



Fast food landscapes: Exploring restaurant choice and travel behavior for residents living in lower eastside Detroit neighborhoods



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ABSTRACT

As the U.S. battles a public health crisis centered on obesity and diet-related diseases, the role of urban foodscapes and available food outlets on choice and consumption is an area of research interest. Restaurant dining provides opportunities for consumption of excessive calories, especially when healthful alternatives are not on the menu. This study analyzes the results of a travel survey in Detroit to examine a) the frequency of restaurant dining, b) the proportion of restaurant dining which is fast food, c) travel behavior including mode of travel and distance traveled. Sixty percent of respondents reported traveling to a restaurant at least once per week, and the majority of those trips were to nearby fast food restaurants. We found that more frequent restaurant dining was related to a higher BMI and the presence of children in the home, and that respondents with higher incomes were more likely to travel farther outside the neighborhood to seek out preferred dining locations. The findings suggest lower income residents may be more susceptible to the available options in the neighborhood than those with higher incomes and/or greater mobility.

1. Introduction

Studying the spatial patterns of food environments has become a popular subject in current public health and food justice research. Many Midwest U.S. cities continue to be characterized by severe urban disinvestment and decline, creating a context where households and local governments are forced to do more with less. In Detroit, for example, while pockets of the city are seeing reinvestment, including by chain grocers and restaurants, some question whether this investment spills over to benefit the average city resident (Reese, Eckert, Sands, & Vojnovic, 2017). Of particular interest is how the composition of the local food environment in such disadvantaged locations might impact diet and health outcomes, including obesity and other diet-related diseases. The purpose of this study is to explore the frequency, mode and distance of travel to restaurants by a representative sample of Detroit residents and examine relationships between such travel and other socioeconomic characteristics of the respondents. Food access is defined as the ability to obtain the services of food providers (Dai & Wang, 2011). As such, factors including the financial means to purchase food items and the mobility to reach desired food providers are significant, and therefore this study emphasizes socioeconomics and mobility (in the form of car ownership) in the research.

1.1. Obesity and diet-related diseases

A primary reason for researching food access and travel behavior is the impact that diet has on health. In 2012, 34.9% of adult Americans were obese, along with 16.9% of youth (Ogden, Carroll, Kit, & Flegal, 2014). By 2030, 65 million more obese adults are expected in the U.S., with projections of an excess of 8 million cases of diabetes, 6 to 8 million cases of coronary heart disease and stroke, and more than 500,000 cases of cancer, with associated medical costs expected to increase by \$66 billion a year (Wang, McPherson, Marsh, Gortmaker, & Brown, 2011).

There are health disparities among income groups (Baeten, Van Ourti, & Van Doorslaer, 2013; Smith, 2004) and racial and ethnic groups, which is noteworthy when examining highly segregated urban environments like the Detroit metropolitan area (Vojnovic & Darden, 2013). Nationally, non-Hispanic blacks have the highest rates of age-adjusted obesity rates at 47.8%, followed by Hispanics at 42.5%, non-Hispanic whites at 32.6%, and non-Hispanic Asians at 10.8% (Ogden et al., 2014). Type 2 diabetes, a preventable disease for which overweight and obesity are established risk factors, accounts for up to 95% of all diagnosed cases of diabetes among adults (CDC, 2017). Specifically, the crude rate of type 2 diabetes for adults is 15.1% for American Indians and Alaskan Natives, 12.7% for blacks, 12.2% for Hispanics, 8.2% for Asian Americans, and 7.5% for whites (*ibid*). In the U.S. in

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2015, 30.3 million people (12.3% of the U.S. population) had diabetes, including 7.2 million people estimated to be living with diabetes but undiagnosed (*ibid*). Spatial clusters of high diabetes-related mortality in the U.S. are associated with low socioeconomic status, a large proportion of African American residents, and a high density of fast food restaurants (Turi & Grigsby-Toussaint, 2017).

In the city of Detroit, the obesity prevalence is 37%, six points higher than the state average. Only 30% of adult Detroit residents are at a healthy weight. 14.6% of Detroit residents have been diagnosed with diabetes, and 11.5% with cardiovascular disease (Michigan Department of Health and Human Services, 2015).

1.2. Food choice, outcomes, and the role of the built environment

Papas et al. (2007) found that 17 out of 20 studies they reviewed on the connection between the built environment and obesity identified a relationship. While several characteristics of the built environment may contribute to poor health outcomes, food sources are one component. Characteristics of the supply side of the urban food environment, as summarized by Dixon et al. (2007), include the wide availability of food that is high in fat, sugar, and salt; relatively lower prices for processed foods than whole foods; and domination of corporate-owned food outlets, such as fast food restaurants, which emphasize convenience and large portion sizes. While food deserts are difficult to define spatially or quantitatively, a collective understanding is that they are “poor urban areas, where residents cannot buy affordable, healthy food” (Cummins & Macintyre, 2002).

The food desert/food access research has expanded from assessments of proximity to food retail (Chung & Myers, 1999; Eckert & Shetty, 2011; Giang, Karpyn, Laurison, Hillier, & Perry, 2008; Wrigley, 2002; Wrigley, Warm, & Margetts, 2003) to more complex and comprehensive research that uses information regarding actual travel behavior to understand how residents navigate these foodscapes (Auchincloss, Riolo, Brown, Cook, & Diez Roux, 2011; LeDoux & Vojnovic, 2013, 2014; Rose, 2011; Vojnovic et al., 2013). Food access is related to childhood obesity (Alviola, Nayga, Thomsen, Danforth, & Smartt, 2014; Galvez et al., 2009; Lee, 2012; Salois, 2012), health of low-income individuals (Cotti & Tefft, 2013; Drewnowski & Specter, 2004; Gordon et al., 2011; Lovasi, Hutson, Guerra, & Neckerman, 2009), and equity and racial justice (Dunn, 2010; Kwate, 2008; Passidomo, 2013; Zenk et al., 2014).

Much of the literature finds that the presence of food outlets such as grocery stores carrying healthful food options has a positive effect on individuals (Ahern, Brown, & Dukas, 2011; Lamichhane et al., 2012; Laraia, Siega-Riz, Kaufman & Jones, 2004; Morland & Evenson, 2009), thus the equitable spatial distribution of such outlets is ideal. However, several studies find that the availability of food outlets carrying healthful food options is lower in low income and minority neighborhoods (Algert, Agrawal, & Lewis, 2006; Dai & Wang, 2011; Galvez et al., 2008; Helling & Sawicki, 2003). Residing in a food desert may not by itself fully explain obesity prevalence; obesity patterns in Detroit, for example, do not appear to significantly overlap with areas designated by the USDA as food deserts (Koh, Grady, & Vojnovic, 2015). Other research from Detroit found that residents surrounded by a higher number of supermarkets did not have a lower BMI than those living with fewer such outlets (LeDoux, Vojnovic, Manning Thomas, & Pothukuchi, 2016).

Restaurants play a key role in the foodscape, and in general eating at restaurants is often associated with consumption of more calories and fat, and fewer micronutrients (Lachat et al., 2012). The average American consumes 2044 calories per day, with 209 calories coming from restaurants with waiter service and 264 coming from fast food, and an average of 31% of daily calories coming from sources outside the home (Lin & Mentzer Morrison, 2012). The average adult fast food meal purchase contains around 900 calories (Block et al., 2013; Brissette, Lowenfels, Noble, & Spicer, 2013). Taste and convenience are the most common reasons individuals give for going to fast food restaurants (Lucan, Barg, & Long, 2010; Rydell et al., 2008), and

convenience and affordability sway individuals to consume fast food even when they are aware of the potentially negative implications (Lucan, Barg, Karasz, Palmer, & Long, 2012). Fast food chains have a history of targeting marketing towards children (Nestle, 2006), and the presence of children in the home may be one reason why busy parents turn to fast food.

Much of the existing literature on restaurants focuses on spatial patterns of, and proximity to, fast food. With an absence of healthier alternatives, some researchers conclude that low income and minority neighborhoods have a higher exposure to unhealthy food outlets (Block, Scribner, & Desalvo, 2004; Kwate, 2008; Lewis et al., 2005; Pearce, Blakely, Witten, & Bartie, 2007; Smoyer-Tomic et al., 2008). Freeman (2007) writes that “the overabundance of fast food and lack of access to healthier foods ... have increased African American and Latino communities’ vulnerability to food-related death and disease. Structural perpetuation of this race- and class-based health crisis constitutes ‘food oppression’”. Some fast food chains charge slightly more for their products in food, as opposed to more affluent areas (Leschewski & Weatherspoon, 2014).

The research findings on the impact of fast food density and locations are mixed. Some studies show no correlation between proximity to fast food and obesity (Burdette 2004; Dunn, 2010) while others do find a correlation between the number of fast food restaurants in an area and obesity rates and/or undesirable health outcomes (Alviola et al., 2014; Boone-Heinonen, 2011; Lhila, 2011; Morland & Evenson, 2009). Some studies find a relationship between proximity of fast food restaurants and consumption (Boone-Heinonen, 2011; Dunn, Sharkey, & Horel, 2012), while others do not. The body of literature is robust but demonstrates that additional study into these topics is needed, based on the myriad social, cultural and economic factors that shape place and food behavior.

1.3. Study purpose

While research has shown that residents go outside the neighborhood to access full service grocers (LeDoux & Vojnovic, 2013, 2014; Rose, 2011; Vojnovic et al., 2014) we do not yet know if the same holds true for dining out at restaurants. This analysis will focus on dining-out behavior, exploring all restaurant types, of residents in disadvantaged lower eastside urban Detroit neighborhoods experiencing severe disinvestment and decline. Much of the literature focuses on where the restaurants are, but lacks the data to analyze actual individual behavior (i.e., frequency of trips to specific restaurant locations). This survey collected information on specific dining-out locations, with the actual restaurant sites verified, including through site-surveys, and geocoded. Thus, this research adds to the literature by analyzing actual dining-out behavior as opposed to extrapolating travel assumptions and frequency of visits to restaurants based on their concentration within neighborhoods. The study also examines the role of respondent characteristics such as income, children in the home, and car access, as these may be individual factors in the decision/ability to dine out. Specifically, the research questions posed are: 1) what is the frequency of restaurant dining? 2) what is the proportion of restaurant dining that is fast food? 3) what is the spatial pattern of restaurant travel? 4) what are the relationships between the travel behavior and the demographics of the respondents?

2. Data and methods

2.1. Study area

Detroit has faced a myriad of urban problems in the last 70 years, including racial segregation and discrimination, deindustrialization, and depopulation (Vojnovic & Darden, 2013; Sugrue, 1996; Darden, Hill, Thomas and Thomas 1987). The poster child for post-industrial decline, the city has lost well over half of its 1950 peak population of

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