

The Economics of Supermarket and Grocery Store Location

There has been little consideration of the economics behind the variation in food access across areas. It is important to understand the economic conditions that may contribute to food deserts—that is, the costs that food retail businesses face and the choices available to consumers who want to buy foods. This chapter outlines an economic framework for considering food access and why some areas may have limited access. This framework considers the consumer and demand factors, business and supply factors, and the market conditions that interact to create differences in the food retail environment across areas and subpopulations. The chapter then provides a broad overview of the history of supermarket development that captures how food retailers have responded to different demand, supply, and market conditions. ERS, through the National Poverty Center at the University of Michigan, commissioned a paper to consider the economic framework of food deserts (Bitler and Haider, 2009). This chapter draws heavily from that paper.

Consumer Behavior and Demand Factors of Food Access

Food in general is considered to be a normal good—that is, demand for it increases as income increases. Given that food is a normal good, it should not be surprising that high-income areas have relatively more foodstores and restaurants than low-income areas. Price is also a major determinant of food demand. The higher the price of a food, the lower the quantity demanded. On the other hand, the higher the price of a substitute food, the higher demand will be for that food item. Given the budget constraints of low-income consumers and the prices of some specific foods, low-income consumers may substitute higher priced goods with lower priced goods (e.g., hamburger for steak or canned fruits for fresh fruits).

Travel costs and time costs of acquiring food as well as the time costs of preparing foods are also likely to affect demand for particular foods. The convenience of eating restaurant food or a prepared meal versus eating at home may be an important part of demand for food. Even for foods prepared at home, there may be relatively greater time costs than those for prepared foods or takeout foods. Consumers may value the convenience of a fast food or prepared meal more because it does not require spending much time to prepare.

Demand for some foods could be affected if individuals do not know which foods are healthy or unhealthy or if individuals do not know how to use or prepare some foods. Tastes for different foods, or preferences as economists call them, may also drive demand and store location. For example, foodstores that sell many Asian or Hispanic food products are often located in areas where there are high concentrations of people of Asian or Hispanic descent, presumably because demand for those foods is high in those areas.⁴²

⁴²This is a bit of a chicken and egg problem—people of a specific ethnic decent may choose to live in an area where they have relatively easy access to the foods they wish to consume. We discuss this further later in this chapter.

Consumers choose where to live and thus, choose the food environment available to them. Clearly, the choices of the poor, especially those living in extreme poverty, are constrained by their budgets. But even among the poor, there are choices in where to reside. This choice is an aspect of food access that is not well considered in the literature. Not accounting for residential choice limits the ability to assess whether limited access to affordable and nutritious food affects food shopping, diet, and health outcomes. If two people are equal in all other manners, the one who places a high value on access to a large supermarket is probably more likely to live in an area where those things are available relative to another who values food-related amenities less and perhaps other amenities more.

Food Retailer Behavior and Supply Factors of Food Access

In general, supply is driven by the costs of input goods—in this case, the land, materials, machines, and labor needed to build and operate a grocery store and the costs of products to stock the shelves. As these costs increase, supply decreases. Economic theory considers fixed costs (costs that do not change as the quantity of output changes, such as the land and materials needed to build a store) and variable costs (the costs of operating that change as the quantity of output changes). Differences in fixed or variable costs across areas could impact the types of stores and products available.

Food retailers that face higher fixed costs will either need to charge a higher price for goods sold or limit the range of products sold (Bitler and Haider, 2009). Fixed costs faced by food retailers probably vary greatly by the type of area. In dense urban areas, land prices may be higher and zoning requirements of local governments may be more cumbersome and costly to meet relative to less dense suburban and rural areas. Consequently, it is likely that the fixed costs in urban areas are greater. Further, the volume of sales in a store could affect how much fixed costs matter to firms. For example, stores that serve a higher volume of consumers (either in the number of consumers or in terms of the amount they purchase) will be able to spread fixed costs over more people and prices may be lower than in stores that serve lower volumes of consumers. This could explain why some rural, less populated areas do not have stores or why some foods may not be stocked in low-volume stores, especially foods that perish.

If fixed costs drive store location decisions or the types of products sold, then the fixed costs should be higher in low-income areas if these areas are underserved. Within urban areas, for example, low-income areas are likely to have lower land prices than high-income areas. In this case, it would be surprising to find that land costs leave some poor areas without access. It is possible that zoning requirements or security costs are higher in poor areas and thus more important for stores to locate in those areas (regardless of size) (Bitler and Haider, 2009).

In the United States, supermarket competition within a market region may be characterized by a small number of chain supermarkets accounting for a large share of the market sales and a large number of smaller “fringe” stores, which account for lower total market sales (Ellickson 2005 and 2007; Smith 2004 and 2006). Ellickson (2005 and 2007) argues this is

consistent with an endogenous fixed-cost economic framework, as when large food retailers incur (take on) fixed costs to keep competitors from entering the market. Such fixed costs could come in the form of offering a larger variety of products (increasing shelf space and improving distribution systems), carrying higher quality products (e.g., organic products), or paying advertising costs to differentiate from competitors. The smaller fringe stores do not incur these costs but survive by being more densely distributed (e.g., small corner stores that offer convenience over variety or quality) and/or by gaining business from consumers who may not value quality or variety as much, or who perhaps cannot afford to. Ellickson (2005 and 2007) finds evidence that this model may describe the supermarket landscape across the United States.

One major variable cost for operating a foodstore is the cost of hiring workers. Poor areas are often areas with relatively lower wages, which should reduce the costs to operate a store, all else equal. King et al., (2004) find that stores serving low-income shoppers (stores with greater shares of revenue from SNAP participants) have significantly lower payroll costs as a percentage of sales than stores that do not serve as many low-income shoppers.

King et al., (2004) find that operating cost structures of stores with higher portions of total revenues from SNAP redemptions are different than those of other stores. For example, the stores had lower labor costs but also lower sales margins, and they were more likely to be supplied by wholesalers than to be part of a large chain with its own supply chain. However, overall operating costs for these stores were not different than other stores.⁴³

Economies of scale, economies of scope, and economies of agglomeration may also explain why product availability is differentially concentrated across areas or stores (Bitler and Haider, 2009). Economies of scale, which is when the costs of operating a store decrease as store size increases, and economies of scope, which is when the costs decrease as more product variety increases, suggests that larger stores that offer greater variety can do so and offer lower prices. Both factors may account for the ability of larger stores to survive more easily than smaller stores. For example, if wholesale costs to stock store shelves are lower for larger stores because they can buy in bulk and buy a greater variety of products more cheaply, larger stores may be able to lower prices and smaller stores may not be able to compete. This does not explain, however, why larger stores do not locate in low-income areas.

In a competitive marketplace, firms selling the same products may have a disincentive to locate near each other. But this may not always be the case. Economies of agglomeration, where the costs of operating a store are lower when a store is located near other stores (e.g., because of roads or distribution systems), may explain why stores are concentrated in some areas and not in others.

The Market

The market is where consumers and suppliers meet, their interactions determining the prices paid and the products bought and sold. The most

⁴³Fixed costs were not considered in this study.

basic economic models assume that markets are perfectly competitive and that food retailers and consumers do not have control over price. In such a case, it is possible that if demand is sufficiently low, retailers would not be willing to supply products because they could not sell them or could only sell them at higher prices.

It is possible that food retailers actually have some market power, especially in settings where there are few competitors. If so, then retailers would have an incentive to increase price and restrict quantities to increase profits. Supply-side conditions, such as high fixed costs or economies of scale, could lead to food retailers having market power (Bitler and Haider, 2009).

It is possible that the supply-and-demand conditions are such that the market does not operate efficiently—that some intervention could be implemented that would improve circumstances for both retailers and consumers. A market failure could arise, if for example, there is poor information on the part of suppliers about the foods that consumers in an area will demand (for a given price). For example, if the models that supermarkets use to predict sales in an area do not adequately capture potential sales in low-income areas as some have suggested, better information on the potential sales could lead to more stores or products offered in those areas (Drake, 2009; Policy Link, 2007).

Supermarket “redlining,” which has been suggested as a possible reason some low-income or minority areas lack larger stores, could also constitute a market failure. Economic theory suggests that if markets are competitive, a retail firm that does not discriminate should have an incentive to locate in an area that is, except for its minority status, otherwise the same as any other area served by a supermarket. That is, the market would tend to reward firms that locate in otherwise underserved areas because there is less competition, at least in the short run. In the long run, nondiscriminating firms will enter the area until no more firms can be supported by the population. If firms lack good information on the true purchasing power or demand for food in areas with concentrations of racial or ethnic minorities, then this market failure is one potential reason why firms do not locate in these areas.

It is also important to note that housing market discrimination could limit the ability of minorities to move to areas that may have better access to food. Legal discrimination in housing and lending markets (which existed until the Fair Housing Act of 1968) and illegal discrimination since then (Turner and Skidmore, 1999; Turner et al., 2002a; Turner et al., 2002b; Wyly and Holloway, 1999) could potentially limit residential choice of affected groups, which could contribute to disparities in supermarket access.

Economic theory suggests that either supply conditions or demand conditions could lead to variation across areas in store locations, the types of stores available, and the products and prices offered within stores. Unfortunately it is difficult to determine how much either supply conditions or demand conditions affect store location and the types of foods that are offered because they are determined simultaneously. Monitoring price could help. For example, if the price of some nutritious foods in underserved areas is high but the prices of other nutritious foods are cheaper, it is likely that demand-side factors are driving differences in availability (Bitler and Haider,

2009). Likewise, understanding more about cost differences of suppliers in different areas could also help determine if supply side factors are to blame. Finally, it may be also be useful to consider the markets for other goods and services in low-income areas. Many areas that are underserved by supermarkets may also be underserved by other businesses, such as banks or health care services. Understanding whether such businesses face similar costs or similar demand for products as food retailers might help explain the lack of supermarkets and other businesses in general (Bitler and Haider, 2009).

Broad Trends in the Supermarket and Food Retail Environments

Very broadly, grocery retail has gone through three major changes (innovations) in the past century: the rise of chain grocery stores over independently owned stores, the rise of supermarkets that offered an increased number and variety of products; and the rise of supercenters that continued the trend to even larger stores offering more and more products (Ellickson, 2005; Tedlow, 1990). In each of these cases, suppliers found ways to decrease the costs of production in order to bring lower prices to consumers. Chain grocery stores used integration of manufacturing and wholesaling to cut out middlemen and offer lower prices (Ellickson, 2005). The middle of the 20th century saw a rise in automobile use, interstate highways, and movement of residences and businesses to the suburbs where large tracts of land were available for relatively lower costs. Supermarkets grew in size and carried an increasing variety of products (Tedlow, 1990). The advent of computerized logistics and inventory systems integrated with the supermarkets themselves occurred during the 1980s and 1990s and provided the catalyst for the most recent trend toward supercenters. Ellickson (2005) shares evidence of this growth—in 1980, the average store carried 14,145 products; by 2004, the average store carried over 30,000 products. Reliance on their own distribution and inventory systems along with larger store sizes allowed supercenters to charge lower prices. Wal-Mart, which is now the Nation’s largest retailer of grocery products, is one model of this type of format.

Competition spurred by this latest trend to supercenters has contributed to other developments among more traditional supermarkets. Some retailers target middle and higher income consumers—often offering specialty products or primarily organic products (e.g., Whole Foods) (Drake, 2009). Other retailers have offered their own line of premium store brands and organic store brands to tap into the more health-conscious consumers (e.g., Kroger’s Naturally Preferred or Giant Food’s Nature’s Promise lines) (Martinez and Kaufman, 2008).

Hard discount stores, which target bargain and low-income shoppers, have also developed. These stores are typically smaller than other supermarkets (typically between 10,000 to 14,000 square feet, compared with an overall average store size of 48,000 square feet), offer more private label brands and fewer national brands, and offer fewer product size options. Many of these stores operate in underserved or low-income areas. Examples include:

- Save-a-Lot (a subsidiary of SuperValu, Inc.) operates 1,200 stores, including 4 in Prince Georges County, Maryland, and 1 store in Coahoma County, Mississippi, a persistently poor county in the Mississippi Delta region.
- ALDI stores (a German discount retailer which opened its first U.S. stores in Southeastern Iowa) have 1,000 stores in 29 States.
- Fresh and Easy Neighborhood Markets (a subsidiary of Tesco, the UK's largest retailer) opened two stores last year in low-income areas of Los Angeles (Compton and Eagle Rock).
- Food4Less (a subsidiary of the Kroger Co.) recently opened a store in Englewood, an impoverished neighborhood on the southwest side of Chicago.

Food retail has also expanded to retailers that have not focused on food in the past. This “channel blurring” has occurred among pharmacies, which typically carry snack and convenience foods and increasingly carry refrigerated and frozen items, and among dollar stores (such as Family Dollar and Dollar Store) (Martinez and Kaufman, 2008; Sharkey and Horel, 2009). Warehouse clubs (e.g., Costco and Sam’s Club), which offer a limited variety of food products and larger or bulk sizes, have also expanded into food markets, serving primarily small businesses and middle-upper-income consumers (Martinez and Kaufman, 2008).

Finally, grocery stores and supermarkets also compete with restaurants and other sources of food away from home. Almost half of all food spending in the United States is for food away from home (48.9 percent in 2006) (Martinez and Kaufman, 2008).

Given these competitive forces, why is it that some areas lack access to a supermarket or large grocery store? The range of reasons offered include some that are identified in this chapter and others that have been summarized elsewhere.⁴⁴ Many apply specifically to urban areas, but some apply to rural areas as well. Examples include the following:

- Zoning and regulatory approval processes
- The need to secure land sites large enough for stores
- Environmental remediation and/or demolition of current structures
- Higher construction and operating (e.g., rent, real estate taxes, security costs) costs in urban areas
- Lower access (to customers and to distribution chains), visibility, or traffic flow and less space for parking in urban areas relative to suburban areas
- Local politics, where officials and groups may have competing goals for development

Despite these potential hurdles, large, high-density populations in underserved urban areas and less competition are two factors that may make

⁴⁴See Drake, 2009; Policy Link, 2008; Food Marketing Institute, 1998.

underserved areas attractive for food retail development (Food Marketing Institute, 1998).

Summary

Economic theory can help explain why some areas may have limited access. Consumer behavior and demand-side issues, such as lack of knowledge of the nutritional benefits of foods or food retailer behavior, and supply-side issues, such as different fixed costs for developing a store in an underserved area, may explain variation across areas in the types of foods offered and the stores that offer them. Further research is needed to determine which factors may be driving differences in access. This research could explore how differences in fixed and operating costs of different areas may account for variation in access to different types of stores or different products within stores. Research could also consider how consumer knowledge and preferences and the time cost tradeoffs affect consumer decisions of which foods to eat and whether to make or to buy prepared foods or restaurant meals. Research on price variation at the local level and spatial demand models could also be used to help determine which factors contribute to differences in access to food retailers.

References

- Bitler, Marianne, and Steven J. Haider (2009). "An Economic View of Food Deserts in the United States," National Poverty Center Working Paper. <http://www.npc.umich.edu/news/events/food-access/index.php> (Accessed 3/30/09).
- Drake, W. (2009). "Food Retailer Site Location Motivations, Methodologies and Behaviors," Presentation at the IOM/NRC Workshop on the Public Health Effects of Food Deserts. January 27, 2009, Washington, DC.
- Ellickson, Paul B. (2007) "Quality Competition in Retailing: A Structural Analysis," *International Journal of Industrial Organization* 24(3), 521-540.
- Ellickson, Paul B. (2005). "Does Sutton Apply to Supermarkets?" *RAND Journal of Economics*. 38(1), 43-59.
- Food Marketing Institute (1998). *Urban Supermarkets*, Food Marketing Institute.
- King, Robert P., Ephraim S. Leibtag, and Ajay S. Behl (2004). "Supermarket Characteristics and Operating Costs in Low-Income Areas," U.S. Department of Agriculture, Economic Research Service, Agricultural Economic Report No. 839.
- Martinez, Steve, and Phil Kaufman (2008). "Twenty Years of Competition Reshape the U.S. Marketing System," *Amber Waves*, Vol. 6, Issue 2, April.
- Neckerman, K.M., M. Bader, M. Purciel, P. Yousefzadeh (2009). "Measuring Food Access in Urban Areas," National Poverty Center Working Paper, <http://www.npc.umich.edu/news/events/food-access/index.php>

Policy Link, and LISC Bay Area (2007). Grocery Store Attraction Strategies, http://www.policylink.org/documents/groceryattraction_final.pdf

Rose, D., J.N. Bodor, C.M. Swalm, J.C. Rice, T.A. Farley, and P.L. Hutchinson (2009). "Deserts in New Orleans? Illustrations of Urban Food Access and Implications for Policy," National Poverty Center Working Paper, <http://www.npc.umich.edu/news/events/food-access/index.php>.

Sharkey, J.R., and S. Horel (2009). "Characteristics of Potential Spatial Access to a Variety of Fruits and Vegetables in a Large Rural Area," National Poverty Center Working Paper, <http://www.npc.umich.edu/news/events/food-access/index.php>

Smith, H. (2006). "Store Characteristics and Retail Oligopoly," *Rand Journal of Economics*, 37(2): 416-430.

Smith, H. (2004). "Supermarket Choice and Supermarket Competition in Market Equilibrium," 71(1): 235-263.

Sparks, A., N. Bania, L. Leete (2009). "Finding Food Deserts: Methodology and Measurement of Food Access in Portland, Oregon," National Poverty Center Working Paper, <http://www.npc.umich.edu/news/events/food-access/index.php>

Tedlow, R.S. (1990). *New and Improved: The Story of Mass Marketing in America*, Cambridge, MA: Harvard Business School Press.

Turner, M.A., F. Frieberg, E. Godfrey, C. Herbig, D.K. Levy, and R.R. Smith (2002a). *All Other Things Being Equal: A Paired Testing Study of Mortgage Lending Institutions*, U.S. Department of Housing and Urban Development.

Turner, M.A. and F. Skidmore (1999). *Mortgage Lending Discrimination: A Review of Existing Evidence*, Urban Institute Monograph Series on Race and Discrimination, Urban Institute.

Turner, M.A., S.L. Ross, G.C. Galster, and J. Yinger (2002b). *Discrimination in Metropolitan Housing Markets: National Results from Phase I of HDS2000*, U.S. Department of Housing and Urban Development.

Wyly, E.K., and S.R. Holloway (1999). "The New Color of Money: Neighborhood Lending Patterns in Atlanta Revisited," *Housing Facts and Findings* 1(2): 1-11.