Impacts of Alcohol Outlet Density on the Provision of City Services

OCTOBER 18, 2019

City of Madison Finance Department, Public Health Madison & Dane County

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Acknowledgements

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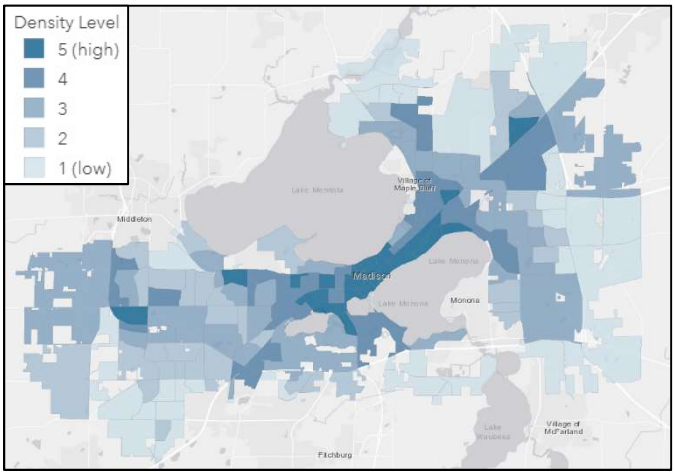
Executive Summary

Findings

- The City has a high density of alcohol outlets on the Isthmus, as well as by the two malls on the east and west sides. Density was determined using a Clerk's Office dataset of Class A, Class B, and Class C alcohol licenses and the methodology recommended by the CDC for measuring alcohol outlet density.
- A statistically significant relationship exists between increased services and density levels for Police (MPD) and Building Inspection, but not Fire and Emergency Medical Services (EMS). Higher density levels showed higher costs for MPD and BI, with MPD accounting for the majority of costs.
- Density of alcohol outlets appears to drive MPD calls during times of day when call volume would otherwise be low. Different types of MPD calls and cases, such as assisting K-9 or EMS and theft, are more likely to be associated with alcohol outlets. There is also a higher rate of Building Inspection Zoning cases at alcohol outlets compared with non-alcohol outlets.
- Populations of color are evenly distributed amongst the density levels, but poverty is more highly concentrated in areas with more alcohol outlets.
- The City does not possess capacity numbers for alcohol outlets that have continuously occupied their premises since before 1998 (45% of licensed alcohol outlets). There is also no single authoritative source of data. These factors combine to make it difficult to pursue analyses and policies that rely on total outlet capacity. Further, different bodies may set capacity limits without knowing about the limits set by the others, and conditions on alcohol licenses do not appear systematically within licenses. Data collection improvements related to alcohol licenses may help better understand the City's alcohol climate and build a baseline regarding alcohol outlet capacity in the City.
- Many alcohol outlets have conditions placed on their licenses, which deal with capacity, operating hours, and outdoor accommodations like beer gardens and sidewalk cafes. Not all outlets have such conditions, but for those that do, the conditions vary widely. While this report does not provide recommendations, an analysis of licensing strategies in other municipalities found the following strategies as best practices for licensing and enforcement: (1) Geographic alcohol license restrictions; (2) population-level alcohol license restrictions; (3) commercial alcohol license restrictions; and (4) time/space alcohol license restrictions.
- Use this map to interactively view the report's data and findings: https://cityofmadison.maps.arcgis.com/apps/Cascade/index.html?appid=a6563299db6940cfb96e9a9a8fa05215



Why the Study was Performed

In early 2017, the City of Madison saw a dramatic increase in violent crimes in areas with high levels of alcohol consumption. In particular, the 600 block of University Avenue saw a tremendous increase in violence incidents requiring police intervention (Arthur, "Violent crimes up on 600 block of University Avenue", 2017).

On January 10, 2018, Mayor Paul Soglin introduced a proposal to restrict new alcohol licenses in the downtown area. After several committee referrals, this Resolution did not pass. However, the Common Council introduced a response, Legislative File 52680, which directed a team of Public Health and Finance staff to analyze alcohol outlet density, identify issues that result in disproportionate calls for service, engage stakeholders, and propose steps to address such programs. This Resolution was adopted on November 8, 2018.

Research Questions

1. Are public safety services being disproportionately utilized in areas defined as having high alcohol outlet density throughout the City?
2. What are the costs associated with providing safety services that are disproportionately utilized across the City?

Project Background

The University of Wisconsin Population Health Institute estimates that the cost of excessive alcohol use in Wisconsin is approximately $6.8 billion (Institute, 2013). This estimate includes lost productivity, premature death, healthcare and criminal justice costs, and motor vehicle crashes. The consequences of excessive alcohol consumption are felt at the municipality level, where cities provide funding for law enforcement and emergency medical services related to excessive alcohol consumption, as well as building inspection related to the safety of alcohol establishments, building upkeep, and assessment of neighboring property values.

Not only does the City of Madison experience these issues, but also other consequences of the high density of alcohol outlets including displacement of non-alcohol outlet businesses, increased vacancies in downtown buildings, and increased violence in the downtown area (Kenney & Springam, 2019). In early 2017, the City of Madison saw a dramatic increase in violent crimes in areas with high levels of alcohol consumption. In particular, the 600 block of University Avenue saw what was quoted by Police Captain Jason Freedman as "…a seven(fold) or an eight fold increase in those violent felony batteries" in the first six months of 2017 (Arthur, 2017). In addition to a dramatic increase in violent offenses, this same block saw numerous police interventions that required the use of pepper spray (Maisto, 2017). This surge in incidents renewed an ongoing conversation in the City about alcohol density and its associated impacts.

While the Downtown Safety Initiative was implemented in 2007 to bring a larger officer presence to the downtown area during weekends and special events, an increased officer presence was considered to address the increased number of incidents (Maisto, 2017).

The 2018 Adopted Budget, adopted in November 2017, called for the Clerk's Office to work with numerous divisions and departments throughout the City, including the Finance Department, to conduct a review of alcohol license special charges determining whether changes were needed to reflect potential disproportionate service costs downtown (2018 Adopted Budget, 2017).

On January 10, 2018, Mayor Paul Soglin introduced a proposal to restrict new alcohol licenses in the downtown area. Legislative File 50110 recognizes the increasing concentration of alcohol outlets in the downtown area, the lack of City policy to address the associated risks, and the disproportionate use of law enforcement in this area during the weekends (File Number: 50110, 2018). This Resolution was intended to limit alcohol licenses for six months in an area extending from the intersection of West Washington and North Fairchild to the intersection of Monroe and Regent, with automatic six month extensions until it was repealed.

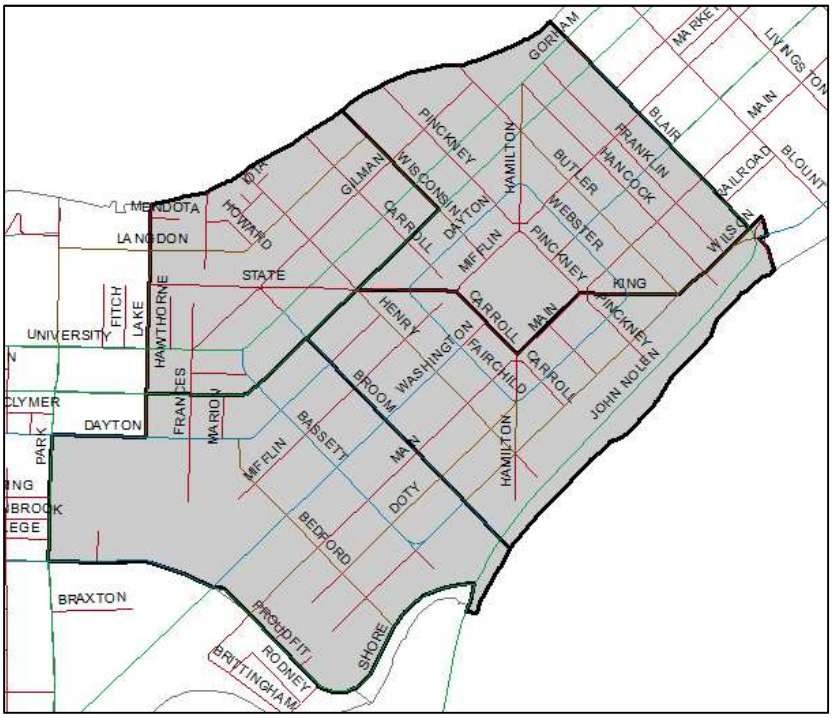
After several committee referrals, this Resolution did not pass. However, the Common Council introduced a response, Legislative File 52680, which directed a team of Public Health and Finance staff to analyze alcohol outlet density, identify issues that result in disproportionate calls for service, engage stakeholders, and propose steps to address such problems (File Number: 52680, 2019). This Resolution was adopted on November 8, 2018. Following this study, a broader group of stakeholders will be engaged to consider policy solutions based on the results of the staff analysis.

Past Policies Regarding Alcohol Licensing

Issues related to alcohol outlet density are not new in the City of Madison. A number of different policies have been proposed and/or adopted in an effort to limit increases in alcohol density in certain areas of the City.

In 2007, the Madison Common Council adopted an Alcohol Limiting Density Ordinance (ALDO) to reduce or maintain the number and capacity of alcohol beverage licenses in downtown Madison. ALDO applied to the shaded area in Figure 1. This area was chosen based on evidence from a 2005 Madison Police Department Report that identified relatively high rates of alcohol-related crime in these areas, especially the State Street Corridor (Alcohol Beverage Density Plan, 2007; DeMotto, 2005). Specifically, this study measured the number and type of police incidents associated with alcohol in selected downtown areas in 2003, as well as the relationship between the number of liquor licenses and incidents at locations within the selected area (DeMotto, 2005). The study found that incidents are clustered in the same locations as liquor licenses, and tend to occur around the time of bar close. The study ultimately recommended prevention through limiting liquor license density.

Figure 1: Area Affected by Alcohol Limiting Density Ordinance



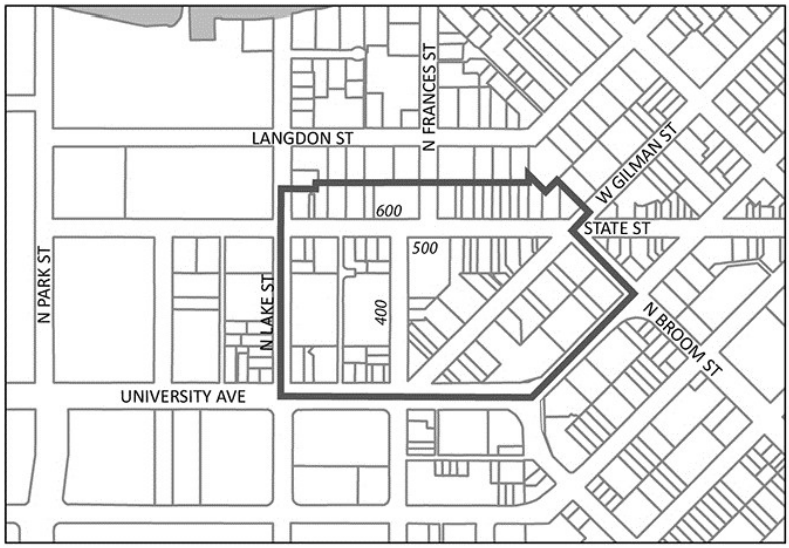
Since the initial MPD report in 2005, a number of additional studies have been conducted regarding various aspects of the alcohol density issue in Madison. Table 1 provides a summary of this research including the year, geographic scope, and synopsis of findings.

Table 1: Review of Prior City of Madison Research

Year	Geographic Scope	Title	Affiliation	Authors	Synopsis
2005	Downtown (Central District and State Street area)	Alcohol-Related Violence in Downtown Madison	Madison Police Department	Nicole DeMotto	Found a significant relationship between the number of liquor licenses and incidents, and found that incidents are clustered around bar time.
2007	Downtown	Spatial and Temporal Aspects of Alcohol-Related Crime in a College Town	University of Wisconsin – Madison	Aaron M. Brower and Lisa Carroll	Studied relationship between crime and alcohol establishment hours, and found that assaults and batteries peaked between 2 and 3 am.
2013	Dane County	Alcohol Density and Crime Study	Public Health Madison & Dane County	Not specified	Measured relationship between alcohol outlet density and crime controlling for socioeconomic factors, but did not find statistically significant association.
2013	Citywide	Recommendations and response to Resolution #23090	Madison Alcohol License Management and Business Development Staff	Mark Woulf, Capt. Carl Gloede, Bill Fruhling, Jenny Lujan, Matt Tucker, Aaron Olver, Matt Mikolajewski	Recommended citywide adoption of new provisions for MGO Chapter 38, including creating additional license types and specific license approval criteria, and setting up a formal enforcement process. Also recommended creation of the State Street Overlay District (SSOD) to restrict certain license types in a more limited area than the Alcohol License Overlay District (ALDO).
2013	Greenbush-Vilas Neighborhood of Madison	Limiting Retail Alcohol Outlets In the Greenbush-Vilas Neighborhood	UW Population Health Institute	Elizabeth Feder, Colleen Moran, Anne Gargano Ahmed, Sarah Lessem, Rachel Steidl	Conducted Health Impact Assessment for Greenbush-Vilas neighborhood to determine impacts of limiting alcohol density on health outcomes. Recommended additional enforcement, particularly on football weekend.
2014	City of Madison	Alcohol License Density Ordinance: Health Impact Assessment	Public Health Madison & Dane County, UW Population Health Institute	Jenny Lujan, Jennifer Weitzel, Liz Hitzel, Judith Howard, Elizabeth Feder, Colleen Moran	Conducted Health Impact Assessment for City of Madison to determine impacts of potential policy solutions on health outcomes associated with alcohol density, as well as potential impact policies would have on vulnerable populations.

In 2014, the Common Council replaced ALDO with an ordinance that established the Alcohol Overlay District. The Alcohol Overlay District placed special conditions on new food, beverage, and retail institutions seeking to locate in the area shown in Figure 2.

Figure 2: Alcohol Overlay District



This prevented new taverns and liquor stores from obtaining a license in a relatively smaller geography that includes two blocks at the end of State Street, a neighboring area of University Avenue, and one block of North Frances, North Broom, and West Gilman Streets (Alcohol Overlay District, 2014). Under the policy, existing licenses could be transferred from one institution to another if the first outlet closed. The Alcohol Overlay District was set to expire July 1, 2019, but was extended to the end of 2019 to allow the Common Council to receive the results of this analysis.

Study Focus

The City of Madison Finance Department partnered with Public Health Madison & Dane County, forming a project team to conduct a study to respond to the various legislative directives. The team developed a project charter (Appendix A) that outlined research questions, background, and subject matter experts to organize the project. Initially, the project team focused specifically on areas of high alcohol outlet density, with an interest in examining changing service levels over time. However, after preliminary data analysis and subject-matter expert interviews, the project team shifted focus to a more holistic view of alcohol density throughout the City, with a focus on determining the association between public service utilization in high density areas as compared with low density areas.

Based on discussions by the project team, the scope of this analysis is limited to two primary research questions to aid policymaking related to alcohol licenses, city services, and related issues.

1. Are public safety services being disproportionately utilized in areas defined as having high alcohol outlet density throughout the City?
2. What are the costs associated with providing safety services that are disproportionately utilized across the city?

Within these two research questions, the project team focused on the usage and cost implications for city resources, including police, fire/emergency medical service (EMS), and building inspection (BI) resources. These particular datasets were selected due to their relevance to the research question and data availability. Non-public safety services delivered to neighborhoods or businesses such as street sweeping and mall maintenance fall outside the scope of this project. Additionally, this analysis does not explore the administrative, legal, or financial implications of any best practices from other municipalities.

The project team relied on data and information from the Clerk's Office, Police Department, Fire Department, and Building Inspection to analyze the number of licensed alcohol outlets, as well as the number of calls per service. These departments provided subject matter expertise regarding service delivery and project scoping, which will be discussed further in the methodology section.

Academic Literature Review

In addition to Madison-specific studies, the project team conducted a review of the existing literature regarding potential community and health impacts of alcohol density, as well as the association between alcohol density and public service utilization. It should be noted that broader alcohol density research has largely focused on associations between alcohol density and crime in low income areas. Additionally, prior research has often focused on a particular type of crime, such as physical assault, in measuring associations between alcohol density and crime. For these reasons, other research is not directly applicable to the City of Madison, in which questions are typically raised about the culture around alcohol due to the student population, and the broader interest is in understanding the association between alcohol density, crime, and overall public service costs.

Limitations aside, prior research has demonstrated a relationship between alcohol density and numerous public health issues, including hospital admissions and pedestrian injury (Maheswaran, et al., 2018; Nesoff, et al., 2018). Related research found that areas with the highest density of licensed on-premises alcohol establishments in Ontario, Canada experienced a 7.8 times higher risk of ambulance calls for service than the lowest density areas when accounting for poverty and off-premises licensed establishments (Ray, et al., 2016).

The positive association between alcohol outlet density and crime rates is also well-documented (Jernigan, Sparks, Yang, & Schwartz, 2013). Jennings et al. studied this question in Baltimore City, Maryland. They found that a one unit increase in outlets that serve alcohol on premise, such as bars and restaurants, was associated with a 1.6% increase in the count of violent crime, and a one unit increase in off-premise alcohol outlets such as liquor stores was associated with a 3.0% increase in the count of violent crime even when adjusting for neighborhood disadvantage, percent minority, percent occupancy, drug arrests, and distribution and proximity of other alcohol outlets (2014).

Multiple studies, including many of those listed above, have further disaggregated alcohol outlets as either on-premises or off-premises, as well as sub-categories of these types of establishments. As Livingston notes, associations between on-premises alcohol outlet density and crime can be stronger or weaker depending on the specific outlet type considered (2008). For instance, Lipton and Gruenewald's study of 766 zip codes in California found a strong positive association between the density of bars and assaults and a negative relationship between the density of restaurants and assaults (2002). In a study using census tracts in Columbus, Ohio, Peterson, Krivo, and Harris further found that the magnitude of the positive association between bar density and crime was strengthened in high-poverty areas (2000).

Off-premises alcohol establishments also have a demonstrated association with increased crime rates, and some research indicates that this relationship may be stronger than for on-premises alcohol establishments (Ray, et al., 2016). A study conducted in Sacramento, California found that each additional off-premise alcohol outlet was associated with a 3% increase in crime reports and an approximately 4% increase in inter-partner violence related police calls (Cunradi, Mair, Ponicki, & Remer, 2011).

The significant body of research regarding the association between alcohol outlet density and alcohol-related problems led numerous health organizations including the Centers for Disease Control and Prevention (CDC) and the World Health Organization to recommend alcohol outlet density control be used to minimize alcohol-related community harm (Alcohol Outlet Density and Public Health, 2014).

Given the strong body of research demonstrating the association between alcohol density and incidents, the project team next referenced several key studies in order to design a methodology for this project. A 2017 CDC report provided an overview of different options for measuring alcohol density and cited studies that had utilized each method (Centers for Disease Control and Prevention). The CDC paper referenced a 2015 study by Zhang, et al. that measured the association between violent crime and alcohol exposure (reflected by hours that alcohol can be sold and related measures) in Atlanta, Georgia neighborhoods with high alcohol outlet density, as measured using one of the CDC's prescribed alcohol density measures (2015). This study found that as the level of alcohol exposure decreased, violent crime also decreased.

Per the study charter in Appendix A, specific policy solutions are outside the scope of this report. However, a natural outgrowth of the study questions and focus described above is inquiry into municipal best practices regarding alcohol licensing and enforcement, and how these policies affect alcohol outlet density. Such strategies include:

- Geographic alcohol license restrictions
- Population-level alcohol license restrictions
- Commercial alcohol license restrictions
- Time/space alcohol license restrictions.

Appendix B provides a review of relevant strategies implemented by other municipalities.

Alcohol Outlet Overview

Alcohol Outlet Licenses

City ordinances define three types of licenses permitting the retail sale of alcohol (MGO 38.03, 2018):

- Class A licenses permit alcohol to be sold for offsite consumption (e.g. convenience, grocery, or liquor store); there are also license subtypes allowing the sale of beer only, or hard cider only. This study considers all Class A licenses together.
- Class B licenses permit patrons to consume alcohol onsite at the establishment where it is sold, and can be further split into Class B—Beer Only, and Class B—Combination (beer and intoxicating liquor). Class B licenses do allow for some sales for offsite consumption, but since their primary function is to allow onsite consumption, this study categorizes them as onsite licenses.
- Class C licenses permit the onsite consumption of wine.

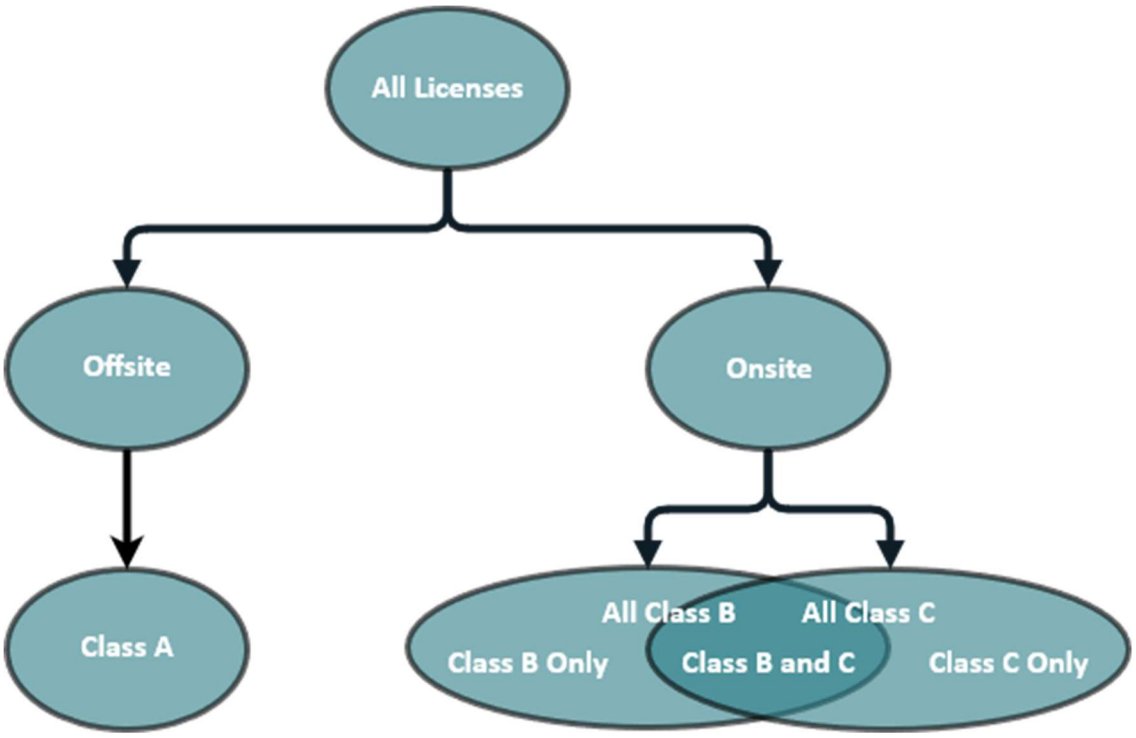
Table 2 provides more detail about the restrictions on each type. Note that it excludes certain situations involving small amounts of alcohol, such as tasting samples and carrying out open containers partially consumed onsite.

Table 2: License Definitions

License Type	**Beer**	**Wine**	**Other Alcoholic Drinks**
Class A	Permits sale for offsite consumption	Permits sale for offsite consumption	Permits sale for offsite consumption
Class B – Beer Only	Permits sale for onsite consumption Permits sale for offsite consumption	Does not permit sale	Does not permit sale
Class B – Combination	Permits sale for onsite consumption Permits sale for offsite consumption	Permits sale for offsite consumption	Permits sale for onsite consumption Permits sale of up to four liters for offsite consumption
Class C	Does not permit sale	Permits sale for onsite consumption	Does not permit sale

Licenses may be combined and categorized in several ways. Class A offsite licenses may not be held in combination with other licenses, while Class B and C onsite licenses may be held together. Figure 3 shows these relationships.

Figure 3: Categorizations of All License Types



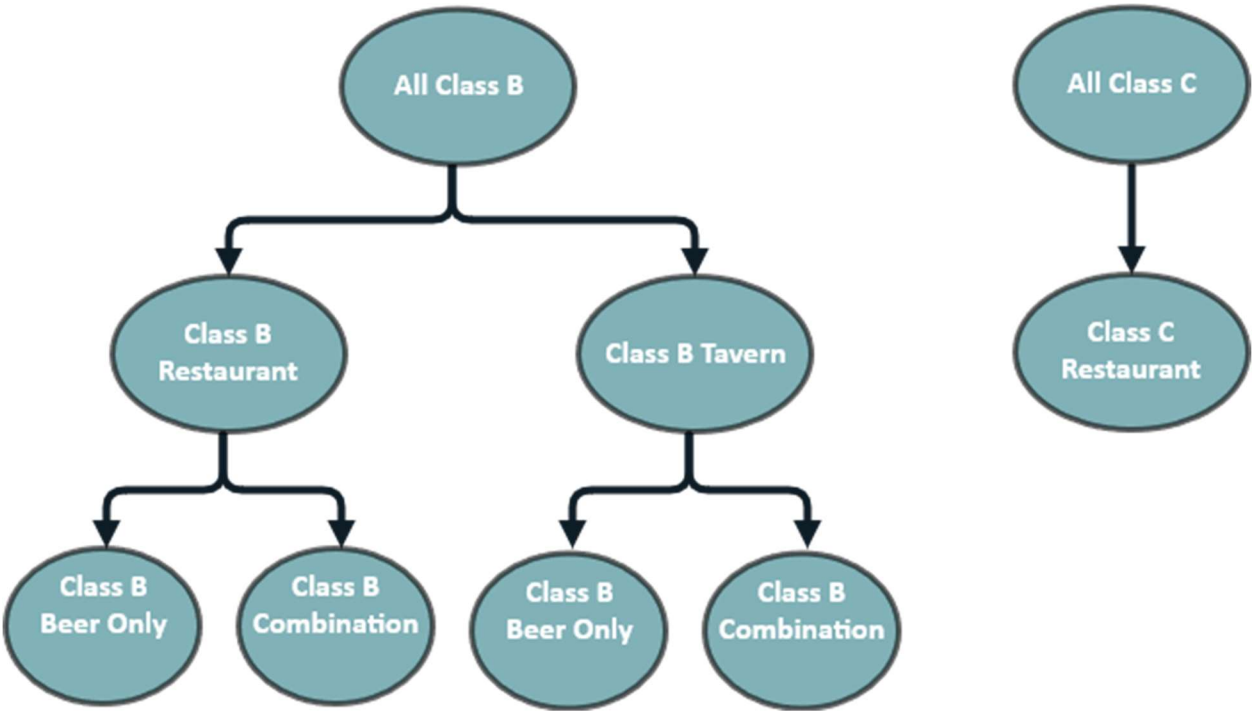
As discussed above, Class B licenses may also be split by the type of alcohol they permit into Class B—Beer licenses and Class B—Combination (beer and intoxicating liquor). Separately, Class B licenses may also be split by establishment type: restaurants must have 50% or less of their gross receipts from alcohol, while taverns have more than 50% of their gross receipts from alcohol.

These two classifications – by alcohol type and by establishment type – are independent of one another, meaning that a Class B establishment could be:

- A restaurant with a beer license.
- A restaurant with a combination license.
- A tavern with a beer license.
- A tavern with a combination license.

These classifications are also independent of whether the establishment also has a Class C license. Class C licenses do not distinguish between types of wine, and only go to restaurants. Figure 4 shows these relationships.

Figure 4: Categorizations of Onsite Licenses



Alcohol Outlet License Data

The City of Madison Clerk's Office maintains information about licensed alcohol outlets in the City, including their locations and the conditions on the licenses. This also includes information about the three types of alcohol licenses – Class A, Class B, and Class C.

Alcohol outlet data enters the Clerk's Office either through applications for new alcohol licenses, or during the annual renewal process. The application process may occur anytime, while renewals are due in April of each year, and then reviewed by the Common Council's Alcohol License Review Committee (ALRC) and finalized by the full Council each June. In both processes, this data is recorded and managed by Clerk's Office staff in the Accela permitting and licensing software system. Appendix C provides a more detailed overview of this process.

With the exception of Class C license data, the dataset used for analysis in this study comes from a point-in-time snapshot of all City-issued licenses active as of October 1, 2018. The Class C license information was obtained through the Clerk's public website,[1] which allows searches of alcohol licenses, in July 2019. Because of this time lag, this dataset may undercount Class C licenses, missing establishments that had Class C licenses in October 2018 but not July 2019.

Figure 5, below, shows the locations of all licensed alcohol outlets in the City, the primary information used for this study. All maps for this study were created using ArcMap 10.4.1.

[1] https://www.cityofmadison.com/clerk/search-liquor-licenses/

Figure 5: Licensed Alcohol Outlets in Madison

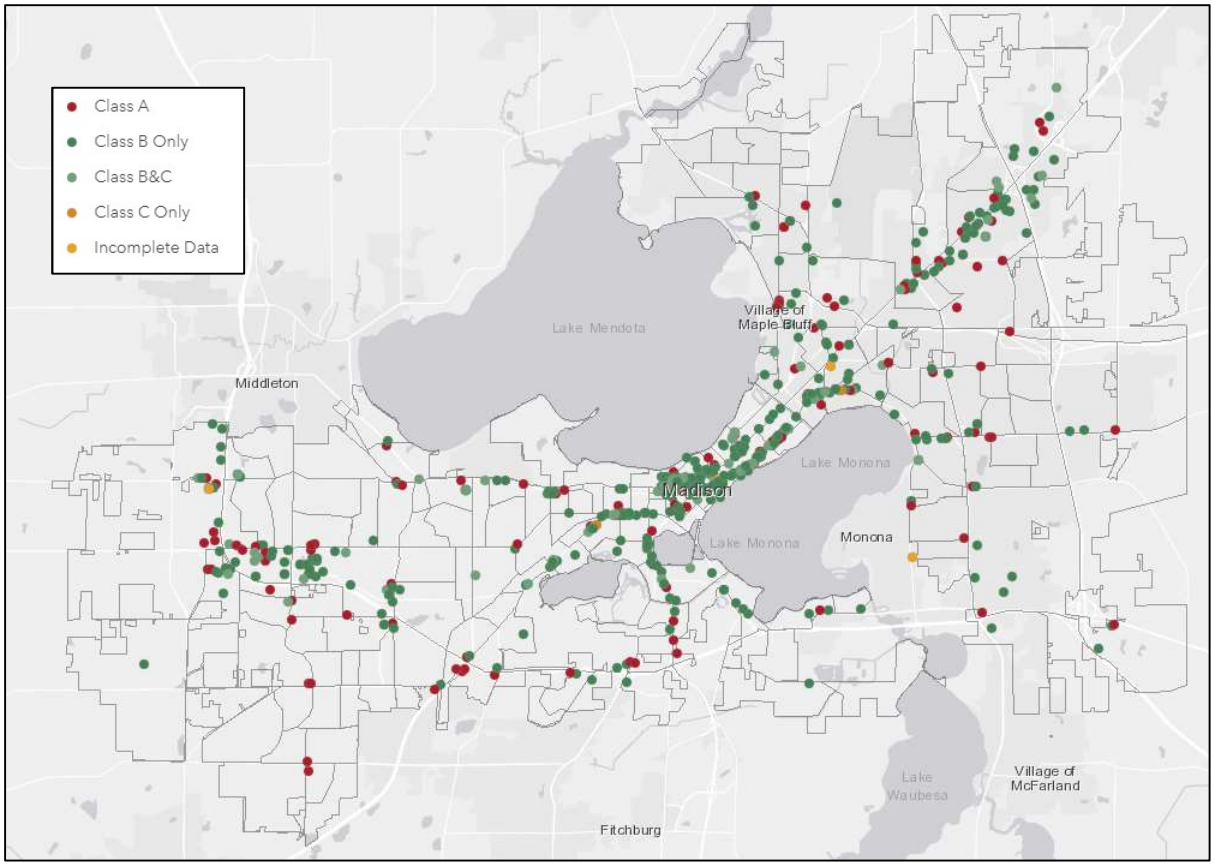


Table 3, below, gives statistics for offsite and onsite licenses.

Table 3: Statistics for All License Types

Item	**Number**	**% of All Licenses**
All Licenses	642	100%
Offsite – All Class A	129	20%
Onsite – All Class B and C	506	79%
Incomplete Data	7	1%

As discussed above, Class B and C onsite licenses may be held together; Table 4 provides additional statistics about these licenses.

Table 4: Statistics for Onsite Licenses

Item	**Number**	**% of Onsite Licenses**
Onsite – All Class B and C	506	100%
Class B Only	425	84%
Class B and C	78	15%
Class C Only	3	1%

As discussed above, Class B licenses may further be independently categorized as either restaurants or taverns, and beer only or combination. Table 5 gives statistics about these licenses.

Table 5: Statistics for Class B Licenses

Item	**Number**	**% of Class B Licenses**
All Class B	503	100%
Class B Restaurant	391	78%
Class B Tavern	112	22%

Item	**Number**	**% of Class B Licenses**
All Class B	503	100%
Class B – Beer Only	108	21%
Class B – Combination	395	79%

The licenses discussed here cover most alcohol outlets in the city, but not breweries, which are licensed by the state. Thus, breweries are not reflected in this dataset unless they also hold licenses permitting the sale of alcoholic drinks in addition to the ones they produce.

Alcohol License Conditions

This section examines the contents of alcohol licenses, which is comprised of their restricting conditions. Conditions may be placed on licenses during the new permit and renewal processes: the Common Council's Alcohol License Review Committee (ALRC) reviews applications and makes recommendations to the full Council, which ultimately makes the final determination. The content of these license conditions varies widely, from directives to comply with the Madison General Ordinances, to charges that the establishments hold community meetings or support the arts, and from restrictions on square footage and interior layout, to security practices like prohibiting reentry after a certain time. Appendix C contains a more in-depth look at conditions as part of the license application business process analysis.

Many of these conditions deal with capacity, operating hours, and outdoor accommodations like beer gardens and sidewalk cafes. Not all outlets have such conditions, but for those that do, the conditions vary widely. Table 6 shows the frequency of common conditions.

Table 6: Conditions by Type

Restriction Type	**Count**	**Percent of Total**
Operating Hours	57	9%
Outdoor Section	97	15%
Common Council Capacity	53	8%

All data about alcohol license conditions was determined by reading and manually coding the conditions field in the dataset for each license.

Conditions on Capacity

Capacity conditions are especially varied, due to the method used to determine them. The Common Council, Building Inspection, and Fire Department may each set their own capacity numbers, and the lowest of the three is used for enforcement. The methods used to determine capacity are:

- The Common Council, through adding a license condition, may establish indoor and/or outdoor capacity based on subjective criteria, if it so chooses, during the new permit and renewal processes. As the above data show, the Council adds such a condition to approximately 8% of licenses.
- Building Inspection always determines capacities for indoor and outdoor spaces that are new construction or have undergone renovations. The capacity determination is based on a statutory formula involving the establishment's square footage, number of exits, and number of toilets. Due to data issues discussed below, although Building Inspection is always required to set capacities, it holds data for only 288 establishments, or 45% of all alcohol outlets.
- The Fire Department always establishes capacity for temporary events.

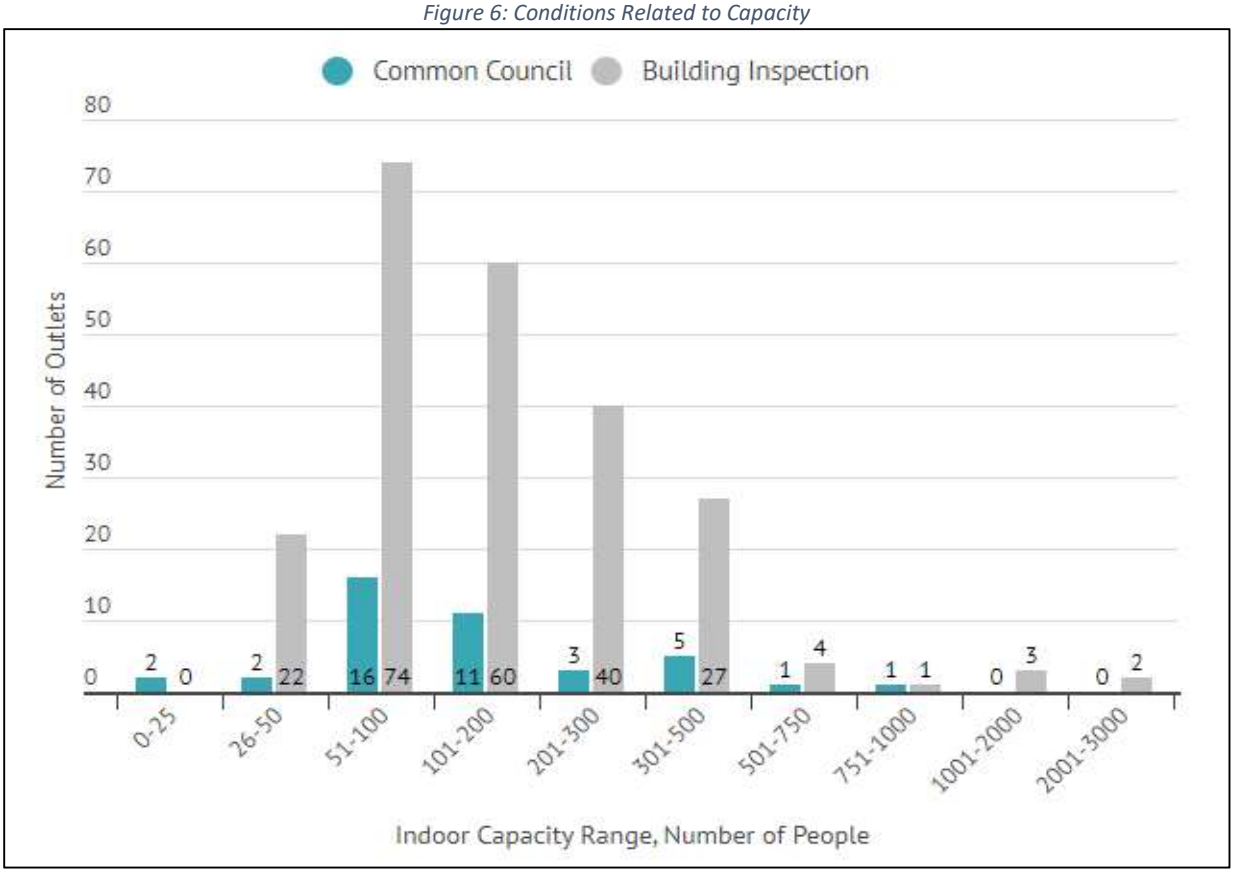
Note that there is no order in which license applicants must go through each body's process, so it is possible that each of these three bodies may determine capacity numbers without being aware of the others' determinations.

A complicating factor is the lack of an authoritative data source providing a single clear capacity number among the three produced during the application process described above. Further, prior to 1998, Building Inspection determined capacity numbers but did not record them, meaning that capacity

numbers are not reliably available for establishments that have continuously occupied their premises since before 1998. Because of that, Building Inspection has capacity numbers on file for only 288 alcohol establishments, which is 45% of the total number of alcohol establishments within the city, and 54% of the on-site (Class B and/or Class C) establishments.

Indoor capacity numbers, where available, are summarized below in Figures 6. Figure 6 shows how many capacities were set by the Common Council and by Building Inspection within each range. For example, Figure 6 shows that the Common Council set capacity limits between 51 and 100 persons for 16 establishments, while Building Inspection set capacity limits in that same range for 74 establishments. The relatively higher Building Inspection numbers highlight the fact that Building Inspection has recorded capacities for 45% of establishments, whereas the Council has set capacities for only 8% of establishments through conditions.

Figure 6: Conditions Related to Capacity



Note that some outlets have exceptions for special events like football Saturdays and private banquets, which are not included in these summaries.

Capacity Enforcement

Capacity enforcement is handled by several City agencies. Ad-hoc enforcement is typically handled by the Police Department's community policing officers, who may conduct capacity checks in response to complaints, or during their broader bar checks. Officers typically document any capacity violations they find and pass the information on to the City Attorney's office, which can follow up with actions such as fines. Separately, the Fire Department performs bimonthly capacity checks during the academic year in

the downtown and university areas. Enforcement during these checks is based on the posted capacity. In the event the posted capacity is inconsistent with the process outlined above, these enforcement efforts would not capture the capacity violation.

As discussed above, the lack of an authoritative data source providing a single clear capacity number can hamper the enforcement process.

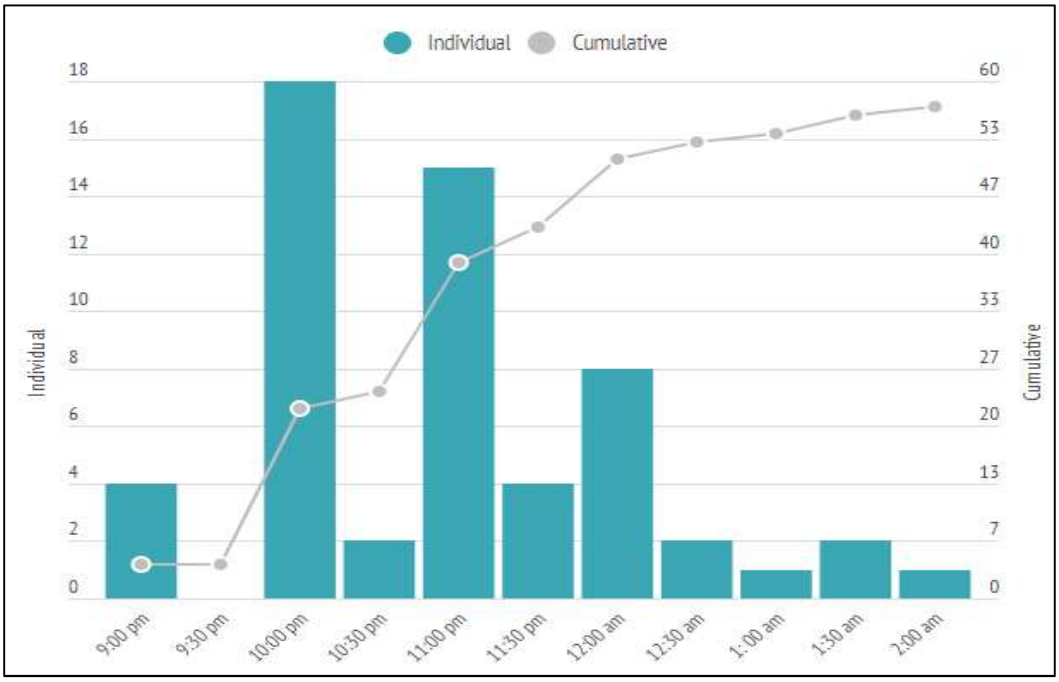
Conditions on Operating Hours

The Common Council and ALRC may also set conditions on operating hours. These are set during the same deliberative process as the operating conditions, wherein the ALRC reviews the applications and makes a recommendation to the full Council, which then makes the final decision.

Like conditions on capacity, conditions on operating hours also vary. Most commonly, these vary by day of the week, typically delineating weekdays and weekends. Some conditions on operating hours reference closing times, while others reference last call times; these are considered together here.

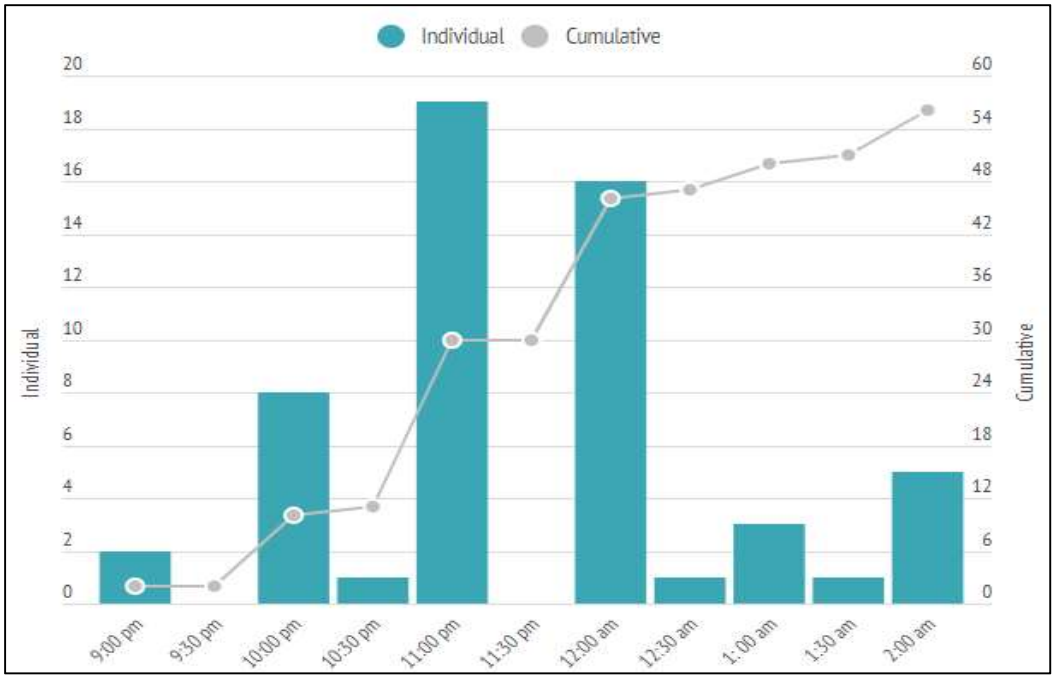
Figures 7 and 8 shows the average close/last call conditions established for weekdays and weekends. Each figure shows both the individual number of established required to close at a certain time, as well as the cumulative number of establishments that have closed due to their license conditions by that time. For instance, Figure 7 shows that two alcohol establishments are required to close at 10:30pm, and that by that point in the evening, a total of 22 establishments will have closed to comply with their license conditions that require them to close even earlier.

Figure 7: Conditions Related to Close/Last Call on Weekdays



Individual	4	0	18	2	15	4	8	2	1	2	1
Cumulative	4	4	22	24	39	43	51	53	54	56	57

Figure 8: Conditions Related to Close/Last Call on Weekends



Individual	2	0	8	1	19	0	16	1	3	1	5
Cumulative	2	2	10	11	30	30	46	47	50	51	56

Together, Table 6 and Figures 7 and 8 illustrate the contents of alcohol licenses as issued.

Alcohol Outlet Density

Areas with high alcohol outlet density are defined as being small zones with a high concentration of alcohol outlets (Centers for Disease Control and Prevention, 2017). Such areas have been associated with a number of public health issues such as increased levels of excessive drinking, increased number of calls for public services, increased criminal behavior, and increased levels of injury (Fone et al., 2016). Alcohol outlet density differs from state to state and from municipality to municipality. To best understand how alcohol outlet density plays out on a local level, the project team relied upon guidance provided by the Center for Disease Control (CDC) to calculate alcohol outlet density in the City of Madison.

This section outlines the project team's work selecting a density calculation methodology, and the results of that selection.

Alcohol Outlet Density Methodologies

The CDC provides guidance for three approaches to determine alcohol outlet density: container-based, distance-based, and spatial access.

The container-based method measures alcohol outlet density within a specified container, such as a neighborhood or planning district. Using this method, an alcohol outlet-dense area would have many outlets within the defined container.

The distance-based method calculates alcohol density by counting the number of additional alcohol outlets within a set distance of a specified reference point. With this method, the reference point is considered to be in a dense area if it has a high number of outlets within that set distance.

The spatial access method is based on the sum of the distances between a reference point and the nearest *N* alcohol outlets, where *N* is a predetermined number chosen by the researcher. This means that the reference point is in a dense area if the nearest alcohol outlets are nearby.

Selecting a Methodology

The project team considered the following criteria provided by the CDC when selecting a method for determining alcohol outlet density.

1. **Ability to Assess Clustering.** Can this method provide the needed information to identify alcohol outlets in the context of proximity to one another?

Note on Census Block Groups

In this analysis, Census Block Groups are used as the geographic boundaries in both the spatial access- and container-based methods. A block group is a geographic unit used by the Census Bureau to collect sample data from households. It contains between 600 and 3,000 people. Block groups falling partially or wholly within the City of Madison municipal boundaries were identified using the ArcGIS mapping platform. The City of Madison municipal boundary was used to trim the Dane County block groups that extended beyond the City's boundaries. Using this approach 195 block groups were identified within the city boundary. Ninety block groups were identified as falling partially within the city limits (meaning their areas were less than 99% within municipal boundary) and 105 block groups fell entirely within the city limits. For the purposes of this analysis block groups that were less than 6% within the city limits and had no discernable commercial or residential uses were excluded (n=19). Block groups with land area containing only water were also excluded (n=2). This process resulted in a total of 174 block groups deemed relevant for this study.

2. **Directly Exposed Populations.** Can this method discern the level of directly exposed populations through an understanding of the transportation network (walking, biking, transit, street layout) and the population impacted?
3. **Evaluating Harms**. Can this method determine the impacts of density on harm factors?
4. **Access Potential**. Does this method account for distance and transportation factors that impact the ease of access?
5. **Low Cost.** What resources are needed for this calculation?
6. **Calculation.** How difficult is it to calculate density using this method? Does the project team have the expertise and resources needed?
7. **Communication.** Is the methodology easily understandable for the intended audience?

Table 7 provides an overview of the three methods of calculating alcohol-outlet density in relation to the seven decision-making criteria.

Table 7: Pros and Cons of Each Strategy

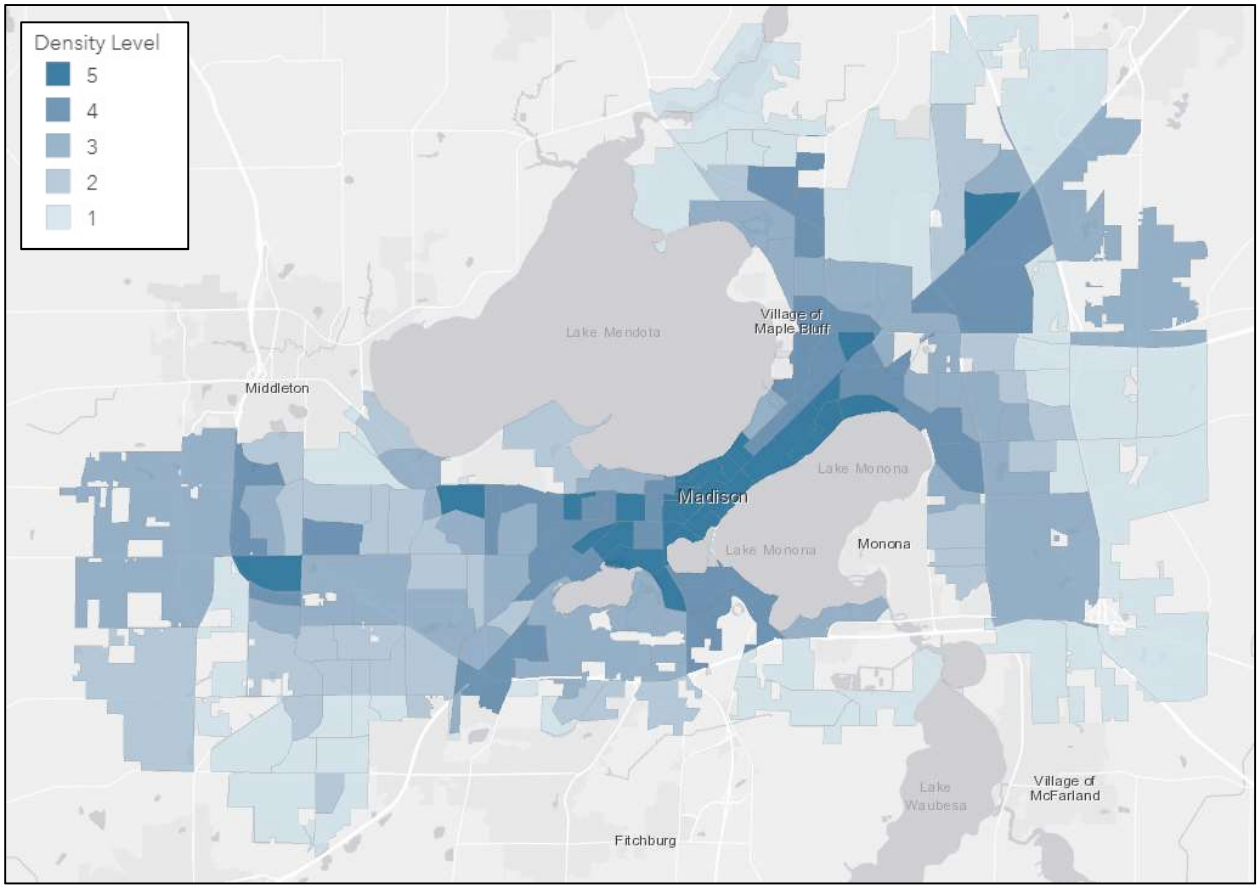
Rating Criterion	**Measurement Strategy**		
	Container Based	**Distance Based**	**Spatial Access Based**
Able to assess clustering	👎	👌	👍
Able to assess directly exposed population	👎	👌	👍
Suitable for evaluating harms	👎	👌	👍
Addresses access potential (reflects convenience cost)	👎	👌	👍
Low cost (personnel, equipment, & data needs)	👍	👌	👎
Easy to calculate (simplicity)	👍	👌	👎
Easy to communicate (understandability)	👍	👌	👎

The container-based method is simple to calculate, and intuitively easy to understand, but it offers limited insight into alcohol outlet and community patterns that span the container's boundaries. The distance-based method is also relatively straightforward to calculate and understand. It also allows calculations to span geographic boundaries, but does not provide an easy way to tie those calculations back to demographic data from the Census. The spatial access method is more difficult to calculate and less easy to understand intuitively, but does allow calculations across geographic boundaries. By picking a reference point within each block group, the project team was able to tie alcohol-outlet data produced by this method to other Census data.

To further inform its considerations, the project team analyzed density levels throughout the City using each of the three methods; more details about this process can be found in Appendix D. The three methods produced similar results, labeling many of the same areas of the city as alcohol outlet-dense. The project team ultimately chose the spatial-access method because of its ability to consider data across geographic boundaries, and its ability to tie alcohol-density data to demographic information.

Using the spatial-access method, block groups were indexed based on their alcohol-outlet density and then separated into five levels, each containing an equal number of alcohol outlets, ranging from Level 1 (least dense) to Level 5 (most dense). The most alcohol outlet-dense areas of city are the downtown and isthmus areas, with additional density in the campus, Monroe Street, and Regent Street areas, as well as the West Towne Mall areas and two additional areas along East Washington Avenue. Density levels then spread outward from these dense centers, with the lowest density found on the far east, north, and south sides. Figure 9 shows these findings.

Figure 8: Alcohol Outlet Density, Spatial Access Method



Data Sources and Analysis Methods

Data Sources

The project team used data from the Madison Police Department (MPD), Madison Fire Department (Fire) (including Emergency Medical Services [EMS]), and Building Inspection (BI) to answer the research questions. Table 8 provides an overview of the datasets used for this analysis.

Table 8: Datasets Used in Alcohol Study Regression Analysis

Data Aspect	**MPD**	**Fire/EMS**	**BI**
Time Period	2016-2018	2017-2018	2016-2018
Variables	• Case Number • Date and Time • Police Sector Number • Call/Incident Type • Case Type[2] • Address • Alcohol Flag	• Date and Time • Incident Number • Address • Zip Code • Incident Type/Description • Total Time Spent on Incident • Alcohol Use Indicators	• Street Address • Case Type • Case Subtype • Description
Initial Dataset Size	629,289 calls, 134,400 cases	60,043 incidents	26,516 cases
Sample Size for Study	413,284 calls, 117,252 cases	57,519 incidents	26,516 cases
Source	Law Enforcement Records Management System (LERMS)	Image Trend Elite	Accela

For additional information regarding the processes used to prepare the datasets for analysis, see Appendix E regarding MPD, Appendix F regarding Fire/EMS, and Appendix G regarding BI.

Note: The project team also analyzed a dataset from the University of Wisconsin Police Department (UWPD). While this dataset provides useful context, this data is outside the scope of the research questions. Additional information about the UWPD dataset can be found in Appendix H.

Regression Analysis

To respond to the first research question, the project team examined the relationship between alcohol outlet density and calls for services in the City of Madison using two different regression methods. Regression methods are used to show or predict the relationship between multiple variables. It shows which predictor variables, such as alcohol outlet density level, have a statistically significant effect on an outcome variable, such as number of police calls for service. Stata 13.0 software used for all regression analyses.

The project team first used Poisson regression because it is typically used for modeling count data (e.g. number of police calls for service). In the initial review of the Poisson models, the project team determined

[2] Note: MPD data includes both calls and cases. Call data represents instances when the Police Department receives a call through the CAD system related to an incident. Case data reflects instances when a call requires additional follow-up by MPD officers. Not all calls become cases.

that the data did not fit Poisson models well given the data's overdispersion, or presence of greater variability than expected.

Since Poisson regression was not a strong fit, the project team instead used negative binomial regression. This is a more flexible method to model count data that adjusts for overdispersion. This report only includes the results of the negative binomial regression model.

Variables in the Regression Model

Models were developed to determine the impact of alcohol density level on the various outcome variables. Outcomes of interest for this analysis included Madison Police Department (MPD) calls, MPD cases, Fire and EMS calls, and Building Inspection cases.

The predictor of interest was alcohol outlet density, which was included as a categorical variable in each model. As mentioned earlier in the "Defining Density" section of this report, the alcohol outlet density variable has five equal-sized levels. Each level contains 20% of the Census Block Groups, with Level 5 containing the 20% of block groups with the highest alcohol outlet density and Level 1 containing the 20% of block groups with the lowest alcohol outlet density.

Incident rate ratios (IRR) were computed to assess the relationship between the outcome and alcohol outlet density for each level of alcohol outlet density. The incident rate ratios compare a variable's value in one level to that variable's value in the reference level. Level 1 (the lowest alcohol outlet density) was used as the reference level, which allows for comparison of each of the other levels to Level 1.

To control for differences between populations residing in block groups, the models controlled for the following factors, called covariates, in each block group:

- Total population
- Percent with at least a high school education
- Percent poverty
- Percent male
- Percent owner occupied household
- Percent minority (non-white race)
- Percent unemployed
- Percent uninsured
- Percent aged 65 years or older
- Percent single unit

Covariates were selected primarily based on literature suggesting a possible association with outcome variables or alcohol outlet density (Cunradi, Mair, Ponicki, & Remer, 2011; Lipton, et al., 2013; Mair, Gruenewald, Ponicki, & Remer, 2013). Additional covariates, such as age, were selected based on observations within individual data sources regarding populations disproportionately represented in the data for outcomes of interest (e.g. older adult falls are common among EMS calls for service).

Cost Analysis

Costs were established by computing an hourly rate for call types where there was a statistically significant relationship. The hourly rates were established using wages, benefits, and an overhead rate established through the City's cost allocation methodology. For information on the cost methodology, see Appendix I.

Detailed Findings

The following sections outline key findings from the analysis of MPD, Fire/EMS, and BI calls for service, as well as cost data for each of these services.

Calls for Service

Madison Police Department (MPD) Calls and Cases

Regression analysis shows a statistically-significant association between alcohol outlet density and MPD calls. This implies that Census block groups identified as having higher levels of alcohol density are significantly associated with increased numbers of MPD calls. Table 8 shows the incident rate ratios (IRR) by alcohol outlet density level. The number of MPD calls in Levels 2, 3, 4 & 5 were significantly higher than the number of calls in Level 1. For instance, the number of MPD calls in Level 5 is 2.2 times the number of calls in Level 1; this is a significant increase given the p-value of less than 0.05.[3]

Regression analysis also shows a statistically significant association between higher levels (Levels 3, 4 and 5) of alcohol outlet density and MPD cases. This implies that Census block groups identified as having higher levels of alcohol density are significantly associated with increased numbers of MPD cases. Table 9 shows the incident rate ratios by alcohol outlet density level. The number of MPD cases in Levels 3, 4 and 5 were significantly higher than the number of cases in Level 1. Although the number of MPD cases in Level 2 was 1.2 times the number of cases in Level 1, it was not a significant increase given the p-value was greater than 0.05.

Table 9: Incident Rate Ratios for MPD Calls and Cases by Density Level

	Calls			*Cases*		
Alcohol outlet density level	**IRR**	**95% CI[4]**	**p***	**IRR**	**95% CI**	**p***
Level 1 (lowest alcohol outlet density)	reference			reference		
Level 2	**1.6**	**1.1-2.3**	**0.02**	1.2	0.9-1.7	0.2
Level 3	**1.7**	**1.2-2.3**	**<0.01**	**1.4**	**1.0-1.8**	**0.04**
Level 4	**2.1**	**1.5-3.0**	**<0.01**	**1.7**	**1.2-2.4**	**<0.01**
Level 5 (highest alcohol outlet density)	**2.2**	**1.4-3.4**	**<0.01**	**1.7**	**1.1-2.6**	**0.01**

Fire and Emergency Medical Services (EMS) Calls for Service

The regression analysis shows no statistically-significant relationship between alcohol outlet density and Fire/EMS calls. This implies that Census block groups identified as having higher levels of alcohol density were not significantly associated with increased numbers of Fire/EMS calls. Table 10 shows the incident

[3] p-value ≤ 0.05 implies there is strong statistical evidence that the calls for services at higher levels of alcohol outlet density differs from Level 1 (referent category) more than could be explained by chance alone; p-value > 0.05 implies that there is no strong statistical evidence that the calls for services at higher levels of alcohol outlet density differs from Level 1 (referent category) more than could be explained by chance alone.

[4] Confidence intervals, or CI, are commonly used along with p-values to assess statistical inferences. A 95% confidence interval means that should the sampling be repeated, the resulting 95% confidence intervals will contain the true IRR value 95% of the time.

rate ratios by alcohol outlet density level. The number of Fire/EMS calls in Levels 2, 3, 4 and 5 were not significantly higher than the number of calls in Level 1.

Table 10: Incident Rate Ratios for EMS by Density Level

Alcohol outlet density level	**IRR**	**95% CI**	***p****
Level 1 (lowest alcohol outlet density)	reference		
Level 2	1.0	0.8-1.4	0.79
Level 3	1.3	0.9-1.8	0.12
Level 4	1.3	0.9-1.8	0.15
Level 5 (highest alcohol outlet density)	1.3	0.9-2.0	0.18

Building Inspection (BI) Calls for Service

Regression analysis shows a statistically significant association between higher levels (Levels 4 and 5) of alcohol outlet density and BI cases. This implies that Census block groups identified as having higher levels of alcohol density were significantly associated with an increased number of Building Inspection cases. Table 11 shows the incident rate ratios by alcohol outlet density level. The number of BI cases in Levels 4 and 5 were significantly higher than the number of cases in Level 1. For instance, the number of BI cases in Level 5 was 1.7 times the number of cases in Level 1; this is significant given the p-value was less than 0.05.

Table 11: Incident Rate Ratios for BI Cases by Density Level

Alcohol outlet density level	IRR	95% CI	*p**
Level 1 (lowest alcohol outlet density)	reference		
Level 2	1.1	0.8-1.6	0.48
Level 3	1.1	0.8-1.4	0.76
Level 4	**1.5**	**1.0-2.1**	**0.03**
Level 5 (highest alcohol outlet density)	**1.7**	**1.1-2.6**	**0.02**

Cost Analysis

As discussed above, the number of MPD calls and cases have a statistically significant difference in Levels 2-5 as compared with the least dense areas (Level 1). Furthermore, the number of Business Inspection cases in the high density (Levels 4 and 5) areas have a statistically significant difference as compared with the least dense area (Level 1). The Fire and EMS data does not demonstrate this same statistical relationship. Thus, as discussed above, this cost analysis focuses on MPD and BI costs by density level.

MPD

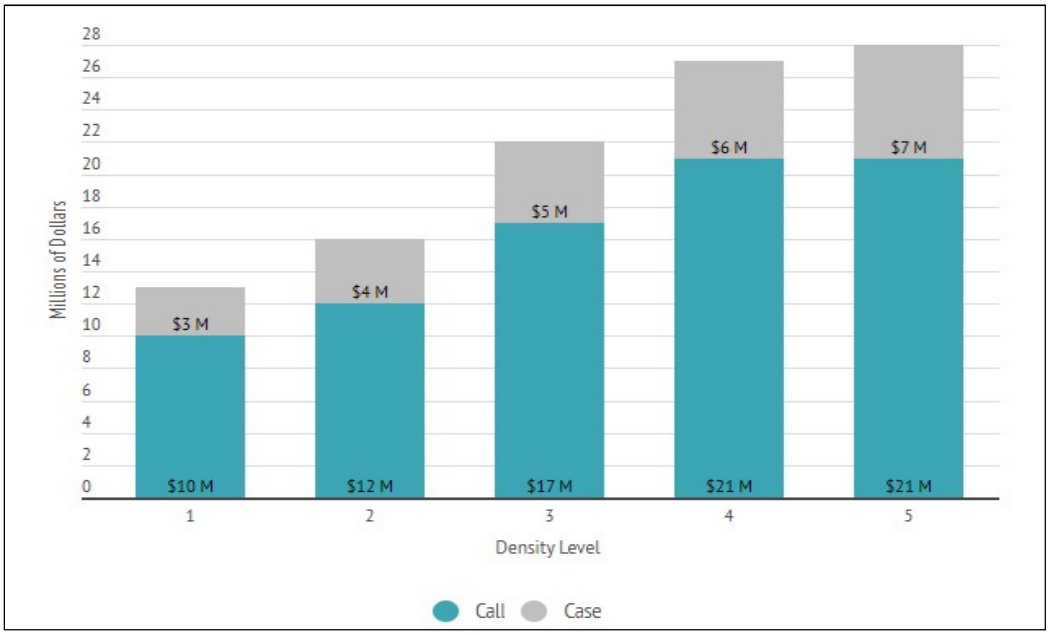
Table 12 shows a breakout of MPD cost by density level for incidents and cases. Notable in this table is the fact that the top two densest levels account for over half of the police costs using the rate methodology.

Table 12: MPD Cost by Density Level

Density Level	**MPD Costs**	**% Total Cost**
5 (Most dense)	$28,372,681	26.72%
4	$26,983,163	25.41%
3	$22,098,460	20.81%
2	$15,850,066	14.93%
1 (Least dense)	$12,868,538	12.12%
Total	$106,172,908	100.00%

Figure 10 illustrates this pattern, with both incident and case costs higher in the densest levels as compared with the least dense level. It is important to note that these higher costs cannot be directly attributed to the alcohol density in these areas because no confounding factors, such as income level, were controlled for in the cost analysis. However, this analysis does indicate that policing costs are higher in the highest density levels in comparison with the lowest.

Figure 9: MPD Cost by Density Level



Building Inspection

Figure 11 shows the cost for Building Inspection by density level. This trend follows a similar pattern to the MPD cost data, with Building Inspection costs for Levels 4 and 5 nearly doubling the costs of inspections for Level 1.

Figure 10: Building Inspection costs by Density Level

Table 13 shows a breakdown of Building Inspection costs by density level and outlet type. When broken out by establishment type, this trend continues, with higher density areas associated with higher building inspection costs. However, even though the highest density (Level 5) alcohol establishments account for nearly 12 times the cost of the least dense alcohol outlets, this cost is still less than $13,000, and accounts for less than 1.5 percent of all building inspection costs considered in this analysis. (Note: cost data does not match Table 14 because 202 cases were unable to be geocoded and therefore not assigned to a density level.)

Table 13: Breakdown of Building Inspection Costs by Outlet Type and Density Level

Density Level	**Alcohol Outlet**		**Non-Alcohol Outlet**	
1	$1,122	4%	$112,234	13%
2	$1,793	7%	$126,159	15%
3	$4,075	16%	$173,556	21%
4	$6,019	23%	$212,583	25%
5	$12,878	50%	$214,152	26%
Total	**$25,887**		**$838,685**	

Table 14 shows a breakdown of Building Inspection costs by type for alcohol outlets as compared with non-alcohol outlets. As shown in the table, the breakdown of case type varies significantly between the alcohol and non-alcohol outlets, with zoning cases accounting for nearly half (46%) of all alcohol outlet cases and housing cases accounting for the majority (69%) of non-alcohol outlet cases. Zoning appears to be a larger piece of building inspection cases for alcohol outlets because there appears to be more signage complaints than non-alcohol outlets. Similarly, housing appears to be a larger share of non-alcohol outlet cases because nearly all rental property emergency contact complaints occur at non-alcohol outlets.

Table 14: Building Inspection Case Cost By Case and Outlet Type

	Alcohol Outlet		Non-Alcohol Outlet	
Construction	$2,535	9%	$38,710	5%
Housing	$7,820	29%	$585,351	69%
Property Maintenance	$2,597	10%	$118,758	14%
Weights and Measures	$1,564	6%	$2,227	0%
Zoning	$12,286	46%	$98,310	12%
Total	**$26,802**		**$843,357**	

*Note: Total costs in Figure 19, Table 4, and Table 5 are not equal because Tables 4 and 5 include costs from cases that could not be geocoded. Cases must be geocoded to assign a density level, so all cases in Figure 19 were geocoded.

As noted regarding the MPD cost data, these trends cannot be solely attributed to alcohol density based on this analysis. It is reasonable that areas with higher density of alcohol outlets may also have higher density of buildings and therefore higher building inspection costs. Particularly noteworthy is the high level of housing cases for non-alcohol outlets. With rental property emergency contact complaints constituting 58 percent of housing cases, it appears that these type of complaints are a primary driver of BI costs. In other words, the number and cost of building inspection cases may be more closely aligned with the density of rental property rather than alcohol outlet density.

Summary of Findings

Previous sections of this report have examined different data sources and service levels in-depth, explaining the relationship of each to different density levels. This section will do the reverse, offering a unified portrait of each density level and its associated services. Please see the section "Alcohol Outlet Density" for more information about how these levels were determined, and the sections corresponding to each service for more information about this data was gathered and analyzed.

The overview gives a high-level view of each density level, and the following sections give additional details. Note that a statistically-significant relationship was found between density levels 2, 3, 4, and 5 and MPD calls, density levels 3, 4, and 5 and MPD cases, and density levels 4 and 5 and Building Inspection cases. No relationship was found between density level and the number of Fire/EMS incidents.

Overview

Table 15, below, gives a high-level profile of each density level. Each level contains approximately 35 Census block groups.

Table 15: Profile of Density Levels

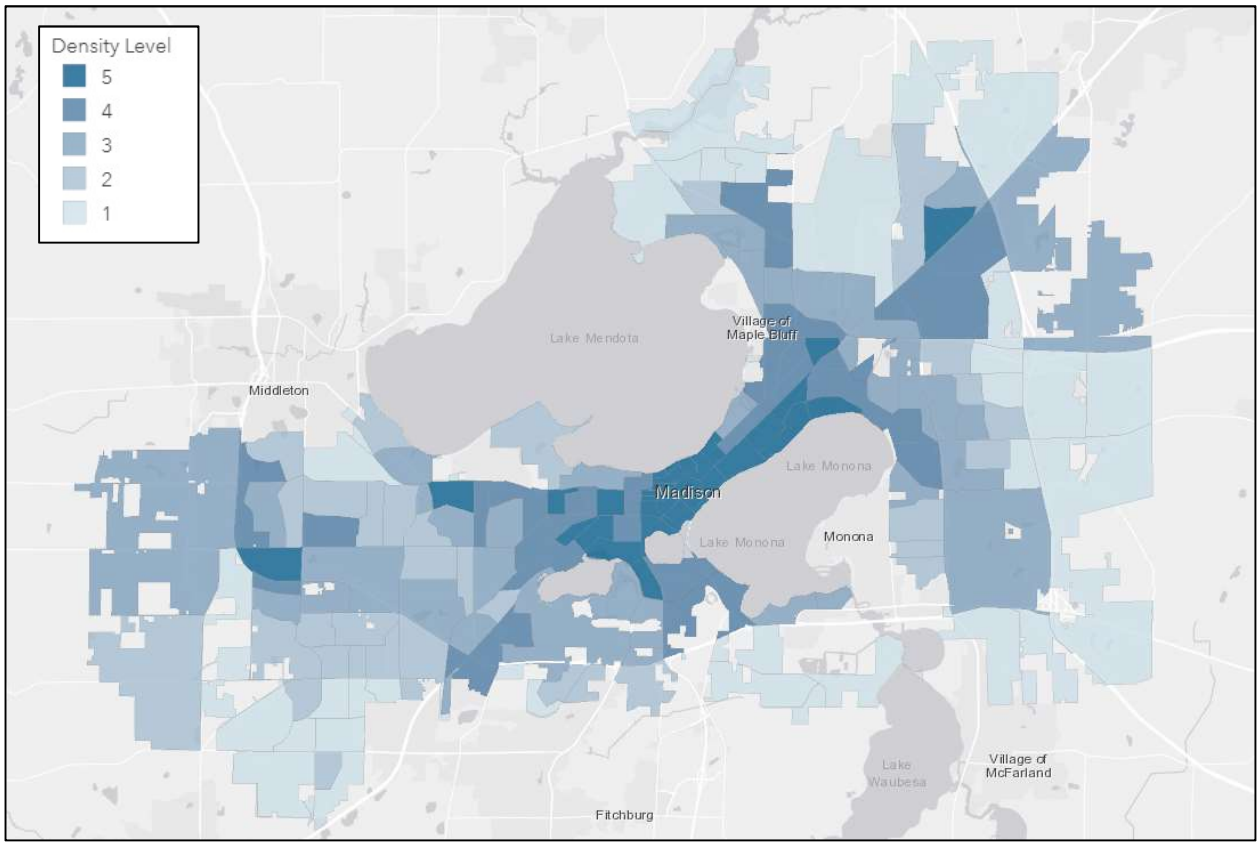
Item	Level 1	Level 2	Level 3	Level 4	Level 5	Total
Number of Residents	**42,596**	**42,864**	**47,760**	**48,871**	**55,342**	**237,433**
Percent of Residents	18%	18%	20%	21%	23%	100%
Number of Alcohol Outlets	**24**	**30**	**109**	**154**	**309**	**626**
Percent of Alcohol Outlets	4%	5%	17%	25%	49%	100%
Number of Alcohol Outlets Per Resident	0.001	0.001	0.002	0.003	0.006	0.003
Number of MPD Incidents	**46,133**	**66,334**	**84,843**	**100,235**	**113,233**	**410,778**
Percent of MPD Incidents	11%	16%	21%	24%	28%	100%
Number of MPD Incidents Per Resident	1.1	1.5	1.8	2.1	2.0	1.7
Number of Fire/EMS Incidents	**9,474***	**8,084***	**13,561***	**11,942***	**14,458***	**57,519***
Percent of Fire/EMS Incidents	16%*	14%*	24%*	21%*	25%*	100%*
Number of Fire/EMS Incidents Per Resident	0.22*	0.19*	0.28*	0.24*	0.26*	0.24*
Number of BI Cases	**3,993***	**4,405***	**5,281***	**6,406**	**6,350**	**26,435**
Percent of BI Cases	15%*	17%*	20%*	24%	24%	100%
Number of BI Cases per Resident	0.09*	0.10*	0.11*	0.13	0.11	0.11
Total MPD Cost	$12,868,538	$15,850,066	$22,098,460	$26,983,163	$28,372,681	$106,172,908
Percent of MPD Cost	12%	15%	21%	25%	27%	100%
MPD Cost Per Resident	$302	$370	$463	$552	$513	$447

Total BI Alcohol-Outlet Cost	**$1,122**	**$1,793**	**$4,075**	**$6,019**	**$12,878**	**$25,887**
Percent of BI Alcohol-Outlet Cost	4%	7%	16%	23%	50%	100%
BI Alcohol-Outlet Cost Per Resident	$0.03	$0.04	$0.09	$0.12	$0.23	$0.11

* No statistically significant relationship with number of alcohol outlets found

A map with all density levels is shown in Figure 12.

Figure 11: Census Block Groups by Density Level



Density Level 5

Areas with a density level of five, indicating the highest concentration of proximate alcohol outlets, are clustered on the Isthmus, campus, and downtown areas, as shown in Figure 13. They extend down Regent and Monroe Streets, and along Old University Avenue. In addition, the areas around West Towne Mall, Hilldale Mall, and a small section near the airport are high-density.

Figure 12: Census Blocks at Density Level 5

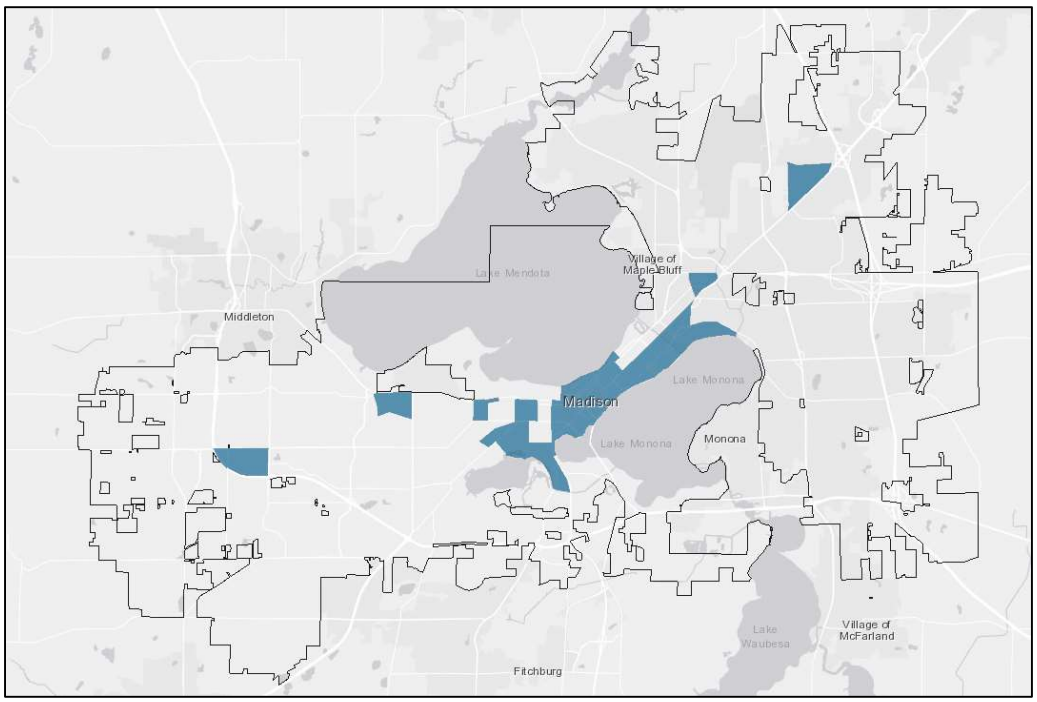


Table 16, below, gives a detailed profile of these areas. For instance, it shows that Level 5 areas have 18% of Madison's people of color, which is 17% of the total population in these areas.

Table 16: Density Level 5 Profile

Item	Number	Percent of Total Citywide	Percent of Total Within Level
Total Population	**55,342**	**23%**	**100%**
People of Color	9,278	18%	17%
Population in Poverty	19,702	46%	36%
Total Alcohol Outlets	**309**	**49%**	**100%**
Class A Alcohol Outlets	40	31%	13%
Class B Alcohol Outlets	269	54%	87%
Total MPD Incidents	**113,233**	**28%**	**100%**
MPD Incidents Against Persons	2,792	24%	2%
MPD Incidents Against Properties	10,802	28%	10%
MPD incidents Against Society	9,639	36%	9%
Other MPD Incidents	90,000	27%	79%
Total Fire Incidents *	**14,458**	**25%**	**100%**
*Fire EMS Incidents **	8,298	22%	57%
*Fire Public Service Assistance Incidents **	1,391	35%	10%
*Fire Unintentional System/Detector Incidents **	811	35%	6%
*Fire Wrong Location Incidents **	732	37%	5%
*Firefighting Incidents **	165	22%	1%
*Other Fire Incidents **	2,805	30%	19%

*Fire Incidents with Missing Data **	256	24%	2%
Total BI Cases	**6,350**	**24%**	**100%**
BI Cases at Alcohol Outlets	368	53%	6%
BI Cases at Non-Alcohol Outlets	5,936	23%	93%
Total MPD Cost	**$28,372,681**	**27%**	**100%**
Total BI Alcohol-Outlet Cost	**$12,878**	**50%**	**100%**

* No statistically significant relationship with number of alcohol outlets found

Density Level 4

Areas with a density level of four have the second-highest concentration of alcohol outlets in the city. They tend to border the densest areas, as shown in Figure 14.

Figure 13: Census Blocks at Density Level 4

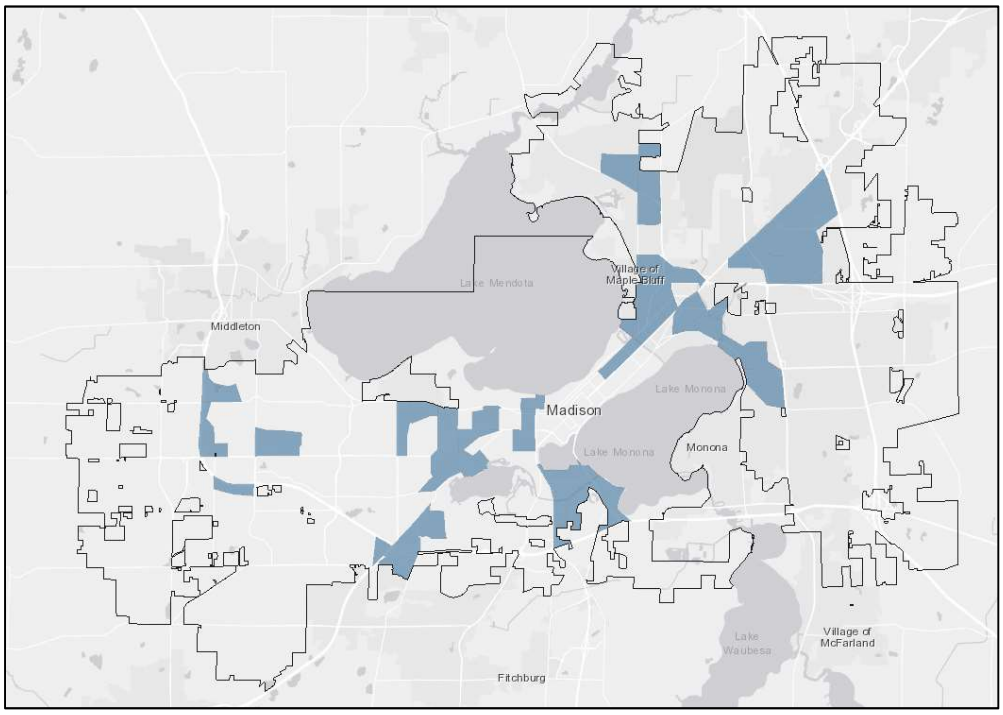


Table 17, below, gives a detailed profile of these areas. Census block groups identified as Level 4 areas have 23% of Madison's people of color, which is 24% of the total population in these areas.

Table 17: Density Level 4 Profile

Item	**Number**	**Percent of Total Citywide**	**Percent of Total Within Level**
Total Population	**48,871**	**21%**	**100%**
People of Color	11,508	23%	24%
Population in Poverty	10,353	24%	21%
Total Alcohol Outlets	**154**	**25%**	**100%**
Class A Alcohol Outlets	40	31%	26%
Class B Alcohol Outlets	114	23%	74%

Total MPD Incidents	**100,235**	**24%**	**100%**
MPD Incidents Against Persons	2,648	23%	3%
MPD Incidents Against Properties	10,679	28%	11%
MPD incidents Against Society	6,708	25%	7%
Other MPD Incidents	80,200	24%	80%
Total Fire Incidents *	**11,942**	**21%**	**100%**
*Fire EMS Incidents **	7,858	21%	66%
*Fire Public Service Assistance Incidents **	834	21%	7%
*Fire Unintentional System/Detector Incidents **	399	17%	3%
*Fire Wrong Location Incidents **	482	24%	4%
*Firefighting Incidents **	173	23%	1%
*Other Fire Incidents **	1,974	21%	17%
*Fire Incidents with Missing Data **	222	21%	2%
Total BI Cases	**6,406**	**24%**	**100%**
BI Cases at Alcohol Outlets	166	24%	3%
BI Cases at Non-Alcohol Outlets	6,204	24%	97%
Total MPD Cost	**$26,983,163**	**25%**	**100%**
Total BI Alcohol-Outlet Cost	**$6,019**	**23%**	**100%**

* No statistically significant relationship with number of alcohol outlets found

Density Level 3

Areas with a density level of three have an average concentration of alcohol outlets in the city. They tend to border the areas with Density Level 4, illustrating a trend of density spilling outwards from the city center, as shown in Figure 15.

Figure 14: Census Block at Density Level 3

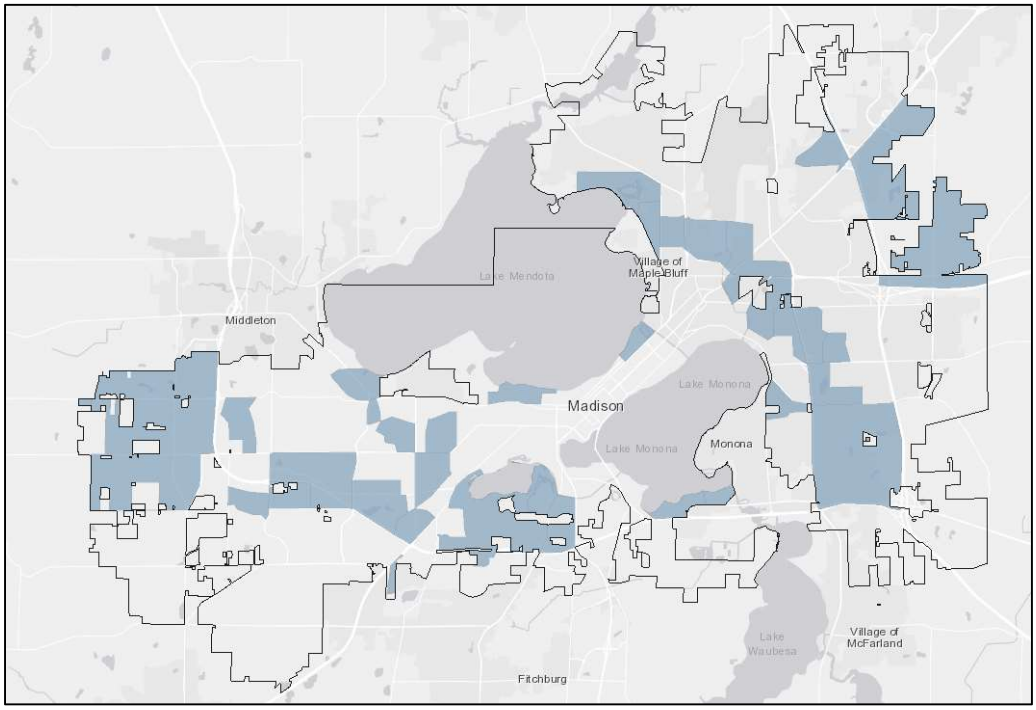


Table 18, below, gives a detailed profile of these areas. Census Block Groups identified as Level 3 areas have 20% of Madison's people of color, which is 22% of the total population in these areas.

Table 18: Density Level 3 Profile

Item	Number	Percent of Total Citywide	Percent of Total Within Level
Total Population	**47,760**	**20%**	**100%**
People of Color	10,389	20%	22%
Population in Poverty	5,217	12%	11%
Total Alcohol Outlets	**109**	**17%**	**100%**
Class A Alcohol Outlets	26	20%	24%
Class B Alcohol Outlets	83	17%	76%
Total MPD Incidents	**84,843**	**21%**	**100%**
MPD Incidents Against Persons	2,441	21%	3%
MPD Incidents Against Properties	7,444	20%	9%
MPD incidents Against Society	4,071	15%	5%
Other MPD Incidents	70,887	21%	84%
Total Fire Incidents *	**13,561**	**24%**	**100%**
*Fire EMS Incidents **	9,407	25%	69%
*Fire Public Service Assistance Incidents **	809	20%	6%
*Fire Unintentional System/Detector Incidents **	499	21%	4%
*Fire Wrong Location Incidents **	356	18%	3%
*Firefighting Incidents **	169	22%	1%
*Other Fire Incidents **	2,036	22%	15%
*Fire Incidents with Missing Data **	285	27%	2%
Total BI Cases *	**5,281**	**20%**	**100%**
*BI Cases at Alcohol Outlets **	93	13%	2%
*BI Cases at Non-Alcohol Outlets **	5,169	20%	98%
Total MPD Cost	**$22,098,460**	**21%**	**100%**
Total BI Alcohol-Outlet Cost	**$4,075**	**16%**	**100%**

* No statistically significant relationship with number of alcohol outlets found

Density Level 2

Areas with a density level of two have a below-average—but not the lowest—concentration of alcohol outlets in the city. These can be found in an arc of west-side neighborhoods arranged around West Towne Mall, as well as a smattering of neighborhoods on the south, east, and north sides, as shown in Figure 16.

Figure 15: Census Blocks at Density Level 2

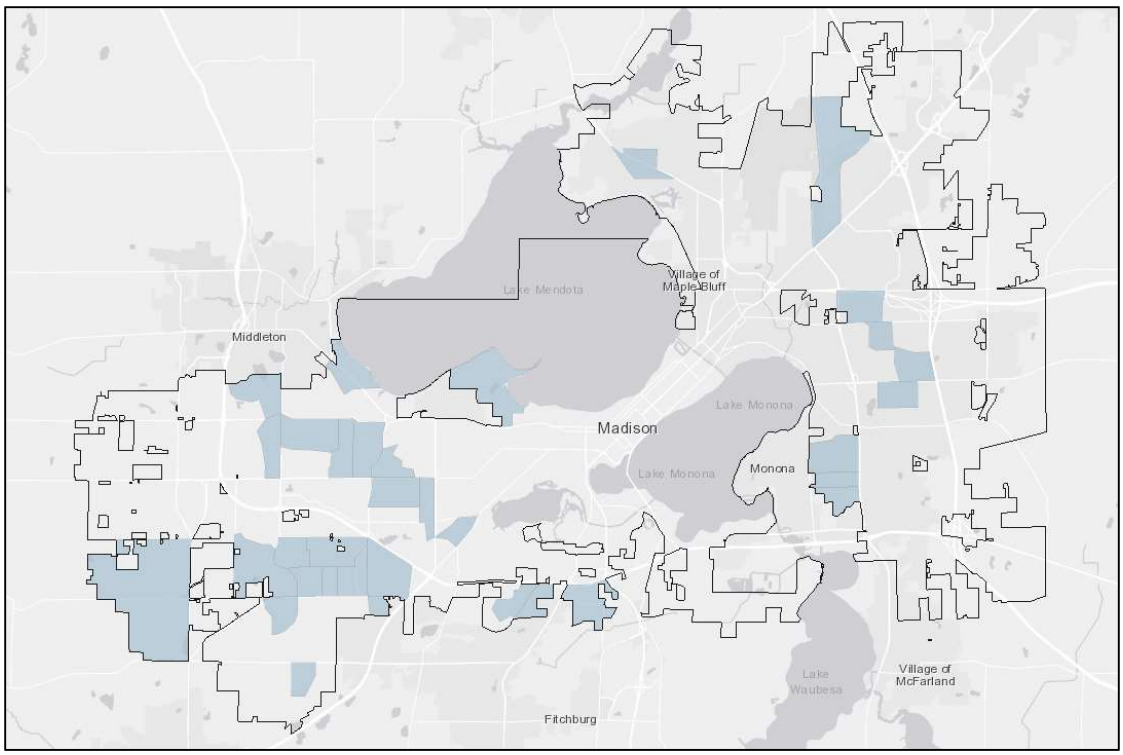


Table 19, below, gives a detailed profile of these areas. Census Block Groups identified as Level 2 areas have 21% of Madison's people of color, which is 25% of the total population in these areas.

Table 19: Density Level 3 Profile

Item	Number	Percent of Total Citywide	Percent of Total Within Level
Total Population	**42,864**	**18%**	**100%**
People of Color	10,754	21%	25%
Population in Poverty	4,902	11%	11%
Total Alcohol Outlets	**30**	**5%**	**100%**
Class A Alcohol Outlets	13	10%	43%
Class B Alcohol Outlets	17	3%	57%
Total MPD Incidents	**66,334**	**16%**	**100%**
MPD Incidents Against Persons	2,094	18%	3%
MPD Incidents Against Properties	4,827	13%	7%
MPD incidents Against Society	3,284	12%	5%
Other MPD Incidents	56,129	17%	85%
Total Fire Incidents *	**8,084**	**14%**	**100%**
*Fire EMS Incidents **	5,629	15%	70%
*Fire Public Service Assistance Incidents **	451	11%	6%
*Fire Unintentional System/Detector Incidents **	272	12%	3%
*Fire Wrong Location Incidents **	199	10%	2%
*Firefighting Incidents **	125	16%	2%

*Other Fire Incidents **	1,256	13%	16%
*Fire Incidents with Missing Data **	152	14%	2%
Total BI Cases *	**4,405**	**17%**	**100%**
*BI Cases at Alcohol Outlets **	42	6%	1%
*BI Cases at Non-Alcohol Outlets **	4,357	17%	99%
Total MPD Cost	**$15,850,066**	**15%**	**100%**
Total BI Alcohol-Outlet Cost	**$1,793**	**7%**	**100%**

* No statistically significant relationship with number of alcohol outlets found

Density Level 1

Areas with a density level of one have the lowest concentration of alcohol outlets in the city. These areas are mainly located on the far-north, south, and far-east sides of Madison, as shown in the light blue areas in Figure 17.

Figure 16: Census Blocks at Density Level 1

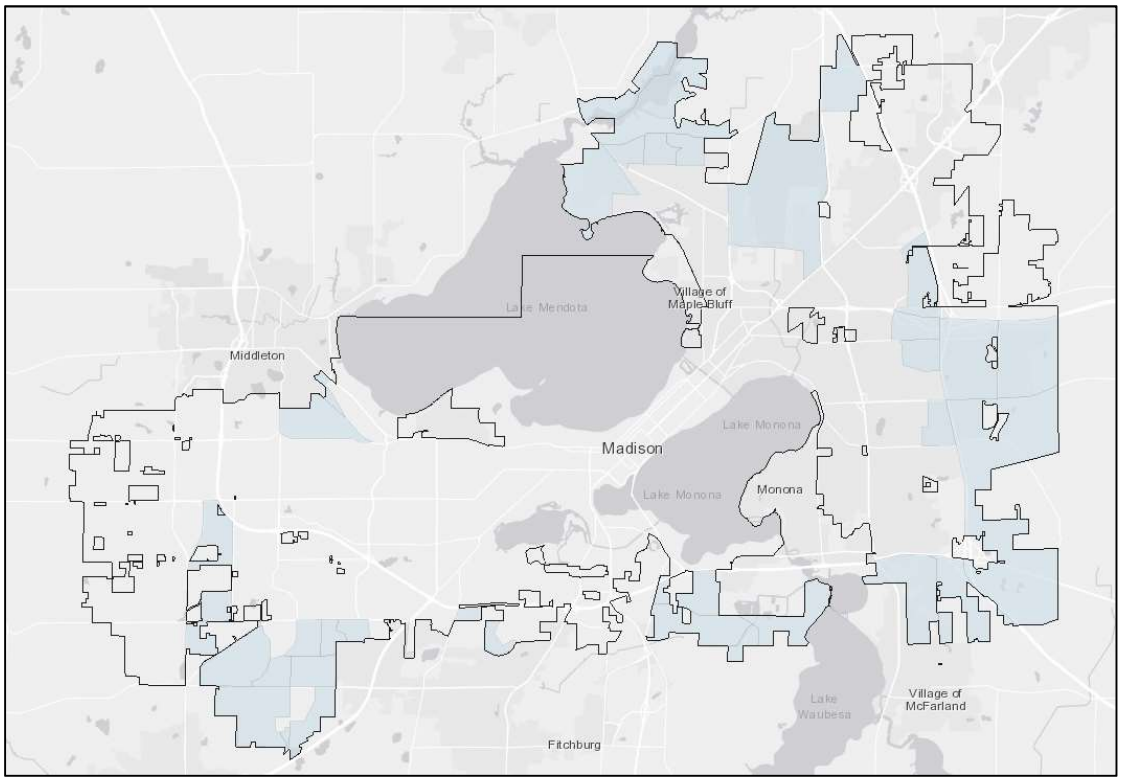


Table 20, below, gives a detailed profile of these areas. Census Block Groups identified as Level 2 areas have 21% of Madison's people of color, which is 25% of the total population in these areas.

Table 20: Density Level 1 Profile

Item	**Number**	**Percent of Total Citywide**	**Percent of Total Within Level**
Total Population	**42,596**	**18%**	**100%**
People of Color	8,750	17%	21%

Population in Poverty	2,860	7%	7%
Total Alcohol Outlets	**24**	**4%**	**100%**
Class A Alcohol Outlets	8	6%	33%
Class B Alcohol Outlets	16	3%	67%
Total MPD Incidents	**46,133**	**11%**	**100%**
MPD Incidents Against Persons	1,636	14%	4%
MPD Incidents Against Properties	4,327	11%	9%
MPD incidents Against Society	2,730	10%	6%
Other MPD Incidents	37,440	11%	81%
Total Fire Incidents *	**9,474**	**16%**	**100%**
*Fire EMS Incidents **	6,728	18%	71%
*Fire Public Service Assistance Incidents **	543	13%	6%
*Fire Unintentional System/Detector Incidents **	358	15%	4%
*Fire Wrong Location Incidents **	214	11%	2%
*Firefighting Incidents **	127	17%	1%
*Other Fire Incidents **	1,345	14%	14%
*Fire Incidents with Missing Data **	159	15%	2%
Total BI Cases *	**3,993**	**15%**	**100%**
*BI Cases at Alcohol Outlets **	26	4%	1%
*BI Cases at Non-Alcohol Outlets **	3,953	15%	99%
Total MPD Cost	**$12,868,538**	**12%**	**100%**
Total BI Alcohol-Outlet Cost	**$1,122**	**4%**	**100%**

* No statistically significant relationship with number of alcohol outlets found

Limitations Relevant to Interpretation of Regression Findings

Although the regression analysis shows significant association between higher levels of alcohol outlet density and increased calls for service to certain City of Madison resources (specifically MPD and BI), the results should be interpreted with caution due to several limitations. Policy decisions based on this analysis must be avoided as this project does not address spatial autocorrelation and residual confounding due to omitted variables. Future studies should take this into consideration. Details of spatial autocorrelation and residual confounding are presented below.

Spatial Autocorrelation

This study did not assess spatial autocorrelation, which indicates how similar a variable is across a geographic area. It also can be thought of as the degree to which nearby areas have similar characteristics to one another (i.e. crime or public safety calls). For example, downtown Madison block groups may be more similar to one another in terms of public safety/service calls compared to block groups on the periphery of the City. Spatial data often has some degree of spatial autocorrelation. The occurrence of spatial autocorrelation may impact results because spatial autocorrelation that is not accounted for violates the underlying assumption of regression modelling that public safety/service calls are independent of one another. If spatial autocorrelation is present and not accounted for, the results of a regression model could be invalid. When there is no evidence of spatial autocorrelation, standard regression techniques may be used without violating the assumption of independent outcomes.

Future research could include a Moran's I test to discern the extent of spatial autocorrelation. The project team was unable to conduct this analysis due to the specialized spatial epidemiology skills required. If the

Moran's I test produces a positive, significant result, this suggests that public safety calls in adjacent block groups are more similar than those that are not adjacent.

Additional Covariates

While many covariates were included to control for differences between block groups that could be related to either alcohol outlet density or outcomes included in the regression models, there could be additional factors that were not accounted for in the model.

Discussion

Statistically Significant Relationships Vary by Agency

The clearest finding from this research also provides the response to the first research question: Are public safety services being disproportionately utilized in areas defined as having high alcohol outlet density throughout the City? The results show that the relationships between calls for service and alcohol density varies by agency. All MPD calls, for example, have a statistically significant association with density level, while Fire/EMS calls for service do not.

Figure 18 illustrates the strongest relationship between alcohol density and calls for service, which is shown in the MPD data.

Figure 17: MPD Calls and Cases by Density Level

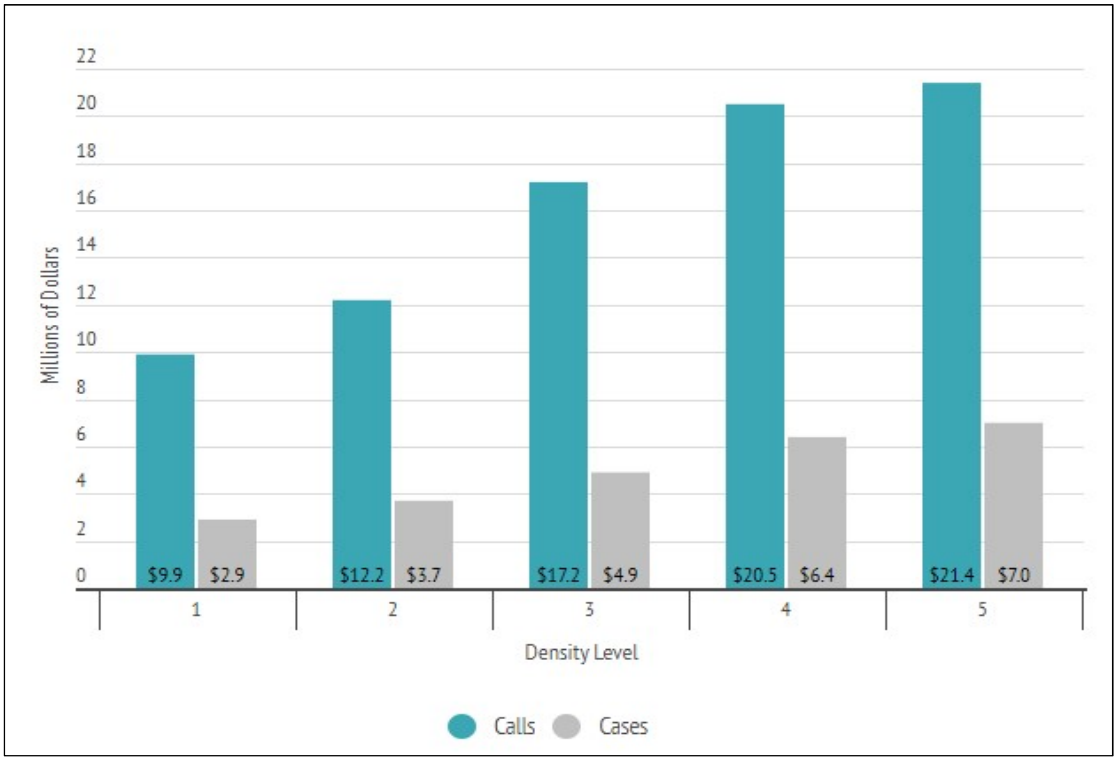
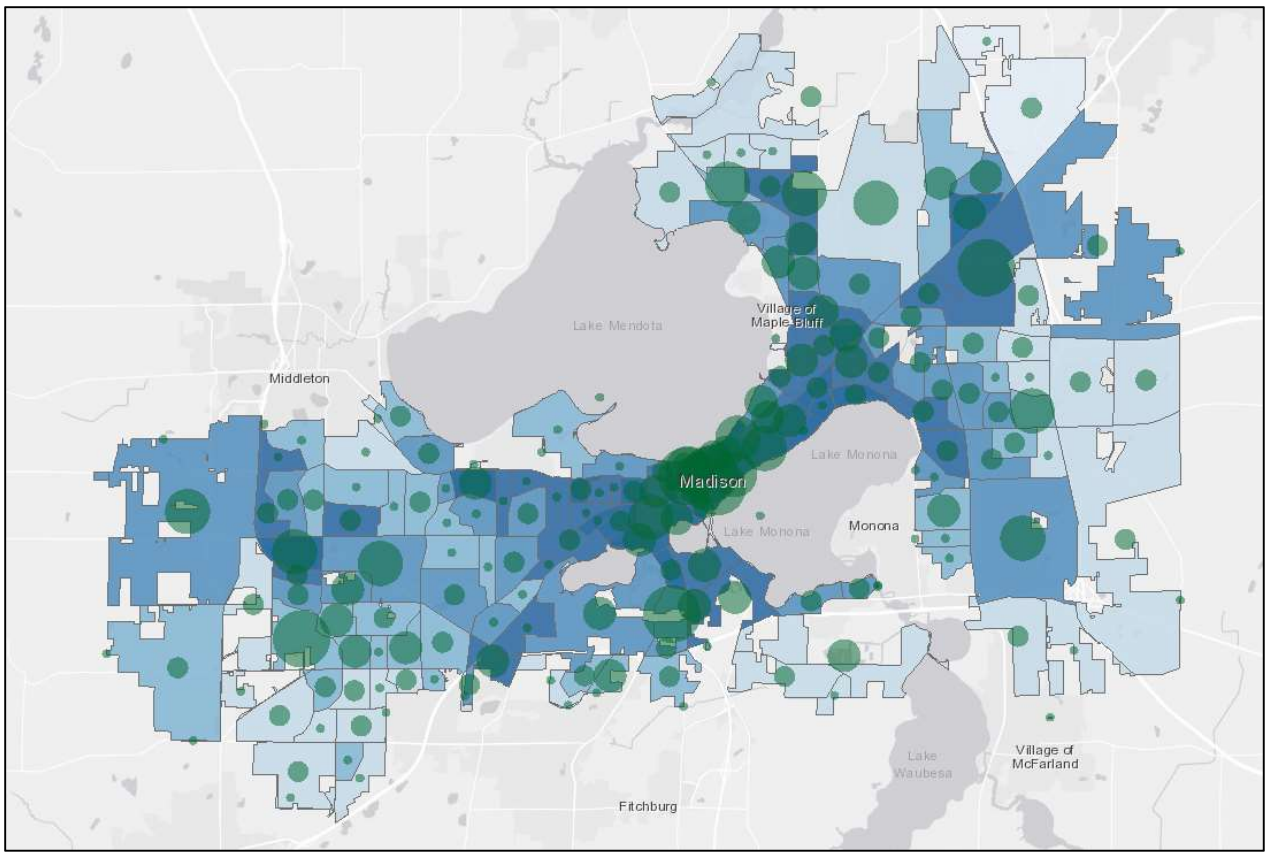


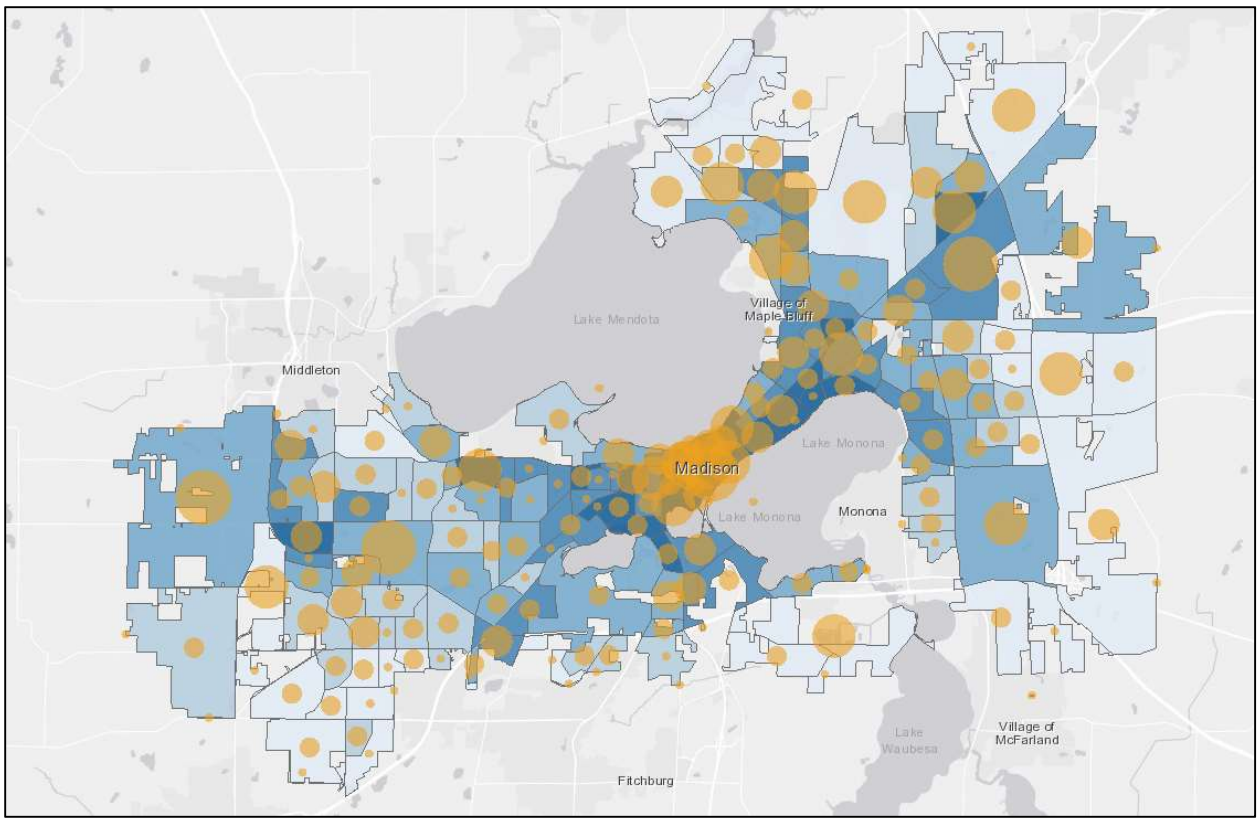
Figure 19 shows the number of MPD calls for each Census block group as a proportional green circle, with larger circles representing higher call volume. The Census block group are color-coded to show density level, with low density represented by light colors and high density represented by dark. This map clearly shows the relationship between higher call volume and higher alcohol outlet density found in the regression analysis. These MPD call and case findings align with interviews with MPD officers, who indicated that alcohol-related issues that they address are concentrated on the University Avenue and State Street corridors where there is a large concentration of alcohol outlets (Officers, 2019).

Figure 18: Density Levels and MPD Calls and Cases



On the other hand, there was no statistically significant difference in Fire/EMS calls across density levels. More dispersion of cases is visible when mapped across density levels, as shown in Figure 20.

Figure 19: Fire/EMS Cases Across Density Levels



The data shows a similar trend to the MPD data, as illustrated in Table 21. Level 5 block groups, which have the highest alcohol density, had the greatest number of Fire/EMS incidents (14,458) while Level 2 had the fewest (8,084).

Table 21: Number and Percent of Fire/EMS Incidents by Density Level

Density Level	Incident Frequency	Percent of Incidents
5 (Highest)	14,458	25.1%
4	11,942	20.8%
3	13,561	23.6%
2	8,084	14.1%
1 (Lowest)	9,474	16.5%

For Fire/EMS, 17% of incidents in Level 5 occurred on Saturdays, while the range for Levels 1-4 was 13.2%-14.7%. Saturdays are likely have the most amount of alcohol consumption occurring compared to other days of the week, which indicates a correlation between alcohol outlet density and Fire/EMS incidents for Saturdays in particular. Interviews with first responders supported the high volume of calls for dense areas on Saturdays, indicating that, particularly for the downtown area and student population, there is a steady, high volume of alcohol-related calls on weekends (Crawley, 2019). Special events, such as football games and Halloween, were indicated to be strong contributors to this trend (Crawley, 2019). Future

analyses could control for day of the week and time of day of incidents, considering there are times when alcohol consumption is much more likely to occur.

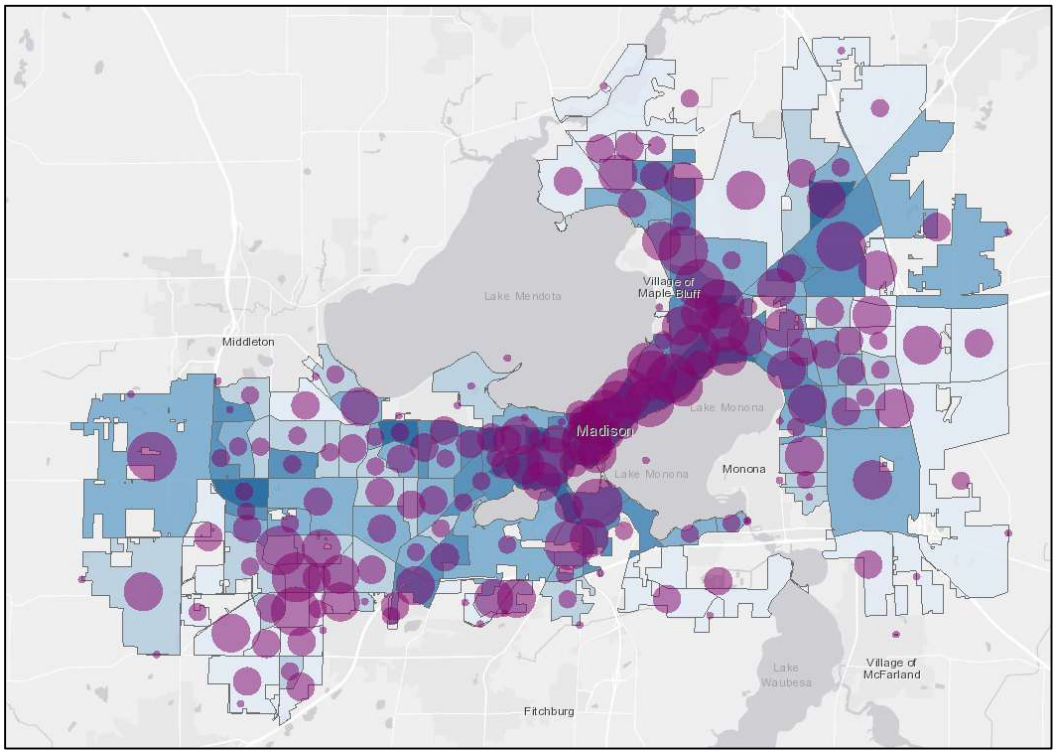
Finally, Table 22 shows number of building inspection cases for each density level by case type. Housing appears to be the only case type that has a higher percentage of cases in the highest levels of density (i.e., Level 4 and Level 5). This may mean that housing cases are driving the total increase in BI cases for Level 4 and Level 5. Furthermore, with rental property emergency contact complaints constituting 58 percent of housing cases, it appears that these type of complaints may be the main driver and worthwhile for Building Inspection to examine outside of this study.

Table 22: Number and Percentage of Building Inspection Cases by Density Level and Case Type

	Case Type											
Density Level	**Construction**		**Housing**		**Property Maintenance**		**Weights and Measures**		**Zoning**		**Grand Total**	
1	75	10%	1,294	12%	2,335	18%	2	8%	273	14%	3,979	15%
2	145	20%	1,488	14%	2,515	19%	1	4%	250	13%	4,399	17%
3	228	31%	2,089	20%	2,488	19%	9	35%	448	23%	5,262	20%
4	150	20%	2,724	26%	2,935	23%	8	31%	553	28%	6,370	24%
5	143	19%	3,053	29%	2,670	21%	6	23%	432	22%	6,304	24%
Total	**741**	**100%**	**10,648**	**100%**	**12,943**	**100%**	**26**	**100%**	**1,956**	**100%**	**6,314**	**100%**

This relationship is visible when BI cases are mapped in Figure 21. There is an intense concentration of cases in the downtown area, but a more even distribution of cases throughout the remainder of the City, reflecting the relationship existing only at the highest density levels.

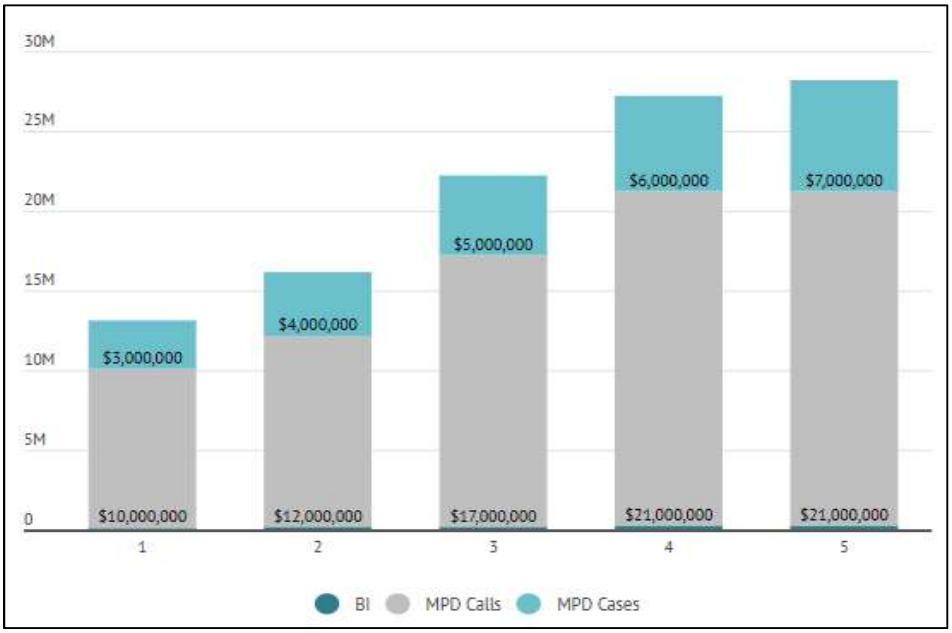
Figure 20: Building Inspection Cases across Density Levels



Primary Driver of Cost Is MPD Services

The second research question focused on the costs associated with providing City services that are disproportionately utilized across the City. While both MPD and BI calls are significantly associated with alcohol outlet density level and both agencies have higher costs associated with those higher density levels, this study found that the costs of MPD services are much higher than those of BI services. Figure 22 illustrates this finding, with BI costs barely visible on a chart showing both BI and MPD costs.

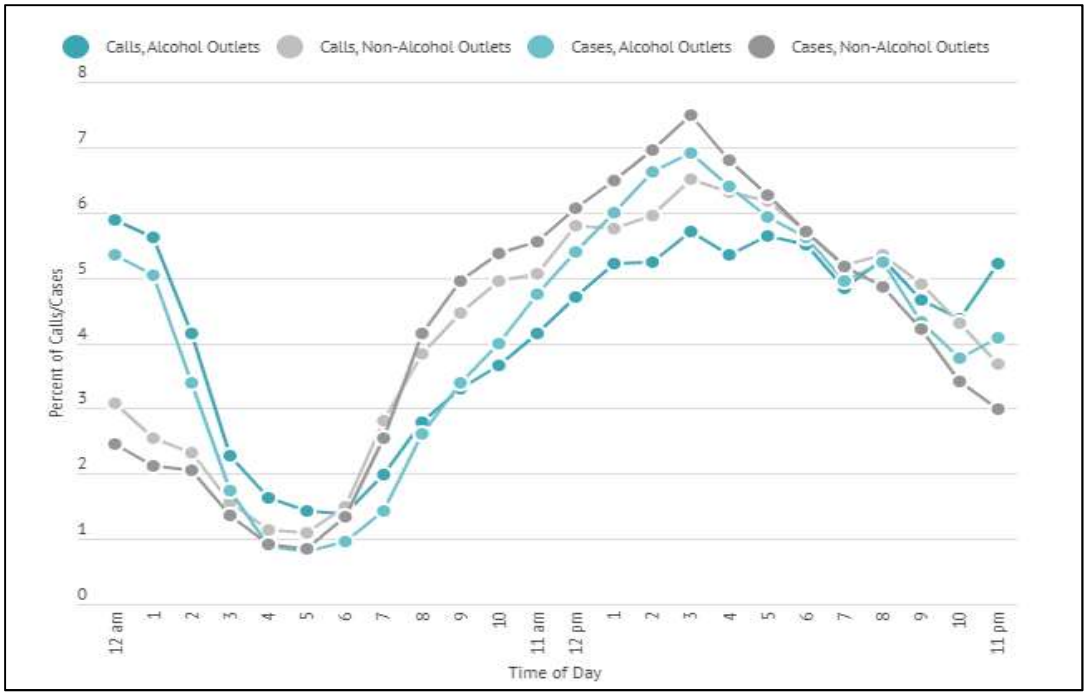
Figure 21: MPD and BI Costs by Density Level



Density of Alcohol Outlets Appears to Drive Time of MPD Calls, MPD Call Type, and BI Case Type

When all MPD calls included in the study are graphed by time of day for alcohol outlets versus non-alcohol outlets, the difference in the calls for service for alcohol outlets becomes more apparent. Peak call/case times for alcohol outlets occur between 10 pm and 3 am, while peak call/case times for non-alcohol outlets occur between 3 pm and 9 pm. Figure 23 illustrates this.

Figure 22: MPD Call and Case Times, Alcohol vs. Non-Alcohol Outlet



Alcohol outlets appear to be driving calls and cases during times of the day when there might otherwise be fewer calls and cases. Officers echoed these concerns in interviews with the research team, indicating that bar time is a major concern for safety because many patrons are leaving establishments at one time and congregating on sidewalks outside (Interviews with Madison Police Department, 2019). Officers indicated that alcohol-related issues are more likely to occur at this time, as is born out in the charts above. Officers suggested that eliminating the mass exodus from alcohol outlets at bar time, such as by stopping alcohol service earlier or eliminating the concept of "bar time," may mitigate these issues (Interviews with Madison Police Department, 2019).

Not only do MPD calls and cases seem to be driven by alcohol outlets at certain times of the day, but types of MPD calls and cases and BI cases differ for alcohol and non-alcohol outlets.

Table 23 shows the top call and case types for alcohol outlets as compared with non-alcohol outlets. Calls and cases associated with alcohol outlets are more often providing additional support to other law enforcement units or theft, while calls and cases associated with non-alcohol outlets tend to include categories that could not be associated with alcohol outlets, such as traffic stops, as well as more general police services such as information.

Table 23: Call and Case Types at Alcohol Establishments vs. Non-Alcohol Establishments

	Alcohol Outlets	
Call Category	***#***	***%***
Assist K-9	4,268	10.0%
Check Person	3,015	7.0%
Assist Fire/EMS	2,879	6.7%
Assist Police	2,776	6.5%
Check Property	2,076	4.8%
All other categories	27,826	65.0%
Total	**42,840**	**100.0%**

	Non-Alcohol Outlets	
Call Category	***#***	***%***
Check Property	***43,920***	11.8%
Check Person	***32,535***	8.8%
Traffic Stop	***18,371***	4.9%
Phone	***16,788***	4.5%
Assist Citizen	15,004	4.0%
All other categories	244,654	34.1%
Total	**371,272**	**100%**

	Alcohol Outlets	
Case Category	***#***	***%***
Retail Theft	2,676	18.9%
Theft	1,232	8.7%
Disturbance	1,131	8.0%
Check Person	883	6.3%
Fraud	476	3.4%
All other categories	8,202	58.1%
Total	**14,124**	100.0%

	Non-Alcohol Outlets	
Case Category	***#***	***%***
Check Person	10,535	10.2%
Disturbance	6,803	6.6%
Domestic Disturbance	6,517	6.3%
Theft	5,087	4.9%
Information	4,676	4.5%
All other categories	69,510	67.4%
Total	**103,128**	100.0%

A key limitation of the MPD dataset is that there is no indicator of which calls/cases are associated with alcohol. While a call may occur at the same address as an alcohol outlet, this is not always the case. In particular, a call/case could result from alcohol purchased at a specific outlet but occur elsewhere after the patron leaves the outlet. The 42,840 calls and 14,124 cases in the police dataset that are directly tied to alcohol outlets is likely an undercount of the number of alcohol-related calls/cases, but it is unknown the number of incidents related to alcohol that do not occur at alcohol outlets.

That so few calls and cases are specifically tied to alcohol establishments is not too surprising, according to interviews the research team conducted with MPD officers. Officers indicate that police work hard to partner with bar and restaurant owners to make the atmosphere downtown safe for patrons (Interviews with Madison Police Department, 2019). Further, incidents tend to occur as patrons are leaving establishments, rather than in the establishment itself.

Building inspection cases are categorized as one of five types: construction, housing, property maintenance, weights and measures, and zoning. These cases are described in more detail in Table 24.

Table 24: Building Inspection Case Types

Case Type	**Includes**
Construction	-Construction complaints -Missing permit
Housing	-Interior/exterior general maintenance -Failure to register emergency contacts for rental properties

Case Type	**Includes**
Property Maintenance	-Trash and debris -Snow removal -Placement of trash containers -Weeds and overgrowth
Weights and Measures	-Gas pumps -Price verification -Pricing -Short weight
Zoning	-Signage (e.g. banners, A-frame signs, non-permitted installation) -Parking on the lawn -Occupancy complaints

As shown by Figure 24, most of the citywide cases are associated with either housing or property maintenance, with the two categories making up almost 90 percent of cases. Conversely, property maintenance remains the most frequent for alcohol outlets but is then followed by zoning and housing, as shown by Figure 25.

Figure 23: All Building Inspection Cases by Type

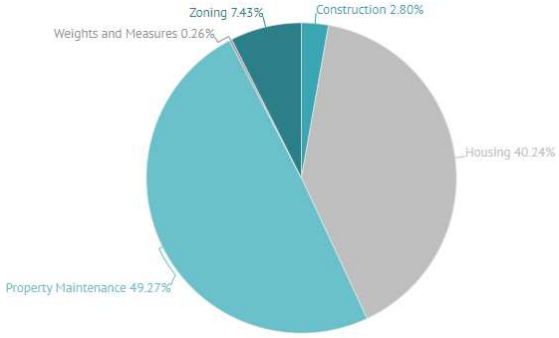
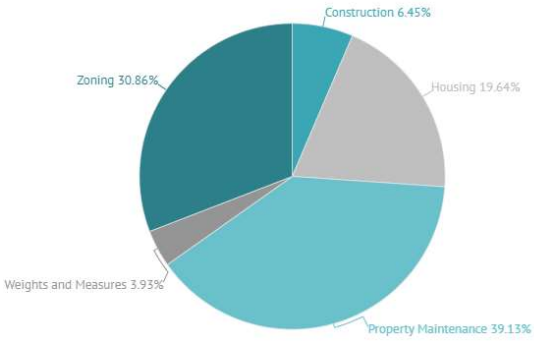


Figure 24: Building Inspection Cases by Type for Alcohol Outlets



The type of building inspection cases appear to reflect the type of property when alcohol outlets are separated from non-alcohol outlets. Zoning appears to be a larger piece of building inspection cases for alcohol outlets because there appears to be more signage complaints than non-alcohol outlets. Similarly, housing appears to be a larger share of non-alcohol outlet cases because nearly all rental property emergency contact complaints occur at non-alcohol outlets. It is also worth noting that approximately 6,000, or 58 percent, of the housing cases are due to rental property emergency contact complaints. Another difference between alcohol and non-alcohol outlets is that weights and measures is less than one percent of all cases but is approximately four percent at alcohol outlets. Noting the differences between alcohol outlet and non-alcohol outlet cases is useful because the two subsets have proportionately different case types with each case type potentially requiring different levels of process time and cost.

Demographic Factors Across Density Level

A key trend that appeared during this analysis was the demographic distribution of Madisonians across alcohol density levels. In particular, Madison's people of color consistently divided among the five density levels, with each level having approximately 18-23% of the City's people of color. This relationship does

not hold for the distribution of the population in poverty, which is more highly concentrated in the more dense levels. Table 25 illustrates these trends.

Table 25: Demographic Factors Across Density Levels

	Level 1	Level 2	Level 3	Level 4	Level 5	Total
Number of Residents	**42,596**	**42,864**	**47,760**	**48,871**	**55,342**	**237,433**
Percent	18%	18%	20%	21%	23%	100%
People of Color	**8,750**	**10,754**	**10,389**	**11,508**	**9,278**	**50,679**
Percent	17%	21%	20%	23%	18%	100%
Population in Poverty	**2,860**	**4,902**	**5,217**	**10,353**	**19,702**	**43,034**
Percent	7%	11%	12%	24%	46%	100%

Alcohol Outlet Data Process and Governance

Examining the data around alcohol outlets, in the "Alcohol Outlet Licenses" section, shed light on the state of the City's data about alcohol outlets. In particular, the City does not possess capacity numbers for alcohol outlets that have continuously occupied their premises since before 1998. This means that Building Inspection only has capacity data for 45% of licensed alcohol outlets within the city (and 54% of outlets licensed for onsite consumption). Further, there is no single authoritative source of data. These factors combine to make it difficult to pursue analyses and policies that rely on total outlet capacity. Additionally, different bodies may set capacity limits without knowing about the limits set by the others, and conditions on alcohol licenses do not appear systematically within the licenses, perhaps reflective of the ad-hoc nature of the conditions.

The business process analysis in Appendix C also helps shed light on the processes contributing to the state of this data.

Based on these findings, a workgroup between the Clerk, Building Inspection, and Fire Department may help to resolve data considerations related to alcohol licensing.

Influence on Non-Alcohol Outlets

This study does not attempt to quantify alcohol-related costs to business owners in the downtown area. However, interviews with subject-matter experts indicated that this is an important consideration. Not only does alcohol use contribute to costly incidents such as broken windows, but business owners believe that the presence of alcohol outlets in the downtown is driving up business costs in a way that pushes out other business owners in favor of those selling high mark-up alcohol (Torkildson, 2019). Additionally, business owners believe that it is creating an incentive for non-alcohol outlets (such as bookstores) to sell alcohol or have alcohol-related events in order to maintain a sustainable business model.

Best Practices Review

Specific policy solutions are outside the scope of this report. However, a natural outgrowth of the study questions and focus is inquiry into municipal best practices regarding alcohol licensing and enforcement, and how these policies affect alcohol outlet density. Such strategies include:

- Geographic alcohol license restrictions
- Population-level alcohol license restrictions
- Commercial alcohol license restrictions

- Time/space alcohol license restrictions.

Appendix B provides a review of relevant strategies implemented by other municipalities.

Special Charge Discussion

One impetus of this study was the question of whether: (1) businesses downtown receive a disproportionate share of services due to the concentration of alcohol establishments and (2) whether these businesses should have to pay a special charge to support the disproportionate use of services. Wisconsin State law allows local jurisdictions to implement a special charge for certain services provided by the municipality. Under this provision, cities can implement a fee to recover costs associated with a specific program so long as the fee does not exceed the actual cost of providing the service.

In this case, the project team did find a significant relationship between the demand for Police and Building Inspection service and alcohol outlet density. Given the limitations highlighted in the study, it is not recommended to implement a special charge for these services. During the course of the stakeholder interviews, the project team learned that there is great variation in the types of businesses, restaurants, and taverns located in the areas with the highest density levels. The project team also learned that rent and property costs in the City's core and nearby neighborhoods are increasing in the same way all property assessments are growing in the City. Implementing a special charge will put even more pressure on the business model for establishments in the area which may have an unintended consequence of incentivizing more alcohol heavy business models.

Rather than exploring implementing a special charge, it may be appropriate to explore the structure of other fees that may be paid by these establishments (i.e. entertainment license).

Appendix A: Study Charter

Background

Problem or Opportunity Statement

Areas in the City of Madison that are densely populated with businesses catering to nightlife and alcohol sales appear to disproportionately consume City services—namely public safety services (i.e., police, fire and EMS). From 2016 to 2018, the amount of public safety services in these areas have increased by XX%[5] and represents XX% of citywide public safety services. This increased level of service reduces public safety services available to other areas throughout the City by XX% and represents XX% of citywide public safety operational costs.

The two primary research questions to investigate, a part from entering the actual numerical values in the aforementioned problem statement, are as follows:

1. Are public safety services (police/fire/EMS) being disproportionately utilized in areas with high alcohol outlet density throughout the City? Within the study density will be defined.
2. Is there a disproportionate net per capita cost of providing public safety services in areas of high alcohol outlet density? Do costs vary based on license class? What are the characteristics of licensees who contribute to disproportionate services?

How the empirical evidence is obtained and how these questions are answered is provided in the project plan.

Business Case

There is a common perception among many City stakeholders that certain areas of the City disproportionately consume City resources and therefore pull these resources away from other areas of the City. This analysis will attempt to validate these concerns with observable data and measurement.

Overcrowding and public safety issues around drinking establishments are not new in Madison. National research provides evidence of the links between alcohol outlet density and various health and social harms. However, the analysis is important, especially if it does uncover pervasive overuse of City services by certain neighborhoods and businesses. If this type of situation is corroborated by dependable data and measurement, the City has an opportunity to increase its equitable allocation of resources by requiring additional revenue contributions from those benefitting from higher levels of service.

With that being said, the imposition of a newly created special charge would require compelling statistical evidence to support the hypothesis that alcohol outlet density represents an issue requiring new and additional City services above and beyond a reasonable level. In addition, the introduction of a new special charge targeted towards certain businesses and areas is certain to become a contentious issue, especially if it involves areas that already fall under other City-designated zones (e.g., BID). The purpose of this analysis is to review available contextual information and data to assess whether the City has a potential business case for imposing additional assessments.

[5] These uncalculated figures showing "XX%" were included in the original charter, and are not a typo. Rather, they reflect the project team's thinking at the time the project charter was drawn up in May 2018, and were left uncalculated because the research went in a different direction.

The data can also provide a more complete picture of policy and environmental factors that can reduce and prevent excessive alcohol use thus decreasing the total cost for use of City services and increase the overall health of the community.

Potential Service Change

We expect the outcome of this analysis to fall into one of three categories:

1. Systematic and disproportionate utilization of City resources cannot be proven by available data. In this scenario, we would recommend that the City not pursue any additional assessments at this time.
2. Our analysis concludes that it is likely that certain areas/businesses are disproportionately consume City resources, but additional data/research/etc. is required to substantiate the imposition of an additional targeted assessment. In this scenario, we would recommend the creation of a new workgroup to conduct further research on the matter including considerations for the Alcohol Licensing Review Committee when reviewing license requests/renewals.
3. Our analysis concludes that it is likely that certain areas/businesses are disproportionately consuming City resources and existing data appears to be compelling enough to substantiate an additional targeted assessment. In this scenario, the appropriate City stakeholders would need to convene to plan the process for communications, rollout and maintenance of a new assessment. This scenario may also include considerations for the Alcohol Licensing Review Committee when reviewing license requests/renewals.

Project Vision, Deliverables and Scope

What does success look like?

A successful analysis project will encompass the following:

- Ability to obtain necessary information and datasets in a timely manner and in useable formats.
- Ability to perform an independent analysis that answers, to the best of our abilities, the two primary research questions presented in section 1.1.
- A succinct, data-informed opinion on whether there is evidence of significant over-utilization of City public safety resources in areas with high alcohol outlet densities.

Deliverables

This analysis will culminate in a final report or presentation detailing our research methods and any relevant findings and recommendations for the City's management moving forward.

Scope

The scope of this analysis project will be limited to trying to answer the two primary research questions presented in section 1.1. It is important to reiterate that within these two research questions the project team will be focusing their efforts on the cost and usage implications for public safety resources only (specifically, police, fire and EMS). This analysis will define and be limited to what the City means by alcohol outlet, alcohol outlet density, and levels of public safety services and operational costs. Data may also be obtained from the UW Police Department and UW Hospital to obtain further information on the scope of calls and services within the City of Madison that might not be captured from City datasets.

The majority of the research and analysis work for this project will be conducted independently by a small team within Finance with the assistance of relevant stakeholders throughout the City, including Public Health Madison and Dane County, to obtain the information/data/context needed to conduct a thorough analysis.

Non-public safety services delivered to neighborhoods or businesses fall outside the scope of this analysis project. Although other City services are provided to these areas, the problem appears to be largest and most pervasive with public safety. With that being said, the findings of this analysis may lead to recommending an additional analysis where more City services and benefits from these neighborhoods are analyzed.

This analysis will not cover any administrative, legal or financial implications of any potential new assessments or levies on certain businesses or districts.

Project Planning

Roles and Responsibilities

Role	**Responsibilities**	**Staff Name & Agency**
Executive Champion	Representative from Mayor's Office who has endorsed the project; ensures relevant Agency contacts provide open and timely information required for analysis; briefed on final analysis findings.	TBD, Mayor's Office
Project Champion	Agency Head who has endorsed the project and allocated resources or priority to it; kept in the loop on project progress; signs charter and signs off on final deliverable; must have sufficient authority to ensure project is implemented.	Dave Schmiedicke, Finance Janel Heinrich, Public Health
Project Sponsor	The main Agency POC that coordinates with Project Leads to ensure the project is successful; assists in overcoming obstacles in the work; reviews draft and final deliverables and verifies scope is delivered.	Laura Larsen, Finance Julia Olsen, Public Health
Project Leads	City staff responsible for conducting the outreach, data gathering and analysis required to complete the objectives of the analysis project.	Trevor Bynoe, Finance Brent Sloat, Finance David Singer, Finance Jeffrey Lafferty, Public Health
Agency Subject Matter Experts (SMEs)	Frontline and/or program staff that provide insight into relevant department processes, data and workflows; provide input on data analysis methods (e.g., defining density); provide input on findings and/or recommendations.	TBD, Clerk TBD, Police TBD, Fire TBD, Attorney's Office TBD, Planning TBD, Treasurer TBD, Finance TBD, Building Inspection TBD, University Police Department Julia Sherman, UW Alcohol Policy Project Carrie Meier, Dane County EMS Sarah Johnson, Public Health

Data POCs	The main POCs within each Agency that understand the databases and how to extract data from them. Responsible for ensuring data is extracted and available for the analysis phase.	TBD, Clerk TBD, Police TBD, Fire TBD, Planning TBD, Treasurer TBD, Finance TBD, Building Inspection Carrie Meier, Dane County EMS
Data Science Experts	Provide assistance with statistics, modeling, mapping and/or other analytics that may add value to the analysis but that Project Team lacks proficiency in	TBD, IT TBD, Planning TBD, Community and/or University Partners Crystal Gibson, Public Health Justin Svingen, Public Health
Agency Team Members	List any additional team members and their role in the project.	
Stakeholders	Anyone else who may be interested in/affected by the outcomes of the project	Common Council; Madison residents; Madison businesses; UW Alcohol Policy Project, Substance Abuse Prevention Coalitions

Project Phases

Phases	**Description**	**Responsible Party**	**Output(s)**
Project Charter and Planning	Before beginning work, we complete and sign this document.	Executive Champion, Project Champion, Project Sponsor and Project Leads	Signed charter
Data Access	Each Agency's Data POC must pull and deliver requested data to Project Leads in a useable format.	Data POCs	Data Access; Confidentiality agreement if needed
Data & Business Knowledge Transfer	Agency SMEs should provide data documentation and other program or business process documentation.	Agency SMEs and Project Leads	Existing business documentation; additional notes, documentation and/or meetings if needed; any research reports or prior analyses
		Iterative Analysis: Data Collection, Analysis, Review, Report	
Initial Contextual Research	Agency SMEs and other frontline staff provide overview of current practice, historical reference, and relevant information	Agency SMEs, Data POCs, Project Leads	Research Summary with Data Collection & Analysis Plan

Data Collection & Data Analysis	Collection: Agency SMEs, Data POCs, and Project Leads collect required data and clean for analysis. Analysis: Exploration of datasets; mapping of data; updating of problem statement; testing of research questions	Agency SMEs, Data POCs, Data Science Experts, and Project Leads	Clean datasets ready for analysis. Data Analysis; Mapping; Summary defining Alcohol Outlet, Density, and Service
1. Obtain or Access Alcohol Outlet Inventory	Defines and categorizes all alcohol outlets by class and location with contextual data on years with license, years at current location, and building capacity.	Clerk, Fire or Building Inspection for capacity numbers, and project leads	Alcohol outlet inventory that can be mapped
2. Define Density	All alcohol outlets mapped complete with valid boundaries and a valid and reliable measurement of density	Leverage data from Planning Building Inspection, the Clerk's Office, and Public Health; referencing CDC guidance	A Citywide map (preferably GIS) showing alcohol outlets and defined areas with their degree of density
3. Define Service	Police, Fire and EMS services with their levels of service and operational costs, particularly to areas defined in the previous phases relative to the rest of the City	Police, Fire, EMS, Finance, Public Health, and project leads	Measurement of levels of service to areas and business defined in the previous phases. Time series analysis with historical data is preferred and needed to complete problem statement.
Draft Findings, Limitations, & Recommendations	Summarization of analytical findings, broken down by research question, limitations, recommendations for future study, and evidence-based policies and practices that could be implemented by the City.	Project Leads, Project Champion	Draft Report and/or Presentation
Project Close out			
Review & Comment	Allow limited subset of primary stakeholders the opportunity to review findings and provide relevant feedback for potential incorporation	Project Sponsor, Agency SMEs	Final Report and/or Presentation
Reporting & Dissemination	Present findings to Mayor's Office. Create brief case summary of project	Project Leads	Presentation to Mayor's Office; Case Summary

for future promotional & learning purposes.		

Project Milestones

Milestone	**Responsible parties**	**Status**
Project kick-off meeting	Executive Champion, Project Sponsor, Project Champion, Project Leads	
Project Charter signed	Executive Champion, Project Sponsor, Project Champion, Project Leads	
Recurring monthly status update	Project Champion, Project Leads	
All requested data delivered to Project Leads	Data POCs	
Research summary and analysis plan	Project Leads	
Data analysis summary	Project Leads	
Draft report/presentation	Project Champion, Project Leads	
Final report/presentation	Agency SMEs, Project Leads	
Report to Mayor's Office	Executive Champion, Project Leads	
Project case study	Project Leads	

Constraints, Assumptions, Risks and Dependencies

Constraints	Potential constraints related to this project include, but are not limited to: ● No dedicated analytical staff; Project Leads have other work commitments to balance with this work ● Inconsistencies in quality and accessibility of Agency datasets ● Limited internal technical skills related to advanced analytics ● Preconceived notions about the appropriate courses of action regarding the underlying issue of alcohol outlet density and its relationship to undesirable behaviors
Assumptions	● Agency SMEs will be open and forthright with the Project Leads as they conduct their analysis ● Requested datasets will be submitted by Agencies in a timely fashion, in useable formats requiring minimal cleaning and/or transformation
Risks and Dependencies	● Data is not available with the level of detail we need to adequately respond to the research questions ● Risk of misinterpretation of the data due to analysis of limited available indicators to address a highly complex issue ● We do not have the in-house technical capability to run the types of analytics/statistics needed to confidently respond to the research questions ● Utilization of external SMEs with expertise on evidence-based policy and practices to address Alcohol Outlet Density will be needed to adequately respond to the research question.

Appendix B: Addressing Alcohol Outlet Density through Evidence-Based Strategies

Alcohol Licensing in Wisconsin

Wisconsin State Statutes Chapter 125 governs the sale, serving, and consumption of alcohol beverages and intoxicating liquor in Wisconsin. While the mechanisms may vary from state to state, all states use licensing as the means of regulating the number and type of alcohol outlets. The primary responsibility for alcohol licensure, control, and zoning falls on local governments as established in Wis. Stat. 125.10. This model of local control is different than models used in many other states where authority for alcohol licensing and control is often held exclusively at the state level with Alcohol Beverage Control Boards. Wisconsin municipalities are in a unique position to determine the number of licenses issued, location and placement of alcohol licenses, and establishing criteria for issuance or revocation of alcohol licenses. The City of Madison establishes local processes and alcohol regulations in Chapter 38 of the Madison General Ordinances (MGO). General alcohol licensing requirements are defined in Sec. 38.05, MGO.

Research has identified a relationship between high concentrations of alcohol outlets and related health and social consequences such as increased calls for public safety services, violence, loitering, public nuisance activities, impaired driving, neighborhood disruption, and injury (Sparks, Jernigan, & Mosher, 2011). In response to these findings, state and national experts in the fields of substance abuse prevention have considered high alcohol outlet density to be an environmental risk factor and have outlined evidence-based prevention strategies to reduce alcohol outlet density and its associated consequences to improve overall health and well-being of the population (Sparks, Jernigan, & Mosher, 2011) (Wisconsin State Council on Alcohol and Other Drug Abuse, Prevention Committee, Alcohol, Culture, and Environment Workgroup, April 2010). Strategies identified can be categorized as policy change to address alcohol licensing, community-level prevention efforts led by local coalitions to address excessive alcohol consumption, and increased enforcement and compliance efforts typically led by local law enforcement or public health agencies. This report will focus on policy options addressing licensing and compliance efforts.

Due to differences in the scope of municipal authority, it is challenging to compare alcohol policies, enforcement, and regulatory practices from cities and states outside of Wisconsin to the local context in Madison. The following section presents an overview of strategies municipalities can utilize to address alcohol outlet density and clustering as recommended by the Wisconsin Alcohol Policy Project (WAPP) and the Wisconsin State Council on Alcohol and Other Drug Abuse (SCAODA). These two entities were selected as primary resources as they have presented recommendations based on national best practices that can be applied to the policy environment in Wisconsin. Examples from municipalities within Wisconsin (City of Green Bay, Village of Oregon, and City of Wausau) who have implemented these recommendations is also provided.

Overview of Strategies to Address Alcohol Outlet Density

In 2009 the Centers for Disease Control and Prevention (CDC) Task Force on Community Preventive Services recommended reducing alcohol outlet density levels and limiting future density growth as a key strategy to reduce harms associated with excessive alcohol consumption (The Taskforce on Community Preventive Services, 2009). Regulatory options that can be utilized as a best practice to address alcohol

outlet density fall into four categories: geographic restrictions, population-level restrictions, commercial restrictions, and time/space restrictions (Sparks, Jernigan, & Mosher, 2011).

- *Geographic restrictions* limit the number of outlets in a defined area such as census tract, block group, zoning district, zip code, police and fire department districts, or redevelopment areas (Sparks, Jernigan, & Mosher, 2011). These restrictions seek to prevent future alcohol clusters from developing and current clusters to continue growing. This method allows for the limitation of new licenses in areas identified as having clusters or where alcohol outlets are deemed to be incompatible with community, neighborhood development plans and goals. A municipality may determine there is over saturation of alcohol outlets and not review applications for licenses in that area or restrict certain license types. For example, new Class A licenses might not be considered in an area unless they are part of a full service grocery store.
- *Population-level restrictions* limit the number of outlets that exist per population and set a defined total number of alcohol outlets in a city (Sparks, Jernigan, & Mosher, 2011). This method would allow a municipality to calculate the current number of alcohol outlets and set a threshold for ratio of number of persons per alcohol license type. Wis. Stat. 125.51 provides municipalities with the general guidance of a ratio of one Class B licensee per 500 residents; however this ratio allows many more licenses per capita than is found in other states i.e. a municipal quota of 1 licensee per 3,000 population in Pennsylvania and 2,500-person per license ratio in California (The Pew Charitable Trusts, 2013) (Pennsylvania Liquor Control Board, 2019).
- *Commercial restrictions* are used to create a limit, either as a ratio or percentage, of the retail alcohol outlets per total number of retail businesses in a defined geographic area (Sparks, Jernigan, & Mosher, 2011). This method is used to diversify retail and prevent clustering.
- *Time/Space restrictions* limit the locations and hours of operations of alcohol outlets (Sparks, Jernigan, & Mosher, 2011). An example of a time restriction would be staggering closing hours for Class B licensees or restricting hour's alcohol can be sold in Class A licensees. In 2012 state law was changed to allow alcohol sales at Class A outlets during the hours of 6AM – 9PM, municipalities are able to set more restrictive hours of sale. Space restrictions are accomplished through zoning and land use policies. For example, a municipality may prohibit an alcohol licensee from being located within a certain proximity to schools, hospitals, parks, youth recreation facilities, residential neighborhoods, etc. Other space restrictions include determining a minimum distance between the entrances to alcohol outlets. For example, the Village of Oregon requires Class A licensees not be located within 1,056 feet from another Class A licensee (Section 12.05(6)(a) of the Village Code of Ordinances). Other examples of space restrictions include prohibiting the sale of alcohol at establishments that also sell prescription medication or gasoline.

Recommendations from SCAODA Adverse Childhood Experiences (ACE) Report for municipal policy change

In an April 2010 report *Changing Wisconsin's Alcohol Environment to Promote Safe and Healthy Lives* (commonly referred to as the "ACE Report"), the SCAODA Prevention Committee Workgroup on Alcohol, Culture and the Environment published recommendations for action for the state legislature, municipalities, educational institutions, community organizations/coalitions, and employers. The goal of the report was to "reduce underage drinking, young adult binge drinking, alcohol-related vehicular crashes, and death" with a focus on not significantly impacting moderate drinkers over the age of 21 (Wisconsin State Council on Alcohol and Other Drug Abuse, Prevention Committee, Alcohol, Culture, and

Environment Workgroup, April 2010). The ACE Report presents 15 recommendations for municipal policy change. Below are 8 of the recommendations related to licensing process, license conditions, and enforcement which will be further discussed.

1. Municipalities should adopt procedural guidelines and policies to govern all local deliberations and decisions on whether to issue, renew or revoke licenses to sell or serve alcohol.
2. Municipalities should consider using detailed license conditions, appended to pending licenses and renewals, to address specific concerns about operation of the establishment and neighborhood concerns such as traffic, noise or sidewalk congestion.
3. Municipalities should regulate alcohol tasting in Class A establishments. The scope of regulations should include:
    a. Limiting access, attended sampling area,
    b. Require ID check limiting sampling to persons age 21 and older,
    c. Locating the sampling area away from child oriented products,
    d. Require alcohol advertising for tastings to be at least 36 inches off the floor,
    e. Presence of licensed operator within the sampling area.
4. Municipalities should append the following conditions to all Class "B" Temporary [picnic] licenses (beer gardens, festivals, etc.) to reduce alcohol related injuries and disturbances and prevent underage drinking:
    a. Create a secure perimeter around the licensed area with a double fence (with a minimum 7 foot gap), a single entrance and photo ID check,
    b. Use wrist bands and hand stamps in rotating patterns to identify customers age 21 and older for alcohol purchase,
    c. Require a Blood Alcohol Content (BAC) not greater than 0.04 and ban alcohol consumption while serving and mandate that alcohol RBS or local RBS alternative training be completed by all servers,
    d. Mandate a minimum of one licensed bartender (operator) on site whenever alcohol is sold or served,
    e. Allow only 12oz (or smaller) clear or opaque cups with sale limited to two cups per purchase,
    f. Stop serving alcohol one hour before closing area,
    g. Require vendors to offer food or allow food purchased from vendors into the licensed area,
    h. Nonalcoholic drinks be priced less than alcohol beverages,
    i. No one under age 21 will be served alcohol even when accompanied by a parent, guardian, or spouse of legal age
5. Municipalities should establish ongoing, comprehensive alcohol age compliance checks for both on and off premises licensees with citations issued to vendors and/or employees for non-compliance.
6. Municipalities should prohibit consumption-based drink specials such as time limited pricing, specials which increase drink volume without increasing the price and all-you-can-drink flat fee specials.
7. Municipalities should adopt ordinances placing significant restrictions on the sale of alcohol at public events including:

a. Prohibiting alcohol sales at youth events and youth oriented events such as interscholastic sports or children's entertainment,
b. Mandated on or off-duty officers retained for security, wristbands and hand stamp to confirm security and the diligent monitoring for intoxicated/incapacitated persons,
c. Non-alcohol beverages cost less than alcohol,
d. Seating within fenced and gates alcohol serving and consumption area,
e. Limiting the number of alcohol beverages one individual may purchase at a time,
f. Schedule saturation patrols to coincide with the anticipated conclusion time of the event.

8. Municipalities should adopt ordinances banning the use of beer bongs and similar devices in addition to competitions and games designed to force the rapid consumption of alcohol in licensed establishments (Wisconsin State Council on Alcohol and Other Drug Abuse, Prevention Committee, Alcohol, Culture, and Environment Workgroup, April 2010).

Licensing Criteria and Guidelines

In addition to the recommendations stated in the ACE Report, the WAPP provides additional guidance to limit density and address current oversaturation. Two methods for limiting density include ceasing to issue new licenses and imposing limits on issuing new licenses to address oversaturation in a designated area (Wisconsin Alcohol Policy Project, 2010). Once awarded, alcohol licenses can only be revoked/not renewed for cause in Wisconsin. As the process to remove a current license can be a long and involve legal challenges, it is important for thorough review and planning prior to issuing a license (Wisconsin Alcohol Policy Project, 2010). According to Wis. Stat. 125.15(3m), municipalities have the authority to deny a license for any reason; however they must provide rational for denial in writing to the applicant. Municipalities are not provided criteria for making licensing decisions. When addressing outlet density having strict criteria for the licensing process and how decisions will be made can provide a consistency and transparency to the licensing process.

The City of Wausau passed a resolution in 2011 establishing a Public Health and Safety Subcommittee, discontinued issuing alcohol licenses on a first-come, first-served basis, and adopted a formal procedure for awarding Class B licenses. The Subcommittee uses the following ten (10) criteria to make recommendations on the issuance or denial of Class B licenses.

1. Neighborhood compatibility. The proposed use is compatible with the predominant or prevailing land use of the neighborhood surrounding the proposed development.
2. Zoning requirements. The proposed use conforms to the underlying zone district purpose and development standards and is in harmony with the general purposes and intent of the Wausau zoning ordinance. When there is an existing nonconforming structure, the development standards may be waived by the Common Council.
3. Traffic impact and parking availability. Adequate measures have been or will be taken to provide ingress and egress so designed as to minimize traffic congestion in the public streets.
4. Services that the establishment may require. Adequate facilities, access roads, drainage and/or necessary services have been or will be provided.
5. Economic impact to the neighborhood and City in general.
6. Management experience of the owners and operator of the establishment.
7. Results of the criminal history and background check by the Wausau Police Department.
8. Density of other alcohol serving establishments within the surrounding neighborhood.

9. Distance of establishment location to nearby school, churches, or hospitals.
10. Results of past inspection reports by Wausau Police Department and Fire Department (File Number: 11-0609, 2011).

In February 2019, the City of Green Bay passed a resolution amending the process to approve Class B Liquor Licenses. While Green Bay includes criteria similar to Wausau, the following additional factors are considered:

- Security in and outside the establishment; noise, crowd and parking lot control methods;
- Proximity to other licensed establishments, or other licensed activities within the City;
- Ability or inability of the police to provide law enforcement services to the new establishment and the impact of the new establishment on the ability of the police to provide law enforcement services to the balance of the community at all time;
- Impact on surrounding neighbors and businesses due to, among other things, increased traffic, noise and litter

The Village of Oregon establishes similar considerations as Wausau and Green Bay, but adds an assessment of potential impact on property values when making licensing considerations. A review of Madison General Ordinances did not find similar considerations for the issuance of licenses. Other municipalities, like the City of Racine, set quotas on the number of Class A and Class B licenses and will not consider applications for new licenses when quotas have been met. The City of Racine has currently met their established quota for Class A licenses and has denied the issuance of new Class A licenses. When a license becomes available, there is a period of time where interested parties can submit applications.

License Application

Municipalities have the authority to require supplemental information and application materials beyond what is required by the state. The WAPP recommends municipalities review current alcohol licensing applications and consider expanding the information requested so sufficient information is obtained to make decisions based on established criteria. Supplemental questions may include those related to the intended advertising, menu, drink specials, and detailed business plan. The Village of Oregon's supplemental Class A and Class B License Application Questionnaire is included in Exhibit 1 at the end of this appendix.

While municipalities require applicants to include a safety plan, the required elements and party responsible for creating the security plan varies. Some municipalities require a basic plan be submitted by local law enforcement, while other require the applicant to create a detailed security plan that also addresses the use of mechanisms to check IDs, sober server policies, use of surveillance equipment, and community impact. The City of Green Bay provides applicants with a detailed security plan template (Exhibit 2 at the end of this appendix) to be developed with a community police officer.

Licensing Conditions

Information obtained in expanded application materials can aide municipalities in setting consistent license conditions. License conditions allow municipalities to "tailor a license to very specific concerns of each license without amending local ordinances," (Wisconsin Alcohol Policy Project, 2013). While license conditions can be tailored to a unique concern or situation, there are several areas where a municipality can apply license conditions consistently. Examples include:

- Sober server policies limiting the BAC of employees to 0.04
- Require video camera surveillance at specific locations within the establishment and recordings to be retained for a specified period of time
- Limitations on number and placement of alcohol advertising

- Limitations on drink specials, flat fees for all-you-can-drink specials, or times of drink specials
- Earlier closing time for specific license types, i.e. beer gardens, festivals
- Limit the number of tasting events
- Alcohol promotions and advertising limited to certain areas of a store
- Limitations on amplified sound on exterior of building
- Require ID checkpoints, electronic ID scanner with memory records
- Requirement for compliance checks
- Requirement to maintain a certain percentage of food sales
- Set an occupancy number

Occupancy Limits

Another recommended strategy for addressing high alcohol outlet density, is setting occupancy or capacity limits as a license condition. The WAPP recommends that occupancy limits reflect the number of patrons with consideration to public safety and crowd control (Wisconsin Alcohol Policy Project, 2013). Municipalities can set occupancy limits on Class B licenses and are able to determine a number lower than that established by the Fire Department or Building Inspection. A municipality may want to consider lower occupancy limits as a license condition for an establishment that has multiple calls for services due to crowd control issues. "A barometer of total capacity might be the number and type of police calls at closing hour resulting when multiple outlets close simultaneously. Is there sufficient sidewalk capacity for the departing patrons, or are individuals forced into the streets? Is local law enforcement able to handle the level of calls for service in the area, or are other jurisdictions regularly called upon for assistance?" (WAPP, Outlet Density, 2010). Occupancy limits allow for a statistical basis to determine maximum capacity for a designated geography during operating hours.

Enforcement

Enforcement of alcohol policies and compliance is typically a function of local law enforcement; however individual license holders are responsible for assuring compliance with requirements to check for appropriate identification and only sell/serve alcohol to those of legal drinking age. Many municipalities, including Madison, create a demerit system with a point system assigned to specific types of violations. Accumulating an established number of points within a designated time period can lead to license revocation or additional license conditions being placed on the license holder. In addition to the demerit system, Madison utilizes audit power to assure compliance with license requirements i.e. assure that a restaurant is operating as a restaurant with more the 50% of sales coming from food.

Exhibit 1: Village of Oregon's Supplemental Class A and Class B License Application Questionnaire

VILLAGE OF OREGON SUPPLEMENTAL CLASS A LICENSE APPLICATION

Please complete this application in its entirety. Please attach additional sheets or copies as needed.

1. Name of Applicant / Partner / Corporation / LLC _____

2. Address of Licensed Premises _____

3. Telephone Number_____ Anticipated Opening Date_____

4. Mailing address if not opening immediately_____

5. Have you contacted the Chief of Police? ☐ Yes ☐ No

6. Are there any special conditions requested by the Chief of Police? ☐ Yes ☐ No

   If yes, please explain: _____

7. What type of establishment are you? Check all that apply. ☐ Liquor Store ☐ Grocery Story

   ☐ Convenience Store ☐ Other (Please explain)_____

8. Business Description, including hours of operation: _____

   _____

9. Detailed written description and floor plan of building, including overall dimensions, and all areas where alcohol beverages are to be displayed, sold and stored. **The licensed premises described below shall not be expanded or changed without the approval of the Village Board.**

   _____

   _____

   _____

10. Describe existing parking and how the parking lot is to be monitored. _____

    _____

11. Describe your management experience, staffing levels, duties, and employee training.

    _____

    _____

12. Identify the registered agent for your corporation or LLC. This is your corporation or LLC's agent for service of process, notice or demand required or permitted by law to be served on the corporation or LLC.

    _____
    Name Address

13. Do you have a written policy regarding responsible alcohol sales and service? ☐ Yes ☐ No
    If yes, please attach a copy of the policy. Please see 12.05 (4)(e)(4) of the Oregon Municipal Code.

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14. Has the applicant, within the last two years, successfully completed a responsible beverage server training course as required by section 12.05(4)(e)(1) of the Oregon Municipal Code? ☐ Yes ☐ No
If yes, please attach copies of the certificates of completion. Please also review section 12.05 (4)(e)(3).

15. Have you ever been convicted of a felony or of a violation of any Federal or State law, or Village of Oregon ordinance, regulating the sale of alcohol beverages? ☐ No ☐ Yes If yes, provide the type, number and dates of such convictions. _____

_____

16. Do you hold, or have you applied for, any other Class A or Class B licenses for any other location within the State of Wisconsin? ☐ No ☐ Yes If yes provide the types and locations of such licenses held or applied for._____

_____

17. Utilizing your market research, who would you project your target market to be? _____

_____

18. Describe how you plan to advertise / promote your business? What products will you be advertising?

_____

19. Are you operating under a lease or franchise agreement? ☐ No ☐ Yes If yes, attach a copy

20. Owner of building where establishment is located:_____

Address of Owner:_____

Phone Number:_____

21. List the Directors of your Corporation / LLC

_____
Name Address

_____
Name Address

_____
Name Address

22. List the Stockholders of your Corporation / LLC

_____
Name Address

_____
Name Address

_____
Name Address

23. Indicate any other product / service offered. _____

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24. How many people do you anticipate will be employed at your establishment?_____

During what hours do you anticipate they will be on duty?_____

READ CAREFULLY BEFORE SIGNING: Under penalty provided by law, the undersigned states that each of the above questions has been truthfully answered to the best of the knowledge of the signer. The signer agrees that he/she is the person named in the foregoing application; that the applicant has read and made a complete answer to each question, and that the answers in each instance are true and correct. The undersigned further understands that any license issued contrary to Chapter 125 of the Wisconsin Statutes shall be void, and under penalty of state law, the applicant may be prosecuted for submitting false statements and affidavits in connection with this application. Any person who knowingly provides materially false information on this application may be required to forfeit not more than $1,000

_____

Officer of Corporation / Member of LLC / Partner / Individual

Print Name:_____

VILLAGE OF OREGON SUPPLEMENTAL CLASS B LICENSE APPLICATION

Please complete this application in its entirety. Please attach additional sheets or copies as needed.

1. Name of Applicant / Partner / Corporation / LLC _____

2. Address of Licensed Premises _____

3. Telephone Number_____ Anticipated Opening Date_____

4. Mailing address if not opening immediately_____

5. Have you contacted the Chief of Police? ☐ Yes ☐ No

6. Are there any special conditions requested by the Chief of Police? ☐ Yes ☐ No

7. What type of establishment are you? Check all that apply. ☐ Tavern ☐ Nightclub

   ☐ Restaurant ☐ Other (Please explain) _____

8. Business Description, including hours of operation: _____

   _____

9. Do you plan to have live entertainment: ☐ No ☐ Yes If yes, What kind?_____

   _____

10. Detailed written description of building, including overall dimensions, seating arrangements, capacity, bar size, and all areas where alcohol beverages are to be sold and stored. **The licensed premises described below shall not be expanded or changed without the approval of the Village Board**.

    _____

    _____

    _____

11. Are any living quarters directly or indirectly accessible and under control of the applicant? ☐ Yes ☐ No
    Please note that alcohol may be sold and stored only on the licensed premise, not in living quarters.

12. Describe existing parking and how the parking lot is to be monitored. _____

    _____

13. Describe your management experience, proposed staffing levels, duties, and employee training.

    _____

    _____

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14. Do you have a written policy regarding responsible alcohol sales and service? ☐ Yes ☐ No
If yes, please attach a copy of the policy. Please see 12.05 (4)(e)(4) of the Oregon Municipal Code.

15. Has the applicant, within the last two years, successfully completed a responsible beverage server training course as required by section 12.05(4)(1) of the Oregon Municipal Code? ☐ Yes ☐ No
If yes, please attach copies of the certificates of completion. Please also review section 12.05 (4)(e)(3).

16. Identify the registered agent for your corporation or LLC. This is your corporation's or LLC's agent for service of process, notice or demand required or permitted by law to be served on the corporation or LLC.

_____
Name Address

17. Have you ever been convicted of a felony or of a violation of any Federal or State law, or Village of Oregon ordinance, regulating the sale of alcohol beverages? ☐ No ☐ Yes If yes, provide the type, number and dates of such convictions. _____

_____

18. Do you hold, or have you applied for, any other Class A or Class B licenses for any other location within the State of Wisconsin? ☐ No ☐ Yes If yes, provide the types and locations of such licenses held or applied for. _____

_____

19. Is the applicant acting as an agent or employee of another person or entity?

20. Utilizing your market research, who would you project your target market to be? _____

_____

21. What age range do you hope to attract to your establishment? _____

22. Describe how you plan to advertise / promote your business. What products will you be advertising?

_____

23. Are you operating under a lease or franchise agreement? ☐ No ☐ Yes If yes, attach a copy

24. Owner of building where establishment is located:_____

Address of Owner:_____

Phone Number:_____

25. Private organizations (clubs). Do your membership policies contain any requirement of "invidious" (likely to give offense) discrimination in regard to race, creed, color, or national origin? ☐ Yes ☐ No

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26. List the Directors of your Corporation / LLC

Name	Address
Name	Address
Name	Address

27. List the Stockholders of your Corporation / LLC

Name	Address
Name	Address
Name	Address

28. What types of food will you be serving, if any?_____

☐ Breakfast ☐ Pizza ☐ Full Dinners

29. Please submit a sample menu with your application, if possible. What might eventually be included on your operational menu when you open? ☐ Appetizers ☐ Salads ☐ Soups ☐ Sandwiches ☐ Entrees ☐ Desserts ☐ Pizza ☐ Full Dinners

30. During what hours of operation do you plan to serve food?_____

31. What hours, if any, will food service not be available?_____

32. Indicate any other product / service offered. _____

33. Will your kitchen have a kitchen manager? ☐ Yes ☐ No

34. Will you have a kitchen support staff? ☐ Yes ☐ No

35. How many wait staff do you anticipate will be employed at your establishment?_____

During what hours do you anticipate they will be on duty?_____

36. Do you plan to have hosts or hostesses seating customers? ☐ Yes ☐ No

37. Do your plans call for a full service bar? ☐ Yes ☐ No

If yes, how many bar stools do you anticipate having at your bar? _____

How many bartenders do you anticipate you would have working at one time on a busy night?_____

38. Will there be a kitchen facility separate from the bar? ☐ Yes ☐ No

If yes, what will be the seating capacity for that area?_____

39. Will there be a separate and specific area for eating only? ☐ Yes ☐ No

If yes, what will be the seating capacity for that area? _____

40. What type of cooking equipment will you have? ☐ Stove ☐ Oven ☐ Fryers ☐ Grill ☐ Microwave

41. Will you have a walk-in cooler and/or freezer dedicated solely to the storage of food products?

☐ Yes ☐ No

42. What percentage of your overall payroll do you anticipate will be devoted to food operation salaries? ____

43. If your business plan includes an advertising budget, what percentage of your advertising budget do you anticipate will be related to food? _____

What percentage of your advertising budget do you anticipate will be drink related? _____

44. What is your estimated capacity? _____

READ CAREFULLY BEFORE SIGNING: Under penalty provided by law, the undersigned states that each of the above questions has been truthfully answered to the best of the knowledge of the signer. The signer agrees that he/she is the person named in the foregoing application; that the applicant has read and made a complete answer to each question, and that the answers in each instance are true and correct. The undersigned further understands that any license issued contrary to Chapter 125 of the Wisconsin Statutes shall be void, and under penalty of state law, the applicant may be prosecuted for submitting false statements and affidavits in connection with this application. Any person who knowingly provides materially false information on this application may be required to forfeit not more than $1,000

_____

Officer of Corporation / Member of LLC / Partner / Individual

Print Name:_____

Exhibit 2: City of Green Bay's Detailed Security Plan Template

[Date]

[Licensee Name]
[Agent for Licensee, if applicable]
[Licensee Address]
Green Bay, WI [ZIP]

Dear [Licensee, or Agent]:

Thank you for your interest in obtaining an alcohol license from the City of Green Bay. Running a tavern or restaurant can be very rewarding, but it also poses unique challenges that are not present in other types of businesses. But you can succeed with the right preparation, plan and attitude. A big factor unique to alcohol licensing is the extra state and local regulations placed upon the business owner. The Police Department asks Licensees to provide a Security Plan and sign a License Stipulation to ensure that they understand the laws surrounding alcohol licenses and any unique rules that apply to their specific business.

You will find attached a copy of the security plan developed by you and your community police officer. Please read it carefully and sign the final page if it accurately represents your policies, procedures, and goals in running your business. You will also find attached a copy of the License Stipulation which sets forth more requirements which are specific to your business. The License Stipulation is a legally binding document which lays out certain duties and restrictions that are particular to your business, and it must be signed by you and your community police officer.

Sincerely,

James Mueller
Assistant City Attorney

LICENSE STIPULATION

In consideration for receiving an alcohol license from the City, the Licensee agrees to the following license stipulation and all terms and conditions contained therein.

I. DEFINITIONS. The following words used in this stipulation shall have the corresponding meanings:

a. "City" means City of Green Bay
b. "ID" means a government-issued identification card that is presented to a licensee as a way of providing evidence of the age of the person presenting the card..
c. "Licensee" means [enter Licensee's name], and to the extent allowed by law shall impose the same duties and restrictions on the agent of the Licensee, if applicable.
d. "Premises" means the area identified on the licensee's application where the service, consumption and storage of alcohol is allowed.

II. RESTRICTIONS ON USE OF LICENSE

___ ___ ☐ Licensee shall not offer, sell, promote for sale, or give away an unlimited number of alcohol beverages for a fixed price during a set period of time.

___ ___ ☐ Licensee shall not offer, sell, or give away any alcohol beverages to any known habitual drunkard noted on the "No Serve List."

III. DUTIES IMPOSED UPON LICENSEE

___ ___ ☐ Licensee shall utilize a functioning ID scanning device that checks each ID of each person entering the Premises and records the time and date each time an ID is scanned.

___ ___ ☐ Licensee shall record video evidence of all activities taking place on the Premises and any unlicensed areas under the licensee's control using a functioning camera security system

___ ___ ☐ Video evidence recorded by a camera security system shall be stored for at least 14 days.

___ ___ ☐ If a Green Bay Police Officer demands a copy of video evidence of activities that took place within 14 days of the date of request, Licensee shall provide the requested video evidence of the date and time range requested in a readily viewable format to the Officer, or his or her designee, within 5 business days after the request is served or mailed.

___ ___ ☐ Licensee shall not have amplified music outdoors.

___ ___ ☐ Licensee shall ensure any exterior area under the licensee's control is illuminated.

___ ___ ☐ Licensee shall accept personal service by mail, for any citations issued to the Licensee.

___ ___ ☐ The Licensee or any employee of a licensed establishment is prohibited from being under the influence of an intoxicant, or a controlled substance or a combination of an

Bar Staff Information:	[number of staff on hand at certain times of operation; prior staff experience; how many bartenders/bar staff/etc. on during peak hours; staff training; whether requiring NWTC training course or operator's license for all or just some staff; other training focused on catching U/A persons, identifying intoxicated persons, etc.]
Security Staff Information:	[number of staff on hand at certain times of operation; prior staff experience; how many bouncers/etc. on during peak hours; staff training; whether attending Professional Communications course offered by PD; other training focused on catching U/A persons, identifying intoxicated persons, etc.]

EXTERNAL OPERATIONS

Hours of Operation:	[enter weekly hours]
Atmosphere:	[describe what type of music, food, entertainment, amusement devices, and clientele Licensee will promote or focus on]
Dress Code:	[describe dress code, and restrictions on access for those who violate dress code, plan on how to handle anyone who argues about dress code]
Food Service:	[if Licensee plans to serve food, what type and what is the expected percentage of total gross sales will come from food]

COMMUNITY IMPACT

Neighborhood:	[how will this business may impact the neighbors and how does Licensee intend to reduce any negative impact which may result]
Police Services:	[how will this business may impact police services and how does Licensee intend to reduce any negative impact which may result]
Compliance with Laws:	[how will this business will ensure compliance with city ordinances , state statutes and state administrative code]

By signing below, I agree that the security plan set forth above accurately represents my policies, procedures, and goals in running my business.

Licensee: _____ Date: _____

SECURITY PLAN

The following security plan represents the Licensee's anticipated operations and procedures. It is a collection of guidelines that are not legally binding on the Licensee, but are intended to give the police department, the Green Bay Common Council and the public a good picture of what the Licensee believes his or her business will look like and how it will operate. While the Licensee will not receive any citations for deviating from this security plan, it is a good idea to follow these guidelines because the Council may consider during renewal time how closely you follow your plan. If you deviate too far from your security plan and fail to update it at renewal time, it could adversely affect your license status.

GENERAL	
Licensee Name:	[Licensee name]
Agent's Name:	[enter agent's name or "N/A"]
Business Address:	[address] Green Bay, WI [ZIP]
Address to Accept Legal Documents:	[address] [city], WI [ZIP]
License Type:	[Class "B" (Beer) or "Class B" Combination (Beer & Liquor)]

PREMISES	
Building Owned or Leased:	[Leased or Owned]
Landlord name and address:	[Landlord name or "N/A"] [Landlord address] [Landlord city], [landlord state] [landlord ZIP]
Building Capacity:	[enter capacity, determined by fire code]
Parking Capacity/Availability:	[enter if private parking lot included in business or if public parking is used; if private, include size, number of spots and location in relation to building; if public, include how Licensee intends to monitor patrons as they leave premises]
Anticipated Building Improvements:	[if owner or occupant intend to make any changes to building, enter them here… outdoor areas or additional levels, etc.]

INTERNAL OPERATIONS	
Brow County Tavern League:	[enter whether a member and whether serving in any further capacity]
Manager, if any:	[manager name] [manager phone number]

intoxicant and a controlled substance, while performing services or job duties on the licensed premises.

___ ___ ☐ Licensee shall, at all times, keep glass windows and doors clean and unobstructed so as to permit a view of the interior of the licensed premises from outside of the licensed premises.

___ ___ ☐ Licensee shall create an alcohol sales policy and provide the Green Bay Police Department with a copy of such policy, prior to issuance of any alcohol license.

By signing below, the City agrees to issue a license to Licensee in consideration for the Licensee abiding by the above terms and conditions throughout the licensure period. By signing below, the Licensee agrees to comply with any provision set forth in this stipulation pursuant to § 33.08(10), Green Bay Municipal Code. If any term or condition of this Agreement not in conformance with Wis. Stat. § 125.10 shall be severed and shall have no affect on the validity of the remaining terms or conditions of this Agreement.

Licensee: _____ Date: _____

Police: _____ Date: _____

Appendix C: Alcohol License Application and Renewal Process Analysis

Liquor Licensing Overview

Liquor licensing typically falls into two categories: new liquor licenses and liquor license renewals. New liquor licenses start with the prospective business completing and submitting a liquor license application at any time throughout the year. The application is available on the City's website and the prospective business does not have to contact the Clerk's Office to obtain or submit the application. The application form is the primary input to the licensing process. The Clerk's Office processes the application by entering some application data (i.e., contact information, agent, capacity, alcohol ratio for Class B and C, and description of premises) into an Accela permitting system/database, sending a $100 publication fee to the applicant, mailing notification postcards to neighbors (300 ft. radius), posting a notice in the Wisconsin State Journal, and providing an instructional brochure to the applicant on key contacts, including the alder, police district, and neighborhood association. The application, once complete, then goes to Common Council and referred to the Alcohol License Review Committee (ALRC).

The ALRC consists of nine voting and six non-voting members and reviews new licenses at monthly meetings, averaging approximately eight new license applicants at each meeting.[6] The ALRC examines the application, business plan, floor plan, and sample menu. The agent, or whoever has authority for the applicant, is at the meeting and is interviewed by the ALRC. The ALRC moves and votes on any conditions for the applicant at the meeting and recommends to the Common Council with conditions, if any. The Common Council reviews ALRC recommendations (Legistar item includes all applications, supplemental materials, conditions, and public input/comment) to either grant or deny the license.

The business has to pass final inspection from the Fire Department, Public Health, and Building Inspection Division (includes zoning). The tasks and signatures of these inspecting agencies are managed by workflow in the aforementioned Accela system. The level of inspection and involvement by these agencies depends on the business and changes associated with the license and premises, which is covered in more detail in the following sections. The liquor license is eventually either granted or denied with the record/status still updated in Accela even if denied. Primary outputs of the new liquor license process include the physical license given to the establishment, updated Accela records, and a paper and digital record of the application (seven-year physical retention period).

Liquor license renewals start with an application mailed by the Clerk's Office to all liquor license holders on March 1st of every year. The applicant completes and submits the license renewal application by April 15th. If the application is inconsistent with what the Clerk has on file, then the applicant will need to correct the renewal application in order for it to be considered complete. The licensee is contacted by phone or email with an explanation of the issue with the renewal form. Some education is provided if the licensee needs to add an officer, change the Liquor/Beer Agent, or update the premises if it is inconsistent with what they have on their current license.

The Attorney's Office reviews the renewal list and applications and pulls any licenses that may go through an intensive audit with the ALRC ultimately determining if the business should be audited. The renewal list and applications are entered as a Legistar item, which goes to ALRC as a mass list or report for ALRC review. The Legistar item goes back to Common Council from ALRC with some licenses separated, especially if the license is not being renewed. The Common Council accepts ALRC's recommendation and

[6] Count of meetings and agenda items from ALRC agendas for 2016-2018.

the license is either renewed or not renewed, and a license fee is paid. Primary outputs include the physical license given to the business, updated Accela records (no workflow is used in Accela unless a change of premises application is submitted), and a paper and digital record of the application (seven-year physical retention period).

Alcohol License Review Committee

The mission of the Common Council's Alcohol License Review Committee (ALRC) is to serve City's residents, businesses, and visitors by thoroughly and conscientiously reviewing license applications, establishing and maintaining standards, addressing violations, developing alcohol-related policies, and making recommendations to the Common Council. The goals of the ALRC are to promote responsible alcohol-selling and serving practices; enhance public safety and quality of life; consistently apply pertinent laws and conditions; educate citizenry/business community about the ALRC mission and processes; modernize existing business and governmental systems and reduce expenditures on alcohol-related issues; and improve overall service delivery.

The ALRC has 15 members, nine of whom are voting members, and averages 16 meetings a year, 12 of which are regular meetings where new liquor licenses are reviewed. The remaining four meetings are usually special meetings, particularly for liquor-license renewal and non-renewal hearings. Although the liquor licensing process is driven by liquor license applications, the ALRC reviews more than just new liquor licenses and liquor license renewals. There are 19 recurring agenda categories followed by an MPD report, Clerk report, and additional items or reports.[7] The 19 categories include: operator's license applications; Temporary Class B License concurrent with street use; change of agent; change of corporate control; business name change; entity reorganization; change of licensed conditions; change of licensed premise; 21+ entertainment license; 18+ center for visual and performing arts; new license public hearing (recessed public hearing); new license public hearing; liquor license renewal public hearing; 21+ entertainment license renewals; 18+ entertainment license renewals; license issuance extension; non-renewal hearing for 18+ entertainment; non-renewal hearing for liquor license; and disciplinary matters.

The processes for new liquor licenses and liquor license renewals, as described in the prior and following section, exist for the ALRC to meet its mission and goals. However, reviewing and approving new liquor licenses and liquor license renewals is a subset of the ALRC's body of work, constituting approximately 29% of agenda items. In comparison, changes of agent, entity reorganization, and operator's license applications constitute a combined 40% of agenda items. With that being said, the deliberation process behind new liquor licenses appears to be longer and more comprehensive. As previously mentioned, this analysis focuses on the processes for new liquor licenses and liquor license renewals, particularly the involvement of the Clerk's Office, Building Inspection Division, and Fire Department. An in-depth analysis of ALRC's process is not included.

Figures 26 and 27 give overviews of the process for new licenses and license renewals/changes of premises, respectively.

[7] Count of meetings and agenda items from ALRC agendas for 2016-2018.

Figure 25: New License Process Overview

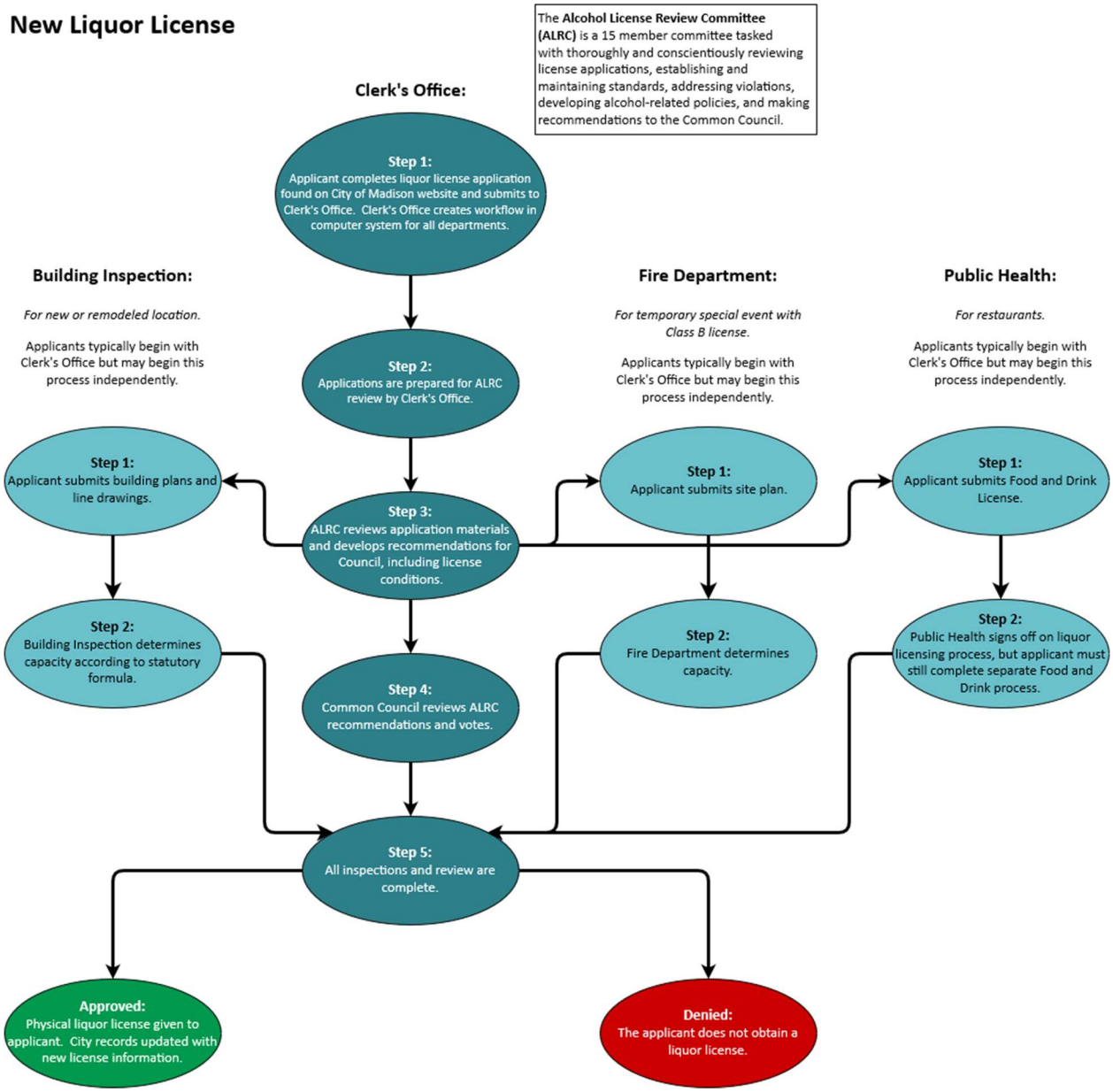
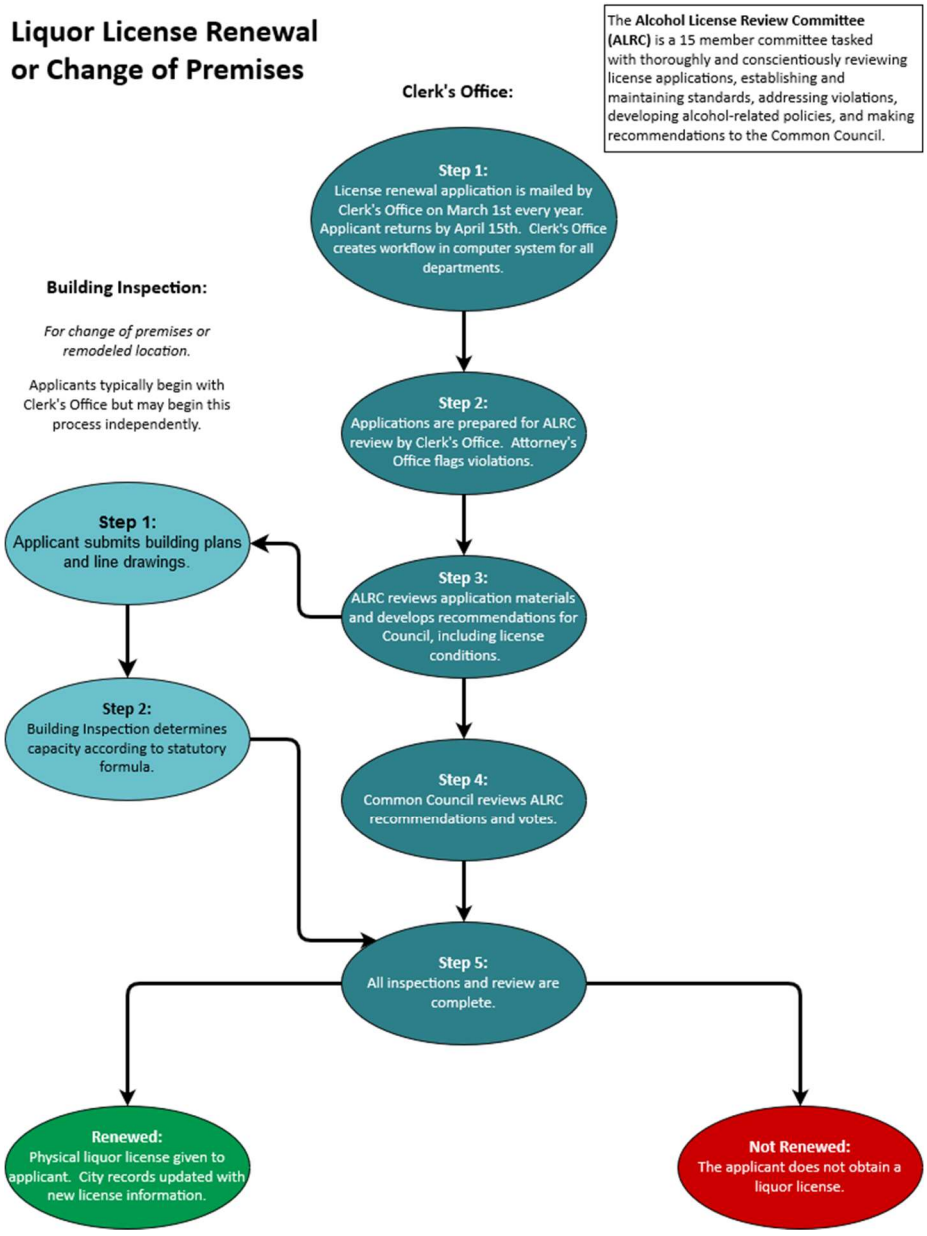


Figure 26: License Renewal/Change of Premises Process



Support Agency Processes for Liquor Licensing

Clerk's Office

The City's Clerk's Office is the process owner of liquor licensing for new licenses and license renewals. As mentioned above, the primary inputs are the applications submitted by businesses for new licenses and license renewal. Only some of the data on the application is maintained in the data fields of the Clerk's Accela system/database with recorded capacity being new for 2019. A new liquor license application includes:

- Applicant/business ID information
- Premises specification/floorplan (capacity estimate question included)
- Corporate agent/contact information complete with background check
- Business plan
- Consumption on premises for B and C licenses
- Terms and conditions
- State seller's permit
- Employer ID (FEIN)

A liquor license renewal application includes:

- Business ID information, corporate information, state seller's permit, and FEIN
- Question and checkbox for criminal or liquor license offenses by owner or employees
- Question and checkbox for tax return on alcohol sales
- Questions on where alcohol is sold and stored; consumption on premises for B and C licenses (i.e., gross receipts)
- Checkbox for both 21+ and 18+ entertainment licenses
- Question on whether dance floor, live music, or DJ provided as entertainment
- Question on capacity (indoor, outdoor, and special event)

As previously mentioned, the Clerk's Office processes the application by entering some application data (i.e., contact information, agent, capacity, alcohol ratio for Class B & C, and description of premises) into an Accela permitting system/database. The floor plan for new liquor licensed establishment is usually drafted by the business but contractor drawings may also be submitted, if available. The Clerk's Office continues the process with sending a $100 publication fee to the applicant, mailing notification postcards to neighbors (300 ft. radius), posting a notice in the Wisconsin State Journal, and providing an instructional brochure to the applicant on key contacts, including the alder, police district, and neighborhood association. All approvals for application processing, including Building Inspection and the Fire Department, are done through Accela workflow. The primary outputs are new or updated Accela records/reports and a liquor license.

Building Inspection

The City's Building Inspection Division is a part of the liquor licensing process, new or renewal, when there is a change of indoor/outdoor premises, new space/construction, or a new alcohol outlet in a new location, which have zoning implications. Building Inspection sets the outdoor capacity when outdoor seating is a part of their regular licensed premises, which is either on their original application or added as a change of premises.

The primary input to Building Inspection's process is a line drawing to scale, which can be drawn by the business owner/operator or an architecturally stamped drawing of the premises. Building Inspection determines the capacity number of the establishment by using the lowest of the following: (1) occupant load (floor area net tables and chairs), (2) number of toilets (taverns require more than restaurants), (3) exit width, or (4) ALRC condition (ALRC may establish a capacity number lower than the previously listed methods but never higher). Primary outputs of Building Inspection's process include a sign off in the Clerk's Office Accela workflow (Building Inspection signs off no matter if an inspection is required or not), updated building permit records in Building Inspection's Accela permitting system/database, updated capacity number in plan review data and Building Inspection's Excel file, and seal/certificate of occupancy.

The line drawings and building plans submitted by a business are attached to Building Inspection's Accela records for establishments that have gone through a plan review since the launch of Accela. Although the updated capacity number is included in the attached plan review, there is no designated field in Building Inspection's Accela permitting system. The Building Inspection Division owns and maintains an Excel file listing all restaurants and taverns by reason for occupancy and final occupancy number (PDF of Excel file is available to the public and used by Fire and Police for capacity enforcement of alcohol outlets). This list only includes restaurants and taverns who have undergone a change of premises or have submitted plans/drawings since 1998. The Madison Fire Department has sent occupancy signs to every business that was in the Building Inspection list. It is unclear if the capacity estimate included on a liquor license application submitted to the Clerk's Office is ever cross-checked with Building Inspection's list and updated when necessary.

As a point of context, the ALRC reviews approximately 23 change of licensed premises and 99 new licenses each year.[8] As previously mentioned, change of premises and new licenses require a planning or zoning review by Building Inspection. This means that Building Inspection is usually involved with 20 to 120 liquor licenses per year, which is a small segment of Building Inspection's estimated body of work for a given year: 13,000 building inspections (excludes mechanical inspections), 1,900 plan reviews, and 2,600 zoning reviews.

Fire Department

The Fire Department is only involved in liquor licensing when there is a new space/construction or the applicant is applying for a Temporary Class B License (e.g., Shake the Lake, temporary beer gardens, or neighborhood block parties). Capacity for Temporary Class B Licenses is finalized by the Fire Department and capacity for regular outdoor seating at restaurants and taverns are finalized by Building Inspection. The Fire Department also conducts capacity checks eight times a year and inspects every public building or place of employment twice a year, including alcohol outlets, for fire safety systems.

Primary inputs to Fire's liquor licensing process include inspection request for certificate of occupancy from the business owner/operator, change of premises or Temporary Class B License application, site plan, access to the Clerk's workflow or license in Accela, and a notice that a liquor license is associated with the certificate of occupancy. An inspection request to the Fire Department from the owner/operator may sometimes be received outside the Clerk's workflow or Fire inspectors are issued a task in the Clerk's Accela system but without any follow up, both of which present problems, especially if there's a new space or change of premises. The applicant provides a capacity estimate for a Temporary Class B application but the Fire Department verifies the outdoor capacity, if there is a perimeter, by looking at the applicant's drawing. The formula for outdoor assembly capacity is available on the Fire Department's website and the formula for indoor capacity is available on Building Inspection's website.

Primary outputs to Fire's liquor licensing process include a capacity sign and certificate of occupancy, Accela workflow sign-off (Fire Department signs off no matter if an inspection is required or not), and the Accela record updated with special event outdoor capacity, when applicable. Fire uses Building Inspection's list for indoor capacity signs and have added capacity data to the Fire Department's own "routine record" Fire inspection database in Accela. Fire's routine record database is separate from the

[8] Count of meetings and agenda items from ALRC agendas for 2016-2018.

Clerk's and Building Inspection's lists and used by the Fire Department for their regular inspection of fire safety systems.

The primary inputs for the Fire Department's capacity checks process includes the Fire Department's routine record database of any public building or place of employment, which includes liquor licensed establishments and capacity number. As previously mentioned, the Fire Department uses Building Inspection's capacity list and those capacity numbers have been added to Fire's routine record. Capacity checks are conducted on eight separate occasions per year, outside of the summer months and December, and are usually driven by special events (e.g., football Saturdays, neighborhood events, Breese Stevens events). Fire Inspectors select the month they would like to conduct capacity checks and then they are assigned by the Fire Marshal. Scheduled capacity checks usually include State Street and University Avenue and typically last for four hours with approximately 20 establishments being inspected. Primary outputs for capacity checks include a findings document in Fire's Accela system, referral to Attorney's Office and ALRC, if needed, and a citation if overcapacity.

Primary inputs for Fire's semi-annual inspection process include the Fire Department's routine record (i.e., the same database used for capacity checks) in Accela and a list of assigned/scheduled inspections (35,000 inspections/year). Fire's routine record is approximately 14,000 addresses and the scheduled inspections for each inspector are managed and assigned by Fire's Accela system. The Fire Department maintains their routine record and occasionally compares it to the Assessor's property list. The Fire Department inspects every public building or place of employment twice a year, including alcohol outlets. If a change of premises or fire safety system work is being done, then the semi-annual inspection is conducted during the certificate of occupancy inspection. If there is no violation, then no action is taken and the status in Fire's Accela workflow is updated. If there is a violation, then notice is given to the establishment and Fire re-inspects until there is compliance. Primary outputs include notice of violation, verbal clearance if there is no violation, and a status update to Fire's Accela workflow.

Public Health

Public Health Madison & Dane County (Public Health) is primarily involved in the liquor licensing process when the prospective establishment is a restaurant, which requires a Food and Drink License issued by Public Health. The Food and Drink License is separate from the City's liquor license and usually runs concurrently with the liquor licensing process. The primary input to the Food and Drink License is the application form, which is processed by Public Health. Public Health is brought into the City's liquor licensing process by receiving a task from the Clerk's Accela workflow for all new liquor licenses. Public Health reviews the applications and any applicants without food sales do not need to complete the Food and Drink process and Public Health simply signs off on their task for the Clerk's liquor license. Public Health follows up with liquor license applicants with prospective food sales to assist them through Public Health's process. The task in the Clerk's Office workflow for the liquor license is usually signed off by Public Health after Public Health has contacted the applicant and received the Food and Drink application but before Public Health's Food and Drink License is issued. This practice is done because Public Health is usually the last inspecting agency for a restaurant and signing off the task allows the applicant to continue with the liquor licensing process to near completion. The only time(s) that Public Health does not sign off a task in the Clerk's workflow is if Public Health does not receive a Food and Drink License application from the owner/operator. After Public Health conducts an on-site final inspection, a Food and Drink License is issued to the establishment.

Discussion on the Current Business Process

As previously mentioned, the processes for new liquor licenses and liquor license renewals exist for the Common Council's Alcohol License and Review Committee (ALRC) to meet its mission and goals. Although the Clerk's Office is the process owner through which most of the liquor licensing processing occurs, the Clerk's process and the Building Inspection and Fire supporting processes occur to meet to the demands of the ALRC. For example, the new liquor license and license renewal applications ask for more information than what is ultimately recorded in the Clerk's licensing system and certainly more than Building Inspection's and Fire's permitting systems. In other words, the applications and associated information exist in their current form so that the ALRC can make the most informed decision possible.
The biggest challenge and limitation of the current liquor licensing process is that all of the sub-processes, with the exception of the ALRC, appear to be auxiliary to the primary services of the participating City agencies. Furthermore, the licensing/permitting systems and databases used by the Clerk, Building Inspection, and Fire Department for liquor license processing are separate and distinct. This leads the City agencies to modify their larger, primary processes and systems for the smaller service delivery of liquor licensing, resulting a sort of ad hoc, reactive process. Furthermore, each agency starts to collect and manage their own data. Clerk, Building Inspection, and Fire all appear to be maintaining separate lists for their primary functions and services and then use each other's lists for liquor licensing and enforcement.

Liquor licensing appears to be more aligned with the Clerk's Office regular service of issuing licenses but it is still one category of licenses. With that being said, the Clerk's Office is still the process owner because it is usually the first point of contact for a liquor license applicant, the steward of liquor licenses and associated data, and the City agency that staffs all of the ALRC meetings. Furthermore, the Clerk's Office is usually the genesis of Building Inspection's and Fire's involvement through their use of the liquor licensing workflow. All of this is mentioned because the Clerk's Office is the one agency that appears to have designed a process and record keeping system to meet a key deliverable within their primary services. In other words, the Clerk's Office primary and final output is a liquor license while Building Inspection's and Fire's primary and final output is a seal/certificate of occupancy.

Liquor licensing is not a service within the Building Inspection Division nor does a separate process for liquor licensing exist. Building Inspection's processing of liquor licenses follows the same route as their other inspections. The change of premises or zoning review applications go through the same review process as all other businesses and households. The only difference is that the workflow of the change of premises or zoning applications may have a liquor license tied to it and thus navigate its way through the Clerk's Office and the ALRC. This becomes even more evident when comparing Building Inspection's occupancy list for restaurants and taverns. This is not an exhaustive list of all of the restaurants and taverns within the City of Madison and it includes restaurants without liquor licenses. The current restaurant and tavern occupancy list[9] available on Building Inspection's website includes approximately 604 businesses while the number of liquor license establishments included in the density analysis was 642. As previously mentioned, this dataset exists because it met the needs of the Building Inspection and is used by the Fire Department for capacity enforcement because it is used as the standard for indoor capacity. Again, it is unclear if the capacity estimate included on a liquor license application submitted to the Clerk's Office is ever cross-referenced with Building Inspection's list and updated when necessary. Lastly, Building Inspection is only a part of the liquor licensing process, new or renewal, when there is a change premises or a new alcohol outlet in a new location, which have zoning implications. Approximately 23 change of licensed premises and 99 new licenses, with only a few new liquor licenses requiring zoning

[9] https://www.cityofmadison.com/dpced/bi/documents/taverns.pdf

review, are reviewed by the ALRC each year.[10] This means that Building Inspection is usually only involved with 20 to 30 liquor licenses per year, assuming some of the new licenses are new construction or require zoning review.

The Fire Department has a similar experience with liquor licensing as the Building Inspection Division. Fire is responsible for inspecting fire safety systems at over 14,000 addresses twice a year throughout the City in addition to eight scheduled capacity checks at alcohol outlets (approximately 20 alcohol outlets are inspected at each capacity check). As previously mentioned, the Fire Department is only involved in liquor licensing when there is a new space/construction or the applicant is applying for a Temporary Class B License (e.g., Shake the Lake, temporary beer gardens, or neighborhood block parties). Capacity for Temporary Class B Licenses is finalized by the Fire Department and capacity for regular outdoor seating at restaurants and taverns are finalized by Building Inspection. Fire's permitting system and database, to which they refer as the routine record, contains every public building and place of employment within the City. Fire uses Building Inspection's list for indoor capacity signs and have added capacity data to the Fire Department's own routine record. Fire's routine record database is separate from the Clerk's and Building Inspection's lists and is used by the Fire Department for their capacity checks and regular fire safety system inspections. As a comparison, the Clerk's list of liquor licenses used in the density analysis similar to change of premises, the ALRC only reviews an annual average of approximately 21 Temporary Class B licenses per year. Assuming some of the new licenses included new space/construction, then Fire is looking at a similar range of involvement with 20 to 30 liquor licenses per year.

Lastly, the ALRC has its own process, which does exist for its primary service. With that being said, ALRC reviews more than just applications for new liquor licenses and liquor license renewals. As previously mentioned, ALRC has 19 recurring categories for review, all of which appear to have their own review and deliberative process within ALRC. For instance, operator's license applications appear to go through a different deliberative process than a new liquor license. Furthermore, the ALRC also has the ability to set stricter conditions on capacity and hours of operation outside of what Building Inspection, Fire, City ordinance, or State law may permit when reviewing new licenses or change of premises. This is all to say that the ALRC, as the legislative body in the liquor licensing process, produces a deliverable to the Common Council that is separate and distinct from the deliverables of the Clerk, Building Inspection, and Fire Department.

[10] Count of meetings and agenda items from ALRC agendas for 2016-2018.

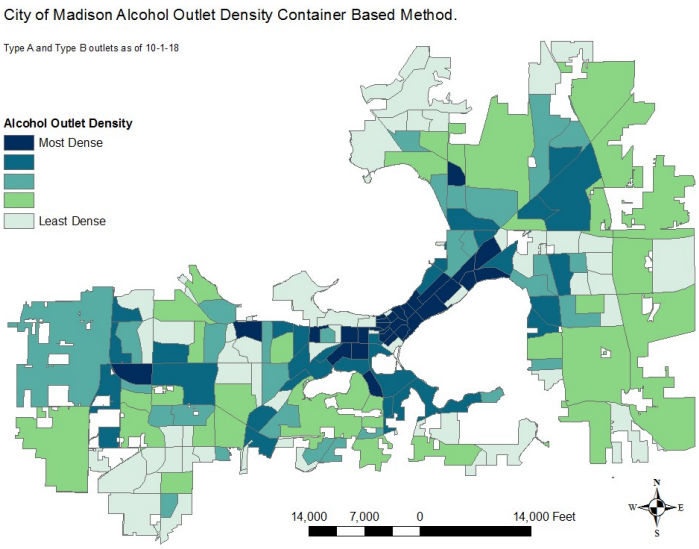
Appendix D: Alcohol Density Calculation Methodology

Areas with high alcohol outlet density are defined as being small zones with a high concentration of alcohol outlets (Centers for Disease Control and Prevention, 2017). Such areas have been associated with a number of public health issues such as increased levels of excessive drinking, increased number of calls for public services, increase in criminal behavior, and increased levels of injury (Fone, et al., 2016). Alcohol outlet density differs from state to state and from municipality to municipality. To best understand how alcohol outlet density plays out on a local level, the project team relied upon guidance provided by the Center for Disease Control (CDC) to calculate alcohol outlet density in the City of Madison.

The CDC outlines three approaches for calculating alcohol-outlet density: the container-based method, the distance-based method, and the spatial access method, all introduced above in the "Alcohol Outlet Density" section. The project team analyzed alcohol outlet density using all three approaches mentioned above to better understand the relevant strengths and limitations of each method.

Container Based Method

Figure 27: Alcohol Outlet Density, Container Based Method



The container-based method was calculated by totaling the number of alcohol outlets in each of the 174 block groups. The number of outlets per block group was divided by the corresponding area of that particular block group to arrive at a density measure in units of outlets per square mile. Block groups were then delineated into one of five levels, each containing an equal number of alcohol outlets, ranging from Level 1 (least dense) to Level 5 (most dense). Figure 28 identifies areas of high alcohol outlet density primarily in the isthmus corridor as well as areas along Regent and Monroe Street. Additional high dense areas include the West Towne and Hilldale mall areas, and Old University Avenue corridor. The block group with the highest alcohol outlet density encompasses the State Street corridor.

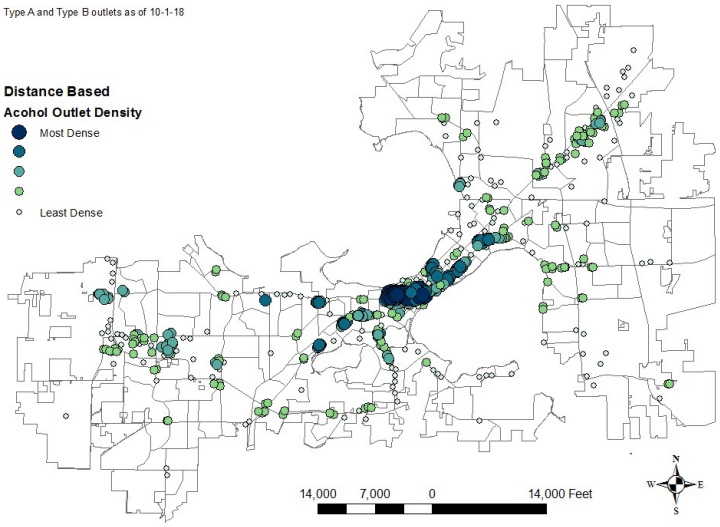
Distance-Based Method

For the distance-based method, a 0.1 mile buffer was created around each alcohol outlet. The choice of buffer size was based on methodology from a similar study in Atlanta (Zhang, et al., 2015). The total number of additional alcohol outlets falling within each outlet's buffer was then counted. Since the points of reference used in this method are the alcohol outlets themselves, this measure is not confined by the block groups' boundaries.

Like the distance-based method, each outlet was divided into five levels, each containing an equal number of alcohol outlets, ranging from Level 1 (least dense) to Level 5 (most dense). In Figure 29 the largest points represent the alcohol outlets that contain the most additional alcohol outlets within their 0.1 mile buffers. Outlets identified as being most dense fall entirely in the State Street and King Street Corridors.

The density measure ranged from a low of 1 to a high of 28 alcohol outlets falling within the 0.1-mile buffer.

Figure 28: Alcohol Outlet Density, Distance Based Method

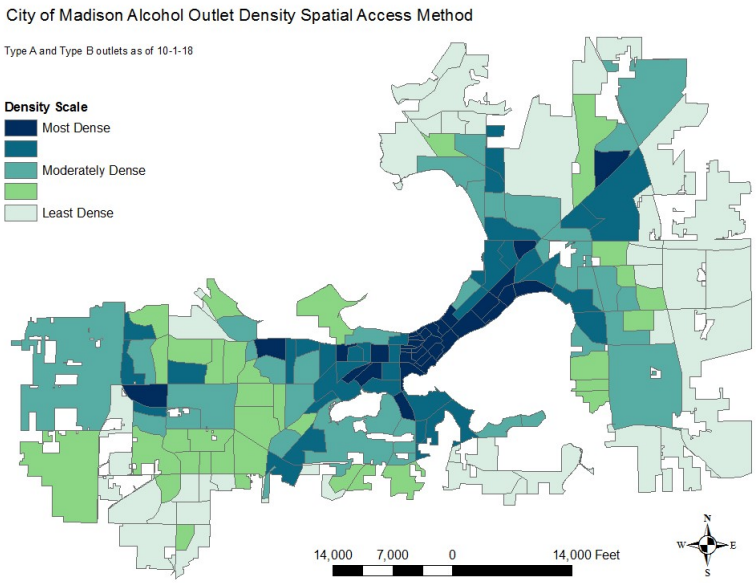


Spatial-Access Based Method

The spatial-access method was calculated by finding the distances from each block group's geographic center to the nearest nine alcohol outlets; the number nine was chosen because research indicates that this is the maximum number of options a person would consider when making choices or evaluating environmental conditions (Miller, 1956). The inverses of these nine distances were then summed to create a density index for each block group; inverse distances rather than linear distances were used to give higher weights to nearby outlets.

As with the other two methods, block groups were separated five levels, each containing an equal number of alcohol outlets, ranging from Level 1 (least dense) to Level 5 (most dense). Figure 30 identifies areas of high alcohol outlet density found using this method.

Figure 29: Alcohol Outlet Density, Spatial Access Method



Selected Methodology

The project team decided to use the spatial-access method. This approach allowed the team to measure density across boundaries while still being able to analyze data using block groups. This proved valuable as many of the variables analyzed in this study are measured at the block-group level.

Appendix E: MPD Data Methodology

The Madison Police Department (MPD) regularly addresses alcohol incidents due to the patrol and crowd-management responsibilities of officers. In interviews with MPD, officers indicated that MPD calls and cases related to alcohol usage are concentrated downtown near campus (Interviews with Madison Police Department, 2019). Officers indicated that patrol on the State Street and University corridor was most commonly addressing alcohol issues, while patrol in other areas of downtown, such as King Street, and the City as a whole do not see the same level of alcohol-related incidents (Interviews with Madison Police Department, 2019).

To test whether there was any relationship between calls for service and density level, the project team analyzed MPD calls and cases from 2016-2018. Data for cases and calls for service is stored in the Department's Records Management System (RMS). Call data represents instances when the Police Department receives a call through the Computer-Aided Dispatch (CAD) system related to an incident. Case data reflects instances when a call requires additional follow-up by MPD officers. While a call may become a case, not all calls become cases. From 2016-18, approximately 24% of calls became cases.

The team took several steps to filter data that did not meet the needs of the study. First, the team removed any calls and cases that were outside of Madison from the dataset (5,546, 0.01% of original dataset) or for which location data was unavailable (86,297, 13.7% of original dataset). In some calls/cases, location data was unavailable because the dataset only included an intersection (e.g. Blair Street and East Washington), while in other calls/cases, no location data was available. This was excluded from the study because the study questions were intended to measure the association between number of calls/cases and density level, as defined by geographic area. An analysis of the calls and cases dropped due to missing or limited location data show that most of these calls/cases were traffic incidents, accidents, or safety hazards. Officers indicated in interviews that alcohol-related incidents can sometimes spill into streets, creating safety hazards (Officers, 2019). It is possible that some incidents related to alcohol were not included in the study by excluding this data.

The team also disregarded data for calls and cases not handled by an MPD officer. These include calls and cases involving Public Health's animal control and parking enforcement (124,162, 19.7% of original dataset).

The team did not control for Badger Football or other event days when developing this sample. Table 26 shows the number of calls and cases by year in the final MPD sample. Call volume increased by 8% over the study period, while case volume only increased by 4% over the study period.

Table 26: Calls and Cases in Final Sample

	Calls	**Cases**
2016	131,861	38,958
2017	139,423	37,948
2018	142,000	40,346
Total	**413,284**	**117,252**

The specific processes for limiting call and case data are described in the following sections.

Call Data

The original 2016-2018 dataset provided by MPD included 629,289 calls.

1. Of the initial dataset, 0.9% of the data (n = 5,546 records) is dropped by excluding data points that are definitively outside of Madison, as determined by police sector number.
2. Of the remaining data, 13.8% (n = 86,297 records) is dropped by excluding data points lost through geocoding (specifically, points were excluded that lacked sector and Census block numbers). MPD indicated that they would not be able to geolocate some data points in the data set, and would therefore not be able to assign sectors or block numbers. This relates to the limits of certain MPD data, which is only recorded at an intersection or 100 block, rather than a specific address, and therefore can't be geolocated.
3. Of the remaining data, 23.1% (n = 124,162 records) is dropped by excluding data from the following categories:
    a. Accident/citizen report: These calls are handled by citizens and do not account for any officer time. (n=19)
    b. Parking and towed vehicle: These employees use the same computer-aided dispatch (CAD) system to track their work, but the incidents/calls are handled by parking enforcement and do not include for MPD officer time. Specific dropped call categories include "Parking Complaint On Street," "Parking Complaint Private," "Check Parking Postings," "Towed Vehicle," and "Towed Vehicle/Abandonment." (n=47,299)
    c. Animal data, except for complaint/disturbance (complaint/disturbance calls are addressed by MPD officers): Animal control uses the same CAD system to track their work, but the incidents/calls are handled by animal control staff and typically do not account for MPD officer time. Specific call types excluded include "Animal Bite," "Animal Dangerous," "Animal Found," "Animal Lost," and "Animal Stray." (n=3,275)
    d. 911 Call Data: Dane County notices all 911 calls over the air but not all calls generate work by an officer; those excluded did not dispatch an officer. Specific call types excluded include "911 Abandoned Call," "911 Call Playing w/Telephone," "911 Call Question," "911 Call Silent," "911 Call Unintentional," and "911 Misdial Call." (n=71,550) There were also 1,210 "Test 911" calls excluded.
    e. On-Duty Training: When officers are conducting on-duty training and are unable to respond to calls, this status appears in the CAD system. There were 809 calls of this type in the dataset.

Overall, 34.3% of the original MPD call dataset was dropped, but much of this was due to decisions about scope rather than data quality. The final dataset used in this analysis includes 413,284 calls (65.7% of the original dataset).

Case Data

The original 2016-2018 dataset provided by MPD included 134,400 cases.

1. Of the initial dataset 0.3% of the data (n = 401 records) is dropped by excluding data points that are definitively outside of Madison, as determined by police sector number.
2. Of the remaining data, 4.2% (n = 5,670 records) is dropped by excluding data points lost through geocoding (specifically, points were excluded that lacked sector and Census block numbers). MPD indicated that they would not be able to geolocate some data points in the data set, and would therefore not be able to assign sectors or block numbers. This relates to the incompleteness of certain MPD data, which is only recorded at an intersection or 100 block, rather than a specific address, and therefore can't be geolocated.
3. Of the remaining data, 8.6% (n = 11,077 records) is dropped by excluding data from the following categories:

a. **Accident/citizen report**: These cases are handled by citizens and do not account for any officer time. (n=9)
b. **Parking and towed vehicle**: These employees use the same computer-aided dispatch (CAD) system to track their work, but the cases are handled by parking enforcement and do not include for MPD officer time. Case categories excluded include "Check Parking Postings," "Parking Complaint On Street," "Parking Complaint Private," "Parking Complaint Pvt Prop," "Parking Street Storage," "Towed Vehicle," and "Towed Vehicle/Abandonment." (n=10,784)
c. **Animal data, except for complaint/disturbance**: These employees use the same CAD system to track their work, but the cases are handled by animal control and typically do not account for MPD officer time. Case categories excluded include "Animal Abandoned," "Animal Assist Other," "Animal Bite," "Animal Dangerous," "Animal Disturbance," "Animal Found," "Animal In Vehicle," "Animal Lost," "Animal Rabies," "Animal Stray," "Animal Surrender," "Animal Wildlife," and "Animal-Welfare." (n=153)
d. **911 Call Data**: Dane County notices all 911 calls over the air but not all calls generate work by an officer; those excluded did not dispatch an officer. Case categories excluded include "911 Abandoned Call," "911 Call Playing w/Telephone," "911 Call Question," "911 Call Silent," "911 Call Unintentional," "911 Disconnect," "911 Misdial Call," and "911 Multiple/Nuisance Calls." (n=131)

Overall, 12.8% of the original MPD case dataset was dropped, but much of this was due to decisions about scope rather than data quality. The final dataset used in this analysis includes 117,252 cases.

Types of MPD Calls/Cases

As shown in Figures 31 and 32, the "Other" category makes up the majority of call types (81.5%) and cases (54.8%). Tables 27 and 28 provide the top five call/case types in the category, and the number and percentage of the "Other" cases that category represents for that year.

Figure 30: Calls by Category

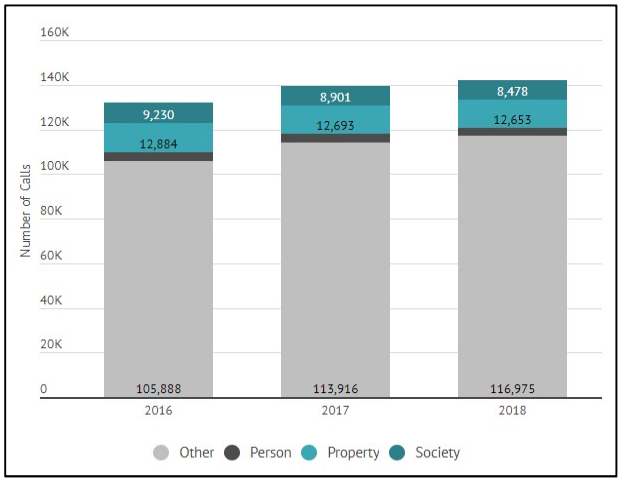


Table 27: Top 5 Call Types in "Other" Category

Call Type	2016	2017	2018
Check Property	11,102 (8.4%)	18,760 (13.5%)	16,834 (11.9%)
Check Person	11,786 (8.9%)	12,284 (8.8%)	12,733 (9.0%)
Traffic Stop	7,273 (5.5%)	5,803 (4.2%)	6,484 (4.7%)
Disturbance	6,137 (4.7%)	5,671 (4.1%)	5,847 (4.3%)
Phone	6,061 (4.6%)	5,735 (4.11%)	5,632 (4.2%)

Figure 31: Cases by Category

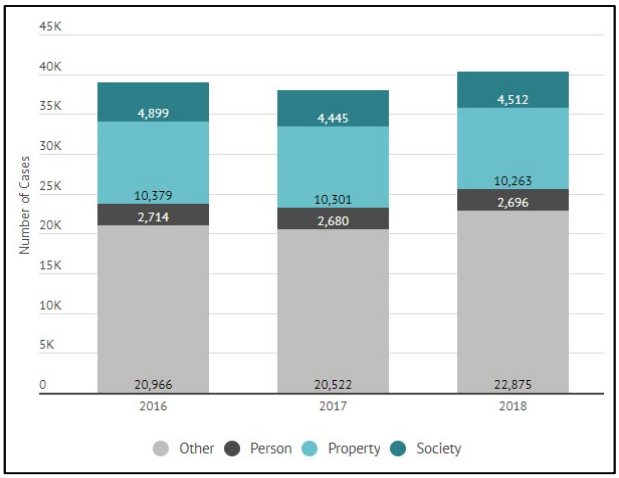


Table 28: Top 5 Case Types in "Other"

Case Type	2016	2017	2018
Check Person	3,546 (17.0%)	3,665 (17.9%)	4,176 (18.3%)
Disturbance	2,552 (12.3%)	2,528 (12.4%)	2,826 (12.4%)
Domestic Disturbance	5,111 (10.1%)	1,622 (11.1%)	2,363 (10.5%)
Information	1,762 (8.46%)	965 (7.9%)	1,674 (7.9%)
Found Property	425 (2.0%)	725 (4.7%)	962 (4.2%)

The following tables show the crosswalk of call and case types with the Person, Property, Society, and Other categories. These categories are defined by the Federal Bureau of Investigation and are used when submitting required information for the National Incident Based Reporting System.

MPD Call and Case Categories Mapped to Categories

Category and Call/Incident Type	Category
Accident	Other
Accident Hit and Run	Other
Accident Mv/Deer	Other
Accident Private Property	Other
Accident Property Damage	Other
Accident Unknown Injuries	Other
Accident w/Injuries	Other
Bicycle Accident	Other
Adult Arrest Resist/Obstruct	Other
Adult Arrest Warrant	Other
Adult Arrested Person	Other
Juvenile Arrest	Other
Juvenile Arrest Capias	Other
Traffic Arrest	Other
Assist Citizen	Other
Assist Citizen Lake	Other
Assist Citizen Vehicle Lockout	Other
Assist Community Policing	Other
Assist Court	Other
Assist Dane County Sheriff	Other
Assist Dive Team	Other
Assist EMS/Fire	Other
Assist Fire/Police	Other
Assist Follow Up	Other
Assist Green County Sheriff	Other

Category and Call/Incident Type	Category
Child Neglect	Person
Carjacking	Person
Aggravated Battery	Person
Attempted Homicide	Person
Battery	Person
Battery Agg/Substantial	Person
Child Abuse	Person
Enticement/Kidnapping	Person
Homicide	Person
Homicide-Motor Vehicle	Person
Sexual Assault	Person
Sexual Assault of a Child	Person
Fire Investigation	Property
Fire Investigation-Arson	Property
Arson	Property
Burglary Non-Residential	Property
Burglary Residential	Property
Damage to Property	Property
Damage to Property Graffiti	Property
Forgery	Property
Fraud	Property
Fraud/Identity Theft	Property
Graffiti Complaint	Property
Retail Theft	Property
Stolen Auto	Property

Category and Call/Incident Type	Category
Assist K-9	Other
Assist MPD (by TMPD)	Other
Assist Police	Other
Assist Translate	Other
Assist Wisc State Patrol	Other
Juvenile Complaint	Other
Civil Dispute	Other
Landlord Tenant Trouble	Other
Neighbor Trouble	Other
Disturbance	Other
Disturbance Unwanted Person	Other
Domestic Disturbance	Other
Information	Other
Death Investigation	Other
PNB/AED Response	Other
Follow-Up	Other
Foot Patrol	Other
Preserve the Peace	Other
Serving Legal Papers	Other
Silent Case Number	Other
Animal Complaint/Disturbance	Other
Emergency	Other
Escort Conveyance	Other
Local Ordinance Violation	Other
Medical Examiner	Other
Non-Urgent Notifications	Other
Phone	Other
Probation/Parole	Other
Problem Solve-Location	Other
Safety Hazard	Other
Special Event	Other
Unknown	Other
Voided Case/Incident Number	Other
ATL Person	Other
Check Person	Other
Found Person	Other
Info/Escapee	Other
Injured Person	Other
Missing Adult	Other
Missing Juvenile/Runaway	Other
Person Down	Other
Problem Solving Person	Other
Prowler	Other
Suspicious Person	Other
Unwanted Person	Other
Alarm	Other
Alarm Broadcast/File	Other

Category and Call/Incident Type	Category
Stolen Bicycle	Property
Stolen Other Vehicle Cycle	Property
Theft	Property
Theft from Auto	Property
Theft Gas Drive Off	Property
Theft Retail	Property
Worthless Checks	Property
Extortion	Property
Robbery - Strong Armed (Do Not Use)	Property
Robbery Armed	Property
Robbery Strong Armed	Property
Fraud-Extortion	Property
Conveyance Alcohol (Detox)	Society
Intoxicated Person	Society
Liquor Law	Society
Liquor Law Violation	Society
Liquor Law/Bar Check	Society
OMVWI Arrest/Intoxicated Driver	Society
Noise Complaint	Society
Odor/Smoke Complaint	Society
Solicitor Complaint	Society
Drug Incident Overdose	Society
Drug Incident/Investigation	Society
Drug Investigation	Society
Overdose	Society
Pharmaceutical Collection	Society
Conveyance	Society
Conveyance Mental Health	Society
PC Conveyance/Commitment	Society
Explosives Investigation	Society
Exposure	Society
Prostitution/Soliciting	Society
Bomb Incident	Society
Bomb Threat	Society
Bomb Threat-Explosion	Society
Trespass	Society
Check Person Weapon	Society
Disorderly Conduct	Society
Misc Sex Offense	Society
Sex Offense Miscellaneous	Society
Weapons Offense	Society
Weapons Offense Person w/Gun	Society
Weapons Offense Shots Fired	Society
Weapons -Violations	Society
Accident Citizen Report	Dropped
Parking Complaint On Street	Dropped
911 Abandoned Call	Dropped

Category and Call/Incident Type	Category
Check Property	Other
Check Property Alarm	Other
Check Property Open Door	Other
Check Property Vacation Check	Other
Found Property	Other
Lost Property	Other
Problem Solving Property	Other
Property Found	Other
Property Lost	Other
Recovered/Stolen Outside Agency	Other
Repo	Other
Suspicious Vehicle	Other
Road Rage	Other
Traffic Complaint/Investigation	Other
Traffic Incident	Other
Traffic Stop	Other
Traffic/Citizen Complaint	Other
Traffic/Road Rage	Other
Attempted Suicide	Other
Fight	Other
Stalking Complaint	Person
Threats Complaint	Person
Annoying/Obscene Phone Call	Person
Intimidation of Witness	Person
Recklessly Endangering Safety	Person
Significant Exposure (Officer)	Person
Violation of Court Order	Person

Category and Call/Incident Type	Category
911 Call Playing w/Telephone	Dropped
911 Call Question	Dropped
911 Call Silent	Dropped
911 Call Unintentional	Dropped
911 Disconnect	Dropped
911 Misdial Call	Dropped
911 Multiple/Nuisance Calls	Dropped
Animal Abandoned	Dropped
Animal Assist Other	Dropped
Animal Bite	Dropped
Animal Dangerous	Dropped
Animal Disturbance	Dropped
Animal Found	Dropped
Animal In Vehicle	Dropped
Animal Lost	Dropped
Animal Rabies	Dropped
Animal Stray	Dropped
Animal Surrender	Dropped
Animal Wildlife	Dropped
Animal-Welfare	Dropped
Check Parking Postings	Dropped
On Duty Training	Dropped
Test 911 Call	Dropped
Parking Street Storage	Dropped
Towed Vehicle/Abandonment	Dropped
Parking Complaint Pvt Prop	Dropped

Calls and Cases by Crime Type

Person	Other	Other (continued)
Aggravated Battery	Accident	Problem Solving Person
Annoying/Obscene Phone Call	Accident Hit and Run	Problem Solving Property
Attempted Homicide	Accident Mv/Deer	Property Found
Battery	Accident Private Property	Property Lost
Battery Agg/Substantial	Accident Property Damage	Prowler
Carjacking	Accident Unknown Injuries	Recovered/Stolen Outside Agency
Child Abuse	Accident w/Injuries	Repo
Child Neglect	Adult Arrest Resist/Obstruct	Road Rage
Enticement/Kidnapping	Adult Arrest Warrant	Safety Hazard
Homicide	Adult Arrested Person	Serving Legal Papers
Homicide-Motor Vehicle	Alarm	Silent Case Number
Intimidation of Witness	Alarm Broadcast/File	Special Event
Recklessly Endangering Safety	Animal Complaint/Disturbance	Suspicious Person
Sexual Assault	Assist Citizen	Suspicious Vehicle
Sexual Assault of a Child	Assist Citizen Lake	Traffic Arrest

Significant Exposure (Officer)	Assist Citizen Vehicle Lockout	Traffic Complaint/Investigation
Stalking Complaint	Assist Community Policing	Traffic Incident
Threats Complaint	Assist Court	Traffic Stop
Violation of Court Order	Assist Dane County Sheriff	Traffic/Citizen Complaint
Property	Assist Dive Team	Traffic/Road Rage
Arson	Assist EMS/Fire	Unknown
Burglary Non-Residential	Assist Fire/Police	Unwanted Person
Burglary Residential	Assist Follow Up	Voided Case/Incident Number
Damage to Property	Assist Green County Sheriff	**Excluded-911**
Damage to Property Graffiti	Assist K-9	911 Abandoned Call
Extortion	Assist MPD (by TMPD)	911 Call Playing w/Telephone
Fire Investigation	Assist Police	911 Call Question
Fire Investigation-Arson	Assist Translate	911 Call Silent
Forgery	Assist Wisc State Patrol	911 Call Unintentional
Fraud-Extortion	ATL Person	911 Disconnect
Fraud/Identity Theft	Attempted Suicide	911 Misdial Call
Graffiti Complaint	Bicycle Accident	911 Multiple/Nuisance Calls
Retail Theft	Check Person	**Excluded-Animal**
Robbery - Strong Armed (Do Not Use)	Check Property	Animal Abandoned
Robbery Armed	Check Property Alarm	Animal Assist Other
Robbery Strong Armed	Check Property Open Door	Animal Bite
Stolen Auto	Check Property Vacation	Animal Dangerous
Stolen Bicycle	Civil Dispute	Animal Disturbance
Stolen Other Vehicle Cycle	Death Investigation	Animal Found
Theft	Disturbance	Animal In Vehicle
Theft from Auto	Disturbance Unwanted Person	Animal Lost
Theft Gas Drive Off	Domestic Disturbance	Animal Rabies
Theft Retail	Emergency	Animal Stray
Worthless Checks	Escort Conveyance	Animal Surrender
Society	Fight	Animal Wildlife
Bomb Incident	Follow-Up	Animal-Welfare
Bomb Threat	Foot Patrol	**Excluded-Other**
Bomb Threat-Explosion	Found Person	Accident Citizen Report
Check Person Weapon	Found Property	On Duty Training
Conveyance	Info/Escapee	Test 911 Call
Conveyance Alcohol (Detox)	Information	**Excluded-Parking**
Conveyance Mental Health	Injured Person	Check Parking Postings
Disorderly Conduct	Juvenile Arrest	Parking Complaint On Street
Drug Incident Overdose	Juvenile Arrest Capias	Parking Complaint Private
Drug Incident/Investigation	Juvenile Complaint	Parking Complaint Pvt Prop
Drug Investigation	Landlord Tenant Trouble	Parking Street Storage
Explosives Investigation	Local Ordinance Violation	Towed Vehicle
Exposure	Lost Property	Towed Vehicle/Abandonment
Intoxicated Person	Medical Examiner	
Liquor Law	Missing Adult	
Liquor Law Violation	Missing Juvenile/Runaway	
Liquor Law/Bar Check	Neighbor Trouble	
Misc Sex Offense	Non-Urgent Notifications	

Noise Complaint	Person Down	
Odor/Smoke Complaint	Phone	
OMVWI Arrest/Intoxicated Driver	PNB/AED Response	
Overdose	Preserve the Peace	
PC Conveyance/Commitment	Probation/Parole	
Pharmaceutical Collection	Problem Solve-Location	
Prostitution/Soliciting		
Sex Offense Miscellaneous		
Solicitor Complaint		
Trespass		
Weapons Offense		
Weapons Offense Person w/Gun		
Weapons Offense Shots Fired		
Weapons -Violations		

Appendix F: Fire and Emergency Medical Services

Data from the Fire Department was provided from their source system, ImageTrend Elite for all calls from 2017-2018. Only two years of data were included in the study due to data availability resulting from a system migration that took place in August 2016.

The Fire/EMS datasets were imported into SAS 9.4 and merged on Incident Number into one dataset. In some cases, duplicate records for one call were caused by multiple agencies responding to the call or multiple patients being associated with the call. Because the research question is about the number and cost of incidents and not individual patients, the dataset was de-duplicated so that each Incident Number was counted once.

The combined Fire/EMS dataset had 60,043 incidents across the two-year time period. These incidents were geocoded and assigned an alcohol outlet density level between 1 (least dense) to 5 (most dense). 2,524 incidents (4.2% of original dataset) were dropped from the dataset because they could not be geocoded. Reasons that an address is unable to be geocoded include: the address has a spelling error, the geocoder did not standardize the address properly, the reference data used by the geocoder is not standardized properly, or the local address style being used is significantly different from the standard street address style. The final geocoded dataset used for analysis had 57,519 incidents, of which 38,229 (66.5%) were EMS incidents.

Fire Incident Type

There are several different category types used by Fire to classify calls for service; the variable "Basic Incident Type Subcategory (FD1.21)" is the most descriptive and was used for this analysis. Most incidents (37,920; 65.9%) received the incident type subcategory of "Emergency medical service (EMS) Incident" meaning it was an incident that was medical in nature and likely also had an EMS response. The next most frequent subcategory was "Public service assistance" with 7.0% of the incidents. Table 29 gives a summary of the Fire incident type subcategories by level. For a list of all the incident types, see the Fire Incident Type Subcategory Tables below.

Table 29: Number and Percent of Fire Incident Subcategory by Density Level

Fire Incident Type Subcategory	**Level 5**		**Level 4**		**Level 3**		**Level 2**		**Level 1**		**Total**	
	#	**%**	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**
EMS Incident	8,298	57.4%	7,858	65.8%	9,407	69.4%	5,629	69.6%	6,728	71.0%	37,920	65.9%
Public service assistance	1,391	9.6%	834	7.0%	809	6.0%	451	5.6%	543	5.7%	4,028	7.0%
Unintentional system/detector operation (no fire)	811	5.6%	399	3.3%	499	3.7%	272	3.4%	358	3.8%	2,339	4.1%
Wrong location, no emergency found	732	5.1%	482	4.0%	356	2.6%	199	2.5%	214	2.3%	1,983	3.4%
Fire	165	1.1%	173	1.5%	169	1.3%	125	1.5%	127	1.3%	759	1.3%
Other	2,805	19.4%	1,974	16.5%	2,036	15.0%	1,256	15.5%	1,345	14.2%	9,416	16.4%
Missing	256	1.8%	222	1.9%	285	2.1%	152	1.9%	159	1.7%	1,074	1.9%

EMS Incident Type

The EMS dataset has a variable titled "Primary Impression", which describes the initial impression of the EMS responder once they arrive to a scene. Off all EMS incidents, 99.3% (37,959 incidents) had an assigned Primary Impression. The most frequent code assigned was related to neurological issues with 18.0% of incidents, followed by injuries (15.9% of incidents). According to Fire and EMS first responders, when they arrive on the scene of an incident, they must rule out any underlying medical incidents prior to assuming intoxication is the cause (Crawley, 2019). For instance, low blood sugar may present similarly to intoxication, so they typically check blood sugar levels prior to addressing potential intoxication. For that reason, it is feasible that alcohol-related incidents may have been assigned a "neurological" or "injury" code even if they were related to overconsumption. The code "Substance Use - Alcohol (F10.9)" was assigned to 8.4% of the incidents in Level 5, 4.3% in Level 4, 2.5% in Level 3, 1.7% in Level 2, and 2.2% in Level 1. Table 30 gives a summary of the EMS Primary Impression codes by level. For a list of all the Primary Impression types, see the EMS Primary Impression Tables below.

Table 30: Number and Percent of Primary Impression Codes by Density Level

EMS Primary Impression	**Level 5**		**Level 4**		**Level 3**		**Level 2**		**Level 1**		**Total**	
	#	*%*	*#*	*%*	*#*	*%*	*#*	*%*	*#*	*%*	*#*	*%*
Behavioral	715	8.5	640	8.2	588	6.3	347	6.2	392	5.8	2,682	7.1
Cardiovascular	696	8.3	736	9.4	1,121	11.9	597	10.6	721	10.7	3,871	10.2
Gastrointestinal/Genitourinary	610	7.3	712	9.1	844	9.0	537	9.5	689	10.2	3,392	8.9
Injury	1,475	17.6	1,244	15.9	1,518	16.2	778	13.8	1,026	15.2	6,041	15.9
Neurological	1,368	16.3	1,354	17.3	1,716	18.3	1,082	19.2	1,300	19.3	6,820	18.0
No illness or injury found	635	7.6	500	6.4	654	7.0	353	6.3	465	6.9	2,607	6.9
Pain	725	8.6	669	8.6	752	8.0	469	8.3	590	8.7	3,205	8.4
Respiratory	418	5.0	476	6.1	633	6.7	509	9.0	501	7.4	2,537	6.7
Substance Use - Alcohol	701	8.4	332	4.3	236	2.5	96	1.7	148	2.2	1,513	4.0
Substance Use - Other	220	2.6	194	2.5	169	1.8	74	1.3	99	1.5	756	2.0
Other	821	9.8	953	12.2	1,156	12.3	785	14.0	820	12.1	4,535	11.9
Total	**8,384**		**7,810**		**9,387**		**5,627**		**6,751**		**37,959**	

The EMS dataset also has a variable titled "Primary Symptom" which describes what the EMS responder determines to be the primary medical symptom the patient is experiencing. Of all EMS incidents, 94.3% (36,051 incidents) had an assigned Primary Symptom. The most frequent code assigned outside of the "Other" category was pain in 19.9% of incidents, followed by "Dyspnea/difficulty breathing/shortness of breath" with 7.3% of incidents. The five most frequent codes in the "Other" category were "Hemorrhage/bleeding" (4.1% of all incidents), "Dizziness/light-headedness/vertigo" (3.5% of all incidents), "Seizure" (3.4% of all incidents), "Headache/head pain" (3.3% of all incidents), and "No apparent illness or injury" (3.1% of all incidents). The code "Intoxication, alcohol" was assigned to 7.3% of the incidents in Level 5, 3.8% in Level 4, 2.1% in Level 3, 1.4% in Level 2, and 2.0% in Level 1. Table 31 gives a summary of the EMS Primary Symptom codes by level. For a list of all the Primary Symptom types, see the EMS Primary Symptom tables below.

Table 31: Number and Percent of EMS Primary Symptom Code by Density Level

EMS Primary Symptom	**Level 5**		**Level 4**		**Level 3**		**Level 2**		**Level 1**		**Total**	
	#	*%*	*#*	*%*	*#*	*%*	*#*	*%*	*#*	*%*	*#*	*%*
Chest pain/discomfort	461	5.8%	506	6.8%	687	7.7%	378	7.1%	432	6.7%	2,464	6.8%
Dyspnea/difficulty breathing/shortness of breath	441	5.5%	471	6.4%	690	7.7%	512	9.6%	505	7.9%	2,619	7.3%
Intoxication, alcohol	586	7.3%	283	3.8%	189	2.1%	76	1.4%	130	2.0%	1,264	3.5%
Pain	1,553	19.5%	1,529	20.7%	1,757	19.7%	1,040	19.5%	1,290	20.1%	7,169	19.9%
Weakness	311	3.9%	383	5.2%	488	5.5%	330	6.2%	393	6.1%	1,905	5.3%
Other	4,624	58.0%	4,221	57.1%	5,113	57.3%	3,000	56.2%	3,672	57.2%	20,630	57.2%
Total	**7,976**		**7,393**		**8,924**		**5,336**		**6,422**		**36,051**	

Fire Incident Subcategories Mapped to Categories

Fire Incident Type Subcategory	Category
8 - Severe Weather & Natural Disaster	Other
10 - Fire, other	Fire
11 - Structure Fire	Fire
12 - Fire in mobile property used as a fixed structure	Fire
13 - Mobile property (vehicle) fire	Fire
14 - Natural vegetation fire	Fire
15 - Outside rubbish fire	Fire
16 - Special outside fire	Fire
17 - Cultivated vegetation, crop fire	Fire
21 - Overpressure rupture from steam (no ensuing fire)	Other
22 - Overpressure rupture from air or gas (no fire)	Other
24 - Explosion (no fire)	Other
25 - Excessive heat, scorch burns with no ignition	Other
30 - Rescue, emergency medical call (EMS), other	Other
31 - Medical assist	Other
32 - Emergency medical service (EMS) Incident	EMS Incident
33 - Lock-In	Other
34 - Search for lost person	Other
35 - Extrication, rescue	Other
36 - Water or ice-related rescue	Other
37 - Electrical rescue	Other
38 - Rescue or EMS standby	Other
40 - Flammable gas or liquid condition, other	Other
41 - Combustible/flammable spills & leaks	Other
42 - Chemical release, reaction, or toxic condition	Other
43 - Radioactive condition	Other
44 - Electrical wiring/equipment problem	Other
45 - Biological hazard	Other
46 - Accident, potential accident	Other

Fire Incident Type Subcategory	Assigned To
47 - Explosive, bomb removal	Other
48 - Attempted burning, illegal action	Other
50 - Service call, other	Other
51 - Person in distress	Other
52 - Water problem	Other
53 - Smoke, odor problem	Other
54 - Animal problem or rescue	Other
55 - Public service assistance	Public service assistance
56 - Unauthorized burning	Other
57 - Cover assignment, standby at fire station, move-u	Other
60 - Good intent call, other	Other
61 - Dispatched and cancelled en route	Other
62 - Wrong location, no emergency found	Wrong location, no emergency found
63 - Controlled burning	Other
64 - Vicinity alarm	Other
65 - Steam, other gas mistaken for smoke	Other
66 - EMS call where party has been transported	Other
67 - HazMat release investigation w/no HazMat	Other
70 - False alarm and false call, other	Other
71 - Malicious, mischievous false alarm	Other
72 - Bomb scare	Other
73 - System or detector malfunction	Other
74 - Unintentional system/detector operation (no fire)	Unintentional detector operation (no fire)
90 - Special type of incident, other	Other
91 - Citizen complaint	Other

Fire Incident Subcategories by Category

EMS Incident
32 - Emergency medical service (EMS) Incident
Fire
10 - Fire, other
11 - Structure Fire
12 - Fire in mobile property used as a fixed structure
13 - Mobile property (vehicle) fire
14 - Natural vegetation fire
15 - Outside rubbish fire
16 - Special outside fire
17 - Cultivated vegetation, crop fire
Other
21 - Overpressure rupture from steam (no ensuing fire)
22 - Overpressure rupture from air or gas (no fire)
24 - Explosion (no fire)
25 - Excessive heat, scorch burns with no ignition
30 - Rescue, emergency medical call (EMS), other
31 - Medical assist
33 - Lock-In
34 - Search for lost person
35 - Extrication, rescue
36 - Water or ice-related rescue
37 - Electrical rescue
38 - Rescue or EMS standby
40 - Flammable gas or liquid condition, other
41 - Combustible/flammable spills & leaks
42 - Chemical release, reaction, or toxic condition
43 - Radioactive condition
44 - Electrical wiring/equipment problem
45 - Biological hazard
46 - Accident, potential accident
47 - Explosive, bomb removal
48 - Attempted burning, illegal action
50 - Service call, other
51 - Person in distress
52 - Water problem
53 - Smoke, odor problem
54 - Animal problem or rescue
56 - Unauthorized burning
57 - Cover assignment, standby at fire station, move-u
60 - Good intent call, other
61 - Dispatched and cancelled en route
63 - Controlled burning
64 - Vicinity alarm
65 - Steam, other gas mistaken for smoke
66 - EMS call where party has been transported
67 - HazMat release investigation w/no HazMat
70 - False alarm and false call, other
71 - Malicious, mischievous false alarm
72 - Bomb scare
73 - System or detector malfunction
90 - Special type of incident, other
91 - Citizen complaint
Public service assistance
55 - Public service assistance
Unintentional detector operation (no fire)
74 - Unintentional system/detector operation (no fire)
Wrong location, no emergency found
62 - Wrong location, no emergency found

EMS Primary Impressions Mapped to Categories

EMS Primary Impression	Category
Alcohol use, unspecified with intoxication (F10.92)	Substance Use - Alcohol
Allergic Reaction (T78.40)	Other
Allergic Reaction with Shock (Anaphylaxis) (T78.2)	Other
Apparent Life Threatening Event in Infant (ALTE or	Other
Behavioral - Anxiety (F41.9)	Behavioral
Behavioral - Depression (F32.9)	Behavioral
Behavioral - Disorientation (R41.0)	Behavioral
Behavioral - Hallucination - Auditory (R44.0)	Behavioral
Behavioral - Hallucination - Visual (R44.1)	Behavioral
Behavioral - Hostile (R45.5)	Behavioral
Behavioral - Mental Disorder Not Otherwise Listed (	Behavioral
Behavioral - Strange Behavior (R46.2)	Behavioral
Behavioral - Suicidal/Homicidal Thoughts (R45.85)	Behavioral
Behavioral - Suicide Attempt (T14.91)	Behavioral
Behavioral - Violent (R45.6)	Behavioral
Burn - First degree (L55.0)	Other
Burn - Second degree (L55.1)	Other
Burn - Third degree (L55.2)	Other
Burn - Unspecified Degree (T30.0)	Other
CV - Abdominal Aortic Aneurysm (I71.9)	Cardiovascular
CV - Bleeding of Varicose Veins (I86.8)	Cardiovascular
CV - Cardiac Arrest (I46.9)	Cardiovascular
CV - Cardiac Arrest/Obvious Death (R99)	Cardiovascular
CV - Cardiac Arrhythmia/Dysrhythmia (I49.9)	Cardiovascular
CV - Cardiac Tamponade (I31.4)	Cardiovascular
CV - Chest Pain - Angina (I20.0)	Cardiovascular
CV - Chest Pain - Myocardial Infarction (Non-STEMI)	Cardiovascular
CV - Chest Pain - Presumed Cardiac (I20.9)	Cardiovascular
CV - Chest Pain - STEMI of Anterior Wall (I21.0)	Cardiovascular
CV - Chest Pain - STEMI of Inferior Wall (I21.1)	Cardiovascular
CV - Chest Pain - STEMI of other sites (I21.2)	Cardiovascular
CV - Congestive Heart Failure (CHF) (I50.9)	Cardiovascular
CV - Hypertension (I10)	Cardiovascular
CV - Hypotension (I95.9)	Cardiovascular
CV - Hypovolemia (E86.1)	Cardiovascular
CV - Pulmonary Embolism (I26)	Cardiovascular
Cancer - Bone (C40)	Other
Cancer - Brain (C43.2)	Other
Cancer - Breast (D48.60)	Other
Cancer - Esophagus (C15)	Other
Cancer - Lung (D02.20)	Other
Cancer - Pancreas (C25.0)	Other
Cancer - Unspecified (D49)	Other
Chest pain, unspecified (R07.9)	Other

EMS Primary Impression	Category
Complication - Bleeding or Hematoma from Procedure/	Other
Complication - Sickle Cell Anemia/Crisis (D57.0)	Other
Dyspnea (R06.0)	Other
EENT - Dental/Tooth Pain (K08.8)	Other
EENT - Epistaxis (Non-traumatic) (R04.0)	Other
EENT - Eye Pain (Non-traumatic) (H57.10)	Other
EENT - Foreign Body to Ear (T16)	Other
EENT - Foreign Body to Eye (T15)	Other
Endocrine - Adrenocortical Insufficiency (E27.40)	Other
Endocrine - Hyperglycemia - Diabetic (E13.65)	Other
Endocrine - Hypoglycemia - Diabetic (E13.64)	Other
Endocrine Disorder - Otherwise Not Listed (E34.9)	Other
Endocrine Hypoglycemia - Non-diabetic (E16.2)	Other
Environment - Dehydration (E86.0)	Other
Environment - Electrocution (T75.4)	Other
Environment - Frostbite Superficial (T33.90)	Other
Environment - Frostbite With Tissue Necrosis (T34.9	Other
Environment - Heat Exhaustion (T67.5)	Other
Environment - Heatstroke (T67.0)	Other
Environment - Hypothermia (T68)	Other
Environment - Poisoning/Drug Ingestion (T65.9)	Other
Environment - Stings/Venomous Bites (T63.4)	Other
Environment - Suspected Exposure to a Health Hazard	Other
Environment - Toxic Exposure (Accidental) (T65.91)	Other
Environment - Toxic Exposure (Intentional) (T65.92)	Other
GI/GU - Abdominal Generalized (R10.84)	Gastrointestinal/Genitourinary
GI/GU - Abdominal Pain Acute Onset (R10.0)	Gastrointestinal/Genitourinary
GI/GU - Appendicitis Acute Onset (K35.80)	Gastrointestinal/Genitourinary
GI/GU - Bowel Obstruction (K56.60)	Gastrointestinal/Genitourinary
GI/GU - Constipation (K59.00)	Gastrointestinal/Genitourinary
GI/GU - Diarrhea (K59.1)	Gastrointestinal/Genitourinary
GI/GU - Esophageal Obstruction (K22.2)	Gastrointestinal/Genitourinary
GI/GU - Foreign Body Digestive System (T18.9)	Gastrointestinal/Genitourinary
GI/GU - Foreign Body Genitourinary Tract (T19.9)	Gastrointestinal/Genitourinary
GI/GU - GERD (Reflux) (K21)	Gastrointestinal/Genitourinary
GI/GU - GI Problem Not Otherwise Listed (K92.9)	Gastrointestinal/Genitourinary
GI/GU - GU Problem Not Otherwise Listed (N39.9)	Gastrointestinal/Genitourinary
GI/GU - Hematemesis (vomiting blood) (K92.0)	Gastrointestinal/Genitourinary
GI/GU - Melena (bloody stools) (K92.1)	Gastrointestinal/Genitourinary
GI/GU - Nausea (With Vomiting) (R11.2)	Gastrointestinal/Genitourinary
GI/GU - Nausea (Without Vomiting) (R11.0)	Gastrointestinal/Genitourinary
GI/GU - Obesity (E66.9)	Gastrointestinal/Genitourinary
GI/GU - Pelvic or Perineal Pain (R10.2)	Gastrointestinal/Genitourinary

EMS Primary Impression	Category
GI/GU - Vaginal Bleeding (N93.9)	Gastrointestinal/Genitourinary
Hemorrhage, not elsewhere classified (R58)	Other
Infectious - Bronchitis - Acute (J20.9)	Other
Infectious - Common Cold (J00)	Other
Infectious - Croup (J05.0)	Other
Infectious - Disease Unspecified (B99.9)	Other
Infectious - Fever (R50.9)	Other
Infectious - Influenza (Flu Like Symptoms) (J11)	Other
Infectious - Meningitis (G03.9)	Other
Infectious - Pneumonia (J18.9)	Other
Infectious - RSV (B97.4)	Other
Infectious - SARS (B97.21)	Other
Infectious - Sepsis (A41.9)	Other
Injury - Abdomen (S39.91)	Injury
Injury - Ankle (S99.91)	Injury
Injury - Ear (S09.91)	Injury
Injury - Elbow (S59.90)	Injury
Injury - Eye and/or Orbit (S05)	Injury
Injury - Face (S09.93)	Injury
Injury - Foot (S99.92)	Injury
Injury - Forearm (S59.91)	Injury
Injury - Genitalia (S39.94)	Injury
Injury - Head (S09.90)	Injury
Injury - Head with L.O.C. (S06.0X9A)	Injury
Injury - Head without L.O.C. (S06.0X0A)	Injury
Injury - Hemorrhagic Shock (T79.4XXA)	Injury
Injury - Hip (S79.91)	Injury
Injury - Intracranial (S06.9)	Injury

EMS Primary Impression	Category
Injury - Lower Back (S39.92)	Injury
Injury - Lower Leg (S89.9)	Injury
Injury - Neck (S19.9)	Injury
Injury - Nose (S09.92)	Injury
Injury - Not Otherwise Listed (T14.90)	Injury
Injury - Pelvis (S39.93)	Injury
Injury - Shoulder or Upper Arm (S49.9)	Injury
Injury - Thigh (upper leg) (S79.92)	Injury
Injury - Thorax (upper chest) (S29.9)	Injury
Injury - Traumatic Epidural Hemorrhage (S06.4)	Injury
Injury - Traumatic Lung Hemothorax (S27.1)	Injury
Injury - Traumatic Lung Pneumothorax (S27.0)	Injury
Injury - Traumatic Subdural Hemorrhage (S06.6)	Injury
Injury - Wrist, Hand, or Fingers (S69.9)	Injury
Lab - Hyperkalemia (E87.5)	Other
Maltreatment - Adult Neglect Suspected (T74.01)	Other
Maltreatment - Adult Physical Abuse Suspected (T74.	Other
Maltreatment - Adult Sexual Abuse/Rape Suspected (T	Other
Maltreatment - Child Physicial Abuse Suspected (T74	Other
Metabolic Disorder - Other (E88.9)	Other
Mobility - Bedridden (Z74.01)	Other
Mobility - Reduced (Z74.09)	Other
Neuro - Altered Mental Status (R41.82)	Neurological

EMS Primary Impression	Category
Neuro - Headache (R51)	Neurological
Neuro - Headache - Migraine (G43.9)	Neurological
Neuro - Hemiplegia (G81.90)	Neurological
Neuro - Malaise (R53.81)	Neurological
Neuro - Neuro Problem Not Otherwise Listed (G99.8)	Neurological
Neuro - Paraplegia (G82.20)	Neurological
Neuro - Seizure (G40.909)	Neurological
Neuro - Status Epilepticus (G40.901)	Neurological
Neuro - Stroke (CVA) Hemorrhagic (I62.9)	Neurological
Neuro - Stroke/CVA (I63.9)	Neurological
Neuro - Syncope/Syncopal Episode (or Near) (R55)	Neurological
Neuro - TIA (transient ischemic attack) (G45.9)	Neurological
Neuro - Unconscious (R40.20)	Neurological
Neuro - Vertigo (R42)	Neurological
Neuro - Visual Disturbance (H53.9)	Neurological
Neuro - Weakness (R53.1)	Neurological
No illness or injury found (Z71.1)	No illness or injury found
Not Applicable	Other
Not Recorded	Other
OB - Childbirth Complicated (O75)	Other
OB - Childbirth Uncomplicated (O80)	Other
OB - Contractions (O62.0)	Other
OB - Newborn Care - Care Not Otherwise Listed (P15)	Other
OB - Newborn Care - Normal (Z38.2)	Other
OB - Newborn Care - Post-term (P08.21)	Other

EMS Primary Impression	Category
OB - Newborn Care - Pre-Term (P07.3)	Other
OB - Newborn Care - Respiratory Distress (P22)	Other
OB - OB/GYN Complaint Not Otherwise Listed (O26.90)	Other
OB - Obstetric Trauma (O71.9)	Other
OB - Postpartum Hemorrhage (O72)	Other
OB - Pre-eclampsia (O14.9)	Other
OB - Preterm Labor Without Delivery (O60.0)	Other
OB - Preterm Labor with Delivery (O60.1)	Other
OB - Spontaneous Abortion (Miscarriage) (O03)	Other
OB - Spontaneous Rupture of Membranes (SROM) (O42.0	Other
OB - Vomiting Due to Pregnancy (O21.9)	Other
Pain - Back (non-traumatic) (M54.9)	Pain
Pain - Chest (presumed non-cardiac) (R07.89)	Pain
Pain - Chronic (G89.2)	Pain
Pain - Extremity (Non-traumatic) (M79.609)	Pain
Pain - Neck (Non-traumatic) (M54.2)	Pain
Pain - Not Elsewhere Mentioned Sudden Onset (G89.1)	Pain
Pain in limb, unspecified (M79.60)	Pain
Respiratory - Acute Onset Distress (J80)	Respiratory
Respiratory - Arrest/Apnea (R06.81)	Respiratory
Respiratory - Asphyxia/Suffocation (T71.9)	Respiratory

EMS Primary Impression	Category
Respiratory - Asthma Exacerbation (J45.901)	Respiratory
Respiratory - Bronchospasm Acute Onset (J98.01)	Respiratory
Respiratory - COPD Exacerbation (J44.1)	Respiratory
Respiratory - Distress Due to Chemicals, Gases, Fume	Respiratory
Respiratory - Failure (J96.9)	Respiratory
Respiratory - Foreign Body Airway (T17.9)	Respiratory
Respiratory - Hemoptysis (R04.2)	Respiratory
Respiratory - Hyperventilation (R06.4)	Respiratory
Respiratory - Not Otherwise Listed (J98.9)	Respiratory
Respiratory - Pneumothorax (Spontaneous) (J93.9)	Respiratory
Respiratory - Pulmonary Edema Acute Onset (J81.0)	Respiratory
Respiratory - Smoke Inhalation (J70.5)	Respiratory
Substance Use - Alcohol (F10.9)	Substance Use - Alcohol
Substance Use - Alcohol - Withdrawal (F10.239)	Substance Use - Other
Substance Use - Cocaine (F14)	Substance Use - Other
Substance Use - Hallucinogen (F16)	Substance Use - Other
Substance Use - Inhalant Substances (huffing) (F15)	Substance Use - Other
Substance Use - Narcotic (i.e. Heroin) (F11)	Substance Use - Other
Substance Use - Psychoactive Substance (F19)	Substance Use - Other
Substance Use - Sedative, Hypnotic or Anxiolytic (F	Substance Use - Other

EMS Primary Impression by Category

Behavioral
Behavioral - Anxiety (F41.9)
Behavioral - Depression (F32.9)
Behavioral - Disorientation (R41.0)
Behavioral - Hallucination - Auditory (R44.0)
Behavioral - Hallucination - Visual (R44.1)
Behavioral - Hostile (R45.5)
Behavioral - Mental Disorder Not Otherwise Listed (
Behavioral - Strange Behavior (R46.2)
Behavioral - Suicidal/Homicidal Thoughts (R45.85)
Behavioral - Suicide Attempt (T14.91)
Behavioral - Violent (R45.6)
Cardiovascular
CV - Abdominal Aortic Aneurysm (I71.9)
CV - Bleeding of Varicose Veins (I86.8)
CV - Cardiac Arrest (I46.9)
CV - Cardiac Arrest/Obvious Death (R99)
CV - Cardiac Arrhythmia/Dysrhythmia (I49.9)
CV - Cardiac Tamponade (I31.4)
CV - Chest Pain - Angina (I20.0)
CV - Chest Pain - Myocardial Infarction (Non-STEMI)
CV - Chest Pain - Presumed Cardiac (I20.9)
CV - Chest Pain - STEMI of Anterior Wall (I21.0)
CV - Chest Pain - STEMI of Inferior Wall (I21.1)
CV - Chest Pain - STEMI of other sites (I21.2)
CV - Congestive Heart Failure (CHF) (I50.9)
CV - Hypertension (I10)
CV - Hypotension (I95.9)
CV - Hypovolemia (E86.1)
CV - Pulmonary Embolism (I26)
Gastrointestinal/Genitourinary
GI/GU - Abdominal Generalized (R10.84)
GI/GU - Abdominal Pain Acute Onset (R10.0)
GI/GU - Appendicitis Acute Onset (K35.80)
GI/GU - Bowel Obstruction (K56.60)
GI/GU - Constipation (K59.00)
GI/GU - Diarrhea (K59.1)
GI/GU - Esophageal Obstruction (K22.2)
GI/GU - Foreign Body Digestive System (T18.9)
GI/GU - Foreign Body Genitourinary Tract (T19.9)
GI/GU - GERD (Reflux) (K21)
GI/GU - GI Problem Not Otherwise Listed (K92.9)
GI/GU - GU Problem Not Otherwise Listed (N39.9)
GI/GU - Hematemesis (vomiting blood) (K92.0)
GI/GU - Melena (bloody stools) (K92.1)
GI/GU - Nausea (With Vomiting) (R11.2)
GI/GU - Nausea (Without Vomiting) (R11.0)
GI/GU - Obesity (E66.9)
GI/GU - Pelvic or Perineal Pain (R10.2)
GI/GU - Vaginal Bleeding (N93.9)
Injury
Injury - Abdomen (S39.91)
Injury - Ankle (S99.91)
Injury - Ear (S09.91)
Injury - Elbow (S59.90)
Injury - Eye and/or Orbit (S05)
Injury - Face (S09.93)
Injury - Foot (S99.92)
Injury - Forearm (S59.91)
Injury - Genitalia (S39.94)
Injury - Head (S09.90)
Injury - Head with L.O.C. (S06.0X9A)
Injury - Head without L.O.C. (S06.0X0A)
Injury - Hemorrhagic Shock (T79.4XXA)
Injury - Hip (S79.91)
Injury - Intracranial (S06.9)
Injury - Lower Back (S39.92)
Injury - Lower Leg (S89.9)
Injury - Neck (S19.9)
Injury - Nose (S09.92)
Injury - Not Otherwise Listed (T14.90)
Injury - Pelvis (S39.93)
Injury - Shoulder or Upper Arm (S49.9)
Injury - Thigh (upper leg) (S79.92)
Injury - Thorax (upper chest) (S29.9)
Injury - Traumatic Epidural Hemorrhage (S06.4)
Injury - Traumatic Lung Hemothorax (S27.1)
Injury - Traumatic Lung Pneumothorax (S27.0)
Injury - Traumatic Subdural Hemorrhage (S06.6)
Injury - Wrist, Hand, or Fingers (S69.9)
Neurological
Neuro - Altered Mental Status (R41.82)
Neuro - Headache - Migraine (G43.9)
Neuro - Headache (R51)
Neuro - Hemiplegia (G81.90)
Neuro - Malaise (R53.81)
Neuro - Neuro Problem Not Otherwise Listed (G99.8)

Neuro - Paraplegia (G82.20)
Neuro - Seizure (G40.909)
Neuro - Status Epilepticus (G40.901)
Neuro - Stroke (CVA) Hemorrhagic (I62.9)
Neuro - Stroke/CVA (I63.9)
Neuro - Syncope/Syncopal Episode (or Near) (R55)
Neuro - TIA (transient ischemic attack) (G45.9)
Neuro - Unconscious (R40.20)
Neuro - Vertigo (R42)
Neuro - Visual Disturbance (H53.9)
Neuro - Weakness (R53.1)
No illness or injury found
No illness or injury found (Z71.1)
Other
Allergic Reaction (T78.40)
Allergic Reaction with Shock (Anaphylaxis) (T78.2)
Apparent Life Threatening Event in Infant (ALTE or
Burn - First degree (L55.0)
Burn - Second degree (L55.1)
Burn - Third degree (L55.2)
Burn - Unspecified Degree (T30.0)
Cancer - Bone (C40)
Cancer - Brain (C43.2)
Cancer - Breast (D48.60)
Cancer - Esophagus (C15)
Cancer - Lung (D02.20)
Cancer - Pancreas (C25.0)
Cancer - Unspecified (D49)
Chest pain, unspecified (R07.9)
Complication - Bleeding or Hematoma from Procedure/
Complication - Sickle Cell Anemia/Crisis (D57.0)
Dyspnea (R06.0)
EENT - Dental/Tooth Pain (K08.8)
EENT - Epistaxis (Non-traumatic) (R04.0)
EENT - Eye Pain (Non-traumatic) (H57.10)
EENT - Foreign Body to Ear (T16)
EENT - Foreign Body to Eye (T15)
Endocrine - Adrenocortical Insufficiency (E27.40)
Endocrine - Hyperglycemia - Diabetic (E13.65)
Endocrine - Hypoglycemia - Diabetic (E13.64)
Endocrine Disorder - Otherwise Not Listed (E34.9)
Endocrine Hypoglycemia - Non-diabetic (E16.2)
Environment - Dehydration (E86.0)
Environment - Electrocution (T75.4)

Environment - Frostbite Superficial (T33.90)
Environment - Frostbite With Tissue Necrosis (T34.9
Environment - Heat Exhaustion (T67.5)
Environment - Heatstroke (T67.0)
Environment - Hypothermia (T68)
Environment - Poisoning/Drug Ingestion (T65.9)
Environment - Stings/Venomous Bites (T63.4)
Environment - Suspected Exposure to a Health Hazard
Environment - Toxic Exposure (Accidental) (T65.91)
Environment - Toxic Exposure (Intentional) (T65.92)
Hemorrhage, not elsewhere classified (R58)
Infectious - Bronchitis - Acute (J20.9)
Infectious - Common Cold (J00)
Infectious - Croup (J05.0)
Infectious - Disease Unspecified (B99.9)
Infectious - Fever (R50.9)
Infectious - Influenza (Flu Like Symptoms) (J11)
Infectious - Meningitis (G03.9)
Infectious - Pneumonia (J18.9)
Infectious - RSV (B97.4)
Infectious - SARS (B97.21)
Infectious - Sepsis (A41.9)
Lab - Hyperkalemia (E87.5)
Maltreatment - Adult Neglect Suspected (T74.01)
Maltreatment - Adult Physical Abuse Suspected (T74.
Maltreatment - Adult Sexual Abuse/Rape Suspected (T
Maltreatment - Child Physical Abuse Suspected (T74
Metabolic Disorder - Other (E88.9)
Mobility - Bedridden (Z74.01)
Mobility - Reduced (Z74.09)
Not Applicable
Not Recorded
OB - Childbirth Complicated (O75)
OB - Childbirth Uncomplicated (O80)
OB - Contractions (O62.0)
OB - Newborn Care - Care Not Otherwise Listed (P15)
OB - Newborn Care - Normal (Z38.2)
OB - Newborn Care - Post-term (P08.21)
OB - Newborn Care - Pre-Term (P07.3)
OB - Newborn Care - Respiratory Distress (P22)
OB - OB/GYN Complaint Not Otherwise Listed (O26.90)
OB - Obstetric Trauma (O71.9)

OB - Postpartum Hemorrhage (O72)
OB - Pre-eclampsia (O14.9)
OB - Preterm Labor with Delivery (O60.1)
OB - Preterm Labor Without Delivery (O60.0)
OB - Spontaneous Abortion (Miscarriage) (O03)
OB - Spontaneous Rupture of Membranes (SROM) (O42.0
OB - Vomiting Due to Pregnancy (O21.9)
Pain
Pain - Back (non-traumatic) (M54.9)
Pain - Chest (presumed non-cardiac) (R07.89)
Pain - Chronic (G89.2)
Pain - Extremity (Non-traumatic) (M79.609)
Pain - Neck (Non-traumatic) (M54.2)
Pain - Not Elsewhere Mentioned Sudden Onset (G89.1)
Pain in limb, unspecified (M79.60)
Respiratory
Respiratory - Acute Onset Distress (J80)
Respiratory - Arrest/Apnea (R06.81)
Respiratory - Asphyxia/Suffocation (T71.9)
Respiratory - Asthma Exacerbation (J45.901)
Respiratory - Bronchospasm Acute Onset (J98.01)
Respiratory - COPD Exacerbation (J44.1)
Respiratory - Distress Due to Chemicals, Gases, Fume
Respiratory - Failure (J96.9)
Respiratory - Foreign Body Airway (T17.9)
Respiratory - Hemoptysis (R04.2)
Respiratory - Hyperventilation (R06.4)
Respiratory - Not Otherwise Listed (J98.9)
Respiratory - Pneumothorax (Spontaneous) (J93.9)
Respiratory - Pulmonary Edema Acute Onset (J81.0)
Respiratory - Smoke Inhalation (J70.5)
Substance Use - Alcohol
Alcohol use, unspecified with intoxication (F10.92)
Substance Use - Alcohol (F10.9)
Substance Use - Other
Substance Use - Alcohol - Withdrawal (F10.239)
Substance Use - Cocaine (F14)
Substance Use - Hallucinogen (F16)
Substance Use - Inhalant Substances (huffing) (F15)
Substance Use - Narcotic (i.e. Heroin) (F11)
Substance Use - Psychoactive Substance (F19)
Substance Use - Sedative, Hypnotic or Anxiolytic (F

EMS Primary Symptoms Mapped to Categories

EMS Primary Symptom	Category
ALOC (Altered level of consciousness/stupor) (R40)	Other
Abdominal distension (fluid) (R18)	Other
Abdominal distension (gaseous) (R14.0)	Other
Abdominal rigidity (R19.30)	Other
Abdominal tenderness (R10.81)	Other
Abnormal breathing (R06.3)	Other
Abnormal involuntary movements (R25)	Other
Abnormal involuntary movements (R25.8)	Other
Acute abdomen (R10.0)	Other
Alcohol abuse (F10.1)	Other
Allergic reaction, hives (urticaria) (L50.0)	Other
Allergic reaction, purpura (D69.0)	Other
Allergic reaction, skin (L23)	Other
Altered mental status (R41.82)	Other
Amnesia (R41.3)	Other
Anaphylaxis/Anaphylactic shock (T78.2)	Other
Angry/upset/irritability (R45.4)	Other
Anorexia (R63.0)	Other
Anxiety (F41.9)	Other
Aphasia (inappropriate communication) (R47.01)	Other
Apnea (R06.81)	Other
Arrhythmia, other (R00.8)	Other
Asphyxia (R09.01)	Other
Attention and concentration deficit/ADD (R41.840)	Other
Bed sores (L89.90)	Other
Behavior, overactivity (R46.3)	Other
Behavior, slowness and poor responsiveness (R46.4)	Other
Behavior, strange and inexplicable (R46.2)	Other
Blood disorder (D77)	Other
Blood in sputum (R04.2)	Other
Blood in stool (melena) (K92.1)	Other
Bradycardia, unspecified (R00.1)	Other
Burn injury (T30)	Other
Can't urinate (R30.0)	Other
Cardiac arrest (I46)	Other
Cardiac arrest, cause unspecified (I46.9)	Other
Chest pain on breathing (R07.1)	Other
Chest pain/discomfort (R07.9)	Chest pain/discomfort
Chills (R68.83)	Other
Choking (T17.800)	Other
Combative/violent (R45.6)	Other
Confusion (R41.0)	Other
Congestion, nasal (R09.81)	Other
Congestion, rhinitis (J30)	Other
Constipation (K59.00)	Other
Cough (R05)	Other
Cramps (R25.2)	Other
Cyanosis (R23.0)	Other
Death (R99)	Other
Dehydration (E86.0)	Other
Delirium (F05)	Other
Demoralization (R45.3)	Other
Depression (F33.8)	Other
Diaphoresis (R61)	Other
Diarrhea (R19.7)	Other
Difficulty swallowing (R13.10)	Other
Difficulty walking (R26.2)	Other
Dizziness/Light-headedness/Vertigo (R42)	Other
Drowsiness (R40.0)	Other
Drug use effects (T88.7)	Other
Dry mouth (R68.2)	Other
Dysphasia (word displacement) (R47.02)	Other
Dyspnea/difficulty breathing/shortness of breath (R06.00)	Dyspnea/difficulty breathing/shortness of breath
Edema (R60.9)	Other

EMS Primary Symptom	Category
Edema, pitting (R60.0)	Other
Excessive crying, infant (R68.11)	Other
Excessive crying, non-infant (R45.83)	Other
Excessive thirst (R63.1)	Other
Facial droop (R29.810)	Other
Failure to thrive (R64)	Other
False labor (O47)	Other
Fatigue/Malaise/Lethargy (R53.83)	Other
Fecal incontinence (R15)	Other
Feeding difficulties (R63.3)	Other
Fever (R50.9)	Other
Flatulence (R14.3)	Other
Flushing (R23.2)	Other
Gait abnormal (R26.0)	Other
Hallucinations, auditory (R44.0)	Other
Hallucinations, visual (R44.1)	Other
Headache/head pain (R51)	Other
Hearing loss (H91.90)	Other
Heartburn (R12)	Other
Hemorrhage/Bleeding (R58)	Other
Hiccup (R06.6)	Other
Hives (L50)	Other
Hives (urticaria) (L50.9)	Other
Hoarseness (R49.0)	Other
Hyperglycemia (R73.9)	Other
Hypertension (high blood pressure) (R03.0)	Other
Hyperthermia (T67.9)	Other
Hyperventilation (R06.4)	Other
Hypoglycemia (E16.2)	Other
Hypotension (low blood pressure) (I95.9)	Other
Hypothermia (T68)	Other
Hypoxemia (R09.02)	Other
Ill Person (R69)	Other
Inability to swallow (R13.0)	Other
Indigestion (K30)	Other
Infection, symptoms of (B94)	Other
Insomnia (G47.00)	Other

EMS Primary Symptom	Category
Intoxication, alcohol (F10.92)	Intoxication, alcohol
Irregular menstruation (N92.6)	Other
Itching (L29.9)	Other
Jaundice (R17)	Other
Loss of body function (R27.0)	Other
Loss of voice (R49.1)	Other
Low self-esteem (R45.81)	Other
Multiple injuries/Multi-system trauma (T07)	Other
Muscle spasm (R29.0)	Other
Nausea (R11.0)	Other
Nervousness (R45.0)	Other
No apparent illness or injury (Z71.1)	Other
Nose bleed (R04.0)	Other
Not Applicable ()	Other
Not Recorded ()	Other
Other chest pain (R07.89)	Other
Other malaise (R53.81)	Other
Overdose, drugs/Poisoning (T50.904)	Other
Overweight (E66.3)	Other
Pain localized to upper abdomen (R10.1)	Pain
Pain, abdominal (R10.8)	Pain
Pain, back (M54.5)	Pain
Pain, ear (H92.0)	Pain
Pain, epigastric (R10.13)	Pain
Pain, extremity (M79.60)	Pain
Pain, eye (H57.10)	Pain
Pain, flank (R10.9)	Pain
Pain, jaw (R68.84)	Pain
Pain, other (R52)	Pain
Pain, pelvic (R10.2)	Pain
Pain, periumbilical (R10.33)	Pain
Pain, rib (R07.82)	Pain
Pain, throat (R07.0)	Pain
Pale skin (pallor) (R23.1)	Other
Palpitations (R00.2)	Other
Paralysis of one lower limb (G83.10)	Other
Paralysis, left or right side (G81)	Other

EMS Primary Symptom	Category
Paranoia (F22)	Other
Paraplegia (G82.2)	Other
Pneumonia (J18)	Other
Pregnancy/OB/GYN (O26.90)	Other
Rebound abdominal tenderness (R10.82)	Other
Repeated falls (R29.6)	Other
Respiratory arrest (R09.2)	Other
Restlessness and agitation (R45.1)	Other
Seizure (G40.3)	Other
Seizure, febrile (R56.0)	Other
Shock, hypovolemic (R57.1)	Other
Shock, sepsis (R65.21)	Other
Shortness of breath (R06.02)	Other
Skin - Burning, prickly, tingling sensation (R20.2)	Other
Skin - Decreased sensation (R20.1)	Other
Skin - Numbness (R20.0)	Other
Skin - Rash (R21)	Other
Skin - Shingles, scabies (R23.8)	Other
Skin - Swelling, mass, or lump (R22)	Other
Skin disorder (L98.9)	Other
Slurred speech (R47.81)	Other
Snoring (R06.83)	Other
Sore throat (J02)	Other
Stress (R45.7)	Other
Stridor (R06.1)	Other
Stroke/CVA, symptoms of (I69)	Other
Suicidal thoughts (R45.851)	Other
Syncope (R55)	Other
TIA (G45)	Other

EMS Primary Symptom	Category
Tachycardia, unspecified (R00.0)	Other
Toothache (K08.8)	Other
Toxic exposure, effects of (T65.9)	Other
Tremor (R25.1)	Other
Twitching (R25.3)	Other
Unconscious/Coma (R40.2)	Other
Unspecified convulsions (R56.9)	Other
Urinating blood (R31)	Other
Urine excessive (R35.8)	Other
Urine incontinence (R32)	Other
Vaginal bleeding (N93.9)	Other
Vision problems/Visual disturbance (H53)	Other
Visual Discomfort/Photophobia (H53.14)	Other
Visual loss (H54.7)	Other
Vomiting (R11.10)	Other
Vomiting blood (K92.0)	Other
Vomiting, projectile (R11.12)	Other
Weakness (R53.1)	Weakness
Weight gain, abnormal (R63.4)	Other
Weight loss, abnormal (R63.5)	Other
Wheezing (R06.2)	Other
Worries (R45.82)	Other

EMS Primary Symptom by Category

Chest pain/discomfort
Chest pain/discomfort (R07.9)
Dyspnea/difficulty breathing/shortness of breath
Dyspnea/difficulty breathing/shortness of breath (R06.00)
Intoxication, alcohol
Intoxication, alcohol (F10.92)
Other
Abdominal distension (fluid) (R18)
Abdominal distension (gaseous) (R14.0)
Abdominal rigidity (R19.30)
Abdominal tenderness (R10.81)
Abnormal breathing (R06.3)
Abnormal involuntary movements (R25)
Abnormal involuntary movements (R25.8)
Acute abdomen (R10.0)
Alcohol abuse (F10.1)
Allergic reaction, hives (urticaria) (L50.0)
Allergic reaction, purpura (D69.0)
Allergic reaction, skin (L23)
Altered mental status (R41.82)
Amnesia (R41.3)
Anaphylaxis/Anaphylactic shock (T78.2)
Angry/upset/irritability (R45.4)
Anorexia (R63.0)
Anxiety (F41.9)
Aphasia (inappropriate communication) (R47.01)
Apnea (R06.81)
Arrhythmia, other (R00.8)
Asphyxia (R09.01)
Attention and concentration deficit/ADD (R41.840)
Bed sores (L89.90)
Behavior, overactivity (R46.3)
Behavior, slowness and poor responsiveness (R46.4)
Behavior, strange and inexplicable (R46.2)
Blood disorder (D77)
Blood in sputum (R04.2)
Blood in stool (melena) (K92.1)
Bradycardia, unspecified (R00.1)
Burn injury (T30)
Can't urinate (R30.0)
Cardiac arrest (I46)
Cardiac arrest, cause unspecified (I46.9)
Chest pain on breathing (R07.1)
Chills (R68.83)
Choking (T17.800)
Combative/violent (R45.6)
Confusion (R41.0)
Congestion, nasal (R09.81)
Congestion, rhinitis (J30)
Constipation (K59.00)
Cough (R05)
Cramps (R25.2)
Cyanosis (R23.0)
Death (R99)
Dehydration (E86.0)
Delirium (F05)
Demoralization (R45.3)
Depression (F33.8)
Diaphoresis (R61)
Diarrhea (R19.7)
Difficulty swallowing (R13.10)
Difficulty walking (R26.2)
Dizziness/Light-headedness/Vertigo (R42)
Drowsiness (R40.0)
Drug use effects (T88.7)
Dry mouth (R68.2)
Dysphasia (word displacement) (R47.02)
Edema (R60.9)
Edema, pitting (R60.0)
Excessive crying, infant (R68.11)
Excessive crying, non-infant (R45.83)
Excessive thirst (R63.1)
Facial droop (R29.810)
Failure to thrive (R64)
False labor (O47)
Fatigue/Malaise/Lethargy (R53.83)
Fecal incontinence (R15)

Feeding difficulties (R63.3)
Fever (R50.9)
Flatulence (R14.3)
Flushing (R23.2)
Gait abnormal (R26.0)
Hallucinations, auditory (R44.0)
Hallucinations, visual (R44.1)
Headache/head pain (R51)
Hearing loss (H91.90)
Heartburn (R12)
Hemorrhage/Bleeding (R58)
Hiccup (R06.6)
Hives (L50)
Hives (urticaria) (L50.9)
Hoarseness (R49.0)
Hyperglycemia (R73.9)
Hypertension (high blood pressure) (R03.0)
Hyperthermia (T67.9)
Hyperventilation (R06.4)
Hypoglycemia (E16.2)
Hypotension (low blood pressure) (I95.9)
Hypothermia (T68)
Hypoxemia (R09.02)
Ill Person (R69)
Inability to swallow (R13.0)
Indigestion (K30)
Infection, symptoms of (B94)
Insomnia (G47.00)
Irregular menstruation (N92.6)
Itching (L29.9)
Jaundice (R17)
Loss of body function (R27.0)
Loss of voice (R49.1)
Low self-esteem (R45.81)
Multiple injuries/Multi-system trauma (T07)
Muscle spasm (R29.0)
Nausea (R11.0)
Nervousness (R45.0)
No apparent illness or injury (Z71.1)
Nose bleed (R04.0)

Not Applicable ()
Not Recorded ()
Other chest pain (R07.89)
Other malaise (R53.81)
Overdose, drugs/Poisoning (T50.904)
Overweight (E66.3)
Pale skin (pallor) (R23.1)
Palpitations (R00.2)
Paralysis of one lower limb (G83.10)
Paralysis, left or right side (G81)
Paranoia (F22)
Paraplegia (G82.2)
Pneumonia (J18)
Pregnancy/OB/GYN (O26.90)
Rebound abdominal tenderness (R10.82)
Repeated falls (R29.6)
Respiratory arrest (R09.2)
Restlessness and agitation (R45.1)
Seizure (G40.3)
Seizure, febrile (R56.0)
Shock, hypovolemic (R57.1)
Shock, sepsis (R65.21)
Shortness of breath (R06.02)
Skin - Burning, prickly, tingling sensation (R20.2)
Skin - Decreased sensation (R20.1)
Skin - Numbness (R20.0)
Skin - Rash (R21)
Skin - Shingles, scabies (R23.8)
Skin - Swelling, mass, or lump (R22)
Skin disorder (L98.9)
Slurred speech (R47.81)
Snoring (R06.83)
Sore throat (J02)
Stress (R45.7)
Stridor (R06.1)
Stroke/CVA, symptoms of (I69)
Suicidal thoughts (R45.851)
Syncope (R55)
Tachycardia, unspecified (R00.0)
TIA (G45)

Toothache (K08.8)
Toxic exposure, effects of (T65.9)
Tremor (R25.1)
Twitching (R25.3)
Unconscious/Coma (R40.2)
Unspecified convulsions (R56.9)
Urinating blood (R31)
Urine excessive (R35.8)
Urine incontinence (R32)
Vaginal bleeding (N93.9)
Vision problems/Visual disturbance (H53)
Visual Discomfort/Photophobia (H53.14)
Visual loss (H54.7)
Vomiting (R11.10)
Vomiting blood (K92.0)
Vomiting, projectile (R11.12)
Weight gain, abnormal (R63.4)
Weight loss, abnormal (R63.5)
Wheezing (R06.2)
Worries (R45.82)
Pain
Pain localized to upper abdomen (R10.1)
Pain, abdominal (R10.8)
Pain, back (M54.5)
Pain, ear (H92.0)
Pain, epigastric (R10.13)
Pain, extremity (M79.60)
Pain, eye (H57.10)
Pain, flank (R10.9)
Pain, jaw (R68.84)
Pain, other (R52)
Pain, pelvic (R10.2)
Pain, periumbilical (R10.33)
Pain, rib (R07.82)
Pain, throat (R07.0)
Weakness
Weakness (R53.1)

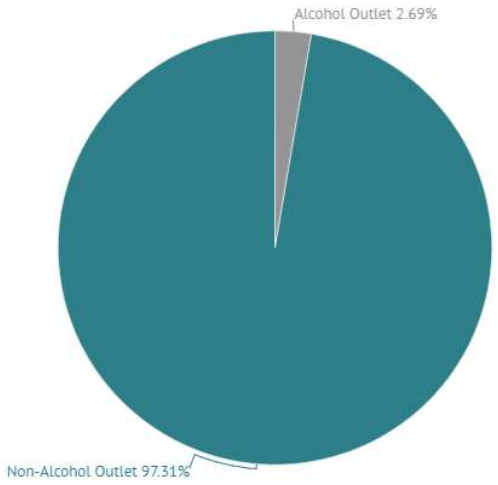
Appendix G: Building Inspection

The unit of measurement used in the analysis is a building inspection case. A building inspection case, as defined by the Building Inspection Division, is a record of a complaint. Complaints are usually generated by the public through the City's Report a Problem system on the City website. A case does not necessarily mean an actual problem exists or defines the problem, only that a concern was logged by the Building Inspection Division. A case is not the same as a code enforcement violation. A code enforcement violation is an observed item that needs to be corrected and is in violation of the Madison General Ordinances enforced by Building Inspection. Not every case generates a violation but a case may generate any number of violations, resulting in a greater number of violations than cases.[11]

The dataset included in this analysis only includes cases, not code enforcement violations, and covers the study date range of 2016 through 2018. The dataset is a modified report that is ran annually for the University of Wisconsin Applied Population Laboratory for the Neighborhood Indicators Project. The case data is entered and managed in the Building Inspection Division's Accela permitting system by Building Inspection staff. Each case in the dataset includes the data points identified in Table 21. The street address allows the case data to be mapped and cases located at alcohol outlets to be identified.

The building inspection case data for the study period includes 26,516 recorded cases with an annual average of 8,839. Table 32 shows the number of building inspection cases by case type by year. Approximately three percent of all building inspection cases citywide have occurred at liquor-licensed establishments (i.e., alcohol outlet), as shown by Figure 33.

Figure 32: Number of Building Inspection Cases by Alcohol vs. Non-Alcohol Outlet



[11] Note: Building Inspection also conducts proactive enforcements, where it inspects without having a logged complaint. However, these proactive enforcements are outside of the scope of this analysis.

Table 32: BI Cases by Case and Outlet Type, 2016-2018

	2016	2017	2018	Grand Total
	Alcohol Outlet			
Construction	22	15	9	46
Housing	52	37	51	140
Property Maintenance	96	85	98	279
Weights and Measures	6	14	8	28
Zoning	73	72	75	220
Alcohol Outlet Total	**249**	**223**	**241**	**713**
	Non-Alcohol Outlet			
Construction	257	252	188	697
Housing	4,368	2,943	3,220	10,531
Property Maintenance	4,999	3,487	4,300	12,786
Weights and Measures	14	14	12	40
Zoning	512	489	748	1,749
Non-Alcohol Outlet	**10,150**	**7,185**	**8,468**	**25,803**
Grand Total	**10,399**	**7,408**	**8,709**	**26,516**

The building inspection case data was geocoded in order to assign each case to a Census block group and in turn assign the case to an alcohol outlet density level. Approximately 202 cases were unable to be properly geocoded, which brings the total number of building inspection cases assigned to a density level to 26,314. As shown in Table 33, the number of building inspection increases as alcohol outlet density increases, with density levels 4 and 5 having the most cases. Table 34 shows the number of cases by density level with alcohol outlets separated from non-alcohol outlets. It is interesting to note that more than half of building inspection cases at alcohol outlets appear to be located in the highest level of density. Non-alcohol outlets appear to less variation across density levels other than comparing levels 4 and 5 to level 1.

Table 33: Number of BI Cases by Density Level

Density Level	**Cases**	**Percentage**
1	3,979	15%
2	4,399	17%
3	5,262	20%
4	6,370	24%
5	6,304	24%
Total	**26,314**	**100%**

Table 34: Number of BI Cases by Outlet Type and Density Level

Outlet Type and Density Level	**Cases**	**Percentage**		**Cases**	**Percentage**
Alcohol Outlet	**695**	**3%**	*Non-Alcohol Outlet*	**25,619**	**97%**
1	26	4%	*1*	3,953	15%
2	42	6%	*2*	4,357	17%
3	93	13%	*3*	5,169	20%
4	166	24%	*4*	6,204	24%
5	368	53%	*5*	5,936	23%

Appendix H: UWPD Call Analysis

The team requested data regarding University of Wisconsin Police Department (UWPD) services from Jessica Rodin. Although this data was ultimately determined to be out of scope of the research questions, this data provides useful context for incidents potentially related to the alcohol environment around the UW campus.

UWPD provided data from 2016-2018. The variables provided include:

- Event ID
- Incident ID
- Call Date/Time
- Nature
- Address
- Unit
- Call Source
- Alcohol and drug flags
- Additional data regarding the nature of the incident

UWPD data varies slightly from MPD data. Calls are tracked in an independent UWPD Caller-Aided Dispatch (CAD) system. The UWPD CAD system directly receives calls made from campus, including any campus buildings and phone stations available throughout campus. MPD indicated that the technical jurisdiction of UWPD is campus, but that MPD officers will sometimes assist with campus calls if the call is received by the county CAD system or an MPD officer is nearby.

The UWPD CAD system also differs in its nomenclature for calls and cases; UWPD refers to events and incidents, while MPD refers to calls and cases. UWPD's events are comparable to MPD's calls, while UWPD's incidents are comparable to MPD's cases. This report will use the MPD terminology moving forward. Table 35 shows the number of calls and cases by year in the initial dataset.

Table 35: Count of UWPD Call and Case by Year in Initial Dataset

Year	**Call Count**	**Case Count**
2016	24,515	2,240
2017	24,332	2,135
2018	25,786	2,250
Total	**74,633**	**6,625**

The dataset had 199 categories, referred to as the "nature", of the calls. While these categories were not summarized using the MPD methodology rather summarized by the top eight call types. The majority of events fell into one of the following categories shown in Tables 36 and 37.

Table 36: Top Eight UWPD Call Types

Nature of Call	**Count**	**Percentage**
Check area	16,535	22%
Traffic stop motor vehicle	10,101	14%
Foot patrol	7,738	10%
Emergency room assistance	3,830	5%
Check parking lot	3,623	5%

Nature of Call	Count	Percentage
Check person	3,228	4%
Assist law enforcement	1,974	3%
*Other**	27,604	37%
Total	**74,633**	**100%**

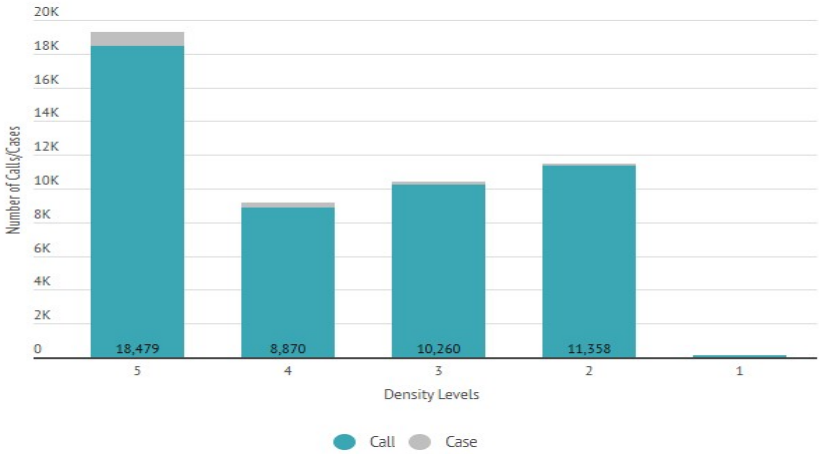
Table 37: Top 14 UWPD Case Types

Nature of Case	Count	Percentage
Liquor law underage alcohol	753	11%
Theft or larceny	701	11%
Information or all other	619	9%
Check person	287	4%
Assist law enforcement agency	281	4%
Drugs marijuana possess	269	4%
Found property	246	4%
Mental health welfare check	234	4%
Alcohol conveyance non student	231	3%
Driving under the influence	226	3%
Alcohol conveyance student	200	3%
Traffic stop motor vehicle	190	3%
Motor vehicle accidents	166	3%
*Other**	2,222	34%
Total	**6,625**	**100%**

*The other category includes any incidents/cases that accounted for less than 3% of the total number of events or incidents.

The project team then geocoded this dataset to determine the number of events by Census block group and by density level. Not all calls were able to be geocoded due to incomplete address information. Ultimately, 49,118 (66%) events were successfully geocoded, and 1,394 (21%) incidents were successfully geocoded.

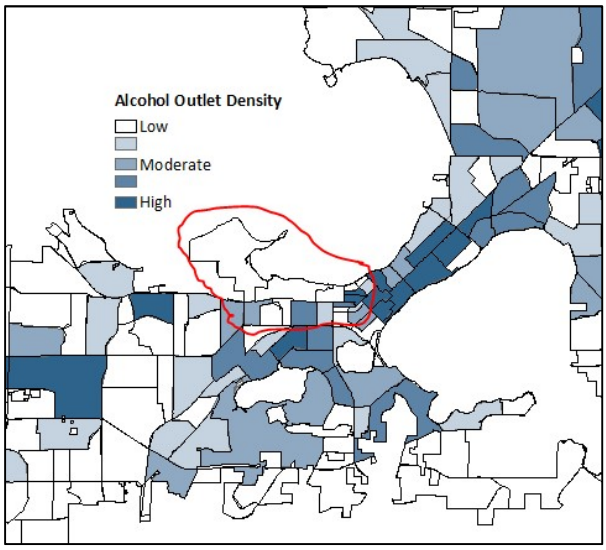
Figure 33: Call and Case Count by Density Level



The call and case trends for this data do not appear to follow the trends of MPD calls and cases, but this is not particularly surprising due to the fact that the UWPD only receives calls from a small portion of the City of Madison.

If one examines the alcohol density levels of the UW-Madison campus shown in Figure 35, there is a combination of both high and low density areas that constitute campus. Although there is a large area of land that would be considered low density, this area contains a lot of park and recreational area and very few buildings, and would therefore be unlikely to have many phones from which UWPD could be contacted. This may explain why there are so few calls from the lowest density area. On the other hand, campus buildings are concentrated in the higher density areas downtown where the dormitories and Camp Randall Stadium are, which may account for the higher levels of calls in high-density areas.

Figure 34: Alcohol Outlet Density of UW Campus



Given the unique attributes of the campus area as well as the unique setup of UWPD dispatch, it makes sense that campus call trends do not follow typical MPD call trends. Additional analysis of the unique

attributes of the campus is required to determine if there is a relationship on campus between alcohol and UWPD calls for service.

Appendix I: Cost Assumptions

Hourly staffing costs for MPD and Building Inspection included in the study were calculated using adopted salary tables for each year of analysis and actual benefit rates by year. This methodology is consistent with how the City bills for numerous services, including ambulance use, and police, fire, and emergency medical service (EMS) overtime for special events. Table 38 shows the rate assumptions for positions included in the study.

Table 38: Rate Assumptions for Included Positions

Agency	**Classifications**	**Assumptions**
Police	-Police Officer -Sergeant -Detective	-Step 1 of salary table -No longevity, overtime, or premium pay -Family Health Insurance Plan enrollment
Building Inspection	-Code Enforcement Officer	-Code Enforcement Officer 3, Step 1 of the salary table -No longevity -Family Health Insurance Plan Enrollment

The overhead rate was calculated using the City's central 2018 Cost Allocation Plan. The overhead rate represents the agency's share of overhead costs associated with central City services, such as the Attorney and Human Resources. This rate does not include any internal overhead costs associated with providing services within a given department.

The City's annual fleet rate is calculated using the following factors: overall share of asset base, annual maintenance hours, and fuel volume. The hourly fleet rate for this analysis was calculated by dividing the annual rate by the number of days in the fiscal year; the daily rate was then broken down to an hourly rate that assumes equipment is utilized 24 hours a day.

The team used the cost assumptions described above (wage, benefit, overhead, and fleet rates) with estimates of hours per call/case provided by the respective agencies to generate cost estimates.[12]

[12] Time data for MPD was from Etico, a patrol workload analysis. BI time data was estimated by BI staff.

Appendix J: Subject Matter Expert Interviews

First Responders

Objective

The goal of the first responder subject matter expert interviews was to provide a supplemental narrative about how police and fire services are utilized in the context of alcohol establishments and alcohol related enforcement in Madison.

Methodology and Responses

Selection process for interviewees:	Finance staff developed questions for interviews, and reached out to contacts at MPD and Fire/EMS to request staff names for interview. Agency contacts provided names of individuals on varying shifts in the downtown area, and Finance staff led outreach to individuals to request interviews. Individuals were able to opt to remain anonymous in name but have quotes attributed to their agency. The vast majority opted to remain anonymous.
Number of individuals interviewed:	11
Time period for interviews:	March 2019
Interview method:	In-person (9) and email (2)

Results

First responders indicated that there are different populations that contribute to alcohol-related problems in the City: students and the homeless. They say that the homeless population can be combative, particularly when there is a crowd.

With respect to the student population, first responder interactions tend to take place outside of establishments. However, first responders sometimes enter an establishment if someone needs medical attention. They reported that they generally have good relationships with bar owners and staff.

First responders noted that they cannot jump to the conclusion that alcohol is the problem right away. Many of the presenting issues of overconsumption, such as nausea, vomiting, inability to walk or talk, and potential head injury, can be indicative of other issues, such as low blood sugar. They often have to have EMS on the scene to check for other potential issues.

A major concern regarding this population is the congregation of large groups on the sidewalk outside of establishments. This presents a safety concern, and can compound problems that are already occurring. This happens frequently at bar time.

There is typically a difference in when MPD and Fire get involved – MPD will take an individual to detox if they are standing and talking but they believe they may need care. On the other hand, Fire/EMS will transport to the emergency room if they are not able to stand and walk. Once EMS starts treating an individual, they cannot transfer them to a lower level of care or no care.

Timing is cyclical with the school year and major events. They indicate that these trends have been consistent over time, although there has been an increase in homelessness.

Policies that first responders believe may contribute to a reduction in alcohol-related issues include those prohibiting re-admittance at 1 am, which have already proven effective at certain alcohol outlets. In

addition, they suggest that eliminating bar time may mitigate dangerous crowding that occurs at 2 am as large groups are leaving alcohol outlets.

Community

Objective

The goal of the community subject matter expert interviews was to provide a supplemental narrative about how issues pertaining to alcohol outlet density impact the quality of life and/or business operations of community members.

Methodology and Responses

Selection process for interviewees:	Suggestions from Alders, community members, and City employees
Number of individuals interviewed:	6 community members, Sample of Downtown Alders
Time period for interviews:	July & August 2019
Interview method:	In-person

Results

A major theme in the community member interviews was the cost of drinking on downtown establishments that do not serve alcohol. This cost presents itself in several ways. First, establishments bear the cost of any repairs that need to be made, such as broken windows, resulting from drinking-related incidents. Additionally, they may bear a business cost if they're near an alcohol establishment and patrons do not want to visit their establishment due to spillover behavior from the alcohol establishment. Additionally, stakeholders indicated that alcohol establishments are driving up the cost of rent in the downtown area due to the high alcohol markup. This is making it challenging for non-alcohol businesses to survive on existing business models. Some non-alcohol businesses are beginning to offer alcohol-related activities at their establishment to maintain viability in the downtown market.

Community members do recognize the need for a strong economy, which may include a late night economy. However, there is a concern about the negative impact of high density levels in downtown.

UW staff brought up concerns around the prominence of realistic-appearing fake IDs. They suggested license smart scanners for IDs to mitigate this issue. They also suggested limiting specials, which may encourage the strong culture to binge drink.

Community members suggested solutions that might mitigate gathering groups on sidewalks outside of bars at bar time, such as a designated pick-up/drop-off area for Ubers and Lyfts.

There was also concern raised about the growing homeless population and specific gathering places for the homeless. In particular, stakeholders commented on the area at the top of State Street, where people often gather and alcohol is one component of many challenges that law enforcement faces. EMS indicated that many of the clientele in that area are ultimately transported to hospitals via ambulance due to intoxication, increasing the demand for ambulance services in that area.

Appendix K: Works Cited

2018 Adopted Budget. (2017). Retrieved from City of Madison: https://www.cityofmadison.com/budget/documents/2018/operating/adopted/Adopted2018.pdf

Alcohol Beverage Density Plan. (2007, October 5). Retrieved from City of Madison: Legislative Information Center: https://madison.legistar.com/LegislationDetail.aspx?ID=1058959&GUID=8F6A6AC5-FA47-415F-AF90-9231B404F0B8&Options=ID|Text|&Search=alcohol+density

Alcohol Outlet Density and Public Health. (2014, January). Retrieved from Alcohol Justice: https://alcoholjustice.org/images/factsheets/OutletDensity2014.pdf

Alcohol Overlay District. (2014, April 17). Retrieved from City of Madison, Wisconsin: Legislative Information Center: https://madison.legistar.com/LegislationDetail.aspx?ID=1696525&GUID=E0D9CFC0-8DFF-476E-B41F-568FB6CDD8F5&Options=Text|&Search=alcohol

Arthur, K. (2017, November 27). Violent crimes up on 600 block of University Avenue. *Chanel 3000*.

Brower, A. M., & Carroll, L. (2007). Spatial and Temporal Aspects of Alcohol-Related Crime in a College Town. *Journal of American College Health*, 267-275.

Centers for Disease Control and Prevention. (2017). *Guide for Measuring Alcohol Outlet Density.* Atlanta: US Department of Health and Human Services.

Code of Ordinances. (2019). Retrieved from City of Madison: https://library.municode.com/wi/madison/codes/code_of_ordinances

Crawley, M. P. (2019). Interview with Fire and EMS First Responders. (K. Kratowicz, Interviewer)

Cunradi, C. B., Mair, C., Ponicki, W., & Remer, L. (2011). Alcohol Outlets, Neighborhood Characteristics, and Intimate Partner Violence: Ecological Analysis of a California City. *Journal of Urban Health*, 191-200.

DeMotto, N. (2005, July 5). *Alcohol-Related Violence On and Near State Street.* Retrieved from Legistar: https://madison.legistar.com/LegislationDetail.aspx?ID=1055401&GUID=B23195AA-5C65-4173-A217-99F43E121A30&Options=ID|Text|&Search=alcohol+violence

Establishing a moratorium on issuance of new alcohol licenses in a high density, high police call area in downtown Madison. (2018, December 4). Retrieved from City of Madison: Legislative Information Center: https://madison.legistar.com/LegislationDetail.aspx?ID=3680069&GUID=BF038694-32C2-49D9-B1CB-2831891556E9&Options=Text|&Search=alcohol

Feder, E., Moran, C., Gargano Ahmed, A., Lessem, S., & Steidl, R. (2013). *Limiting Retail Alcohol Outlets in the Greenbush-Vilas Neighborhood, Madison, Wisconsin Health Impact Assessment.* Madison: University of Wisconsin Population Health Institute.

File Number: 11-0609. (2011, June 21). Retrieved from Resolution of Public Health and Safety Committee.

File Number: 50110. (2018, January 10). Retrieved from City of Madison: https://madison.legistar.com/View.ashx?M=F&ID=6629334&GUID=07C10D36-7002-4F9A-9C55-9EB96AA40899

File Number: 52680. (2019, July 31). Retrieved from City of Madison: https://madison.legistar.com/View.ashx?M=F&ID=6734149&GUID=2B899B05-30A1-40A3-BB72-C989B177B10A

Institute, U. o. (2013). *University of Wisconsin.* Retrieved from https://law.wisc.edu/wapp/alcohol_burden_one_pager.pdf

(2019, March). Interviews with Madison Police Department. (B. Sloat, Interviewer)

Jennings, J., Milam, A., Greiner, A., Furr-Holden, C., Curriero, F., & Thornton, R. (2014). Neighborhood alcohol outlets and the association with violent crime in one mid-Atlantic City: the implications for zoning policy. *Journal of Urban Health*, 62-71.

Jernigan, D. H., Sparks, M., Yang, E., & Schwartz, R. (2013). Using Public Health and Community Partnerships to Reduce Density of Alcohol Outlets. *Preventing Chronic Disease*.

Kenney, T., & Springam, S. (2019, August 20). Business Improvement District Interview. (L. Larsen, Interviewer)

Lipton, R., & Guenewald, P. (2002). The spatial dynamics of violence and alcohol outlets. *Journal of Studes on Alcohol*, 187-195.

Lipton, R., Yang, X., Braga, A. A., Goldstick, J., Newton, M., & Rura, PhD, M. (2013). The Geography of Violence, Alcohol Outlets, and Drug Arrests in Boston. *American Journal of Public Health, 103*(4).

Livingston, M. (2008). Alcohol outlet density and assault: a spatial analysis. *Addiction*, 54-62.

Lujan, J., Weitzel, J., Howard, J., Hitzel, E., Feder, E., & Moran, C. (2014). *Alcohol LIcense Density Ordinance Health Impact Assessment.* Madison: Public Health Madison & Dane County, University of Wisconsin Population Health Institute.

Maheswaran, R., Green, M. A., Strong, M., Brindley, P., Angus, C., & Holmes, J. (2018). Alcohol outlet density and alcohol related hospital admissions in England: a national small-area level ecological study. *Addiction*, 2051-2059. Retrieved from Society for the Study of Addiction: https://onlinelibrary.wiley.com/doi/epdf/10.1111/add.14285

Mair, C., Gruenewald, P. J., Ponicki, W. R., & Remer, L. (2013). Varying Impacts of Alcohol Outlet Densities on Violent Assaults: Explaining Differences Across Neighborhoods. *Journal of Study on Alcohol and Drugs, 74*(1), 50-58.

Maisto, A. (2017, October 4). After string of incidents, crackdown on University Avenue crime continues. *The Daily Cardinal*.

Nesoff, E., Milam, A. J., Branas, C. C., Martins, S. S., Knowlton, A. R., & Furr-Holden, D. M. (2018). Alcohol Outlets, Neighborhood Retail Environments, and Pedestrian Injury Risk. *Alcoholism: Clinical & Experimental Research*.

Officers, M. P. (2019, March). Interview with Madition Police Department (MPD) Officers. (B. Sloat, Interviewer)

Pennsylvania Liquor Control Board. (2019, October 5). *The Retail Liquor License Quota.* Retrieved from Pennsylvania Liquor Control Board: https://www.lcb.pa.gov/Licensing/Topics-of-Interest/Documents/Quota_Fact_Sheet.pdf

Peterson, R. D., Krivo, L. J., & Harris, M. A. (2000). Disadvantage and Neighborhood Violent Crime: Do Local Institutions Matter? *Journal of Research in Crime and Delinquency*, 31-63.

Public Health Madison & Dane County. (2013). *Alcohol Density and Crime Study.* Madison.

Ray, J. G., Turner, L., Gozdyra, P., Matheson, F. I., Robert, B., Bartsch, E., & Park, A. L. (2016). On-Premise Alcohol Establishments and Ambulance Calls for Trauma, Assault, and Intoxication. *Medicine*, 1-12.

Scribner, R. A., Mason, K. E., Simonsen, N. R., Theall, K., Chotalia, J., Johnson, S., . . . DeJong, W. (2010). An Ecological Analysis of Alcohol-Outlet Density and. *Journal of Studies on Alcohol and Drugs*, 184-191.

Snowden, A. J., & Pridemore, W. A. (2014). Off-premise alcohol outlet characteristics and. *The American Journal of Drug and Alcohol Abuse*, 327-335.

Snowden, A. J., & Pridemore, W. A. (2014). OFf-premise alcohol outlet characteristics and violence. *The American Journal of Drug and Alcohol Abuse*, 327-335.

Sparks, M., Jernigan, D. H., & Mosher, J. F. (2011). *Strategizer 55. Regulating Alcohol Outlet Density: An Action Guide.* Alexandria: Community Anti-Drug Coalitions of America (CADCA) and the Center on Alcohol Marketing and Youth (CAMY) at the Johns Hopkins Bloomberg School of Public Health.

The Pew Charitable Trusts. (2013, January 1). *Alcohol Outlets and Our Community: A Health Impact Assessment of the Harms of High Alcohol Outlet Density in Mendocity County California.* Retrieved from Alcohol Outlets and Our Community: https://www.pewtrusts.org/-/media/assets/2013/01/01/mendocino_alcohol_densityhia.pdf

The Taskforce on Community Preventive Services. (2009). Recommendations for Reducing Excessive Alcohol Consumption and Alcohol-Related Harms by Limiting Alcohol Outlet Density. *American Journal of Preventive Medicine*, 570-571.

Torkildson, S. (2019, July 22). Former Business Owner, A Room of One's Own. (L. Larsen, Interviewer)

Torkildson, S. (2019, July 22). Interview with Downtown Business Owner. (L. Larsen, Interviewer)

U.S. Department of Justice -- Federal Bureau of Investigation. (2012). *Crimes Against Persons, Property, and Society.* Retrieved from Uniform Crime Reporting (UCR) Program: National Incident-Based Reporting System (NIBRS): https://ucr.fbi.gov/nibrs/2012/resources/crimes-against-persons-property-and-society

Weisburd, D. (2015). The Law of Crime Concentration and the Criminology of Place. *Criminology*, 133-157.

Wisconsin Alcohol Policy Project. (2010, June 30). *Outlet Density: Limiting the Concentration of Retailers Selling & Serving Alcohol in Your Community*. Retrieved from Wisconsin Alcohol Policy Project: https://law.wisc.edu/wapp/outlet_density_2014_revisions.pdf

Wisconsin Alcohol Policy Project. (2013, August 1). *License Conditions*. Retrieved from Wisconsin Alcohol Policy Project: https://law.wisc.edu/wapp/license_conditions.pdf

Wisconsin State Council on Alcohol and Other Drug Abuse, Prevention Committee, Alcohol, Culture, and Environment Workgroup. (April 2010). *Alcohol, Culture and Environment Workgroup Recommendations: Changing Wisconsin's Alcohol Environment to Promote Safe and Healthy Living.* Madison: State of Wisconsin. State Council on Alcohol and Other Drug Abuse.

Woulf, M., Gloede, C., Fruhling, B., Lujan, J., Tucker, M., Olver, A., & Mikolajewski, M. (2013). *Staff Recommendations Re: Alochol License Management and Business Development.* Madison: City of Madison.

Zhang, X., Hatcher, B., Clarkson, L., Hold, J., Bagchi, S., Kanny, D., & Brewer, R. D. (2015). Changes in Density of On-Premises Alcohol Outlets and Impact on Violent Crime, Atlanta, Georgia, 1997–2007. *Preventing Chronic Disease*, 1-10.