An Evaluation of the Equity of Greenspace in Buffalo Neighborhoods

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Introduction

Greenspace is an important component of urban sustainability as it touches the areas of "good health and well-being" (SDG #3) and "reduced inequalities" (SDG #10) on the United Nations Sustainable Development Goals (United Nations 2015). This study seeks to understand the degree to which greenspace within the city of Buffalo, N.Y. is equitable. I will examine this by comparing greenspace acreage, quality (via amenities), and safety (via crime statistics) to each neighborhood's per capita income, poverty rate, and racial composition.

I expect the results of this case study to align with previous findings, which reveal that neighborhoods with low incomes, high poverty rates, or large minority populations typically have less quality greenspace than their wealthy, white counterparts (Rigolon 2016). **If Buffalo's park system is not equitably contributing to all residents' health and well-being despite being one of the most lauded park systems in the country, then it is likely that other cities are falling short in this area of urban sustainability as well, but if the city's greenspace is equitable, then Buffalo could be a model for other cities to emulate when designing or improving their greenspace.**
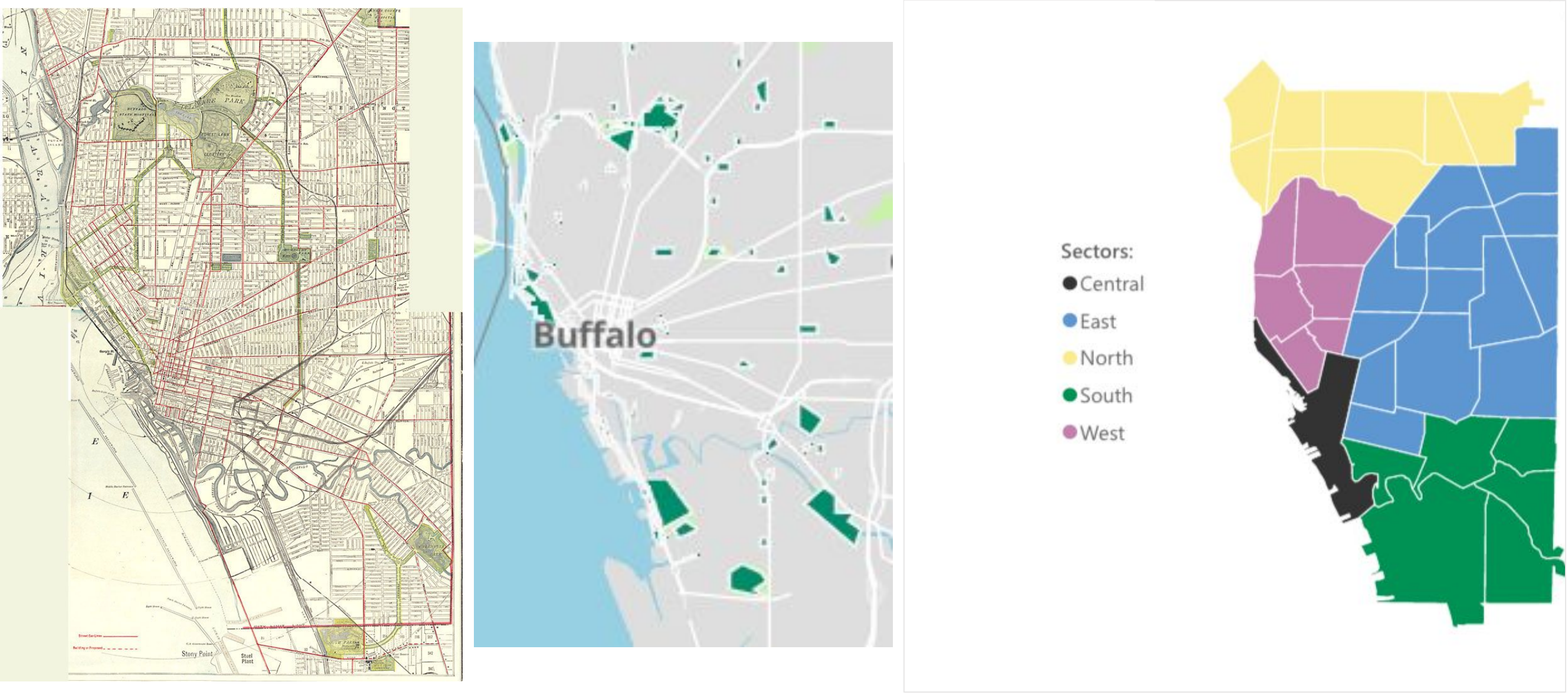
Origin of Buffalo's Park System

➤ Buffalo found major industrial success through the grain market, iron and steel making, and machine manufacturing (Eberle & Grande 1987).

➤ In 1868, city leaders met to address increasing congestion in the urban core due to Buffalo's growing transportation system, commercial industries, and population (Better Parks Buffalo n.d.).

➤ They invited Frederick Law Olmsted, one of the creators of NYC's Central Park and now considered "the father of landscape architecture," to design parks (See Figure 1) for Buffalo that would ease congestion and provide recreational spaces for city residents (Better Parks Buffalo n.d.).

➤ Olmsted believed that **nature has the ability to lift and strengthen the human spirit and should, therefore, be accessible to everybody** "regardless of social or economic status" (Better Parks Buffalo n.d.).

➤ The connected park system brought greenspace throughout the city via parkways, and it excluded commercial traffic, allowing city dwellers to fully and safely escape urban life without ever leaving the city (Eberle & Grande 1987).

Economic & Racial Segregation

➤ During WWI, demand for workers in Buffalo's steel industry increased. Known as the Great Migration, many African Americans seeking jobs relocated from the South (Blatto 2018).

➤ Initially, African Americans settled in existing "Black Belts" but later settled in white working-class neighborhoods, leading to "tension, racist incidents, and even physical altercations" (Blatto 2018).

➤ White property owners began using restrictive covenants, "clauses included in the deed to a property that prohibit certain future uses," to exclude African Americans (Blatto 2018).

➤ Now called redlining, in the 1930s the Federal Housing Agency (FHA) labeled all Black neighborhoods as the least financially stable in its underwriting rules, thereby limiting Black Buffalonians' ability to "buy homes, open businesses, build wealth, and… move to other neighborhoods" (Blatto 2018).

➤ Additionally, the rise of public housing, steering (when real estate agents "steer" individuals to neighborhoods based on race), and blockbusting (the practice of buying property in a white neighborhood that bordered a Black neighborhood, renting the property to Black families above market prices, and then convincing the white families that their neighborhood was becoming predominantly Black so that the white families would sell their property "quickly at a deflated price") all contributed to the racial and economic segregation facing Buffalo today (Blatto 2018).

➤ During the 1950s, white Buffalonians began moving to the suburbs, termed "white flight," to take advantage of federal mortgage subsidies (Blatto 2018). This decentralization further contributed to racial segregation, as suburban zoning policies (e.g., only allowing single family housing or large lots) often worked to keep out different races, and roadways constructed to take people to and from the suburbs cut through Black neighborhoods, hurting businesses and destroying communities (Blatto 2018).
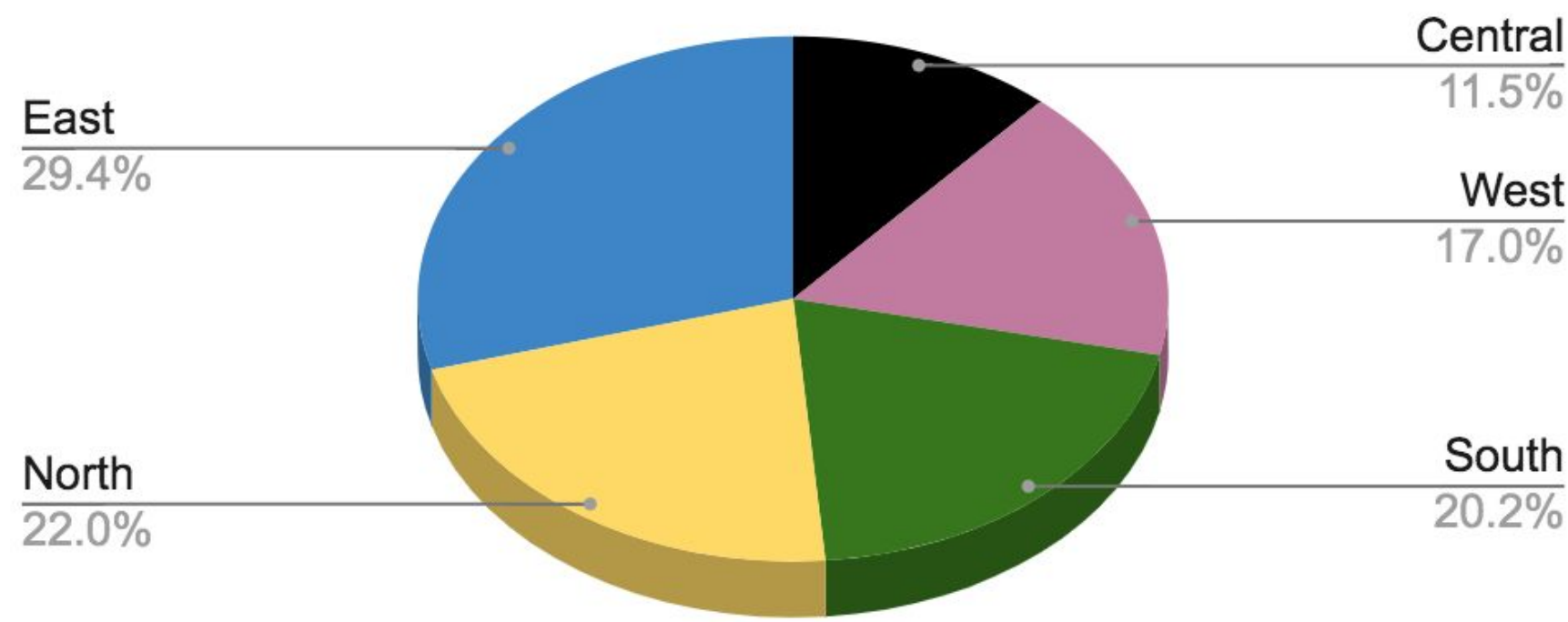

From left to right: the Rose Garden in Delaware Park (Buffalo Olmsted Parks Conservancy), portrait of Frederick Law Olmsted (Better Parks Buffalo), and Bidwell Parkway (Buffalo Olmsted Parks Conservancy).

Maps from left to right: The park system in 1914 (University at Buffalo University Libraries), Buffalo's current park system (Open Data Buffalo: Parks), and a breakdown of Buffalo's neighborhoods into sectors (Open Data Buffalo: Neighborhoods).

Sectors:
- Central
- East
- North
- South
- West

Two of the UN Sustainable Development Goals that emphasize the importance of equitable greenspace (United Nations 2015).

3 GOOD HEALTH AND WELL-BEING

10 REDUCED INEQUALITIES

Benefits of Greenspace:

★ Increases rates of outdoor exercise. Exercise provides both physical and mental health benefits which are amplified when exercise occurs outdoors (Mayer et al. 2009).

  ○ Keeps mental illness, including depression, at bay, thereby contributing to long-term mental stability (White et al. 2013).

  ○ "encourages active lifestyles" that, in turn, reduce obesity and stress levels (Williams 2021, p. 108).

★ Builds a "stronger subjective connection with nature," which contributes to one's sense of belonging and purpose (Capaldi et al. 2017).

★ Decreases heat and noise pollution due to canopy cover and vegetation (Williams 2021, p. 107).

Percentage of 218 Total City Parks Contained in Each Sector

- Central 11.5%
- West 17.0%
- South 20.2%
- North 22.0%
- East 29.4%

Sector	Average Per Capita Income	Average Poverty Rate
Central	$49,328	22%
East	$16,826	37%
North	$23,285	30%
South	$20,424	26%
West	$25,431	33%

Data & Methods

➤ **Data collected:** total population, race, per capita income, poverty rate, list of amenities by park, and top ten most dangerous neighborhoods in Buffalo based on violent crime (defined as murder, rape, robbery, and assault).

➤ **Methods:** calculated average per capita income, average poverty rate by sector, and median percentage of neighborhood residents that identify as white or Black and then compared this data with the crime and amenity data.

➤ **Sources:** population and economic data obtained from the City of Buffalo's Open Data Neighborhood Profiles, which is compiled by the Buffalo Urban Renewal Agency using the 2017 American Community Survey and performed by the United States Census Bureau; amenity data compiled from the City of Buffalo's Open Data Park database; crime data retrieved from areavibes, which uses data from the FBI and local law enforcement agencies.

Results & Analysis

Buffalo's modern park system has not strayed too far from Olmsted's vision. As a result, the total number of parks per sector seem to be fairly distributed. Because the amenities in this data set are fairly modern additions, I presumed that they might oppose Olmsted's vision and follow the trend of inequitable greenspace along racial and economic lines as outlined by Kapanda (2021). **That being said, the East sector had the highest total number of amenities at two-hundred and twenty-six despite being the sector with the lowest average per capita income of all the sectors ($16,826), the highest poverty rate (37%), and the highest median percent Black residents (81%) & lowest median percent white residents (9%).**

However, there does not appear to be a linear correlation between a sector's **average per capita income** and the number of **park amenities** within that sector. In other words, although the East sector has the lowest average per capita income and the highest total number of park amenities, the total number of park amenities per sector does not decrease as a sector's average per capita income increases. The relationship between a sector's **average poverty rate** and a sector's total **park amenities**, however, follows a more linear relationship: generally, as poverty rate increases, total park amenities increase as well. It is important to note though that correlation does not necessarily equal causation, so further study and statistical analysis would be necessary to determine if this relationship is statistically significant.

Discussion & Conclusion

➤ The most amenities are found within the East sector, which has the lowest average per capita income, highest average poverty rate, and highest median percent Black residents by neighborhood. In this way, **Buffalo serves as a good example of how a city might plan their park systems to serve all of their residents.**

➤ However, the East sector contains eight out of ten of the city's neighborhoods with the highest rates of violent crime during 2021. Thus, while the parks seem fairly distributed and amenities are available in all sectors, parks within the East sector are not truly accessible to and safe for all of its residents.

➤ A likely explanation for the relatively equitable quality of Buffalo's parks is the work of the Buffalo Olmsted Parks Conservancy, a "not-for-profit, independent, community organization that promotes, preserves, restores, enhances and ensures maintenance of Olmsted Parks… to guarantee Olmsted park experiences for current and future generations" (Buffalo Olmsted Parks Conservancy n.d.).

➤ Overall, the issues contributing to inequity are not actually related to the park system itself. Therefore, the routes citizens might successfully take to improve greenspace equity (if the equity issues stemmed from the park system), such as pushing local and state governments for increased access via improved public transportation, increased walkability, amplified emphasis on beautification projects, and increased focus on park maintenance, won't solve the issue causing the inequity: violent crime.

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