



Fast food and liquor store density, co-tenancy, and turnover: Vice store operations in Chicago, 1995–2008



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ABSTRACT

Fast food restaurants and liquor stores—vice stores—have been shown to be more prevalent in predominantly Black and low income U.S. neighborhoods, and are associated with a number of health risks and social ills. The purpose of this study was to investigate in the City of Chicago vice store density and spatial distribution as a function of racial, socioeconomic, and other population characteristics; to examine spatial clustering among these outlets; and to study how store turnover follows population change over a 13-year period. We used spatial point process analysis to fit linear and non-linear models for the intensity function of stores. Spatial clustering was estimated using the K function. We found heterogeneous associations between stores and population characteristics, with the most consistent finding being a positive association between percent Black and liquor store exposure. A high degree of spatial clustering was evident, and liquor stores were more likely to stay in business over time than fast food restaurants. However, when liquor stores closed, they were more likely to be replaced by non-vice businesses. Results suggest that vice stores are associated with lower positions in racial and socioeconomic hierarchies, and this patterning is often durable over time.

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Chicago's Grand Boulevard neighborhood traverses an area encompassed by Pershing (East 39th St.), Cottage Grove, Calumet, and 43rd St. Ethnographic work conducted in 2000 (St. Jean, 2007) revealed a relatively restricted set of businesses in the area: in one tour of the community, liquor stores appear six times, take-out restaurants thrice. Also common were small grocers, dollar stores, barber and beauty shops, laundromats and check cashing stores. Elsewhere in Chicago, the Englewood neighborhood is reportedly the site of 63 fast food restaurants and 23 food and liquor stores within 6 square miles, encouraging residents "to buy the cheeseburger for a dollar ... Eating like that you can feed a whole family" (Chicago Policy Research Team, 2010, p. 16).

Research suggests that these neighborhoods are not anomalies. A review of 40 studies on fast food and population generally found that fast food restaurants are prevalent in low-income and racial and ethnic minority areas in the U.S. and Canada (Fleischhacker, Evenson, Rodriguez, & Ammerman, 2010). In one subsequent

study (Richardson, Boone-Heinonen, Popkin, & Gordon-Larsen, 2012) national data revealed a variable portrait of food resources (fast food, groceries, supermarkets, and convenience stores) across urban contexts. For example, using proportion of developed land to define high, compared to low density urban areas, findings suggested that all resource types were more prevalent in high density areas, but this was not true when those areas also had high proportions of minority residents; neighborhood poverty was not associated with access, but percent minority was inversely related to access; fast food was most available in high poverty neighborhoods, and areas with greater minority populations incurred additional exposure still; and finally, in high-density, high-minority urban areas, fast food was less prevalent in high, rather than low poverty neighborhoods. The authors argued that food store siting is therefore driven by complex social and economic drivers. That is, food resources do not appear to hew to a consistent and rigid line cast either by race or area socioeconomic position; siting varies at the intersection of the two, by store type, and by land use.

Regarding liquor stores, location is also associated with race and area income. In Baltimore, off-premise per capita licenses were positively associated with percent Black, after controlling for

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median household income (LaVeist & Wallace, 2000). Nationally, a continuous density map of alcohol retailers across the U.S. showed socioeconomic disadvantage, percent Black and percent Latino all to be strongly and positively associated with store density in a nonlinear fashion, with much steeper rises at the highest levels (Berke et al., 2010). Moreover, demand did not appear to be the likely driver, because the associations were essentially absent in non-urban areas. Indeed, research has shown that demand plays little role in retail access in Black neighborhoods—in New York City, areas with more Black residents had less access to a wide variety of retail stores, and overexposure to fast food, after accounting for census characteristics and retail demand (Kwate, Loh, White, & Saldana, 2013).

The disproportionate density of vice stores—fast food restaurants and liquor stores—carried by African American, Latino, and low income neighborhoods bodes ill for health and well-being in those communities. Effectively intervening in population health requires an analysis of what puts people at risk of risks (Link & Phelan, 1995), and neighborhood context is critical in this regard. Liquor store density is associated with three times the odds of at-risk drinking (Theall et al., 2011) and alcohol outlets are spatially linked to social disorder, crime and violence (Conrow, Aldstadt, & Mendoza, 2015; Cunradi, Mair, Ponicki, & Remer, 2012; Schofield & Denson, 2013; St. Jean, 2007; Theall et al., 2011; Toomey et al., 2012). Though findings are mixed, a number of studies provide evidence on the health risk of adult exposure to fast food in the form of cardiovascular outcomes (Alter & Eny, 2005; Morgenstern et al., 2009), BMI and obesity risk (Bodor, Rice, Farley, Swalm, & Rose, 2010; Dubowitz et al., 2012), dietary intake (Jeffrey, Baxter, McGuire, & Linde, 2006; Li, Harmer, Cardinal, Bosworth, & Johnson-Shelton, 2009; Moore, Diez Roux, Nettleton, Jacobs, & Franco, 2009), and overall mortality rate (Daniel, Paquet, Auger, Zang, & Kestens, 2010). Among children, some studies have failed to document a relationship between fast food exposure and overweight (Fraser & Edwards, 2010; Lee, 2012) but others show fast food to be associated with obesity and BMI (Currie, DellaVigna, Moretti, & Pathania, 2009; Davis & Carpenter, 2009; Fraser, Clarke, Cade, & Edwards, 2012).

In this paper, we study how retail risk changes when a city's population changes. Specifically, we investigate density, clustering, and business turnover of vice stores as a function of neighborhood racial and socioeconomic characteristics in Chicago. We were particularly interested in whether declines in Black residents would be associated with fewer vice outlets. As noted earlier, complex drivers produce spatial patterning of food stores, and the same is true for alcoholic beverages. That Black neighborhoods face differential exposure to fast food and liquor outlets after accounting for income, demand, land use and other population and geographic characteristics suggests that purposeful targeting is one driver. Alcohol companies have sought to profit from human misery in Black communities (Weems, 1998) and have developed targeted marketing to do so (Alaniz & Wilkes, 1998; Altman, Schooler, & Basil, 1991; Kwate, 2007; Mitchell & Greenberg, 1991). Moreover, even in the absence of purposeful targeting, the downstream effects of residential segregation—including lower rents and less political power—make it likely that fast food will proliferate in Black neighborhoods (Kwate, 2008). Taken together, racial patterning in vice store locations is driven by both indirect and direct mechanisms that make Black neighborhoods more likely as vice store destinations.

1. Neighborhood and retail change in Chicago

If vice stores are retail staples in Black neighborhoods, what happens when Black neighborhoods change? Wealth buys some

degree of isolation from the nuisance of fast food (Smoyer, Spence, & Amrhein, 2006); an increase in affluent residents in a neighborhood should result in fewer such restaurants. Chicago is ideally suited to study retail and neighborhood change, a city that is at once sclerotic in the reduction of racial segregation and yet changing in several significant ways. Disadvantage is stubborn in Chicago communities: poverty in 1960 and 2000 were correlated at 0.78, and in those 40 years, not one community changed from predominantly Black to White, giving Chicago the distinction of not only high segregation levels, but also of durability that is potentially anomalous (Sampson, 2012). On the other hand, some neighborhoods once characterized by vacant rail yards and dilapidated single-room-occupancy hotels now boast condos and chic restaurants (Sampson, 2012), and similar changes were apace in communities where large housing projects once stood (Miller, 2008; Pattillo, 2007). It remains to be seen, then, whether large-scale changes in housing infrastructure and increasing gentrification will produce the kinds of predominantly Black-to-White neighborhood change seen in other large cities such as New York.

If neighborhood affluence increases, or the proportion of Black residents decreases, this may result in decrements in vice store density, as retail corridors change to suit new residents' perceived tastes. On the other hand, stigmatizing neighborhood reputations are durable, locking communities into processes that reproduce inequality and negative conditions such as poverty, crime and disorder (Sampson, 2012). Because Black neighborhoods in Chicago generally remain Black, it is possible that influxes of White or affluent residents may not be enough to entice new retailers into changing neighborhoods.

2. Study aims

Our aim was to investigate the spatiality and turnover of vice stores in Chicago between 1995 and 2008. Building on studies that have examined either fast food or liquor, we investigate their density jointly, asking the following questions: First, concordant with extant literature, is vice store density at either point in time associated with the proportion of Black residents, after controlling for population characteristics related to retail siting (i.e., median household income, median age, population density)? Second, do fast food and liquor stores display mutual co-tenancy? Preferred co-tenancy refers to retailers' desired proximity to other store types. For example, shoe stores reportedly seek proximity to dress stores and banks desire locations near grocers (Teska Associates, 2012). One study showed that varied food retailers (e.g., pharmacies, groceries, fast food) in the Washington, D.C. metropolitan area tended to cluster spatially, with fast food restaurants being 22% more likely to have another fast food restaurant as its nearest neighbor than would be expected by chance (Leslie, Frankenfeld, & Makara, 2012). We examined whether fast food was spatially clustered not only to itself, but to liquor stores. Indirectly, the downstream effects of segregation may produce environments amenable to both fast food and liquor; directly, both industries may target Black communities due to stereotypical perceptions that residents find these products desirable. Indeed, industry pundits have argued that in Black neighborhoods, fast food restaurants garner high sales when proximal to liquor stores (Melaniphy, 2007), suggesting that these vice outlets are mutually reinforcing. We therefore sought to examine whether fast food and liquor stores tend to co-locate, and cluster spatially in Chicago, and if so, whether that clustering varies by population characteristics. Third, what population characteristics (e.g., increases in White residents) and store characteristics (e.g. liquor vs. fast food) predict the likelihood of a store turning over, and what characterizes the persistence of vice stores? That is, what differentiates the arrival of yet another

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