

Equal Employment Opportunity

EO50 certificates across NYC areas

Final Course Project

SMM635 Data Visualization

Marius Kiefer

December 2024

Introduction

The executive order 50 (EO50) was created in 1980 and requires all contractors to comply with equal employment principles. Individuals are protected with this order against discrimination explained by ten categories (Department of Small Business Services (SBS) 2024c). The incentive to comply with EO50 is not just an ethical one. It is also mandatory for doing business with the city. Additionally, recipients of the Industrial Commercial Incentive Program (ICIP) or the Industrial Commercial Abatement Program (ICAP) benefits must comply (Department of Small Business Services (SBS) 2024a). In this analysis, I show the dispensation of all companies that have received the EO50 certificate between June 2021 and June 2024 across NYC areas. Furthermore I put this distribution into relation with the business population of NYC boroughs.

Analysis

To correctly display all companies that have received the certificate within 2021 and 2024 on a map, I had to find accurate map data of the NYC boroughs. Default map data contained in ggplot2's R-library did not precisely capture the exact borders of all boroughs. Therefore, I use data from the NYC Open Data website (New York City Department of City Planning (DCP) 2013).

Figure 1 shows four maps of NYC for each year and the companies locations with a EO50 certificate granted that year. It is visible that the years 2021 and 2024 have less points (companies) in total than the other years. This is simply caused by the amount of data available for each year. 2021 and 2024 only capture half of the year. Considering this observation, it is still noticeable that the boroughs Manhattan, Brooklyn and Queens show relatively more companies with the certificate than the Bronx and Staten Island.

Distribution of EO50 Certificates in New York City

By Borough and Year

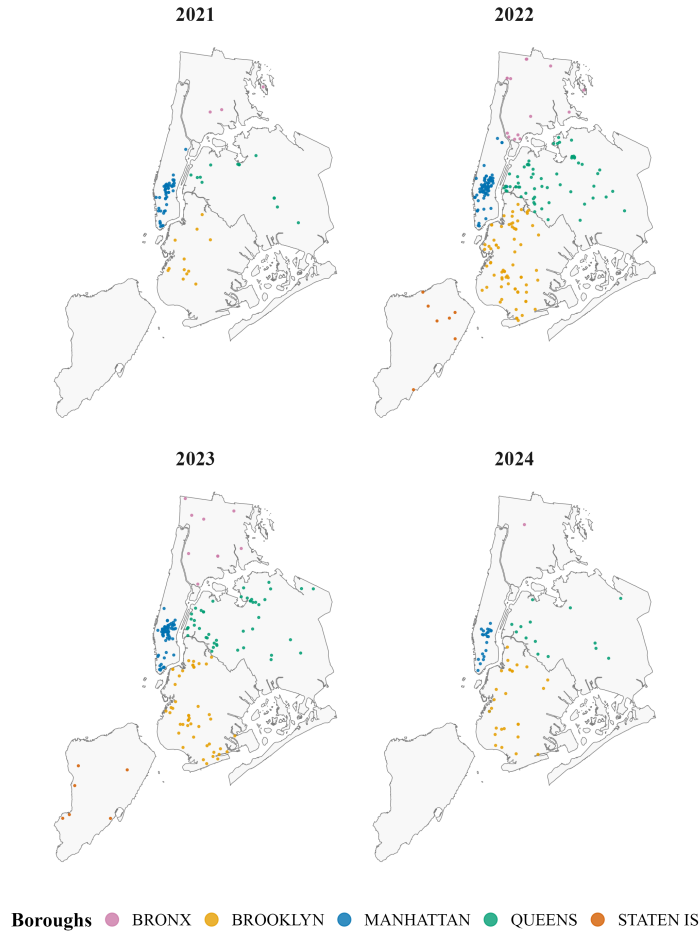


Figure 1: EO50 certificate distribution visualized by boroughs and years.

To put the observations of **Figure 1** into socio-economic context, I have decided to investigate into the relative difference between certificates issued and business populations of each borough. The data used for business populations in NYC is published by the same Department, that published the EO50 data, in the same year (Department of Small Business Services (SBS) 2024b).

Figure 2 demonstrates that, relative to the business population, the Bronx and Staten Island exhibit not only low absolute numbers but also notably lower relative proportions of businesses with EO50 certification. Specifically, the Bronx has a negative relative difference of 56.8%, indicating that, despite

its smaller overall business population compared to Manhattan, it has an even lower representation of certified businesses. Similarly, Staten Island shows a negative relative difference of 46.5%, further highlighting a substantial under-representation of EO50-certified businesses relative to its business population. Conversely, Manhattan displays a positive relative difference of 31.6%, suggesting a disproportionately higher adoption of EO50 certification among its business population.

The relative difference was calculated as follows:

$$\text{Relative Difference} = \frac{\text{EO50 Percentage} - \text{Business Population Percentage}}{\text{Business Population Percentage}} \times 100$$

Relative Difference: EO50 Certificates vs. Business Population

Boroughs with higher relative difference have more EO50 certificates compared to business population

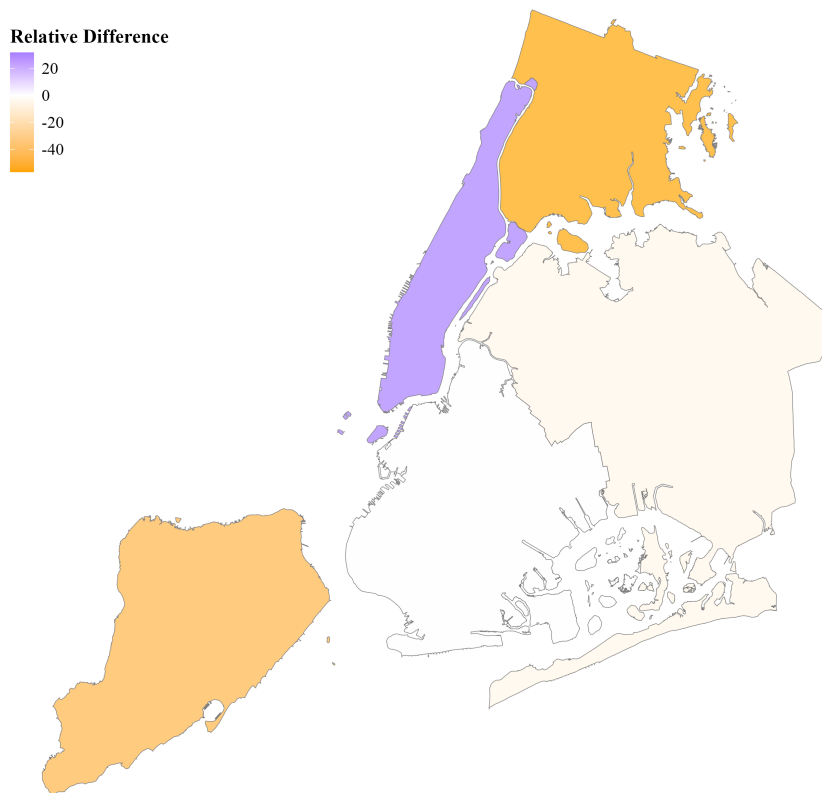


Figure 2: Visualizing the relative distribution of EO50 certificates by borough.

Conclusion & Improvement

The certificate for EO50 is not evenly distributed in New York City's boroughs. The first figure shows that there is a big absolute difference between each borough. Mostly visible between the Bronx and Manhattan. This observation alone is not significant. These differences might be explained by looking into the number of businesses in each borough. A borough with less registered businesses than another borough would also show less businesses with a certificate. This assumption is not true, explained by looking into business population data of NYC. Computing a relative difference between business population and EO50 certificates received, revealed that the boroughs Bronx and Staten Island own less certificates than the population might indicate. The opposite is happening for Manhattan. Brooklyn and Queens do not show a significant difference. To explain these trends, other socio-economic factors are necessary to be considered. Demographic factors or other business-related factors seem suitable. Ethical incentives and benefits from ICAP and ICIP are very important to regard.

References

- Department of Small Business Services (SBS) (2024a). *Contract Compliance - NYC Small Business Services (SBS)*. Accessed: 2024-12-03. URL: <https://www.nyc.gov/site/sbs/businesses/contract-compliance.page>.
- (2024b). *SBS Certified Business List*. https://data.cityofnewyork.us/Business/SBS-Certified-Business-List/ci93-uc8s/about_data. Accessed: 2024-12-02.
- (2024c). *Unique Businesses that Received EO50 Certificate of Approval from SBS*. Accessed: 2024-12-02. URL: <https://catalog.data.gov/dataset/unique-businesses-that-received-eo50-certificate-of-approval-from-sbs>.
- New York City Department of City Planning (DCP) (2013). *Borough Boundaries*. Updated quarterly; dataset excludes water areas. URL: <https://data.cityofnewyork.us/City-Government/Borough-Boundaries/tqmj-j8zm>.