Prison Rates and the Built Environment: A Case for Green Space

Project Overview

Sociologists highlight the importance of physical space, and the built environment, in contributing to a number of social and health incomes. Vacant land has been connected to an increase in violence, criminal activity, and stress that result in lower rates of community cohesion (Branas et al). On the other side, green space has been shown to have a number of positive physical and mental health outcomes for individuals. It can also increase a sense of community cohesion, social capital, and defensible neighborhood space (Kuo, Sullivan).

In this project I look at prison admission rates in Philadelphia neighborhoods, and compare these with both socio-economic and physical characteristics of those neighborhoods.

Methods

I processed land type data (vacant land, and green space) in several ways in order to compare it to the prison rate information by zip code. First, I used a field-to-point conversion of land type polygons to avoid the issue of polygons that slightly crossed a zip code boundary, or crossed slightly outside my projected Philadelphia boundary. I used a spatial join to attach zip codes to each land type, aggregated the sum of each land type by zip code, and joined that data to the prison data layer. I then calculated land type area as a percent of total zip code area.

Results

Unemployment rate and low income provide very predictable results. One can see a strong correlation between high rates of these socio-economic factors, and high rates of prison admission.

The built environment also demonstrates results to support the literature. Vacant land tends to be strongly correlated with higher rates of prison admissions. On the other hand, green space tends to be more concentrated at the periphery of the city, and in neighborhoods with lower prison admission rates. From the Built Environment Map one can see these two trends together.

Conclusion

Socio-economic outcomes help to describe a neighborhood and its characteristics, yet the physical environment also plays an important role in determining, and describing a place. This project helps to visualize patterns in both social factors and the built environment across the city of Philadelphia, in comparison to prison admission rates. It largely supports research in sociology stressing the importance of the built environment on social outcomes and community cohesion. Vacant land can contribute to stress, crime, and a lack of community cohesion, yet green space tends to be more concentrated at the periphery of the city, and in neighborhoods with lower prison admission rates. On the other hand, green space has been shown to have a number of positive physical and mental health outcomes for individuals. It can also increase a sense of community cohesion, social capital, and defensible neighborhood space (Kuo, Sullivan).