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Research Paper Final

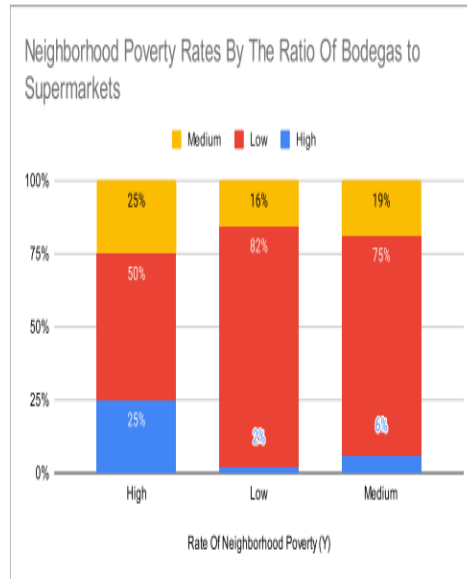
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Research Question: What is the relationship between unhealthy food access (ratio of bodegas to supermarkets) and neighborhood poverty rates?

Everyday billions of foods are consumed, most of us just eat without much thought of where the food came from and if it's healthy or not. Our food choices and eating habits is crucial as healthy eating is associated with better health, less risk of diseases, and keeps us strong. However, not everyone has the luxury of having access to safe, affordable, and healthy foods. Food access can be influenced by many economic factors including income levels, food pricing, proximity to food outlets, and neighborhood poverty rates. This research paper will explore the relationship between unhealthy food access (ratio of bodegas to supermarkets) and neighborhood poverty rates.

In the neighborhoods, where ratio of bodegas to supermarkets is low, 82% have low neighborhood poverty rates. 16% have medium poverty rates and 2% have high poverty rates. In neighborhoods, with a medium ratio of bodegas to supermarkets, 75% have low neighborhood poverty rates, 19% have medium poverty rates and 6% have high poverty rates. In neighborhoods, with a high ratio of bodegas to supermarkets, 50% have low neighborhood poverty rates, 25% have medium poverty rates and 25% have high poverty rates. From this data, it can be concluded that there is some relationship between ratio of bodega to supermarkets and low neighborhood poverty rates.

COUNTA of Rate Of Neighborhood Poverty (Y)	Ratio Of Bodegas to Supermarkets (X)			Grand Total
	High	Low	Medium	
High	25.0%	2.2%	6.3%	4.6%
Low	50.0%	82.2%	75.0%	78.5%
Medium	25.0%	15.6%	18.8%	16.9%
Grand Total	100.0%	100.0%	100.0%	100.0%



Percentage of Neighborhood Poverty By The Ratio Of Neighborhood Poverty (X)				
Ratio Of Neighborhood Poverty (Y)	High	Low	Medium	Grand Total
High	25%	2%	6%	5%
Low	50%	82%	75%	78%
Medium	25%	16%	19%	17%
Grand Total	100%	100%	100%	100%

Percentage of Neighborhood Poverty: Low = Less than 20%, Med = 20.1%-35%, High = More than 35%

Ratio of Bodegas to Supermarkets: Low = Less than 20%, Med = 20.1%-35%, High = More than 35%

Source: NYC Health and Environmental Data Portal: <https://a816-d0hbep.nyc.gov/indicator/Public/beta/data-explorer/>

Independent Variable = X

Dependent Variable = Y

Three Library Sources:

Ploeg, Michele Ver. "Access to Affordable, Nutritious Food Is Limited in 'Food Deserts.'" USDA ERS - Access to Affordable, Nutritious Food Is Limited in 'Food Deserts,' 1 Mar. 2010, www.ers.usda.gov/amber-waves/2010/march/access-to-affordable-nutritious-food-is-limited-in-food-deserts/.

Mui, Yeeli, et al. "A community-based system dynamics approach suggests solutions for improving healthy food access in a low-income urban environment." Plos one 14.5 (2019): e0216985. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0216985>

Larson, Nicole I., Mary T. Story, and Melissa C. Nelson. "Neighborhood environments: disparities in access to healthy foods in the US." American journal of preventive medicine 36.1 (2009): 74-81. <https://www.sciencedirect.com/science/article/pii/S0749379708008386>

In the article "Access to Affordable, Nutritious Food Is Limited in 'Food Deserts,' Ploeg (2010) explores food deserts in low-income areas. Low-income residents who live in areas without supermarkets or other food retailers must rely on local stores that don't provide many options for healthy foods or usually at higher prices. "According to data from the latest census (2000), about 23.5 million people, or 8.4 percent of the U.S. population, live in low-income neighborhoods that are more than a mile from a supermarket" (Ploeg 1). However, in Ploeg's findings, she discovers that not all people who live in low-income neighborhoods are poor. Only about 4.1% of U.S population that have low-income live in low-income neighborhoods. Those of higher income have forms of transportation such as cars or use delivery services to obtain

nutritious food. Low-income residents who shop at local store retailers only make up 2-3% of food expenditures. Many low-income residents who qualify for food stamps will travel outside of their food deserts to get to supermarkets when they can. There are also initiatives that address disparities in healthy food access such as New York City's Healthy Bodegas and Health Bucks programs. This program offers \$2 coupons to people in low-income food deserted areas for the purchase of fresh fruit and vegetables at participating farmers' markets. In conclusion, Ploeg's findings show that only a small percentage of low-income residents who live in food deserted areas have problems obtaining healthy foods, as there is transportation, delivery services, and initiatives that are used to obtain access to healthier food sources.

In, "Measuring food deserts in New York City's low-income neighborhoods", Gordon, et.al (2011) showcases an environmental food study that took place in New York City, East and Central Harlem. They conducted their research in Harlem because many Black and Hispanic families of low-income live there. In contrast, they studied the wealthiest neighborhoods in the Upper East Side, a predominantly white area. The study measured each neighborhood by a Food Index score, a measure that consisted of three components: access to supermarkets, healthy bodegas, and fast-food restaurants. They were ranked 1-3, 1 being fewer access to healthy foods and 3 representing higher access to healthy foods. In the study, researchers found that in low-income neighborhoods they were disadvantaged and had the lower food index scores of 1-2, as they had less access to supermarkets and an abundance fast-food restaurant compared to the upper income areas. The results of the study showed, "that block groups with the highest median household income had a significantly higher proportion of "most healthy" bodegas, more supermarkets, and higher food index scores

compared with the lowest income block groups” (Gordon 699). In conclusion, this study showed that areas with higher ratios of bodegas to supermarkets had more households of higher income and healthier food scores compared to areas of low-income with less access to healthy bodegas and supermarkets.

In the article, “Associations of Neighborhood Characteristics with the Location and Type of Food Stores”, Moore, et.al. (2006) showcases a study between local food environment and neighborhood racial/ethnic, and income rates. The study took place in North Carolina, Maryland and New York. The study looked at a total of 3337 food stores, liquor stores and supermarkets. These stores were classified using SIC codes, supermarkets (541101, 541104–541106); convenience stores (541102, 541103); and liquor stores (5912). Results showed out of the three areas studied, North Carolina was the largest study site by area with 410 square miles, followed by Maryland; 240 square miles and lastly New York; 26 square miles. Although New York was the smallest site studied, New York had significantly more food stores per square mile than both North Carolina and Maryland (67 stores per square mile vs 1-3 stores per square mile). The results of three areas studied found that “Low-income neighborhoods had 4 times as many grocery stores per population as the wealthiest neighborhoods (SR = 4.3; 95% CI = 3.6, 5.2) and half as many supermarkets (SR = 0.5; 95% CI = 0.3, 0.8) (Table 4)-Predominantly White and wealthier areas were found to have more supermarkets than were predominantly minority and poorer areas after we accounted for population and geographic size. In contrast, small grocery stores were more common in predominantly minority areas and in poorer areas (Moore 1)”. This quote shows that in lower-income neighborhoods they had higher rates of bodegas to supermarkets than in upper-income neighborhoods. In conclusion, residents of lower-income

lived in neighborhoods with higher rates of bodegas to supermarkets meanwhile people of upper-income lived in areas with less bodegas to supermarkets.

Comparing the results of the data from initial data and from the three studies researched, I can conclude that the relationship between unhealthy food access (ratio of bodegas of supermarkets) to neighborhood poverty rates varies and depends on a complex set of factors. The data from our initial research indicate that majority of residents who are of upper-income lived in areas of lower rates of bodegas to supermarket (82% low poverty rates to 2% high poverty rates) and that lower-income neighborhoods lived in areas with higher ratios of bodegas to supermarkets (50% low poverty rates to 25% high poverty rates). However, from the three studies researched we found that not all families who live in low-income neighborhoods are actually of low-income and have transportation methods to access healthy food markets. We also found that in the study conducted in New York, Harlem that areas with higher ratios of bodegas to supermarkets had more households of higher income and healthier food access compared to areas of low-income which had a lower ratio of bodegas to supermarkets and unhealthier food access. Meanwhile in the study conducted in North Carolina, Maryland and New York, residents of lower-income lived in neighborhoods with higher rates of bodegas to supermarkets, had fewer healthy food sources, meanwhile people of upper-income lived in areas with less bodegas to supermarkets and unhealthier food access. In conclusion, there are many variables and factors that influence the relationship between unhealthy food access (ratio of bodegas of supermarkets) to neighborhood poverty rates mainly location, area and socioeconomic compositions.

Citations

Ploeg, Michele Ver. "Access to Affordable, Nutritious Food Is Limited in 'Food Deserts.'" *USDA ERS - Access to Affordable, Nutritious Food Is Limited in "Food Deserts,"* 1 Mar. 2010, www.ers.usda.gov/amber-waves/2010/march/access-to-affordable-nutritious-food-is-limited-in-food-deserts/.

Cynthia Gordon, Marnie Purciel-Hill, Nirupa R. Ghai, Leslie Kaufman, Regina Graham, Gretchen Van Wye, "Measuring food deserts in New York City's low-income neighborhoods, *Health & Place*, Volume 17, Issue 2, 2011, Pages 696-700"
<https://www.sciencedirect.com/science/article/pii/S1353829210001905>
[https://www.academia.edu/19876269/Measuring food deserts in New York City's low income neighborhoods](https://www.academia.edu/19876269/Measuring_food_deserts_in_New_York_City_s_low_income_neighborhoods)

Latetia V. Moore and Ana V. Diez Roux, 2006: "Associations of Neighborhood Characteristics With the Location and Type of Food Stores"
American Journal of Public Health **96**, 325_331, <https://doi.org/10.2105/AJPH.2004.058040>

NYC Environment and Health Data Portal
<https://a816-dohbesp.nyc.gov/IndicatorPublic/data-explorer/active-design/?id=2389#display=summary>