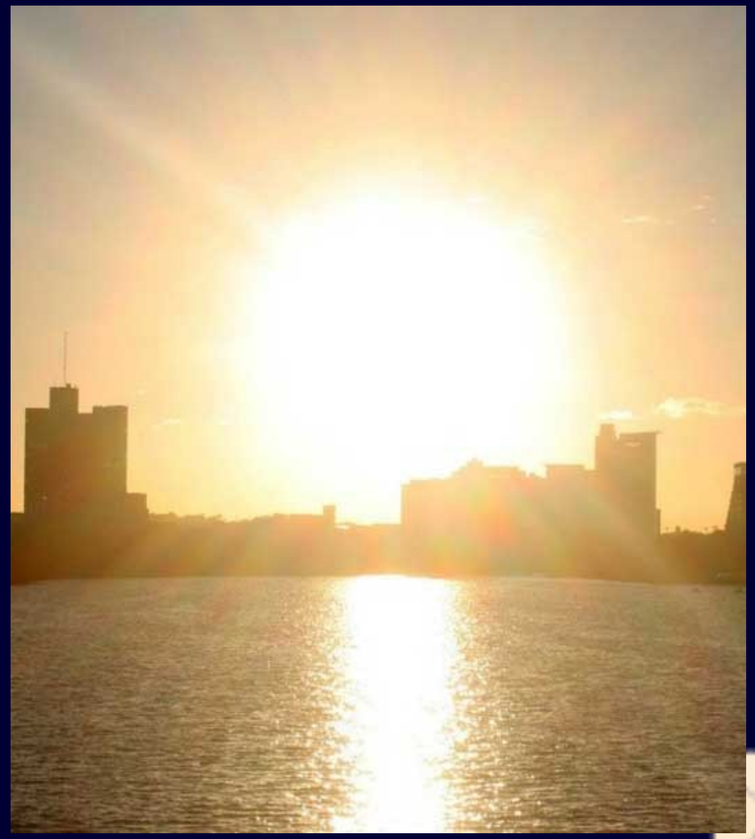
evaluating equity of tree canopy in climate-changing New York City

DAN LEVINE MAR 7, 2022



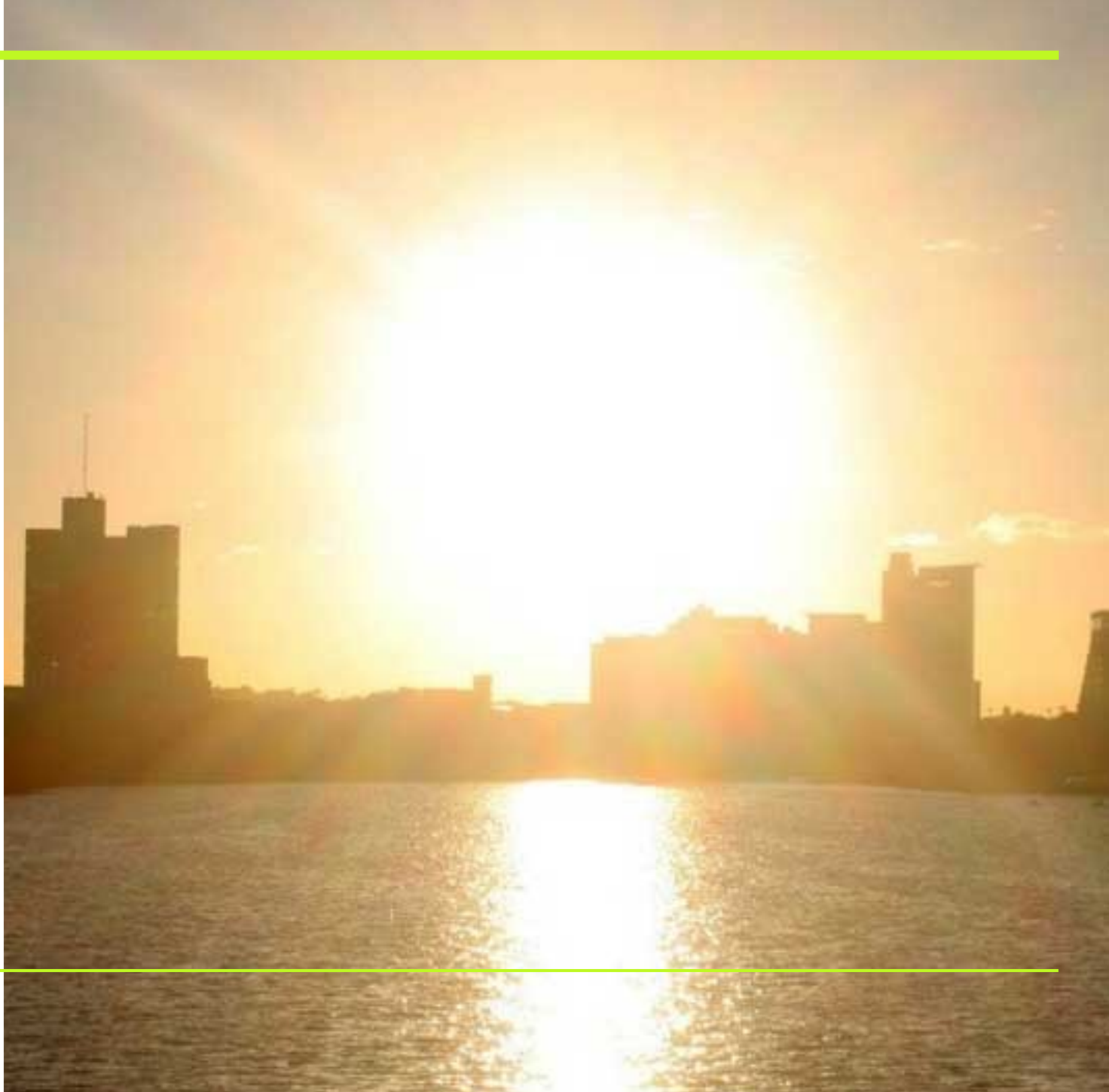
Dan Levine

Is the change in tree canopy equitable in climate-changing New York City?

MAT 7 2021

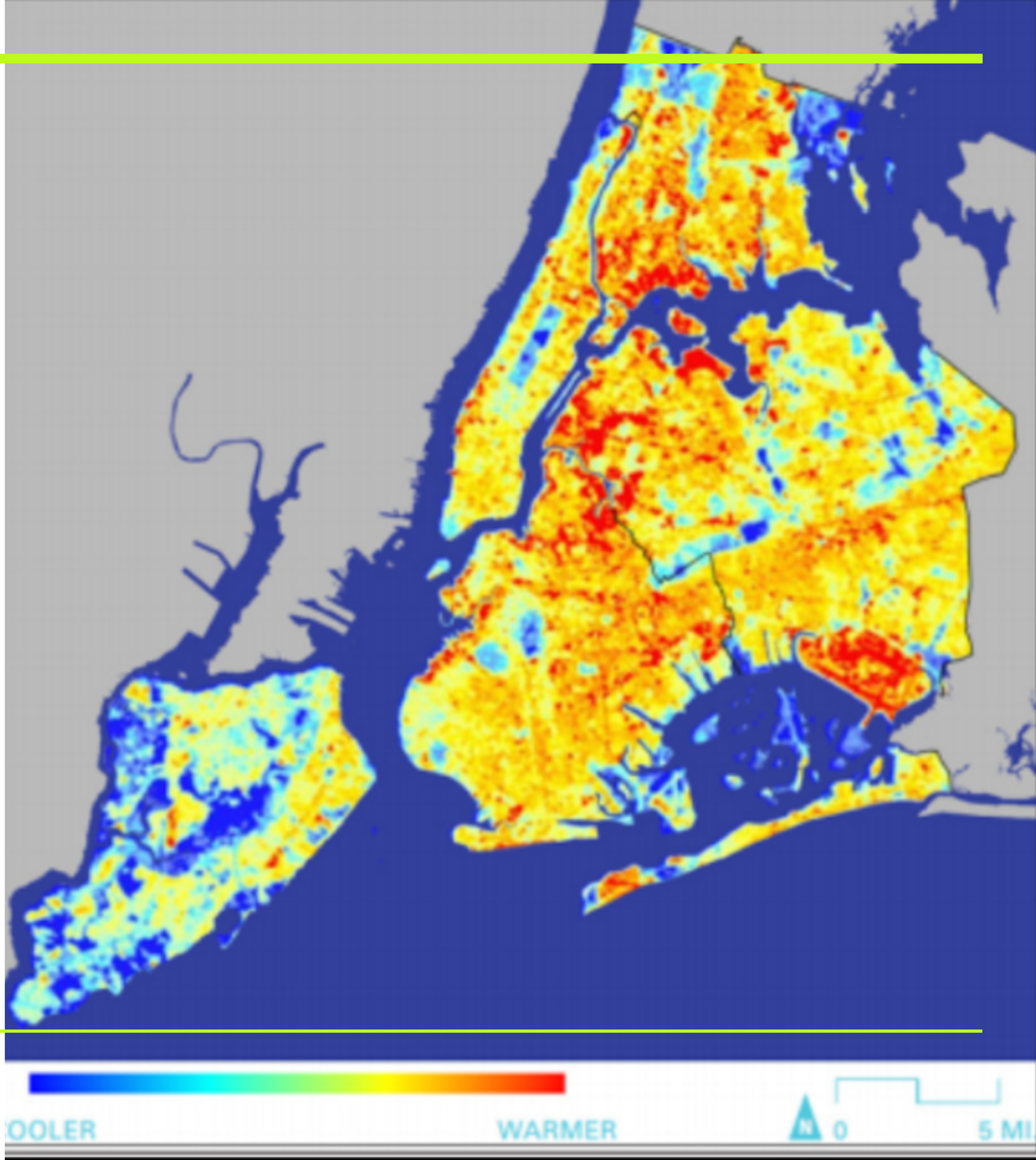
Why?

urban heat island



Why?

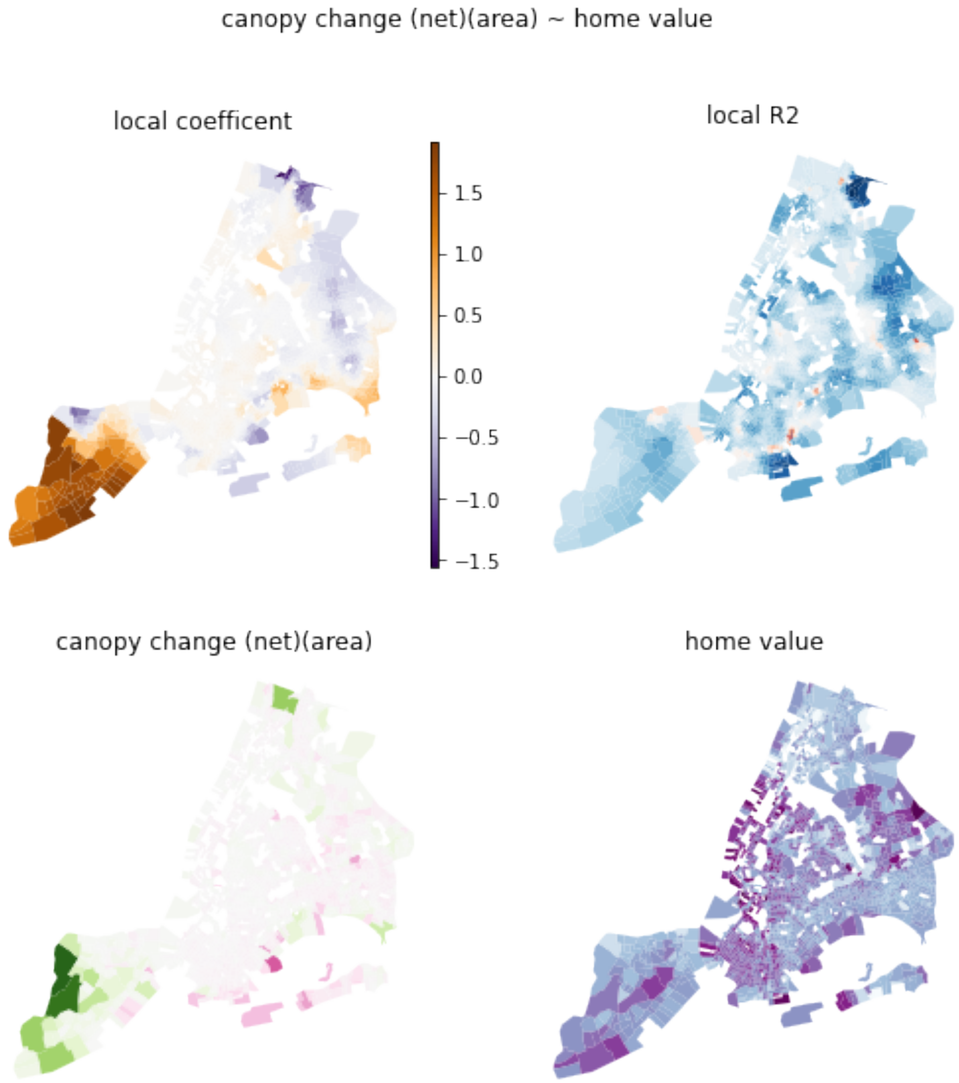
climate change



Why?

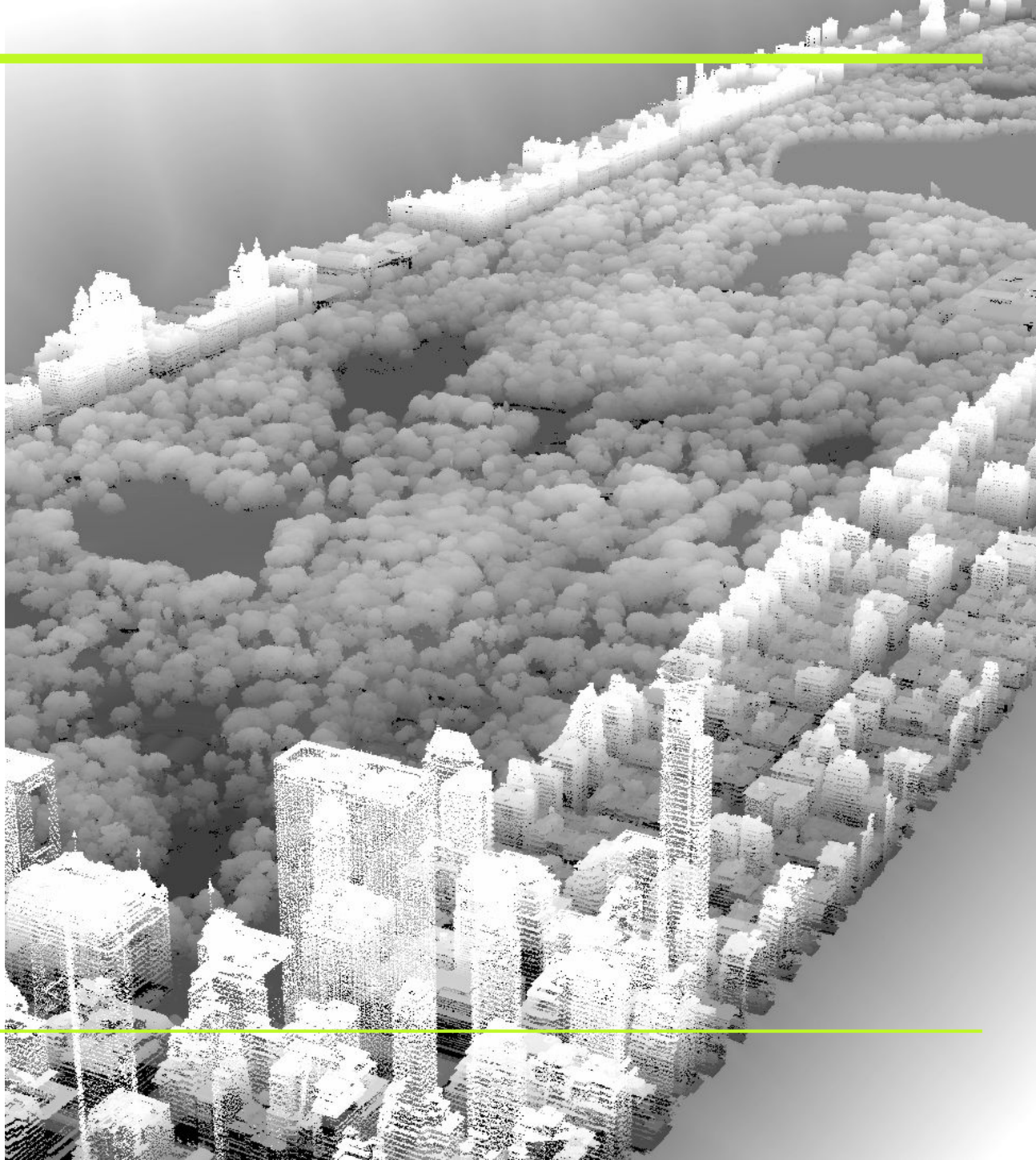
tree planting

Data and methods



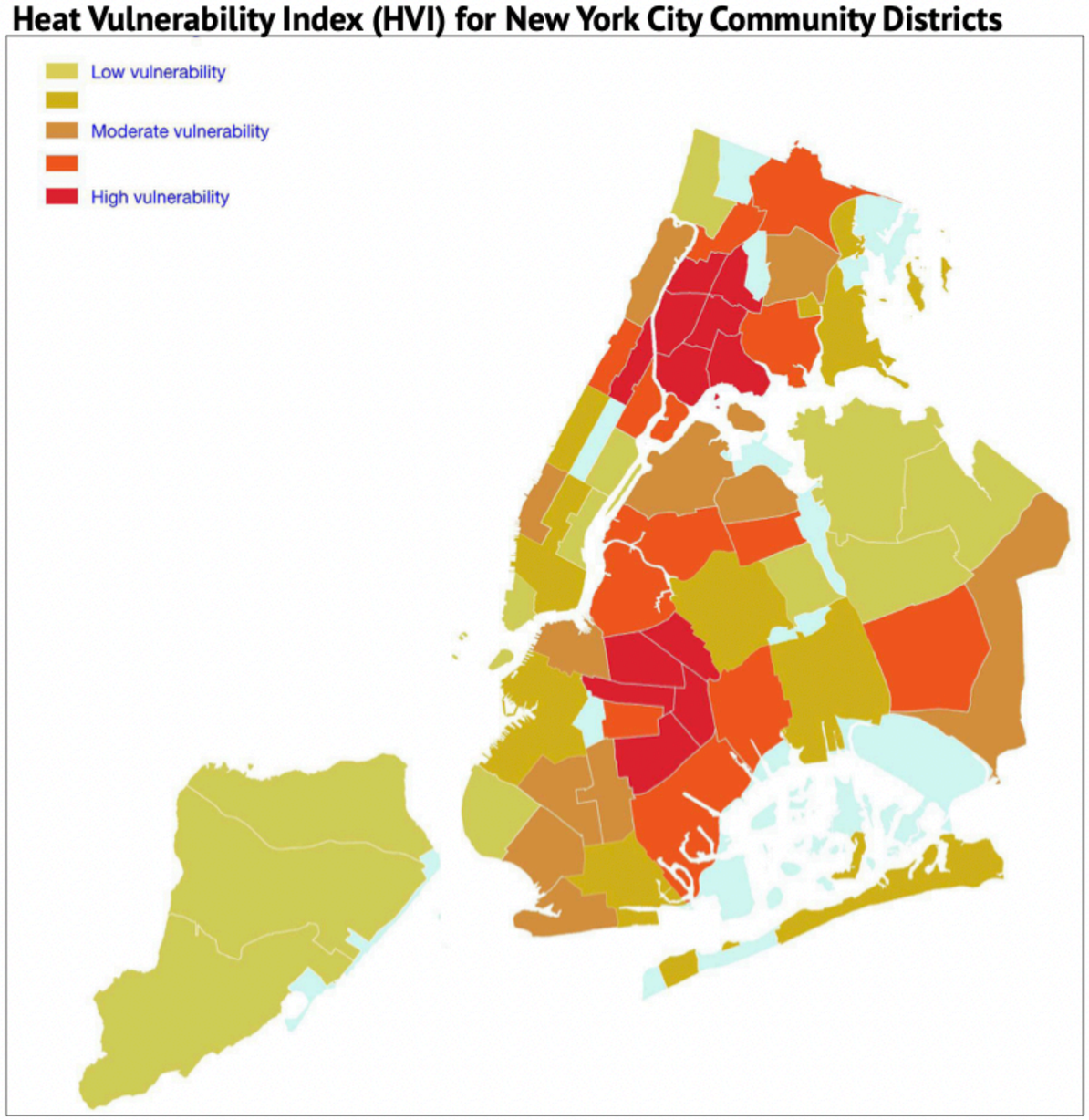
Data

tree canopy change



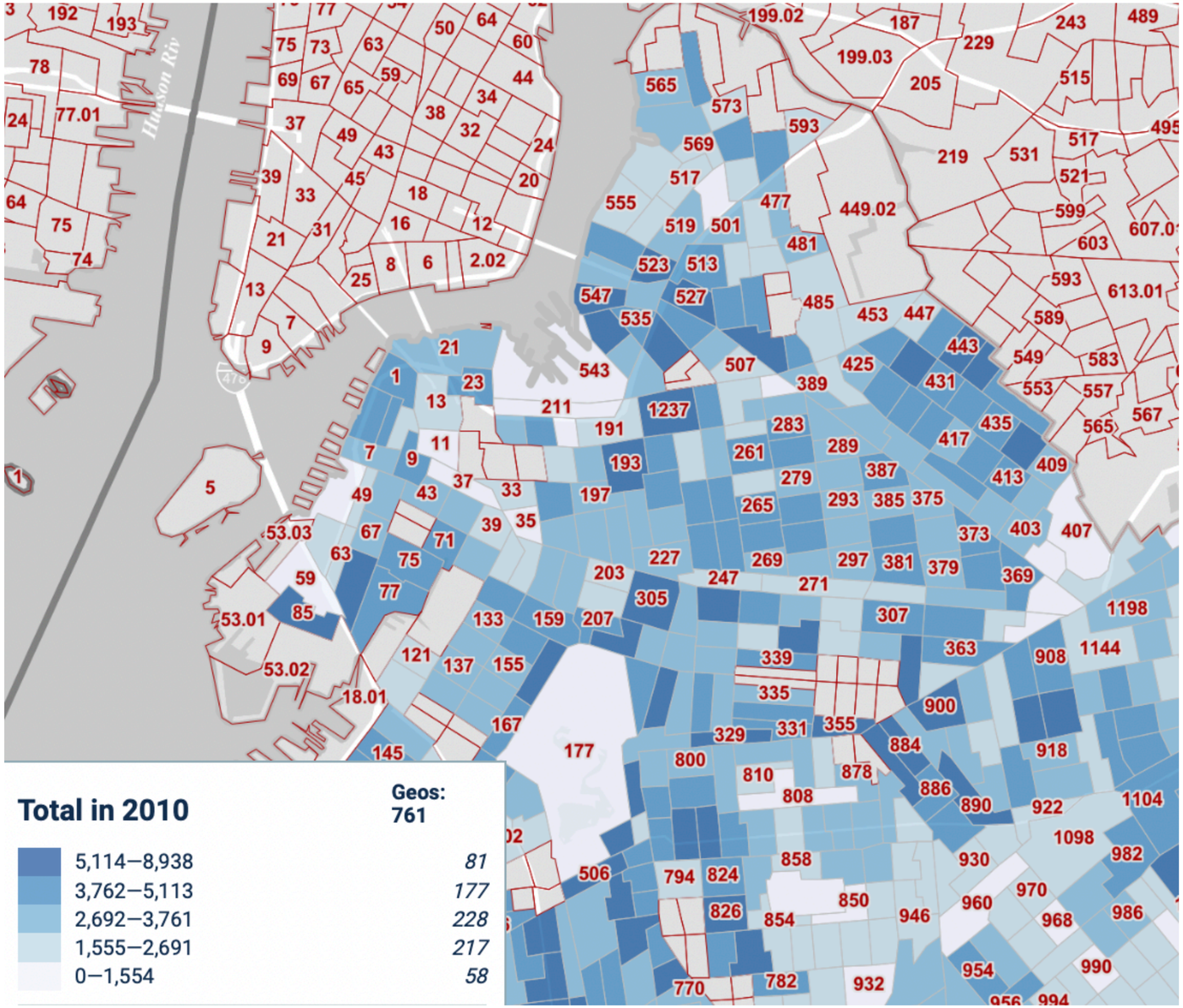
Data

Heat Vulnerability Index



Data

Census

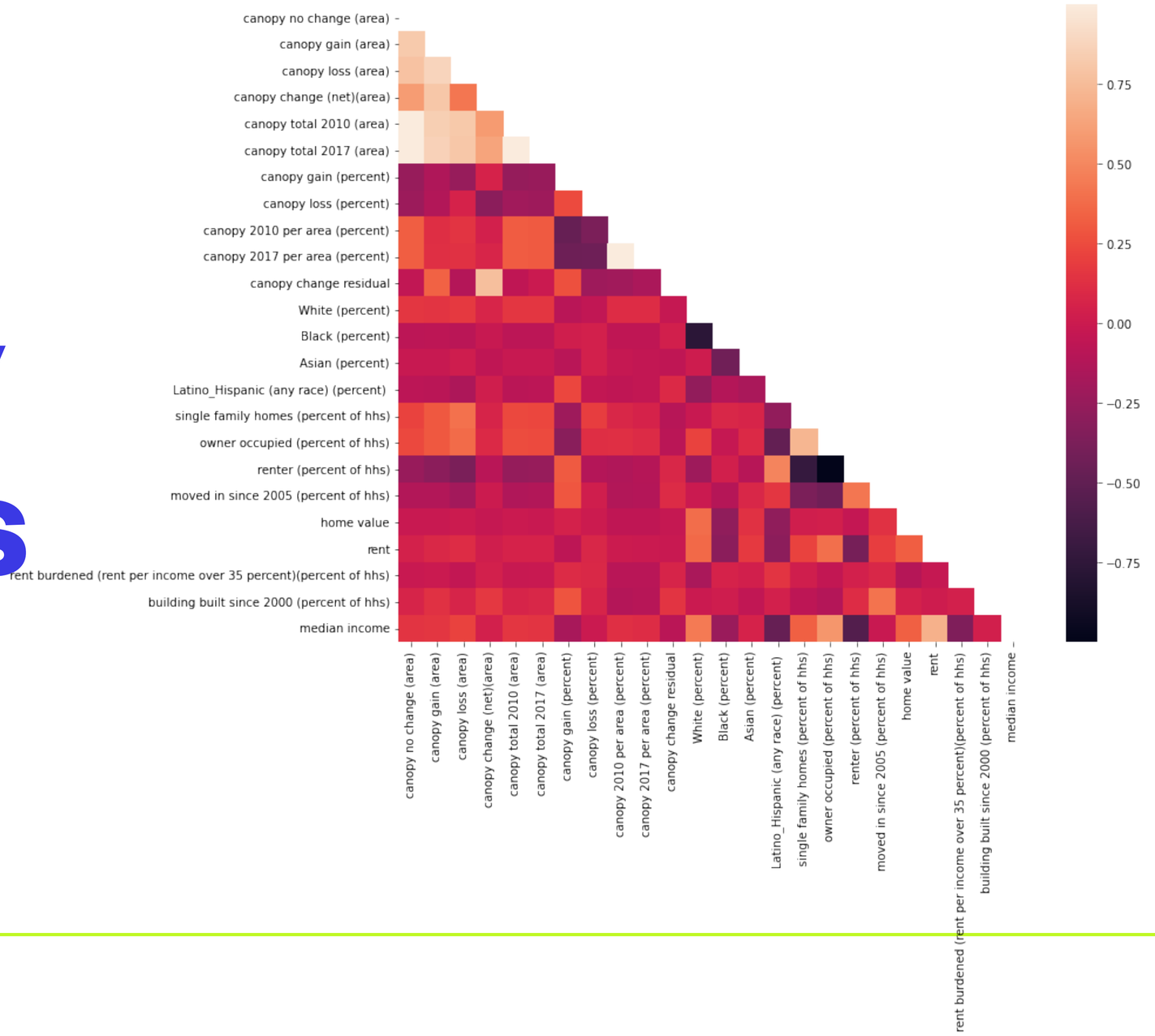

Hudson Riv
Total in 2010
Geos: 761
5,114–8,938 81
3,762–5,113 177
2,692–3,761 228
1,555–2,691 217
0–1,554 58

Methods

clip and process canopy

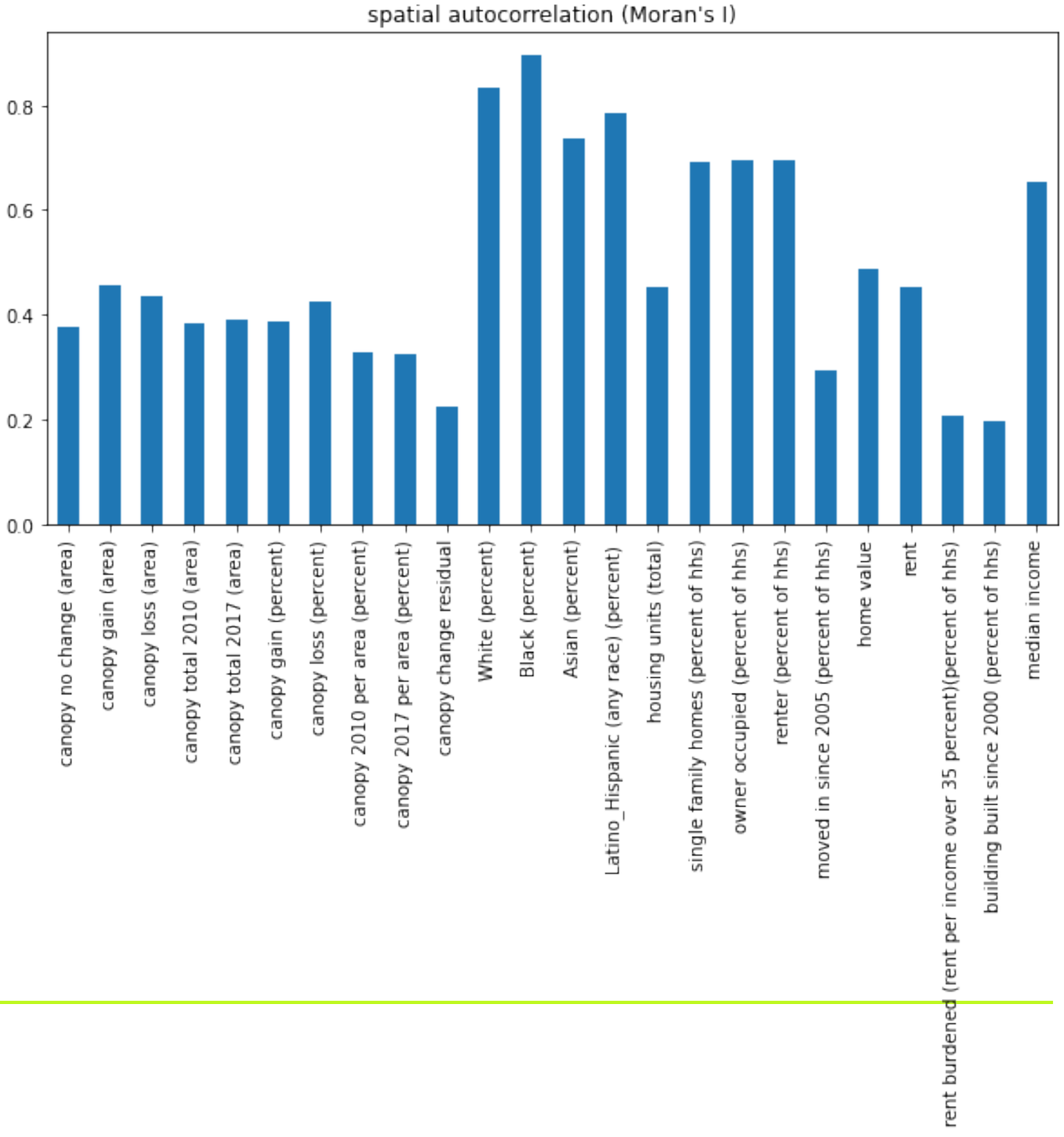
Methods

exploratory correlations



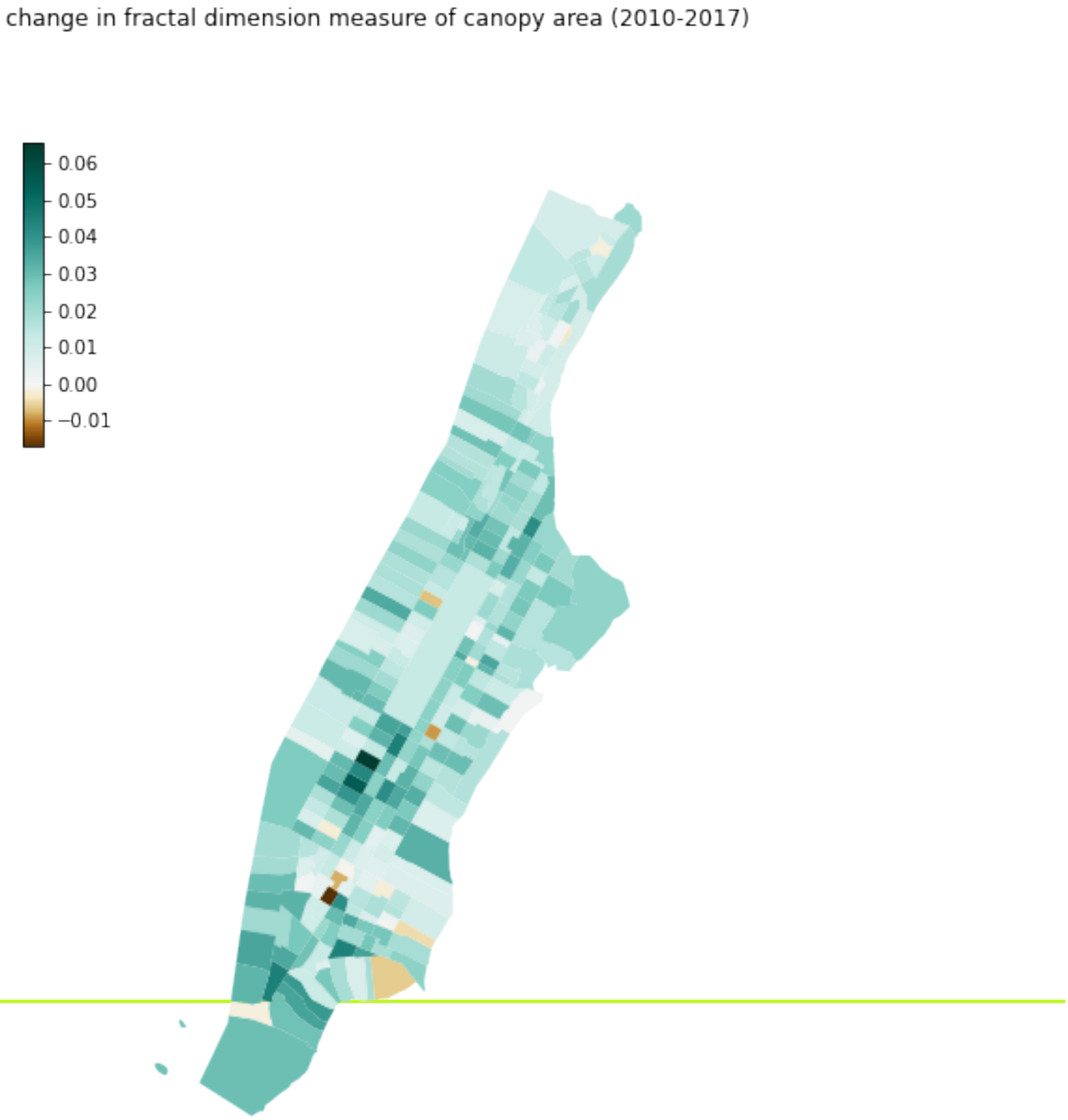
Methods

check spatial auto-correlation



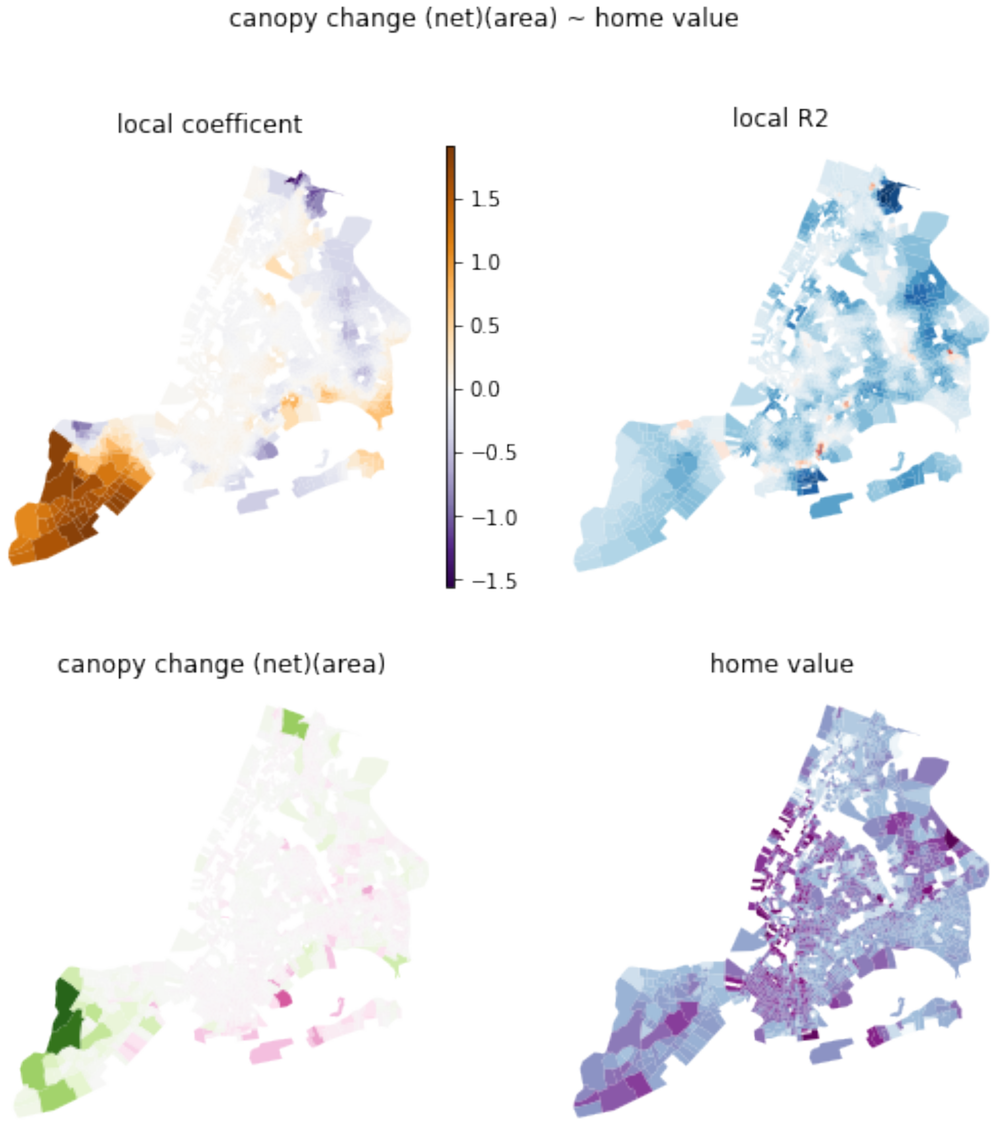
Methods

compute fractal dimension



Methods

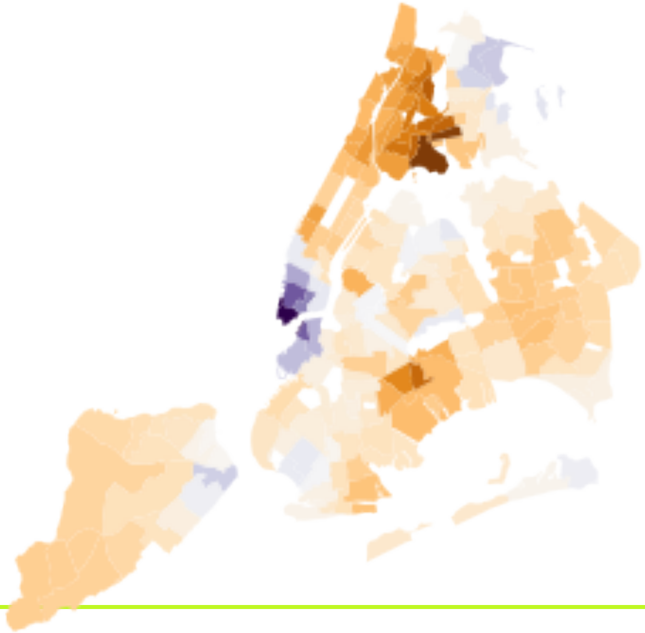
geographically weighted regression



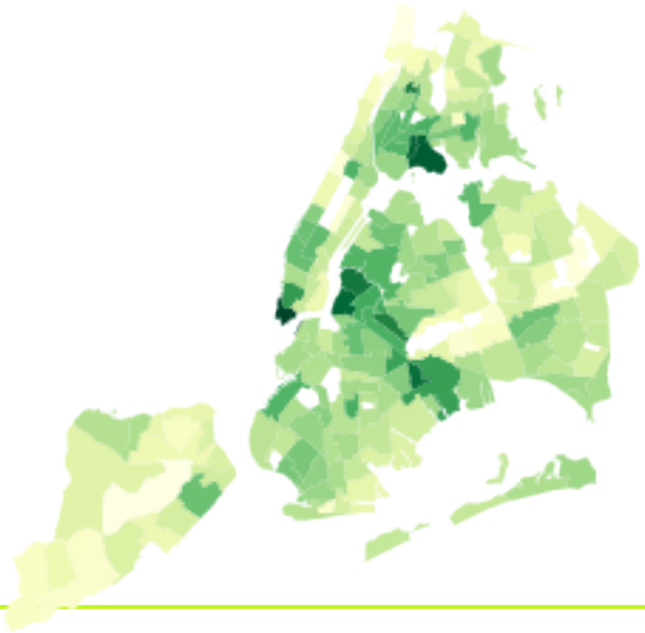
Findings

More canopy for more heat-stressed areas (and also for lower Manhattan)

local coefficent for tree canopy gain ~ heat vulnerability

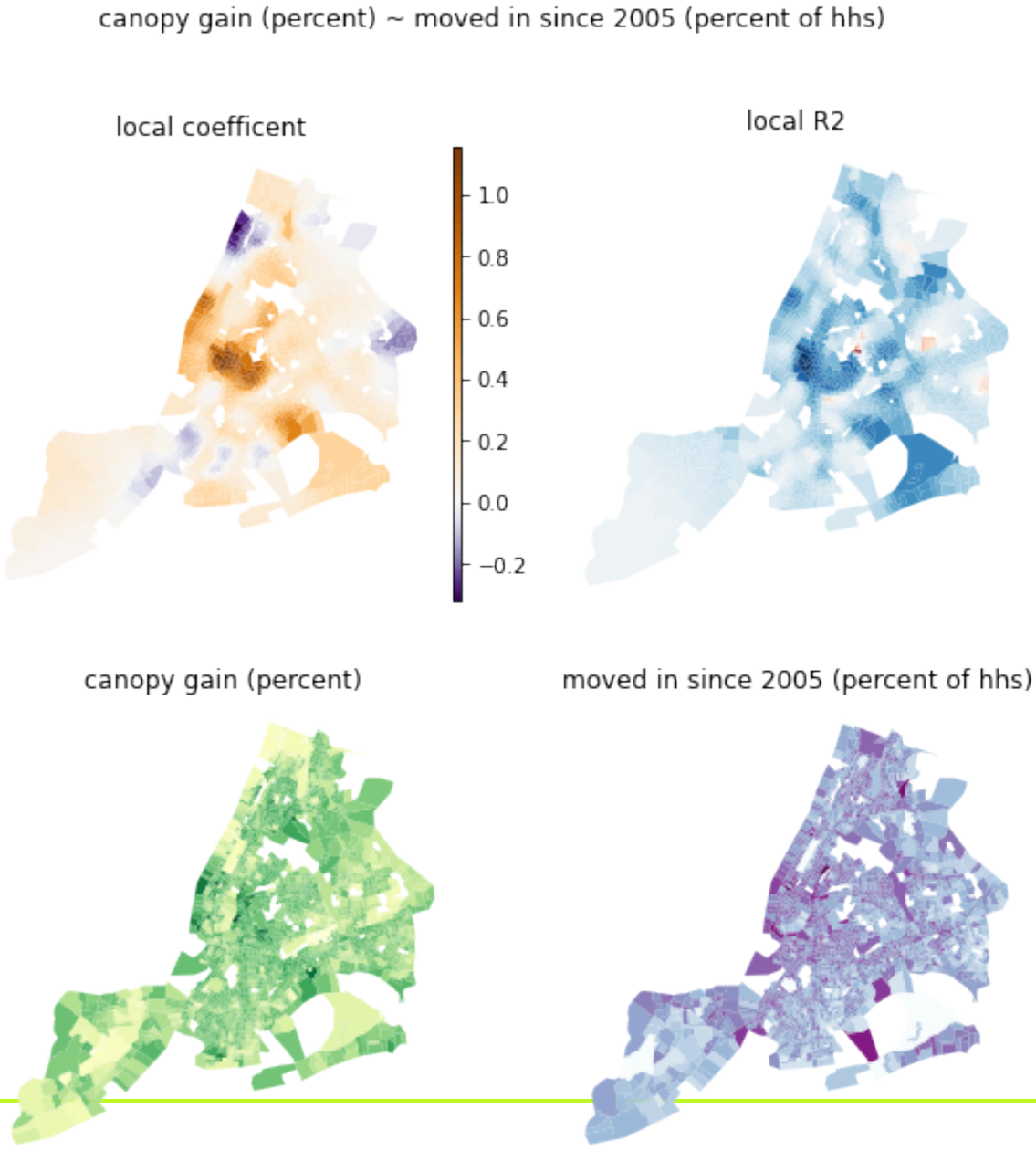


tree canopy change (percent)

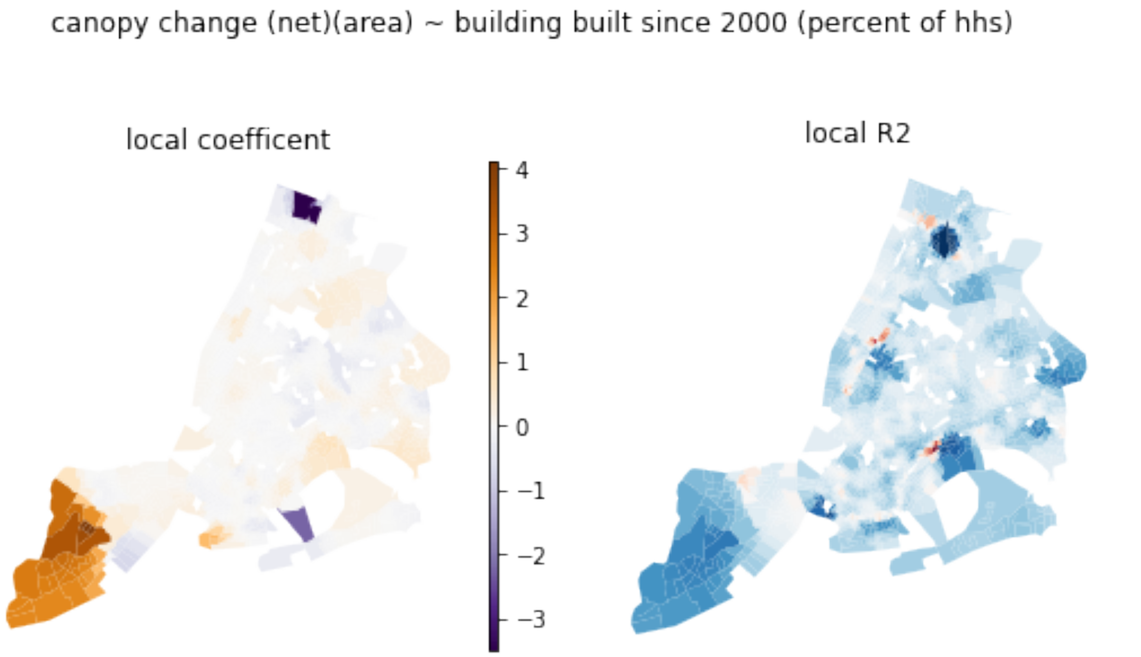


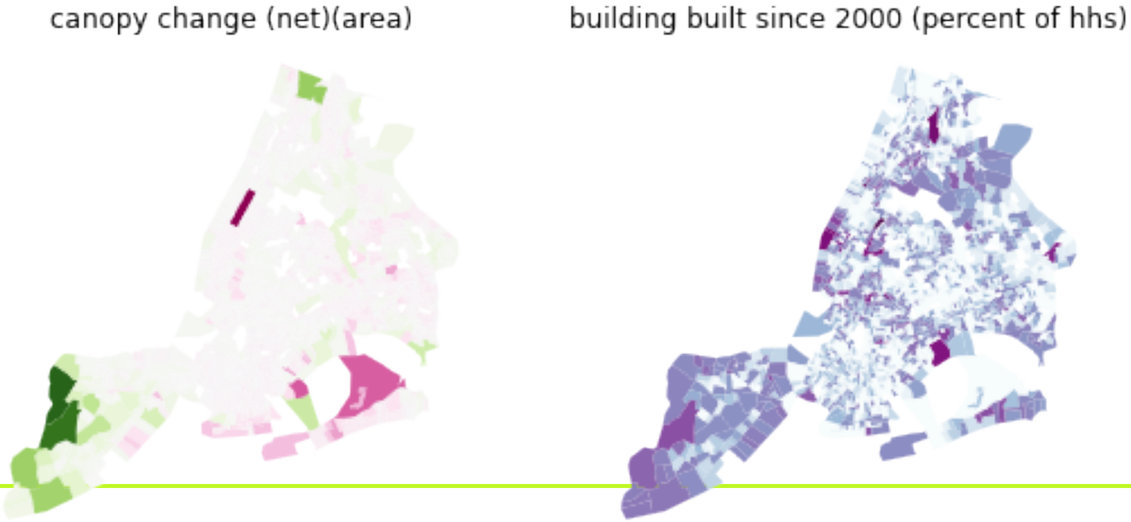
Heat Vulnerability Index

More new residents, more new trees

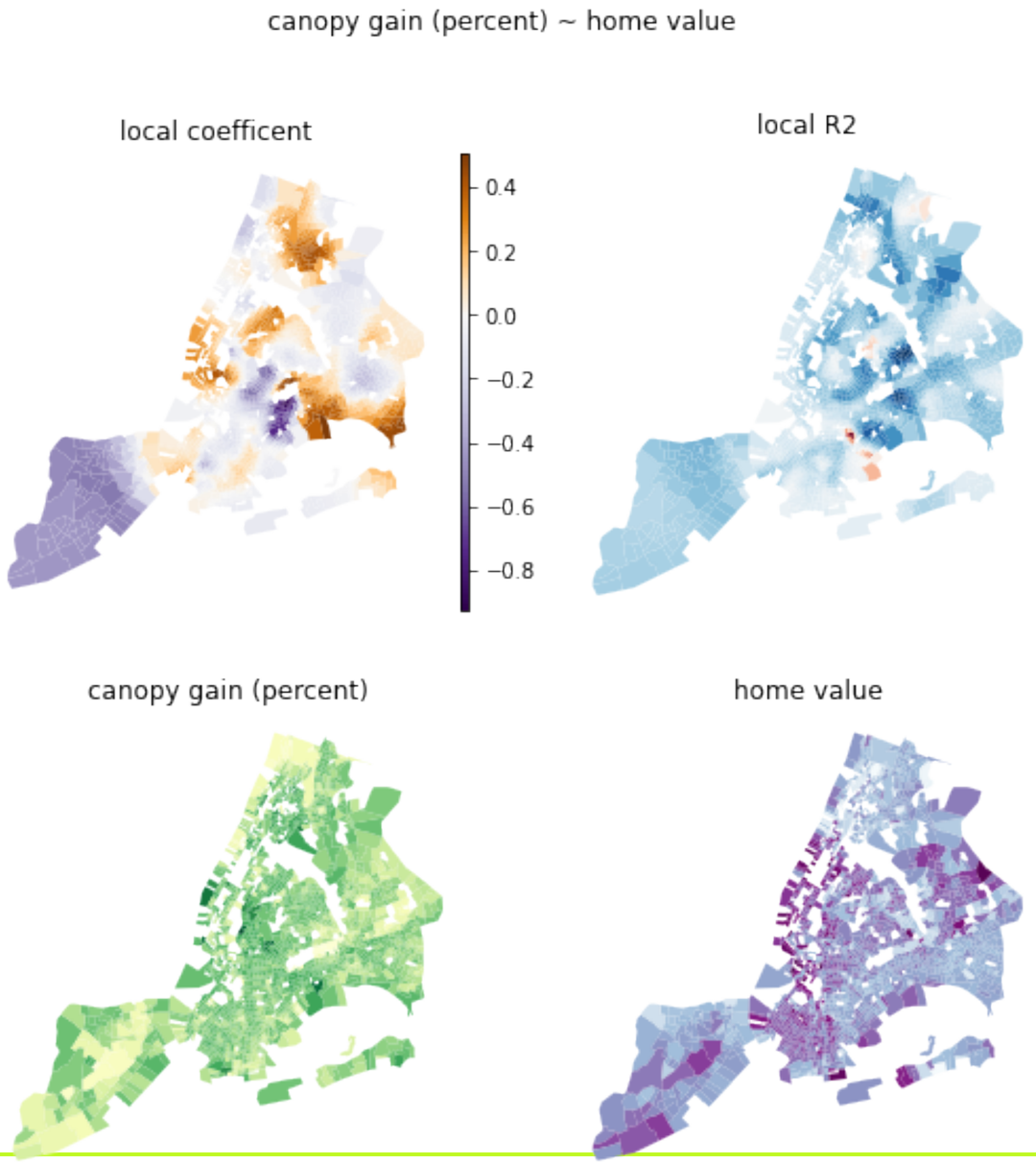


more new homes, more new trees (Staten Island edition)

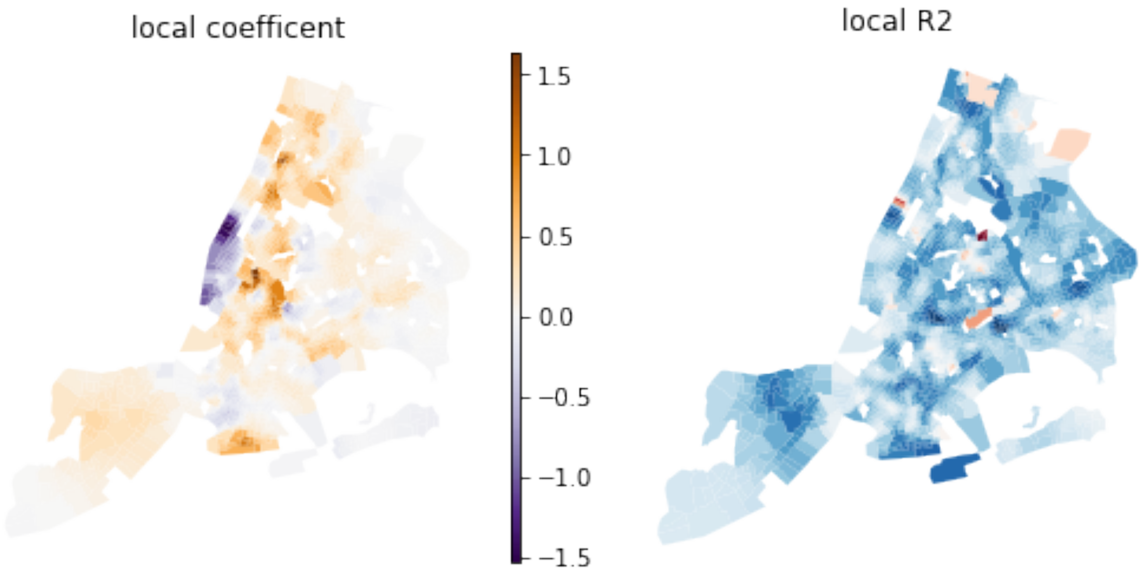




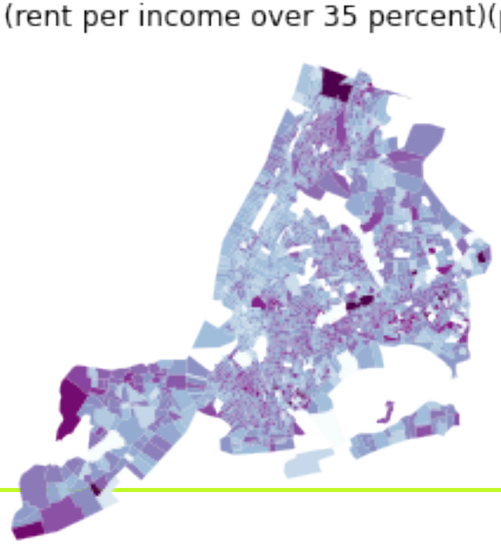
Lower home price, less canopy gain in heat-vulnerable neighborhoods



canopy gain (percent) ~ rent burdened (rent per income over 35 percent)(percent of hhs)

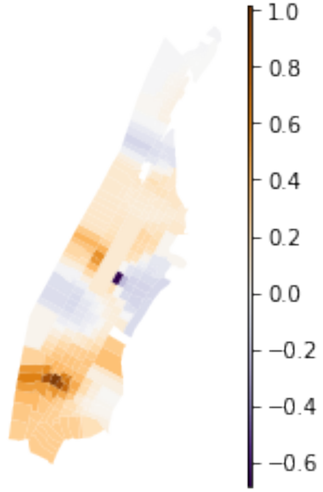


More tree canopy for the less-rent-burdened

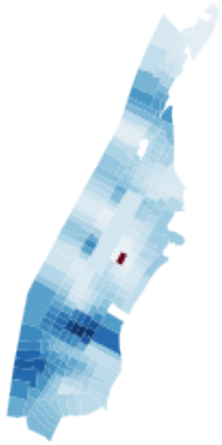


canopy frac change ~ building built since 2000 (percent of hhs)

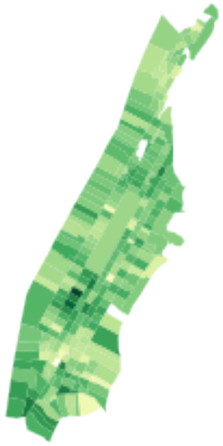
local coefficent



local R2



canopy frac change



building built since 2000 (percent of hhs)

More new residents, more canopy fragmentation near NYU