MODELING SPATIAL INCOME INEQUALITY in PHILADELPHIA

developing metrics for measuring spatial segregation

Could we better understand the distribution of wealth and access to opportunity through a spatial analysis of segregation patterns?

How can we develop more spatially aware criteria for targeting public resources, prioritizing investments, and penetrating areas of hyper-concentrated poverty?

Constructing an S-Index
Comparing two populations, we can produce a measure of evenness and exposure by comparing the probability of intersection between each regional sub-population...

S-Index Analysis
We can begin to interpret patterns of spatial segregation by comparing surface-based versus areal data analysis...

The constraints of arbitrary census boundaries tend to limit what the data can explain about inter-tract exposure and regional evenness.

An S-index can reveal patterns in the various dimensions of segregation, providing a spatial component to traditionally spatial methods.

- O’Sullivan and Wong

Dasymetric Mapping Process
Using a method of areal interpolation, we can generate finer resolution population estimates... population by census tracts

Source Layer: Aggregate Values

Residential density classes

dasymetric distribution

Ancillary Layer: Land Use Classes

Dasymetric Interpolation: Distributed Values

Kernel Density Function: Surface Estimates

Low Income Households (Probability Density)

High Income Households (Probability Density)

S-Index: Low to High Income Households