Alcoholic Beverage License Population Quotas and Restaurant Availability and Restaurant Quality in New Jersey (revised)

In this paper I use restaurant data from Google Maps to examine how population restricted on premise alcoholic beverage licensing in New Jersey impacts restaurant availability, restaurant quality, and restaurant longevity. I do this, in part, by comparing restaurant data from Bergen County, New Jersey with restaurant data in population quota free Westchester County, New York. I find no evidence that New Jersey's alcohol control policies result in fewer full service restaurants or restaurants of lower quality in Bergen as compared to laissez-faire licensing Westchester. In fact, there were 32% more full service restaurants in Bergen than in Westchester, counties with very similar population, incomes, age, race and ethnicity, and education levels. The best explanation for this difference appears to be the liberal BYOB policies in Bergen, which lower the full price of a restaurant meal with alcoholic beverages, coupled with a substantial restaurant meal price elasticity. I also estimate reduced form cross county models of the number of full service and the number of limited service restaurants in the US, which show the number of these restaurants differ not only by population but by total employment, tourism, education levels, population density, and race and ethnicity in the county. This means that a top-down one-size-fits-all resident population licensing formula, such as in New Jersey, will not be able to match full service restaurant numbers with full-service meal and beverage restaurant demand across municipalities with different characteristics.

JEL code: L83

Key words: restaurants, liquor licenses, New Jersey

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December 2022

Introduction

In this paper I use data from Google Maps to examine how population restricted on premise alcoholic beverage licensing coupled with liberal BYOB (bring your own booze) policies in New Jersey impacts restaurant availability, restaurant quality, and restaurant longevity. I do this, in part, by comparing 2019 restaurant data from population quota restricted Bergen County, New Jersey, with restaurant data for the same time period in population quota free Westchester County, New York. Bergen has a liberal BYOB policy for restaurants without alcoholic beverage licenses while BYOB is not permitted in Westchester restaurants. As part of this analysis, I conclude that the price elasticity of demand for full service restaurant meals in Bergen County is at the high-end (in absolute value) of estimates previously reported in the literature and near -1 or higher. I also estimate reduced form cross county models of the number of full service and the number of limited service restaurants in the US to show that the number of these restaurants are sensitive to total employment, tourism, education levels, race and ethnicity and population density in the county. I also estimate these models for the number of employees by county for these restaurant types. These results show that restaurant markets are influenced by factors other than resident population, and thus, resident population quotas on alcoholic beverage licenses will almost always fail to reflect market demand. And it is for this reason that population restrictions on alcoholic beverage licenses for restaurants, bars, or taverns have come under criticism in a number of states in recent years because of their assumed

detrimental impact on commercial and residential development in town centers that follows from a less vibrant nightlife.

In 18 states of the US alcoholic beverage licenses for on premise consumption in restaurants, bars, or taverns are limited by population formulas. The population formulas in the 18 states are hard to summarize for they differ not only in their numerical values but in the geographic units to which they apply (municipality, county, or state) the type of license (beer, wine, spirits, beer and wine only, wine only, or beer only[1]) and the type of establishment (ranging from a bar or tavern with limited seating and a limited menu up to large restaurants with full menus). In some states local governments must provide initial approval for an on premise alcoholic beverage license and in other states local governments cannot prevent the formation of an on premise alcoholic beverage establishment in an appropriately zoned area that meets state requirements, such as the minimal distance from schools or houses of worship. Also, in some states with population restrictions on on premise alcoholic beverage licenses, food sales in excess of some percentage of total revenue and/or restaurants with a number of seats in excess of a specified level are exempt from the population quotas. Finally, alcoholic beverage license population formulas were legislated over a wide range of years after prohibition was repealed in the US in 1933 and existing alcoholic beverage establishments were always grandfathered in.

Probably the least restrictive of the population formula states is Wisconsin, where their “class B” on premise licenses (beer, wine, spirits) are restricted to one per 500 population in a municipality, among other requirements, with no population quotas on other licenses.[2] Probably the most restrictive of the population formula states is New Jersey, with one on premise license for beer, wine, and spirits allowed for every 3000 population in a municipality. Furthermore, New Jersey, unlike most other states, does not have beer and wine licenses or beer only or wine only licenses for on premise establishments.

In this research I compare restaurant availability, restaurant quality, and restaurant longevity data for full service restaurants in Bergen County, New Jersey, with and without on premise alcoholic beverage licenses. I also compare these Bergen County full service restaurants with full service restaurants in laissez-faire on premise licensing Westchester County, New York. These are not neat natural experiments, however. New Jersey has the most liberal BYOB regulations in the nation; customers can bring their own beer and wine (and probably spirits)[3] to a restaurant without an alcoholic beverage license at the discretion of the owner and state law prohibits a corkage fee. An indicator of the acceptance of BYOB restaurants in New Jersey is that on one recent list of the top 30 restaurants in New Jersey, 10 were BYOB.[4] Also, three of the eight highest cost category ($$$$) restaurants in Bergen County in 2019 were BYOB, as were 17 of the 55 $$$ cost category restaurants (see table 3, below).

The on premise alcohol beverage licensing population restrictions in New Jersey have been criticized for reducing the number of restaurants and bars serving alcoholic beverages and, thus, dampening nightlife energy in downtown areas **(**Agnish, 2018, Pugliese and Davidowitz, 2018).[5] A less robust downtown nightlife is assumed to negatively impact commercial and residential development in the town centers. This represents a sea change in the philosophy behind the regulation of on premise alcoholic beverage licenses, from concern over the negative externalities of excess consumption to support for alcohol consumption's positive impact on social interaction and, hopefully, community vibrancy. However, New Jersey's alcoholic beverage regulations do not necessarily translate into a less lively restaurant culture. It is also possible that by reducing the out-of-pocket costs of beer and wine (and probably spirits) consumed with restaurant meals, the New Jersey state regulations could actually increase the number of restaurant customers as compared to an environment with no population license quotas and no BYOB, where almost all full service restaurants will have licenses to serve alcoholic beverages. Andreyeva, et al. (2010), in their review of food price elasticity studies, report a mean price elasticity estimate of -.8 for food purchased for consumption away from home, with a 95% confidence interval of -.6 to -.1.0. To state the obvious, if "bringing your own" lowers the full cost of a restaurant meal on average by, say, 25%, demand for restaurant meals could increase 15 – 25%.

On premise alcoholic beverage consumption licenses are valuable in New Jersey, even in the liberal BYOB environment. These licenses can be sold at market value for use within the municipality in which they are licensed. The mean and median

values of 51 asking prices at one business website for the sale of New Jersey on premise alcoholic beverage consumption licenses in January, 2020, were $325,000 and $300,000 and ranged from $50,000 to $1.1 million.[6,7] These values are consistent with the arguments of the “pro-development” advocates that there is demand for restaurant meals complemented by on premise alcoholic beverage service in many municipalities in New Jersey or that there is a demand for a “bar atmosphere” that is not satisfied by BYOB restaurants. BYOB restaurants cannot profitably provide a bar atmosphere where people would come into drink their own alcoholic beverages and socialize, but not to eat restaurant meals.

The value of licenses are generally higher in suburban and ex-urban municipalities that have experienced population growth since 1947, when population formula license regulation began. New Jersey municipalities closer to New York City and Philadelphia generally have lower license values because they had a relatively large number of licenses prior to 1947 and have experienced population losses, or at best have held even, since then. Meanwhile the state population increase from 4.8 million in 1950 to 8.9 million today has occurred outside the inner suburban rings of New York and Philadelphia of 1947. The on premise alcoholic beverage consumption license population ratio was set at one per 1000 population in a municipality in 1947. This population ratio was tightened in 1960 and again in 1969, when the current 1/3000 ratio was signed into law. In each legislative instance license holders in municipalities with population ratios in excess of the new formula were grandfathered in and they are

counted in establishing a municipality's population ratio when determining eligibility for new licenses.

Methods and Previous Literature

I estimate the impact of New Jersey's population restrictions on on premise alcoholic beverage consumption licenses on restaurant availability, restaurant quality, and restaurant longevity[8] by comparing Google map restaurant data for Bergen County, New Jersey, with the restaurant data for Westchester County, New York. I compare data for the counties as a whole and for matched cities in these counties; Ridgewood in Bergen with Scarsdale in Westchester and Mahwah in Bergen with Yorktown in Westchester. I use multiple regression to examine the effect of population restrictions on restaurant licenses on the restaurant ratings from Google maps. I then examine the determinants of the per capita number of full service and limited service restaurants in counties in the United States and the number of employees per capita in these restaurant categories in reduced form regression models that include an indicator variable for the presence of population formula license restrictions and median family income, percent of population 25 and over with a four-year college degree, population density, hotel and motel employment per capita (to measure tourism), percent of the population white,[9] and total employment per capita. I do this in part so I can adjust the Bergen and Westchester results for full service restaurants because the counties differ substantially in population density and, to a lesser degree, employment. I am also interested in the sensitivity of the restaurant numbers to the other explanatory variables

as well, for if these variables are important to the restaurant markets, then allocating alcoholic beverage licenses based on resident populations is, to be generous, hit and miss.

Cross-section models of restaurant demand or of the number of restaurants in a geographic area have been estimated previously but none appear in the literature after 2010 except for Yang et al. (2017). Yang et al. reported population density, median family income, education, hotel density, and percent white to be statistically significant and positively related to the number of restaurants in ZIP Codes of the US in 2013. Research that was influential in the specification of the Yang models included Byrne et al. (1998), who found household expenditures in the US in the 1980s on food away from home to be influenced by household income, education, and ethnicity; by Stewart and Yen (2004), who also reported household income, education, and ethnicity effects for household expenditures in the late 1990s in the US at fast food and at full service restaurants; by Ham et al. (2004), who showed income and education effects for 1999 household expenditures on food away from home in the United States and in South Korea; and by Brinkley (2006), who in an analysis of the data are from the 1994–1996 Continuing Survey of Food Intakes by Individuals in the US also found income, education, and race and ethnicity effects on food consumed away from home. Note that data on household expenditures or individual food consumption were analyzed in these four studies, not the number of restaurants in a geographic area. Thus, tourism, population density, and employment effects on restaurant numbers were not analyzed.

Empirical Results Bergen County, New Jersey, and Westchester County, New York

In this section, restaurant availability, restaurant quality, and restaurant longevity in Bergen County, New Jersey, and Westchester County, New York, are compared. In Westchester County, as in the rest of New York State, the number of alcoholic beverage consumption licenses in a municipality are not restricted by population formulas. Furthermore, the New York State alcoholic beverage law preempts any local law that attempts to regulate the sale of alcoholic beverages.[10] Bars, taverns, and restaurants serving alcoholic beverage are free to open in New York State if they are located in appropriately zoned areas. The only significant restriction on their location is the "200 foot rule," which states that establishments cannot be located within 200 feet of buildings used exclusively for schools, churches, synagogues, or other places of worship.[11] Data from Google maps are used to compile restaurant data from Bergen and Westchester counties. Google map restaurant data in this application were found to be more complete, more up-to-date (particularly with respect to restaurant closings), and with more reviews than similar data from Yelp or Trip Advisor.

The geographic centers of Bergen and Westchester County are 24 and 27 miles, respectively, from the Empire State building in midtown Manhattan. The socioeconomic and demographic characteristics of the two counties are strikingly similar. Bergen County's population was 934,000 in 2018 and Westchester's was 968,000. Median family income in 2016 was $112,000 in Bergen and $114,000 in Westchester. Percent of the population 25 years and over with a bachelor's degree or higher was 48% in

Bergen and 47% in Westchester. Median age of the population was 42 years in Bergen and 41 years in Westchester. Percent of the population white in each county was 73%. Each county is connected to Midtown Manhattan by two major commuter rail lines. Two notable differences that may affect the number of restaurants are population density and employment. Population density in 2018 was 1900 people per square mile in Westchester and 3700 people per square mile in Bergen. Total employment in Bergen and Westchester in 2012 was 438,000 and 390,000, respectively.[12]

Data were collected from Google map searches on restaurant rating, food and beverage cost rating, and restaurant food type for restaurants in Bergen and Westchester counties in 2019. The restaurant rating is from self motivated reviewers who participate online at a time of their choosing and the restaurant cost and food type data are generated internally by Google.[13] Restaurant ratings go from one to five stars and cost ratings go from one to four dollar signs. These data were collected from Google map searches on restaurants near a given municipality in each county, for example, “restaurants near Scarsdale, New York.” These searches were done for each municipality in each county with only restaurants in the given municipality included in that municipality’s list.[14] It is not predictable whether a coffee shop or a bakery or a snack shop are classified as a restaurant in Google maps. Starbucks, for example, is not considered a restaurant in Google maps, but Dunkin Donuts is. Restaurants with less than 10 reviews are not included in the databases. The presence of an on premise alcoholic beverage license was determined from the alcoholic beverage license databases maintained by each state’s liquor control authority.[15]

In Bergen County, 2321 restaurants were identified from Google map searches for restaurants by municipality. Seven of these had the highest cost rating of four, 63 had a cost rating of three, 872 had a cost rating of two, 700 had a cost rating of one, and no cost rating was provided for 679 of the restaurants. Limited service restaurants, characterized by no table service and payment before the meal, are almost always in the cost one rating category. Restaurants in cost categories two, three, and four are almost always full service, with payment after the meal . The average restaurant rating (average number of stars) for these four cost categories were 4.44, 4.37, 4.27, and 4.19. The restaurants with missing cost data had a 4.30 average restaurant rating. In Westchester County, 1576 restaurants were identified from Google map searches for restaurants in each municipality. Seven of these had the highest cost rating of four, 33 had a cost rating of three, 682 had a cost rating of two, 254 had a cost rating of one, and no cost rating was provided for 596 of the restaurants. The average restaurant rating (average number of stars) for these four cost categories were 4.44, 4.33, 4.31, and 4.16. The restaurants with missing cost data had a 4.26 average restaurant rating. Bergen had 32% more full service restaurants than Westchester (942 two, three, and four cost category restaurants in Bergen as compared to 716 in Westchester). Thus, it does not appear that the alcoholic beverage license quotas in Bergen coupled with no corkage fee BYOB has resulted in fewer full service restaurants as compared to population quota free alcoholic beverage licensing in Westchester with no BYOB permitted. In fact, I will argue below that the BYOB option should stimulate restaurant

meal demand by lowering the average price of a restaurant meal inclusive of alcoholic beverages.

In table 1, the characteristics of restaurants located in Ridgewood, New Jersey, and Scarsdale, New York, in 2019 are listed (https://sites.google.com/view/restaurant-tables/home). Ridgewood and Scarsdale are the “queen” cities of Bergen and Westchester counties, with median family incomes of $162,000 and $292,000, with 89 and 90 percent of the population 25 years of age and over with a four-year college degree, with populations of 25,200 and 17,900, with both featuring commuter rail stops and vibrant downtowns that attract nonresidents. Ridgewood had seven three dollar cost category restaurants, 49 two dollar cost category restaurants, and 29 one dollar cost category restaurants. Scarsdale had in these cost categories four, 45, and 19 restaurants. There were no four dollar cost category restaurants in either municipality. Ridgewood had 56 restaurants in the two and three dollar cost categories and Scarsdale 49. Of Ridgewood’s 56 restaurants in these categories, eight had on premise alcoholic beverage licenses, fitting neatly into the population formula of one on premise license per 3000 population. Forty one of the 49 Scarsdale restaurants in these categories had alcoholic beverage licenses. Some of eight restaurants without licenses may be limited service and misclassified out of the one dollar cost category.[16]

In table 2 the characteristics of restaurants located in Mahwah, Bergen County, New Jersey, and Yorktown, Westchester County, New York, in 2019 are listed (https://sites.google.com/view/restaurant-tables/home). Mahwah is located at the

northwestern edge of Bergen County, 35 miles from the Empire State building. Yorktown is located in the northwestern corner of Westchester County, 43 miles from the Empire State building. Median family incomes in Mahwah and Yorktown are $166,000 and $161,000, percent of the population's 25 and over with a four-year college degree are 60% and 57%, and their populations are 26,300 and 37,000. While Ridgewood and Scarsdale have slightly smaller populations today than they had in 1970, Mahwah's population has grown from 10,800 in 1970 and Yorktown's has grown from 28,000 in that year. Mahwah had 15 one dollar cost category restaurants and 17 two dollar cost category restaurants in 2019. Yorktown had 21 one dollar cost category restaurants and 17 two dollar cost category restaurants. There were no three or four dollar cost category restaurants in either municipality. In Mahwah, five of the 17 two dollar cost category restaurants had alcoholic beverage licenses and in Yorktown all of the two dollar cost category restaurants had alcoholic beverage licenses except for a Panera bread. The pattern is the same in these municipalities with more recent population growth on the northwestern edges of their counties as it is in the long-established elite towns in the county centers, with most of the Westchester full service restaurants having alcoholic beverage licenses and most of the Bergen full service restaurants BYOB.[17]

The results of a regression of restaurant rating (*10) for Bergen County two dollar cost category restaurants and higher on food type indicators, an alcoholic beverage license indicator, and cost category are (absolute value of t statistics below coefficients):[18]

rating*10	=41.7	-.8 license	+.8 cost cat	+1.0 Italian	-2.6 Chinese	-1.4 Korean	-.1 Pizza
	80.2	4.9	3.3	5.1	6.1	4.3	0.3

R squared= .13, F= 20, n = 803

The alcoholic beverage license coefficient shows little difference in restaurant rating between licensed and unlicensed restaurants, with licensed restaurants having ratings approximately one third of a standard deviation lower than the unlicensed restaurants. These restaurants are shown in table 3 (https://sites.google.com/view/restaurant-tables/home). If restaurants from the same cost categories in Westchester County, shown in table 4 (https://sites.google.com/view/restaurant-tables/home), are added to the data, the licensing dummy coefficient stays negative, falls in absolute value, and loses statistical significance. The weakened licensing dummy effect represents a comparison of the ratings of unlicensed BYOB full service restaurants in Bergen with licensed full service restaurants in Bergen and Westchester, food type and cost category constant.

Seventeen percent of the Bergen County restaurants, two dollar cost category and above, were classified as Italian. If the Bergen sample is limited to this most popular restaurant type, the negative licensing coefficient increases in absolute value, but remains small. Italian restaurants with alcoholic beverage licenses have about a one unit lower rating*10 than BYOB Italian, with mean rating*10 for these restaurants equal 44.

		-1.1	+.8 cost
rating*10	=42.8	license	cat
	46.4	3.3	1.9

R squared= .07, F= 6.0, n = 147

There is no evidence, then, in these data for Bergen and Westchester counties that New Jersey's alcohol control policies result in fewer full service restaurants or restaurants of lower quality in Bergen than in quota free Westchester. It seems more likely that New Jersey's liberal BYOB policy has actually resulted in more full service restaurants of comparable quality to Westchester full service restaurants by lowering the full cost of a full service restaurant meal with alcoholic beverages in BYOB restaurants. Most of the factors that might affect restaurant meal demand- median family income, median age, education levels, race and ethnicity- are similar in the two counties and, as will be shown below, the effects of the differences in population density and employment between the two counties on the number of full service restaurants are likely not sizable. A full service restaurant meal price elasticity of -.8, the mean value reported by Andreyeva et al.(2010) in their literature review, would mean that the BYOB option in Bergen would have to reduce the full cost of a restaurant meal with alcoholic beverages by 40% across the county to fully explain the 32% difference in the restaurant demand (number of full service restaurants). For drinkers of fine wine with full service restaurant meals or for drinkers that have several alcoholic beverages during restaurant meals this is not an unreasonable savings estimate from choosing BYOB

over a licensed restaurant. It would seem on the high side, however, as an average reduction in the price of a restaurant meal with alcoholic beverages in all full service restaurants in the county, even if the drinkers described above self-selected into BYOB restaurants. These considerations lead me to infer that a price elasticity in the upper range in absolute value of the estimates reviewed Andreyeva et al.(2010), near -1.0 or higher, is appropriate for the Bergen County restaurant market. The Mahwah – Yorktown matched city comparison is supportive of this conclusion, for Mahwah had 41% more full service restaurants per capita than Yorktown. Scarsdale had more full service restaurants per capita than Ridgewood, but both of these cities have large daily influxes of nonresidents for commuting, employment, and commercial and leisure activities, which makes it difficult to assess the size of the restaurant market in each case.

The substantial market values for on premise licenses in the secondary market indicate that BYOB restaurants are not perfect substitutes for on premise alcoholic beverage establishments, whose customers may desire the convenience of on premise alcoholic beverage service or have a preference for a "bar atmosphere." Also, top down one-size-fits-all population licensing formulas will never be a good fit for municipalities with different restaurant markets. As will be shown in the next section but is self-evident, there is a greater demand for restaurant food and beverages in municipalities that are employment centers, tourism centers, shopping centers, or otherwise attract nonresidents than similarly populated municipalities that are bedroom communities. And the balance between negative and positive alcohol consumption externalities is

probably best determined at the local level and regulated through alcohol licensing, zoning, and policing. There is room for some state oversight to the extent that externalities extend beyond municipal borders, for example, drunk driving.

There is evidence that restaurants licensed for alcoholic beverages have greater longevity, assuming that the natural log of the number of restaurant reviews correlates with time in business. The natural log of the number of reviews is used to dampen the effect of higher restaurant quality on the number of reviews in a given time period (Moe and Schweidel, 2012). A regression of the natural log of reviews on the licensed dummy, cost category, restaurant rating, and Italian, Chinese, Korean, and pizza identifiers, for two dollar cost category restaurants and above in Bergen County (data in table 3), gives a license coefficient of .56 with a t value of 9.4. This is a large effect, the mean number of reviews is 331 and this license coefficient implies about 70% more reviews for restaurants with alcoholic beverage licenses. There may be much more turnover, then, in the BYOB sector. Of course, restaurants can change ownership and keep the same name.

Empirical Results for a Cross County Model of the Determinants of Full service and Limited Service Restaurants in the US

In this section I examine the determinants of the number of full service and limited service restaurants in counties in the United States and the number of employees in these restaurant categories. One purpose is to demonstrate that county

restaurant numbers are sensitive to a number of factors other than resident population, thus Indicating that allocating alcoholic beverage licenses based on resident populations will not likely reflect restaurant food and beveragel demand. Secondly, I am also interested in quantifying the impact of population density and employment on the number of full service restaurants. Recall that although Bergen and Westchester counties were very similar across a number of socioeconomic and demographic categories, they differed substantially in population density and to a lesser extent, employment. Finally, the different effects of explanatory variables on full service and on limited service restaurants are of interest to students of the restaurant industry.

The most recent public data available at the county level for the number of restaurants and the number of restaurant employees are from the 2012 County Business Patterns data from the U.S. Census. Counties are large enough to capture the market reach of most restaurants in the US and numerous enough to provide a substantial number of observations, despite the confidentiality issues that can characterize the responses from smaller populated counties. Explanatory variables in the regression models include median family income, percent of population 25 and over with a bachelor's degree or higher, population density, total county employment, total county employment in the hotel, motel industry, percent of the population white and a dummy variable identifying states that restrict alcoholic beverage licenses based on population ratios. The number of full service and limited service restaurants, the number of employees in these establishments and the total employment and hotel motel employment variables are adjusted for county population. The total employment and

hotel/motel employment variables are meant to capture nonresident population movements to a county for work or leisure or commercial activities and are expected to be positively correlated with restaurant demand. Percent white in a county may be positively associated with restaurant food and beverage demand if social engagement is inversely related to population diversity (Putnam, 2007) or if the propensity to frequent full or limited service restaurants differs by race. Population density should be associated with reduced travel time to restaurants on the demand side although this positive effect would be diminished by a correlation of density with commercial rental rates on the supply side. States with population restrictions on restaurant alcoholic beverage licenses are expected to have less full service restaurants, other things the same. Employment at full service restaurants may not be adversely affected if restaurants in population restricted states with alcoholic beverage licenses are larger than their counterparts in unrestricted states. As implied above, the regression models are reduced forms; that is, the independent variables can be thought of as from structural equations explaining the demand for and supply of restaurants by county. Importantly, none of the right-hand side variables would seem to be endogenous, meaning that the number of restaurants, or the number of their employees, are not important determinants of income, hotel and motel employment, etc. for the entire county. The socioeconomic and demographic variables are at American factfinder and are from the American Community Surveys and the U.S. Census.

In table 5 the results for the regression models of the number of full service restaurants (table service and payment after the meal) per 100,000 population and the

number of limited service restaurants per 100,000 population are presented. The regression coefficients of the education, total employment, hotel motel employment, and percent white variables in the full service and limited service regression equations are 82 and 41, 34 and 75, 1828 and 372, and .4 and -.1. That is, taking these point estimates, nearly all statistically significant, the education effects are twice as big in the full service model as in the limited service model; the hotel motel employment effect is five times as big, and the white effect is positive for the former and negative for the latter. Much larger education effects for expenditures at full service restaurants as compared to limited service restaurants were also reported in Stewart and Yen (2004), Yang et al. (2017), and in Byrne et al. (1998). The more educated may be more likely to eat away from home, particularly at full service restaurants, because of greater extraversion (Kassenboehme et al., 2018) and because of more trust in their neighbors. The stronger effects of percent white and education in the full service restaurant estimates is consistent with Putnam's (2007) results in his analysis of social capital in the United States, given that increases in the white population in county data in the US mean greater racial and ethnic homogeneity.[19] Putnam found that his social capital variables, such as trust in your neighbors, were negatively impacted by racial and ethnic heterogeneity and positively and substantially associated with levels of education. More trust in neighbors and more extraversion should lead to more dining out in full service restaurants and be less strongly associated with the purchase of food and beverages at limited service restaurants, most of which are take-out. Hotel and motel guests apparently favor sit down meals over fast food and workers in a county, apparently more sensitive to time constraints, favor limited service restaurants over full service

restaurants. The small negative income effect is similar to Yang et al. (2017), who reported negative income coefficients in 10 of their 15 restaurant models estimated across zip codes.[20] Byrne et al. (1998) report income elasticities under .2 for food expenditures away from home. Thus, the strong positive correlation of education levels with full service restaurant numbers in a geographic area is not camouflaging a purchasing power effect on restaurant demand from higher incomes. With education constant, income effects are quite weak. With income constant, education effects are quite strong.

The elasticities at the means for the employment and density variables from the full service restaurant equation are .14 and .01.[21] Bergen had approximately 10% more employment than Westchester and double the population density, but adjusting for these differences has only a modest impact on the 32% advantage in the number of full service restaurants in Bergen. Thus, these results lend support to the price elasticity explanation for the greater number of full service restaurants in Bergen.

In table 6, results for the regression models of the determinants of the number of employees in full service restaurants and in limited service restaurants in counties of the US are presented. The pattern of the results are similar to those in table 5 other than the population quota dummy variable coefficient turns from small and negative for the number of full service restaurants to small and positive for the number of employees of full service restaurants. This is consistent with the idea that if restaurant alcoholic beverage licenses are limited by population formulas, those restaurants with licenses

will be larger than otherwise would be the case. Recall also from the second paragraph of this paper that the population restrictions on on premise alcoholic beverage licenses vary from mild (Wisconsin) to severe (New Jersey), making it difficult to give precise interpretations of the licensing dummy variable coefficient in the cross county models.

Summary and Conclusion

In this paper I have used data from Google Maps to examine how population restricted on premise alcoholic beverage licensing in New Jersey impacts restaurant availability, restaurant quality, and restaurant longevity. I did this, in part, by comparing restaurant data from Bergen County, New Jersey with restaurant data in population quota free Westchester County, New York. I found no evidence that New Jersey's alcohol control policies result in fewer full service restaurants or restaurants of lower quality in Bergen as compared to laissez-faire licensing Westchester. In fact, there were 32% more full service restaurants in Bergen as compared to Westchester, counties with very similar population, incomes, age, race and ethnicity, and education levels. The best explanation for this difference appeared to be the liberal BYOB policies in Bergen, which lower the full price of a restaurant meal with alcoholic beverages, coupled with a substantial restaurant meal price elasticity. I also estimated reduced form cross county models of the number of full service and the number of limited service restaurants in the US, which showed the number of these restaurants differed not only by population but by total employment, tourism, education levels, population density, and percent white in the county as well. Education effects dominated income effects,

particularly in the case of full-service restaurants. These results mean that a top-down one-size-fits-all resident population licensing formula, such as in New Jersey, will not be able to match full service restaurant numbers with full-service meal and beverage restaurant demand across municipalities with different characteristics. Also, the substantial market values for on premise licenses in the resale market in New Jersey municipalities indicate that BYOB restaurants are not perfect substitutes for on premise alcoholic beverage establishments and that liberal BYOB policies can attenuate, but not eliminate, the market distortions caused by population restricted alcoholic beverage license formulas.

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[1]Leaving aside licenses for caterers, clubs, sport and entertainment venues, brewpubs, wineries, special permits, etc.

[2]The states with population restrictions on alcoholic beverage licenses are Alaska, Arizona, California, Florida, Idaho, Kentucky, Massachusetts, Michigan, Minnesota, Montana, New Jersey, New Mexico, Ohio, Pennsylvania, South Dakota, Utah, Washington, and Wisconsin (Saksa 2014, and the author's own survey).

[3]The primary enforcers of New Jersey's BYOB regulations are the owners of the BYOB restaurants. In 30 years of BYOB dining in New Jersey, the author has never seen a reprimand of someone drinking spirits in these restaurants, nor has the author encountered an unliscensed full service restaurant that does not honor BYOB.

[4]The 30 Best Restaurants in New Jersey (2020)

[5] Gernstein (2020), Dyer (2016), and Loveridge (2020) discusses similar criticisms of on premise alcoholic beverage license population restrictions in New Mexico and Montana.

[6] Here is the list of the asking prices (000s) for restaurant alcoholic beverage licenses in New Jersey in January 2020 at one broker site: 550, 640, 450, 700, 429, 500, 500, 599, 330, 400, 300, 450, 410, 130, 150, 450, 350, 290, 95, 199, 85, 115, 80, 50, 55, 160, 115, 120, 80, 200, 95, 180, 150, 1100, 600, 750, 470, 250, 70, 349. https://liquorlicenseauctioneers.com/buy?location=NJ&location=nj&crtag=goognjlic&gcli

d=CjwKCAiAx_DwBRAfEiwA3vwZYoo-R1uVlF2MtWkKKmNzqnLMRd2d0eH-GvajsFVkgHhHBemtW2QwNRoCRA0QAvD_BwE

[7]In Bozeman, Montana, a beer, wine, spirits on premise license was made available for bidding at a minimum price of $370,000 in October 2020 (Loveridge, 2020). In cities of more than 3,000 inhabitants in Montana five of these retail licenses are permitted for the first 3,000 inhabitants and one retail license for each additional 1,500 inhabitants (Montana Code Annotated, 2019). In New Mexico, the average price in 2016 for 11 "full" liquor licenses that exchanged hands was $381,000. These licenses are required for restaurants and bars that want to sell spirits by the drink. These licenses also enable the holders to sell beer, wine, and spirits for off premise consumption . The number of these licenses was set at 1,411 in 1982 (Dyer, 2016).

[8] I use the natural log of the number of restaurant reviews to approximate restaurant longevity, as is discussed below.
[9] Percent of the county population black and percent Hispanic were included in the models, were negatively related to full service restaurants per capita and were not statistically significant.

[10] https://sla.ny.gov/alcoholic-beverage-control-law
[11] https://www1.nyc.gov/html/mancb3/downloads/cb3docs/sla-200-500ft-rule.pdf. The state of New Jersey also has a “200 foot rule.” http://njabclawyer.com/church-and-school-where-to-locate-a-nj-liquor-license/
[12]The data in this paragraph are from the 2017 American Community Survey, the 2012 County Business Patterns, or the U.S. Census. All are at America FactFinder.
[13]There tends to be upward bias in online self motivated reviews in part because the reviewer has expressed a preference for the product or service to begin with (Hu et al., 2017). This bias is less important when comparing one restaurant against another, or one group of restaurants against another group if the bias is similar in each instance. Furthermore, there is evidence that this bias is reduced the more familiar the platforms are to the reviewers (Han and Anderson, 2020). Google maps would certainly seem to fall in the category of a familiar platform.
[14]Google maps cannot be used to search for restaurants confined to a given municipality. Searches for restaurants in Scarsdale, New York, must be done by searching for restaurants near Scarsdale and then deleting restaurants without a Scarsdale address.
[15] See https://sites.google.com/site/bergenandwestchester/home for the New York and New Jersey license list used in this research
[16] They were Amore Pizza, Buon Maici Deli, Chopt Creative Salad, Happy Days Pizza , Hunan village II, Italian village, Kishuya Ramen Noddle Bar, Little Thai Kitchen
[17]The annual fee for an on premise restaurant license (OP 252) in Westchester County, New York in 2019 was $1792. The annual fee for a on premise alcoholic beverage consumption license in Ridgewood and Mahwah in 2019 was $2500 and $1890, respectively.
[18] Means and standard deviations of the variables are rating*10 43.12 (2.31), cost category 2.1 (.31), license dummy .34 (.47), Italian dummy .17 (.38), Chinese dummy .03 (.18), Korean dummy .06 (.23), pizza dummy .06 (.24). All coefficients are statistically significant at the 5% level, except for the pizza dummy variable.

[19] The mean percentage white in these county data is 82.

[20] A specification with income and income squared in the full service restaurant models gives a positive income coefficient and a negative income squared coefficient. Neither coefficient is statistically significant. Peak restaurant "demand" is at about a median family income of $20,000.

[22] Recall that density effects can be small in these specifications because greater population density can mean higher commercial rents and discourage restaurant supply, while at the same time encouraging restaurant demand to the extent greater population density shortens travel times to restaurants.

Table 5. Results of regressing the number of full-service restaurants per capita and the number of
limited service restaurants per capita on selected variables, counties of the United States, 2012*

	Full service rest. per capita		Limited service rest. Per capita	
	coef.	t value	coef.	t value
density	0.001	5.9	0.0004	1.7
batchpct	.8	10.6	.4	7.7
medfaminc	-0.0002	-4.8	-0.0002	-4.6
emplypop	34.1	7.4	74.9	21.8
popquota	-3.2	-3.1	-3.2	-4.2
hotmotpop	1828.6	39.3	372.7	11.2
whitepct	0.4	12.1	-.1	-5.5
constant	14.8	4.6	53.1	22.2
n	1813		1808	
F	430		220	

*All variables are statistically significant at the 5% level except for density in the limited service model.

Stata robust regression estimates. The dependent variables are the number of full-service restaurants per capita and the number of limited service restaurants per capita, both variables multiplied by 100,000. The means and (standard deviations) of the variables are: full-service 82.7 (47.9), limited service 69.8 (24.1), density 404 (2241), batchpct, the percent of the county population 25 and over with a four-year college degree 23 (10), median family income 52,384 (13,953), employment per capita .33 (.13), population quota dummy .39 (.49), hotel motel employment per capita .01 (.011), White population percent 82.3 (15.3). Data from Census of Business, 2012, and American Community Surveys, both at American Fact Finder.

Table 6. Results of regressing the number of full-service restaurant employees per capita and the number of limited
service restaurant employees per capita on selected variables, counties of the United States, 2012*

	Full service employees per capita		Limited service employees per capita	
	coef.	t value	coef.	t value
density	-0.0008	-1.9	-0.03	-5.9
batchpct	33.8	22.6	3.5	2.2
medfaminc	-0.008	-8.1	-0.007	-7
emplypop	2389.2	26.7	2213.9	23.3
popquota	37.2	1.9	-114.1	-5.5
hotmotpop	29762.9	33.1	-4311.3	-4.7
white	2.3	3.5	-4.2	-6.1
constant	-142.8	-2.3	1298.8	19.7
n	1813		1808	
F	800		114	

e

*All variables are statistically significant at the 5% level except for density and popquota in the full service model.

Stata robust regression estimates. The dependent variables are the number of full-service restaurant employees per capita and the number of limited service restaurant employees per capita, both variables multiplied by 100,000. The means and (standard deviations) of these variables are: full-service employees 1460 (1028), limited service restaurant employees 1323 (525). The independent variables are described in table 5. Data from the Census of Business, 2012, and the American Community Surveys, both at American Factfinder.

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