Methods & Preliminary Findings

Race, Inequality and Job Accessibility
Researchers examined strong positive relationship between both African American and Latino clustering and high unemployment rate. Less job accessibility is also correlated with racial neighborhood segregation on a US national level. (Li et al., 2013; Anderson & Galaskiewicz, 2021)

Car Ownership and Transport Equity
Studies shown the effect of car ownership on increasing job accessibility for African American and Latino people are statistically more significant than for white people, and such effect is the largest in most segregated cities. Inner city lower income households also have the most inelastic need for automobiles among all socioeconomic groups. (Raphael et al., 2001; Yousefzadeh et al., 2021)

Public Transport as Moderator
Public transit has a small but observable negative indirect effect on unemployment and poverty shown by the model compactness. (Lyons & Ewing, 2021)

Implications

SEGREGATION
1. We’ve found no evident correlation between segregation and unemployment, however there is a positive relation between dissimilarity index for both African Americans and Hispanic people and household low-income rate.

2. There’s a larger correlation between unemployment in Hispanic neighborhoods and zero automobile ownership than in African American neighborhoods, suggesting a particular need of the Hispanic low-income households on cars.

TRANSPORT
1. Unemployment rates in both segregated neighborhoods are correlated with transit accessibility instead of automobile accessibility.

2. Based on the residents’ dependency on public transport, governmental spending on improving SEPTA services could be a solution to increase the job accessibility.

3. The relationship between automobile accessibility and dissimilarity index for African Americans is significant, however the automobile accessibility is not correlated with Hispanic segregation. Further analysis is needed in explaining the different pattern.

4. There are a number of African American segregated block groups lying at the edge of the city with insufficient public transport, subsidy for these particular neighborhoods for encouraging automobile ownership could be an alternative.

Figure 4: Parsimonious conceptual model

Figure 5: Summary of a testing linear regression model

REFERENCES

City Context

African American residents being 42.13% of the total population in Philadelphia are in the center and southwest regions (Figure 1).

The 14.1% Hispanic population are highly concentrated in the inner city (Figure 2).

SEPTA public transport services (bus, trolly and railway) are unevenly distributed and underprovided in the center of the city.

Figure 1 Neighborhood Segregation of African Americans
Figure 2 Neighborhood Segregation of Hispanics
Figure 3 SEPTA service frequency and distribution

Figure 5: Summary of a testing linear regression model

Figure 4: Parsimonious conceptual model

We’ve constructed several linear models to test the correlation between unemployment and selected explanatory variables. In the shown example, the frequency of transit, transit accessibility index and the interaction variable remains statistically significant, however the impacts of dissimilarity rate for Hispanic people (di hw) and automobile accessibility index are not obvious.

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