

Assessment of the Casinos' Impacts on Operating Under the Influence (OUI) and OUI- Involved Traffic Collisions

Christopher W. Bruce

Crime Analysis Consultant to the Massachusetts Gaming Commission

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Table of contents

Executive summary	2
Background	3
Analysis of agency complaints for OUI	9
Analysis of "Last Drink" Locations Reported at Adjudication	13
Analysis of crashes with OUI charges	15
Conclusions	22

Executive summary

This report assembles available evidence for the impact of Plainridge Park, MGM Springfield, and Encore Boston Harbor on impaired driving in the region, to include complaints (arrests and summonses) for operating under the influence (OUI), OUI-involved crashes, and reports of “last drink” locations from guilty drunk drivers. Key findings are:

- As destination locations that serve alcohol, the casinos produce a number of impaired driving trips every year.
- The specific number of trips depends on the number of patrons, the average number of drinks consumed, the percentage of patrons leaving by car, the average distance traveled, the availability of transportation alternatives, and efforts by the casino and the police to control intoxication, to discourage impaired driving and to stop impaired drivers before they leave the casino.
- Many of the statistics associated with these variables are unknown, but both guesswork and evidence from past research suggest that among the three casinos, the number of impaired driving trips is in the tens of thousands per year. This is supported with available “last drink” reports from drunk drivers.
- These drunk driving “trips” likely translate into at least a few dozen additional crashes. Analysis of crashes with associated OUI charges shows increases on state roads within the three host communities as well as increases on some local roads in Plainville and Everett.
- Further research should be conducted after MGM and Encore have been open for longer periods, after COVID-19 is no longer creating havoc with drinking and driving patterns, and statewide datasets are available for alcohol-involved crashes.

None of the findings in this report are meant to cast “blame” at any of the casinos. From locations serving alcohol to millions of patrons per year, a certain amount of impaired driving is a mathematical inevitability, no matter how sincere the efforts the locations put into discouraging it. However, these findings do support the utility of targeted traffic enforcement at key times along local roads and highways leading to and from the casino as well as expanded public awareness efforts . They also demonstrate the utility of continued data collection of “last drink” reports during adjudication.

Background

This analysis is part of an ongoing effort by the Massachusetts Gaming Commission (MGC) to assess the social and economic influences of new gaming facilities across the state. The purpose of this report is to compile any and all evidence, within available datasets, of a casino influence on operating under the influence (OUI) and OUI-related crashes. Previous reports on individual casinos have considered limited evidence but have not been comprehensive.

The purpose of this report is *not* to assign or even suggest that blame should fall on individual casinos, casino operators, or their employees. Indeed, this report recognizes that a certain amount of impaired driving is inevitable in a society that allows liquor to be purchased and consumed away from home. The report simply seeks to quantify the contributions of the casinos to this specific type of social harm.

Background and summary of previous research

Each of Massachusetts's three casinos offers restaurants and bars that serve alcohol, plus drinks served to patrons engaged in gambling on the casino floor. Drinking and gambling have long been paired in popular images of casinos, including in promotions from the casinos themselves. Although service at restaurants and bars stops at 02:00, both Encore Boston Harbor and MGM Springfield can serve drinks to patrons engaged in gaming until 04:00.



Figure 1: A photograph of a cocktail entices visitors on the MGM Springfield website. "Enjoy a handcrafted cocktail while taking your luck to the highest limit," the caption offers. Alcohol and gambling are often linked in casino advertisements and public imagination.

The relationship between impaired driving and the presence of licensed establishments has been studied by researchers for decades. Although a positive correlation between the two variables has been long-understood,¹ the specific contribution of a licensed establishment to drunk driving is tangled in a complex web of variables, including density and distance.² A single bar in the middle of five dry counties may produce more drunk drivers than a very large cluster of hotel bars, for instance. This problem has been particularly acute in Connecticut, where the long distance between each of its casinos and major population centers has resulted in high risk of crashes for drunk drivers.³ Although their contributions to drunk driving have not been studied by social scientists, both casinos have come under fire in the media for numerous known fatalities caused by impaired drivers leaving the casinos.

Even when located closer to populated areas, casinos offer additional risks of drunk driving, as studies have shown that problem gambling and problem drinking often go hand-in-hand.⁴ Research has shown a strong link between the expansion of casino gambling in the United States and increases in alcohol-related traffic fatalities.⁵

Available literature does not produce a specific formula to determine the contribution of casinos or other licensed establishments on drunk driving in surrounding communities, but it does support an understanding of the variables that such a formula would include.

Factors Increasing Drunk Driving Risk	Factors Decreasing Drunk Driving Risk
<ul style="list-style-type: none"> • Number of patrons • Average drinks consumed per patron • Percentage of patrons arriving and leaving by car • Average distance traveled after leaving 	<ul style="list-style-type: none"> • Availability of transportation alternatives • Establishment efforts to control intoxication • Establishment efforts to identify and discourage intoxicated drivers from leaving in their cars • Perception of risk of getting stopped and arrested for OUI • Establishment and societal efforts to alert conscience of potential offenders and strengthen social controls

Understanding the specific risk posed by Massachusetts casinos means analyzing how these risk factors work in this state and among the specific facilities.

¹ Early evidence linking the variables is found in O’Donnell, M. A. (1985). Research on drinking locations of alcohol-impaired drivers: Implications for prevention policies. *Journal of Public Health Policy*, 6(4), 510–525. For a study that correlates drunk driving crashes with the proximity and volume of licensed establishments, see Cotti, C., Dunn, R.A., & Tefft, N. (2014). Alcohol-impaired motor vehicle crash risk and the location of alcohol purchase. *Social Science & Medicine*, 108, 201–209.

² The research into specific spatial variables on impaired driving patterns is still in its infancy. For a discussion, see: Wang, S., Chen, Y., Jianling, H., Liu, Z., & Ma, J. (2020). Spatial relationships between alcohol outlet densities and drunk driving crashes: An empirical study of Tianjin in China. *Journal of Safety Research*, 74, 17–25.

³ I am not aware of academic studies on Connecticut’s casinos specifically but the issue is often discussed by the news media. See, for example, Scworm, P. (2011, December 12). Mohegan Sun casino a mixed blessing for town. *The Boston Globe*. <https://www.bostonglobe.com/metro/2011/12/12/mohegan-sun-casino-mixed-blessing-for-montville-conn-area/a9JI8WyaFqkp2kIs65QDPK/story.html>. The Cotti and Walker article cited below cites a no-longer-available 2009 article from WFSB Hartford in which Mohegan Sun admitted that drunk drivers leaving its facility were a problem.

⁴ McGowan, R. (2013). Casino gambling and drunk driving: How are communities impacted? *Gaming Law Review & Economics*, 17(10), 747–759.

⁵ Cotti, C., & Walker, D. M. (2010). The impact of casinos on fatal alcohol-related traffic accidents in the United States. *Journal of Health Economics*, 29(6), 788–796.

Number of Patrons

The number of patrons visiting the casinos is perhaps the most important variable. Sheer numbers can overwhelm the other statistics: Strategies to reduce the number of intoxicated drivers leaving the facilities could be nearly 100% effective and still miss a handful of them every night.

Unfortunately, requests to the casinos for daily attendance figures did not produce usable results from all three locations. However, the figures that we did receive, plus those reported to the media, plus those estimated in previous reports issued by SEIGMA, suggest an average daily attendance of about 36,000 across all three casinos during the period of 2019 when all three were operating. This number is subject to significant variation by day, season, and time.

Average drinks consumed per patron / Establishment efforts to control intoxication

As previously mentioned, gambling and drinking are often paired in public imagination and in casino advertisements. To many patrons, the promise of “free drinks” on the casino floor helps them mentally offset the losses they inevitably suffer. To our knowledge, however, no statistics have been compiled that indicate what percentage of casino patrons

In an effort to reduce both impaired driving and other negative consequences of over-imbibing, Massachusetts General Law Chapter 138, Section 69 prohibits establishments from serving alcoholic drinks to intoxicated customers. There is also a long history of case law that holds licensed establishments (as well as private hosts) liable, under certain circumstances, for the behavior of patrons who become intoxicated at those locations.

The Massachusetts Alcoholic Beverage Control Commission (ABCC) encourages but does not require servers at licensed to receive a national training called TIPS to recognize signs of intoxication and thus know when to “cut off” that patron. The Massachusetts Gaming Commission does require this training for “managers and other principal representatives” (205 CMR 136.077.9.c), and the Commission’s Responsible Gaming guidelines direct casinos to implement several other policies, including limited distribution of alcohol during certain hours and disallowing intoxicated persons from gambling.

Although both Plainridge Park and MGM Springfield have been fined by the Gaming Commission for violations of alcohol regulations, none so far have been related to overserving. Indeed, all available evidence (including reports from the casinos and observations of Gaming Commission employees) suggests that the three facilities have complied with relevant laws, regulations, and guidelines by providing training to servers, cutting off intoxicated guests, and assisting intoxicated guests in getting a safe ride home. In addition, Gaming Commission agents routinely visit the facilities to verify compliance. However, it must be noted that casinos are large, loud, crowded places in which it is difficult to keep track of how many drinks a patron has been served and whether a patron has drunk too much to drive, a threshold that for some drinkers falls comfortably below that at which the patron is visibly intoxicated. Any system that relies heavily on a subjective assessment of intoxication inevitably misses some intoxicated drivers.

Percentage of patrons arriving and leaving by car / Availability of transportation alternatives

This percentage of patrons traveling by car simply has not been studied. We can only make guesses. The percentage is almost certainly over 75%, as it is for the percentage of Americans who drive to work. It is likely highest at Plainridge Park, which is in an area with limited public transportation, and lowest at Encore Boston Harbor. For MGM and Encore, these figures will be reduced mildly by the percentage of patrons spending the night in the casinos’ own hotels (MGM’s 240 hotel rooms and Encore’s 671 hotel rooms are a small percentage of the roughly 15,000 daily pre-COVID visitors).

As it is adjacent to Boston, Encore benefits from a robust public transportation network, including the MBTA subway, bus, and commuter rail system; courtesy shuttles to local hotels and Logan Airport; water transportation to Boston; proximity to national and international air, train, and bus options; and widespread availability of taxi and rideshare options. MGM Springfield likely receives the most foot traffic of the three casinos and also has nearby rail service and bus service provided by the Pioneer Valley Transportation Authority. Alternatives to Plainridge Park are mostly limited to taxi and rideshare options and private bus services out of Boston; it is safe to say that the vast majority of patrons to PPC arrive by car.

Average distance traveled after leaving

No hard data exists on this variable, either, but we can make some estimates. In a 2016 survey, only 11% of Plainridge Park patrons came from the host and surrounding communities, while 67% came from other parts of Massachusetts and 19% came from out of state.⁶ At MGM Springfield, 41% came from the host and surrounding communities, 18% from other parts of Massachusetts, and 40% from out of state.⁷ No statistics are yet available for Encore Boston Harbor, but if they remain within the parameters of the other two, between 58% and 89% of visitors are traveling more than a few miles once they leave the casino.

This variable means that the extent of impaired driving and impaired driving crashes may not be captured by local datasets. Data would have to be collected from throughout Massachusetts and other New England states, particularly Connecticut and Rhode Island, to comprehensively assess the impact of impaired drivers.

Establishment efforts to identify and discourage intoxicated drivers from leaving in their cars

For this variable, casinos have a significant advantage over other licensed establishments. They have a comprehensive surveillance and security network, plus the constant presence of state and local police officers. State law, Massachusetts Gaming Commission regulations, and general public opinion all encourage them to do their best to reduce the number of drivers leaving their parking areas while intoxicated.

Sheer numbers, however, make it difficult to intercede with all of them. Moreover, casinos lose control of this variable when patrons park at locations other than the casino lot or garage. Such a scenario is highly unlikely at Plainridge Park (which has no other convenient area parking) but modestly more likely at Encore and in particular at MGM. In all cases, the casino offers the least expensive, most convenient parking, but is also sometimes full, or inconvenient to other things that the patron wants to do in the area. We otherwise have no statistics on the percentage of patrons who choose to park elsewhere.

Perception of risk of getting caught and arrested for impaired driving

As a popular Problem-Oriented Policing guide notes:

Perhaps the single most significant factor in explaining why people drive while impaired is that they believe that there is little risk that they will be caught by police—and statistically, they are correct. By some estimates, the average drunk driver will drive while impaired between 80 and 2,000 times for every time he is apprehended, depending on the enforcement capacity of the local police. In fact, most drivers believe they are more likely to be involved in a crash than they are to be stopped by police.

⁶ University of Massachusetts School of Public and Health Sciences. (2019). *Social and economic impacts of Plainridge Park Casino: 2018*. Author, p. 35.

⁷ University of Massachusetts School of Public and Health Sciences. (2019). *2019 MGM Springfield patron survey: A look at who is visiting: 2018*. Author, p. 1.

Even the most committed police agencies and officers can stop or arrest only a very small percentage of the impaired drivers who are on the road at any one time—probably less than one percent.⁸

This factor affects impaired driving nationally and not just driving from specific locations. The perception of risk can be enhanced at those locations, however, with strategies like posted warnings and police visibility. We have no information about specific casino strategies in this area.

Societal efforts to alert conscience

Perhaps the most effective advertising slogan in history is “Friends don’t let friends drive drunk,” the tagline of a 1990 Ad Council campaign credited with the largest single-year drop in drunk driving fatalities. The slogan works by alerting the conscience not only of potential drunk drivers but the people around them—friends, colleagues, family members, even servers. Research has shown that such campaigns are effective at the local level as well as the national level.⁹ We are aware of no specific strategies along these lines at Massachusetts’s three casinos.

Tying it all together

Because of a lack of hard data for key variables, we cannot derive a specific prediction of the number of impaired drivers produced by the casinos. But to use a hypothetical example, assume that the following is true:

- 12,000 visitors arrive at a casino on a particular day
- 75% (9,000) arrive by car
- 60% of them drink
- 10% of those who drink become intoxicated
- 90% of those who become intoxicated are identified and deterred from driving by casino security or are motivated to find alternate transportation means by raised conscience or fear of getting caught.

Such an arrangement of variables would leave $20,000 * 0.75 * 0.6 * 0.1 * 0.1$, or 54 impaired patrons leaving the casino by car each day, for a total of 19,710 drunk driving trips per year (59,130 across three casinos), assuming that all factors are independent of each other. The National Institute of Health estimates that the probability that an impaired driving trip will result in a crash is 1 in 625, or 0.16%.¹⁰ We would thus expect this single casino to produce 32 impaired driving crashes per year, 96 for three casinos. Obviously, the number becomes higher or lower as the variables change. If only 80% of impaired drivers are deterred in the last step, the number doubles. If only 5% of those drinking become intoxicated, the number halves. There is essentially no circumstance, however, in which it reaches 0.¹¹

The rest of this report seeks to assess whether the number of impaired drivers coming from Massachusetts’s casinos is detectable among the datasets we have available.

⁸ Scott, M. S., Emerson, N. J., Antonacci, L. B., & Plant, J. B. (2006). *Drunk driving* [Problem Oriented Guides for Police, Problem-Specific Guides Series #36]. U.S. Department of Justice, Office of Community-Oriented Policing Services, pp. 6–7.

⁹ See, for instance, Niederdeppe, J., Avery, R., & Miller, E.N. (2017). Alcohol-controlled public service announcements (PSAs) and drunk-driving fatal accidents in the United States, 1996–2010. *Preventive Medicine*, 99, 320–325.

¹⁰ Miller, T., & Spicer, R. (1998). How drunk are U.S. drivers? Measuring the extent, risks, and costs of drunk driving. *Annual Proceedings of the Association for the Advancement of Automotive Medicine*, 42, 353–367.

¹¹ There are two additional variables unaddressed above because the lack of data makes it difficult to even estimate. The first is the number of impaired driving trips to the casino—that is, drivers who decided to visit the casino while already intoxicated. Even if turned away at the door, there is a way in which the presence of the casino “caused” the trip. The second is the percentage of drunk drivers leaving the casino who would have gotten drunk elsewhere if the casino had not existed. Even if this number is significant, the limited types of entertainment available at a casino almost certainly ensures that this population of drunk drivers is traveling farther, even if their number of trips remains constant. While this form of displacement remains a valid objection to the specific formula presented here, it does not diminish the overall point is that the number of drunk drivers “caused” by a casino is quantifiable and thus theoretically detectable.

Methodology and limitations

This report involves several different datasets. The methodology for the collection and use of each dataset and the limitations of those datasets are thus described in the relevant sections of the report.

About the author

Christopher W. Bruce is a professor of criminal justice at Husson University in Bangor, Maine. He is also a career crime analyst with previous service at the Cambridge Police Department (1994–2001) and the Danvers Police Department (2001–2010). He was president of the Massachusetts Association of Crime Analysts from 2000 to 2004 and president of the International Association of Crime Analysts from 2007 to 2012. He has served as an instructor in criminal justice and crime analysis topics at Suffolk University (2001–2010), Westfield State University (2009–2010), the University of Massachusetts Lowell (2009–2010), Middlesex Community College (2007–2011), Western Oregon University (2012–2016), and Tiffin University (2006–2018).

Mr. Bruce is an internationally-recognized expert in police data systems and police data analysis. He has trained, consulted, and provided technical assistance for various programs of the U.S. Department of Justice, Bureau of Justice Assistance; the U.S. Department of Transportation, National Highway Traffic Safety Administration; the Texas Department of Transportation; the U.S. Department of Justice, International Criminal Investigative Training Assistance Program; and the International Association of Directors of Law Enforcement Standards and Training. He lives in Maine.

Analysis of agency complaints for OUI

The first dataset presented in this report simply looks at the number of complaints (arrests, summonses, and other methods of charging drunk drivers) reported by each participating agency for the crime of operating under the influence, which is almost always operating under the influence of liquor.

This dataset is the least reliable of those used in this report when it comes to understanding the prevalence of impaired driving. It is heavily influenced by agency priorities, directives from executives, and initiative of individual patrol officers and troopers. There is some evidence, for instance, that local agencies anticipated more intoxicated drivers after the casinos opened and responded by conducting more OUI enforcement on key routes. This, in turn, increased the number of OUI arrests irrespective of the number of actual intoxicated drivers.

Nonetheless, the dataset has some value in its corroboration of other data show in this report. If nothing else, it is valuable to know the effects of the casinos on agency operations, including OUI enforcement and arrests, regardless of whether these effects correlate with actual impaired driving.

Methodology

The data used for this section was extracted directly from the records management systems of the participating police agencies and has been used over the past six years to generate a series of reports analyzing post-casino changes in crimes, collisions, and other police-related activity. The data collection and coding standards set by the FBI's National Incident-Based Reporting System (NIBRS), as promoted locally by the Massachusetts Executive Office of Public Safety and Security (EOPSS), have been instrumental in combining and analyzing data from multiple agencies.

OUI complaints in the Plainridge Park region

Raw data, years beginning 1 July and ending 30 June (casino opened on 24 June 2015)

Agency	Pre-Casino					Post-Casino			
	2011	2012	2013	2014	2015	2016	2017	2018	2019
Plainville	18	20	18	12	20	21	17	15	19
Attleboro	130	128	107	86	105	98	93	56	58
Foxborough	69	74	46	56	70	64	56	66	40
Mansfield	54	44	59	55	45	54	48	39	53
North Attleborough	23	6	12	9	43	63	47	57	32
Wrentham	6	8	9	4	12	5	7	12	11
State Police	35	38	27	29	43	32	42	31	34
Total	335	318	278	251	338	337	310	276	247

Aggregated data, years beginning 1 July and ending 30 June (casino opened on 24 June 2015)

Agency	Pre-PPC Avg.	Pre-PPC Range ¹²	Post-PPC Avg.	Pct Change
Plainville	17.6	15-21	18	+2%
Attleboro	111.2	95-127	76.3	-31%
Foxborough	63.0	53-73	56.5	-10%
Mansfield	51.4	46-57	48.5	-6%
North Attleborough	18.6	5-32	49.8	+167%
Wrentham	7.8	5-11	8.8	+12%

¹² Calculated as one standard deviation above and below the average.

Agency	Pre-PPC Avg.	Pre-PPC Range ¹²	Post-PPC Avg.	Pct Change
State Police	34.4	29-40	34.8	+1%
Total	304.0	270-338	292.5	-4%

The statistics show that the PPC region showed virtually no change in its total OUI complaints, although there are some notable exceptions at the agency level. In particular, North Attleborough showed a near tripling of its average. However, the statistics show that the agency's enforcement of OUI ramped up in the year before PPC opened.

In the four years after PPC opened, there were 19 arrests or summonses for OUI at the casino itself, almost all (17) made by State Police gaming enforcement agents. Although these incidents may not have occurred without PPC, it is important to recognize that most of them supply evidence of the system working right. That is, the impaired drivers were identified by PPC employees or Gaming Enforcement agents, and the State Police were able to stop the drivers before they left the property.

OUI complaints in the MGM Springfield region

MGM opened on 24 August 2018 and had about 18 months of unrestricted operation before the March 2020 COVID-19 closures. The "post-casino" period in the first data table looks at 12 months of data, but only for 2019.

Raw data, years beginning 1 September and ending 30 August (casino opened on 24 August 2018)

Agency	Pre-Casino						Post-Casino
	2013	2014	2015	2016	2017	2018	2019
Springfield	58	67	63	43	49	50	40
Agawam	27	44	40	32	27	21	44
Chicopee	41	36	43	49	49	59	84
East Longmeadow	27	33	26	27	19	31	23
Hampden	14	11	15	6	7	13	10
Holyoke	35	34	21	44	34	54	50
Longmeadow	39	15	21	20	14	21	18
Ludlow	35	38	46	39	54	55	57
Northampton	105	118	140	176	157	84	85
West Springfield	24	28	30	34	21	17	30
Wilbraham	53	94	69	59	66	28	39
State Police	358	359	361	229	325	220	284
Total	816	877	875	758	822	653	764

Aggregated data, years beginning 1 September and ending 30 August (casino opened on 24 August 2018)

Agency	Pre-MGM Avg.	Pre-MGM Range	2019	Pct Change
Springfield	55.0	47-63	40	-27%
Agawam	31.8	24-40	44	+38%
Chicopee	46.2	39-54	84	+82%
East Longmeadow	27.2	23-32	23	-15%
Hampden	11.0	8-14	10	-9%
Holyoke	37.0	27-47	50	+35%
Longmeadow	21.7	13-30	18	-17%
Ludlow	44.5	37-52	57	+28%
Northampton	130.0	99-161	85	-35%
West Springfield	25.7	20-31	30	+17%
Wilbraham	61.5	42-81	39	-37%
State Police	308.7	248-369	284	-8%
Total	800.3	723-877	764	-5%

This second set of numbers looks at two years post-casino but uses only the months of September through February for both the baseline and post-casino measures. The analysis stops at February because the casinos closed in response to COVID in March 2020 and did not re-open until July. Traffic volumes and patterns have been so widely affected that results after March 2020 cannot be legitimately compared to a baseline.

Raw data, years beginning 1 September and ending 29 February (casino opened on 24 August 2018)

Agency	Pre-Casino						Post-Casino	
	2013	2014	2015	2016	2017	2018	2019	2020
Springfield	33	26	33	19	33	21	15	35
Agawam	16	17	18	13	12	9	19	31
Chicopee	20	20	25	19	24	18	39	49
East Longmeadow	15	19	16	16	11	20	13	6
Hampden	10	3	6	2	2	10	5	4
Holyoke	18	21	9	21	20	25	22	36
Longmeadow	24	8	13	10	7	8	10	6
Ludlow	24	16	22	11	27	22	26	22
Northampton	40	69	72	98	85	46	38	76
West Springfield	29	34	39	24	37	16	20	20
Wilbraham	15	10	13	23	7	4	10	27
State Police	158	173	129	104	148	85	138	235
Total	402	416	395	360	413	284	355	547

Aggregated data, years beginning 1 September and ending 29 February (casino opened on 24 August 2018)

Agency	Pre-MGM Avg.	Pre-MGM Range	Post-MGM Avg.	Pct Change
Springfield	27.5	22–33	25.0	-9%
Agawam	14.2	11–17	25.0	+76%
Chicopee	21.0	18–24	44.0	+110%
East Longmeadow	16.2	13–19	9.5	-41%
Hampden	5.5	2–9	4.5	-18%
Holyoke	19.0	14–24	29.0	+53%
Longmeadow	11.7	6–18	8.0	-31%
Ludlow	20.3	15–26	24.0	+18%
Northampton	68.3	48–89	57.0	-17%
West Springfield	29.8	22–38	20.0	-33%
Wilbraham	12.0	6–18	18.5	+54%
State Police	132.8	102–163	186.5	+40%
Total	378.3	332–424	451.0	+19%

While the initial year started off lower than average, most agencies—particularly the State Police—significantly increased their enforcement efforts during the September 2019–February 2020 period. The region was headed for a record annual high before COVID stepped in and changed driving habits.

The agencies that reported increases in drunk driving complaints are those that have more local travel routes to and from the casino. That is, unless a driver specifically lived in those communities, he would be unlikely to pass through Longmeadow, East Longmeadow, Hampden, or Northampton (all of which reported decreases) on local roads. The other communities have non-highway routes to other destinations in the region. With the exception of West Springfield, all of them reported increases in OUI complaints during the six-month period.

In contrast to the other two casinos, no complaints were made from incidents that occurred at the casino itself. Springfield only made a single post-casino arrest on the immediate MGM block.

OUI complaints in the Encore Boston Harbor region

For Encore, we only have a single eight-month period post-casino and pre-COVID.

Raw data, years beginning 1 July and ending 29 February (casino opened on 23 June 2019)

Agency	Pre-Casino						Post-Casino
	2014	2015	2016	2017	2018	2019	2020
Everett	14	14	12	17	24	23	50
Chelsea	21	24	34	27	48	23	31
Lynn	55	91	74	85	78	64	89
Melrose	8	3	8	3	3	5	4
Revere	35	28	48	71	48	41	36
Saugus	17	14	16	22	15	31	23
Somerville	15	26	27	30	19	26	18
State Police	161	131	97	187	124	149	199
Total	326	331	316	442	359	362	450

Aggregated data, years beginning 1 July and ending 29 February (casino opened on 23 June 2019)

Agency	Pre-EBH Avg.	Pre-EBH Range	2020	Pct Change
Everett	17.3	13–22	50	+188%
Chelsea	29.5	20–39	31	+5%
Lynn	74.5	62–87	89	+19%
Melrose	5.0	3–7	4	-20%
Revere	45.2	32–59	36	-20%
Saugus	19.2	13–25	23	+20%
Somerville	23.8	19–29	18	-24%
State Police	149.7	121–178	199	+33%
Total	364.2	283–446	450	+24%

The Encore region showed total OUI complaints were significantly above the pre-casino average. It was not universal for all agencies. Everett (the host community) and the State Police reported the largest changes. A subsequent section shows that both agencies saw an increase in OUI-involved crashes, but it also appears that both agencies ramped up OUI enforcement in anticipation of the casino.

Six Everett Police incidents and two State Police incidents occurred at the casino itself, again a possible sign that detection measures are working.

Conclusions

The results for this dataset—again, the least important of the data in this report—showed results highly variable by agency. Changes were most heavily noted in the Springfield area between September 2019 and February 2020 and the Everett region between July 2019 and February 2020. Only in the Everett region are these increases correlated with observed increases in OUI-involved crashes during the same period.

Analysis of “last drink” reports at 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).¹³

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.

Methodology and limitations

Upon request, the ABCC provided spreadsheets for “last drink” adjudications from January 2016 to May 2021. The data includes 8,438 adjudication records, but only about 7,400 offer an identifiable location, and of those, 847 list private residences, leaving around 6,500 identifiable licensed locations.

As last drink data is collected only from those who plead guilty or are found guilty at trial, the 8,438 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. Because the numbers represent *all* drunk driving arrests, not just those that stemmed from crashes, they will be heavily influenced by the decisions of specific police agencies and their officers and thus are not necessarily a good representation of where people are drinking.

Results

All three casinos appear within the “Last Drink” data. Specifically:

- **Plainridge Park** was named as the place of last drink for 19 cases adjudicated between November 2016 and February 2020, with offense dates between October 2016 and August 2019. For the period in which the casino was open, it was fourth-highest in the state for “last drink” reports.
- **MGM Springfield** was named as the place of last drink for 18 cases adjudicated between September 2019 and December 2020, with offense dates between August 2018 and September 2020. For the period in which the casino was open, it was second-highest in the state for “last drink” reports.
- **Encore Boston Harbor** was named as the place of last drink for 11 cases adjudicated between July 2019 and December 2020, with offense dates between June 2019 and November 2020. For the period in which the casino was open, it was tied with MGM for second-highest in the state for “last drink” reports.

For the period between September 2019 and February 2020, when all three casinos were open, the number of drunk drivers arrested who later reported one of the three casinos as their place of last drink was 13. If this number did represent a random distribution of drunk drivers, it would suggest that 76–87 total drivers were arrested in Massachusetts during that period after coming from one of the three casinos, a rate of 152–174 per year. If it is

¹³ The law requires reports of “last drink” locations only in cases of guilty findings or pleas. The perception of the ABCC (via personal correspondence) is that most courts have applied this literal interpretation. There are some anecdotal reports of courts also asking about last drinks when a case is continued without a finding (CWOFF). If some courts are doing so, the practice would result in an overrepresentation of facilities in those regions. The percentage of last drink reports from solely guilty verdicts versus those obtained from CWOFFs could not be assessed at publication time.

further true that there is only a 1 in 500 chance of an individual being arrested for every impaired driving “trip,”¹⁴ this figure suggests between 76,000 and 87,000 impaired driving trips from Massachusetts casinos every year. This figure is not to be relied upon: It is extrapolated from only 6 months of data; data collected from adjudications do not represent a random sample; and estimates of likelihood of arrest from a single New York survey may not be representative of Massachusetts. However, the figure is remarkably similar to the estimated number of drunk driving trips derived by a combination of research and guesswork in an earlier section (76,650). If it is wrong, it is probably still within an order of magnitude. That is, the number of “last drink” reports from casinos almost certainly translates into tens of thousands of drunk driving “trips” per year.

Rank	2015–2020 (PPC Years)	2018–2020 (MGM years)	2019–2020 (EBH Years)
1	TD Garden, Boston (30)	TD Garden, Boston (22)	TD Garden, Boston (13)
2	Gillette Stadium, Foxborough (28)	MGM Springfield, Springfield (18)	MGM Springfield, Springfield (11)
3	Barrett’s Ale House, Bridgewater (23)	Encore Boston Harbor, Everett (11)	Encore Boston Harbor, Everett (11)
4	Plainridge Park Casino, Plainville (19)	The Ritz, Oak Bluffs (9) Scorpion Bar, Foxborough (9)	The Still, Agawam (8)
5	MGM Springfield, Springfield (18)	Buffalo Wild Wings, Shrewsbury (9)	Scorpion Bar, Foxborough (5) Buffalo Wild Wings, Shrewsbury (5)
6	Duck Inn Pub, Hyannis (18)		
7	The Ritz, Oak Bluffs (17)	Gillette Stadium, Foxborough (8)	Funky Murphy’s, Marlborough (5)
8	Bar Louie, Foxborough (17)	The Still, Agawam (8)	Yard House, Lynnfield (5)
9	Wamesit Lanes, Tewksbury (16) Fenway Park, Boston (16)	British Beer Company, Hyannis (8)	The Ritz, Oak Bluffs (4) Duck Inn Pub, Hyannis (4)
10	Taylor’s Tavern, Greenfield (16)	Duck Inn Pub, Hyannis (7) Bar Louie, Foxborough (7) Fenway Park, Boston (7) Taylor’s Tavern, Greenfield (7) Smitty’s Pub, Greenfield (7)	Bar Louie, Foxborough (4) Smitty’s Pub, Greenfield (4) Wamesit Lanes, Tewksbury (4) Whiskey on Water, Worcester (4)
16		Plainridge Park Casino, Plainville (6)	
25			Plainridge Park Casino, Plainville (2)

Figure 2: Top “last drink” locations in three time periods. Source: Massachusetts Alcoholic Beverage Control Commission.

We lack specific figures on patronage at any of the above locations, but it seems likely that the number of “last drink” reports for a location is highly correlated with the number of patrons. It is not surprising to see Gillette Stadium, TD Garden, and Fenway Park within the top locations given the sheer volumes of attendance that the locations receive.

¹⁴ This figure is attested by survey research carried out in New York state: Dowling, A., MacDonald, R., & Carpenter, K. H. (2011). Frequency of alcohol-impaired driving in New York State. *Traffic Injury Prevention*, 12(2), 120–127.

Analysis of crashes with OUI charges

Although the Massachusetts police crash reporting form has fields for suspected alcohol use and suspected drug use, there are a few problems using those fields for analysis. First, they were not introduced until 2013, making it difficult to establish a baseline statistical level prior to the opening of the first casino in 2015. Second, even after the fields were introduced, reporting was, in the words of a Department of Transportation official in a personal communication, "sporadic." This assessment is confirmed by my own analysis of the field, which shows that among agencies contributing data to this report, it is used less than 10% of the time in which a driver in the same crash is actually charged with Operating Under the Influence.

Thus, the better way to determine if a crash involves the use of alcohol is to determine if anyone was arrested or summonsed for Operating Under the Influence on scene. This method will miss a small number of OUI-involved crashes, principally ones in which the driver was killed, but these are relatively rare.

Methodology

The data for this section was extracted directly from the records management systems (RMS) and computer-aided dispatch (CAD) systems of each participating agency via open-database connectivity (ODBC) technology. The data was collected at the incident level, with all related dates, times, locations, involved persons, vehicles, and offenses.

An SQL query linked a) police incidents initially reported as vehicle crashes with b) incidents in which a driver was charged with OUI, based either in the NIBRS code of 90D ("drunk driving") or a textual description of the offense that indicates impaired driving. The linkage was made through the common CAD number assigned to all incidents.

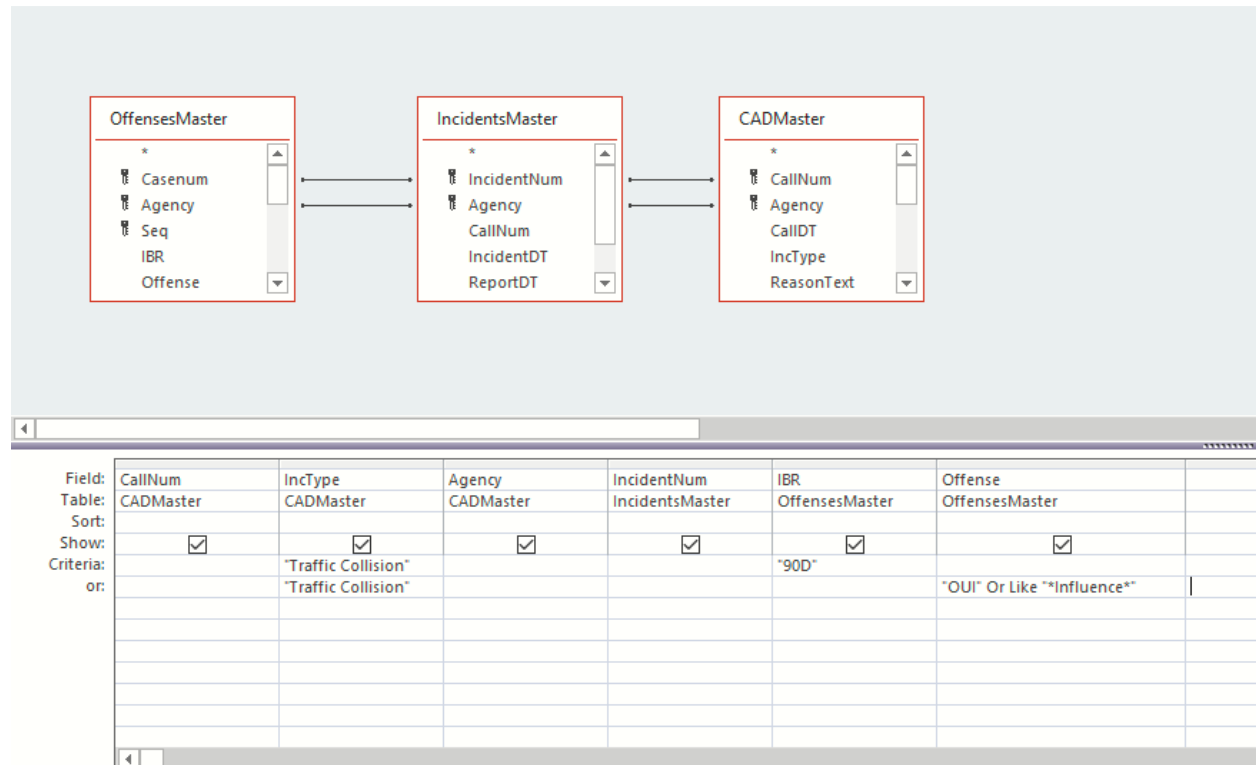


Figure 3: A query finds incidents that started as traffic collisions but were later reported by the agency as operating under the influence.

The accuracy is quite high because traffic accidents are an extremely common call for service and thus rarely miscoded, and the CAD number is a required field in the associated incident record for all RMS systems. However, the following errors could rarely occur. They are so rare that in a manual search of records, I could not find enough relevant reports to estimate their frequency, even with thousands of records in the sample.

- The officer could be dispatched to a crash but then request a new CAD record for the OUI arrest.
- The CAD event or criminal charge could be miscoded.
- Serious injury or death could preclude an OUI charge.

The following tables and analyses summarize these datasets for the three regions. Note that the time periods differ because the casinos opened at different times. I did not collect the literal charge from most of the agencies, only the charge category. With available data, I cannot separate charges of operating under the influence of drugs and operating under the influence of alcohol in the data collected. However, data from a sample of agencies shows that between the two, OUI alcohol is charged between 90 and 95 percent of the time, depending on time period and agency, making OUI drugs a relatively insignificant contributor to any OUI dataset. It is safe to assume that the vast majority of the numbers below represent alcohol-related OUI charges.

The onset of the COVID-19 pandemic provides a hard endpoint for this analysis. Between March and July 2020, not only were all three casinos shut down, but so were almost all bars and restaurants. The effects of COVID on public safety far exceed this short period of absolute closure, however. Various types of businesses have had various types of restrictions imposed and lifted, more workers and students are telecommuting, and in general many Americans have been wary of social gatherings and crowded places. The pandemic has affected the way that Commonwealth residents both drink and drive, an influence that goes far beyond our ability to isolate the effects of individual facilities.

Unfortunately, this means that for MGM, we have less than two years of post-Casino, pre-COVID data to compare. For Encore Boston Harbor, we have less than a year. The tables below use a variety of time periods based on data available.

Crashes with OUI charges in the Plainridge Park region

Plainridge Park opened on 24 June 2015, so the data has been aggregated in to years beginning 1 July and ending 30 June, including five pre-PPC years and four post-PPC years. All six designated surrounding agencies contributed data throughout the life of the study.

Raw data, years beginning 1 July and ending 30 June (casino opened on 24 June 2015)

Agency	Pre-Casino					Post-Casino			
	2011	2012	2013	2014	2015	2016	2017	2018	2019
Plainville	7	1	7	4	9	11	4.0	7	7
Attleboro	27	33	25	17	20	5	13.0	5	24
Foxborough	27	26	24	28	40	22	43.0	22	14
Mansfield	26	24	40	22	19	30	34.0	11	23
North Attleborough	0	0	0	0	0	1	0.0	0	8
Wrentham	2	3	3	2	4	2	6.0	1	5
State Police	12	13	6	18	11	27	20	12	14
Total	101	100	105	91	103	98	120	58	95

Aggregated data, years beginning 1 July and ending 30 June (casino opened on 24 June 2015)

Agency	Pre-PPC Avg.	Pre-PPC Range	Post-PPC Avg.	Pct Change
Plainville	5.6	3–8	7.3	+29%
Attleboro	24.4	19–30	11.8	-52%
Foxborough	29.0	23–35	25.3	-13%
Mansfield	26.2	19–33	24.5	-6%
North Attleborough	0.0	0–0	2.3	N.C.
Wrentham	2.8	2–4	3.5	+25%
State Police	12.0	8–16	18.25	+52%
Total	100.0	79–96	92.75	-7%

Plainville, the host community, had the largest percentage increase among the local agencies, although this translates to an average of only 2 incidents per year. Other communities reported decreases or stayed the same, although North Attleborough had an odd distribution, reporting only one OUI-related crash in the entire 2011–2018 period, and then suddenly reporting 8 during a four-month period between August and November 2018.

The most notable statistics come from the state police, where we saw a jump of roughly 6 incidents per year post-casino. The immediate post-casino year (2016) was the highest in this period.

Crashes with OUI charges in the MGM Springfield region

MGM Springfield opened on 24 August 2018. We have 19 months of post-casino, pre-COVID data. All 11 designated surrounding communities participated in the analysis.

The first set of statistics considers the full year post-casino only, meaning that it includes only 2019 (as the full year for 2020 was truncated by COVID).

Raw data, years beginning 1 September and ending 30 August (casino opened on 24 August 2018)

Agency	Pre-Casino						Post-Casino
	2013	2014	2015	2016	2017	2018	2019
Springfield	23	31	40	45	33	38	28
Agawam	10	17	19	12	10	17	13
Chicopee	30	59	55	45	45	44	49
East Longmeadow	15	13	12	12	23	15	13
Hampden	4	4	4	2	4	5	3
Holyoke	29	31	23	46	40	39	43
Longmeadow	13	11	11	9	13	18	7
Ludlow	25	19	18	17	30	22	17
Northampton	23	38	44	39	28	25	28
West Springfield	27	47	40	43	35	29	35
Wilbraham	21	13	13	17	25	12	11
State Police	35	40	39	44	59	47	72
Total	255	323	318	331	345	311	319

Aggregated data, years beginning 1 September and ending 30 August (casino opened on 24 August 2018)

Agency	Pre-MGM Avg.	Pre-MGM Range	2019	Pct Change
Springfield	35.0	28–42	28	-20%
Agawam	14.2	11–18	13	-8%
Chicopee	46.3	37–56	49	+6%
East Longmeadow	15.0	11–19	13	-13%
Hampden	3.8	3–5	3	-21%

Agency	Pre-MGM Avg.	Pre-MGM Range	2019	Pct Change
Holyoke	34.7	27-42	43	+24%
Longmeadow	12.5	10-15	7	-44%
Ludlow	21.8	17-26	17	-22%
Northampton	32.8	25-41	28	-15%
West Springfield	36.8	30-44	35	-5%
Wilbraham	16.8	12-22	11	-35%
State Police	44.0	36-52	72	+64%
Total	313.8	285-342	319	+2%

This second set of numbers looks at two years post-casino but uses only the months of September through February for both the baseline and post-casino measures.

Raw data, years beginning 1 September and ending 29 February (casino opened on 24 August 2018)

Agency	Pre-Casino						Post-Casino	
	2013	2014	2015	2016	2017	2018	2019	2020
Springfield	14	12	28	18	21	18	9	26
Agawam	3	12	12	5	4	8	3	6
Chicopee	17	29	33	18	21	19	27	23
East Longmeadow	8	7	8	5	10	8	6	3
Hampden	3	1	3	0	0	4	2	3
Holyoke	13	17	13	23	19	20	19	24
Longmeadow	7	4	4	6	5	7	3	1
Ludlow	15	12	8	9	14	10	9	8
Northampton	14	21	17	17	15	13	10	16
West Springfield	13	20	19	18	19	13	13	20
Wilbraham	12	9	8	7	9	9	6	9
State Police	15	22	21	23	44	28	40	43
Total	134	166	174	149	181	157	147	182

Aggregated data, years beginning 1 September and ending 29 February (casino opened on 24 August 2018)

Agency	Pre-MGM Avg.	Pre-MGM Range	Post-MGM Avg.	Pct Change
Springfield	18.5	13-24	17.5	-5%
Agawam	7.3	4-11	4.5	-38%
Chicopee	22.8	17-29	25	+10%
East Longmeadow	7.7	6-9	4.5	-42%
Hampden	1.8	0-3	2.5	+39%
Holyoke	17.5	14-21	21.5	+23%
Longmeadow	5.5	4-7	2	-64%
Ludlow	11.3	9-14	8.5	-25%
Northampton	16.2	14-19	13	-20%
West Springfield	17.0	14-20	16.5	-3%
Wilbraham	9.0	7-11	7.5	-17%
State Police	25.5	16-35	41.5	+63%
Total	160.2	144-176	164.5	+3%

Both datasets tell the same story: if impaired drivers are leaving MGM Springfield, they are not having a statistical impact on local roads. With the sole exception of Holyoke, all agencies reported totals within or below their past normal ranges. There is particularly no apparent correlation between the increase in OUI complaints reported by some communities (see the previous section) and additional OUI-involved crashes in those communities.

On roads policed by the State Police, however, the increase in OUI-involved crashes was significant (between 1.6 and 2.5 standar deviations above the mean for both periods). A map shows particular clustering around the 295/195/Turnpike triangle, all of which might be favored by drivers heading to different destinations from MGM. While there is no direct proof linking these crashes to the casino, the increase immediately following the opening of the casino is strong circumstantial evidence.

OUI Crash Reports Taken by State Police, September 2018 to February 2020

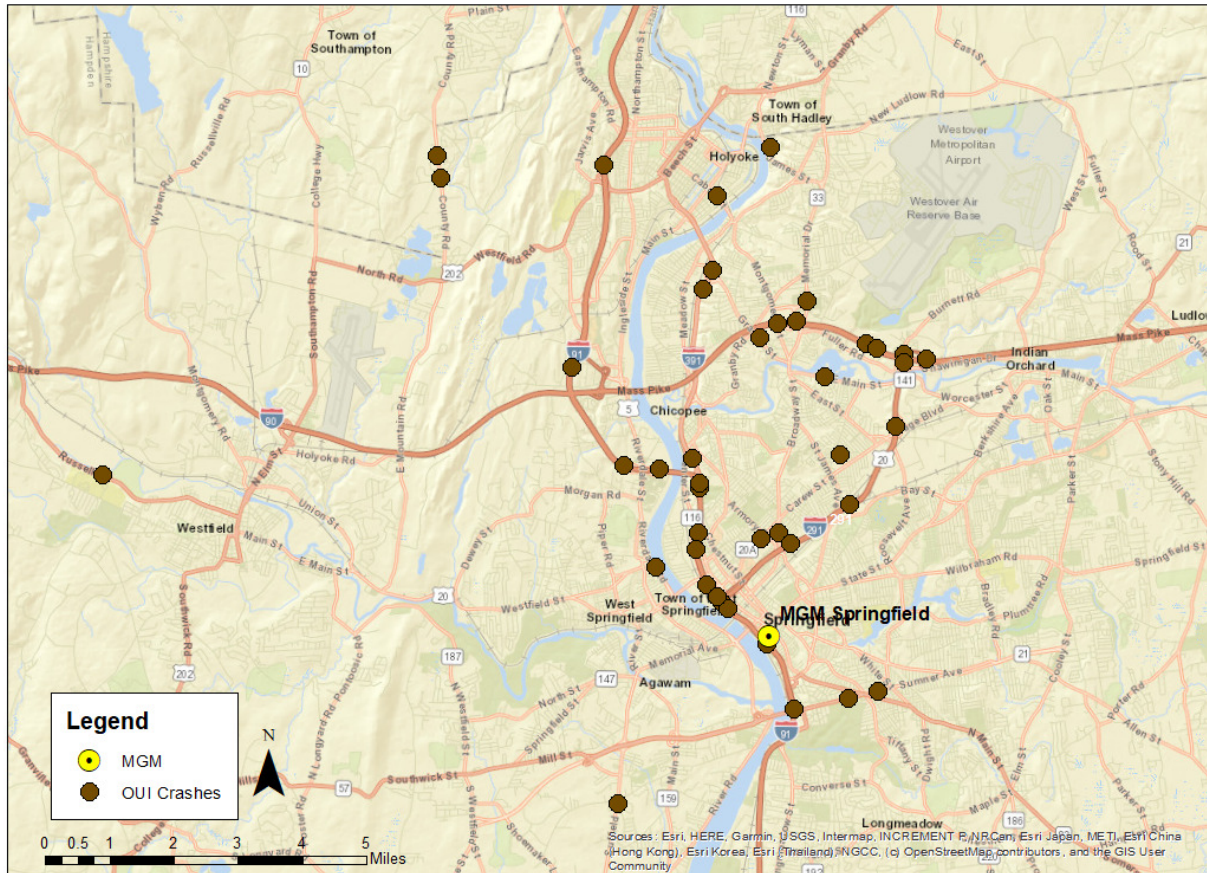


Figure 4: Crash reports with OUI charges taken by State Police in the MGM region.

Crashes with OUI charges in the Encore Boston Harbor region

Encore Boston Harbor opened on 23 June 2019. We have 8 months of post-casino, pre-COVID data. Unfortunately, there are some significant holes in the data. Cambridge and Medford declined to participate in the analysis. Malden initially participated but was unable to contribute data for the post-casino period.

Raw data, years beginning 1 July and ending 29 February (casino opened on 23 June 2019)

Agency	2013	2014	2015	2016	2017	2018	2019	2020
Everett	3	5	2	2	2	1	3	17
Chelsea	17	12	15	24	18	21	12	16
Lynn	32	24	54	36	46	46	37	40
Melrose	3	3	1	5	2	3	2	2
Revere	12	18	15	23	32	17	19	18
Saugus	4	10	5	3	6	6	12	8

Agency	2013	2014	2015	2016	2017	2018	2019	2020
Somerville	18	10	17	12	14	9	11	12
State Police	35	43	34	43	56	42	58	67
Total	124	125	143	148	176	145	154	180

Aggregated data, years beginning 1 July and ending 29 February (casino opened on 23 June 2019)

Agency	Pre-EBH Avg.	Pre-EBH Range	2020	Pct Change
Everett	2.6	1-4	17	+561%
Chelsea	17.0	13-21	16	-6%
Lynn	39.3	30-49	40	+2%
Melrose	2.7	2-4	2	-26%
Revere	19.4	13-25	18	-7%
Saugus	6.6	4-10	8	+22%
Somerville	13.0	10-16	12	-8%
State Police	47.3	39-56	67	+42%
Total	145.0	129-161	180	+24%

It appears that nothing has significantly changed in the area with the sole exceptions of Everett and the roads patrolled by the State Police. The casino host community reported a near-sixfold increase in crashes related to OUI in the first six eight months post-casino. Moreover, twelve of these additional incidents happened on Broadway Street. The Everett Police Department flagged five incidents as "Encore Related," indicating there was specific evidence that the driver had been coming from the casino.

The State Police, meanwhile, have seen concentrations on Route 16 between Revere and Medford and on the Fellsway. If Encore did cause an increase in OUI-related crashes in the area, the geography makes sense. Patrons leaving Encore have an immediate choice to turn north or south. Southbound traffic quickly crosses the bridge to Boston, from which we did not receive crash data and thus could not provide statistics to support this analysis. Traffic turning north from Encore can do any of the following:

1. Continue north through Everett (which had a significant increase along this route) and Malden (which did not supply us with post-casino data) before reaching Route 1.
2. Turn east on Route 16 and continue into Chelsea and Revere, which showed a small concentration of OUI-related crashes.
3. Turn west on Route 16 and continue into Medford or Somerville, which showed small concentrations of OUI-related crashes.

Unless going home to those communities, drivers are less likely to take local roads through Chelsea, Revere, Lynn, Melrose, Saugus, and Somerville, accounting for the lack of an increase seen in those areas.

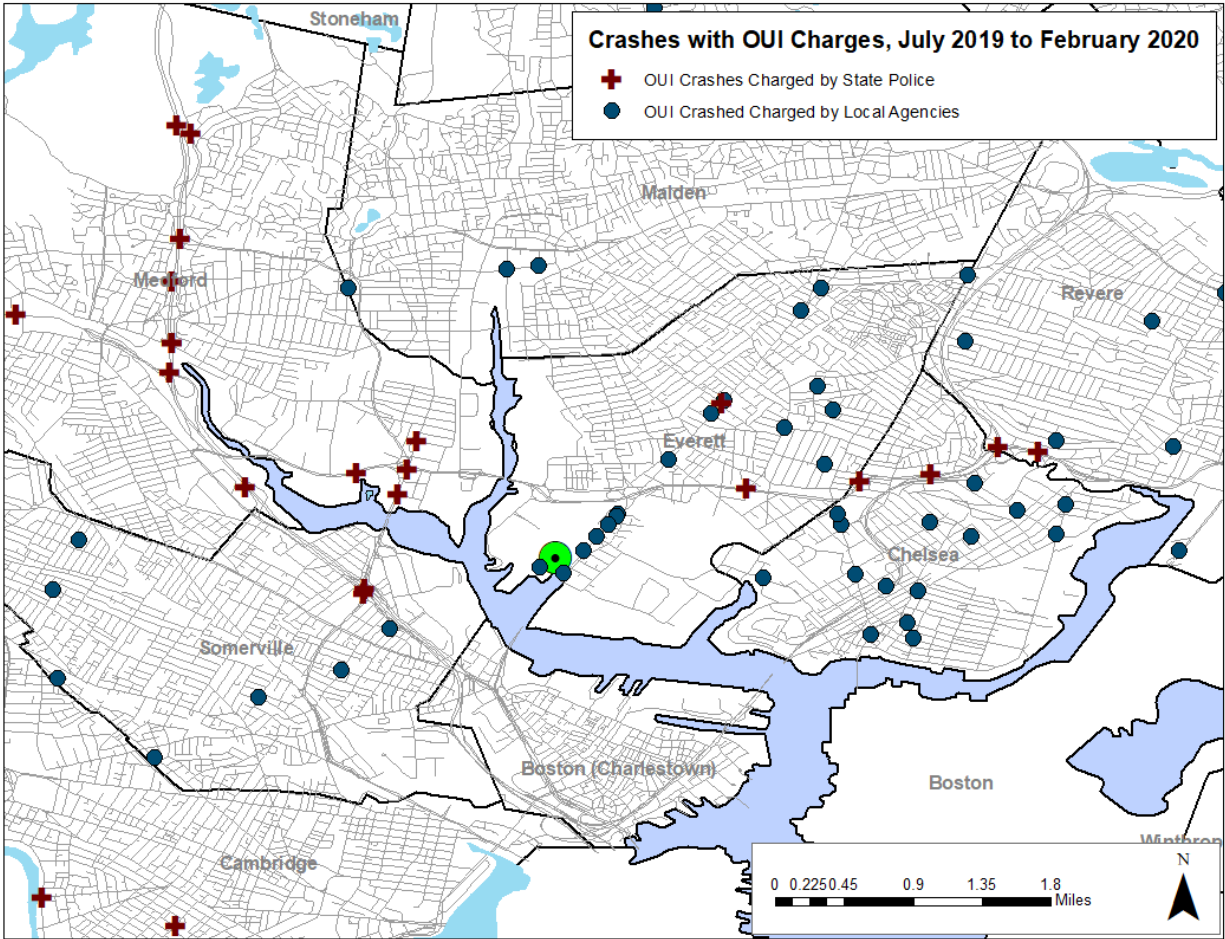


Figure 5: Crashes with resulting OUI charges in the Encore region.

Conclusions

The statistics show mixed results for the three casino areas. The most consistent set of statistics among them show increases in OUI-involved crashes on highways patrolled by the State Police. This is perhaps to be expected, as all three casinos are within half a mile of a major state route. In Plainville and Everett, the host communities also saw an increase in collisions on local roads. Only in Everett was this number significant, and the evidence for a casino relationship there is bolstered by both the geography and the agency's own investigations into the incidents.

Conclusions

This report is an initial analysis of available data covering the relationship between Massachusetts's three casinos and impaired driving. The three casinos were only jointly open for three months before COVID closures significantly changed both drinking and driving patterns in a way that likely overwhelms our ability to detect casino-specific influences. More data should be available in future periods when the COVID threat lessens and routines return to normal.

This initial data, however, combined with past research and experience, tells a relatively consistent story. Casinos serve alcohol to thousands of patrons per day, most of whom arrive by car. Even the best efforts by the casinos to stop patrons from becoming intoxicated, and the best efforts by both the casinos and the police to stop intoxicated patrons from driving, will fail to corral all of them. The sheer numbers of patrons that the casinos receive likely translates into tens of thousands of impaired driving "trips" per year, which in turn results in both an increased number of arrests and an increased number of collisions. These outcomes are mathematically inescapable, although they may be reduced by focusing on factors known to both encourage and suppress impaired driving.

Estimating exact numbers is very difficult due to the lack of available data in some areas and the lack of comprehensive research in others. But the totality of the datasets supports the conclusion that among some tens of thousands of impaired driving "trips" to and from the casinos—a reality that both past research and "last drink" data support—there have been several dozen additional OUI-involved crashes, mostly on roads patrolled by the State Police, within the three host communities. There are likely more crashes waiting to be found in other communities with statewide datasets, analysis of which should be a priority in future reports.