The relationship between rates of obesity in adults by the percentage of adults reporting exercise

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Introduction:

Adult obesity rates are a serious public health issue that have a significant influence on people's quality of life and healthcare systems across the globe. The percentage of adult participants who report frequent exercise is one important factor that may be related to the rate of obesity. Physical exercise is essential for managing weight and maintaining general health, thus the relationship between these two variables is of great interest and concern. In order to effectively prevent and treat obesity, it is essential to understand the correlation between activity habits and obesity rates. As such, this relationship is a crucial subject for research and policy development. The data that I have accessed for these two variables comes from the Environment and Health data portal from https://a816-dohbesp.nyc.gov/IndicatorPublic/beta/. I was able to access the percentages and come up with definitions in order to categorize and compare these two variables.

Tables and Chart

Rates of Obesity by the Percentage of Adults Reporting Exercise

Rate Of Obesity(Adults)(Y)	Rate of exercise(X)			
	High	Low	Medium	Grand Total
High	33.3%	50.0%	77.8%	58.8%
Low	33.3%		5.6%	14.7%
Medium	33.3%	50.0%	16.7%	26.5%

Rates of obesity reported in adults by the percentages of adults reporting exercise

Rate Of Obesity (Adults)(Y)	Rate of exercise(X)			
	High	Low	Medium	Grand Total
High	33.3%	50.0%	77.8%	58.8%
Low	33.3%	0.0%	5.6%	14.7%
Medium	33.3%	50.0%	16.7%	26.5%
Grand Total	100.0%	100.0%	100.0%	100.0%

Rate of Obesity	Rate of Exercise
High= more than 55%	High= more than 75%
Medium= 43.1 to 55%	Medium= 63.1 to 75%

Low=0 to 43%   Low=0 to 63%

These two tables compare both the percentages of the two variables. (obesity rates and exercise reported) Below the table are the definitions of both my variables which indicated whether the rates are either HIGH, MEDIUM or LOW.

Rates of obesity reported in adults by the percentages of adults reporting exercise
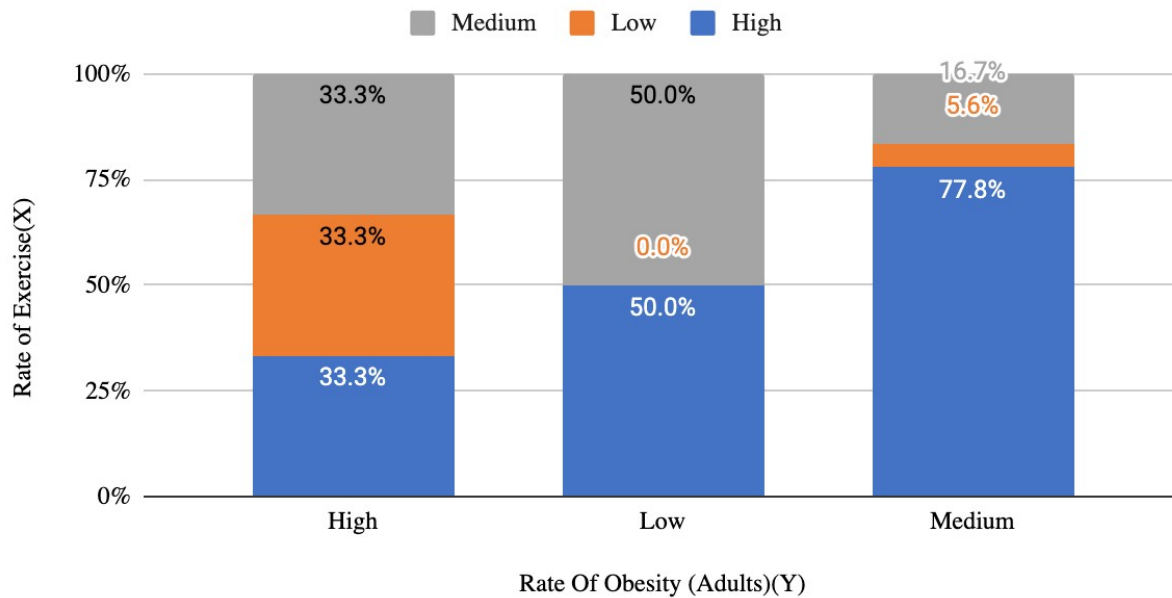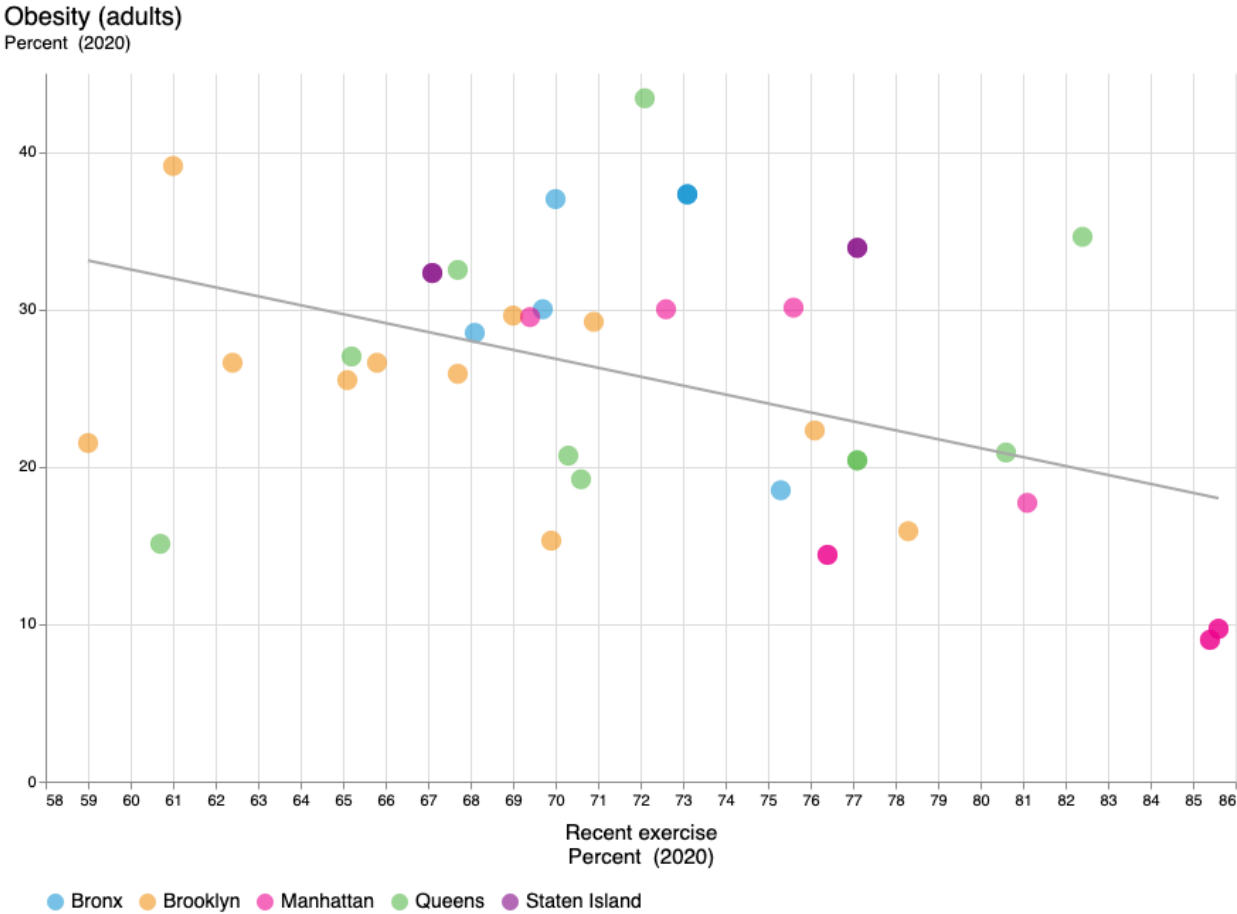

Chart displays the relationship between the rates of obesity and rate of exercise reported by adults.

In neighborhood areas where the rates of exercise reported were low, there was a 0% of low obesity rates. In rates where the rates of exercise were reported low, 50% had a medium rate of

obesity and 50% had a high rate of obesity. In neighborhoods where the rates of exercise were reported as medium, 5.6% had low obesity rates, 16.7% had medium obesity rates and 77.8 had high obesity rates. In neighborhoods where the rate of exercise were high, 33.3% reported low obesity rates, 33.3% reported medium obesity rates and 33.3% reported high obesity rates. From this data, we can see that exercise plays a key role in the rates of obesity in many neighborhoods. With there being a low reported number of exercises, we can see that the rates of obesity fluctuate between the high and the low rates. Despite this, even when the rates of exercise were high, it displays that the rates of obesity were similar throughout the neighborhoods.

Obesity (adults)
Percent (2020)

Recent exercise
Percent (2020)

● Bronx   ● Brooklyn   ● Manhattan   ● Queens   ● Staten Island

In this case we can see that there is an inverse correlation between the rates of obesity reported in adults and the rates of exercise reported. An inverse correlation can be defined as When two related variables move in opposite directions, their relationship is negative. We can see the inverse correlation in our graph because the higher rates of exercise there are, the less incidence of obesity rates are reported in neighborhoods, and vice versa.

Obesity (adults)
Percent (2020)
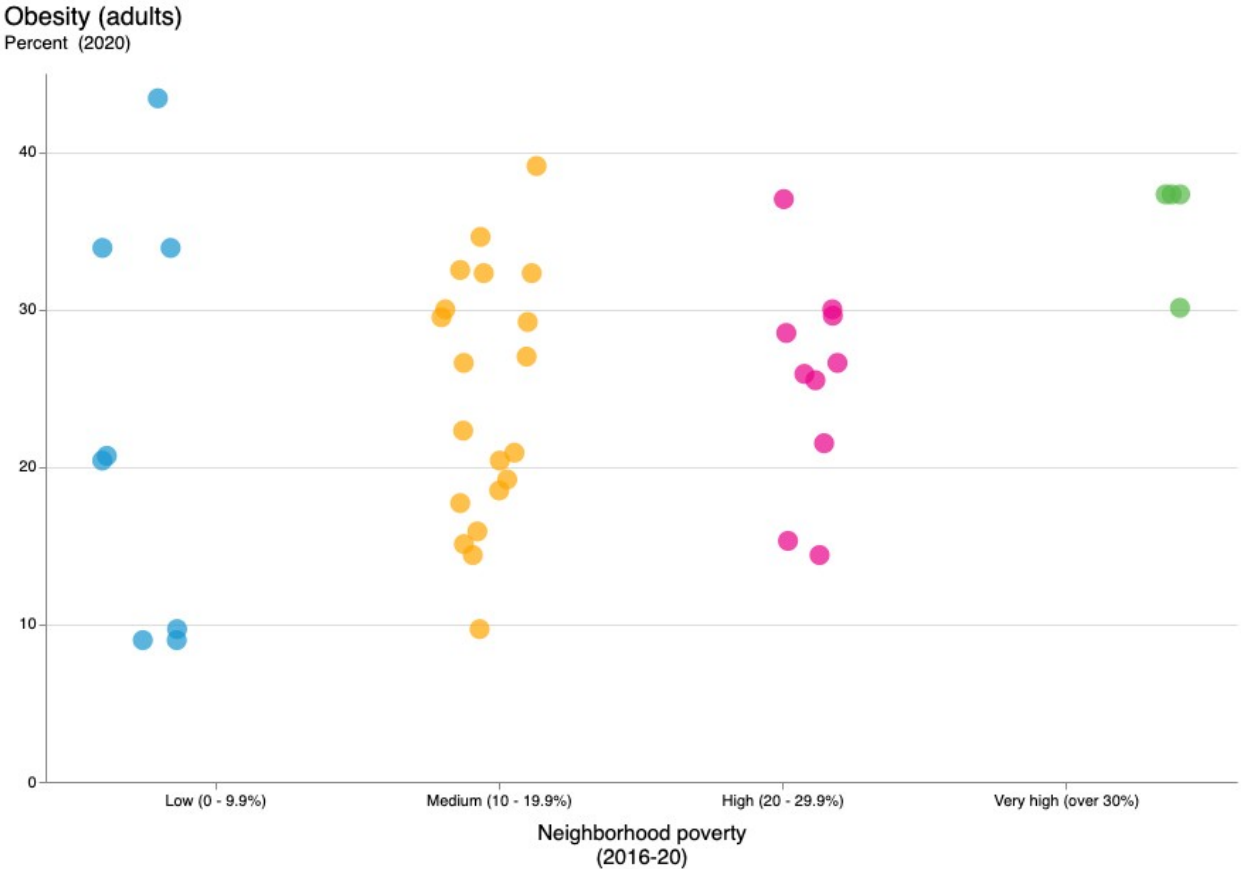
There's a clear correlation between neighborhood poverty rates and disparities in adult obesity rates, often revealing higher obesity rates in areas with lower socio-economic status. Limited access to fresh and healthy food options, coupled with higher availability of fast food and

processed products, contributes significantly to these disparities. The problem may be made worse in lower-class neighborhoods by the absence of safe areas for physical exercise. Tackling the relationship between neighborhood poverty rates and adult obesity disparities requires addressing economic disparities, expanding access to nutritional information, and establishing conditions that encourage physical activity.

Research

Reid mentions that the reason for some of the high rates of obesity would be due to the environmental factors such as, the access to healthy food, physical activity or the access to transportation, and the rise in urban sprawl. The objective of the research is to simulate various health-related outcomes and behaviors using the most recent, improved, and verified county compactness/sprawl metrics. It is accepted that this trend has been significantly influenced by environmental influences, broadly defined. Obesity and overweight have recently been connected in numerous studies to features of the built environment. Obesity rates can be linked to urban sprawl due to factors such as increased reliance on cars, longer commuting times, limited walkability, and reduced access to recreational areas or green spaces. These conditions often lead to a more passive lifestyle and less physical activity, contributing to higher obesity rates among individuals living in sprawling urban areas

In the article provided by Grey, et. al. (2018), they have conducted an experiment detailing how environmental factors affect the physical inactivity of individuals. The obesity epidemic is mostly caused by lack of physical inactivity, which can be helped or hampered by environmental variables. In the article, researchers conducted a cross-sectional study by combining county-level Behavioral Risk Factor Surveillance System data with the Environmental Quality Index, a composite measure of five environmental domains across all U.S. counties to investigate how cumulative environmental quality may modify the inactivity-obesity relationship. The domains include air, water, land, built environment and sociodemographic environment quality. The domains are focused on how the poor or good the air quality or the water quality have an effect on the rates of obesity on adults. The poor environmental quality in many neighborhoods and the lack of physical inactivity had a significant impact on the rates of obesity

Despite the significant role that green spaces play in mitigating issues related to obesity, there has been a noticeable lack of research delving into whether adults' access to green spaces like parks and recreational facilities has an impact on obesity rates in the United States. The study provided by Kim, Junhyoung, et al. aimed to examine the connections between the availability of green spaces, the prevalence of obesity, and various socioeconomic and demographic factors among adults residing in the state of Indiana, within the United States. Junhyoung Kim dives into this issue by conducting a secondary analysis to see the relationship between the two variables of the availability of green spaces and obesity. The results showed that the access to these green spaces do in fact play a vital role in the health of the residents in Indiana. It was discovered that

adult obesity rates were significantly influenced by the availability of green space. Additionally, research indicated that persons with greater county-level access to green space had a lower risk of obesity.

Conclusion:

There is no denying the importance of the association between obesity prevalence and activity rates. Research from the articles and the research I have conducted, it can be shown that physical activity and regular exercise are important factors in lowering the adult obesity risk. People who are physically active on a regular basis tend to be less obese than those who lead sedentary lifestyles, which increases their risk of obesity-related issues. In the battle against obesity, the significance of encouraging physical activity and making sure that it is accessible cannot be emphasized. One common thing I see in my research is that they include environmental factors as reasons why the obesity rates could be higher than usual. In "Investigating the Relationship Between Accessibility of Green Space and Adult Obesity Rates: A Secondary Data Analysis in the United States" we can see that the access to green space, such as parks, gardens, playing fields plays a very important role because the rates of obesity are low as compared to those that don't have access to green spaces. Taking this factor into consideration, people would feel motivated to take a walk or even a jog in a space that is relatively close to them rather than in crowded streets or junctions. Another factor would be the limited access to fresh and healthy food options, in which communities in the lower economic region don't have many options or resources to fresh or healthy food options.

Bibliography:

[1] Ewing, Reid, et al. "Relationship between Urban Sprawl and Physical Activity, Obesity, and Morbidity – Update and Refinement." *Health & Place*, Pergamon, 21 Dec. 2013, www.sciencedirect.com/science/article/pii/S135382921300172X.

[2] Gray, Christine L., et al. "The Association Between Physical Inactivity and Obesity Is Modified by Five Domains of Environmental Quality in U.S. Adults: A Cross-Sectional Study." *PloS One*, vol. 13, no. 8, 2018, p. e0203301–, https://doi.org/10.1371/journal.pone.0203301.

[3] Kim, Junhyoung, et al. "Investigating the Relationship Between Accessibility of Green Space and Adult Obesity Rates: A Secondary Data Analysis in the United States." *Journal of preventive medicine and public health*, vol. 54, no. 3, 2021, pp. 208–17.

[4] Active design data in NYC | environment & health data portal. (n.d.). https://a816-dohbesp.nyc.gov/IndicatorPublic/beta/data-explorer/active-design/