

Investigating NYC Schools: A Comparison of Neighborhood Demographics, Public High School Demographics, and Graduation Rates

BACKGROUND

Public High Schools

New York City is the largest public school system in the country, educating over 1.1 million students. Some high schools are zoned, meaning students in that neighborhood are prioritized in admissions; other high schools accept by lottery or application, although priority is often given to students who live nearby. With such a diversity of options, there should be a diverse representation in the high schools' student bodies. Yet New York City is one of the most segregated cities in the United States, as most neighborhoods are often defined by race or income, and the public high schools reflect that. The high-performing schools or the schools with the best graduation rates tend to be those with more white, Asian, and high income students. This project looks at the racial demographics of the of New York City's neighborhoods and the demographics of the public high schools, looking to see which schools reflect their neighborhoods and if any are noticeably different. This project also looks at the locations of the high schools with higher and lower graduation rates to find out if there is a correlation or pattern to their locations and student bodies.

METHODS

This project examined the racial demographics of neighborhoods using the 2017 ACS Community Survey, and the 2019 racial demographics of public high schools and 2019 high school graduation rates from the NYC Department of Education. Population by race was represented through a dot density map. Global Moran's I was applied to look at the clustering of people who identify as black, white, Asian, and Latinx in New York City to assess if people of certain races live in clusters and to what degree they are clustered. The locations of public high schools were added to the map using their latitude and longitude coordinates and the Add XY Data Method. Global Moran's I was used again to look at the clustering of schools with similar graduation rates and to discover if schools with similar percentages of black, white, Asian, and Latinx students enrolled are clustered. Five Cluster and Outlier analyses (Anselin Local Moran's I) were conducted on high school graduation rates and the percentages of black, white, Asian, and Latinx students enrolled in the public high schools. This tool was used to show where statistically significant clustering of high and low graduation rates occurs in New York City to compare against where high and low percentages of major racial demographics are enrolled in high schools.

SOURCES

Data: TuftsGIS, NYC OpenData, 2017 American Census, NYC Department of Education , ESRI

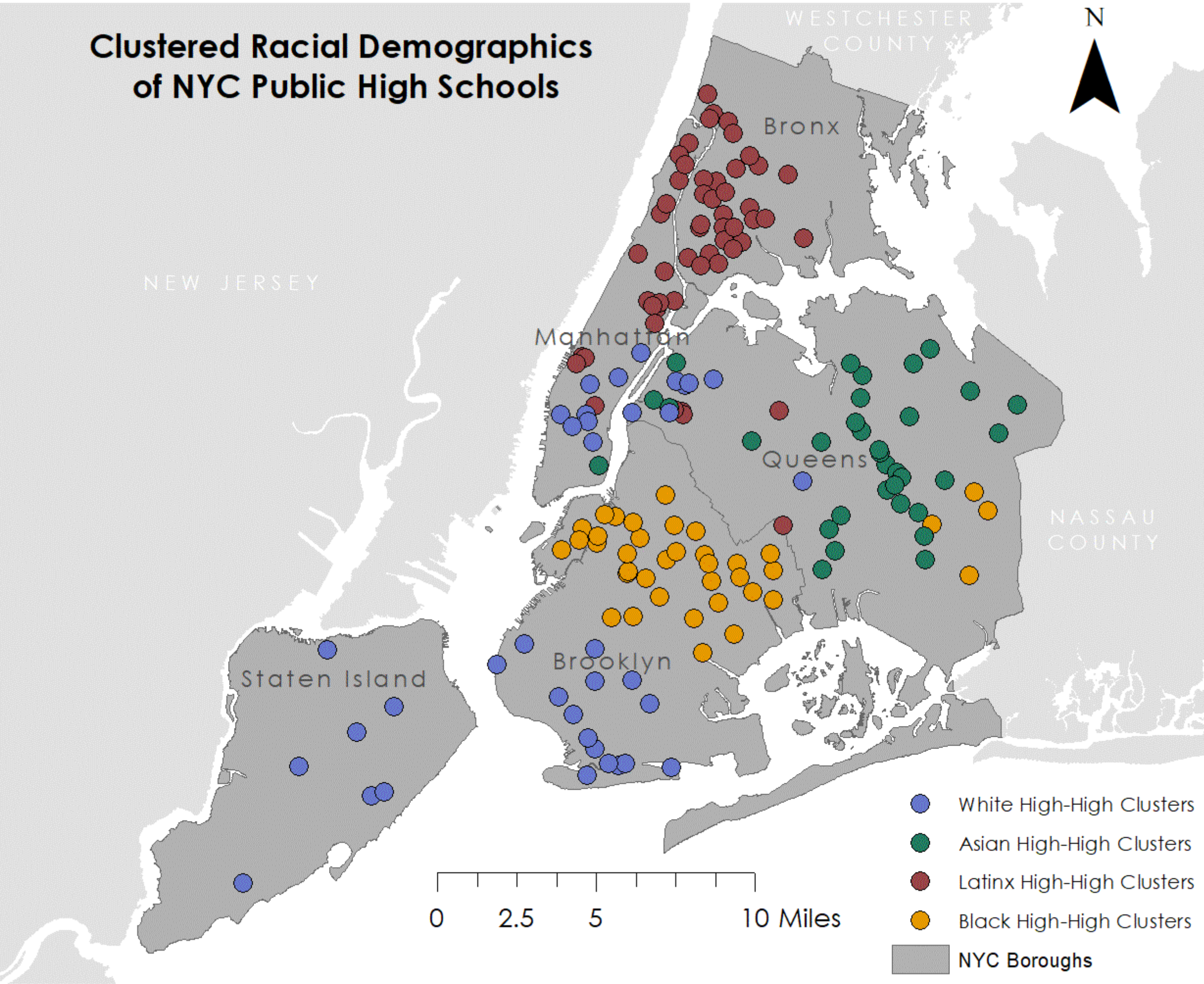
Other Sources: My Real Clip Domain

References:

Nathanson, Lori, Sean P. Corcoran, and Christine Baker-Smith. 2013. *High School Choice In New York City: A Report On The School Choices And Placements Of Low-Achieving Students*. Ebook. New York City: The Research Alliance for New York City Schools.

Mader, N., Hemphill, C., & Abbas, Q. (2018). *The Paradox of Choice: How school choice divides New York City Elementary Schools* [Ebook]. New York, NY: Center For New York City Affairs.

Projection: NAD 1983 State Plane New York Long Island FIPS 3104



RESULTS

Interpreting cluster analysis:

The output of a Cluster and Outlier Analysis shows five different kinds of points, Not Significant, High-High (HH), High-Low (HL), Low-High (LH), and Low-Low (LL). High-High points are high values surrounded by other high values (a cluster), High-Low points are high values surrounded by low values (an outlier), Low-High points are low values surrounded by high values (an outlier), and Low-Low points are low values surrounded by other low values (a cluster). The Not Significant points are completely transparent in these maps, because their presence detracted from the more important data on the maps.

Global Moran's I Results:

New York City Demographics:

Race	Moran's Index	p-value	Clustering
White	0.475272	0.000000	clustered
Black	0.464163	0.000000	clustered
Asian	0.396792	0.000000	clustered
Latinx	0.440813	0.000000	clustered

High School Demographics (by percent race enrolled in each high school):

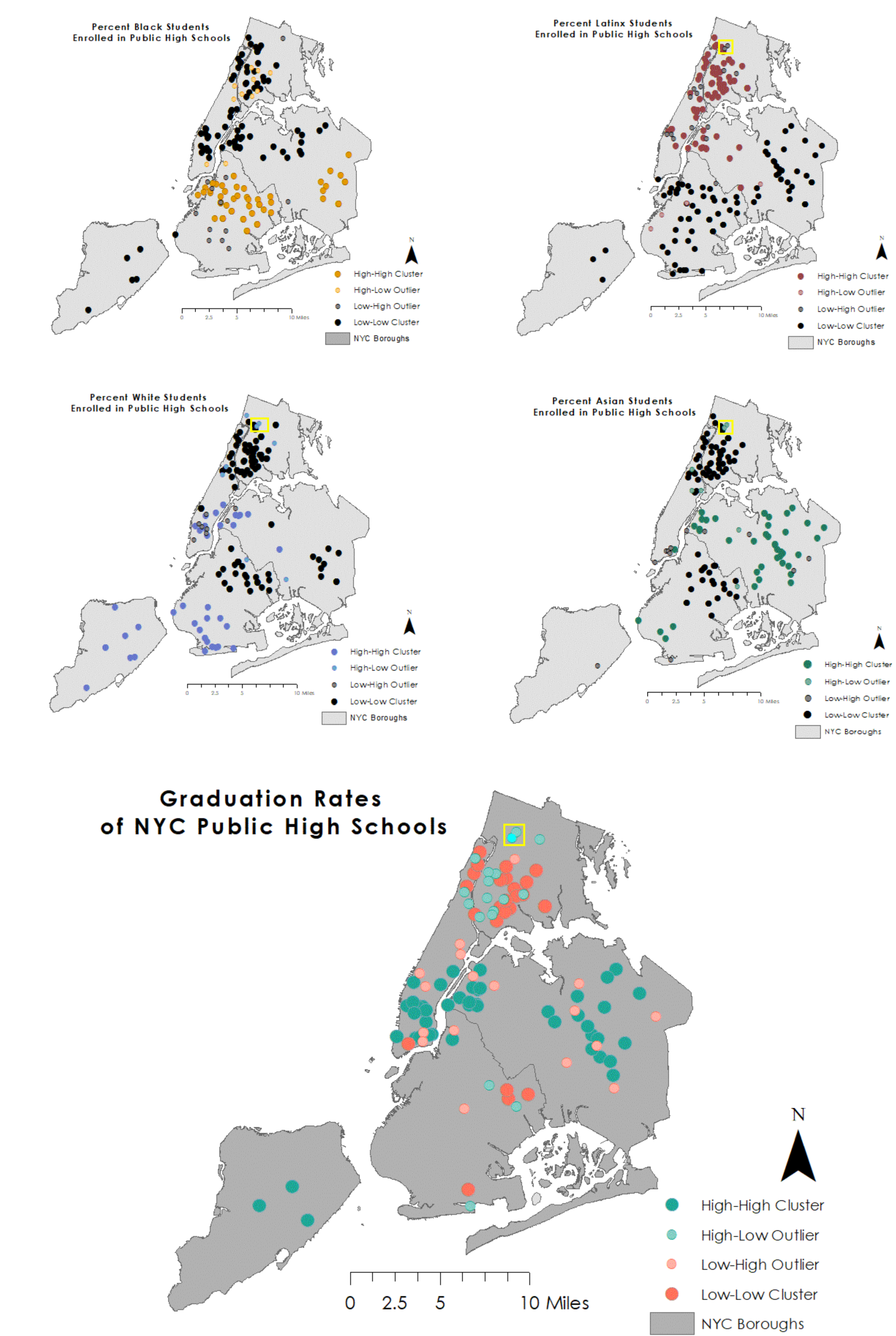
Race	Moran's Index	p-value	Clustering
White	0.393096	0.000000	clustered
Black	0.628754	0.000000	clustered
Asian	0.328128	0.000000	clustered
Latinx	0.617135	0.000000	clustered

High School Graduation Rates:

	Moran's Index	p-value	Clustering
Graduation	0.148062	0.000073	clustered

Limitations:

One important limitation to keep in mind while analyzing these maps is that these maps show four distinct races, but people often identify as multiple races. In particular, Latinx individuals often also identify as black or white, and this analysis used data where people identified as Latinx or Hispanic only.



CONCLUSIONS

The clusters generated by the Cluster and Outlier Analysis closely match the NYC population demographics dot density map, showing that generally, the demographics of public high schools match their neighborhoods. Clusters of low graduation rates occur in the Bronx and Harlem, where there are high percentages of Latinx students enrolled. Clusters of high graduation rates are in lower Manhattan and Brooklyn, places where there are high percentages of white students enrolled in high schools, showing a correlation between the graduation rate of a high school and its racial demographics. Interestingly, the Bronx High School of Science and The High School of American Studies at Lehman College, the two schools boxed in yellow on several maps, are HL outliers in the graduation rates and Asian and white enrollment percentage maps, but are LH outliers in the Latinx map. The demographics of these schools noticeably do not match the neighborhood around them. These are two of New York City's eight exam schools, highly selective and competitive institutions that require an exam for admission.