

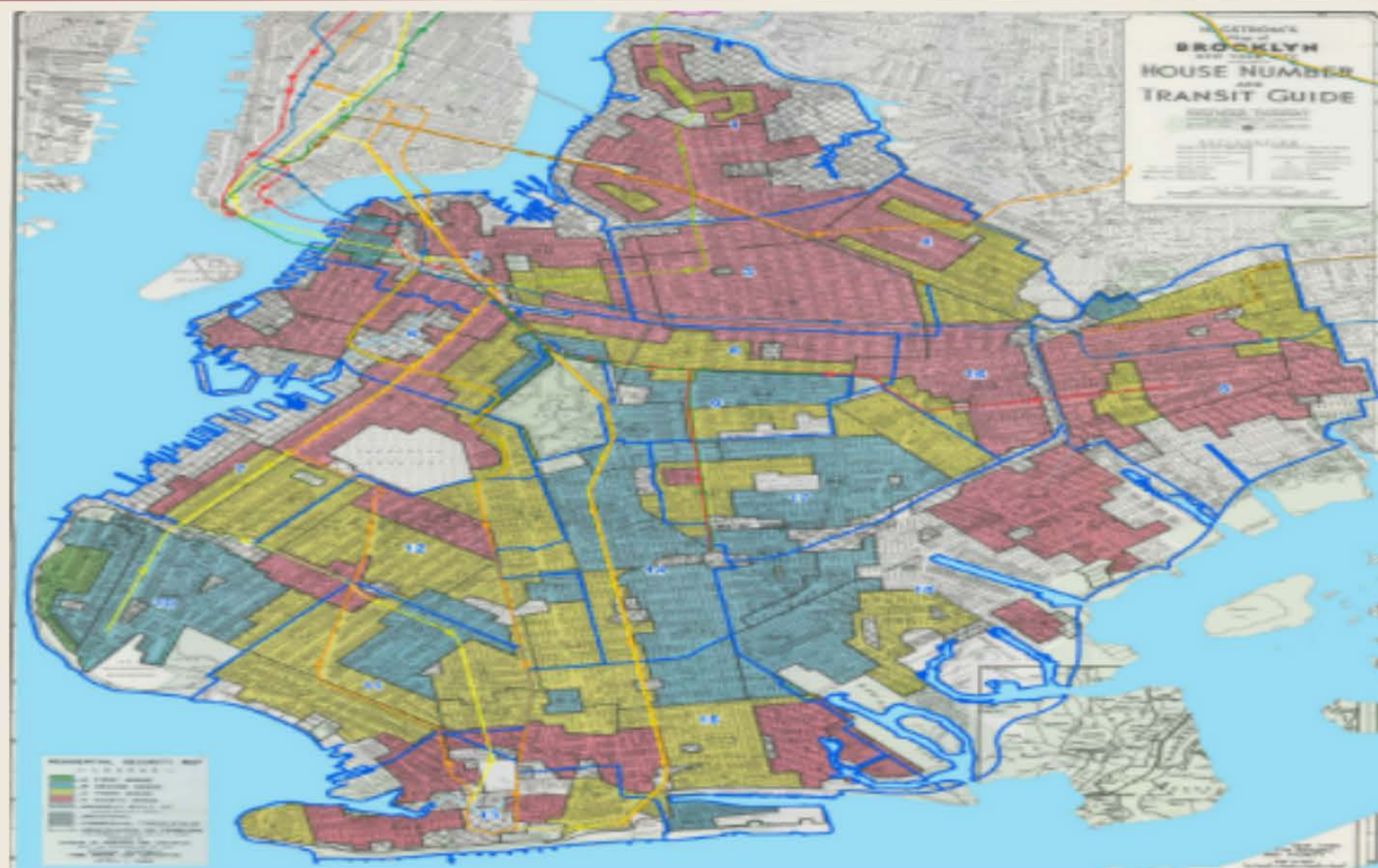
# Historical Parallels: A Comparative Analysis of HOLC-Rated Neighborhoods in New York City and Contemporary Racial Demographics within the 2020 Census Tract Data

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## 01. Introduction

Between 1935 and 1940, the Home Owners' Loan Corporation (HOLC) developed maps for U.S. cities, aiming to evaluate real estate credit risk. As part of the New Deal initiative to aid struggling homeowners, HOLC assigned local authorities the task of creating color-coded neighborhood maps to gauge credit default risk.

The neighborhoods were categorized into four grades: "A" for best, "B" for still desirable, "C" for definitely declining, and "D" for hazardous. However, this grading system exhibited significant racial bias. Affluent White neighborhoods often received "A" ratings, while neighborhoods with higher Black, lower-class, or immigrant populations were unfairly downgraded to "D."

This "redlining" practice, marked by redlining in "D" neighborhoods on HOLC maps, directed financial resources toward White neighborhoods, leaving communities of color deprived of essential investments. This perpetuated racial prejudices within real estate practices.

## 02. Objective

Clemens Noelke et al. (2022) developed modern HOLC rating data for census tracts in 2010 and 2020, enabling analysis of historic HOLC ratings with current neighborhood data.

We will investigate the persistence of Black households in the lowest-rated zones, using 2020 census tract data in New York City's five boroughs with Noelke et al. HOLC data.

This aims to assess if contemporary racial disparities parallel historical HOLC map biases, which accounted for up to 20% of black household concentration in "D" rated zones during the 1930s and 1940s (Fishback et al. 2021).

## Data Sources/Key References

Fishback, Price V. et al. 2021. "The Holc Maps: How Race and Poverty Influenced Real Estate Professionals' Evaluation Of Lending Risk In The 1930s." *National Bureau Of Economic Research*.

Noelke, Clemens et al. 2022. "Mapping Redlining Grades to Today's Neighborhoods."

U.S. Census Bureau. 2020. API 2020 Decennial Census.

## 03. Results

### Geographic Distribution

Map 1: HOLC Letter Grades in NYC 2020 Census Tracts color-coded by historical mortgage risk assessment.

Map 2: Black Population Percentages Gradient shading representing varying concentrations of the Black population.

### T-Test Statistical Analysis

- Conducted Welch Two Sample t-test to compare "D"-rated tracts and other tracts in NYC based on Black population percentage.
- The t-value of 5.1623 suggests a substantial difference between the groups.
- The small p-value (2.773e-07) provides strong evidence against the null hypothesis.
- Significant difference observed ( $p < 0.001$ ) in mean Black concentration percentage between "D"-rated tracts (25.76%) and other tracts (19.80%).
- 95% Confidence Interval: [3.70, 8.23], indicating a substantial and statistically significant difference in favor of "D"-rated tracts.

## 04. Critical Analysis

### Unveiling Spatial Patterns

Our interactive maps depict HOLC ratings and Black population distribution in NYC's census tracts, revealing spatial biases. Historical HOLC ratings from the 1930s and 1940s molded neighborhoods and resource access. Contrasting these ratings with today's data exposes ongoing racial stratification. These maps visually confirm the lasting impact of government-sanctioned programs.

### Statistical Significance

Complementing the visualizations, our t-test statistical analysis serves as a robust quantitative tool to measure the persistence of racial disparities. Focusing on the prevalence of Black individuals in "D"-rated tracts, the statistical results strongly reject the null hypothesis, underscoring a significant difference in mean Black percentage compared to other tracts.

### Interpretation

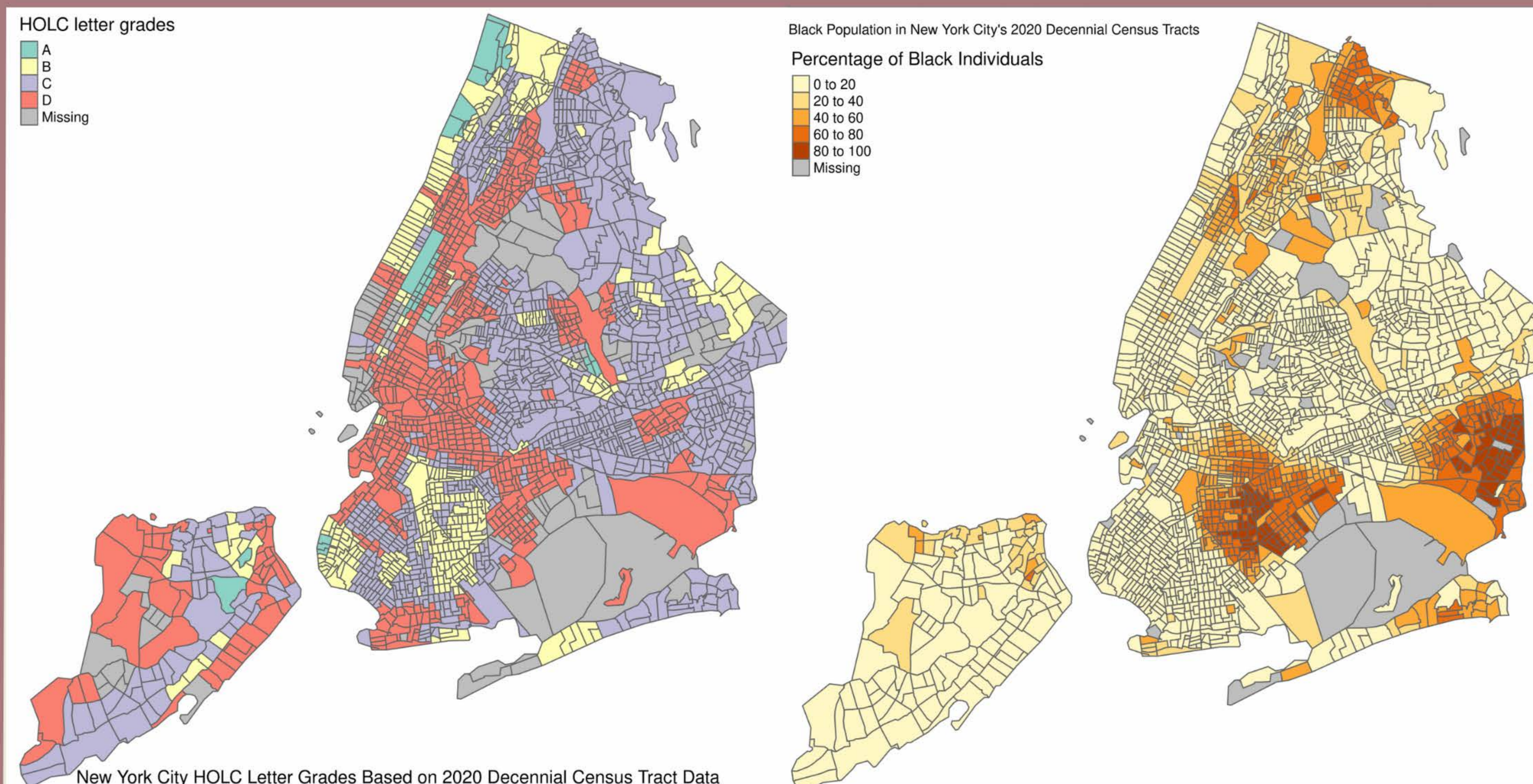
Combined with historical context, our findings align with HOLC biases. Concentrating Black households in lowest-rated zones during the 1930s and 1940s sustains contemporary disparities. Persistent racial inequality underscores the need to grasp historical policies and their lasting consequences. Our geospatial practice reveals how data analysis can spotlight these complexities and promote conversation.



## 05. Conclusion

Our visual presentation of HOLC ratings and Black population distribution exposes persistent systemic biases. This countermapping critically examines government-driven racial disparities. To deepen our analysis, we suggest comparing earnings across census tracts and NYC, linked to dominant racial demographics in HOLC ratings. This could uncover intricate socio-economic impacts of HOLC mapping.

Overall, this geospatial approach underscores countermapping's power to reveal hidden narratives and advocate for equity. Contextualizing historical biases within today's socio-economic context empowers us to challenge inequalities and shape a more just urban future.



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