LIQUOR LICENSE DISTRIBUTION

Liquor licenses are expensive in Boston. Are bars disproportionately clustered in wealthy, White, gentrified neighborhoods as a result?

INTRODUCTION

Historically, establishments that served alcohol to patrons were seen as inherently risky to the public order; licensing policies like Massachusetts' were used both to mitigate risks and to minimize the number of these establishments. More recently, bars are framed as essential amenities and economic development drivers for urban neighborhoods rather than just a simple nuisance. These establishments make their districts more active, signal to other retailers that there is enough foot traffic for additional businesses, and helps establish an identity for the neighborhood. Typically these places cannot survive without liquor licenses; alcohol has higher margins than most food items, so many independent restaurants find alcoholic beverages account for 20% or more of their sales, according to data from Technomic (Griswold, 2014).

Boston City Councilor Ayanna Pressley has argued that Massachusetts' liquor licensing policies, which have been in effect since 1933, have resulted in licenses being concentrated in wealthier and Whiter neighborhoods. State-mandated caps on Boston's liquor licenses have driven the prices of these licenses on the secondary market up from a few thousand dollars to $450,000 in some cases; as a result, only entrepreneurs with significant access to capital and the right social networks are able to obtain one. They might, therefore, opt to locate their ventures in wealthier neighborhoods to recoup this initial, substantial investment. The resulting distribution is a matter of economic disenfranchisement, according to Councilor Pressley, since it means that low-income or minority neighborhoods have a harder time attracting restaurants and the economic development power that they bring.

This project will assess the clustering of liquor licenses in Boston and how this clustering seems to correlate to race, income, and gentrification. The research questions at hand are:

- Which neighborhoods in Boston have higher shares of the liquor licenses?
- Where are there clusters of liquor licenses?
- Do variables like income, racial composition, and gentrification predict where clusters will be in Boston?

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DATA

The data for this analysis was gathered from several different sources:

Liquor licenses. The City of Boston maintains lists of all liquor licenses and all eating establishments in the city. These points were located using a mixture of address geocoding and XY coordinate mapping. Census tracts with few residents and the census tract containing Logan Airport were all excluded from this analysis in order to avoid skewing the results. Naturally, some census tracts are better for restaurants and bars than others. Therefore, the number of liquor licenses per census tract was normalized by dividing that number into the number of all eating establishments in that census tract.

Demographic data. Data on income and poverty were taken from the American Community Survey (ACS) 5-Year estimates. Data on race and ethnicity were taken from the Decennial Census because ACS data had substantial error.

Gentrification. To approximate gentrification, a complete set of all approved residential building permits was exported from the City of Boston's dataset of building permits. The number of permits in a census tract was normalized by dividing it into the number of all housing units in each census tract. This provides a general proxy for where investment is happening in the city, which can be used as a shorthand for gentrification.

METHODS

Exploratory Spatial Data Analysis. To start, the liquor license data is mapped to visually assess clustering. In addition, the share of liquor licenses is calculated for each quartile of census tracts based on median income, percent non-White population, percent Latino population, and number of permits per housing unit.

Local Indicators of Spatial Autocorrelation. Next, Moran's I is calculated using GeoDa to assess how much liquor licenses seem to be clustered overall, as well as where these clusters are located.

Spatial Regression. Finally, spatial regressions can explore whether income, race, and gentrification predict the distribution of liquor licenses. Because so many of these variables are correlated with each other, univariate regressions were calculated for each variable rather than a single multivariate regression.

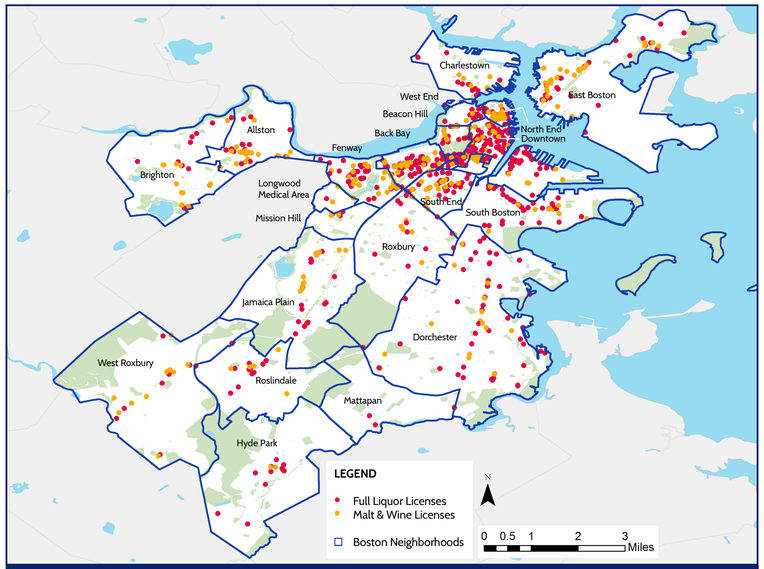

Figure 1: Liquor Licenses in Boston By Type

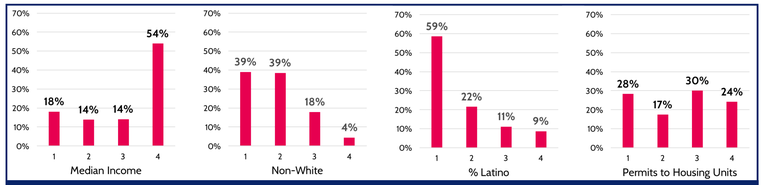

Figure 2: Share of Liquor Licenses per Quartile

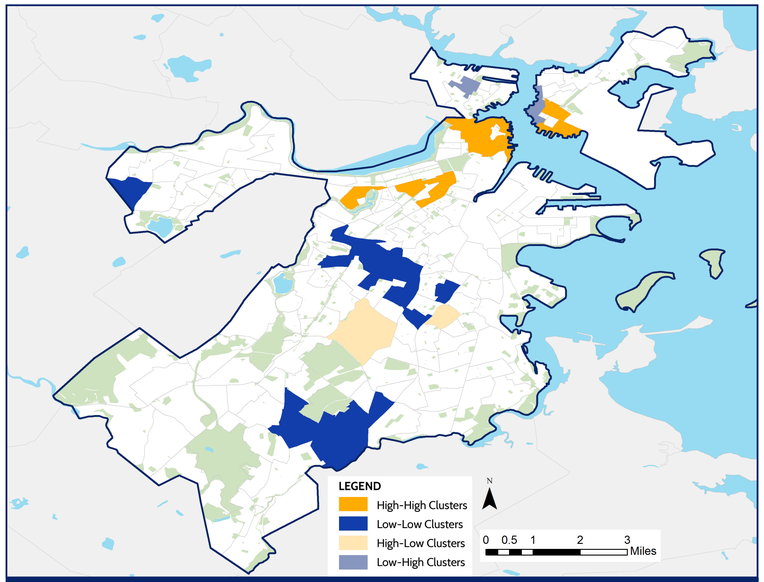

Figure 3: Clusters of Liquor License

RESULTS

Exploratory Spatial Data Analysis. As the map of liquor licenses in Boston demonstrates (Figure 1), there appears to be clustering of licenses throughout the north of Boston. Liquor licenses seem much more sparse south of Fenway, Back Bay, and the South End. For the most part, the quartile tables (Figure 2) support Councilor Pressley's predictions: generally, as median income rose, so did the share of liquor licenses, and as percentage non-White population and percentage Latino rose, the share of liquor licenses decreased generally. In terms of gentrification, however, there was no immediately discernible pattern.

Local Indicators of Spatial Autocorrelation. The Global Moran's I was calculated for the ratio of liquor licenses to eating establishments; the result was .2723, which indicates moderate autocorrelation, or clustering, of liquor licenses. When randomized for 999 permutations, this result was significant at the p =.001 level. The Local Moran's I, mapped in Figure 3, highlights census tracts that have a high ratio of liquor licenses to eating establishments and are surrounded by census tracts that also have a high ratio. There is a collection of high-high tracts in the Downtown, North End, and West End neighborhoods, another in East Boston, and another in Back Bay and Fenway. Figure 3 also shows low-low clusters, where neighborhoods with a low ratio of liquor licenses to eating establishments are surrounded by other neighborhoods with a low ratio. Mattapan, Roxbury, and Mission Hill all host low-low clusters.

Spatial Regression. To determine whether income, race, and gentrification were predictors of liquor license distribution, several univariate spatial regressions were conducted with the ratio of liquor licenses to eating establishments as the dependent variable. A selection of results for the most predictive variables is listed in Figure 4. The strongest predictor of liquor license distribution was the percentage of non-White residents in a tract; for every percentage point increase in the non-White population, the predicted ratio of liquor licenses, which contains values 0 through 1, decreases by .0041. Family poverty rate, the most predictive of all income variables modelled, and the ratio of permits to housing units were also significant predictors.

Independent Variable	Coefficient	R^2
Family Poverty Rate**	-0.0048	.21
Percentage Non-White***	-0.0041	.24
Permits to Housing Units*	.2175	.22

*Significant at p < .05; **Significant at p < .005; *** Significant at p < .0005

Figure 4: Regression Results

CONCLUSION

This analysis supports Councilor Pressley's assessment that the current distribution of liquor licenses is clustered in wealthy, White neighborhoods. While the North End, West End, and Downtown neighborhoods all enjoy dense clusters of liquor licenses, Roxbury, Mattapan, and Mission Hill have very few. Over half of all liquor licenses are located in the wealthiest quartile of census tracts. The spatial regressions indicate that race was the most predictive variable of those explored, but income and gentrification also serve as significant predictors.

These results have real-world implications for the neighborhoods that lack liquor license density. These areas have a more difficult time drawing restaurants to the area, which in turn hampers economic development efforts to produce thriving commercial districts for residents to shop, socialize, and work in.

Future analysis could explore specifically how liquor license policy in Massachusetts seems to be affecting the distribution in Boston, perhaps by comparing to other metropolitan areas. Furthermore, Massachusetts lawmakers created more licenses in 2014 specifically tied to underserved neighborhoods; future research could explore the effects of this measure. Data limitations minimize the research that can be completed; improved accuracy to city databases and more historic detail for liquor licenses over time would open up more possibilities for future researchers.

In the meantime, however, this analysis supports further policy interventions to increase the number of liquor licenses in low-income and minority neighborhoods.

REFERENCES

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