## Segregated Success: Upward Mobility in Hartford County, Connecticut

Known as the "insurance capital of the world," Hartford, Connecticut was one of the richest cities after the Civil War and remains associated with its strong insurance industry. [1] Yet simultaneously, Hartford suffers a growing poverty rate, ranking as one of the poorest cities in the U.S.[2] Given this dichotomy, how likely are children in Hartford to experience upward economic mobility and what factors influence their chances? According to data from the Opportunity Atlas, the absolute mobility at the 25th percentile – also known as the mean income percentile rank for individuals with parents at the 25th percentile – in downtown Hartford is 42.496, which falls below the averages of 44.813 and 42.496 for Connecticut and the U.S. respectively. However, broadening out to Hartford County as a whole, a more nuanced picture arises. From Figure 1, there is a clear divide between downtown Hartford and neighboring suburbs such as West Hartford and Windsor, where urban areas appear to experience lower economic success for both high- and low-income groups.[3] While outcomes for individuals in Hartford may fall short of average national and state outcomes, growing up in a surrounding suburb could yield a very different result.

Figure 1: Map of Hartford County showing adult household income at age 35 for children from low-income families (left) and high-income families (right). Blue values correspond to higher income, while red values correspond to lower income.
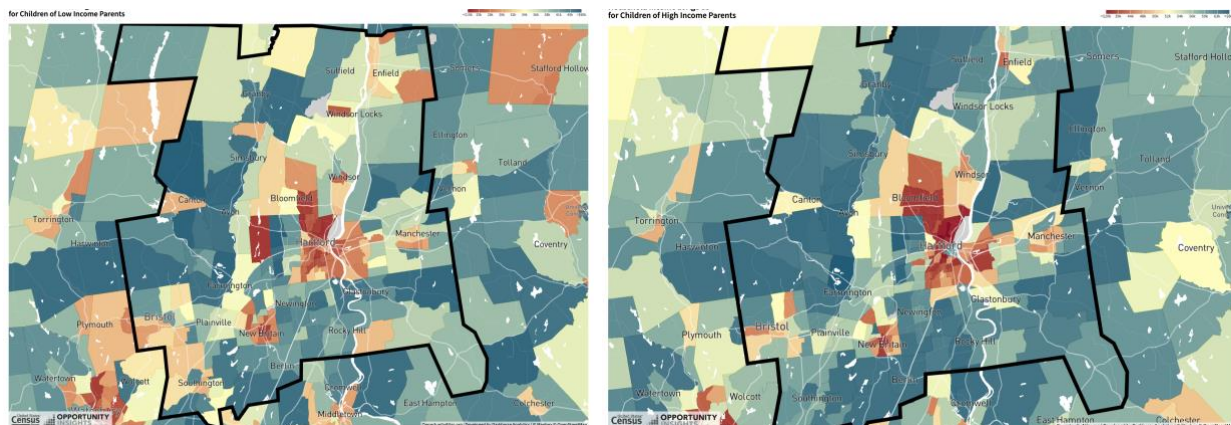
[1]Zielbauer, P. (2002, August 26). Poverty in a land of plenty: Can Hartford ever recover? The New York Times. Retrieved February 25, 2022, from https://www.nytimes.com/2002/08/26/nyregion/poverty-in-a-land-of-plenty-can-hartford-ever-recover.html

[2]Metro Hartford Progress Points. (2014). "Metro Hartford Progress Points: A snapshot of our communities." Retrieved from https://web.archive.org/web/20140706144554/http://metrohartfordprogresspoints.org/downloads/Metro_Hartford_Progress_Points_2014.pdf

[3]Low-income families are defined as below the 25th percentile. High-income families are defined as above the 75th percentile.

Having spent many years living in Northeast America, I have witnessed a recurring trend of families moving to suburban areas whenever possible with the hope of providing better education for their children. Anecdotally, it seems that New England residents believe that suburban neighborhoods can lead to better outcomes for their children due to higher quality education in lower population density areas. Using data from the Opportunity Atlas, I will assess the validity of this idea and consider its interactions with income, gender, and race.

Figure 2: Binned scatterplot (50 bins) of college degree completion and grade 3 math scores vs. mobility
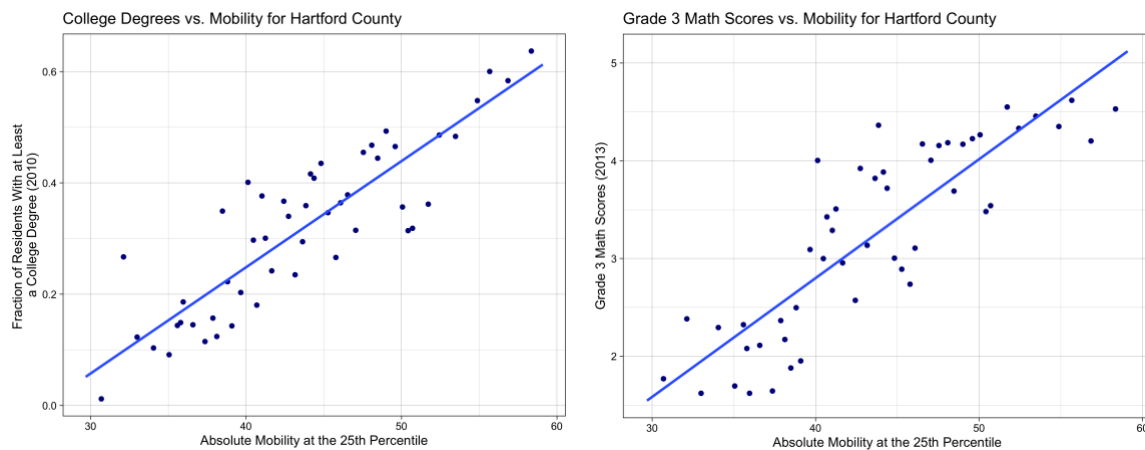
Quality of education can be difficult to quantify, so other measures can be used to serve as proxies for education quality. Standardized test scores and college completion rates can serve as approximate measures by reflecting the average academic performance and achievement of a neighborhood. When comparing the fraction of residents with at least a college degree and average third-grade math scores to upward mobility in census tracts across Hartford County (Figure 2), we see that neighborhoods with higher college education rates (r = 0.672) and third-grade math scores (r = 0.663) are linearly correlated with higher mobility. Furthermore, these proxies for education quality are also correlated with population density such that areas with higher population density tend to have lower education outcomes in addition to lower mobility levels (Figure 3). Another proxy for quality of education to consider is student-teacher ratios since smaller class sizes can

Figure 3: Binned scatterplot (50 bins) of population density percentile ranking vs. mobility colored by math scores (left) and rate of college degree completion (right)
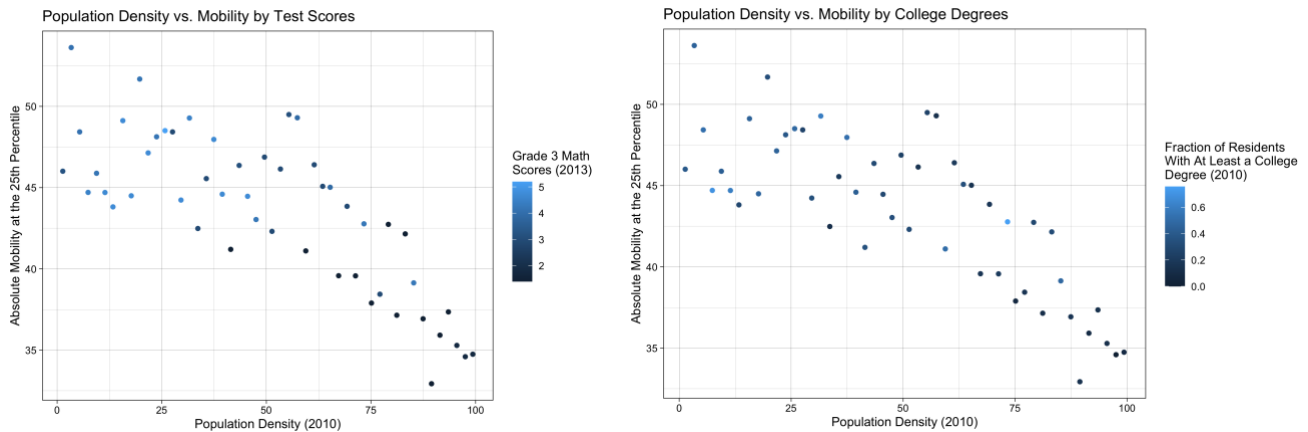
yield long-term benefits for students.[4] By comparing Figures 1 and 4, we see that areas with weaker economic and mobility outcomes overlap with areas with higher student-teacher ratios, which further supports the hypothesis that the educational differences in urban and suburban neighborhoods could be a source of the division in levels of success. In other words, it appears that suburban neighborhoods tend to have stronger educational systems and outcomes for their residents, which could be assisting them in climbing the economic ladder.

In order to potentially create more equal access to opportunity, we might want to consider who is currently benefitting most from the higher quality education systems, given the clear educational differences between various geographical locations in Hartford County. Since living in suburban areas could potentially incur higher costs for items such as transportation and housing, one category to assess would be income level. Based on both mean household income and poverty rates shown in Table

Figure 4: Map of Hartford County showing student/teacher ratio in 2016-17. Darker colors correspond to higher values. Source: Policy Map.

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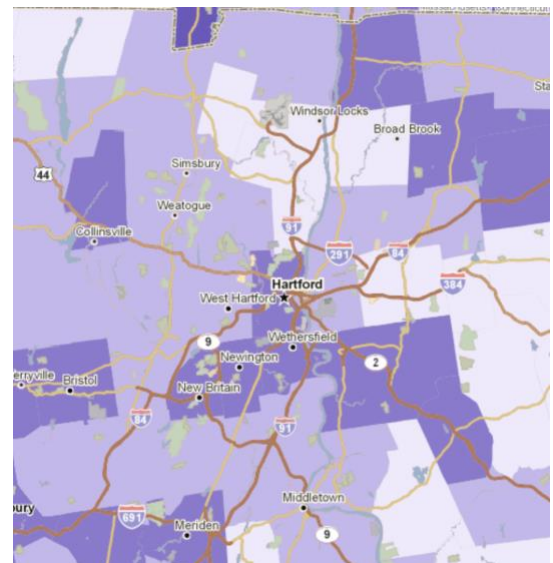
[4] Fredriksson, Peter; Björn Öckert, and Hessel Oosterbeek. 2013. "Long-Term Effects of Class Size." Quarterly Journal of Economics 128 (1).

*Table 1: Comparing mobility, income, and housing measures by population density quartiles*

Population Density (2010)	Mean Household Income (2000)	Poverty Rate (2000)	Median Rent for Two-Bedroom Apartment (2015)
Lowest Quartile	$130,882.20	0.035%	$1,206.91
Second Quartile	$97,803.28	0.049%	$1,159.90
Third Quartile	$87,436.76	0.093%	$1,055.63
Highest Quartile	$42,580.14	0.359%	$955.00

1, it appears that richer families tend to live in lower-density areas, as evidenced by the decreasing mean income and the increasing poverty rate for each successive population density quartile. Since stronger education systems tend to occur in lower population density areas, children from higher-income families are more likely to live in areas with higher quality education and benefit from it, making them more equipped to maintain economic success across generations. Additionally, we see that housing costs also decrease with increasing population density, suggesting that one potential method for providing greater education opportunities for low-income children could be through creating more affordable housing in suburban neighborhoods. However, the overall correlations between rent and mobility ($r = 0.466$) and between rent and population density ($r = -0.375$) are fairly low, suggesting that the impact of affordable housing may not be very significant in improving outcomes for low-income children in Hartford County in practice. Moreover, graphing these relationships in Figure 5 further shows the weaker correlation between mobility outcomes and income or rent.

Figure 5: Binned Scatterplots (50 bins) of absolute mobility vs. mean income and housing costs colored by population density

*Figure 6: Mobility grouped by population density quartile and gender*
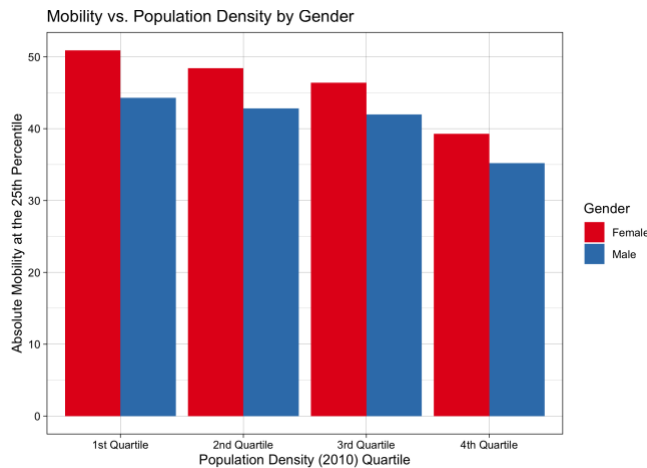
While initial analysis seems to suggest that differing education and income levels could potentially play a role in Hartford County's diverging economic successes, examining effects on subgroups of identities is also important to determine whether compositional differences may be the true causes of the trends that have emerged. Moreover, outcomes for different identities can often differ even within the same neighborhoods.[5] According to Figure 6, both genders experience a decreasing mobility level as population density increases, which is consistent with correlations between population density and economic success found in previous sections. Interestingly, females experience higher mobility than males in Hartford County regardless of their population density quartile, supporting the aforementioned claim that neighborhoods can have differing effects on each subgroup.

On the other hand, when sub-setting the results by racial groups, population density no longer seems to significantly affect mobility rates (Figure 7). Between corresponding racial groups in different population density quartiles, absolute mobility at the 25th percentile remains almost constant, with only a slight

Figure 7: Mobility grouped by population density quartile and race

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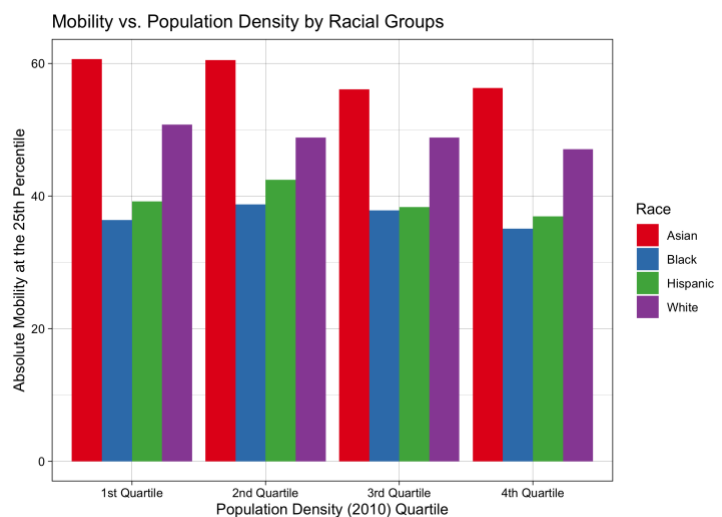
[5] Chetty, Raj, John Friedman, Nathaniel Hendren, Maggie R. Jones, and Sonya R. Porter. 2018. "The Opportunity Atlas: Mapping the Childhood Roots of Social Mobility." NBER Working Paper No. 25147.

decrease for the averages of Asian and white people as density increases. White and Asian individuals achieve higher mobility on average regardless of the neighborhood they originate from, suggesting that the disparity between economic success in urban and suburban regions of Hartford is driven by racial compositional differences. Based on comparing Figures 1 and 8, geographical regions with higher fractions of non-white residents overlap with areas of lower economic success, further demonstrating the racial self-segregation of Hartford County. In addition, when breaking down the earlier education proxies by race, the previously strong covariations with economic and mobility outcomes deteriorate. For instance, both white (r = 0.463) and black (r = 0.340) mobility outcomes are not strongly correlated with the rate of college degree completion, with correlations for black outcomes being especially low. Therefore, it seems that the geographical divide of economic success and chances of mobility in Hartford County mostly stems from the fact that racial subgroups who experience higher successes are aggregating in suburban areas.

Figure 8: Map of Hartford County showing fraction of non-white residents with darker values representing higher fractions
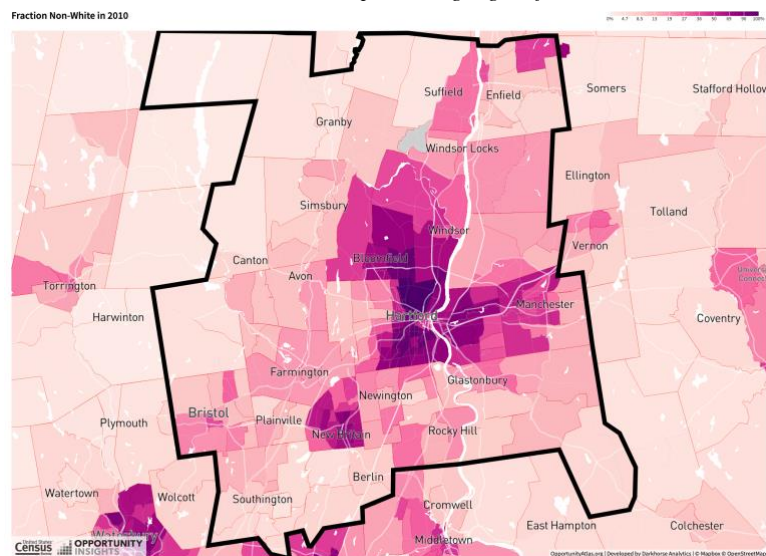
Overall, education quality differences do seem to exist and influence residents' economic and mobility outcomes in Hartford County, and higher income groups may be disproportionately benefitting from the regions with higher educational calibers. However, compositional differences

by race seem to have an even greater influence. Black and Hispanic individuals do not perform as well as their Asian and white counterparts regardless of the type of neighborhood that they reside in. Based on these results, in order to improve the equality of opportunity for success and the overall economic outcomes in Hartford and its surrounding suburbs, policymakers in Hartford County should aim to increase or improve resources that specifically support racial minority groups and strive to bolster school systems in areas with a higher concentration of black and Hispanic families.

However, many limitations should be taken into consideration along with these conclusions. These analyses were performed on observational data instead of a randomized experiment or a quasi-experimental method. As a result, no causal effect can be concluded from any of the correlations between the variables presented here. Moreover, some of the reasoning relies on assumptions that may not fully encompass all nuances. In particular, the educational proxies of third-grade math scores, college degree completion, and student-teacher ratios are not representative of all aspects of education quality, and population density is not necessarily the most optimal measure of categorizing locations as urban or suburban. Finally, the time frames of data collection were not consistent across variables. Most notably, the mobility measure focuses on children born in the 1980s while other neighborhood characteristics were recorded more recently. These discrepancies could affect conclusions if the conditions in Hartford have shifted substantially over time. Despite these caveats, it's important to acknowledge the divergent education standards in different neighborhoods and address the racial divide in Hartford County as crucial steps toward alleviating Hartford's growing poverty issues. Ideally, further exploration should be done to examine the root causes of why certain racial groups are not experiencing the same successes as others.