Finding the prevalence of arrest warrants resulting from minor citations

SPATIAL ANALYSIS FOR CRIMINAL JUSTICE REFORM

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Criminalizing the inability to pay

LEGAL RISK

- Municipal citation: minor infractions (traffic violations, loitering, property upkeep)
- *Not* criminal
- Tickets can charge $100s
- If tickets are unpaid, arrest warrants are issued

	Name	Citation	Balance Due	Status
58411	[redacted], Gerardo M	GT - PEDI-CAB-TOO MANY PASSENGERS	409.50	WARRANT
39813	[redacted], Juan	FAILURE TO PROCEED THROUGH GREEN LIGHT	406.38	WARRANT
70035	[redacted], Eugene	NMV - BICYCLE FAILED TO RIDE TO RIGHT SIDE	258.70	WARRANT
21902	[redacted], Virginia N	FAILURE TO SIGNAL INTENT TO CHANGE LANES	217.00	WARRANT

New search risk for anyone with a warrant

LEGAL RISK

- Under a recent Supreme Court ruling, anyone with an outstanding warrant faces added risk of being stopped and searched

- Lost fundamental rights, just for an unpaid ticket

Faulty judicial reasoning

LEGAL RISK

- Court assumed an outstanding warrant was “extraordinary”
- It is not! especially in places subject to overpricing and punitive municipal courts
- How prevalent are outstanding warrants?

Research questions

- How common (*non-extraordinary*) are outstanding warrants where they are the most prevalent?

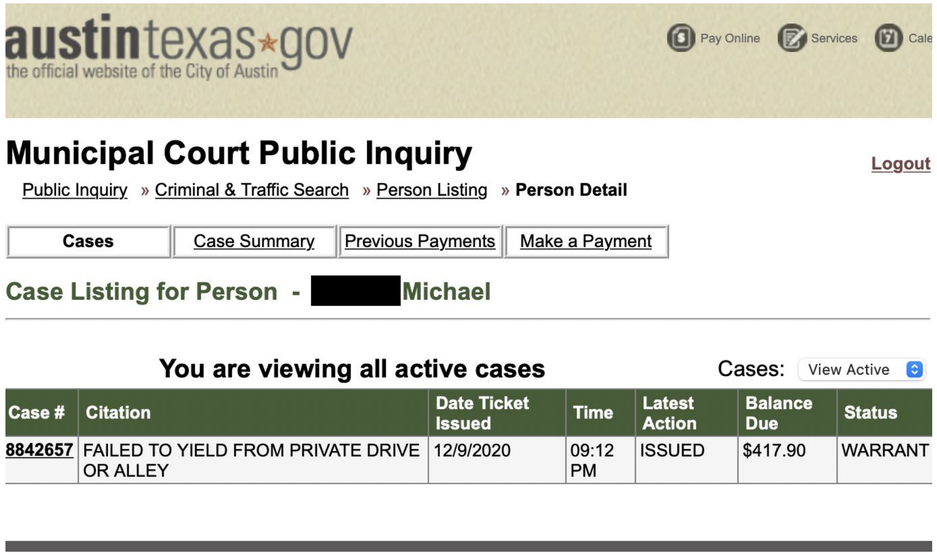
- How fair is the distribution of warrants?
  Is the prevalence of warrants greater where more poor or non-white residents live?

Data

Individual warrant and traffic stop records from Austin, TX

DATA

- from Austin Municipal Court: records for everyone with an outstanding warrant, with name, age, and home address
- from Austin Police: records of all traffic stops
- from Census: population and demographics



austintexas.gov
the official website of the City of Austin
Pay Online Services Cale

Municipal Court Public Inquiry Logout

Public Inquiry » Criminal & Traffic Search » Person Listing » **Person Detail**

Cases | Case Summary | Previous Payments | Make a Payment

Case Listing for Person - [redacted] Michael

You are viewing all active cases Cases: View Active

Case #	Citation	Date Ticket Issued	Time	Latest Action	Balance Due	Status
8842657	FAILED TO YIELD FROM PRIVATE DRIVE OR ALLEY	12/9/2020	09:12 PM	ISSUED	$417.90	WARRANT

Methods

Methods

- Geocode
- Compute prevalence by Census Tract
- Exploratory regression to find explanatory demographic factors
- Identify clusters and hot spots
- Evaluate spatial structure with semivariance
- Measure the local effect of policing with GWR

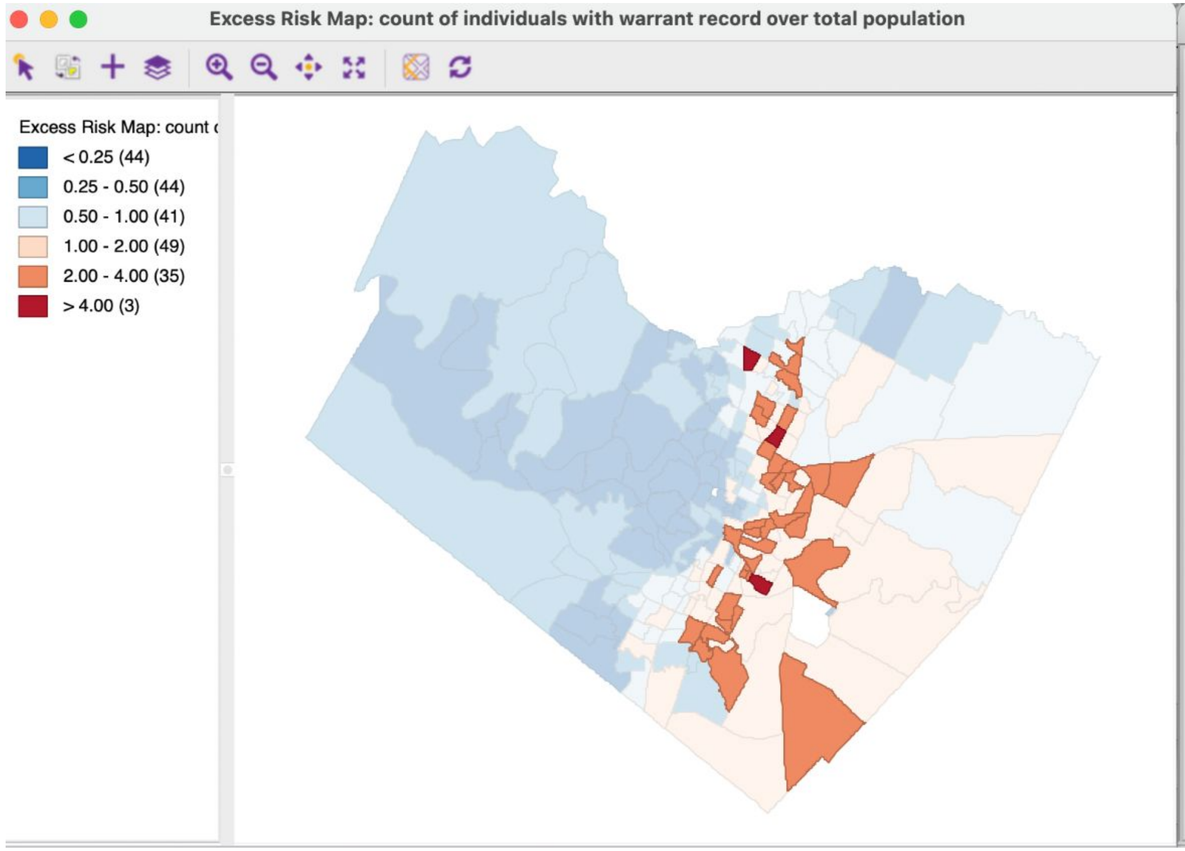
What factors explain warrant prevalence

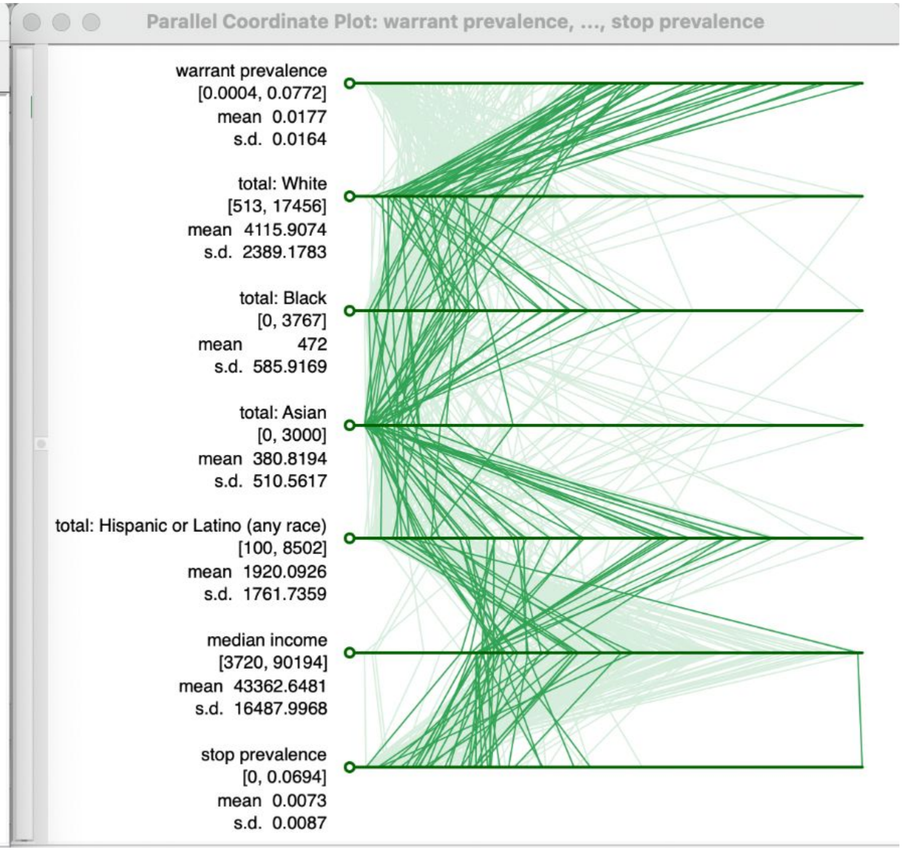
can the
number of people with outstanding warrants
be explained by

- income
- poverty
- race
- ethnicity
- frequency of police stops

Exploratory regression

geocode → bin by Census Tract → compute prevalence
find correlations between prevalence and demographics





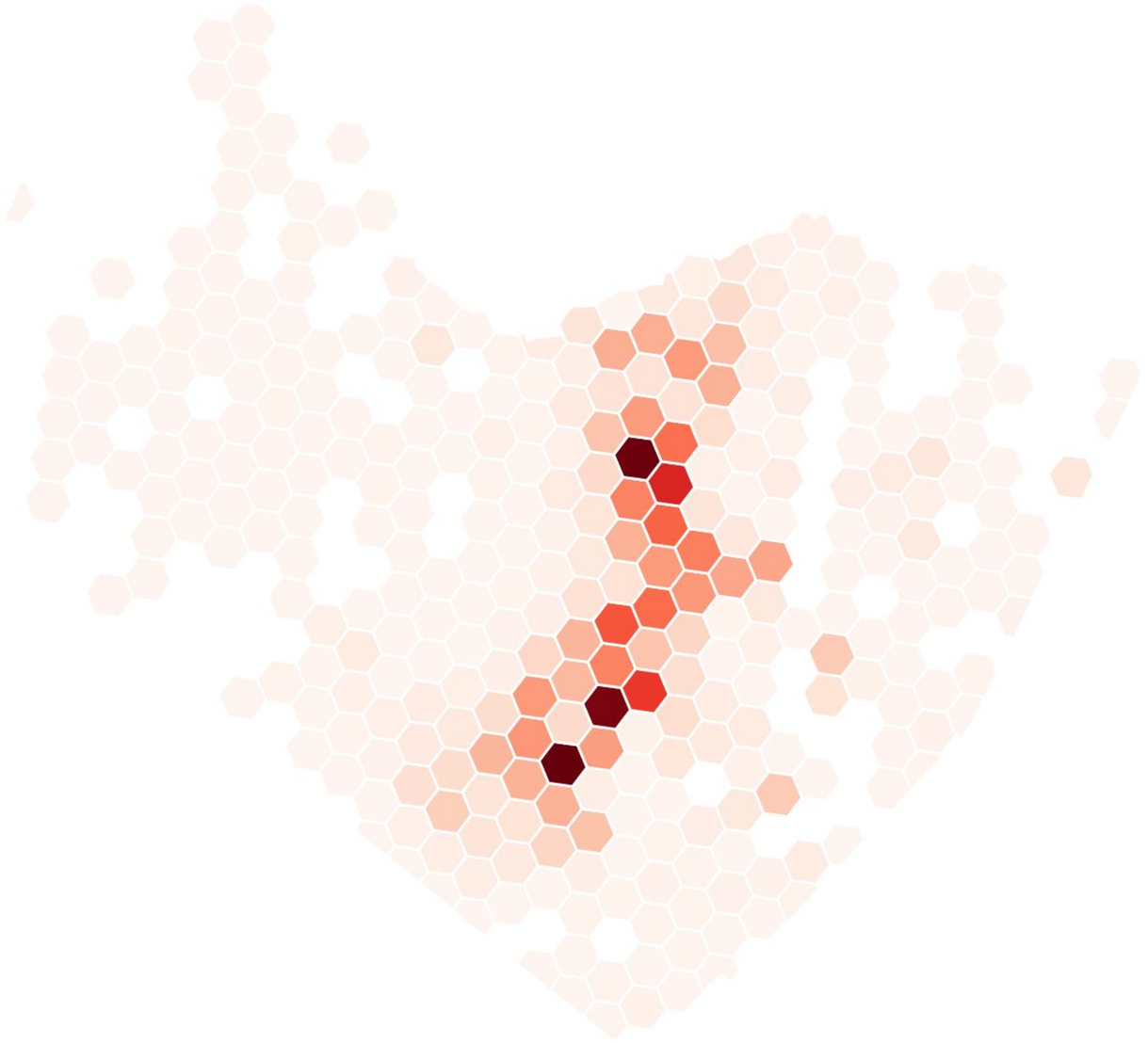
What area demographic factors explain prevalence of warrants

spatially-lagged linear regression
controlling for population and number of traffic stops
explaining count of individuals with outstanding warrant

attribute	coefficient
total population: Hispanic or Latino	0.03***
total households receiving SNAP benefits	0.15***

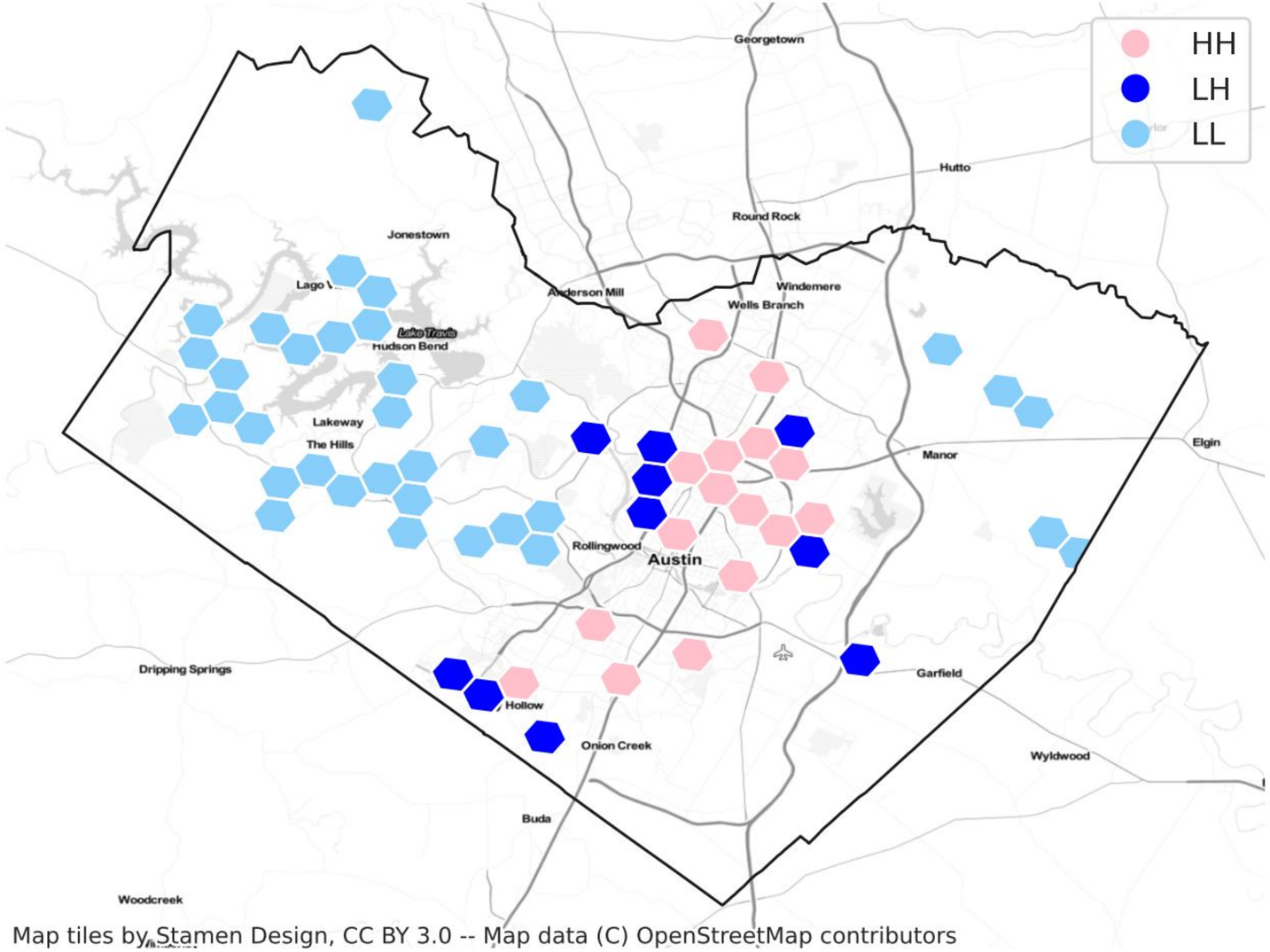
R^2 = 0.70

Compute density



Detect clusters and outliers

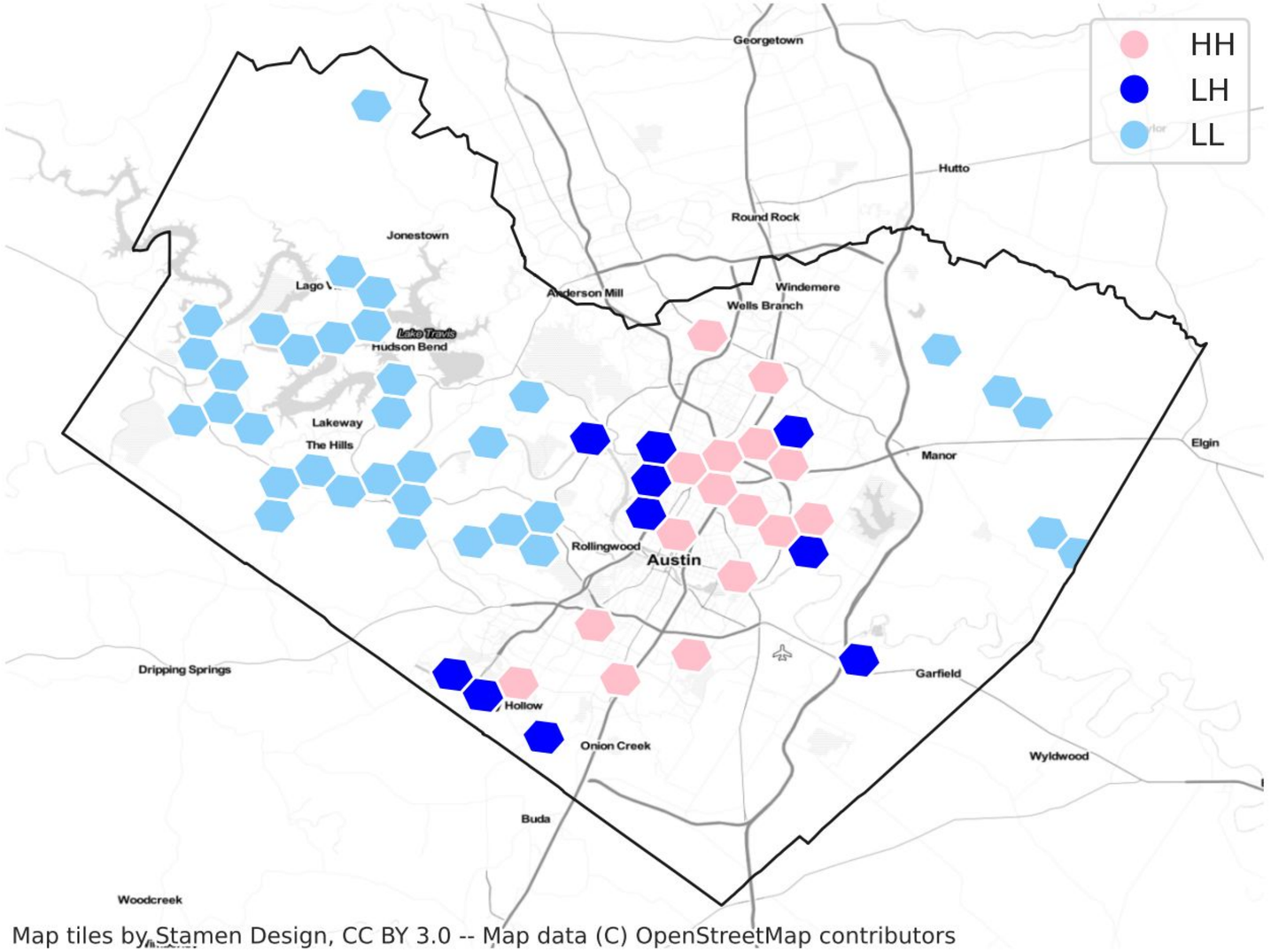
Are there areas with unusual density of warrants, compared to their neighbors?



Detect clusters and outliers

Queen adjacency:

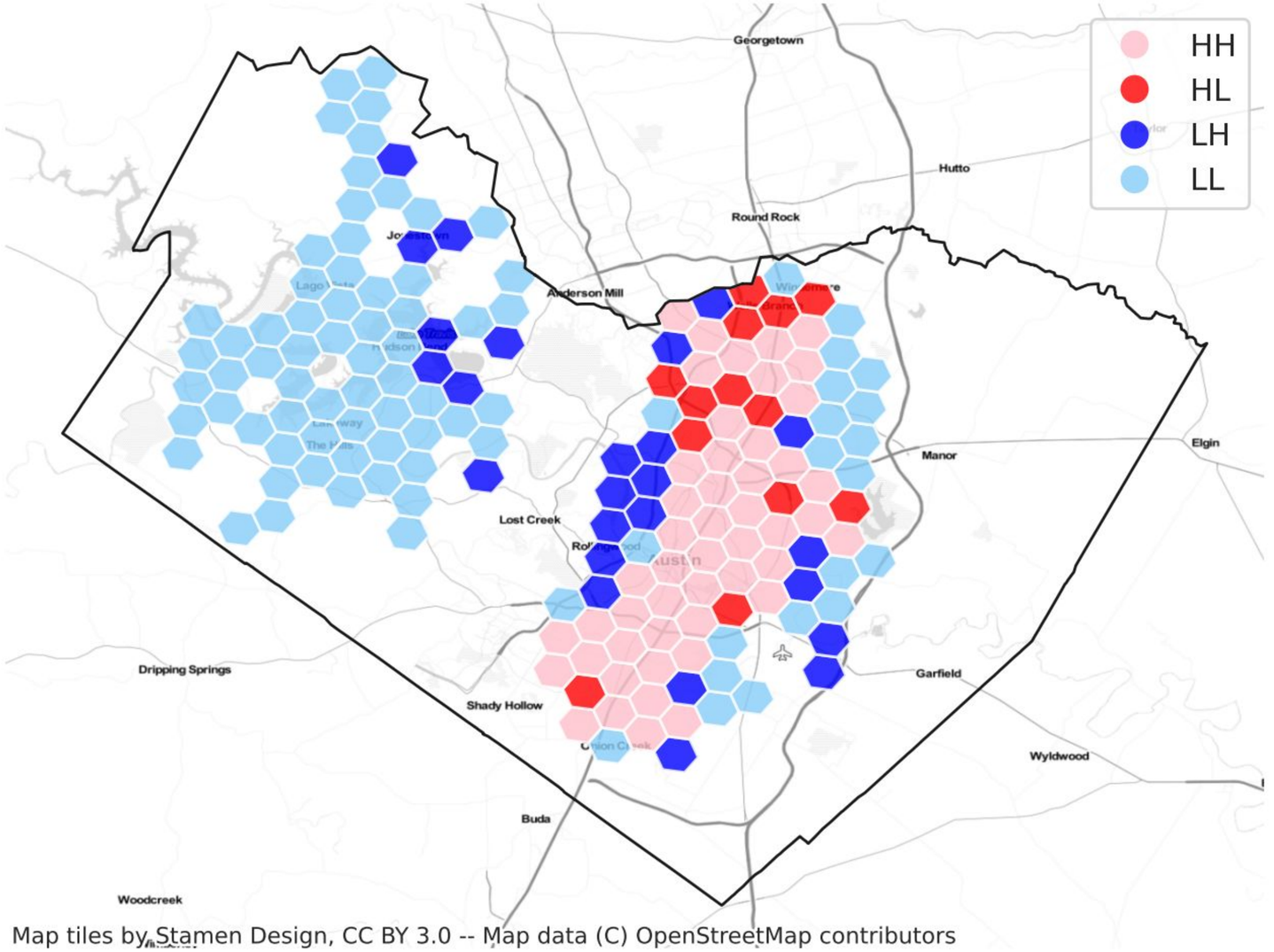
- low and high clusters
- low outliers
- no high outliers



Detect clusters and outliers

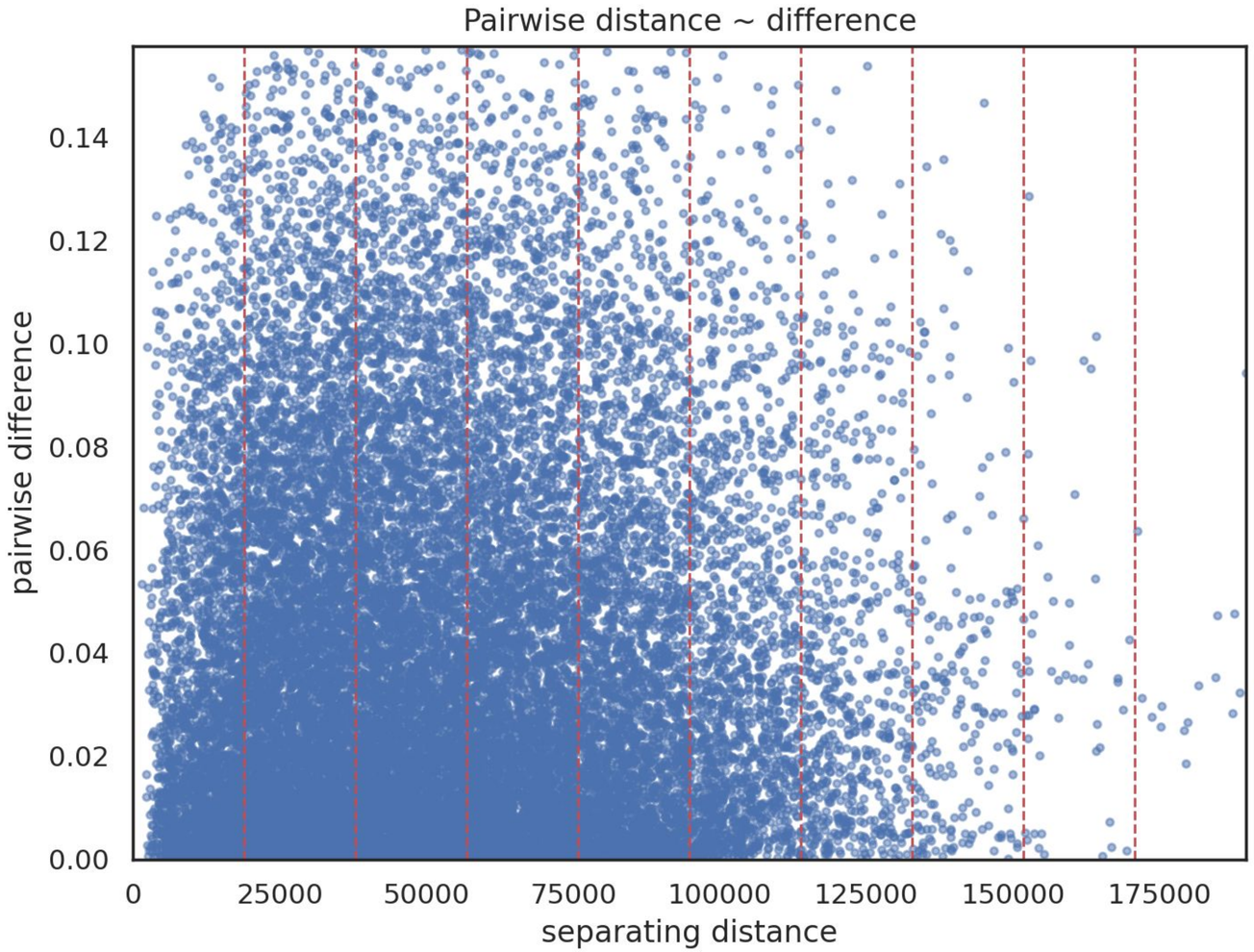
Inverse distance:

- large low and high clusters
- low and high outliers



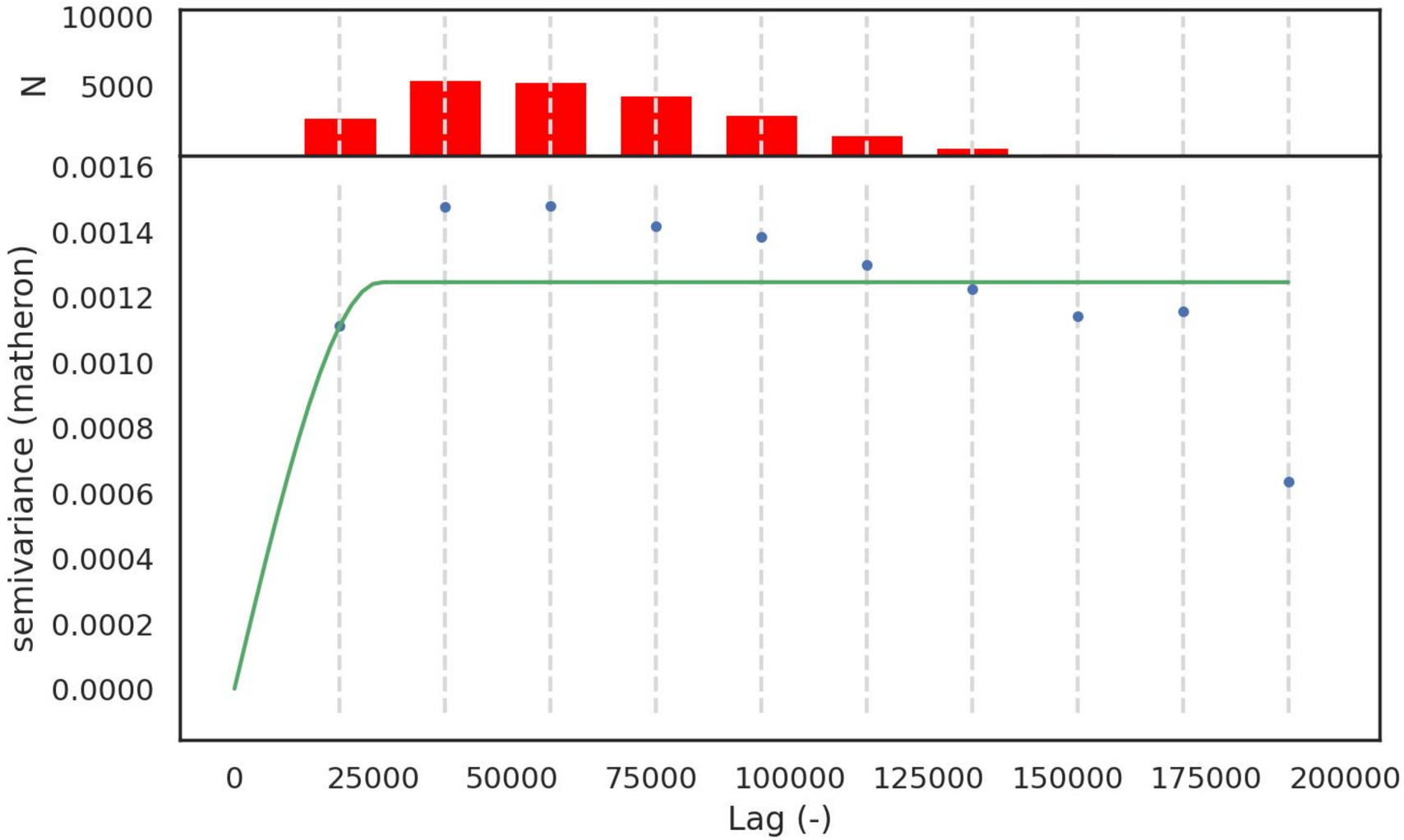
Find spatial structures of warrant assignment

Is the allocation of warrants driven by a similar system across space?
Or is the system local?

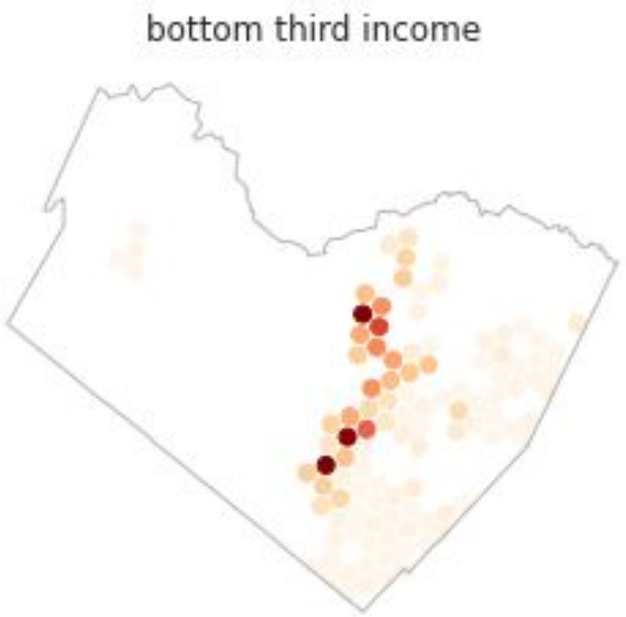


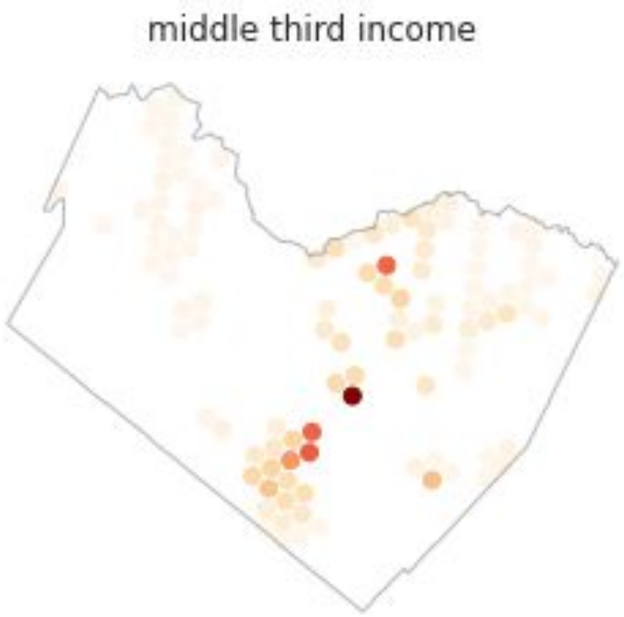
Find spatial structures of warrant assignment

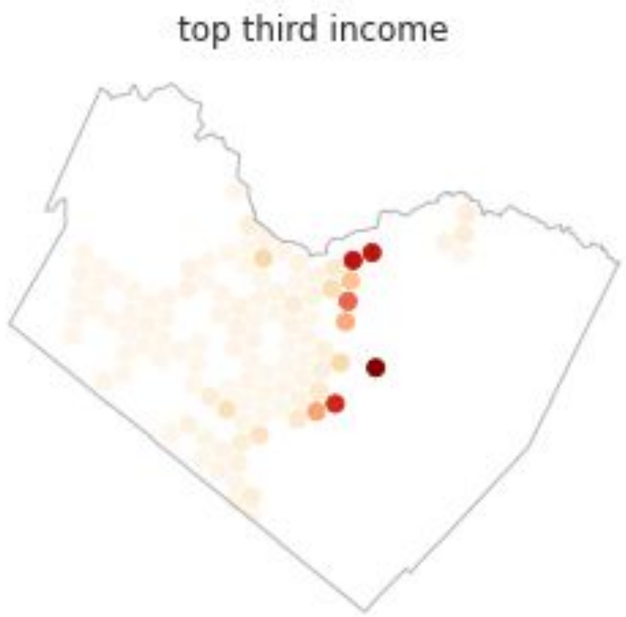
Detect range of semivariance



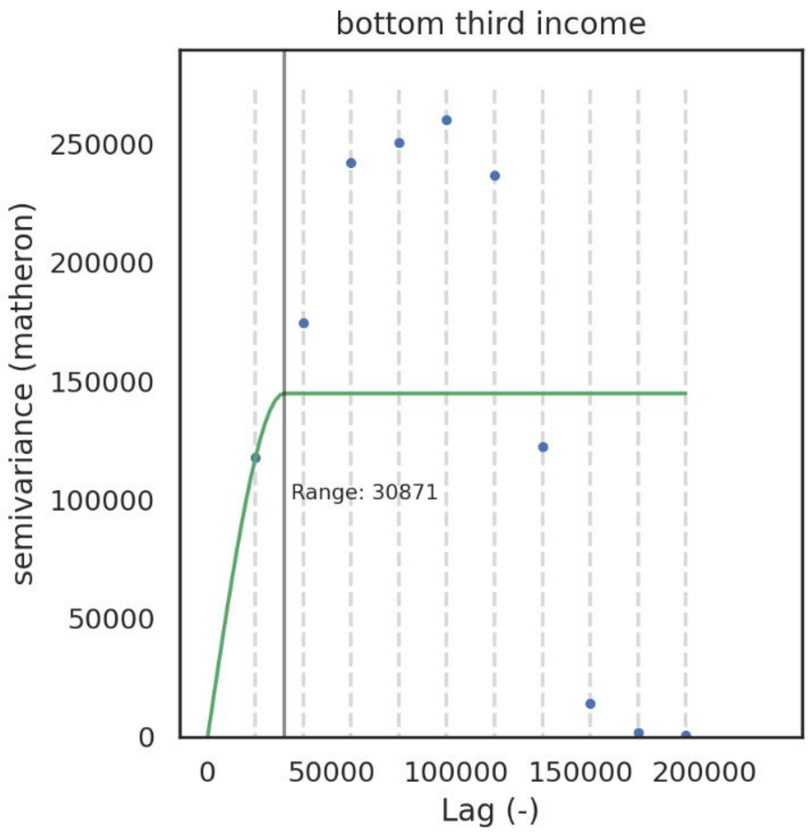
Is the spatial structure different in higher- and lower-income neighborhoods?

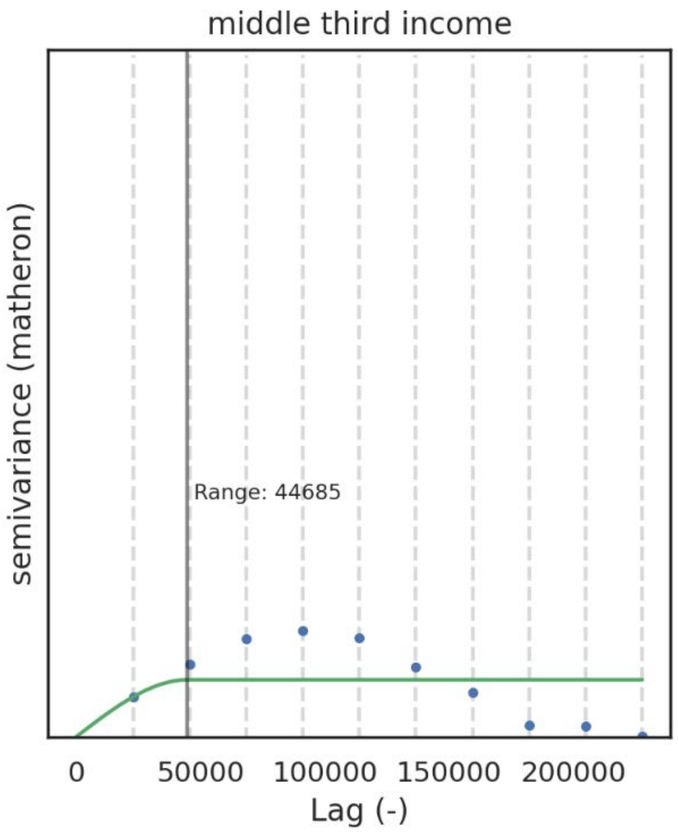


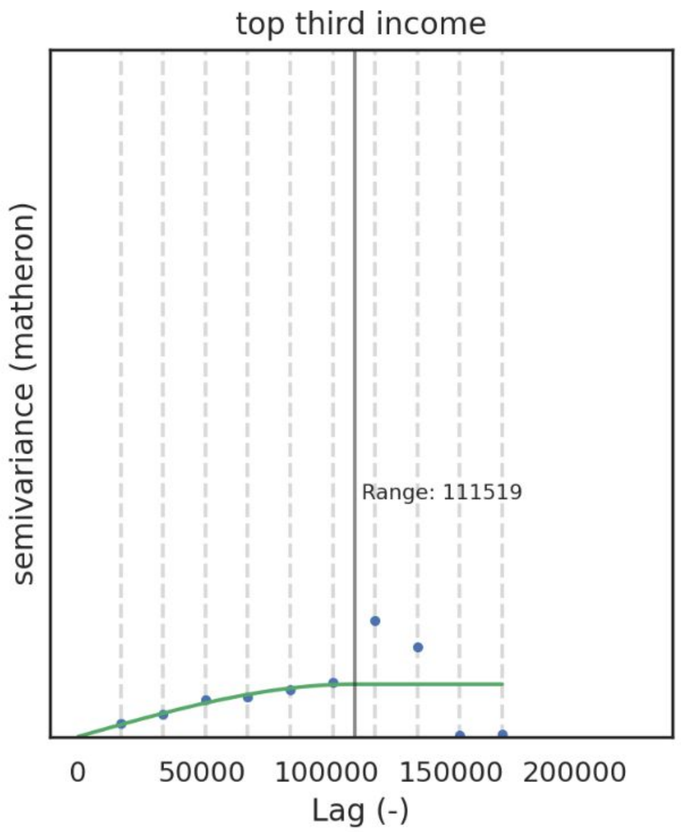




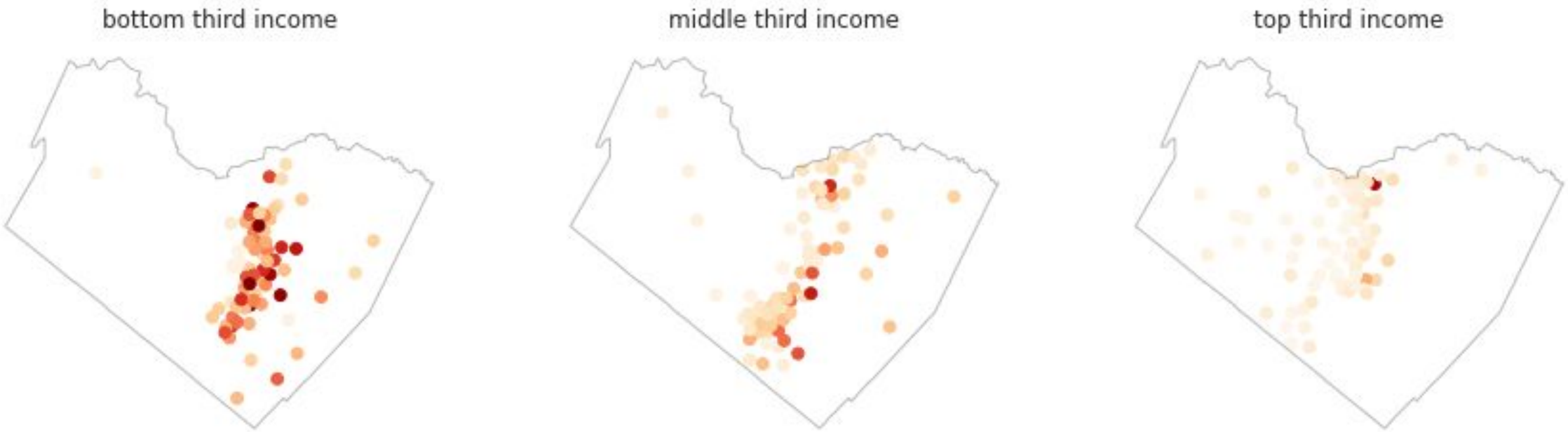
More local variation amid lower-income neighborhoods



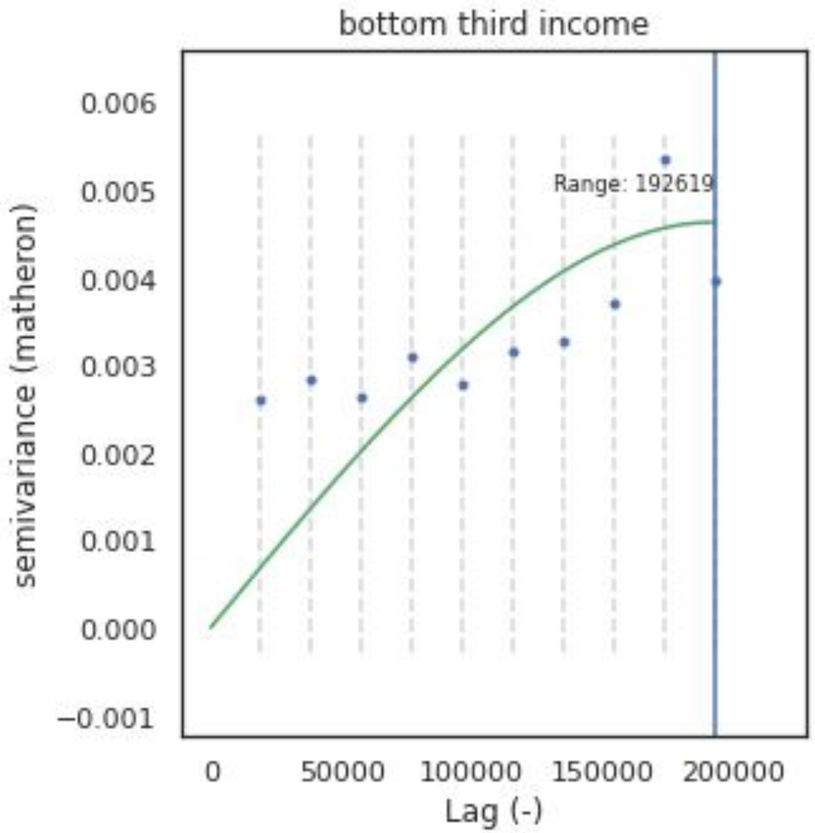


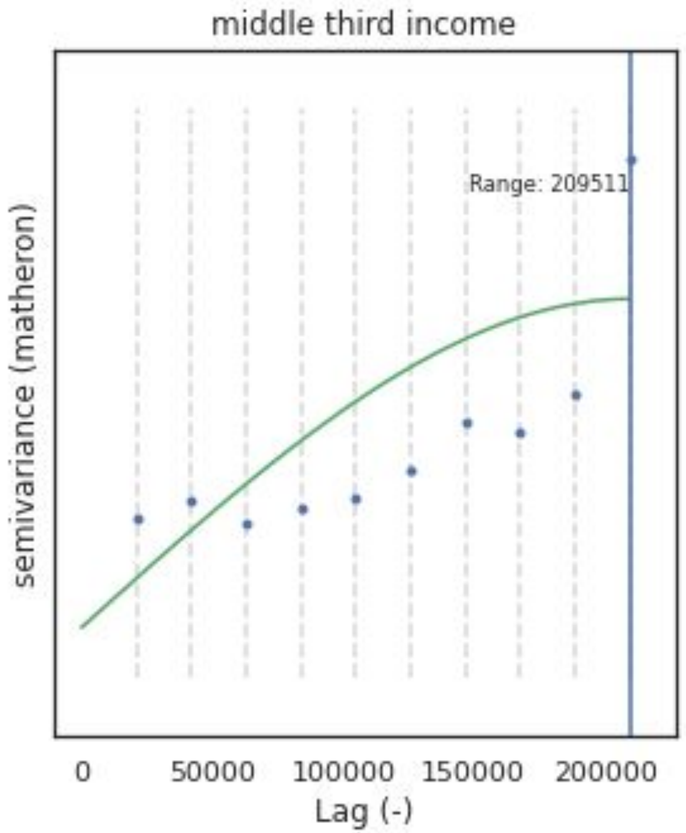


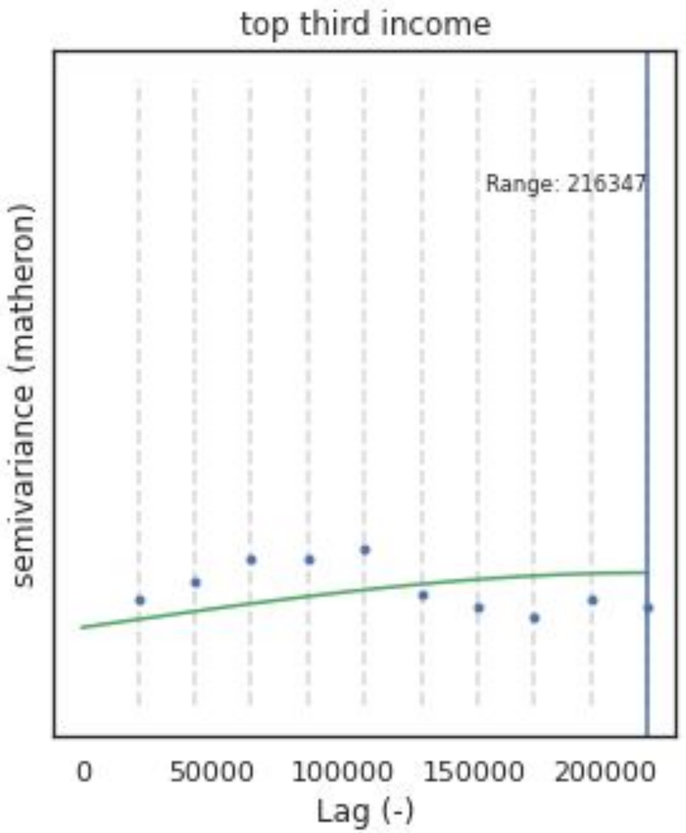
Does *prevalence* match with *density?*



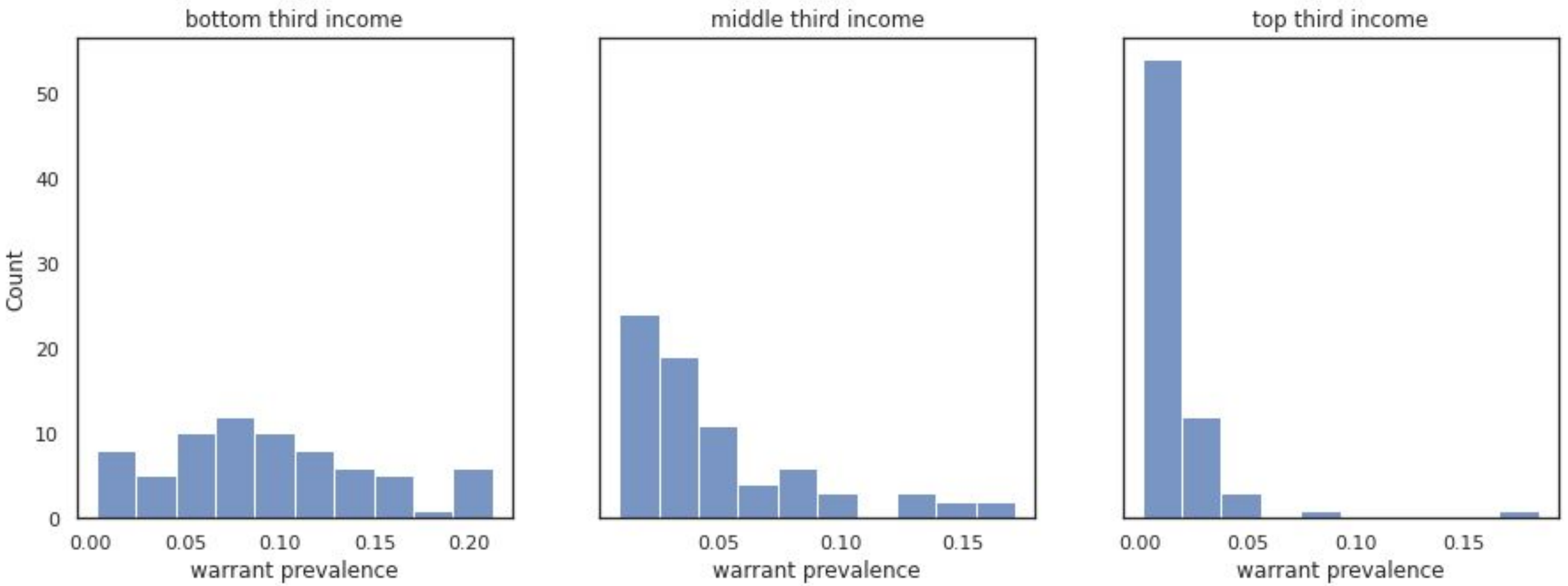
Spatial association over much longer range







More variance in lower-income neighborhoods



Where are warrants driven by overpolicing?

- Geographically-weighted regression
- using bandwidth from semivariogram

- compute *local* fit