcast on best practices.

The good news is that each jurisdiction has experienced significant reductions in crime since 2013. Figures 18.A-F, labeled Violent and Property Crime Compared over the Past 10 Years, demonstrate this consistent pattern of crime reduction. In most cases crime has leveled off the last two to five years, except for Lynn; the single jurisdiction that has climbed back to 3,441 overall crimes in the past four consecutive years, marking its highest point since 2016. Each city is covered in the subsequent pages and represents a systematic approach for better understanding the crime fight in the Encore region. Table 12 (p. 62) documents the Top-10 crime categories in each jurisdiction. The subsequent series of Table 11.A-G tables offer the weekly averages across the five periods for each City to provide historical context as we continue to study crime and place in the region. These figures provide us with solid benchmarks to assess future trends and patterns.

Figure 18.A-F shows the consistent decline in crime in each city from 2013 to 2019. Most jurisdictions experienced a flattening out period for crime between 2017-2020 except for Lynn which experienced an uptick in crime three consecutive years since 2019, and Malden which rebounded to 1,372-the highest level in the past five years. Much of these graphs and tables illustrate that crime has shared a similar trend across the cities of the region, most jurisdictions share the same crime threats and activities, and that crime has begun to turn upward in 2022. Agencies in region could pool their resources, collaborate on innovative problem-oriented policing solutions, and look to create regional taskforces to target the most prevalent crime and prolific offenders. Regional agencies should consider tapping into mitigation funds that the Massachusetts Gaming Commission offers specifically to address crime related to the casino, directly impacting the area at and around Encore.

Crime related to the casino would include street-jump robberies of patrons near the casino who carry cash, auto crimes in parking structures and on streets in the surrounding areas, including motor vehicle theft and from/theft of auto parts given the vulnerability of cars parked by patrons of Encore. Other possible crimes that should be further investigated and researched include ID theft based on the theft of personal records and documents stolen from cars; and potential vice like prostitution and human trafficking associated with high income venues. As sports betting opens across Massachusetts, additional attention should focus on various types of establishments given licenses to operate. Cash-based establishments demonstrate unique risks and crime opportunities and attract distinct clientele and specialized offenders.

The city-by-city comparisons that follow provide a starting point for each city to compare within and throughout the region for opportunities to partner and more fully understand the shared crime problems within the region. Further research needs to be conducted to appreciate the nuances and factors contributing more fully to crime, and who the prolific offenders might be and the way specific crime clusters in space and time. A regional crime analysis consortium should be considered that meets regularly to share intelligence, review patterns and trends, and collectively conducts problem-oriented policing (POP) projects. It is a concerted effort that will prove to be most effective, given that most crime is committed by the Chronic 6% and tends to cluster in consistent hotspots.

Everett⁶

Encore Boston Harbor was built on the south border of a densely populated suburban community. The revitalization occasioned by the casino has transformed and is likely to continue transforming the waterfront on both sides of the river, both creating opportunities for crime and providing natural guardians against it.

The Everett Police Department's two crime analysts are vital partners in this project. The senior analyst has worked for the agency for more than 10 years. We will rely on their judgment to analyze many of the increases and determine the probability of a casino relationship. Future research is forthcoming.

The site chosen for Encore Boston Harbor lies on the banks of the Mystic River, at what was formerly an unsightly industrial area. The revitalization caused by the casino has transformed and is likely to continue transforming the waterfront on both sides of the river, both creating opportunities for crime and providing natural guardians against it.



Population (est. 2018): 47,195
Area: 3.7 square miles
Police officers: 123
City center distance to Encore: 0.93 miles

Motto(s): "City of Pride, Progress, and Possibilities"^[1]

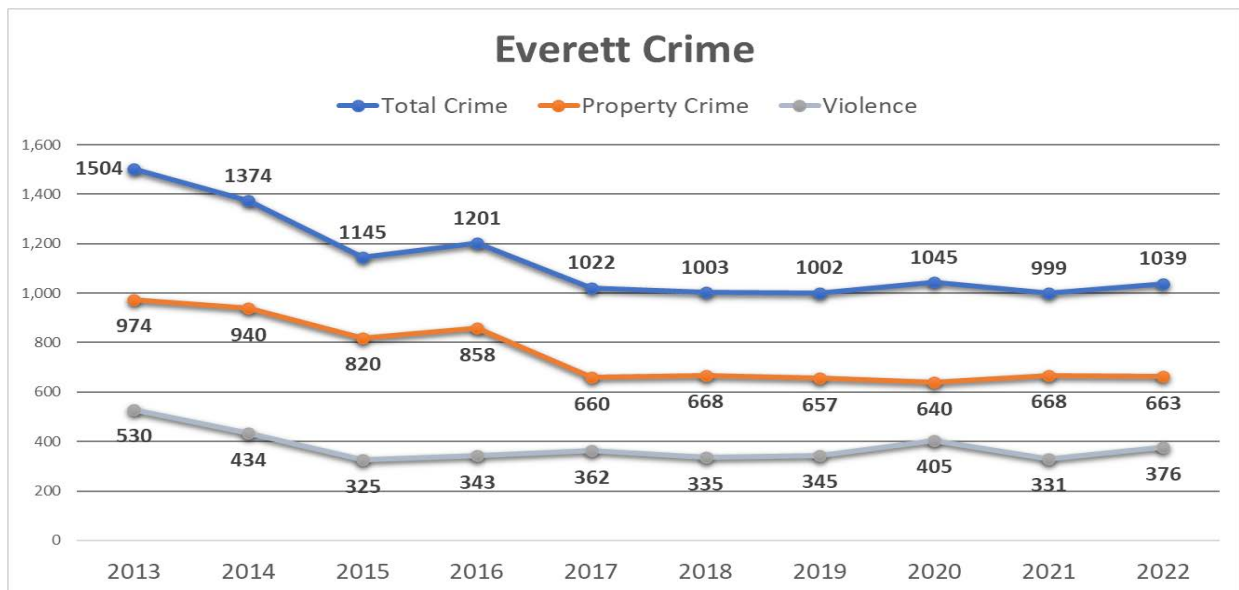
Everett

Location in Middlesex County in Massachusetts

Location in the United States
 Coordinates: 42°24′30″N 71°03′15″W﻿ / ﻿42.40833°N 71.05417°W﻿ / 42.40833; -71.05417

Country	United States
State	Massachusetts
County	Middlesex
Settled	1630
Incorporated	1870
City	1892
Government	
• Type	Mayor-council city
• Mayor	Carlo DeMaria, Jr.
Area ^[2]	
• Total	3.66 sq mi (9.48 km ²)
• Land	3.42 sq mi (8.85 km ²)
• Water	0.25 sq mi (0.64 km ²)
Elevation	10 ft (3 m)
Population (2020)	
• Total	49,075
• Density	14,366.22/sq mi (5,546.12/km ²)
Time zone	UTC-5 (EST)
• Summer (DST)	UTC-4 (EST)
ZIP code	02149
Area code	617 / 857
FIPS code	25-21990
GNIS feature ID	0612739
Website	cityofeverett.com

Figure 18.A: Violent and Property Crime in Everett



⁶ City profiles were taken from Wikipedia for general reference purposes only.

Crimes in Everett

Table 11.A: Crimes in Everett: Weekly averages by major category

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Burglary	2.22	1.87	1.12	1.52	1.57	-16%	-40%	36%	3%	-16%	-29%
Disorder	5.54	5.16	4.18	5.35	5.11	-7%	-19%	28%	-4%	-1%	-8%
Fraud	3.29	4.03	2.47	4.17	2.48	22%	-39%	69%	-41%	-38%	-25%
Theft	7.01	7.32	4.71	5.89	6.32	4%	-36%	25%	7%	-14%	-10%
Vehicle	3.37	3.95	3.82	4.85	4.66	17%	-3%	27%	-4%	18%	38%
Vice	2.81	3.11	2.65	1.67	1.91	11%	-15%	-37%	14%	-39%	-32%
Violence	6.47	7.84	5.53	5.83	6.88	21%	-29%	5%	18%	-12%	6%

Everett saw an immediate impact from the opening of Encore. These trends were covered in a previous report, but they include (within the eight-month initial opening period) almost 200 responses to the casino itself, including 15 aggravated assaults, 2 sexual assaults, 16 simple assaults, a robbery, 28 thefts of various sorts, 6 incidents of drunk driving, 4 drug offenses, and 20 incidents of disorderly conduct. These crimes helped elevate almost all crime categories in the city, although disorder and burglary remained low. COVID-19 immediately ended these trends. Restricted and full opening restored them, but not to pre-covid numbers. In the end, only vehicle crimes remained higher than pre-Encore levels.

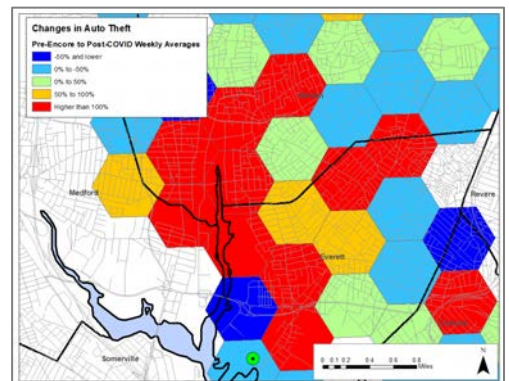
Table 11.B: Vehicle crimes in Everett: Weekly averages by major category

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Auto Theft	1.29	1.37	1.71	1.46	1.84	6%	25%	-15%	26%	34%	43%
Theft From	2.01	2.47	2.12	3.13	2.04	23%	-14%	48%	-35%	-17%	1%
Parts	0.07	0.11	0.0	0.26	0.79	57%	-100%	N.C.	204%	618%	1029%

Within the category of vehicle crime, Everett is one of the few agencies to see not a sustained increase in thefts from vehicles (which peaked during the restricted re-opening period) but rather thefts of the entire car and thefts of car parts. The large increase in auto parts theft is tied to a nationwide problem of catalytic converter thefts that includes an August arrest of two men from Rhode Island.

Everett's increase in auto theft is seen in neighborhoods east and north of the casino. There are clusters along Broadway and Main Streets, continuing in the latter case up to Malden Center. Many of the hexes with auto theft increases are within destinations or on travel routes of free Encore shuttles, raising the possibility—yet untested by necessary data—that patrons arriving at Encore through other means may be stealing cars to return home. Peak times for the increase are 16–20:00 and 20–00:00. This hypothesis should be tested by monitoring where these vehicles are recovered and by whom.

Figure 19: Theft from Vehicle



Everett saw a large increase in residential telephone scams during Encore's initial opening period (they were not tied to Encore), but these did not persist after the covid closures. A slight sustained increase in violent crime can be attributed to incidents at Encore itself; the post-covid period has brought 26 incidents, including 11 aggravated assaults, a robbery, 9 simple assaults, and 3 sexual assaults.

Chelsea

Chelsea⁷ is a diverse working-class community. The smallest city in the Commonwealth, and the second densely populated, Chelsea is one of only three Massachusetts cities with a Hispanic-majority population. It has bounded back from crippling crime rates and near-bankruptcy in the 1990s and has enjoyed significant economic growth and gentrification in the past 15 years. The city's UCR Part 1 violent crime rate fell 59% between 2008 and 2018.

The city is physically close to Encore, and visitors coming from eastern Massachusetts or even Logan Airport might pass through the city's boundaries. Extra tourist traffic to Encore might bring extra visitors to its hotel and restaurant cluster off Everett Avenue.

Chelsea has a full-time crime analyst who can assist with the analysis of new patterns and trends in the city.



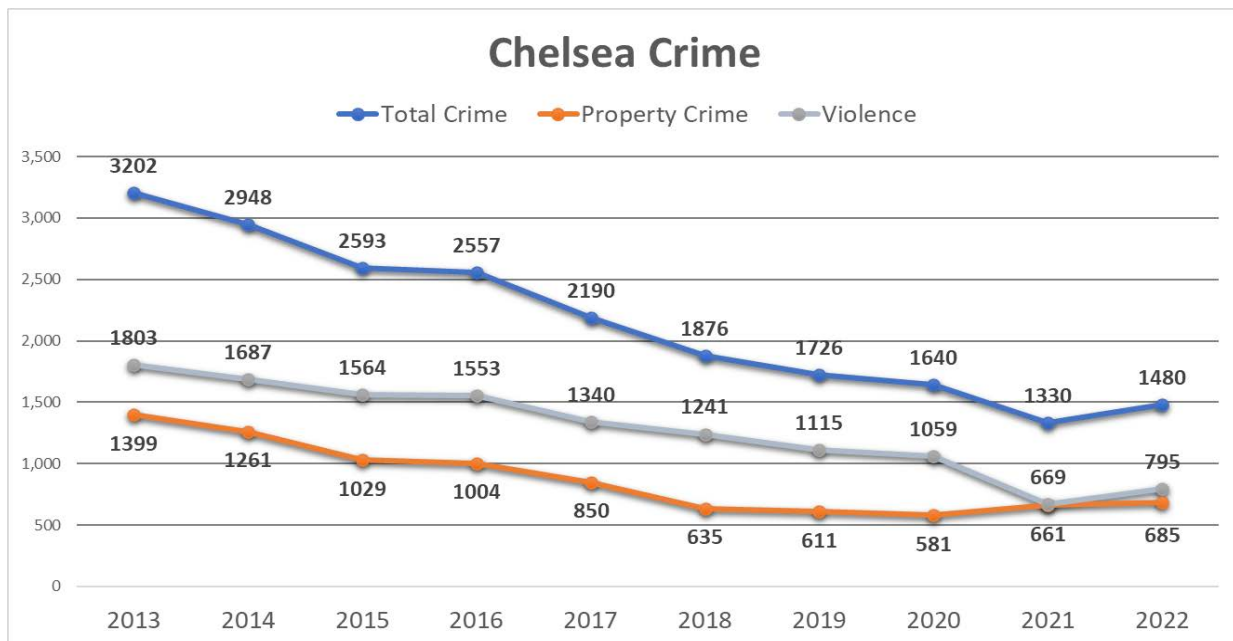
Population (est. 2019): 40,496
 Area: 2.5 square miles
 Police officers: 107
 City center distance to Encore: 1.83 miles

Chelsea

Location in Suffolk County and the state of Massachusetts

Country	United States
State	Massachusetts
County	Suffolk
Settled	1624
Incorporated (town)	1739
Incorporated (city)	1857
Government	
• Type	Council-manager government
• City Manager	Thomas G. Ambrosino
• Deputy City Manager	Ned Keefe
Area^[1]	
• Total	2.47 sq mi (6.39 km ²)
• Land	2.22 sq mi (5.75 km ²)
• Water	0.25 sq mi (0.64 km ²)
Elevation	10 ft (3 m)
Population (2020)	
• Total	40,787
• Density	18,380.80/sq mi (7,097.87/km ²)
Time zone	UTC-5 (Eastern)
• Summer (DST)	UTC-4 (Eastern)
ZIP Code	02150
Area code	617/857
FIPS code	25-13205
GNIS feature ID	0612723
Website	www.chelseama.gov

Figure 18.B: Violent and Property Crime in Chelsea



⁷ City profiles were taken from Wikipedia for general reference purposes only.

Crimes in Chelsea

Crime statistics show that the city continued declining in most crime categories even as Encore opened in 2019. Those declines were of course accelerated by the initial covid closures, and although crime returned as the closures were lifted, the city still had double-digit decreases from pre-Encore averages in most categories.

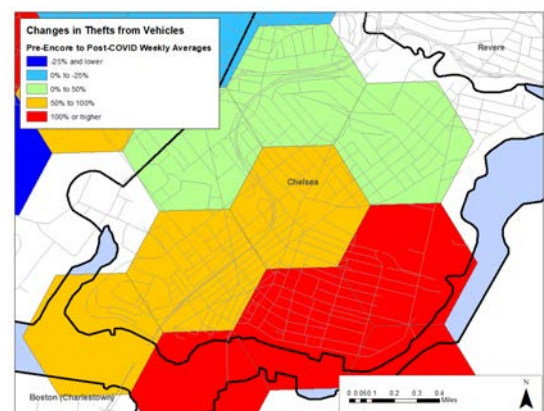
Table 11.C: Crimes in Chelsea: Weekly averages by major category

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Burglary	1.79	1.66	2.29	1.61	1.54	-14%	38%	-30%	-4%	-7%	-14%
Disorder	8.52	7.87	7.71	8.26	7.75	-9%	-2%	7%	-6%	-2%	-9%
Fraud	3.27	2.55	2.06	3.09	2.84	-13%	-19%	50%	-8%	11%	-13%
Theft	5.9	5.87	5.06	5.89	6.14	4%	-14%	16%	4%	5%	4%
Vehicle	4.27	3.71	3.88	4.91	5.59	31%	5%	27%	14%	51%	31%
Vice	8.47	7.84	3.53	2.11	3.86	-54%	-55%	-40%	83%	-51%	-54%
Violence	22.73	21.45	16.29	12.85	14.93	-0.34	-24%	-21%	16%	-30%	-34%

The most significant exception is in vehicle crime, which increased during the COVID-19 restrictions and continued increasing afterwards. Of the various vehicle crimes, only thefts *from* vehicles account for this increase (auto thefts and thefts of vehicle parts both held steady or declined).

Spatial analysis shows the increase happening throughout the city, but highest in Chelsea Square and the residential neighborhoods to the east. The increase is seen at all times of day but is highest in the 04:00–08:00 and 08:00–12:00 blocks, and particularly on Mondays and Tuesdays. Most of the increase is conspicuously not in the area that one would expect to be patronized by Encore visitors.

Figure 20: Theft from Vehicle



Chelsea's crime total has dropped so much in the past 10 years that the 2021 figures for property crime and Violent crime converge. Total Property and Violent Crime combined increased by over 1,000 incidents between 2021 and 2022 (using fiscal year totals).

Lynn

Lynn⁸ has no travel routes to Encore excepting those that its own residents will use. A couple of bed-and-breakfasts make up its only lodging. It may see an increase in visitation from a small percentage of Encore visitors interested in the city's growing arts culture. So far, however, most activity has been low, and no changes are attributable to Encore.



Population (est. 2019): 94,449
Area: 13.5 square miles
Police officers: 168
City center distance to Encore: 7.62 miles

Nicknames: City of Sin, City Of Firsts



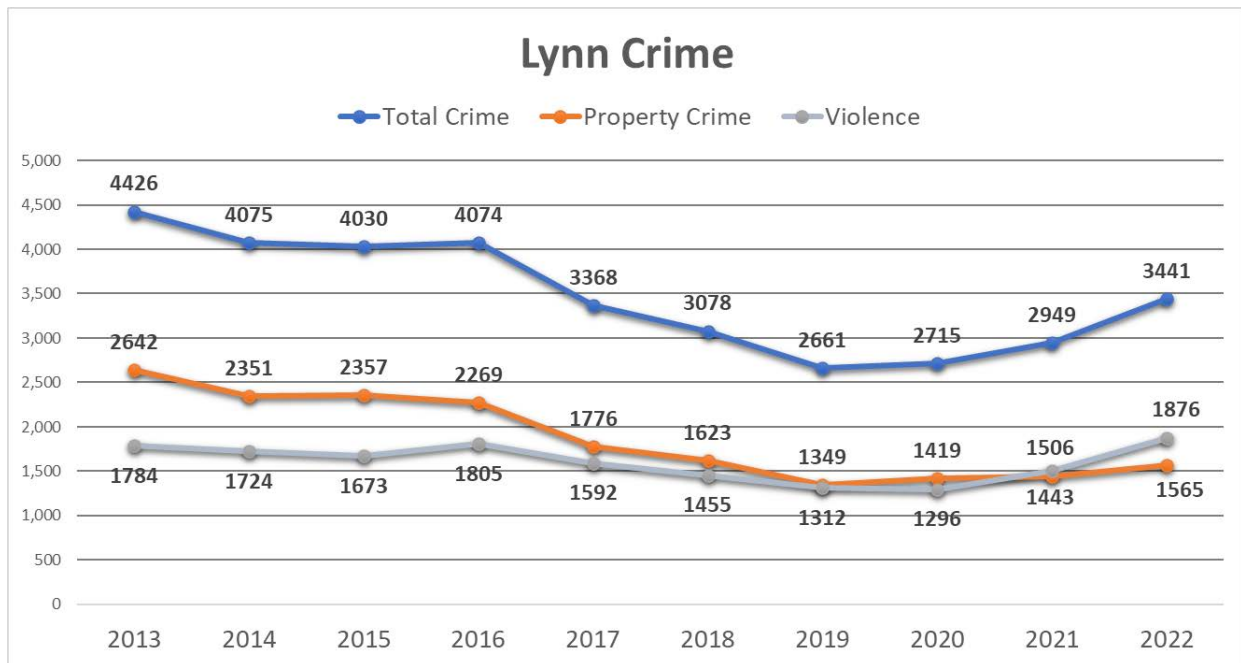


Location in the United States
 Coordinates: 42°28'N 70°57'W

Country	United States
State	Massachusetts
County	Essex
Settled	1629
Incorporated (Town)	1629
Named	1637 ^[1]
Incorporated (City)	May 14, 1850 ^{[2][3]}
Named for	King's Lynn, Norfolk, England ^[1]
Government	
• Type	Mayor-council city

Area ^[7]	
• Total	13.52 sq mi (35.02 km ²)
• Land	10.74 sq mi (27.81 km ²)
• Water	2.78 sq mi (7.20 km ²)
Elevation 30 ft (9 m)	
Population (2020)	
• Total	101,253
• Density	9,428.53/sq mi (3,640.41/km ²)
Demonym Lynner	
Time zone UTC-5 (Eastern)	
• Summer (DST) UTC-4 (Eastern)	
ZIP Codes 01901-01905	
Area codes 339/781	
FIPS code 25-37490	
GNIS feature ID 0613376	
Website www.lynnma.gov	

Figure 18.C: Violent and Property Crime in Lynn



⁸ City profiles were taken from Wikipedia for general reference purposes only.

Crimes in Lynn

Lynn was the only jurisdiction in this study to rebound from COVID-19 with significantly higher rates of vice and violence. The locations most affected by the latter (residences) and the specific crimes (aggravated and simple assaults) suggest an increase in domestic violence. A lack of comparable increases in other communities likely precludes a direct Encore influence in Lynn's trends.

Table 11.D: Crimes in Lynn: Weekly averages by major category

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Burglary	4.39	4.42	2.88	3.11	3.59	1%	-35%	8%	15%	-19%	-18%
Disorder	16.00	14.95	13.82	13.35	13.75	-7%	-8%	-3%	3%	-8%	-14%
Fraud	4.98	5.74	5.82	12.80	4.55	15%	1%	120%	-64%	-21%	-9%
Theft	15.41	16.39	13.94	17.72	17	6%	-15%	27%	-4%	4%	10%
Vehicle	8.67	8.11	6.65	7.24	8.79	-6%	-18%	9%	21%	8%	1%
Vice	7.73	9.61	5.76	8.28	9.5	24%	-40%	44%	15%	-1%	23%
Violence	26.52	26.13	22.94	27.76	36.16	-1%	-12%	21%	30%	38%	36%

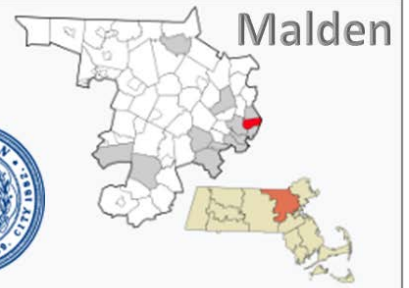
Lynn has experienced significant increases in Total Crime (combined Property and Violent incidents) since 2019. Most of the increase comes from Simple Assault, Aggravated Assault, and Theft from Vehicle/Theft of Vehicle Parts. And overall crime in Lynn has turned upward since 2019 and now has 3,441 incidents, the highest number in the past six years.

Malden

Bordering Everett to the north, Malden⁹ has one of the lower crime rates (for both violent crime and property crime) among the jurisdictions in this study. Except for a small part of U.S. Route 1 (a stretch mostly clear of businesses except a single liquor store), the city does not have many significant auto travel routes leading to Encore. However, the casino does operate a free shuttle out of Malden Center, which may increase foot and vehicle traffic to the businesses in the region. So far, most categories analyzed below show normal or decreased activity.



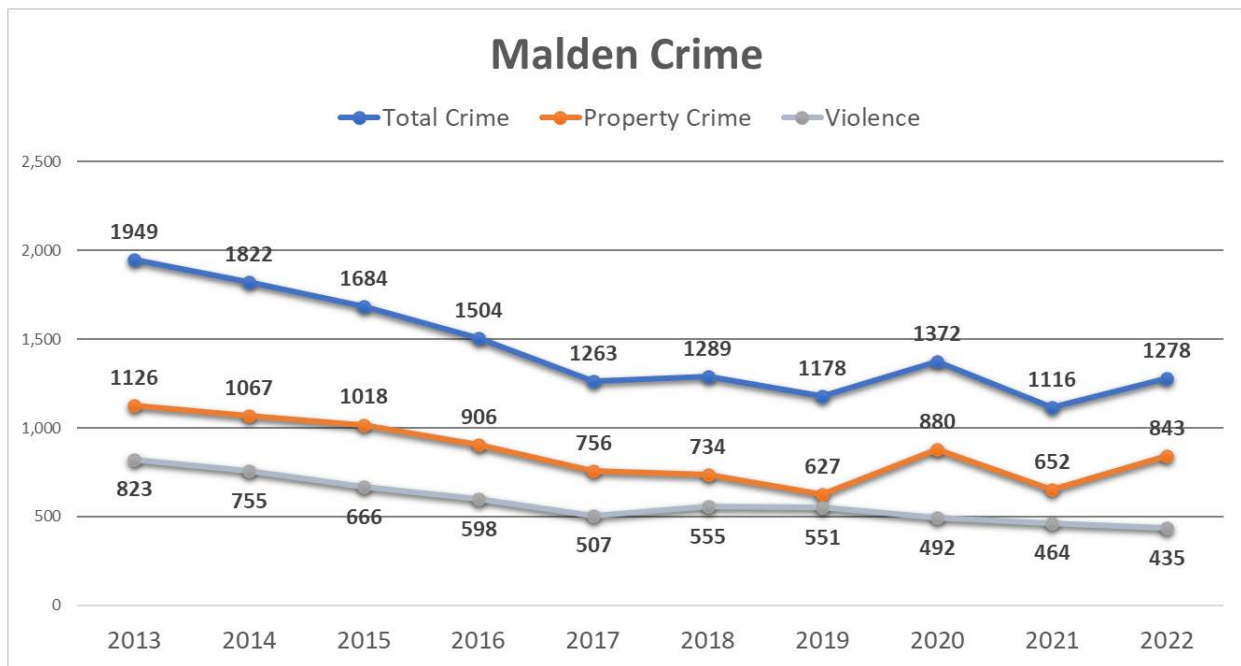
Population (est. 2019): 60,746
Area: 5.1 square miles
Police officers: 100
City center distance to Encore: 2.28 miles



Location in Middlesex County in Massachusetts
 Coordinates: [42°25'30"N 71°04'00"W](#)

Country	United States
State	Massachusetts
County	Middlesex
Settled	1640
Incorporated	1649
City	1882
Government	
• Type	Mayor–council
• Mayor	Gary Christenson
Area^[1]	
• Total	5.08 sq mi (13.16 km ²)
• Land	5.04 sq mi (13.06 km ²)
• Water	0.04 sq mi (0.10 km ²)
Elevation	13 ft (4 m)
Population (2020)	
• Total	66,263
• Density	13,136.99/sq mi (5,072.11/km ²)
Demonym	Maldonian ^[2]
Time zone	UTC-5 (Eastern)
• Summer (DST)	UTC-4 (Eastern)
ZIP Code	02148
Area code	339/781
FIPS code	25-37875
GNIS ID	0612773
Website	cityofmalden.org

Figure 18.D: Violent and Property Crime in Malden



⁹ City profiles were taken from Wikipedia for general reference purposes only.

Crimes in Malden

Malden joins Everett in showing a significant increase in vehicle crime, including both thefts from vehicles and auto theft. The auto theft increase was analyzed in the Everett section. There, we raised the possibility that visitors to Encore were stealing cars for short-term transportation back home.

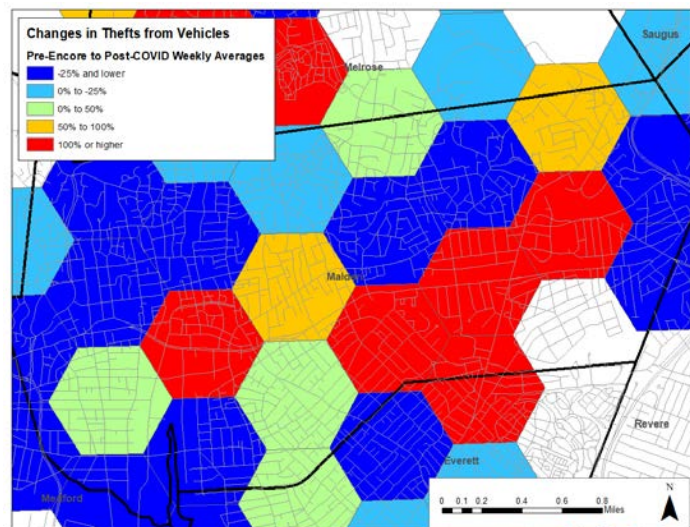
This hypothesis is based on the spatial pattern, which centers around bus and shuttle routes from Encore, but it will have to be tested by local authorities by monitoring where these vehicles are recovered and by whom.

Table 11.E: Crimes in Malden: Weekly averages by major category

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Burglary	1.82	2.32	1.18	1.76	1.93	27%	-49%	49%	10%	-17%	6%
Disorder	6.37	6.08	5.00	5.33	5.11	-5%	-18%	7%	-4%	-16%	-20%
Fraud	1.91	1.74	3.24	2.41	1.36	-9%	86%	-26%	-44%	-22%	-29%
Theft	7.21	8.34	6.18	6.13	8.02	16%	-26%	-1%	31%	-4%	11%
Vehicle	3.98	6.5	8.47	4.61	5.96	63%	30%	-46%	29%	-8%	50%
Vice	1.45	1.13	0.53	0.91	0.77	-22%	-53%	72%	-15%	-32%	-47%
Violence	10.6	9.82	8.47	8.8	8.55	-7%	-14%	4%	-3%	-13%	-19%

Malden also had an increase in thefts from vehicles through the post-Encore period. Again, Malden Center stands out, but the group of hexes showing the highest coadjacent increase is further east, along Routes 99 and 60.

Figure 21: Theft from Vehicle



Melrose

On the outskirts of our study, Melrose¹⁰ is smaller and more suburban than most of the other communities analyzed here. It is avoided by highways and other major travel routes to Encore, it has no hotels, and it lacks most of the other attractions and amenities that a visitor to the area would seek out. Hence, it is unlikely to experience much impact from Encore unless this region experiences the type of wide-ranging crime patterns that have been rare in the other casino communities.



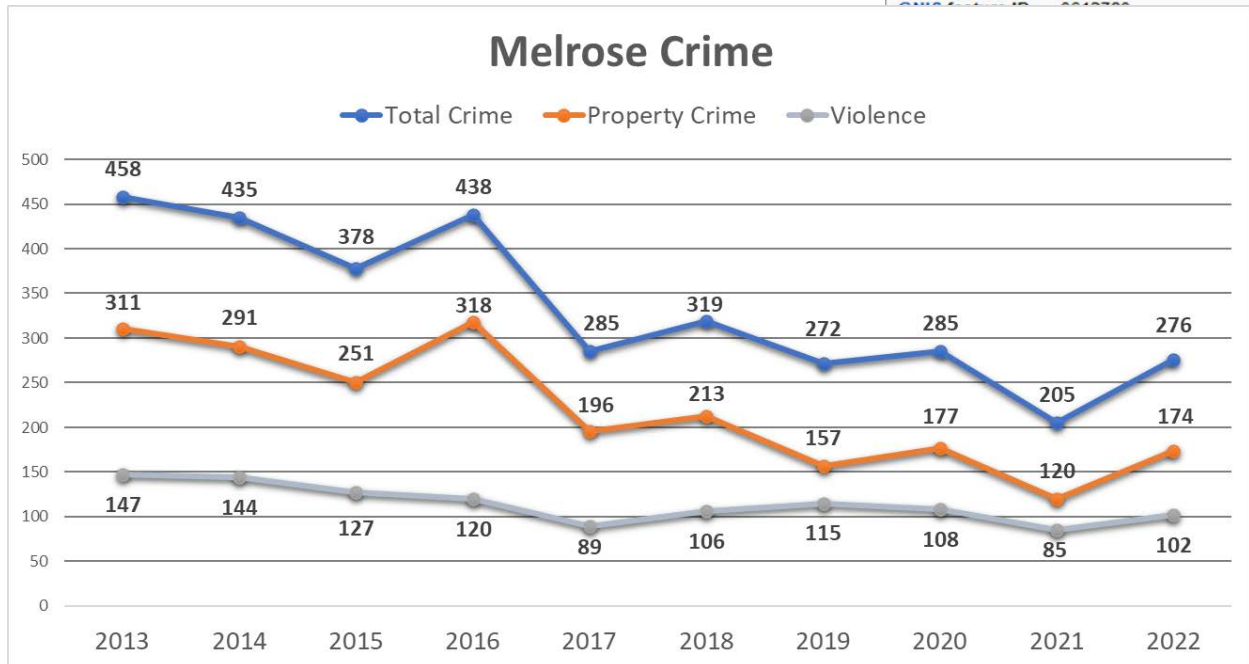
Population (est. 2019): 28,120
Area: 4.8 square miles
Police officers: 48
City center distance to Encore: 4.16 miles

Melrose
 Location in Middlesex County in Massachusetts

Location in the United States
 Coordinates: 42°27'30"N 71°04'00"W

Country	United States
State	Massachusetts
County	Middlesex
Settled	1629
Incorporated	1850
City	1900
Government	
• Type	Mayor-council city
• Mayor	Paul A. Brodeur (D) ^[1]
Area ^[2]	
• Total	4.77 sq mi (12.35 km ²)
• Land	4.68 sq mi (12.13 km ²)
• Water	0.09 sq mi (0.22 km ²)
Elevation	133 ft (41 m)
Population (2020)	
• Total	29,817
• Density	6,365.71/sq mi (2,458.07/km ²)
Time zone	UTC-5 (Eastern)
• Summer (DST)	UTC-4 (Eastern)
ZIP Code	02176
Area code	339/781
FIPS code	25-40115

Figure 18.E: Violent and Property Crime in Melrose



¹⁰ City profiles were taken from Wikipedia for general reference purposes only.

Crimes in Melrose

One potential exception is in activity at Melrose-Wakefield Hospital, a possible destination for medical emergencies at Encore Boston Harbor. This facility did see an increase in crimes during this period, from a pre-Encore average of 55 to a post-Encore average of 93. However, incidents at the hospital had already been increasing when Encore arrived on the scene. A more definitive analysis will have to be made from the report narratives and associated offender data.

Figure 22: Theft from Vehicle 10-year trend

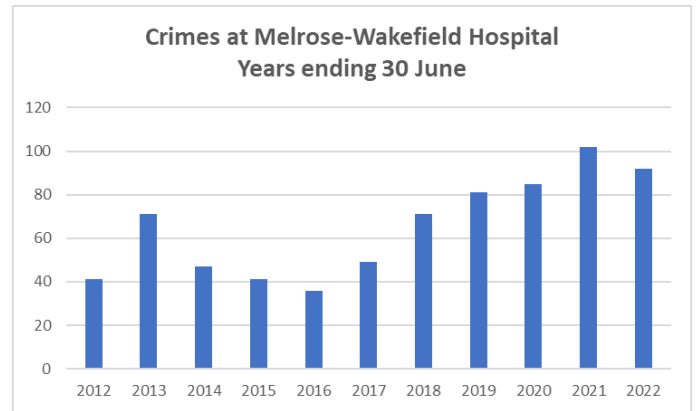
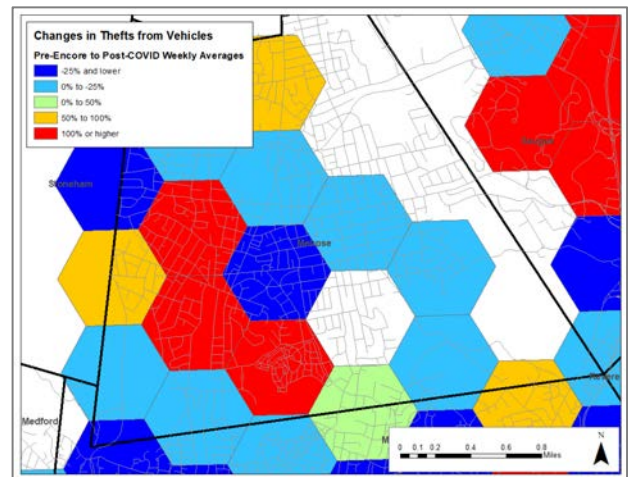


Table 11.F: Crimes in Melrose: Weekly averages by major category

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Burglary	0.50	0.68	0.35	0.28	0.59	36%	-49%	-20%	111%	-13%	18%
Disorder	2.01	1.79	1.59	1.48	1.43	-11%	-11%	-7%	-3%	-20%	-29%
Fraud	0.69	0.84	0.35	0.39	0.30	22%	-58%	11%	-23%	-64%	-57%
Theft	2.08	1.87	1.53	1.07	1.36	-10%	-18%	-30%	27%	-27%	-35%
Vehicle	0.98	1.13	0.94	0.87	1.16	15%	-17%	-7%	33%	3%	18%
Vice	0.56	0.76	0.12	0.43	0.45	36%	-84%	258%	5%	-41%	-20%
Violence	2.11	2.42	1.35	1.65	1.93	15%	-44%	22%	17%	-20%	-9%

Burglaries and vehicle crimes are both concerning in Melrose. The burglary increase is found entirely in the residential category and is found in two neighborhoods, one centered at First Street and Sixth Street and the other centered at Pleasant Street and Francis Street. This second neighborhood is also the site of one of the increases in thefts from vehicles. Unlike burglaries, the three hexes that saw the largest increase in vehicle crimes are all contiguous, starting in the corridor between Pine Banks Park and Middlesex Fells Reservation, then proceeding north into the Wyoming neighborhood.

Figure 23: Theft from Vehicle Hotspots



Saugus

Saugus¹¹ is a small residential city bisected by a massive commercial corridor. It is only shortly before its borders that Interstate 95 travelers headed to Boston (including Encore) exit the highway onto Route 1. The route this traffic takes through Saugus is some of the mostly densely packed commercial territory in the state, including a major shopping mall (Square One), a major shopping center, and dozens of department stores, restaurants, gas stations, and other retail and service outlets.

These establishments do not continue much beyond the city's southern border; in Malden, Route 1 becomes a controlled-access freeway. While Saugus was thus poised to see an increase in activity from travelers to and from Encore from northern points, such an increase has yet to materialize.

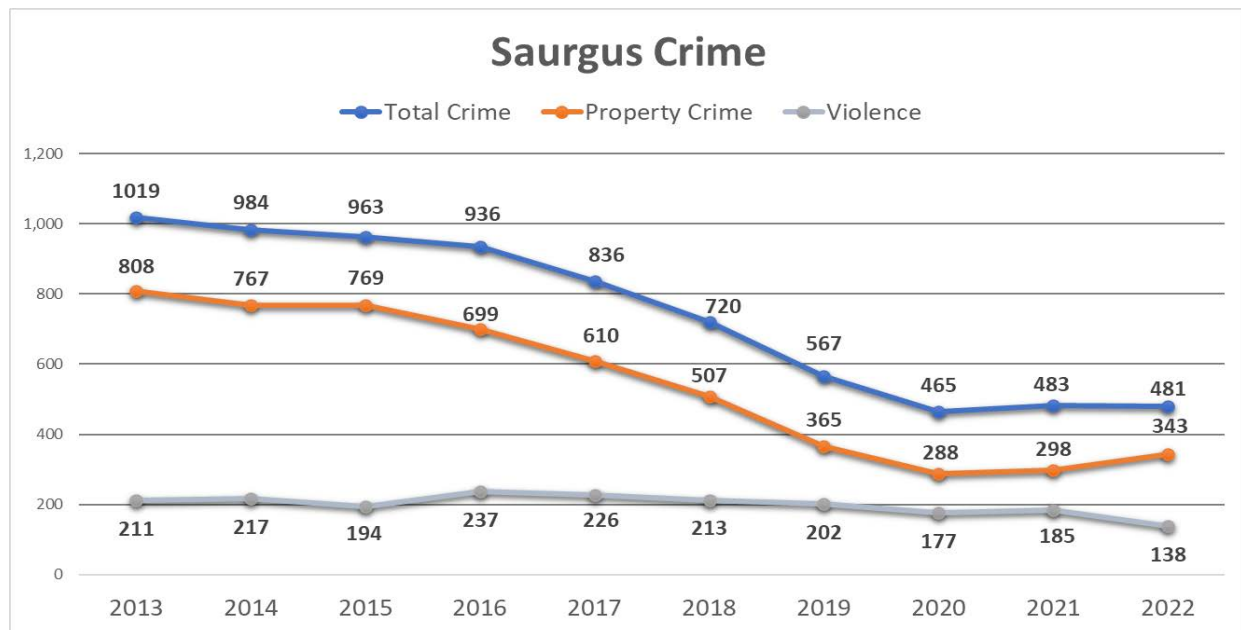


Population (est. 2019): 28,378
 Area: 11.8 square miles
 Police officers: 59
 City center distance to Encore: 5.72 miles

Saugus
 Location in Essex County and the state of Massachusetts.
 Coordinates: 42°27'53"N 71°00'38"W

Country	United States
State	Massachusetts
County	Essex
Settled	1629
Incorporated	1815
Government	
• Type	Town Manager–Board of Selectmen/Representative town meeting
• Town Manager	Scott Crabtree
• Board of Selectmen	Anthony W. Cogliano, Sr. Corinne R. Riley Michael J. Serino Debra C. Panetta Jeffrey V. Cicolini
Area	
• Total	11.8 sq mi (30.6 km ²)
• Land	10.8 sq mi (28.0 km ²)
• Water	1.0 sq mi (2.6 km ²)
Elevation	21 ft (6 m)
Population (2020)	
• Total	28,619
• Density	2,400/sq mi (940/km ²)
Time zone	UTC-5 (Eastern)
• Summer (DST)	UTC-4 (Eastern)
ZIP code	01906
Area code	339 / 781
FIPS code	25-60015
GNIS feature ID	0619454
Website	Town of Saugus, Official Web Site ²

Figure 18.F: Violent and Property Crime in Saugus



¹¹ City profiles were taken from Wikipedia for general reference purposes only.

Crimes in Saugus

Saugus is the only agency to experience a full slate of decreases during the initial period of opening and the reopening. As so much of the city’s crime is dependent on commercial activity, it reacted more strongly to covid closures than other agencies, in a variety of ways. For instance, commercial burglaries increased during the period of full closure, but thefts (including shoplifting and thefts from vehicles) plummeted. In the end, the city enjoyed double-digit decreases from its pre-Encore average during the reopening period.

Table 11.G: Crimes in Saugus: Weekly averages by major category

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Burglary	0.74	0.42	0.59	0.57	0.66	-43%	40%	-3%	16%	57%	-11%
Disorder	3.35	2.53	2.53	2.41	2.80	-24%	0%	-5%	16%	11%	-16%
Fraud	3.09	2.97	2.76	5.87	2.36	-4%	-7%	113%	-60%	-21%	-24%
Theft	5.85	4.58	1.24	4.07	4.18	-22%	-73%	228%	3%	-9%	-29%
Vehicle	1.8	1.71	1.06	1.35	1.52	-5%	-38%	27%	13%	-11%	-16%
Vice	1.92	1.68	0.82	1.35	1.04	-13%	-51%	65%	-23%	-38%	-46%
Violence	3.93	3.79	2.82	3.61	2.62	-4%	-26%	28%	-27%	-31%	-33%

Table 12 provides a detailed breakdown of the top ten crimes in each of the EBH communities over the past ten years. While Table 10 (p.48) offered the top ten rank for the most prolific crime categories, the table below offers the detail by which departments can begin to set priorities. The common themes could be cause for joint initiatives between agencies.

Table 12: Top Ten Crimes - Breakdown over the past 10 Years

EVERETT TOP 10 CRIMES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Grand Total
Vandalism	342	343	310	276	305	263	225	209	256	229	2758
Other Theft	242	276	254	262	231	221	223	214	219	206	2348
Theft from Vehicle	226	210	147	181	119	129	83	121	162	108	1486
Family Offenses	16	93	166	143	186	181	163	167	163	183	1461
Burglary	227	166	127	155	116	101	132	85	78	85	1272
Simple Assault	247	182	77	91	112	89	90	127	113	127	1255
Shoplifting	93	123	149	130	91	98	114	94	75	91	1058
Aggravated Assault	97	79	75	84	92	90	125	129	86	86	943
Threats	109	78	93	99	100	90	68	89	80	105	911
Auto Theft	120	101	83	89	70	74	62	73	80	99	851

CHELSEA TOP 10 CRIMES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Grand Total
Simple Assault	774	743	739	723	639	624	549	506	238	296	5831
Vandalism	778	732	581	595	465	351	308	327	368	329	4834
Threats	400	411	322	328	310	263	258	213	168	214	2887
Aggravated Assault	330	275	246	262	189	177	183	223	170	180	2235
Drunkenness	290	254	290	250	227	228	189	152		1	1881
Theft from Vehicle	238	248	148	199	166	112	103	126	173	200	1713
Other Theft	422	175	89	96	67	53	60	140	185	125	1412
Burglary	265	178	198	155	120	77	112	94	83	81	1363
Theft from Building	132	205	198	167	130	131	127	87	84	101	1362
Robbery	217	188	186	175	118	93	65	63	50	73	1228

LYNN TOP 10 CRIMES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Grand Total
Simple Assault	897	869	880	940	814	681	680	721	845	1073	8400
Other Theft	998	994	996	910	696	665	585	590	705	644	7783
Vandalism	1033	916	902	987	806	677	552	531	510	575	7489
Aggravated Assault	496	481	445	462	433	397	330	310	377	475	4206
Burglary	592	452	463	424	319	267	194	207	160	189	3267
Theft from Vehicle	494	329	300	330	282	260	197	233	165	239	2829
Drugs	331	348	292	297	246	200	156	166	170	142	2348
Auto Theft	267	270	246	344	211	228	201	163	192	202	2324
Disorderly	207	189	215	200	175	135	115	144	105	73	1558
Family Offenses	220	152	154	171	148	150	129	117	142	114	1497

MALDEN TOP 10 CRIMES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Grand Total
Simple Assault	396	408	378	343	278	285	338	280	279	258	3243
Other Theft	371	453	404	331	302	280	237	285	232	303	3198
Vandalism	337	317	299	282	251	229	230	218	216	217	2596
Theft from Vehicle	191	152	208	206	134	151	108	254	146	168	1718
Burglary	276	226	154	113	108	105	87	101	93	100	1363
Aggravated Assault	140	123	150	143	122	155	114	111	107	117	1282
Auto Theft	105	103	101	105	94	76	75	116	74	134	983
Shoplifting	149	88	94	114	86	73	71	73	56	71	875
Threats	193	150	52	36	42	43	37	34	26	13	626
Fraud	62	57	60	48	83	58	64	61	57	42	592

MELROSE TOP 10 CRIMES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Grand Total
Vandalism	143	129	90	120	88	88	98	77	67	62	962
Other Theft	89	83	99	105	89	86	76	75	52	53	807
Simple Assault	75	82	62	62	51	58	67	61	44	58	620
Theft from Vehicle	71	60	52	92	32	48	20	47	31	39	492
Burglary	79	58	34	33	13	29	26	29	15	33	349
Theft from Building	46	48	36	34	36	28	12	13	6	12	271
Threats	42	35	36	32	22	18	19	20	17	13	254
Fraud	21	27	25	25	16	23	22	21	15	10	205
Aggravated Assault	18	16	16	17	10	18	25	21	19	24	184
Auto Theft	14	15	19	36	16	17	13	11	12	20	173

SAUGUS TOP 10 CRIMES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Grand Total
Other Theft	345	331	306	334	266	252	128	92	84	82	2220
Vandalism	274	243	205	206	216	164	147	117	123	138	1833
Shoplifting	173	183	204	166	156	88	89	75	104	133	1371
Simple Assault	98	104	103	120	108	97	78	71	79	56	914
Theft from Vehicle	107	98	95	89	71	63	46	45	39	47	700
Identity Theft	63	30	47	52	56	39	55	51	215	45	653
Fraud	68	62	50	57	45	48	70	74	50	54	578
Burglary	103	72	71	49	49	43	33	26	29	35	510
Aggravated Assault	46	53	39	53	57	57	52	36	48	42	483

Hexagon Hotspots - Spatial analysis

The statistics below do not include categories with fewer than 5 crimes on average unless the category was notably high in the associated region in the period ending February 2020.

The next section drills deeper into the hexagon hotspots discussed in the methodology section. Sherman et al., (1989) has demonstrated several times that crime aggregates and clusters in certain places, year over year. Their research has shown that three percent of crime hotspots in Minneapolis was responsible for nearly 100% of what he called predatory crime (i.e., UCR Part One Violent Crime) representing murder, rape, robbery, and aggravated assault. Lawrence Sherman refers to this phenomenon as spatial continuity, and our focus here is based upon his research.

If you recall, this hexagon hotspot approach was used to identify four (4) distinct high-volume areas for further analysis. The identified hotspots include the areas surrounding Encore, a Chelsea hotspot, a Lynn hotspot, and a Malden hotspot. The discussion below covers the crime activity over the five COVID-19 periods.

HEXAGON HOTSPOT ANALYSIS

Table 13.A (below) shows the culmination of the four hotspots across each of the six crime categories. Lynn and Chelsea experience the greatest volume of violent, vice and fraudulent crime. Vehicle crime is relatively equally dispersed in the Lynn, Malden, and Chelsea hotspot. Burglary impacts the Lynn hotspot at twice the rate as Chelsea and Malden, and similarly for Other Theft. In each case, the data shows that the Encore hotspot is consistently lower, respectively.

Table 13.A: All Hexagons Combined – COVID-19 Trend Crime Comparison

HEX COUNTS OVER PERIODS							
Category	Grid Id (group)	Study Periods					Grand Total
		PRE-OPEN	OPEN	CLOSED	RESTRICTED	RE-OPEN	
Violence	Chelsea_HEX	306	331	114	262	367	1,380
	Encore_HEX	26	65	9	36	57	193
	Lynn_HEX	481	539	192	729	1,026	2,967
	Malden_HEX	194	185	73	189	261	902
	Total	1,007	1,120	388	1,216	1,711	5,442
Vice	Chelsea_HEX	141	144	21	59	102	467
	Encore_HEX	12	28	2	16	18	76
	Lynn_HEX	126	198	45	214	246	829
	Malden_HEX	25	20	4	15	15	79
	Total	304	390	72	304	381	1,451
Fraud/Forgery	Chelsea_HEX	69	79	17	81	79	325
	Encore_HEX	8	19	3	11	19	60
	Lynn_HEX	82	91	28	182	106	489
	Malden_HEX	41	38	19	49	40	187
	Total	200	227	67	323	244	1,061
Vehicle Crime	Chelsea_HEX	70	78	33	106	161	448
	Encore_HEX	14	21	7	27	43	112
	Lynn_HEX	125	157	63	162	276	783
	Malden_HEX	61	138	67	85	177	528
	Total	270	394	170	380	657	1,871
Burglary	Chelsea_HEX	47	31	18	28	43	167
	Encore_HEX	2	6	1	10	14	33
	Lynn_HEX	73	78	19	77	98	345
	Malden_HEX	33	43	7	32	52	167
	Total	155	158	45	147	207	712
Other Theft	Chelsea_HEX	126	138	52	158	191	665
	Encore_HEX	92	105	31	89	129	446
	Lynn_HEX	238	281	106	349	458	1,432
	Malden_HEX	148	189	59	133	247	776
	Total	604	713	248	729	1,025	3,319
Grand Total		2,540	3,002	990	3,099	4,225	13,856

Table 13.B shows that the Lynn Hexagon Hotspot nearly doubled from pre-opening and the reopening after COVID-19. No other hotspot experienced this degree of elevated crime. Something is clearly occurring in Lynn that suggests that the Casino is not the contributing factor. Lynn is the farthest hotspot from the casino, and most likely prone to its own factors.

Table 13.B: Total number of Select Crimes within each Hexagon Hotspots during each period

HEX CNTS OVER PERIODS						
Grid Id (gro..	Study Periods					Grand Total
	PRE-OPEN	OPEN	CLOSED	RESTRICTED	RE-OPEN	
Encore_HEX	154	244	53	189	280	920
Chelsea_HEX	759	801	255	694	943	3,452
Lynn_HEX	1,125	1,344	453	1,713	2,210	6,845
Malden_HEX	502	613	229	503	792	2,639
Grand Total	2,540	3,002	990	3,099	4,225	13,856

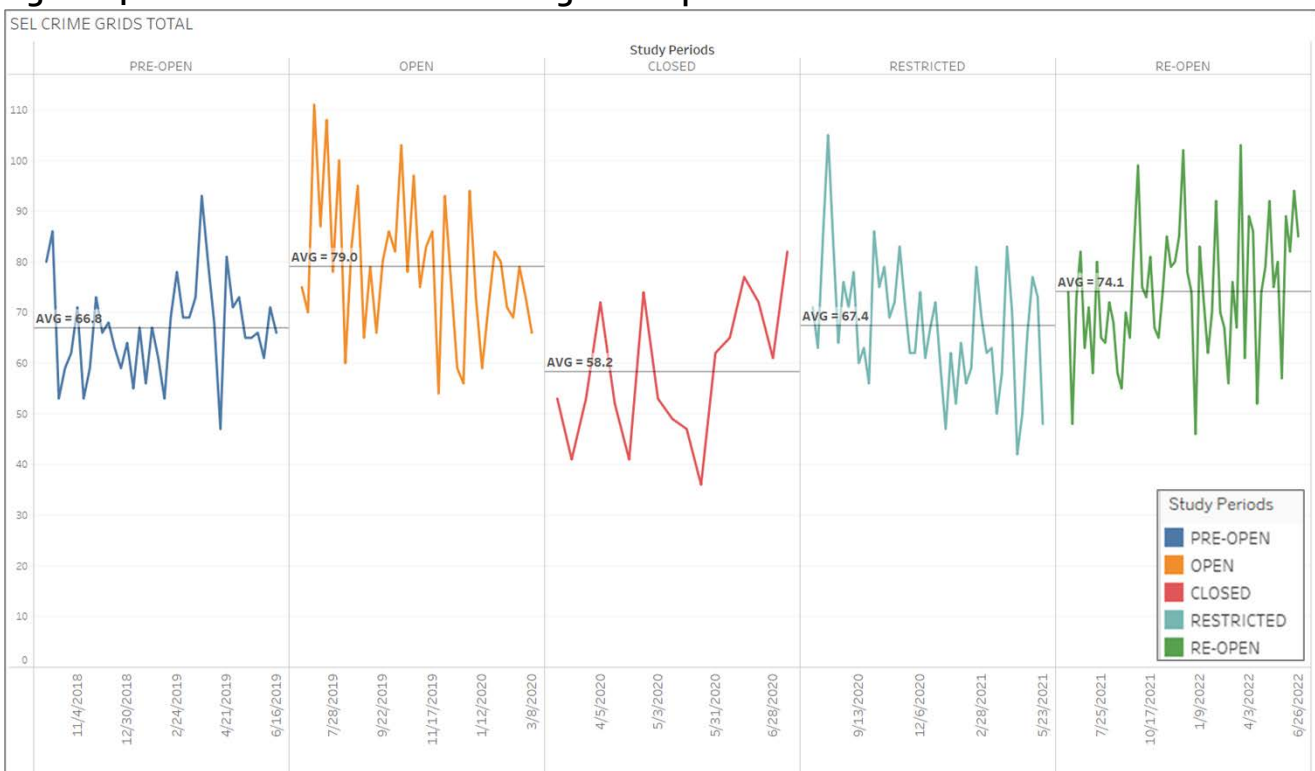
As you can see in Table 13.C below, Encore Hexagon jumps approximately 3% points when it opens and again when it reopens from the period preceding it – going from 6.6% during the pre-opening to 9.8% and from 6.2% during the closure to 9.3% during the reopening. This suggests that at least in the Everett area and as a part of the larger region, the casino contributes about 3% of the criminal activity. Note that the hexagon cluster around Encore tops out at 9-10% of the entire region or 1 out of 10 of these crimes.

Table 13.C: Percentage of Select Crimes within each Hexagon Hotspots during each period

HEX PCT OVER PERIODS					
Grid Id (gro..	Study Periods				
	PRE-OPEN	OPEN	CLOSED	RESTRICTED	RE-OPEN
Encore_HEX	6.6%	9.8%	6.2%	8.3%	9.3%
Chelsea_HEX	35.6%	31.7%	31.9%	23.9%	24.0%
Lynn_HEX	43.9%	44.5%	45.1%	54.6%	53.0%
Malden_HEX	13.9%	14.0%	16.9%	13.1%	13.7%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 24.A below, like the Region and City analysis, demonstrates a clear and consistent pattern of crime over the pre-during and post-covid periods. This micro analysis of hotspots shows the weekly counts and the periodic averages for crime that reflects what one would expect and hypothesize. When the casino opened in the region crime went up on average slightly, from 67 crimes to 79 crimes—a net gain of 11 crimes per week in the four hotspots. When establishments closed because of COVID-19, crime dropped to 58 crimes per week during the covid shutdown in Massachusetts.

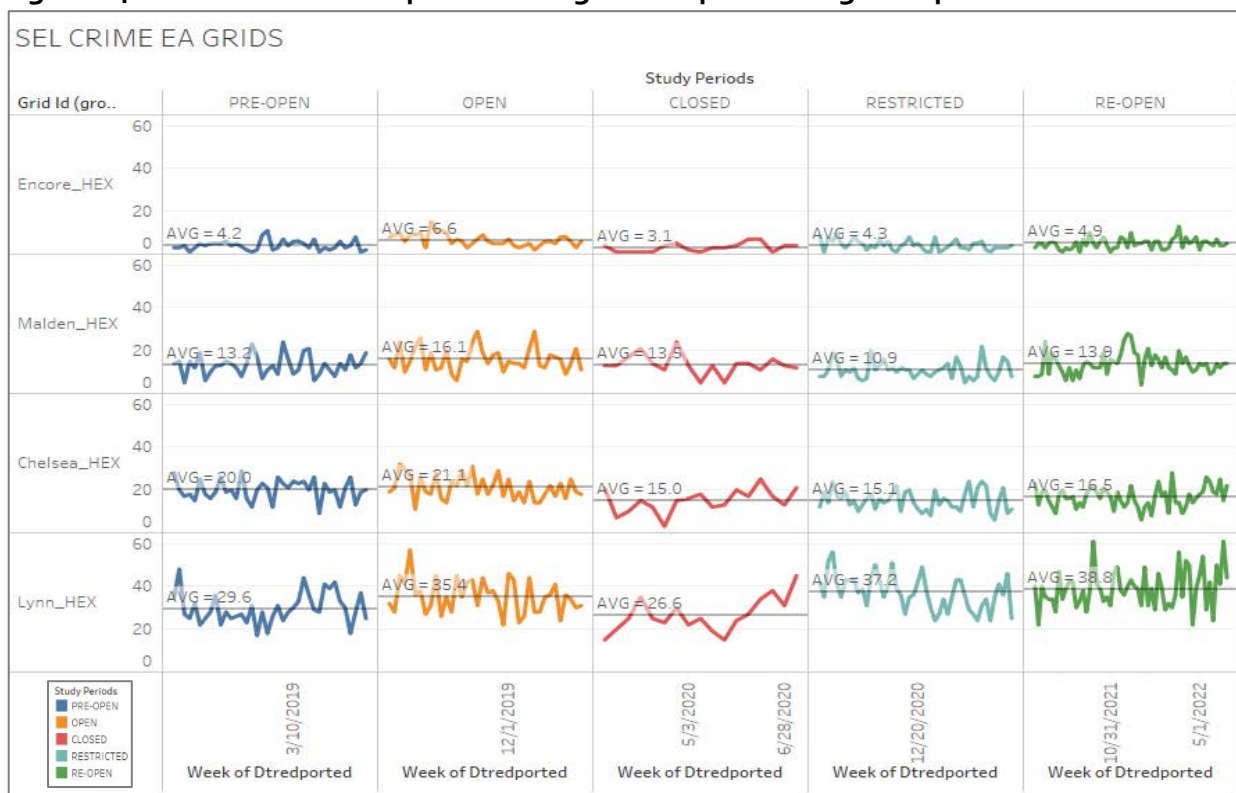
Figure 24.A: All Select Crime in the Hexagon Hotspots



Interesting is the fact that crimes began trending significantly downward well before the closure, suggesting that something other than COVID-19 was amiss. Likewise, during the closing, Figure 24.A shows that crime fluctuated up and down several times but trended up again above the previous period's average of 79 to 58 crimes; again, demonstrating that casino operations are not the primary contributing factor. Crime continues to climb during the restricted operations as one would expect only to drop below the period's average for most of the timeframe. Again, it vacillates up and down throughout the end of the restricted period and remains low through the first 16 weeks of reopening. Crime does level off at 74 crimes per week during the reopening but slightly lower than the 79-crime average of the initial casino open operations.

And like other periods of interest, crime ebbs and flows, peaking and dipping extensively 3 or 4 times. This suggests to us that something other than operating a casino in the region drives crime up and down. Further research needs to be conducted and other contributing factors identified. One contributing factor in need of investigating is seasonality and weather. Another would be to probe other correlations like special events at the casino (e.g., poker tournaments), and in the region, events like NBA Finals, MLB playoffs, and NFL games—and the subsequent weekends associated with them. When these events are combined with gambling opportunities or attractors, does crime subsequently spike? Do certain crimes associated with high rollers bring sex workers and human trafficking to the region? These questions may require a greater qualitative analysis or police surveillance to ascertain legitimate answers, but they are certainly worthy of our attention.

Figure 24.B: Select Crime in Specific Hexagon Hotspots during each period



Crime Category	Pre-Open	Open	Closed	Restricted	Reopen
All -Total HS	66.8	79.0	58.2	67.4	74.1
Encore	4.2	6.6	3.1	4.3	4.9
Malden	13.2	16.1	13.5	10.9	13.9
Chelsea	20.0	21.1	15.0	15.1	16.2
Lynn	29.6	35.4	26.6	37.2	38.8

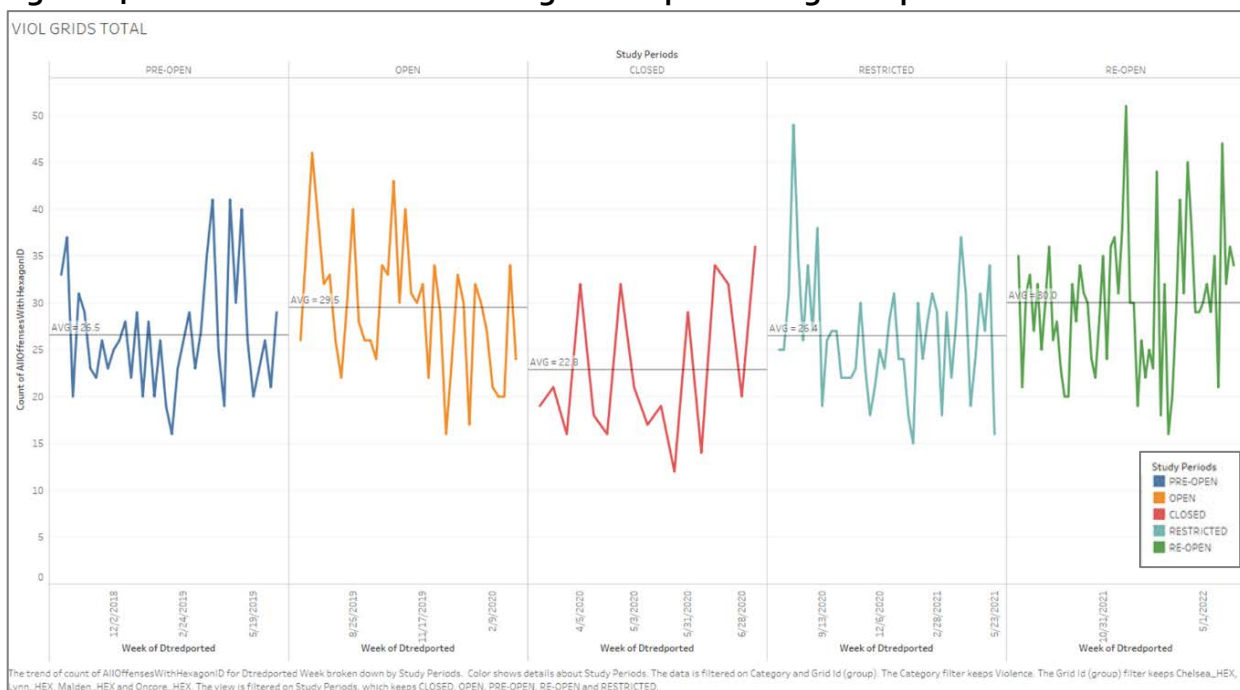
Looking more closely at the four distinct hotspots in Figure 24.B above shines a little light on the crime trends. In the Encore cluster, weekly averages go from 4.2 crimes per week before the casino’s opening to 6.6 during the initial operations; and is cut in half when the casino and other establishments are required to close. Crime climbs by one from 3.1 during the closure to 4.3 during the restricted timeframe and climbs back to 4.9 on average per week but remains lower than the initial operations period; but not much higher than the 4.2 pre-opening period. This suggests to us that crime was certainly impacted by COVID-19, but not exclusively due to the casino per se. The Malden hotspot follows a similar pattern except during the restricted opening period. The Chelsea hotspot did not return to the pre-opening benchmark nor the average of crimes (21.1) during the initial casino opening. This suggests to us that the casino does not directly affect crime in the Chelsea hotspot.

Finally, the Lynn hotspot seems to operate under a completely different set of influencers. Crime, on average, climbed by almost six (6) crimes once the casino opened, dropped nearly ten (10) crimes during the covid closure, only to rebound even higher than previous highwater marks to 37.2 and 38.8 crimes per weeks during the restricted and reopening periods, respectively. Lynn is a significant distance from the casino and does not have direct road networks to the casino, so it would seem unlikely that the post-covid climb in these numbers were directly linked to the casino, additional

evidence that something else is going on regarding crime contributors in the region, other than the direct effect of the casino.

One hypothesis we hold is Crime Pattern Theory (a focus for future research to investigate this premise) claims that activity space within places where offenders and victims live, work, and play drives opportunities for crime, and Lynn simply has a greater density of residents within its boundaries. Social disorganization theory suggests that poverty, single-female head of households and racial heterogeneity contribute to higher crime neighborhoods which might also help explain why crime volume is greater in Lynn than the other jurisdictions. Finally, while the casino may draw certain crime related opportunities, like vehicle crime, it does a relatively good job of providing capable guardians or place managers by using security guards and CCTV cameras that deter other crimes from occurring.

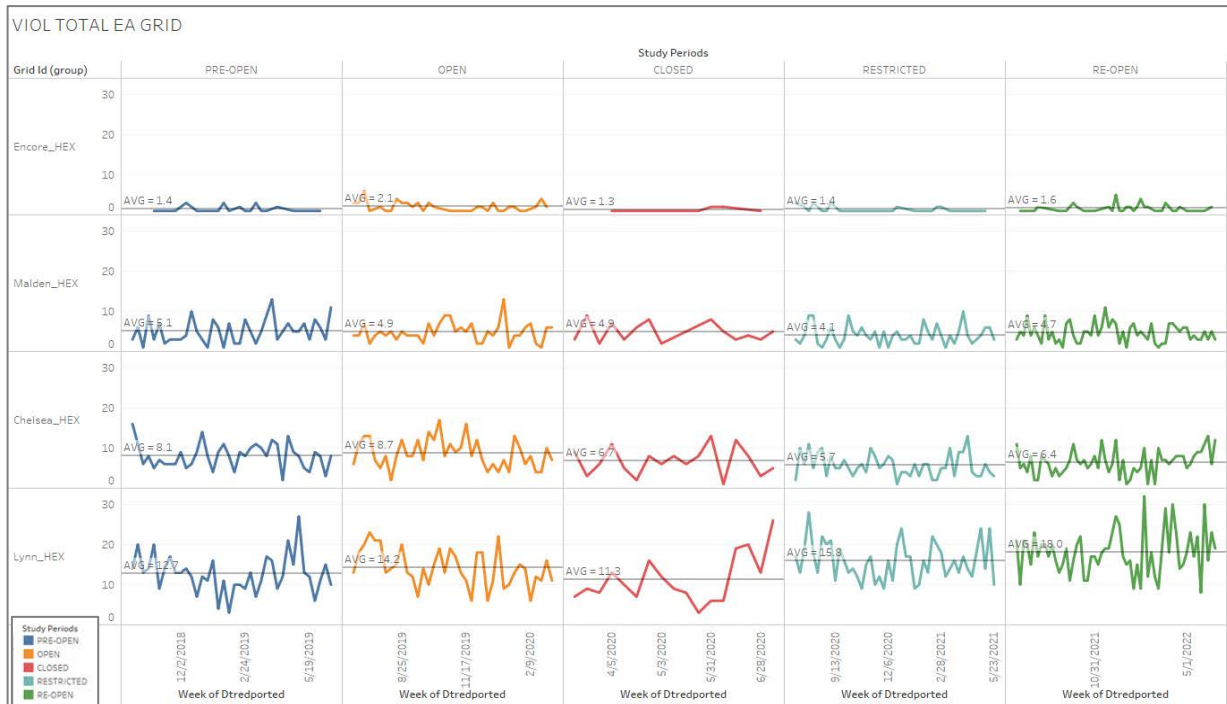
Figure 24.C: Violent Crimes in the Hexagon Hotspots during each period



Crime Category	Pre-Open	Open	Closed	Restricted	Reopen
Violent -Total HS	26.5	29.5	22.8	26.4	30.0
Encore	1.4	2.1	1.3	1.4	1.6
Malden	5.1	4.9	4.9	4.1	4.7
Chelsea	8.1	8.7	6.7	5.7	6.4
Lynn	12.7	14.2	11.3	15.8	18.0

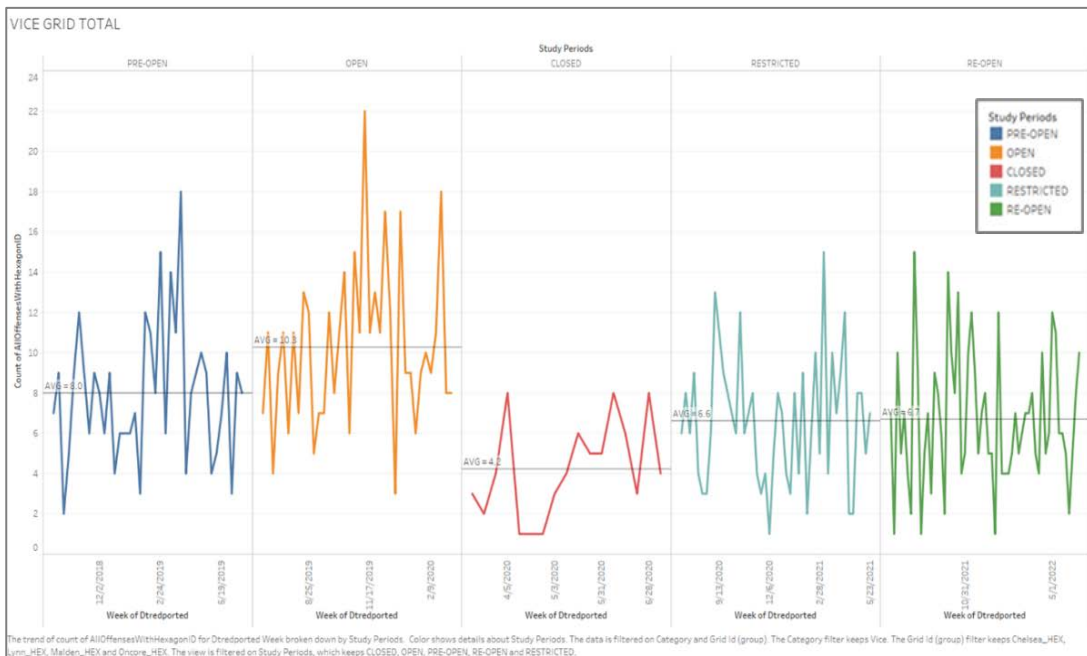
Figure 24.C illustrates that violent crime followed the same patterns as the overall selected crime with the Lynn hotspot contributing the most to the crime picture in the region. Violent crime does appear to return to the same level as when the casino opened as when it reopened, but with crime significantly rising at the end of the closure and into the restricted period and vacillating high and low during the reopening period. Figure 24.D shows how relatively flat violent crime remained across the five distinct periods.

Figure 24.D: Violent Crime in the Hexagon Hotspots during each period



The remaining crime categories graphs only show the combined trends as a graph and the Hexagon Hotspots as a visualization and subsequent table for comparison purposes.

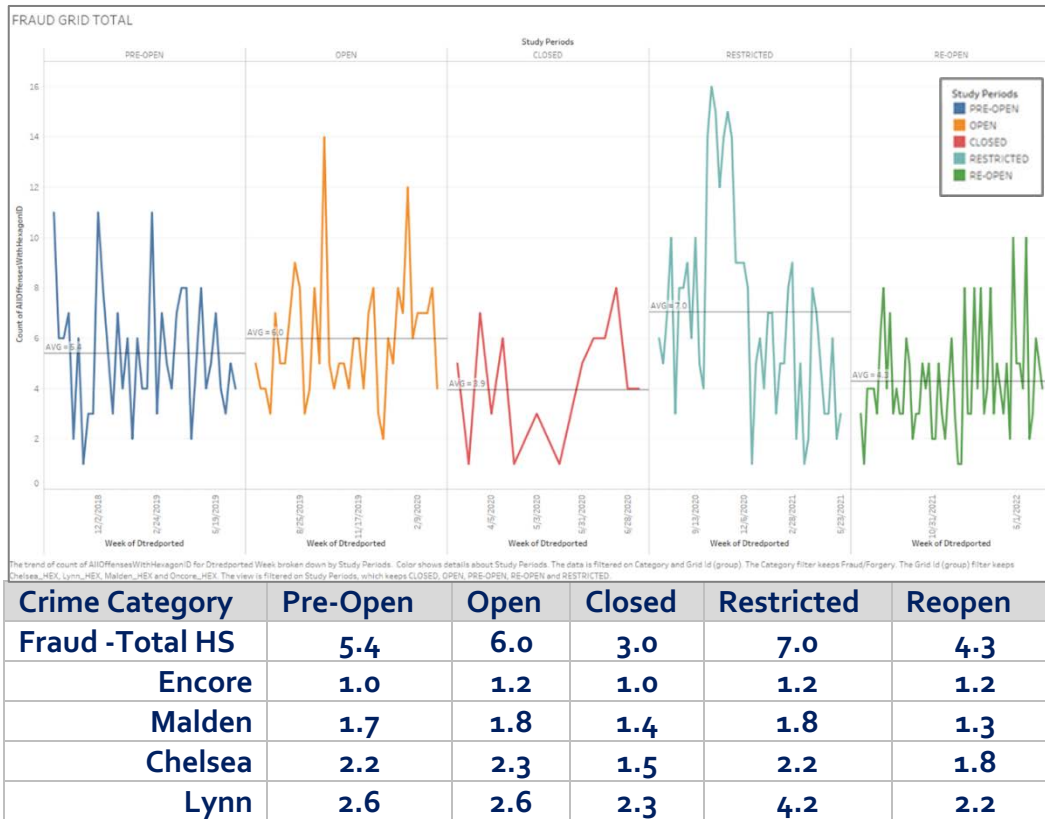
Figure 24.E: Vice in the Hexagon Hotspots during each period



Vice dropped significantly when covid closure went into effect & remained relatively low once it reopened. Lynn accounts for more than half of Vice offenses.

Crime Category	Pre-Open	Open	Closed	Restricted	Reopen
Vice-Total HS	8.0	10.3	4.2	6.6	6.7
Encore	1.5	1.5	1.0	1.6	1.2
Malden	1.4	1.7	1.3	1.2	1.3
Chelsea	4.1	3.9	1.8	2.0	2.4
Lynn	3.3	5.2	2.8	4.8	4.5

Figure 24.F: Fraud Crime in the Hexagon Hotspots during each period



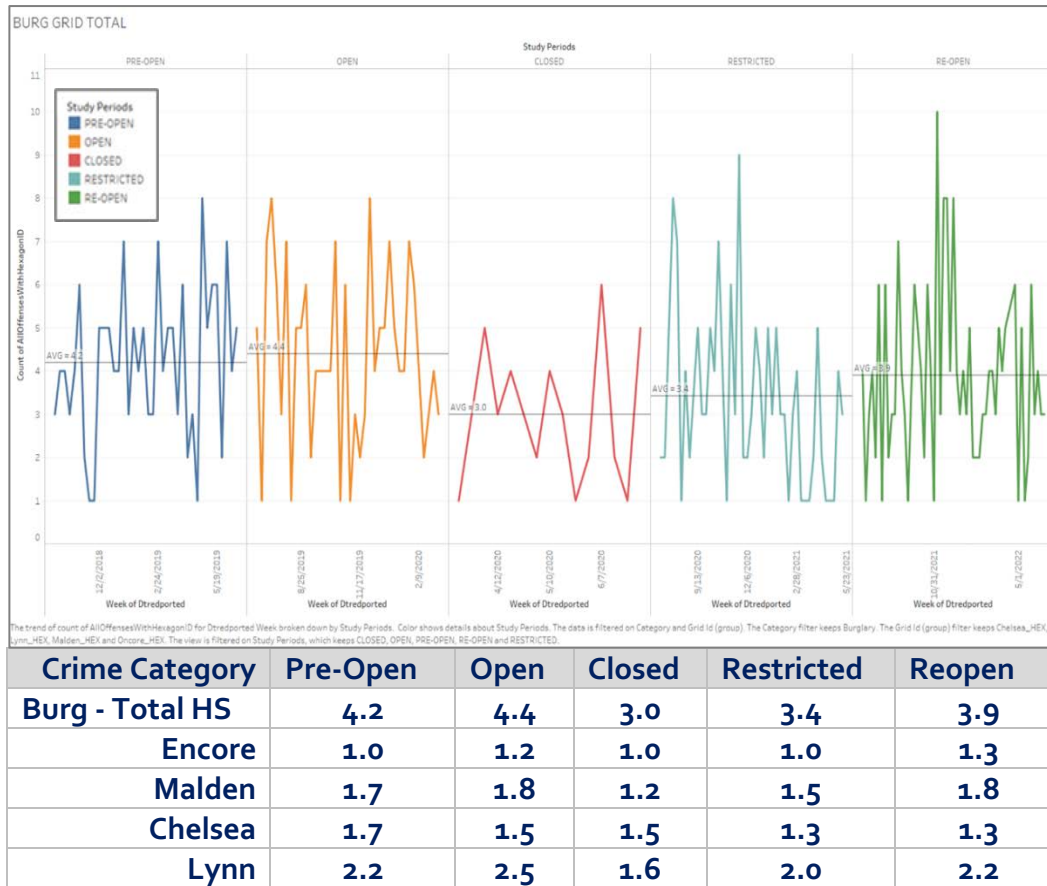
Fraud spiked throughout each period but stayed relatively low since reopening. Lynn’s fraud stayed low in the reopening period after doubling during the restricted period.

Figure 24.G: Vehicle Crime in the Hexagon Hotspots during each period



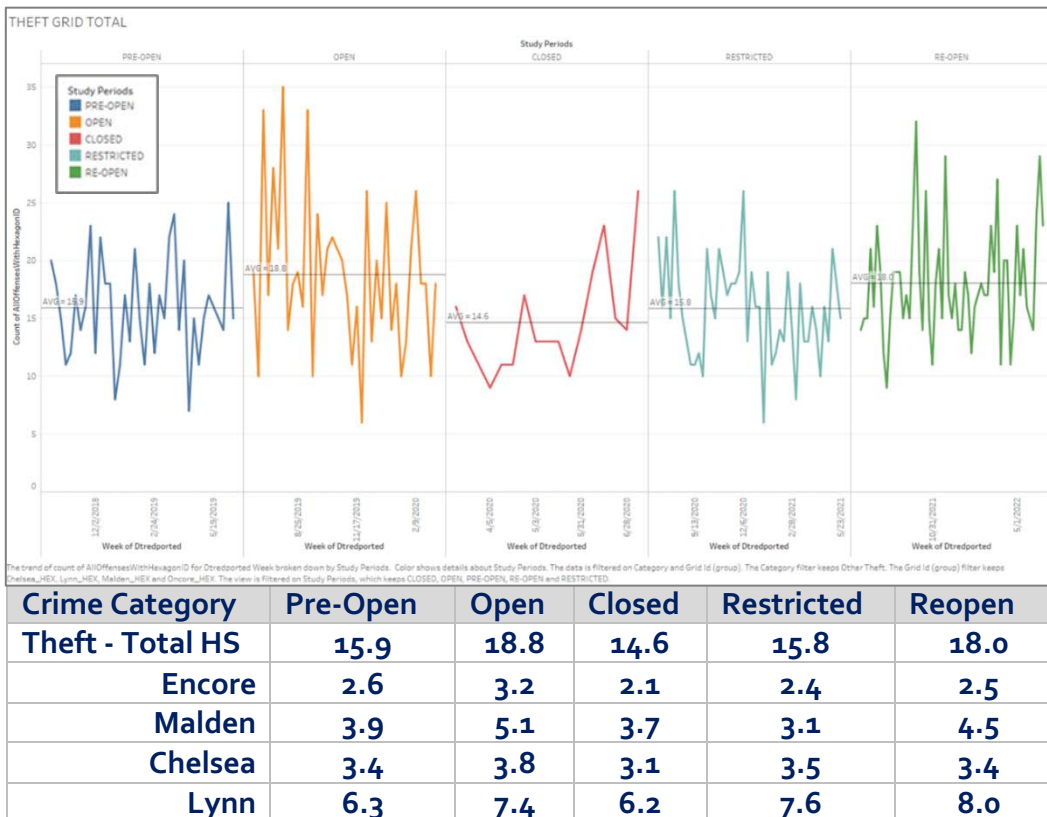
Vehicle crime in the hexagon hotspots was low in each of the areas, climbed during the initial opening and dropped slightly during closure. It remained relatively low during the restricted period but climbed high since reopening.

Figure 24.H: Burglary in the Hexagon Hotspots during each period



Burglary like in the entire region has periods of extreme peaks and valleys. Clearly, burglaries on average went down significantly during the closure and during the restricted operations. Burglaries have not bounced back to levels of pre-opening or open periods.

Figure 24.I: Other Theft Crime in the Hexagon Hotspots during each period

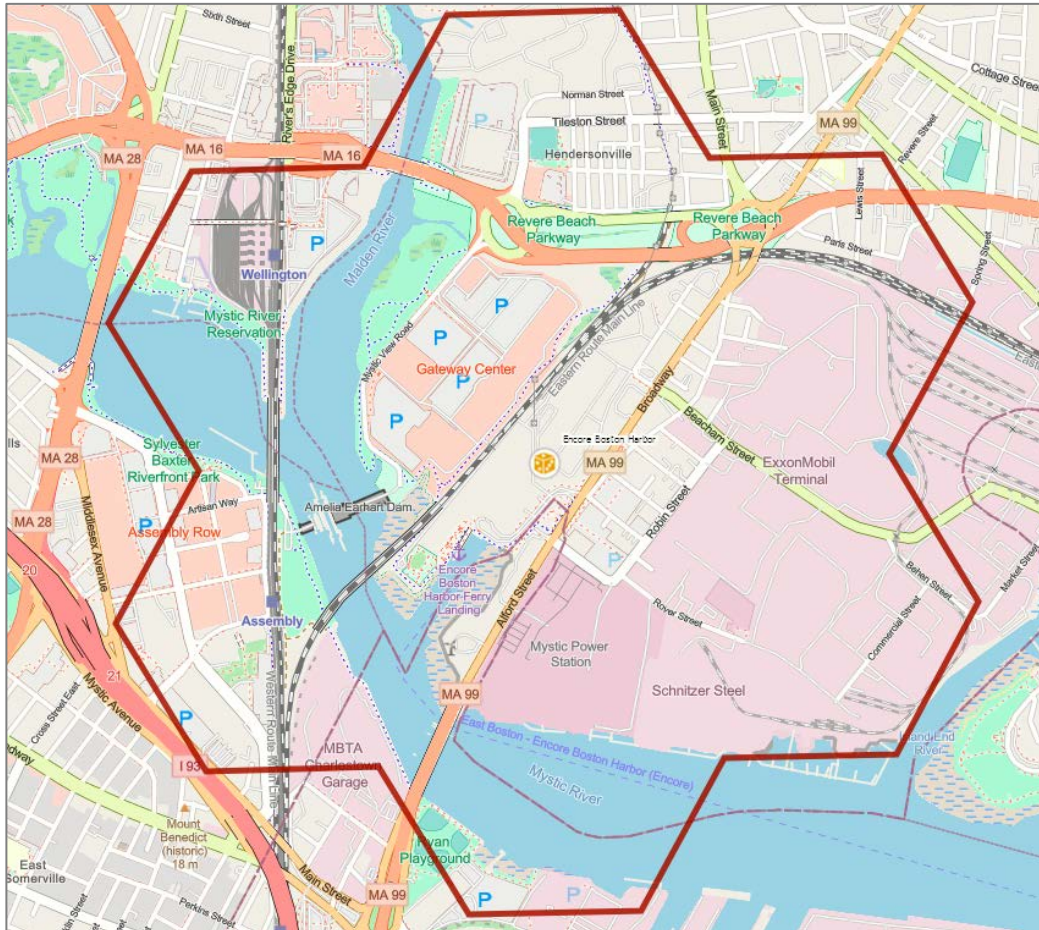


Thefts went up during periods when establishments are open, stayed relatively constant in Encore and Chelsea, & slightly up in Malden and Lynn.

Detailed Hexagon Cluster Summaries

This section of the report compares the four equally sized geographic areas among the participating communities. We study the effects of both the casino opening and the COVID-19 related openings and closures.

Hexagon Cluster-1: Encore Boston Harbor and Surrounding Neighborhoods



This Hexagon Cluster-1 includes the casino and the immediate adjacent areas: Broadway, a mixed industrial/residential area to the east, the Gateway Center shopping center to the west, Revere Beach Parkway (Route 16) between Sweetser Circle and Santilli Circle, and immediately adjacent residential areas north of Route 16. It was meant to include Assembly Square in Somerville as well, but we did not receive data from the Somerville PD in time for this report. Including Assembly Square in the immediate area will become more important after the pedestrian bridge across the Mystic River is completed; construction is currently slated to start in 2024.

Table 14.A: Crimes in this Area: Weekly Averages by Major Category

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Burglary	0.15	0.16	0.06	0.17	0.23	7%	-63%	183%	35%	30%	53%
Disorder	0.76	0.53	0.41	0.74	0.66	-30%	-23%	80%	-11%	20%	-13%
Fraud	0.33	0.47	0.18	0.2	0.29	42%	-62%	11%	45%	-62%	-12%
Theft	4.66	5.29	3.06	4.02	4.27	14%	-42%	31%	6%	-24%	-8%
Vehicle	2.16	2.08	1.76	1.74	2.14	-4%	-15%	-1%	23%	3%	-1%
Vice	0.42	0.47	0.41	0.54	0.64	12%	-13%	32%	19%	27%	52%
Violence	0.38	0.39	0.12	0.17	0.23	3%	-69%	42%	35%	-70%	-39%

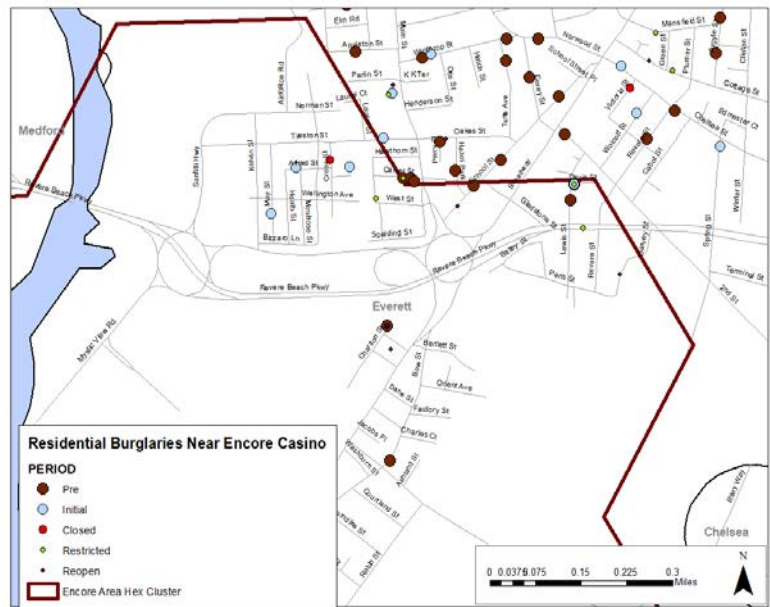
Table 14.A shows that most crime categories in this area share the same trend. During Encore’s initial opening, they remained unchanged or showed a slight increase. They decreased extensively during the period of full closure, then rebounded during the restricted reopening and full reopening, but they generally did not rebound enough to exceed their original volumes. The exceptions to this trend are found in burglary and vice.

Overall **burglaries** increased significantly in this area during this period, particularly in the period after full covid closure. To understand this phenomenon, we break the crime down into commercial and residential burglaries:

Table 14.B: Burglaries in this Area: Weekly Averages by Burglary Type

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Comm.	0.11	0.03	0	0.07	0.11	-73%	-100%	NC	57%	73%	0%
Resid.	0.05	0.13	0.06	0.09	0.12	160%	-54%	50%	33%	-8%	140%

Here, we see that the increase in this crime is predominantly in the residential category. During the period of initial Encore opening, a 160% increase in residential burglary was balanced by a 73% decrease in commercial burglary. Both fell during the period of closure (commercial burglaries disappearing entirely); both came back to life during the reopening periods, but commercial burglary never exceeded its original average while residential burglary ended the “reopening” at the same heightened level that it exhibited during the initial opening period.



The numbers in Table 14.B and 10.C are extremely small. Even the most voluminous period had only seven total burglaries. Nonetheless, spatial analysis shows a clear geographic cluster of incidents during the initial opening period in the neighborhood north of Revere Beach Parkway between the two circles (the pattern spills across the boundary of the hexagon cluster). This area had half a dozen residential burglaries in the eight months after the initial opening of the casino and, including a couple of incidents just south of Revere Beach Parkway, eleven incidents during the period of restricted and full reopening. (Some locations were victimized more than once, so the map may appear to show fewer overall crimes.) One apartment building on Charlton Street was hit four times during the post-covid closure period.

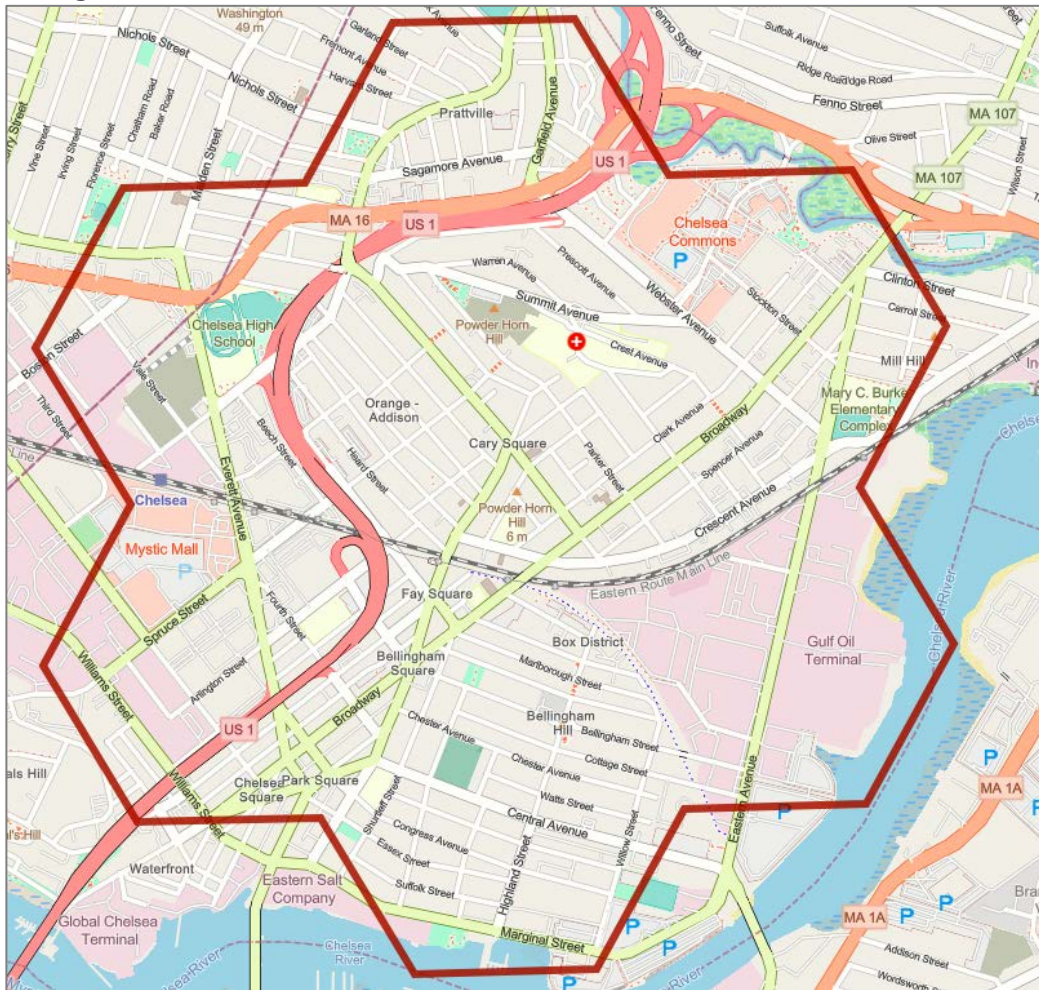
Table 14.C: Vice in this Area: Weekly Averages by Crime Type

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Drugs	0.08	0.03	0	0.02	0.02	-63%	-100%	NC	0%	-50%	-75%
Drug Eq.	0.15	0.08	0	0.13	0.05	-47%	-100%	NC	-62%	-60%	-67%
OUI	0.09	0.24	0.06	0.02	0.11	167%	-75%	-67%	450%	-118%	22%
Porn.	0.01	0.03	0.06	0	0.02	200%	100%	-100%	NC	-50%	100%
Weapon	0.06	0.03	0	0	0.04	-50%	-100%	NC	NC	25%	-33%

The increase in the “vice” category is almost entirely in the sub-category of drunk driving (OUI). During the initial eight months after Encore’s opening, Everett saw an increase in OUI-related crashes on Broadway, and the State Police reported a similar increase on Route 16. Drunk driving is analyzed later in the report.

The pornography “increase” is a matter of small numbers driving large percentage changes. There was one incident in each of the five time periods. Data is insufficient to suggest any casino relationship.

Hexagon Cluster-2: Chelsea



Hexagon Cluster-2 includes most of Chelsea, the smallest city in the state. The comparison area is centered on Broadway at Crescent Avenue and includes almost all the city, except Admiral's Hill to the southwest and a portion of Prattville to the north. It includes the Mystic Mall shopping center and the cluster of hotels off Everett Avenue that likely saw increased occupancy from the casino.

Table 15.A: Crimes in the Chelsea Area: Weekly Averages by Major Category

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Burglary	2.69	2.58	3.47	2.09	2.23	-4%	34%	-40%	7%	-16%	-17%
Disorder	12.1	11.13	9.88	12.74	9.93	-8%	-11%	29%	-22%	-12%	-18%
Fraud	4.71	4.08	2.53	4.5	3.71	-13%	-38%	78%	-18%	-10%	-21%
Theft	9.82	8.32	6.65	8.2	8.02	-15%	-20%	23%	-2%	-4%	-18%
Vehicle	4.77	4.74	5.35	6.7	6.57	-1%	13%	25%	-2%	28%	38%
Vice	9.41	8.68	3.41	3.04	4.98	-8%	-61%	-11%	64%	-74%	-47%
Violence	43.14	40.55	29.24	23.13	26.82	-6%	-28%	-21%	16%	-51%	-38%

This area of Chelsea saw almost universal decreases across the entire period. The area barely seemed to respond to the initial opening of Encore. During the covid closure period, burglaries and vehicle crimes bucked the trends seen in other areas and increased. While burglaries subsequently decreased in the post-closure period, vehicle crimes have continued going up. By the end of June 2022, vehicle crimes were 38% higher than the pre-Encore period and 28% higher than Encore's initial eight months.

Burglary's odd behavior during the covid closure period is worth a closer look. The mystery deepens if we consider the type of burglary. COVID-19 caused more people to stay home during the day, which tended to reduce residential burglaries, but in the case of this area of Chelsea, all the burglary increase during the closure period can be attributed to residential burglaries. The increase was centered on the morning hours (08:00–12:00). Spatial analysis shows that the incidents occurred in the neighborhoods most prone to burglary pre-Encore, just at slightly higher volumes. In any event, the increase did not sustain into the restricted opening and full-reopening periods.

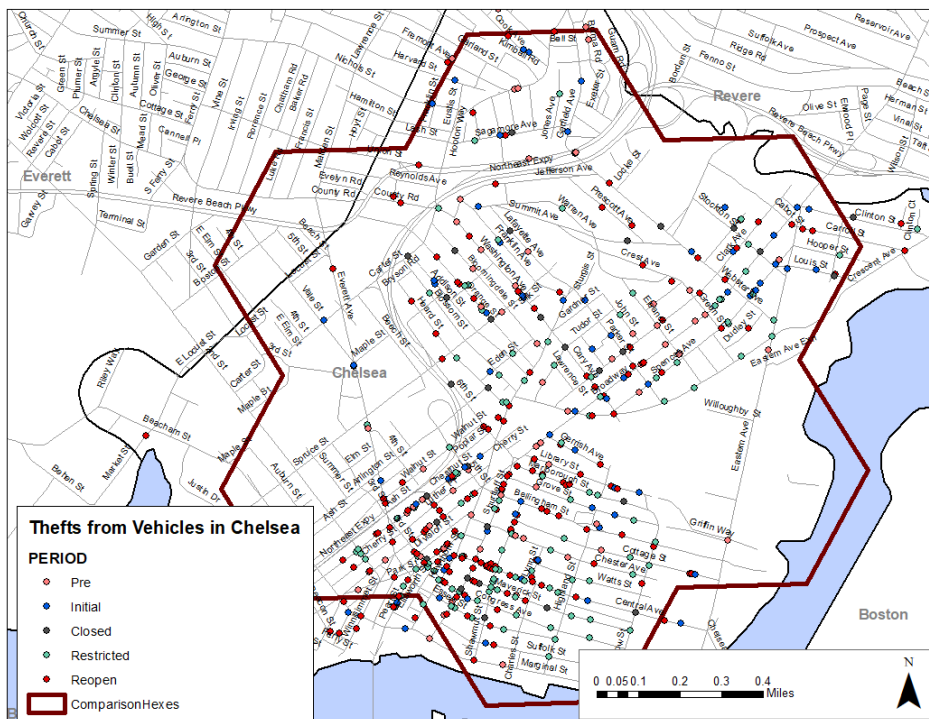
Table 15.B: Burglaries in the Chelsea Area: Weekly Averages by Burglary Type

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Comm.	0.82	0.87	0.82	0.59	0.8	6%	-6%	-28%	36%	-9%	-2%
Resid.	1.88	1.71	2.59	1.5	1.43	-9%	51%	-42%	-5%	-20%	-24%

Vehicle crimes, on the other hand, saw relatively steady growth irrespective of COVID-19. Looking at the individual crimes that make up the category, it appears that auto theft increased during the period of total closure but decreased afterwards. Auto parts thefts had some wild swings but very low numbers. Thefts from vehicles had a slight drop during the closure period but otherwise increased throughout all the periods, finishing the period of reopening 86% higher than the pre-Encore period.

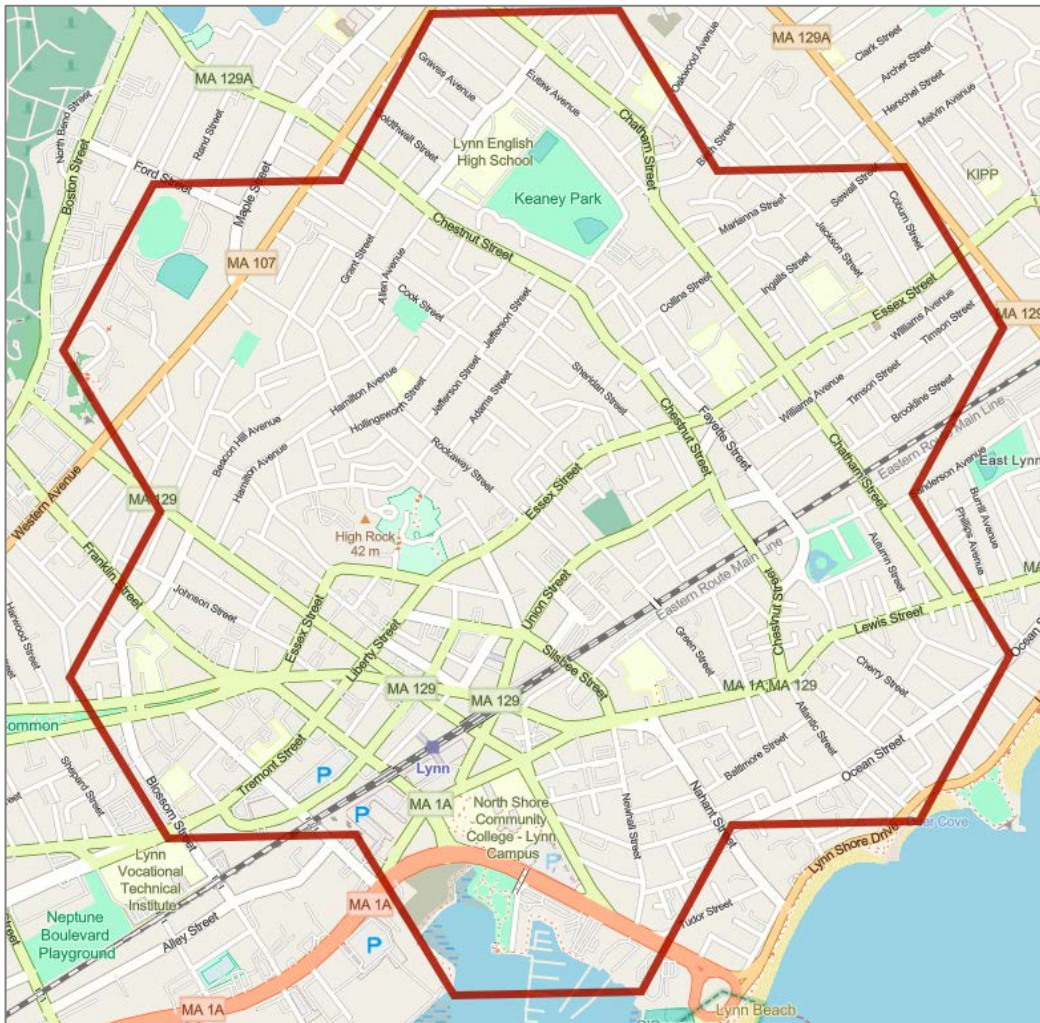
Table 15.C: Vehicle Crimes in Chelsea Area: Weekly Averages by Crime Type

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Auto	1.82	1.47	2.47	2.24	1.48	-19%	68%	-9%	-34%	1%	-19%
From	2.38	3.21	2.88	4.37	4.43	35%	-10%	52%	1%	28%	86%
Parts	0.57	0.05	0	0.09	0.66	-91%	-100%	NC	633%	92%	16%



Chelsea's **Thefts from Vehicle** spatial analysis shows that the increase is happening within areas already affected by thefts from vehicles in the past, particularly Chelsea Square and points east.

Hexagon Cluster-3: Downtown Lynn



The Hexagon Cluster-3 is centered on Essex Street and includes much of the eastern part of the city, including Central Square, High Rock Park, the eastern part of Lynn Commons, and densely packed commercial and residential areas along Essex Street, Broad Street, Washington Street, and Chestnut Street.

Table 16.A: Selected Crimes in the Downtown Lynn Area: Weekly Averages by Major Category

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Burglary	4.05	4.05	2	3.63	3.75	0%	-51%	82%	3%	-8%	-7%
Disorder	13.97	14	10.41	11.85	11.93	0%	-26%	14%	1%	-17%	-15%
Fraud	3.23	3.79	2.12	4.46	2.89	17%	-44%	110%	-35%	-31%	-11%
Theft	11.52	12.21	7.24	10.37	12.52	6%	-41%	43%	21%	2%	9%
Vehicle	5.03	5.37	3.47	4.2	6.12	7%	-35%	21%	46%	12%	22%
Vice	5.65	7.47	5.18	6.74	5.8	32%	-31%	30%	-14%	-29%	3%
Violence	29.79	31.39	26.24	34.61	39.89	5%	-16%	32%	15%	21%	34%

During the eight months after the initial opening of Encore Boston Harbor, most of Lynn's crime categories remained on par with the norm. Burglary showed no reaction to Encore, was quashed by covid closures, and rebounded during reopening, but at levels consistent with the pre-Encore period. This narrative describes most other crime types as well, but with some variants:

- **Vehicle crime** remained a bit higher than usual during the post-covid rebound. The increase is found in all types (auto theft, thefts from vehicles, and theft of vehicle parts); timewise, the largest portion of the increase is seen from 04:00–08:00, particularly on Tuesdays and Wednesdays.
- The **vice** category showed a large initial increase (during the eight months post-Encore), driven primarily by prostitution and weapons violations, both analyzed in a previous report. The increase did not sustain in the reopening period.
- **Violent crime** showed a substantial increase in the full reopening period. The table below shows the largest increases in simple and aggravated assaults and threatening. The increase is confined to residences, which increased 72% between the pre-Encore period and the full reopening period, suggesting an increase in domestic violence.

Table 16.B: Violent Crimes in Downtown Lynn Area: Weekly Averages by Crime Type

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Agg.	7.87	8.11	9.06	9.26	10	3%	12%	2%	8%	23%	27%
Kidnap.	0.33	0.18		0.54	0.32	-45%	-100%	NC	-41%	78%	-3%
Murder	0.23	0.26	0.47	0.13	0.07	13%	81%	-72%	-46%	-73%	-70%
Robbery	3.01	2.11	1	1.28	1.96	-30%	-53%	28%	53%	-7%	-35%
Sexual	1.81	1.45	0.82	1.72	2.18	-20%	-43%	110%	27%	50%	20%
Simple	14.39	17.16	13.29	19.2	22.64	19%	-23%	44%	18%	32%	57%
Threats	2.15	2.13	1.59	2.48	2.71	-1%	-25%	56%	9%	27%	26%

Hexagon Cluster-4: Malden Square



Centered on Route 60 at Malden Square, the Hexagon Cluster-4 area reaches almost to the northern, western, and southern borders of the City of Malden. It includes a dense cluster of restaurants and businesses around Malden Square and Center Street, and adjacent residential areas on the fringes.

Table 17.A: Crimes in Malden Area: Weekly Averages by Major Category

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Burglary	1.43	1.97	0.88	1.48	1.45	38%	-55%	68%	-2%	-36%	1%
Disorder	4.84	4.63	3.00	3.35	3.43	-4%	-35%	12%	2%	-35%	-29%
Fraud	1.59	1.26	1.29	1.52	0.98	-21%	2%	18%	-36%	-29%	-38%
Theft	5.62	7.42	5.24	3.7	5.71	32%	-29%	-29%	54%	-30%	2%
Vehicle	2.18	4.13	5.47	2.11	3.64	89%	32%	-61%	73%	-13%	67%
Vice	0.86	0.61	0.41	0.46	0.41	-29%	-33%	12%	-11%	-49%	-52%
Violence	10.73	9.63	8.35	8.13	9.05	-10%	-13%	-3%	11%	-6%	-16%

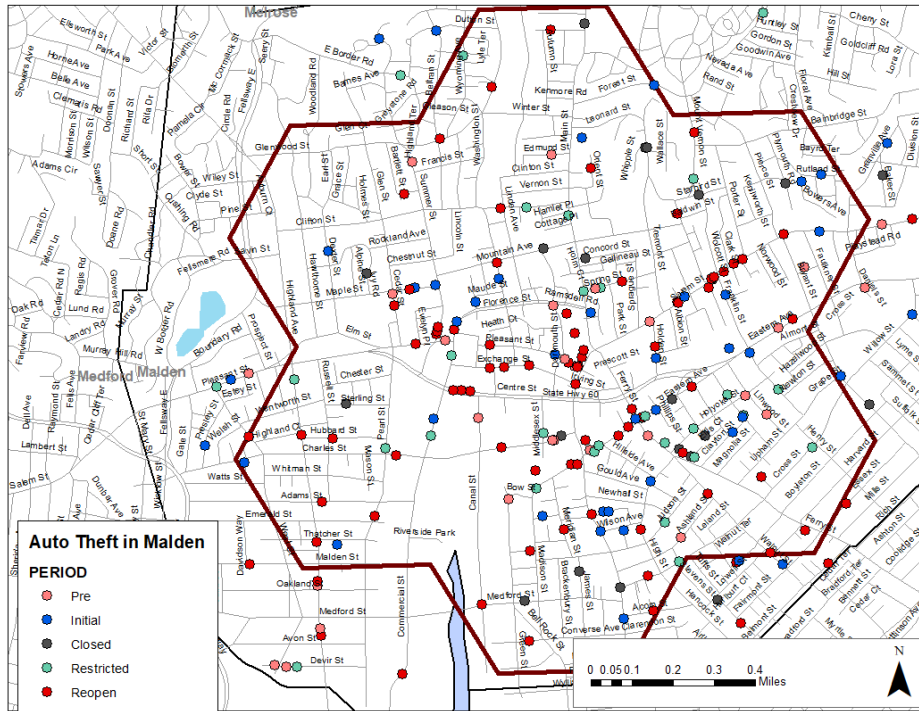
Burglaries, particularly residential burglaries, showed an increase during the initial eight months, but unlike their counterparts in Chelsea, they were quashed by the covid closures and ended the period roughly equal to their pre-Encore values.

The sustained increase in vehicle crime increase is seen in all types. Auto parts thefts started with very small numbers: the agency went from almost never reporting the crime to reporting 7 within the reopening period. Thefts from vehicles showed a large increase during Encore's first eight months

but leveled out after that. Auto theft, on the other hand, nearly doubled its weekly average between the pre-Encore period and the first eight months, continued to increase during the covid closure period, and increased even more during the reopening period, ending at nearly 1.5 times its pre-Encore total.

Table 17.B: Vehicle Crimes in the Malden Area: Weekly Averages by Crime Type

Category	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Auto	0.81	1.47	1.82	0.89	1.96	81%	24%	-51%	120%	33%	142%
From	1.37	2.63	3.59	1.13	1.55	92%	37%	-69%	37%	-41%	13%
Parts	0.01	0.03	0.06	0.09	0.12	200%	100%	50%	33%	300%	1100%



Spatial analysis shows clusters of new auto thefts along Salem Street, Eastern Avenue, Malden Center, Summer Street, Pleasant Street, and Route 60. Some of these clusters almost certainly represent patterns or series of theft, but without access to more data, it's hard to say exactly what's happening in the area. Auto theft patterns are often based around the need for short-term transportation. There is a potential logical connection with the casino here; for instance, patrons arriving

on a bus and deciding to take a more convenient route home. Encore provides free shuttle service to Malden Center. Data on recovery locations plus data from the Medford Police Department (where Wellington station is also serviced by a free Encore bus) would help illuminate this pattern further.

This hypothesis is based on previous spatial patterns and offender behavior known to the police but requires further inquiry into these specific incidents by local authorities by monitoring where these vehicles are recovered and by whom.

Drunk driving analysis

Encore has several policies and practices in place to prevent patrons from becoming intoxicated and particularly from driving away while intoxicated. However, the size of the facility, the number of entrances and exits, and the difficulty in fully monitoring any individual’s drinking activity makes it difficult to prevent some intoxicated patrons from leaving and getting into a vehicle. This report examines the possible relationship of the casino with drunk driving in the region.

There are several available indicators that we can study to determine whether Encore has led to an increase in drunk driving in the region, some better than others. Each available dataset is reviewed below.

Drunk driving arrests by jurisdiction

Everett, Chelsea, Lynn, and the region experienced a 24% increase in average weekly OUI arrests and summonses in the period immediately after Encore opened. Malden and Melrose, which were low in the first place, saw no increase. Saugus experienced a decrease.

During the closure period, all agencies except Chelsea experienced a sharp decline in OUI charges, as most outlets serving alcohol were closed. This was followed by an increase during the period of limited reopening, and a further increase during the period of full reopening. There were individual agency exceptions, but overall, the trend followed the pattern one would expect given the reductions in driving and alcohol sales during COVID-19.

Table 18.A: Arrests and summonses for drunk driving, Weekly Averages

City/Town	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Everett	0.84	1.37	0.53	0.41	0.65	+63%	-61%	-23%	+59%	-53%	-23%
Chelsea	0.60	0.97	1.06	0.50	1.11	+62%	+9%	-53%	+122%	+14%	+85%
Lynn	2.02	2.58	1.06	2.28	3.17	+28%	-59%	+115%	+39%	+23%	+57%
Malden	0.21	0.21	0.06	0.13	0.13	0%	-71%	+117%	0%	-38%	-38%
Melrose	0.13	0.13	0	0.13	0.13	0%	-100%	NC	0%	0%	0%
Saugus	0.97	0.69	0.35	0.53	0.51	-29%	-49%	+51%	-4%	-26%	-47%
All	4.79	5.95	3.06	3.98	5.69	+24%	-49%	+30%	+43%	-4%	+19%

Overall, OUI arrests and summonses in the area increased from a pre-Encore average of 4.79 per week to an average of 5.95 per week during Encore’s first full opening and an average of 5.69 per week. These figures are consistent with the findings in previous reports of a modest increase in drunk driving in the state following the introduction of the casinos, or at least heightened police enforcement of drunk driving.

Crashes that involve an arrest or summons for drunk driving

A better set of statistics involves merging the original call-for-service with the offense dataset to find offenses of drunk driving that originated as calls-for-service for traffic collisions. This should capture most of the relevant incidents, missing only cases where the determination of drunk driving happened well after the original call, or when the original call for some reason was not coded as a collision.

Table 18.B: Traffic collision with a later offense for drunk driving, weekly averages

City/ Town	Pre	Open	Closed	Restrict	Reopen	Pre to Open	Open to Close	Close to Restr.	Rest. to Reopen	Open to Reopen	Pre to Reopen
Everett	0.16	0.50	0.06	0.22	0.25	+213%	-88%	+267%	+14%	-50%	+56%
Chelsea	0.45	0.50	0.41	0.30	0.63	+11%	-18%	-27%	+110%	+26%	+40%
Lynn	1.16	1.16	0.65	1.22	1.43	0%	-44%	+88%	+17%	+23%	+23%
Malden	0.21	0.13	0.06	0.09	0.09	-38%	-54%	+50%	0%	-31%	-57%
Melrose	0.05	0.05	0.00	0.09	0.04	0%	-100%	NC	-56%	-20%	-20%
Saugus	0.34	0.24	0.00	0.26	0.20	-29%	-100%	NC	-23%	-17%	-41%
All	2.37	2.58	1.18	2.17	2.65	+9%	-54%	+84%	+22%	+3%	+12%

The increase in collisions caused by drug driving is smaller than the increase in drug driving arrests. Everett and Chelsea are the only agencies to show sustained increases during both periods in which the casino was fully open, and Chelsea’s initial increase was small.

In previous reports, we observed a spatial pattern on Broadway—the avenue that includes Encore Boston Harbor. In the year ending 30 June 2020, eight of the 18 drunk driving crashes reported in Everett occurred on Broadway. However, this trend disappeared in subsequent years, with only a single incident reported on Broadway in the years ending 2021 and 2022.

“Last Drink” Locations from adjudication

Massachusetts General Law Chapter 90, Section 24J requires courts to collect from individuals adjudicated guilty (whether by trial or plea) of OUI, “whether he was served alcohol prior to his violation of said section at an establishment licensed to serve alcohol on the premises and the name and location of said establishment.” Court clerks send such “last drink” reports to the Alcohol Beverage Control Commission (ABCC).

These reports have long been used to prioritize certain bars for additional training and enforcement. They provide direct evidence of at least some influence of certain facilities on drunk driving.

Upon request, the ABCC provided spreadsheets for “last drink” adjudications from January 2016 to June 2022. The data includes 9,551 adjudication records, but only about 7,960 offer an identifiable location, and of those, 1,243 list private residences, leaving around 6,717 identifiable licensed locations.

As last drink data is collected only from those who plead guilty or are found guilty at trial, the records represent only about 15-17% of the 50,000–60,000 people charged with OUI in Massachusetts during the coverage period. These, in turn, represent only a small percentage of the actual number of impaired drivers on the road during this period. All three casinos appear within the “Last Drink” data.

Table 18.C: “Last Drink” reports from each casino, year ending 30 June¹²

Casino	2016	2017	2018	2019	2020	2021	2022
Plainridge Park	1	7	6	3	4	1	2
MGM Springfield				11	10	4	2
Encore Boston Harbor					14	5	5

Overall, Encore was reported as the place of last drink for 24 drunk drivers since its opening in 2019. The initial year is so far the highest, with 14 drivers during a year that included four months of complete casino closure. Although 2021 and 2022 had lower numbers, it is likely that many cases with offense dates in those years have not yet been adjudicated.

¹² Based on date of offense

Conclusions and Future Direction

The aim of this report was multifaceted. It provides researchers an opportunity to become familiar with the data and the geography. It provides a drill down on crime around Encore Boston Harbor beginning with an analysis of the entire region that included five (5) jurisdictions near EBH. The analysis examined crime over five distinct periods: (1) pre casino opening, (2) initial casino opening, (3) during covid full closure, (4) during restrictive reopening post closure, and (5) fully reopening the casino. The analysis drilled down into various areas, (1) region, (2) city-by-city and (3) in four spatially defined hexagon hotspots across the region.

This temporal analysis of crime before, during and after COVID-19 suggests that crime vacillates despite covid closures or the opening and reopening of establishments, including the casino. As such, the data demonstrates that other social, economic, or psychological factors are at play. The weekly time series analysis shows that crime went up and down at various times regardless of the casino being open, and regardless of the COVID-19 closures of all community venues. Motivated offenders appear to have found ways to offend despite COVID-19. Since crime climbed in the region across different geographical areas while establishments were closed due to COVID-19, it is evidence that something other than the casino is the contributing factor. Since crime went up while the casino was closed, its operation simply could not be the causal factor. It does appear, as a preliminary finding, that crime increased about 3% after both the initial opening and the reopening of the casino, but it also hit record highs and lows, and varied throughout different areas of the region, suggesting that crime varies temporally and spatially as offenders leverage different opportunities.

Lynn, as a community, at a relative distance from the casino and without direct transportation routes to it, has experienced substantive increase in crime over this timeframe. As other research has suggested, crime may be related to the stress of COVID-19, civil and political unrest and more recently, a poor economy or inflation.

The research team accomplished the objectives of this study and is now in a better position to study crime in and around the casino and use can use different spatial and temporal techniques to study crime and disorder in the future. While other research found that certain crime categories went down during COVID-19, our findings that it began to climb before reopening suggests that crime is a complex and complicated phenomenon. It does suggest to us that motivated offenders will find other means and targets when strain or opportunities present themselves. More research is needed that focuses on offending, victimology, and hotspots.

Benchmarks have been established for which to compare crime in the future using new and innovative research methods to study crime. They include learning and applying Poisson regression, Seasonal-Trend decomposition procedure based on Loess (STL), spatial point pattern test (SPPT), and other time series and trend analysis techniques in the future. Risk Terrain Modelling appears to be a promising technique to conduct micro-analysis of hexagon hotspots towards identifying crime drivers or contributors that will help agencies better understand risk and protective factors found within their communities. Future research goals remain the same:

- An expansive analysis of trends by working with the agencies to look at the full reports, including narratives.

- An analysis of changes in the Encore Boston Harbor area compared to control areas and the rest of the state. This will become possible when a full set of statewide NIBRS data is available.
- A comparative analysis of traffic collisions in the Everett area versus control areas. This probably will not be possible until a public statewide crash dataset is available.
- A comparison of Encore Boston Harbor with other casinos, normalized by the number of annual visitors each facility receives. We will commit to identifying casinos who will share their data so we can compare them on a national basis.

The Massachusetts Gaming Commission has received several questions from partners and stakeholders concerning the possible growth of human trafficking, particularly sex trafficking in the area. Police statistics are a poor measure of “hidden” crimes like human trafficking, and thus we must look to more creative ways to blend information and intelligence from a variety of sources. To this end, the MGC will be commissioning a meeting of experts to discuss the issue, and to hopefully create an analytical process that will allow us to report better on this potential phenomenon in future reports.

This research report lends itself to critically thinking about crime in its temporal and spatial context, which it turns provides actionable intelligence for agencies interested in developing robust solutions to their crime problems. Crime Prevention By Environmental Design (CPTED), Opportunity Theory and Focused Deterrence are just a few examples of best practice coming out of the contemporary police literature and from police organizations like the Police Foundation and the International Association of Chiefs of Police. The International Association of Crime Analysts are dedicated to improving crime analysis techniques and best practice.

As offenders continue to look for opportunities whenever and wherever they can, know that motivated offenders are resourceful offenders, they study victims and targets, and possess ingenuity, no different than other entrepreneurs. Police officers act as guardians and warriors, when necessary, to prevent and mitigate crime in our communities. The Massachusetts Gaming Commission (e.g., including reports they fund) and the applied researcher role is to equip them with the information they need to do so.

Utilizing the Crime Triangle, the police can choose to leverage enforcement and crime prevention strategies in their effort to provide public safety. Security guards, CCTV cameras, and crime prevention designs like lighting, alarms, locks, Uber drivers, and self-driving cars offer innovative approaches to preventing crime as well. These crime prevention tools help keep us safe and provide American citizens and our visitors the chance to pursue our right to life, liberty, and the pursuit of happiness. This report hopeful helps point us towards an ongoing commitment to problem solving (POP) and evidence-based practices (ILP) - contemporary models that local police can elect to pursue.

Today we have a little better understanding about how crime behaves; in fact, how criminals behave and how, leaning on the crime triangle, how victims behave. We have laid the groundwork for better understanding the third element of the crime triangle, time/place as we create a knowledge base around crime—casinos more specifically. Understanding crime in relationship to population density and the risks that urban living presents is our future goal.

Below is a brief discussion of the role daytime and event population, and a promising new approach to better understand crime within its geographic context. Risk Terrain Modeling offers the police and researchers, alike, a mechanism to put crime under the social microscope.

Daytime population – Special Events Attendance

We also want to look at better methods of normalizing the data. Crime rates historically use residential population or census data, but urban areas and locations that have special events or larger employers (referred to as daytime population and special event populations) might be more robust or at least offer other proxies for understating crime and place. Other venues like bars, taverns, dance clubs, colleges, transportation hubs or subway or light rail stops, malls and shopping centers to name a few – draw people who are, and their cars that are, potential targets. Social disorganization theory ... underground economies for stolen goods, drugs, and prostitution proliferate in neighborhoods of poverty for economic reasons. Events like an NBA playoff or a Superbowl game draws larger crowds, many of them big spenders and gamblers, and it has been reported that these venues attract prostitution and human trafficking, all things that we should be on the lookout as we go forward. Future research will employ a relatively new research model called Risk Terrain Modeling (RTM). The authors and designers of RTM have been contacted to discuss a plan for using RTM to study crime and place in the future, particularly the threats and risks at and around casinos. If you are interested in learning more about this technique, see the articles or book listed below. Risk Terrain Modeling offers a robust method to compare and contrast crime hotspots in the future.



Risk Terrain Modeling

Kennedy, L. W., Caplan, J. M., Piza, E. L. & Buccine Schraeder, H. (2016). Vulnerability and Exposure to Crime: Applying Risk Terrain Modeling to the Study of Assault in Chicago. *Applied Spatial Analysis and Policy*. 9(4), 529-54.

Kennedy, L. W., Caplan, J. M. (2019). OPERATION SAFE SURROUNDINGS (OPSS): THE EVIDENCE-BASED VIOLENCE PREVENTION STRATEGY. *Issues in Spatial Analysis Series*, Vol. 2 Edited by J. M. Caplan, and L. W. Kennedy.

Kennedy, L. W., Caplan, J. M. (2016). Risk Terrain Modeling: Crime Prediction and Risk Reduction. United States: University of California Press.

Risk Terrain Modeling is an approach to risk assessment in which separate map layers representing the influence and intensity of a crime risk factor at every place throughout a geography is created in a GIS. Then all map layers are combined to produce a composite "risk terrain" map with values that account for all risk factors at every place throughout the geography. RTM builds upon principles of hotspot mapping, environmental criminology, and problem-oriented policing to produce maps that show where conditions are ideal or conducive for crimes to occur in the future given existing environmental contexts. It offers a new and statistically valid way to articulate and communicate crime-prone areas at the micro level according to the special influence of criminogenic features.

By comparing both the frequency of crime and calls-for-service within high volume areas to crime contributors or contributing factors, what RTM refers to as risk and protective factors, social and geographic elements can be investigated to measure the risk of crime and demonstrate viable correlations between the types of establishment or venues within high crime areas. RTM can be used to assess high and low hexagon clusters to determine what correlates are found for higher risk as well as protective elements. By using RTM, insights can be offered to local law enforcement agencies and communities when considering crime reduction strategies. In this way, a broader understanding of crime and place may offer a more robust picture. To date, no research or theory has attempted this approach to study casinos.

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Here is a reference list of citations found in the Table A-1 above should further review and understanding be desired.

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Appendix

Acronyms and abbreviations

CAD	Computer-aided Dispatch (system)	A police database that holds information about police dispatches to calls for service, including incidents discovered by police officers. Some but not all the incidents reported in CAD are crimes and have longer records in the RMS.
CFS	Calls for Service	Typically, 911 calls for help and other non-emergency calls to the police for assistance.
IBR	Incident-based reporting	See NIBRS.
MGC	Massachusetts Gaming Commission	The commonwealth agency charged with overseeing and regulating gaming in Massachusetts
FBI	Federal Bureau of Investigation	National investigative agency, part of the U.S. Department of Justice, in charge of collecting national crime statistics.
IACA	International Association of Crime Analysts	A global nonprofit professional association that provides training, literature, and networking to individuals who analyze crime data.
MACA	Massachusetts Association of Crime Analysts	A nonprofit professional association that provides training, literature, and networking to individuals who analyze crime data in New England.
NIBRS	National Incident-based Reporting System	FBI program for data collection that supersedes UCR. Collects more specific data about a wider variety of crimes. With only a few exceptions, all Massachusetts agencies report to NIBRS and all Massachusetts RMS vendors have implemented NIBRS coding standards.
ODBC	Open Database Connectivity	A technology developed by Microsoft that allows any application that uses a database to connect to any database source. The primary mechanism by which we can extract data from police CAD and RMS databases.
RMS	Records Management System	A police data system that stores information about crimes and offenders. See also CAD.
SEIGMA	Social and Economic Impacts of Gaming in Massachusetts	A multi-year research project hosted by the University of Massachusetts Amherst School of Public and Health Sciences. The SEIGMA project has a broader mandate for its study than just crime.
UCR	Uniform Crime Reporting (program)	National program for the reporting of crime statistics to the FBI. Captures only summary data about a limited number of crime types. Contrast with NIBRS.

Call for service definitions

Calls for service include both criminal and noncriminal police incidents and activities. In the case of criminal activities, such incidents receive a longer, more detailed report in the police records management system, and it so it makes more sense to analyze them using the crime categories above than in their original call-for-service form. Thus, the only incident types we have selected for analysis in this report are noncriminal. Definitions of those types appear below. Because the police officer does not usually write a full report for calls for service, the dataset available for analysis is more limited.

Administrative: A wide variety of call types that have to do with the administration of a police department, such as delivery of documents to businesses or other government facilities, attendance at meetings, vehicle maintenance, or even meal breaks. Agencies use their call-for-service systems to document such activities so that they can determine what a particular officer or unit was doing at a particular time, although the incidents are not truly “calls for service.” Practices differ significantly between police agencies as to what is reported under this category, and it is generally not useful for analysis.

Alarm: A burglar, panic, or medical alarm that required a response but (probably) turned out to be false or would have a different final code.

Animal complaint: Calls involving sick, dangerous, or wild animals, animals in danger (e.g., left in a hot or cold car), or loose or noisy pets.

Assist other agency: A call type that involves rendering aid to a neighboring police or other government agency for any number of purposes, including serious crimes, fire and medical issues, and traffic issues.

Crime enforcement: Any number of pro-active police activities meant to deter crime, generally taking the form of a “directed patrol” to a particular location during a peak time for criminal activity (based either on citizen complaints or internal analysis). Though not a technical “call for service,” such incidents are recorded in the CAD database to document the officer’s activity.

Disabled vehicle: A call for service for a vehicle suffering physical or mechanical trouble, usually broken down in an active roadway.

Disturbance: Any of a variety of types of disorderly conduct, disputes, fights, and excessive noise.

Domestic dispute: A dispute between family members, spouses, or intimate partners that has not risen to the level of physical violence.

General service: Minor calls for service that involve rendering aid to residents and visitors for a variety of issues such as giving directions, installing car seats, dealing with lockouts, and providing physical aid.

Gunshots: Reports of gunshots fired, whether phoned in by a resident or received from automatic detection services.

Hunting: Reports of hunters hunting off-season, in protected areas, with illegal gear, or in an unsafe manner.

Lost property: Calls for service involving lost personal property such as wallets and mobile phones. If there is any indication of theft, these incidents are typically reported under the appropriate crime category.

Medical aid: All calls for medical aids except unattended deaths and overdoses. Police responses only are included in the figures in this report.

Missing person: a runaway or other missing person.

Prisoner transport: documentation of a police agency transporting an arrested person from one facility to another.

Psychological issue: Calls for service involving individuals with mental health issues.

Suspicious activity: Any suspicious person, vehicle, or other activity, whether identified by an officer or citizen.

Traffic collision: A collision involving at least one motor vehicle.

Traffic complaint: Complaint about reckless driving, illegal or unsafe parking, or other traffic issues.

Trespassing: Trespassing on private or public property.

Vehicle stop: An officer pulls over a vehicle for a moving or equipment violation.

Warrant service: a call type that documents the service, or attempted service, of an arrest warrant or search warrant. The category is entirely police-directed.

Youth disorder: Disorderly incidents involving youths congregating, skateboarding, making noise, and so forth.

Offense types by associated crime category

Offense	Category	Offense	Category
Aggravated Assault	Violent Crime	Liquor Law Violations	Drug/Alcohol Crime
All Other	Other Crime	Murder	Violent Crime
Arson	Property Crime	Other Thefts	Property Crime
Auto Theft	Property Crime	Peeping Tom	Other Crime
Bad Checks	Property Crime	Pornography	Societal Crime
Burglary	Property Crime	Prostitution	Societal Crime
Credit Card Fraud	Property Crime	Robbery	Violent Crime
Disorderly	Societal Crime	Runaway	Other Crime
Drug Equipment Offense	Drug/Alcohol Crime	Sexual Assault	Violent Crime
Drug Offense	Drug/Alcohol Crime	Shoplifting	Property Crime
Drunk Driving	Drug/Alcohol Crime	Simple Assault	Violent Crime
Drunkenness	Drug/Alcohol Crime	Statutory Rape	Other Crime
Employee Theft	Property Crime	Stolen Property Offense	Property Crime
Extortion	Property Crime	Thefts from Buildings	Property Crime
Family Offenses	Other Crime	Thefts from Vehicles	Property Crime
Forgery	Property Crime	Thefts of Vehicle Parts	Property Crime
Fraud/Con Games	Property Crime	Threats	Violent Crime
Gambling	Societal Crime	Trespassing	Other Crime
Identity Theft	Property Crime	Vandalism	Property Crime
Kidnapping	Violent Crime	Weapon Offenses	Societal Crime