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# HEDONIC PRICING USING SPATIAL REGRESSION

ADVANCED SPATIAL ANALYTICS: PROJECT I

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# BUILDING THE HEDONIC PRICE MODEL

- Dependent Variable:
  - Median Gross Rent (dollars): Total: Renter-occupied housing units paying cash rent – (estimate)

# BUILDING THE HEDONIC PRICE MODEL

- Internal Attributes:
  - Tenure by bedrooms: Renter occupied: Occupied housing units – (estimate)
  - Tenure by plumbing facilities: Renter occupied: Complete plumbing facilities: Occupied housing units – (estimate)
  - Household income in the past 12 months (in 2014 inflation-adjusted dollars): Total: Households – (estimate)

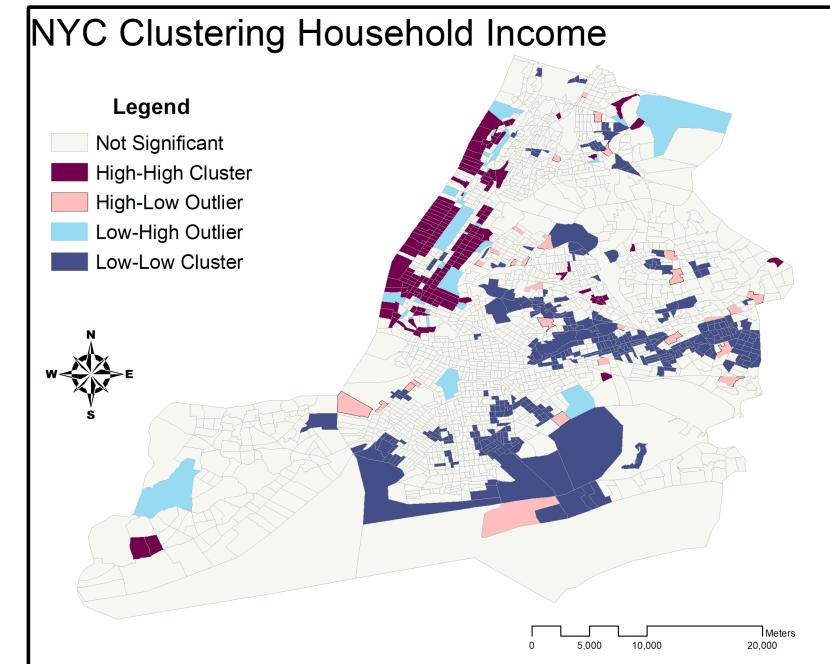
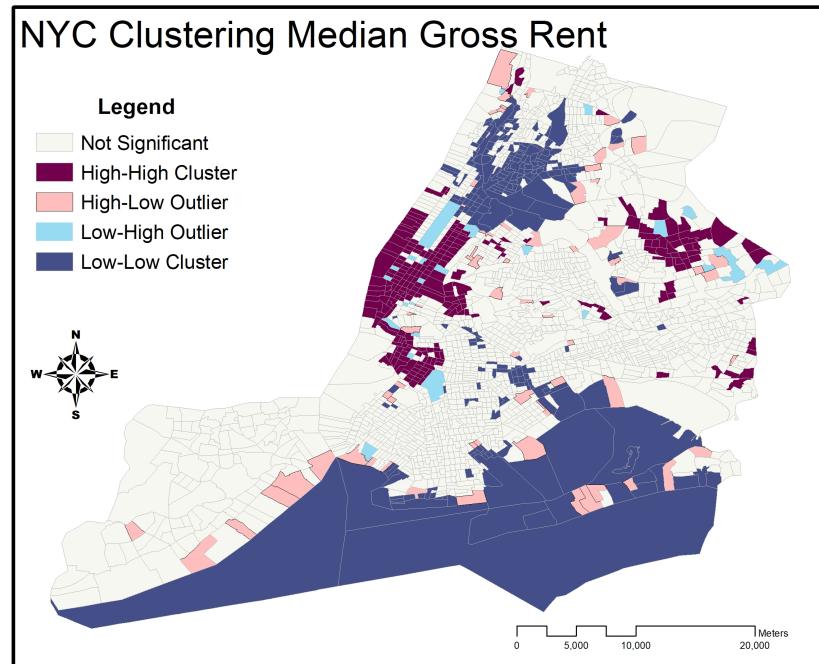
# BUILDING THE HEDONIC PRICE MODEL

- External Attributes:
  - Vacancy status: For rent: Vacant housing units – (estimate)
  - Means of transportation to work by age: Public transportation (excluding taxicab): workers 16 years and over – (estimate)
  - Means of transportation to work by age: Walked: Workers 16 years and over – (estimate)
  - School enrollment by level of school for the population 3 years and over: enrolled in school: population 3 years and over – (estimate)

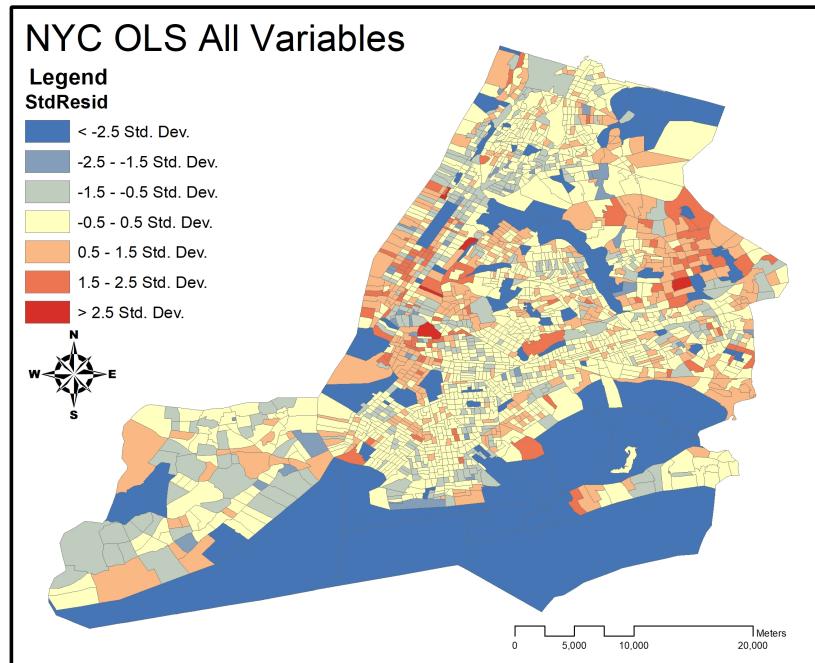
## GLOBAL MORAN'S I

Attribute Name:	Global Moran's I:
Median Gross Rent (dollars)	0.3345
Vacancy Status (for rent)	0.2875
Public Transportation (excluding taxicab)	0.4448
Walking Transportation	0.6002
School Enrollment	0.2776
Bedrooms	0.4511
Plumbing	0.4514
Household Income	0.3783

# ANSELIN LOCAL MORAN'S I

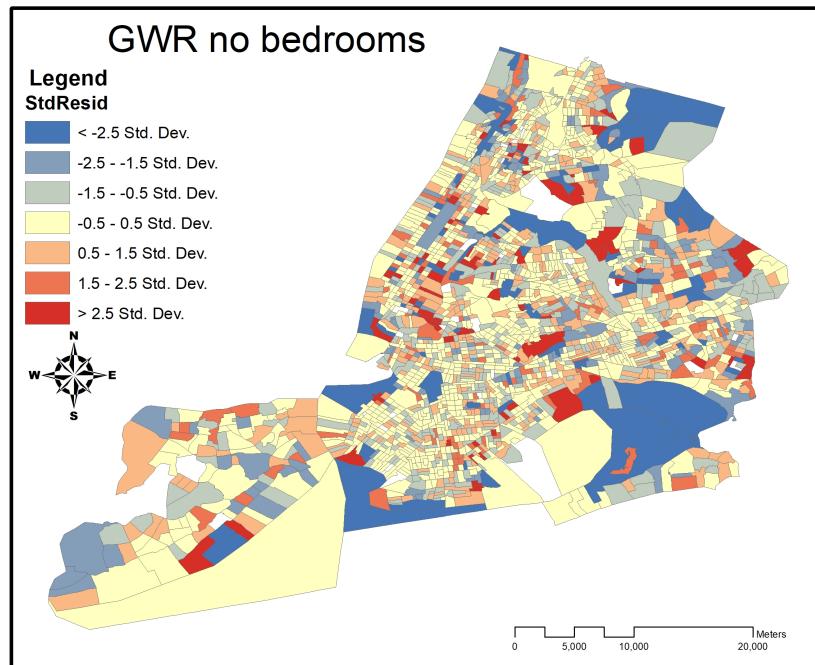


# ORDINARY LEAST SQUARES REGRESSION (OLS)



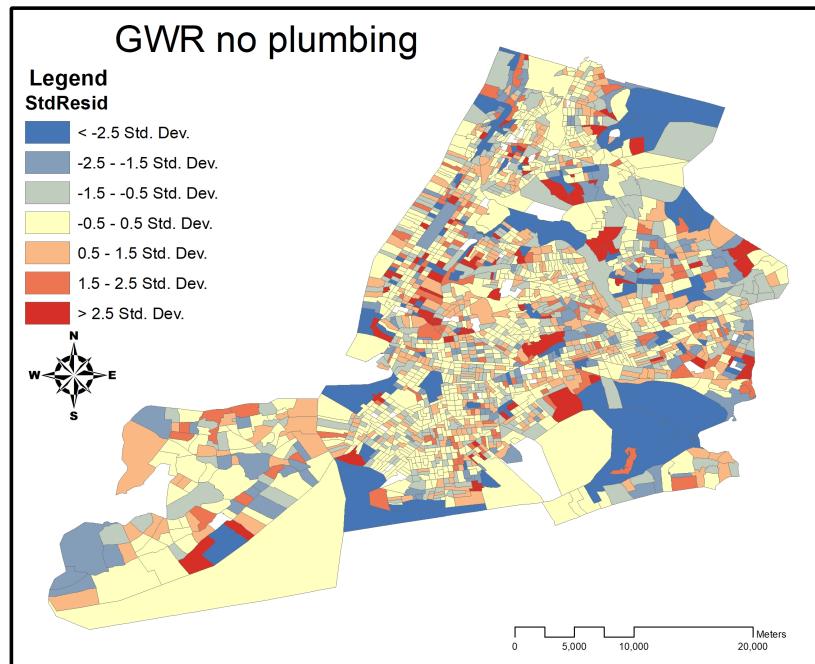
- Dependent Variable = Median Gross Rent
- Explanatory Variables = Both Internal and External Attributes
- Adjusted R<sup>2</sup> = 0.294574

# GEOGRAPHICALLY WEIGHTED REGRESSION (GWR)



- Dependent Variable = Median Gross Rent
- Explanatory Variables = All attributes excluding bedrooms
- Adjusted R<sup>2</sup> = 0.696688

# GEOGRAPHICALLY WEIGHTED REGRESSION (GWR)



- Dependent Variable = Median Gross Rent
- Explanatory Variables = All attributes excluding plumbing
- Adjusted R<sup>2</sup> = 0.719938

## SPATIALLY ADJUSTED REGRESSION VS. OLS

Regression Type	All Attributes	Internal Attributes	External Attributes
OLS	0.294574	0.128572	0.132758
Spatially Adjusted Regression	0.369448	0.301205	0.272994



THANK YOU