Assessing Healthy Food Access: Network Walkability in Alameda County, California

Purpose

Investigating this epidemic, research has pointed to the relationship between obesity and poverty as well as to ethnic background, while other research considers the influence of the built environment on obesity. To illustrate and examine healthy food access in Alameda County based on household income and race, this project uses network walkability based upon density and walking distance to healthy, intermediate and unhealthy food retailers.

Method

Street networks and service areas are used to map and analyze walkability to local food retailers. Walkable streets were determined and food retailers were organized into three categories: Healthy, Intermediate, and Unhealthy. Street-based service areas were created for each retailer using a distance of a quarter mile as the definition of walkable for this project. These service areas were then rasterized into 10x10 meter rasters and combined to create an accessibility score map for each of the three food resource categories. This information was aggregated to census tracts to examine any correlations between socioeconomic variables and walkable access to the various types of food resources.

Analysis

For Healthy Food Access, the mean accessibility score increased along with the percentages of Latino and Blacks per census tract, but decreased with Whites. Also, lower household median income correlated with an increase in the mean accessibility score of healthy food retailers per tract. Census tracts with low percentages of Whites had the highest mean accessibility score for healthy food resources, while census tracts with low percentages of Blacks had the lowest mean.

For Unhealthy Food Access, the mean accessibility score remained almost constant within the ranges of Latino and Whites populations. However, tracts with a 20-50% Black population have the highest mean. Also, the lowest average household median income was in tracts that are 50% or more Black, but have the lowest mean accessibility score.

The scatter plots below reinforce these results and reveal that healthy food access is positively correlated with Latino and Black populations. On the other hand, it is negatively correlated with White populations and higher median household incomes. Unhealthy food access is not correlated with Latino and Black populations, but is negatively correlated with White populations and higher median household incomes.

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Based on these results I think food access in Alameda County is related more to metropolitan development patterns than to race or income. Latino and Black populations live closer to major roads and freeways, where many walkable food retailers are located. This is in contrast with White populations or those with higher household median incomes who live in the foothills or in more suburban locations away from major roads and freeways and thus further from many food retailers.

Alameda County Socioeconomic Demographics

Food Retailer Categories

- Large Food Stores
- Cafes
- Baked Goods Shops
- Supermarkets
- Fast Food Restaurants
- Pizza Parlors
- Farmers Markets
- Ethnic Food Stores
- Fruit and Vegetable Stores
- Convenience Stores
- Fast Casual Restaurants
- Ice Cream Shops
- Variety Stores
- Seafood Restaurants
- Pizza Markets
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- Ice Cream Shops
- Variety Stores
- Seafood Restaurants
- Pizza Markets

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Data Sources: Metropolitan Transportation Commission (Census 2000
and 2010), Tiger Roadline (**Tiger Roadline**), American Community Survey (2005-2009), Reference USA (Food Retailers)

Unhealthy Food Walkability per Census 2000 Tract

Healthy Food Walkability per Census 2000 Tract