Making the Connection: Boston’s Community Health Centers and the Neighborhood Food Environment

Background

Obesity has become a serious public health concern in the United States; today, almost 33 percent of Americans are obese. In an effort to reduce these health disparities and diet-related diseases, Federally Qualified Health Centers (FQHCs), also known as “community health centers” or “health centers,” offer a range of nutrition education and counseling services to their clients. FQHCs are non-profit health care providers that receive federal funding to provide quality, affordable care to medically underserved populations.

In recent years, health center staff in Boston have discovered that many of the healthy foods they promote are not actually available for purchase in the local community. A growing body of research supports the claim that low-income communities of color—populations typically served by FQHCs—are particularly affected by limited access to healthy food choices and that such limited access may contribute to high rates of obesity and diet-related disease in these communities.

Some FQHCs have started healthy food initiatives, such as farmers markets and community gardens, to increase the availability of healthy food choices in their communities. If healthy food access is, indeed, an issue in local communities, other health centers may need to take a more holistic approach to improving healthy eating habits by considering how the neighborhood food environment may influence dietary behavior.

Purpose

The purpose of this project was to examine the food retail environment throughout the city of Boston. In particular, this project examines the number and type of food retail stores within a half-mile of FQHCs to determine whether or not healthy food access is a problem within surrounding neighborhoods. Results from this analysis are used to generate recommendations for health centers interested in taking a more holistic approach to improving healthy eating habits among patients.

Methods

This GIS analysis examines spatial relationships between community health centers and the number and type of food retail stores within the city of Boston. Stores in this analysis include:

- Convenience stores
- Fast food restaurants
- Supermarkets
- Farmers markets
- Supermarkets
- Fresh food markets
- Summer farmers markets

Spatial analysis tools were used to generate maps showing the density of each category of food retail stores within a half-mile radius of each health center, as well as the average distance between those food stores and health centers.

The following equation was used to determine a “Community Health Center (CHC) Food Score” for each health center’s neighborhood food environment:

\[
\text{CHC Food Score} = \frac{(\text{# of Groceries} + \text{# of Fresh Food Markets})}{\text{Distance}}
\]

This number indicates a relative score for how “healthy” a health center food environment is, with positive scores being healthier and negative scores being unhealthier.

Results

Density maps show that convenience food stores are highly concentrated in the Central (downtown) neighborhood and the areas surrounding downtown. Groceries and fresh food markets are more evenly distributed throughout the city, though East Boston has a somewhat higher density of groceries than other areas.

The results of the network analysis show that certain community health centers, particularly those downtown, are located within close proximity to a high number of stores selling convenience food (>20). These health centers appear to be within a short distance of a high number of groceries and/or supermarkets (13-25). Several health centers are within a short distance of fresh food markets, though there are fewer of these markets than other types of food stores.

Summary results indicate that some health centers experience greater neighborhood food imbalance than others, with CHC Food Scores ranging from -38 to 8. Eight health centers have food scores equal to -10 or below, meaning that there are at least 10 more convenience food stores than groceries or fresh food markets within a half-mile radius of each health center. Only five health centers have a CHC Food Score greater than 0.

Recommendations

Based on these findings, it is recommended that health centers with a CHC Food Score below -10 think more holistically about strategies to improve healthy eating habits. These health centers may want to consider developing interventions that recognize the potentially influential nature of the food environment on dietary behavior. Interventions could include helping patients make healthier food purchases at existing food stores, increasing public transportation to stores carrying healthy food, or increasing the availability of healthy food within the neighborhood. Before designing any interventions, the health center should conduct a more localized analysis of the food retail environment to determine the most practical strategies to improve healthy eating.

References

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Sources: MSALES City of Boston; Reference 2010 U.S. Census Boston
Projected Coordinate System: NAD 1983 State Plane MA / M Massachusetts FIPS 2003 (meter system)