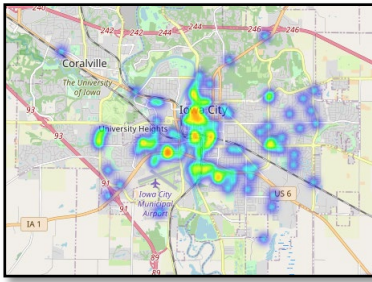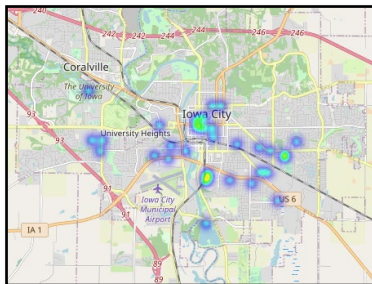# Collaborating with the Iowa City Partnership for Alcohol Safety Committee

Kelsey Van Selous, Shawn F Dorius, and Cassandra Dorius
March 7, 2023
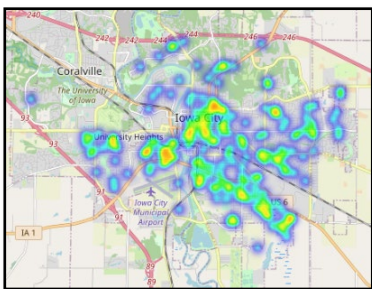
Figure 1. Service Calls, 2020
1. Alcohol-Related

B. Violence-Related Calls

C. Family-Related Calls

OVERVIEW & INSIGHTS

The Public Science Collaborative (PSC) met with members of the Iowa City Partnership for Alcohol Safety Committee (PASC) on March 7th, 2023, to share data insights from PSC's alcohol analytics. This project investigates the association between Computer-Aided Dispatch System (CADS), or 911 calls, and alcohol retail establishments. CADS data was shared with PSC by the Iowa City Police Department, and alcohol data was downloaded from the Iowa Alcoholic Beverages Division public use licensing data available from: https://iowaabd.force.com/s/public-database.

The facilitated discussion with meeting participants revealed that PASC is well-*informed* about alcohol prevention, actively *engaged* in a number of harm reduction and prevention efforts, *organized* to support system-level programs that address issues from a whole person to community-wide initiatives, and sufficiently *funded* to ensure that fundamental prevention needs are being met. In short, the Iowa City PASC is a model of action in the state.

For its part, PSC indexed Iowa City 911 call data into three classifications, enabling measurement of **alcohol**, **violence**, and **family**-related calls. This effort was informed by national AOD research and our team's substantive expertise. Figure 1A-C maps the locations for each of the three call indexes, using yellow & green to identify places with the highest concentration of calls and blue to identify areas with relatively lower call density. Figure 2A uses green marks to map the locations of on-premise establishments (e.g., bars, restaurants, and clubs) and blue marks to identify off-premise retailers, such as grocery stores, liquor stores, and gas stations. Figure 2B uses purple rings to identify **alcohol outlet clusters**, defined as areas with five or more outlets within a 0.15-mile radius of each other.

Figure 2. On vs. Off-premise, 2020
A. Alcohol Outlets
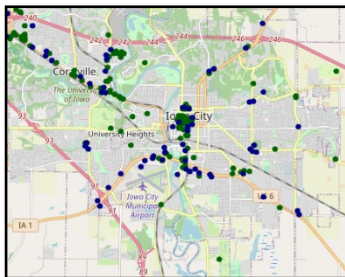
B. Alcohol Outlet Densities
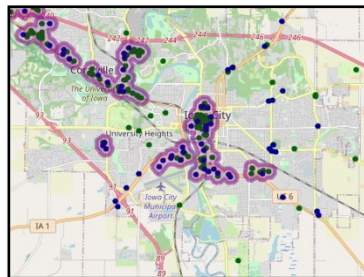
The maps illustrate that neighborhoods with more alcohol outlets often have more alcohol-related reactive service calls. This was also true of violence and family-related calls: pooled 2018-2020 data for each index found a strong, robust, and statistically significance association between outlet density and reactive service call density. Drilling down to three neighborhoods in Iowa City helped us to identify action steps that PASC might consider. See the appendix for more details.

RESULTS FROM FACILIATED DISCUSSION

PSC facilitated a discussion with PASC about the committee's current alcohol outlet density (AOD) efforts, data infrastructure, and monitoring needs. The goal was to better understand PASC's vision for how Iowa City might use community-based AOD tools such as the Iowa Alcohol Density Monitoring Program to support local intervention efforts.

What are the key AOD-related issues that you are trying to address in your workgroup?	PASC is working to address: • AOD-related behavior, such as overconsumption, adult alcohol misuse, and problem drinking • Safety by improving responses to violence and sexual assault, as well as improving harm reduction efforts and connecting resources to students • Alcohol control, such as overservice, bar density, and alcohol availability (home delivery and drinks to go)
What type of data do you typically use to inform your alcohol-related work?	PASC is currently working with: • Police data, such as the use of police reports, CADS, arrest data, and public safety data • Health survey data such as BRFSS, the National College Health Assessment, community and student surveys • Administrative health data such as emergency department and AUD treatment episode data. • Data from conduct reports and previous alcohol prevention initiatives (e.g., county assessment workbooks) • Enforcement data, including alcohol sales compliance checks • Narrative data such as anecdotes and stories from community members
How could you use the AOD tool to improve decision-making and programming in Iowa City?	PASC can use AOD monitoring data to: • Improve placed-based resource allocation • Make data-driven decisions • Strengthen advocacy for policy change and support more targeted programming • Share data publicly to keep the public informed • Provide context to better understand the student environment and its impact on student decision making
Please rank the service call categories by how beneficial they are for informing your alcohol-related work.	PASC ranked the following categories most beneficial: 1. Violence-related calls (assault, armed robbery, etc.) 2. Alcohol-related incidents (e.g., bar check, OWI) 3. Sex crimes (e.g., sexual assault, rape) 4. Health (mental health, physical health, falls, suicide, etc.) 5. Nuisance and disturbances (noise, parties, fights, etc.)

SUMMARY

The Public Science Collaborative recommends Iowa City and PASC:

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$	**Quantify Economic Costs.** Use call data to estimate costs that can be shared with the city council, community partners, and public health to *localize* the economic alcohol burden.
	Reduce Densities and Partner for Harm Reduction. Local police departments can monitor areas with high AODS to help reduce sales to minors or visibly intoxicated consumers. Human service organizations to deliver neighborhood-specific interventions (e.g., administer SBIRT at home visits in high-risk neighborhoods).
	Reduce Alcohol Exposure to Vulnerable Populations. Changes to local business or zoning regulations to address the proximity of alcohol retailers to schools, parks, churches, and other sensitive areas where children and families congregate.
	Leverage Existing Data Infrastructure. Additional focus on high-priority service call categories to inform the committee's next steps and harm reduction efforts.

For questions or additional information about the AOD project, please see the included appendix or contact the principal investigator Dr. Shawn Dorius, at ***sdorius@iastate.edu***.

Shawn Dorius, PhD
Iowa State University
Public Science Collaborative
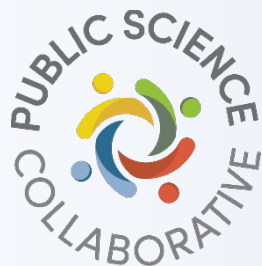
APPENDIX

Classifying Alcohol Licenses and Retail Outlets

The alcohol outlet data in this report was created by downloading public use Iowa Alcoholic Beverages Division licensing data (downloaded from https://iowaabd.force.com/s/public-database October 2022). The statewide data contain information about every active alcohol-selling license from 2017-2022. The Public Science Collaborative's alcohol research team cleaned, classified, and converted licensing data into alcohol outlet data, following best practices outlined in the Centers for Disease Control and Prevention's Guide for Measuring Alcohol Outlet Density.

The Public Science Collaborative (PSC) co-developed an alcohol licensing classification strategy specific to Iowa that can be used to assess harms related to alcohol outlet densities (AOD). This strategy was created in collaboration with the Iowa Alcoholic Beverages Division, the National Alcohol Beverage Control Association, and PSC in 2021 during a pilot project establishing the state's first AOD monitoring system. This coding strategy has been presented to the Centers for Disease Control and Prevention, the Iowa Alcoholic Beverages Division, the National Alcohol Beverage Control Association, the Governor's Office for Drug Control Strategy, the National Prevention Network, the Alliance of Coalitions for Change in Iowa, and an Alabama Mapping team as they piloted an AOD evaluation program. Our approach has been identified as best practice for license classification in AOD research in Iowa.

Table 1 summarizes the classification system and identifies Iowa City specific criteria for creating the alcohol outlets data for the PASC workshop. In addition to the inclusion/exclusion criteria outlined in Table 1, the Iowa classification system categorizes licenses according to on-premise and off-premise establishments. The resulting AOD workshop data includes alcohol licenses active for at least six months in the years 2018-2020 in Iowa City, Coralville, and University Heights, Iowa. The number of outlets was relatively stable over the study period, with a total of 248 outlets in 2018, 239 outlets in 2019, and 235 outlets in 2020.

Table 1: License inclusion and exclusion criteria

Included Licenses:
- Active retail licenses in Iowa City, University Heights, and Coralville, Iowa
- Applications between 2018-2020
- Licenses active for greater than six months
- Licenses with 90% confidence in their locations

Excluded Licenses:
- Licenses outside of Iowa City, University Heights, and Coralville, Iowa
- Licenses active for less than six months
- Licenses with less than 90% confidence in their locations
- Wholesale, importing, shipper/carrier, & privilege specific licenses

Classifying Reactive Service Calls

To assess alcohol-related harms in Iowa City, PSC obtained the computer-aided dispatch system (CADS), or 911 call, data from the Iowa City Police Department. Officer David Schwindt shared this data with PSC in the summer of 2021. The data file contains 787,219 911 call records occurring from January 2010 through July 2021, and 11 variables, including the date and time of each call, the type of call, how the call was reported, how the call was cleared, and also location information (e.g., street address, city, state, zip, latitude, and longitude). Our team updated the geocoding of these calls and removed 207,221 calls where we were not at least 90% confident of the accuracy of the geocoding. We also removed an additional 54,333 calls with the address of the Iowa City Police or Fire Department (410 East Washington Street, Iowa City). Our analysis of Iowa City focused on service calls from 2018 through 2020 to match the years of data we had available from the Iowa Alcoholic Beverages Division licensing data.

Table 2: Call classification and frequency

	2018	2019	2020
All Calls	**46,446**	**51,873**	**44,259**
Violence Related Calls	**55**	**57**	**43**
Robbery/Armed/Gun	9	10	10
Robbery/Armed/Knife	2	2	3
Robbery/Strong Arm	13	9	8
Assault/Sexual Assault	4	13	14
Sex/Rape	27	23	8
Alcohol Related Calls	**598**	**488**	**388**
Intoxicated Pedestrian	548	444	339
TR/OWI	50	44	49
Family Related Calls	**555**	**707**	**766**
Child Neglect/Abuse	19	20	17
Disturbance/Domestic	440	573	600
Violation No Contact Order	78	110	145
Sex/Child Abuse	18	4	4

Table 2 summarizes yearly reactive service by year and call index. These data show that family/domestic calls were more frequent than either violence or alcohol-related calls, and of the three indexes, only family-related calls increased over the study period. In total, the three indexes comprise less than 2.6% of annual reactive services calls, suggesting that there are many other types of service calls that Iowa City might consider monitoring to better understand the impact of alcohol outlets on the community. For example, Iowa City might consider monitoring reactive service calls involving noise disruption, nuisance calls, property damage, and fights.

Analytics

Figure 3: Iowa City Calls for Service, 2020
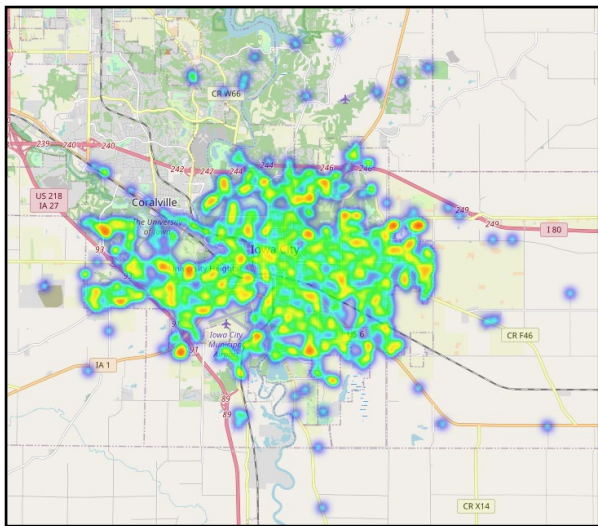
The map on the left shows the location of all 44,259 dispatch calls in 2020. We use a map like this for hotspot analysis, where orange coloring indicates areas with the highest call concentration and blue areas signal areas with relatively fewer calls.

Maps 1A-1C on page one of the executive report shows the densities of calls in 2020 related to the indexes classified in Table 1. Figure 1A shows the location of 388 alcohol-related calls for 2020. The highest density cluster of alcohol-related calls is in the downtown area, but there is also a hotspot in the south-central part of town, just below Highway 6.

Figure 1B maps violence-related call hotspots in 2020. Among the 43 calls, many were clustered in the same neighborhoods where alcohol-related calls are also concentrated, with the highest number of calls coming from the downtown district and southeast of Highway 6 near the Iowa River. Figure 1C displays the locations of 766 family-related calls in 2020. That map shows many high-density domestic service calls throughout town's central, western, and southeastern parts.

Figures 2A & 2B on the first page of the executive report show the locations of the 235 alcohol outlets in Iowa City in 2020. Here we can see on-premise establishments with green circles and off-premise establishments with blue circles. Similar to the alcohol, violence, and family-related service calls, we also see many outlets in the downtown area and southeast of Highway 6 and the Iowa River.

Figure 2B shows the locations of alcohol outlet clusters, defined as five or more outlets within a 0.15-mile radius of at least one other outlet in the cluster. Outlet clusters are shaded in purple. Here we can see that there is one large alcohol outlet cluster that stretches southwest from the downtown area to the airport and southeast along Highway 6. These maps also indicate that there may be an emerging cluster south of the Melrose Avenue and Mormon Trek Boulevard intersection to the east of University Heights and another cluster where Lower Muscatine Road intersects with Highway 6, near the Iowa City Marketplace shopping center. Without the intentional restriction of new alcohol

retailers in these areas, there is considerable risk that these emerging clusters will expand and merge with nearby clusters.

This analysis suggests that neighborhoods with more alcohol outlets also have more reactive service calls. This finding was also true when we tested these relationships statistically, where we found that alcohol retailers and alcohol-related calls for service had the strongest relationship, followed by violence-related calls and then family-related calls. Now, let's drill down to get a closer look at three neighborhoods experiencing both a high density of calls and high concentration of alcohol outlets.

## Site 1: Alcohol Establishments are a Risk Factor

Here, we visit the south-central corridor of Iowa City, as identified by the yellow triangle in Figure 4A. Figures 4B-4D show the locations of 104 alcohol-related calls, 136 family-related calls, and seven violence-related calls. There are many alcohol establishments on the south side of Highway 6 and very few just north of the highway. The maps in Figure 4 show that alcohol, violence, and service calls are highly concentrated south of the highway and nearly absent north of the highway. The concentration of emergency service calls near alcohol outlet densities points to a neighborhood inequity, with one neighborhood bearing the brunt of the community risk and another enjoying much lower community risk.

Linn County estimated it costs about $105 per officer per vehicle to respond to a single call[1]. We can use call data like this to estimate the cost of each call type. For example, this section of the city, southeast of Kirkwood Avenue and the Iowa River, is estimated to cost the city approximately $26,000 a year for calls related to families, violence, and alcohol. Additional neighborhood efforts could potentially save the city thousands of dollars in reactive service call costs. This leads to our first recommendation to use reactive service call data to develop localized economic costs about the burden of alcohol that can be shared with local decision-makers.

Figure 4:

A. Location

B. Alcohol-Related Calls

C. Violence-Related Calls

D. Family-Related Calls

Site 2: Off-Premise Densities Are a Community Risk

Here, we visit an emerging hot spot south of Melrose Avenue and the Mormon Trek Boulevard intersection (see Figure 4A). This location is the site of an emerging cluster of alcohol retailers and, predictably, an emerging reactive service all cluster, as evidenced by the concentration of alcohol, family, and violence-related calls directly within and surrounding the alcohol outlet density. This pattern can be seen in Figures 4B-D, where we can see an acute absence of reactive service calls in areas with fewer or no retailers.

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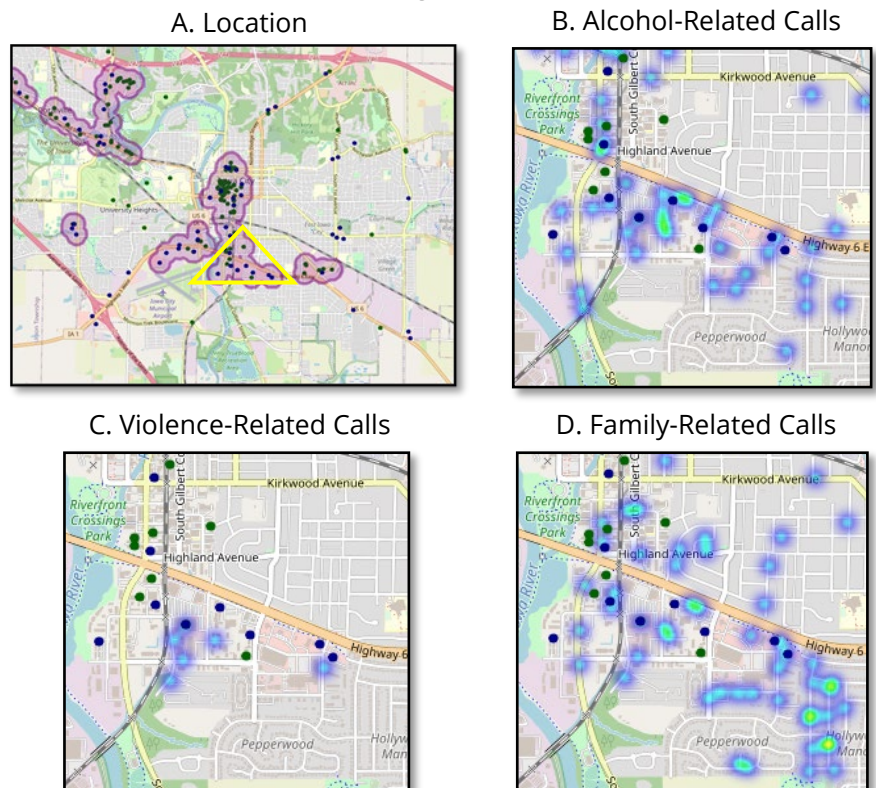
[1] Source: Linn County Access Center estimates costs per call. Estimates based on $105.05 per officer per vehicle

This area poses a unique risk because this cluster comprises several off-premise establishments. Off-premise establishment clusters increase unsupervised excessive drinking in the home and also underage drinking. This suggests a second recommendation: to reduce densities and build partnerships for harm reduction. Partnering with the police department to increase enforcement of alcohol-related purchasing laws in high-risk outlets is an evidence-based strategy to prevent the sale of alcohol to minors and reduce alcohol harms.

Iowa City might also benefit from a partnership with human service organizations to expand home visiting programs to these areas and train staff on the use of the brief screening measures (SBIRT). Such efforts might improve early detection of alcohol use disorder in households living in high AOD neighborhoods. Because this is an emerging alcohol outlet cluster, we recommend Iowa City target this area to help prevent this cluster, and its harms, from getting expanding.

Figure 4:

A. Location

B. Alcohol-Related Calls

C. Violence-Related Calls

D. Family-Related Calls

Site 3: Sensitive Environments

In our third site, we visit the southeastern part of the city, by the Iowa City Marketplace shopping center, where Lower Muscatine Road intersects with Highway 6. Here we can see that there are several sensitive environments in close proximity to alcohol outlet clusters in the neighborhood. Figure 5A maps the familiar alcohol outlets, clusters, and location with the yellow triangle. In this figure, we also see the locations of schools throughout the city, as indicated by the purple square with the school building image in the middle. Figure 5B gives a closer look at the neighborhood, revealing that many schools are near the alcohol outlet density, including schools *within* the AOD. The map also shows a high concentration of family-related service calls near alcohol-selling establishments.

Alcohol establishments near primary and secondary schools increase the exposure of minors to alcohol advertising and alcohol products. For example, a family walking to school in this area is likely to see more alcohol advertising, people consuming alcohol, and alcohol products than a family in an area without an alcohol outlet cluster. This is an especially high-risk, but avoidable alcohol harm, because research shows that children exposed to alcohol early in life are more likely to engage in excessive drinking later in life.
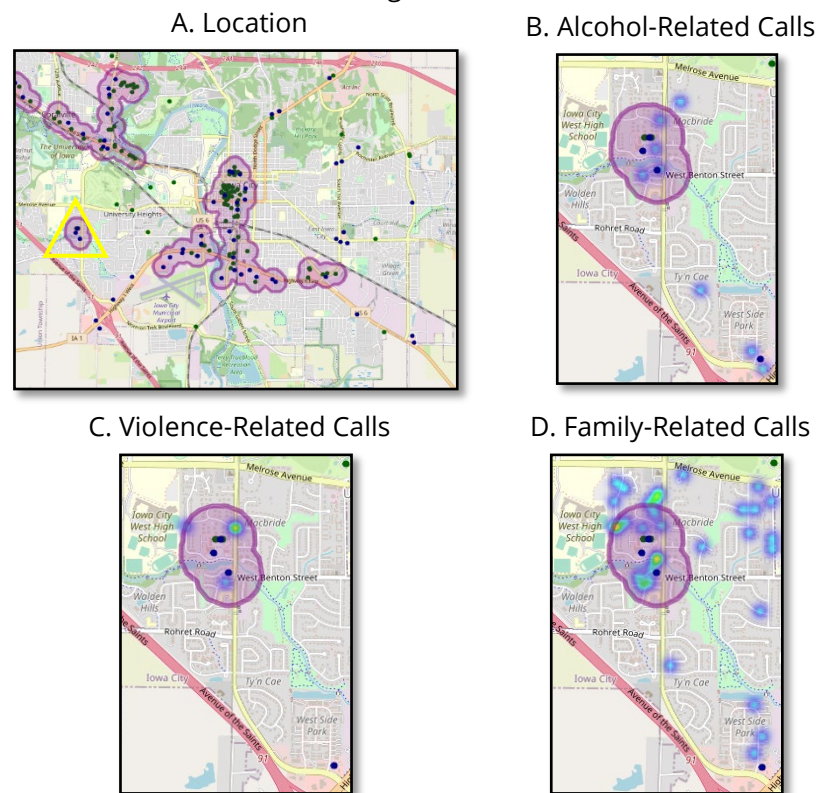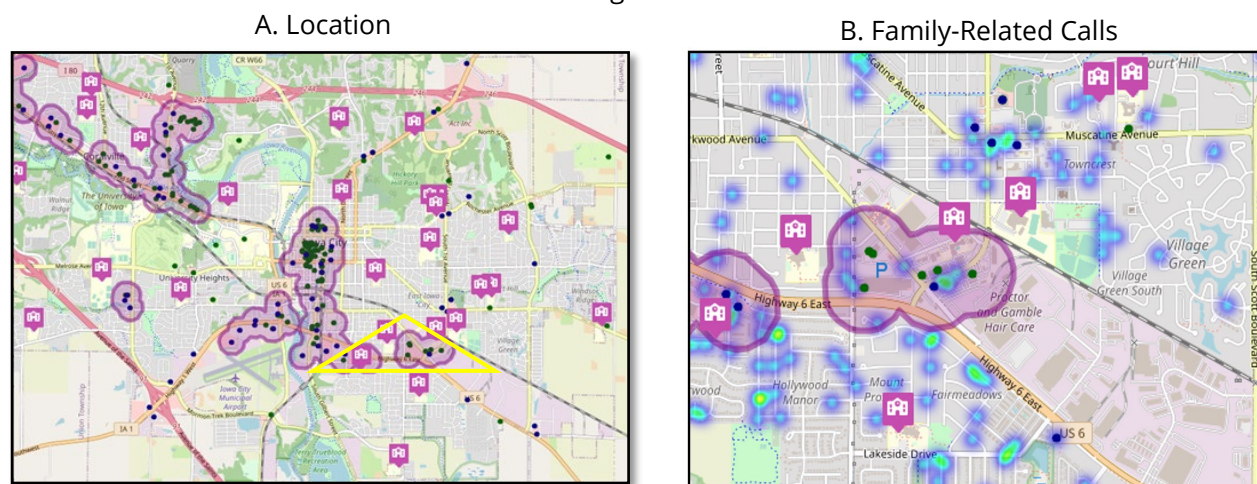
Figure 5:

A. Location

B. Family-Related Calls

This leads to a third recommendation, which is to reduce alcohol exposure among vulnerable populations. To reduce harms associated with the alcohol outlets, communities can consider changing business or zoning regulations to restrict how close an alcohol retailer can be to a school, park, church, or other sensitive areas where children and families congregate.

Facilitated Discussion Results:
Tables 3, 4, and 5 summarize the results of the facilitated discussion.

Table 3: What are the big AOD-related issues that are you trying to address in your workgroup?	
Concept	**Response**
Alcohol Culture	Shifting culture to be essentially centered on alcohol
Behaviors	Adult problem drinking and related health/mortality issues
	Adult alcohol misuse aged 45 and over
	Obnoxious behavior
	Addiction
	Overconsumption
	Over consumption
Programs & Interventions	Harm reduction
	Providing resources to students
	Harm reduction
Safety	Violence
	Sexual assault and sexual violence related to overconsumption of alcohol
	Safety for all
	Harm reduction
	Providing resources to students
	Harm reduction
Alcohol Control; Supply	Over service and bar density
	Increased availability thru home delivery & drinks to-go

Table 4: What type of data do you typically use to inform your alcohol-related work?	
Data Type	**Response**
Process & Procedural Data	Police reports
	Statistics compiled by calls for service collected by CAD software
	Public Safety Data
	Observation and local police call / activity data
	Local PD arrest data
	Arrest data. Call for service data
	Compliance checks
Health & Education Surveys	BRFSS
	National College Health Assessment
	Community Survey information
	Student surveys
Reports	Follow-up from conduct reports
	Studies conducted over the last twenty years
	County assessment workbooks from previous alcohol prevention initiatives
Narrative Data	Realistically...anecdotes.
Administrative Health Data	Alcohol use disorder treatment data
	Local sobering/detox admit data
	ER data

Table 5: How could you use the AOD tool to improve decision-making and programming in Iowa City?	
Concept	**Response**
Inform decision-making	To make choices that are data driven and not anecdotal
	it's visual, decision makers have limited time, it's easy to digest
	Provide context for what is around students who that impacts their decisions
	Can it be used as a case to limit alcohol density? I don't know the complexities of those policies
	Geo-targeting where resources should be placed
Inform the public	Sharing this data more widely, beyond the folks already familiar with it, to shift public opinion
Inform policy	Data driven policy change.
	Could be used to add to existing data to help form policy
	Additional evidence to make the case for policy change
Support programs	Supports programs I am advocating for