Understanding and projecting the restaurantscape: The influence of neighborhood sociodemographic characteristics on restaurant location

Yang Yang, Wesley S. Roehl*, Jing-Huei Huang

School of Sport, Tourism and Hospitality Management, Temple University, Philadelphia, PA, 19122, United States

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ABSTRACT

To better understand the location patterns of different types of restaurants across the United States, we investigate the relationship between neighborhood sociodemographic characteristics and restaurant location using a unique data set from 2013 covering 30,772 U.S. zip codes. The estimation results from negative binomial regression models confirm the significant impacts of various sociodemographic factors (e.g., population density, median age, median household income, average household size, educational attainment, gender distribution, housing tenure, neighborhood urbanization) on restaurant location. We also project future restaurant growth potential based on model estimates and projected changes in sociodemographic characteristics by 2020. The results are analyzed, and several metropolitan areas in Texas and Florida are identified as having high potential for growth. Lastly, implications are provided for restaurant real estate practitioners.

1. Introduction

Researchers have consistently ranked location as one of the most influential factors for restaurants' long-term business prosperity. A superior location is associated with higher customer purchasing intention (Leung and Cheuk, 2000; Lim and Loh, 2014), higher customer satisfaction (Haghighi et al., 2012), and a higher level of customer loyalty and retention (Prendergast and Man, 2002). Additionally, several authors (Moutinho and Paton, 1991; Roehl and Krauss, 1993) have noted that location interacts with management strategy. While less dedicated or innovative management may be able to succeed in a prime location, superior management skills are often needed merely to break even in a less desirable area. Because restaurants provide somewhat homogeneous products and services, intense competition and limited product differentiation force restaurants to leverage site selection for a competitive advantage (Kincaid et al., 2010; Parsa et al., 2011). Thus, there is a huge demand for detailed analysis of restaurant location patterns and identification of specific location determinants.

When analyzing restaurant location, certain factors must be considered to ensure a well informed decision, including cost, traffic flow, ingress, parking, visibility, demographics, competition, and municipal regulations (Tarras, 1991). Restaurant location not only determines customers' access to certain products/service providers (Smith, 1983, 1985); it also shapes restaurants' relative proximity to other competitors/collaborators. When restaurants are situated close to one another, they may enjoy economies of agglomeration. A single restaurant can attract more customers and improve its business simply by being located near other restaurants (Parsa et al., 2011). To set themselves apart from competitors, restaurants can also use location strategies to cater to a specific market and particular dining preferences, which vary by a neighborhood's geodemographic characteristics (e.g., race, income, residential history) (Pillsbury, 1987). Restaurant location and its determinants provide valuable information for restaurant investors and operators regarding market access to potential guests and market competition within a particular area.

Location is a strategic decision, one that literally anchors an establishment to a point in space. Therefore, a poor decision about location cannot be easily, quickly, or cheaply remedied. The process of finding a suitable location is further complicated by assessment of current demand characteristics and how they are likely to change over a 10- or 20-year period. Although location is paramount to a restaurant's success, relatively few empirical studies have investigated restaurants' location patterns and the extent to which different factors shape those patterns (Cella, 1968; Chen and Tsai, 2016; Darley/Gobar Associates, 1969; Powell et al., 2007b; Prayag

et al., 2012a,b; Tzeng et al., 2002). To bridge this empirical gap, the present study investigates the relationship between neighborhood sociodemographic characteristics and restaurant location patterns using a negative binomial regression model based on U.S. zip code-level data. Furthermore, we use model estimates and projected changes in sociodemographic factors to predict future restaurant business growth potential for each U.S. zip code. By doing so, we expect to make at least three significant contributions to the current restaurant management literature. First, this study evaluates nationwide restaurant location patterns on a precise geographic scale covering 30,772 U.S. zip codes, which provides abundant information on restaurant location at the neighborhood level. Second, by using a rich data set that includes detailed information about each individual restaurant, we are able to compare location patterns of different restaurant types, which may prove crucial in facilitating future restaurant location selection. Lastly, we present an integrated means of forecasting restaurant business growth potential for generic and specific establishments. Information on over 80 different types of restaurants is incorporated into an online web-geographic information systems (GIS) platform that can provides timely query and visualization of these forecasts. Along with dramatic sociodemographic changes in populations at the national and local levels (Iceland et al., 2013), the identification of superior neighborhoods for new investment opportunities is particularly important to practitioners.

2. Literature ReviewLiterature review

2.1. Restaurant location analysis

Two major location theories in business and retail geography can be applied to restaurant location patterns. First, as stated in central place theory, business units are not uniformly located. We should therefore anticipate that business units will organize around demand; to that end, locations with greater demand will generate more business units and a wider variety of business types than locations with less demand (Litz and Rajaguru, 2008). Second, spatial interaction theory highlights three major factors that shape retail location: demand factors, retail attractiveness, and market accessibility (Nakaya et al., 2007). Both theories underscore the importance of demand-side factors. In restaurant location analysis, these factors include traffic, population, and market geodemographics (Pillsbury, 1987; Prayag et al., 2012a,b; Smith, 1983, 1985). Different types of restaurants use distinct location strategies to target certain markets (Smith, 1983, 1985). For instance, Smith (1985) found that fast food outlets and doughnut shops are strongly oriented toward major arterials, suggesting that they cater to a mobile population of workers and shoppers. Pizzerias are often located close to residential areas, and a high degree of visibility near main arterials ensures frequent to-go orders and convenient home delivery for customers (Smith, 1983, 1985). Based on the distribution of restaurants in Atlanta, GA, Pillsbury (1987) proposed a restaurant location model in which three factors were thought to affect a location's success: accessibility, ambiance, and socioeconomic indicators. Moreover, he pointed out that restaurants were influenced by more specific factors depending on the types of food they served. Pillsbury (1987) suggested that leasers' perceptions lead to high restaurant turnover in high-rent and affluent communities because they tend to project an *au courant* image through their tenants.

Guided by community typology theory in urban studies, Neal (2006) investigated the restaurantscape in 243 American cities to understand cities' consumption spaces. He clustered cities into four categories along two intersecting dimensions, restaurant availability and culture, with the latter reflecting the concentration of highly standardized restaurants designed for mass consumption.

Moreover, using a longitudinal data set to identify restaurants' development and potential locations, Prayag et al. (2012a,b) underscored clustered spatial patterns of restaurants within the central business district and new area in Hamilton, New Zealand. They assumed that the increased agglomeration of restaurants could be explained by the population's increasing size and heterogeneity, available retail provisions, and changes to planning policies over time.

Because food is often analogous with cultural and ethnic differences, it is important to understand the role of ethnic entrepreneurs in restaurant creation (Nakaya et al., 2007). Portes (1995) theorized a process wherein ethnic entrepreneurs gain entry to the restaurant industry by using cultural capital such that their knowledge of foodways outside the mainstream provides a competitive advantage. Restauranteurs supplement this knowledge with their social capital of kin and fictive kin networks that allow them to combine capital and labor. They also practice self-exploitation; long hours and low wages allow them to turn sweat and kin loyalty into capital. The distribution patterns of ethnic restaurants in North America are influenced by a host of demand generators: higher income and education levels, which inherently support more ethnic restaurants; tourism (i.e., areas that receive more tourism tend to support more ethnic restaurants); regional patterns of contact and diffusion; and regional culture (Zelinsky, 1985). These patterns are not static. Ethnic succession can be observed over time, with entrepreneurs (and cuisine) from one ethnic group being replaced by those from another (Nash, 2009; Ray, 2005). Interestingly, the distribution of ethnic group membership seems to be important for less popular ethnic cuisines but not necessarily for the most dominant cuisines in North America, namely Chinese, Italian, and Mexican (Zelinsky, 1985).

Other studies have described operational models that facilitate restaurant location choice. Muller and Inman (1994) proposed an innovative method of using GIS to determine location choice. Fisher (1997) outlined an integrated site selection model for restaurant franchisees that incorporated a variety of factors including a location's demographic profile, transportation support, accessibility and visibility, physical attributes, traffic flow, clustering of competitive stores, and economic indicators. Tzeng et al. (2002) used the analytic hierarchy process (AHP), which consisted of five aspects and 11 criteria, to develop a location evaluation hierarchy for a restaurant in Taipei. Their specifications were as follows: aspects of transportation, commercial area, economic factors, competition, and environmental factors; and criteria of rent cost, transportation cost, convenience to mass transportation systems, parking space size, pedestrian volume, number of competitors, competition intensity, size of the commercial area where the restaurant is located, extent of public facilities, convenience of garbage disposal, and sewage capacity. By evaluating the importance of each criterion, this optimization method helped decision-makers to evaluate alternative locations for restaurants and compromise under complicated conditions. Relatedly, Park and Khan (2006) study proposed a decision-making process for restaurant site selection. Demographics and market site statistics such as accessibility, cost, competition, and neighborhood demographics were integrated into the location decision. In a more recent paper, Chen and Tsai (2016) developed a data mining framework consisting of four stages with five categories to support restaurant location selection: demographics, market conditions, store expenses, store conditions, and accessibility conditions.

2.2. Neighborhood sociodemographic characteristics and restaurant location

Studies have investigated the relationship between restaurant demand and household sociodemographic factors (e.g., income,