

In the past years, the diffusion of EO50 certificates has been uneven across NYC boroughs, raising questions about potential barriers to compliance and participation. This paper seeks to explore borough trends and the factors influencing certificate issuance by analyzing the diffusion of certificates across boroughs, focusing on differences across time. Additionally, it explores the possible impact of hate crime rates and its relationship with certificate issuance to understand the broader social dynamics.

The time series chart (figure 1) shows EO50 certificate bestowed from 2022 to 2023. It is important to emphasize two key aspects of this plot, the difference in slopes and the difference in line spacing between boroughs. The slopes highlight the variability of certificates across boroughs. We observe a steady increase for the first half of 2022 for most boroughs. However, this trend shifts radically by the end of the year, leading to a strong decline for 2023. This downward trend leads to an overall 22% reduction in certificate issuance in 2023 compared to 2022. Manhattan and Brooklyn exhibit steeper declines, suggesting a significant fall in activity or compliance, while Queens and Bronx have steadier behavior. The steep declines may reflect saturation or challenges in maintaining momentum post-2022. On the other hand, the gap between boroughs reflects the borough-specific disparities. Manhattan consistently leads in the number of certificates while Staten Island and Bronx fall behind, with minimal certificate issuance. The disparity in certificate issuance as seen in the plot indicates uneven adoption or compliance across boroughs.

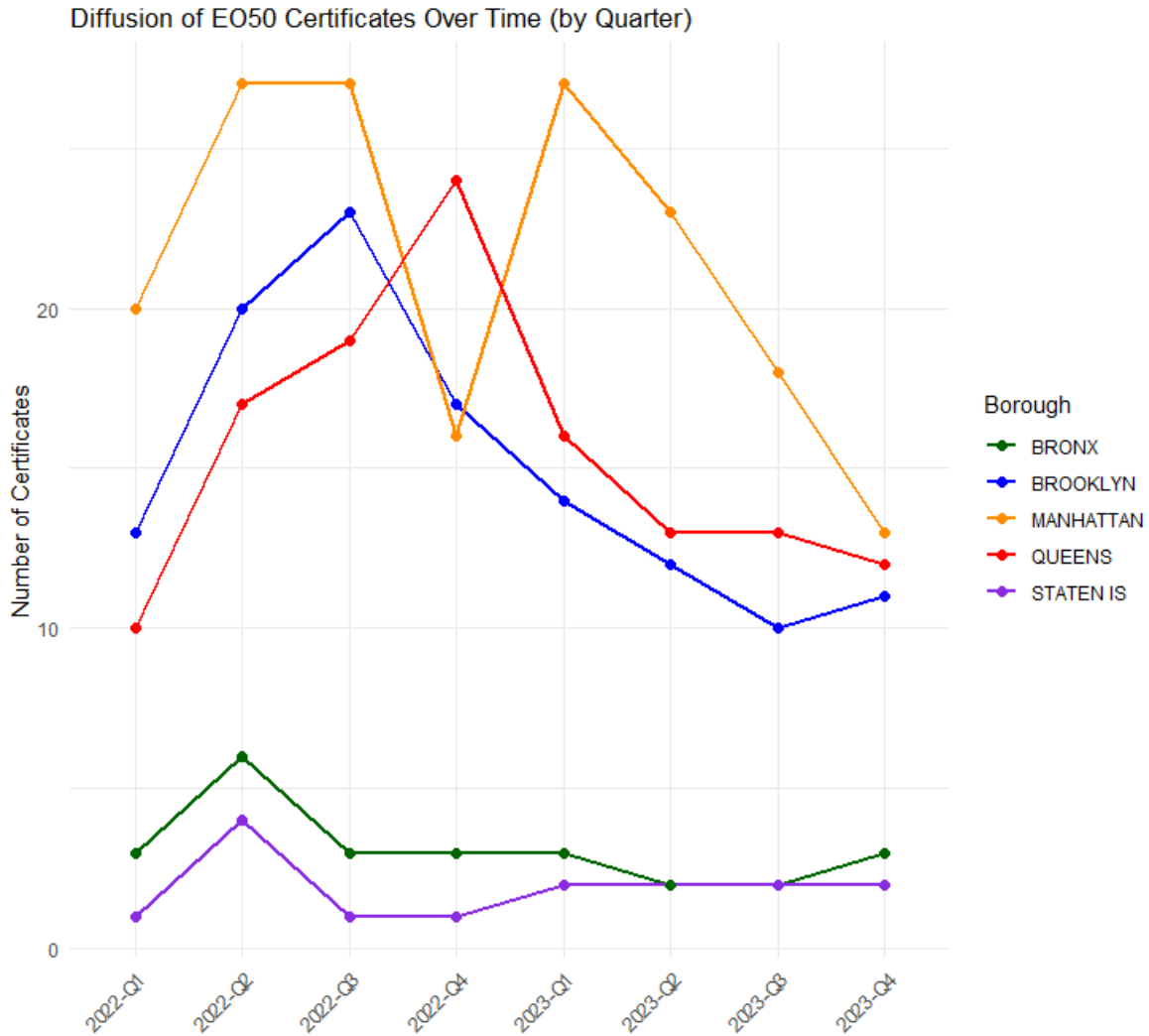


Figure 1

The time series plot suggests that due to economic dynamics, there are policy challenges related to the spread of certificates. This leads us to further explore the socio-economic aspects of the boroughs to better understand the business and policy implications. Data about population and hate crimes in NYC will help us analyze if this factor could impact the trend of certification diffusion across boroughs. The map (figure 2) visualizes hate crime rates per 100K population. A darker red color implies a higher hate crime to population rate and the black points indicate the certificates bestowed in each borough during each year. This visualization will help test two hypotheses:

1. Boroughs with higher hate crime rates correlate with fewer EO50 certificates, suggesting potential barriers to compliance.
2. Boroughs with higher hate crime rates correlate with higher EO50 certificates, suggesting businesses investing higher efforts to comply with EO50 in areas where culture is problematic.

The plot shows crime rates remaining relatively stable from 2022 to 2023 for most boroughs, with notable exceptions. Manhattan and Brooklyn show a higher hate crime density, which could contribute to changes in socio-economic pressures affecting businesses in these areas. The slopes, as seen above, for these areas show a steeper negative slope compared to those of Bronx and Staten Island, which reinforces the hypothesis of a negative correlation between hate crime rates and EO50 certificates issuance. Even though we tend to fail to reject this idea, there is additional information we could take into consideration to draw stronger conclusions. For example, information about number of businesses applicable in each borough, growth/decline of new businesses from 2022-2023, or average income across boroughs could help further explore the declining behavior of certificate diffusion.

## Hate Crimes per 100K Population Across NYC Boroughs (20212024)

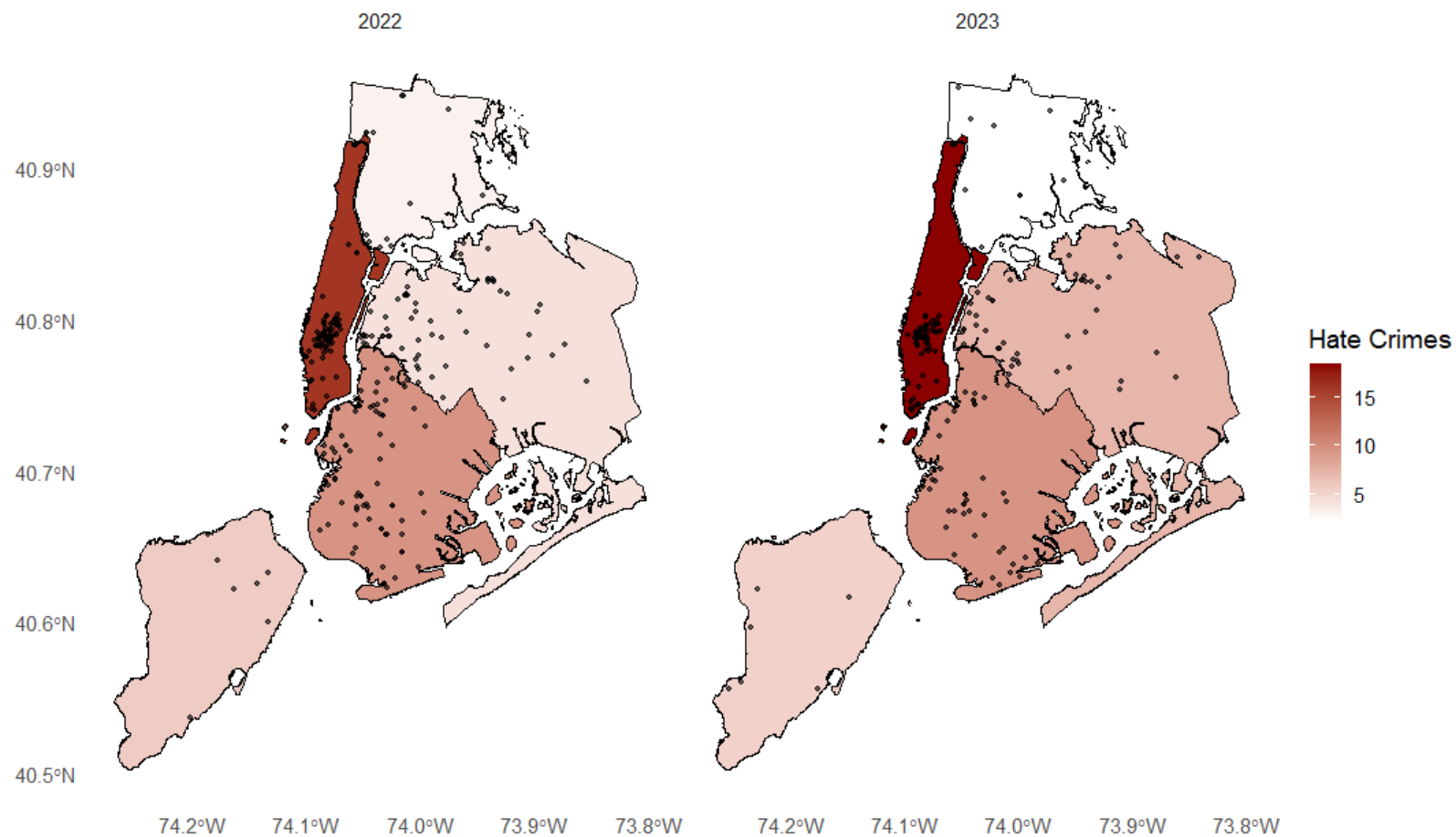


Figure 2

This analysis portrays business and policy implications like addressing disparities and regenerating momentum. The gap in EO50 certificate issuance between boroughs highlights the need for an equity-focused policy. For example, areas like Bronx and Staten Island may require tailored interventions to boost economic development and EO50 compliance. Additionally, the number of certificates drop post 2022 suggests ICAP needs a strategic review of their outreach to reengage businesses across boroughs with engagement strategies to sustain the EO50 initiative. I would suggest ICAP address borough-specific barriers, enhance their support for underperforming boroughs, and plan a strategic outreach to combat hate crimes, fostering safer, more inclusive environments for businesses and communities.

## Citations

Bureau, C. (2024) Population estimates for New York City and boroughs as of ..., nyc.gov. Available at: <https://www.nyc.gov/assets/planning/download/pdf/planning-level/nyc-population/population-estimates/current-population-estimates-2023-June2024-release.pdf?r=1> (Accessed: 29 November 2024).

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