

HEALTH RISK AND INEQUITABLE DISTRIBUTION OF LIQUOR STORES IN AFRICAN AMERICAN NEIGHBORHOODS

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IT HAS BEEN ABUNDANTLY DEMONSTRATED that racial residential segregation is an enduring aspect of the urban landscape of the United States (Massey & Denton, 1993; White, 1983). Some theorists have begun to link racial segregation to racial disparities to health status (LaVeist 1989, 1992, 1993). However, the pathways connecting racial segregation to health disparities remain largely untested empirically. In this analysis we examine the relationship between level of racial segregation within an urban area and the location of off-premises packaged goods liquor stores. Such stores have been shown to be an important component of the “social infrastructure” that destabilizes communities (Scribner, MacKinnon & Dwyer, 1995, 1994; Colon, 1981; Harford, Parker, Paulter & Wolz, 1979; Smart, 1977).

Background

Alcohol use and alcohol-related problems have been found to be particularly high among African American men, the poor, and residents of large highly segregated cities (Barr, Farrell, Barnes & Welte, 1993; Herd, 1989; Lex, 1987; Moskowitz, 1989; Herd, 1991). Alcohol sales, consumption, and various alcohol-related problems have all been found to relate to the physical availability of alcohol, where physical availability refers to “the location, number and density of retail outlets that sell alcoholic beverages,” and “whether beverages are sold for off-premises use only, or for on-premises consumption” (Wallace & Brown, 1995). Problems associated with the physical availability of alcohol include assaultive violence (Scribner et al., 1995), motor vehicle accidents (Scribner et al., 1994), higher mortality rate from liver cirrhosis (Colon, 1981) and alcoholism (Harford et al., 1979; Smart, 1977).

It has been suggested that the relatively high number of alcohol-related problems that African Americans experience is due, at least in part, to the high level of alcohol availability in low income urban African American communities (Harper, 1976). Dawkins (1983) noted that, “an often discussed but under analyzed phenomenon in the urban setting in terms of its policy implications is the high visibility of liquor establishments in and near black residential neighborhoods” (p. 214). Although the physical availability of alcohol has received some attention in the popular press, our review of the scientific literature yielded only one study that empirically examined the physical availability of alcohol in African American communities (Dawkins, Farrell & Johnson, 1979).

The disproportionate concentration of off-premises establishments such as package liquor stores is significant in that these outlets typically sell alcohol chilled, served in larger quantities than in taverns or restaurants (e.g. 40 and 64 oz. bottles), and ready for immediate consumption—on the street corner, in a nearby park, or in a motor vehicle. This drinking pattern is more likely to result in excessive drinking, public drunkenness, automobile crashes, and physical altercations that result in injury or death. These are all alcohol-related problems that have a substantial impact upon African American communities (Herd, 1989, 1991; Watts & Wright, 1983).

Several scientific studies have examined the location, number and density of alcohol outlets, whether their products are sold for on or off-premises consumption, and the relationship of these characteristics to alcohol consumption and alcohol-related problems (Wallace & Brown, 1995; Dawkins, 1983; Gruenewald, Ponick & Holder, 1992; Rabow & Watts, 1982; MacDonald & Whitehead, 1983; Pfautz & Hyde, 1960). However, these issues, as they pertain to African American communities, have been largely ignored. In light of the relationship between the physical availability of alcohol outlets and negative social and physical health outcomes, the disproportionate share of alcohol-related problems experienced by African Americans, and the paucity of research on the availability of alcohol in African American communities, the purpose of the present research is threefold: (1) to examine empirically whether the physical availability of alcohol, through off-premises liquor stores is greater in predominantly black communities relative to predominantly white and racially integrated communities; (2) to investigate the extent to which the income status of the community residents mediates the relationship between community racial composition and alcohol availability; and (3) to explore whether the intersection of race and income status places low income African American communities at greater risk for alcohol availability through off-premises packaged stores.

Methods

We use census tract data from the city of Baltimore, MD to examine the racial and socioeconomic status patterns in the physical availability of alcohol. Baltimore's population of 736,014 residents is distributed among 203 census tracts. Census tracts are geographic areas designated by the US Census Bureau. They range in population from about 1200 to about 3500 persons. Nine census tracts were primarily non-residential areas (i.e. the downtown business district, areas devoted to tourism, and industrial areas). Because these nine census tracts have an inordinately high number of liquor licenses and a relatively low number of residents, they have an excessively high per capita number of liquor licenses. In order to prevent the findings from being unduly biased by these nine tracts, they were eliminated from the analyses. Thus, the final sample includes the 194 census tracts that are predominantly residential areas.

Data were abstracted from various official sources to produce the analytic database. Census tract data were based on 1990 US Census designations. Data on liquor licenses were obtained from the Board of Liquor License Commissioners for Baltimore City (BLLCBC).

The other variables used in this analysis include census tract racial composition and median income. The racial composition of the census tract is specified as percent black residents of the census tract. As the racial composition of the entire city is 59.2% African American and 39.1% white, other racial and ethnic groups comprise < 2% of the city's population. As such it can be stated that a lower percentage of blacks within a census tract indicates a higher percentage of whites. Median annual income is the aggregate median annual income of the residents of the census tract. It is specified as a continuous variable which ranges from \$2660 to \$64,976.

Results

Baltimore, like many of the nation's large cities, is highly segregated by race. Specifically, less than one-quarter (22%) of Baltimore's population lives in integrated (between 25 and 74% black) census tracts. In fact more than 45% of the population lives in predominantly (75% or more) black census tracts and nearly one-third (32%) lives in predominantly white census tracts.

In Table 22.1 we present results from regression analysis in which per capita off-premises liquor licenses was regressed on percent black. The analysis is presented as Model 1 of Table 22.1. The model indicates a significant positive relationship.

Table 22.1. Linear Regression Model of per Capita Liquor Stores Regressed on % African Americans Living in Tract and Median Income of Census Tract

Variable	Model 1	Model 2	Model 3
% Black	0.267 ($P = 0.0002$)	0.176 ($P = 0.02$)	0.110 ($P = 0.1$)
Median income		- 0.214 ($P = 0.005$)	- 0.139 ($P = 0.08$)
Interaction			0.202 ($P = 0.01$)
Model statistics	R^2 (Adj) = 0.07 $F = 14.80^*$	R^2 (Adj) = 0.10 $F = 11.68^*$	R^2 (Adj) = 0.12 $F = 9.95^*$

* $P < 0.05$.

Thus, census tracts with higher percentages of black residents have significantly more liquor stores per capita than do census tracts with a lower percentage of black residents.

In Model 2 we test the hypothesis that controlling for the median income level of the residents of the census tract will eliminate the relationship between census tract racial composition and the per capita number of liquor stores. The model indicates that controlling for median income reduces the strength of the relationship between census tract racial composition and per capita number of liquor store licenses; however, it does not eliminate the relationship. Racial composition and income status of a census tract are both independent predictors of per capita number of liquor stores.

Finally, in Model 3 we test the hypothesis that it is neither race nor income status alone, but rather their combination, that is important as an explanation for the relatively higher concentration of liquor stores within a given area. The analyses designed to test this hypothesis are presented as Model 3. The model presents a regression analysis specifying a multiplicative interaction term between % black in census tract and census tract median income. The significant effect of the interaction indicates that the effect of % black on per capita number of liquor stores differs by level of median income of the census tract.

To determine the nature of the income/race interaction we present two models in Table 22.2. In Model 4 an interaction between a binary version of income status is multiplied by % black. To produce the binary variable the continuous version of census tract median income was divided at the 50th percentile into lower and higher income. The low income binary variable is coded 1 for census tracts with median incomes below the 50th percentile and 0 for census tracts above. By multiplying the binary variable by % black, all higher income tracts are scored zero for

Table 22.2. Linear Regression Model of per Capita Liquor Stores Regressed on Interaction Between % African Americans Living in Tract and Median Income of Census Tract (Continuous Variable)

Variable	Model 4	Model 5
% Black	0.123 ($P = 0.2$)	0.183 ($P = 0.03$)
Median income	- 0.066 ($P = 0.2$)	- 0.174 ($P = 0.05$)
Low income \times % black	0.237 ($P = 0.01$)	
High income \times % black		- 0.058 ($P = 0.42$)
Model statistics	R^2 (Adj) = 0.12 $F = 9.1^*$	R^2 (Adj) = 0.11 $F = 11.68$

* $P < 0.05$.

the interaction, thus the interaction term in Model 4 produces a slope for the relationship between % black and per capita number of liquor stores among low income census tracts. In Model 5 the binary variable is reversed (0 = below the 50th percentile; 1 = above) to produce a slope for the effect of % black among higher income tracts.

In Model 4 we find a significant direct effect indicating that among census tracts with a median income level below the 50th percentile for the city, a higher percentage of black residents is associated with a greater per capita number of liquor stores. By contrast Model 5 finds a non-significant effect of the interaction, whereby a higher percentage of black residents is not associated with a higher per capita number of liquor stores.

Summary and Conclusions

In this study, we examined the extent to which liquor stores are more likely to be located in predominantly black census tracts. Our findings indicate that liquor stores are more likely to be located in predominantly African American communities. On the other hand, other research found that the more socially desirable establishments that sell alcohol (e.g. restaurants) were more likely to be located in predominantly white communities (Dawkins, 1983).

Given that African Americans in Baltimore are disproportionately poor and that liquor stores have been found to be concentrated in poor areas, analyses were performed to determine if community economic status, as well as racial composition, is an important predictor of the number of liquor stores. To test this hypothesis we

examined the relationship between census tract racial composition and per capita number of liquor store licenses, adjusting for census tract aggregate median income status. Both income status and racial composition of the census tract are related, independently, to the number of liquor stores. Specifically, low SES census tracts and predominantly black census tracts have significantly more liquor stores per capita than more affluent communities and predominantly white communities. Additionally, we hypothesized and confirmed that communities that are both low income and predominantly black have significantly more liquor stores compared with other communities.

Although it is beyond the scope of the present study, it should be noted that our data (not shown here) indicate that there are significant associations between the per capita number of liquor store licenses in a census tract and other social problems, including assaults, rapes, and homicides. Clearly it would be inappropriate to conclude on the basis of an ecological association that alcohol consumption is higher among African Americans in these communities. As we have demonstrated an association and not a cause-effect relationship, one may question the causal ordering of the relationships observed in our analysis. That is, could it be that demand for the products sold at these liquor stores is affecting supply, rather than supply inducing demand? Clearly the answer to this question can not be definitively determined without additional research. However, an example from research on crack cocaine use indicates that availability can increase use (Lillie-Blanton, Anthony & Schuster, 1993; Crum, Lillie-Blanton & Anthony, 1996). This seems a possible scenario in the case of alcohol as well.

There is also some speculation in the research literature (Harper, 1976) that the relatively high availability of alcohol in low income black communities may distort African American youths' perceptions surrounding appropriate levels of consumption of alcohol. Future research on the impact of alcohol in the social, psychological, and physiological health of low income urban African Americans, should examine in greater detail the ecological conditions that expose them to significantly higher levels of alcohol availability compared with whites.

Although the data analyzed in this study are from a single city and although no direct causal conclusions can be made, these findings suggest that the relatively higher number of liquor stores in lower income African American communities may be tied to the disproportionate share of alcohol-related problems experienced by residents of these communities. Accordingly, the availability of alcohol in poor black communities is an issue that policy makers, health professionals, clergy, community activists, and other concerned citizens must address in their efforts to reduce alcohol abuse and its sequelae in African American communities.

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