



LUND UNIVERSITY

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New York State Inequality Since the 1980s

Drivers and Trends

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Abstract: This paper investigates the trends and drivers of inequality in New York state from 1981-2020 using OLS. As there are multiple ways to measure inequality, I propose using the GINI index and top 10% - 0.01% income share as proxies for inequality. This thesis is motivated by the lack of a long-term investigation into drivers of inequality in New York state as all significant previous research solely focused on New York City or the entire United States. Results show that the main driver of inequality in New York during this period was the rise of the CEO-worker income ratio. A sub regression using New York state county level data from 2010-2019 found significant effects of the CEO-worker income ratio, minimum wage, and top tax rate on inequality.

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1. Introduction

After a period of declining global inequality during the mid-20th century, driven by trends of decreasing within country inequality, global inequality has been on the rise since the 1970s and 1980s. Inequality in the United States, hereby abbreviated to “US”, has risen significantly since the 1970s. In fact, according to the World Bank (2024), the US has the highest level of income inequality out of all developed nations.¹ During this same period, inequality has risen even more substantially in New York state, hereby abbreviated to “NY”. The state of NY has had the highest income inequality rate and the largest increase since the 1980s out of all US states. This begs the question of why inequality has risen more in NY compared to the rest of the US?

This paper aims to discuss the trends and investigate the potential drivers of income inequality in NY state since 1981, Ronald Reagan’s first year as US president. The reason that 1981 is the chosen starting year for this study, even though inequality started slowly rising in the US during the 1970s, is for two reasons: data availability and the fact that the Reagan administration created many policies, such as lower taxes on the wealthy, that coincided with the trends of increasing income inequality. After Ronald Reagan’s presidency, not much has been done by his succeeding presidents, policy wise, to address rising inequality. There has been much debate on how Reagan’s policies have impacted the economy as a whole and on inequality. For example, Krugman (2009) believes that Reagan’s tax cuts on the wealthy have led to increasing inequality across the US. However, these debates mainly look into the national level and do not investigate how inequality levels have changed at the state level during and post Reagan’s presidency.

Considering the significance of NY state, largely driven by New York City, hereby abbreviated as “NYC”, it is surprising that I have been unable to find a paper that investigates drivers of inequality throughout the entirety of NY state during this period. It is possible that certain policies or other drivers of inequality at the national level since the 1980s have little to no impact on the steeper rise of inequality in NY state. According to Wikipedia (2024a), NY state has a \$2 trillion GDP, which would make it the 10th largest economy in the world if it was an independent nation. The economic significance of NY state, even though much of it is largely driven by NYC, makes it even more important to address these inequality concerns. A long-run state level

¹ A complete list of “Developed Economies” as defined by the UN can be found in their World Economic Situation and Prospects 2014 report. The link to this report is in the reference list. United Nations (2014)

investigation into drivers of inequality in NY will help understand why inequality grew much faster compared to the US during this period. Understanding these drivers of inequality can help in crafting relevant policies that aim to lower inequality by focusing on what is truly related to this substantial rise of inequality in NY. This motivates the necessity of this study to investigate the potential drivers of inequality in NY state since the 1980s.

Why is rising inequality important in the first place? From Qureshi (2023) at the Brookings Institution, a think tank based in Washington DC that focuses on unbiased research on political, social, and economic issues, rising inequality is bad because it often leads to decreasing trust in political and public institutions. This decreasing trust in the public, both among themselves and with their politicians, often leads to a rise of right-wing nationalism. This is currently happening in Europe with an increasing number of right-wing politicians and in the US when Donald Trump won the election in 2016. While Biden won in 2020, this trend of rising right-wing nationalism has not reversed as Trump has a chance to win again in 2024.

Increasing inequality can also often lead to polarized societies, both economically and socially. From Martin (2024) at Forbes, the US is home to 813 of the world's 2781 billionaires, which is more than double second place China's 406, even though China has a population almost 5 times the size of the US. According to the KFF (n.d.), in 2022 the US had a poverty rate of almost 13%, or just over 40 million people. Even among these figures, poverty rates range as low as 9.5% for White people to 16.7% for Hispanic people, 21.4% for Black people, and almost 25% for Indigenous Americans. While these figures are only related to the US, they give context as to how fractured a society may look when inequality is high. High rates of inequality disproportionately favor certain groups of people based on economic background, which in turn can lead to increasing social/political polarization and violence.

This paper contributes to existing literature by investigating drivers of inequality throughout the entire state of NY, not just NYC or the entire US, since the 1980s. As there are many different ways to measure economic inequality, such as the income GINI coefficient, Atkinson index, and top 1% income share, to name a few, I have decided to investigate drivers of economic inequality in NY state and compare it with the entirety of the US using the GINI coefficient and top 10% - top 0.01% income, collected from Frank (2023). More information can be found in the Methodology and Data section. The rest of the paper is organized as follows: section 2 defines

inequality for the quantitative section of this paper and presents the inequality context in NY state, section 3 discusses inequality theories and other relevant literature, section 4 presents the data and methods, section 5 presents the results, section 6 discusses the results and limitations of the study, and section 7 concludes the paper.

2.1 Defining Economic Inequality

How is economic inequality going to be defined for the quantitative section of this paper? Since there is no perfect economic inequality measurement, multiple inequality variables will be used to best capture the essence of economic inequality. Having multiple measures of inequality instead of using only 1 helps gain more insight into understanding potential drivers of inequality as using multiple measures could capture different aspects of income inequality. The most commonly reported variables of economic inequality are the GINI income index and top income shares.

Why are top income shares used as a proxy of inequality? Kuznets (1955, p. 7) believed that the increasing income of the top income earners has led to rising inequality due to their ability to own more income earning assets compared to everyone else. Piketty and Saez (2014) and Neckerman and Torche (2007) found that increasing wage inequality has led to increasing inequality. A higher share of the top income earners signifies this increasing wage inequality. Top income shares are also fairly straightforward to interpret. If the top 5% income share was 30% in 1990 and rises to 50% by 2000, this signifies that the bottom 95% of income earners saw their income share shrink from 70% to 50%. Even if the overall dollar amount of income that the bottom 95% stays constant in both years, this still highlights increasing inequality as the top 5% significantly increased their amount of total earned income. As the wealthiest individuals are more likely to be involved in politics, directly or indirectly, an increasing share of income signifies a larger percent of their income that they can use to lobby politicians to pass favorable laws for them individually or for their businesses. Finally, top income shares are a good proxy for inequality because it is easy to assess the impact of policies on the income of the wealthiest individuals. If there is a new policy that taxes all income above \$250,000 at 90%, a decreasing concentration of income for that group signifies that this policy has effectively lowered income inequality. To conclude, top income shares are used to proxy for inequality in this paper as they

are simple to interpret, they reflect the political and economic power of the wealthy, and are highly responsive to policy changes that target the highest income earners.

Aside from the GINI index being the most common measurement of inequality, the UN (2015) names it as one of the 4 main indices to measure economic inequality. Similar to top income shares, the GINI index is easy to interpret. On a scale of 0 to 1, with numbers closer to 0 representing lower inequality and numbers close to 1 representing higher inequality, one can obtain a decent understanding of the income inequality of a nation solely by looking at the GINI value. Another benefit of using the GINI index, similar to top income share, is that GINI values are great for comparing inequality trends over time. If country A had a GINI of 0.3 in 1990 and in 2000 it rose to 0.5, income inequality in country A rose significantly during this period. Finally, the GINI index, which measures the income dispersed throughout the entire population, is more sensitive to changes in the middle of the income distribution and less sensitive to changes at the tails of the income spectrum. While large changes at the top of the income spectrum certainly can increase the GINI, a more even dispersion of income among the middle class can heavily decrease the GINI, especially if the top income values earned are held constant. In this example, the top 10% income shares may be constant from period A to period B, but the GINI may decrease from period A to period B because of the rise in income for the middle class. This is why it is beneficial to investigate the drivers of inequality when considering top income shares and the GINI index, as both variables tell different stories about inequality.

Economist Mark W. Frank, from Sam Houston State University, has gathered data from a variety of sources, including the World Inequality Database, to present inequality figures from the early 1900s until 2020. All of this data is available on his personal website (Frank, 2023). The inequality data that will be used from Frank's dataset is as follows: top 10% income share, top 5% income share, top 1% income share, top 0.5% income share, top 0.1% income share, top 0.01% income share, and the income GINI index. The reason that I am using top 10% - top 0.01% income shares instead of only 1 of these top income shares is because each of these income subsections represents different groups of individuals. For example, from Kagan (2023), in 2021 the top 10% of income earners had an average wage of \$167,639 while the top 0.01% of earners had an average wage of \$3,312,693. Looking at these two numbers alone, it is clear that both income groups represent a completely different set of individuals. A top 0.01% income

earner could be a CEO of a large company while a top 10% income earner could be someone who works in tech in Silicon Valley. Hence, investigating the top 10% - top 0.01% of income earners can help us understand if the drivers of an increasing income share for both these groups and those in between are the same.

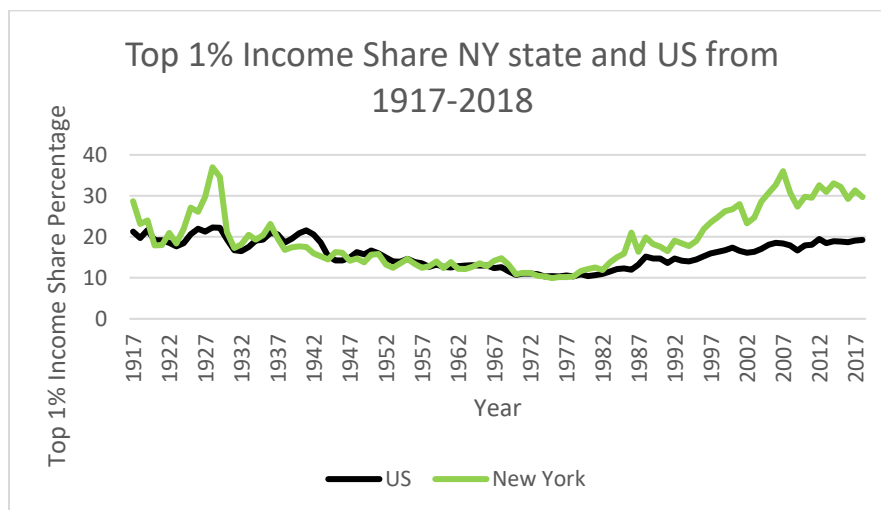
2.2 New York State vs United States Inequality Trends

Figure 1: Income Values in New York and the United States

	New York	United States
Top 1% Average Income	\$2,447,358	\$1,532,189
Top 10% Average Income	\$470,063	\$348,453
Bottom 90% Average Income	\$39,316	\$32,928

Source: Author's recreation of Figure 1 from the Fiscal Policy Institute (2022), with 2018 data adjusted for 2021 inflation via the World Inequality Database (n.d.)

Figure 2: Top 1% Income Share in New York compared to the US from 1917-2018



Source: Authors recreation of Figure 2 from Fiscal Policy Institute (2022), with data from the World Inequality Database (n.d.)

Figure 1 shows that NY has higher average incomes for the top 1%, top 10%, and bottom 90% compared to the rest of the US. However, NY has the 4th highest overall cost of living in the

entire US, only behind California, Massachusetts, and Hawaii (Missouri Economic Research and Information Center, n.d.). Figure 2 shows the top 1% income share in NY compared to the rest of the US during the last century. Aside from the great depression and the roaring 20s, figures were relatively stagnant until the late 1970s. When Ronald Reagan became president at the start of the 1980s, both figures rose, but the figure from NY rose significantly faster.

From Davis et al. (2022, p. 7), NY has the highest concentration of wealth across the entire US, contributing over 21% of wealth over \$30 million. This 21.3% figure is almost larger than the figures of the next 2 highest states combined, California and Florida, the only other two states that have over 10% of wealth over \$30 million. Appendix A from Davis et al. (2022, p. 14-15) shows estimates of wealth held by individuals worth over \$30 million in net worth. The US as a whole has roughly \$39 trillion and \$6.7 trillion of that is held in NY, the most out of any state. Appendix C from Davis et al. (2022, p. 18) shows that there is over \$16 trillion in unrealized capital gains held by individuals with a net worth higher than \$30 million in 2022, with over \$3 trillion in NY state alone, again the most out of any state.

Brad Lander (2023), the NYC Comptroller, investigates the racial wealth gap across the entirety of NY state. This report goes into depth on the difference between economic outcomes for White and Black people in NY. Lander's (2023) Chart 3 shows the stark difference in median household net worth for White vs Black New Yorkers. The White median household net worth, of those who only graduated from high school, is triple the value compared to Blacks who have a bachelor's degree. Meanwhile, the median household net worth for White New Yorkers with a bachelor's degree is almost 5 times greater than the median household net worth for those who are only high school graduates, \$443,000 vs \$101,000. For Black New Yorkers, a high school graduate has a median household net worth of \$18,000 compared to \$32,000 for a Black college graduate with a bachelor's degree.

Kaslovsky (2008) highlights inequality levels in NY state during the 2000s. The gap between the top 1/5th and middle class was the 4th highest in the mid-2000s, only behind California, Mississippi, and Oklahoma (Kaslovsky, 2008, p. 1). Aside from wage inequality, Kaslovsky (2008, p. 3) highlights investment inequality as a driver of income inequality, as from 1994 to 2006 the amount of reported income due to capital gains from stocks, bonds, or other investments rose from 4% to 16%. Since the wealthy are more likely to own stocks compared to

the average American, this overwhelmingly benefits the wealthy. Finally, Kaslovsky (2008, p. 4) compares 1999 income GINI values from major Rust Belt cities, which includes Buffalo, NY, and finds that Buffalo had the highest GINI out of major rust belt cities, which also include Cleveland, Ohio and Flint, Michigan.

When investigating county level data in NY from the US Census (2024a), the lowest GINI income value in NY state in 2022 was St. Lawrence County, north of the Adirondacks on the border with Canada, at 0.42. From the World Bank (2024), this value is comparable to Argentina's value in 2021, a country famous for its high inequality and unstable economy in recent decades. For a European comparison, the OECD (2024) shows that this 0.42 value is higher than the country with the highest income GINI value in the EU, which is Bulgaria. On the opposite end of the spectrum, from the same US Census (2024a) dataset, New York County, which is where Midtown Manhattan, the Upper East Side, Central Park, and Wall Street are located, in 2022 had a GINI of 0.60. If Manhattan was its own country, it would have the second highest GINI in the world, only after South Africa's value of 0.63 in 2014 (World Bank, 2024). Finally, NY state in 2022 had 5 counties with GINI values over 0.5. From the same World Bank (2024) report, only 11 countries have a GINI index higher than 0.5. Some of these countries with GINI values over 0.5 include Brazil, Colombia, Botswana, and Namibia. While it may seem unfair to compare counties to entire countries, it gives comparisons to show just how high income inequality is across various regions of NY state.

Sommelier and Price (2018) from the Economic Policy Institute created a report on inequality in the US by state, county, and city levels. Their Table 11 shows the trends of the top 1% income share, by state, from 1928 to 2015. In 1928, Delaware had the highest level of the top 1% income share, at over 47%, while NY was second with 36%. The overall figure for the US during this year was 28%. In 1973, around 9% of all income was owned by the top 1%. NY's figure was 10.5%, but Florida, Texas, Delaware, and Arkansas all had higher figures, with Florida having the highest at 11.5%. In 2007 and 2015, NY had the highest statewide figures, with 33.2% and 31% respectively, compared to the values of 21.7% and 21% for the entire US. From the same table, NY has seen the highest change in income share held by the top 1% since 1973.

From the same 2018 report, Table 3 highlights the most unequal counties in the country, based on the income ratio from the top 1% to the bottom 99%. Out of the top 25 counties, two of them

are in NY, with the second overall being New York County and 13th being Westchester County, the first county north of NYC. Table 9 shows that New York County has the highest top 1% share of income, at 6% of the overall top 1% income in the US, while Westchester County is in 8th and adds another 1.8%. Finally, Table 10 shows the shares of total income growth, by state and overall, captured by the top 1%. From 1945-1973 the country level value was 4.9% and in NY it was 0.5%, the smallest out of every US state. From 1973-2007, the nationwide level was 58.7%, with NY having the highest value at 87.3%. Overall, while NY state has always had the highest or one of the highest levels of inequality out of all US states, largely driven by NYC, the income inequality has significantly worsened since the 1970s. It may seem exhausting to read and visualize all of these inequality figures. While there are more figures that could be presented to describe inequality trends across NY and the US, these figures give the necessary context for understanding how inequality has evolved over time.

In sections 2.3-2.5, I will present an example of a rich and poor part of the 3 main regions of NY state: NYC, Long Island, and Upstate NY. This is done to show how inequality looks across the state in order to contextualize how the most unequal US state looks by region. While enough has been done to contextualize the increasing trends of inequality in NY state, these next 3 subsections break it down even further. Understanding a basic level of how inequality looks in each of these 3 main regions of NY, aside from being interesting, helps understand why inequality is so high today. This visualization also helps understand the similarities and differences between the regions and could eventually lead to policy discussions that aim to decrease inequality by region. While each of these 3 sections could all be research papers or books on their own, it is still necessary to give some contextualization to understand the bigger picture regarding how inequality looks throughout NY state.

2.3 NYC Inequality Visuals

Before highlighting more statistics and figures of inequality in NYC, one must first understand the layout of the city. This map from NYC Map 360 (n.d.) showcases the geographical layout of all 5 boroughs. Each borough coincides with a different county, essentially a different local government. The county of Manhattan is New York County, Brooklyn is Kings County, Queens is Queens County, The Bronx is Bronx County, and Staten Island is Richmond County.

Figure 3: NYC Borough Map



Source: NYC Map 360 (n.d.)

Manhattan is the borough of the city that everyone first pictures when they think of NYC. As mentioned above, New York County had an income GINI coefficient of 0.6 in 2022. Also mentioned above, New York County has the second highest top 1% to bottom 99% income ratio out of all US counties. The only county with a higher income ratio is Teton County, Wyoming. However, the population of Teton County is roughly 23,000, according to the US Census (2023a, 2023b) population estimates, compared to Manhattan, which on its own has a larger population than the entire state of Wyoming. From City Population (2023), in 2022, Manhattan had around 1.6 million residents, Brooklyn had 2.6 million, Queens had 2.2 million, The Bronx had 1.4 million, and Staten Island had 500,000 citizens.

From Swindells (2022), in 2021, NYC had the 5th highest GINI income index out of all US cities, with the bottom quintile earning around \$10,000 annually compared to \$308,000 for the top quintile. The top quintile earns 30 times the amount that the bottom quintile earns, which puts NYC in 6th place overall out of the US cities with the highest top to bottom quintile income ratio. According to Kolomatsky (2023), 13 out of the 20 most expensive NYC neighborhoods are in Manhattan, the other 7 are all located in Brooklyn. This highlights the extreme wealth of NYC. One of these neighborhoods is Hudson Yards, where Kolomatsky (2023) reports that the median home price in 2023 was \$5.7 million. Blumenthal (2021) from Condé Nast writes about the history of this new area in Manhattan. It only started production in 2012, it is still incomplete,

with estimates of around \$25 billion in construction, which would make it the largest private real estate project ever in US history.

The other extreme end of inequality in NYC, also located in Manhattan, is East Harlem. East Harlem, which is also known as Spanish Harlem or El Barrio due to the high number of Latino citizens, who are mostly Dominican and Puerto Rican, that call East Harlem home. From the NYU Furman Center (n.d.), using US Census data, the poverty rate in East Harlem was 31% in 2021. This compares to the Manhattan average of 17.3% and the citywide average of 18%.

Many people who live in East Harlem or other poor parts of NYC live in public housing project buildings, often referred to as “the projects”. The NYU Furman Center (n.d.) reports that over 31% of citizens in East Harlem live in these project buildings, compared to 9% in Manhattan and 7.5% citywide. Nori (2022) writes about the living conditions of many NYC housing project buildings. Some of the common problems in the NYC project buildings are rats, lack of heat in the winter, mold, roaches, unsafe drinking water, and broken elevators. While Hudson Yards and East Harlem are two extremely different neighborhoods, it highlights the realities of inequality within NYC.

2.4 Long Island Inequality Visuals

This map below from the World Atlas (n.d.) shows Long Island’s geography. It is broken down into 4 counties, two of which are part of NYC: Kings County, Queens County, Nassau County, and Suffolk County. From Metzler (2019) of the Long Island Press, Long Island has a population of roughly 8 million people, of which half are located in Queens and Brooklyn. From the US Census 2023 figures, NY state has a population of 20 million people, giving Long Island 40% of the state’s total population despite its relatively small size compared to the rest of the state. From Wikipedia (2024c), Long Island is the largest island in the contiguous US, which includes all states except for Alaska and Hawaii. Also, if Long Island was its own state, it would be the state with the highest population density.

Figure 4: Long Island County Map



Source: World Atlas (n.d.)

Long Island has some of the most expensive real estate in all of NY state, even when ignoring Brooklyn and Queens. From Jozsa (2023) at PropertyShark, 12 out of the 100 most expensive zip codes in the US reside on Long Island. Out of these 12, only 2 of them are located in NYC, one in Queens and one in Brooklyn. In the top 10, there are 2 zip codes from Long Island that make it, Sagaponack and Water Mill, both in Suffolk County, with median home sale prices at \$8,075,000 and \$4,500,000 respectively.

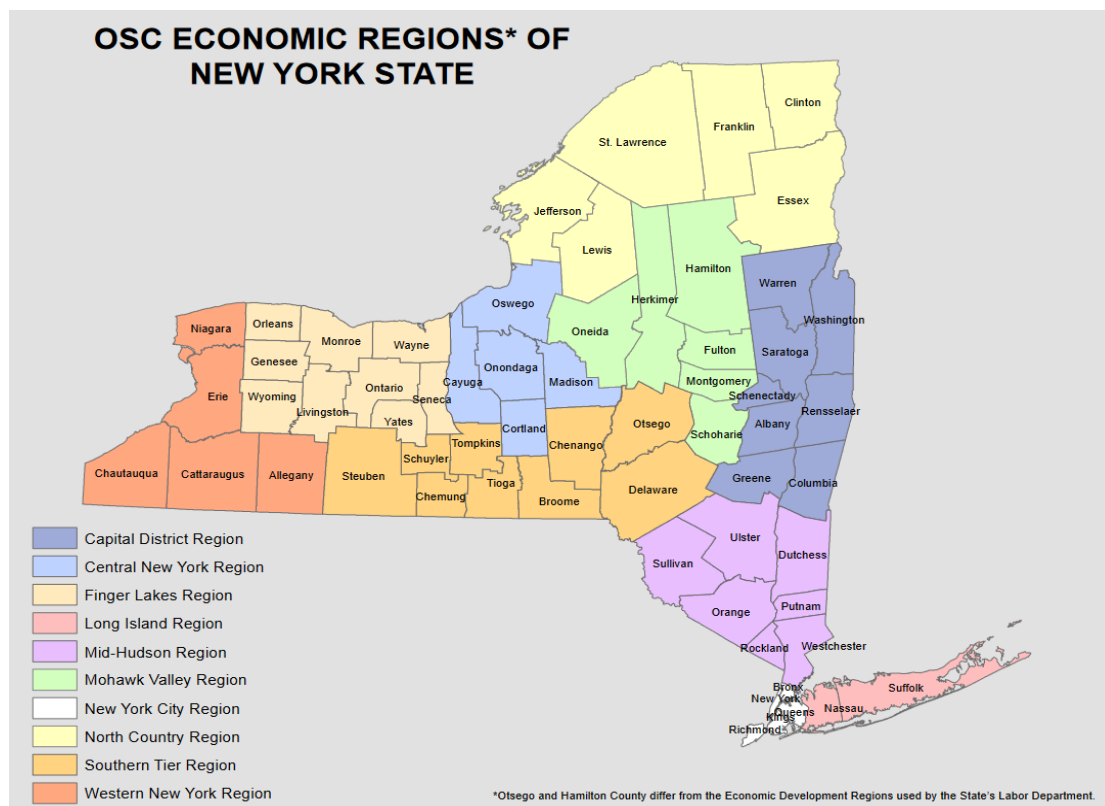
An example of a poor area on Long Island is Brownsville, a neighborhood in Brooklyn. A report from NYC Health (2015) presents statistics for Brownsville and compares them to the rest of NYC. The population is roughly 86,000 with the racial makeup being 76% Black and 20% Latino, the other 4% are White, Asian and “Other”. Only 18% of Brownsville residents have a university degree, compared to 41% in NYC and 38% in Brooklyn. It was the 7th poorest neighborhood in 2015 and had a poverty rate of 37%, compared to the NYC average of 21% and the Brooklyn average of 24%.

2.5 Upstate New York Inequality Visuals

One of the most controversial things in all of NY state is the phrase “Upstate New York”, now “Upstate NY”. For someone from NYC, anything north of The Bronx is considered Upstate NY.

Someone like me, from Northern Westchester, would say that anything north of Westchester County is Upstate NY. A person from Southern Westchester would say that anything north of White Plains, a city in the geographical center of the county that divides the more rural and wealthier north with the poorer, more urban south, is Upstate NY. Finally, someone who lives in Albany, the capital and geographical center of the state, would say that anything north is Upstate NY and that anything to the west is “Western New York”. Below is the official map of the economic regions of NY state from the NY state’s Office of the Comptroller (n.d.). For simplicity going forward in this paper, all counties geographically north of NYC, from Westchester County to Clinton County, are considered Upstate NY. According to New York Demographics (2024), Upstate NY had a population of roughly 8.5 million in 2015.

Figure 5: Economic Regions of NY State as Defined by NYS Government

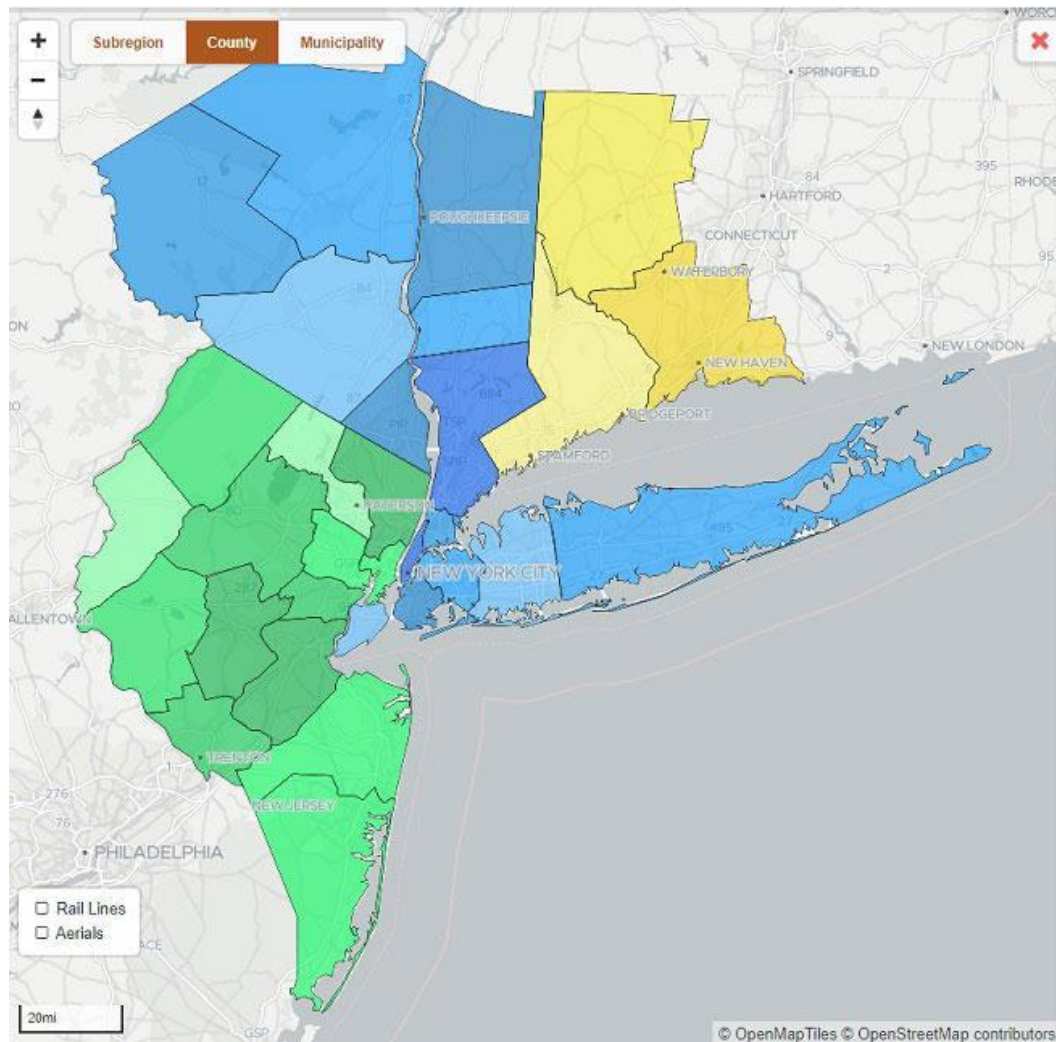


Source: New York State Office of the Comptroller (n.d.)

This map below, from the NYC Department of City Planning (n.d.), shows the NYC metropolitan area, which includes areas of New Jersey and Connecticut. While not the focus of this study, roughly half of New Jersey and a third of Connecticut’s land area are located within

the NYC metropolitan area. In NY state, all of the Mid-Hudson Region, including Westchester, Putnam, and Sullivan counties, are considered part of the NYC metro area. When the population of these 7 counties is subtracted from the 8.5 million figure, roughly 6.4 million people, less than one third of NY state's population covers most of its geographical space. Unsurprisingly, this shows that the NYC metropolitan area is home to the majority of NY state's residents.

Figure 6: NYC Metropolitan Area

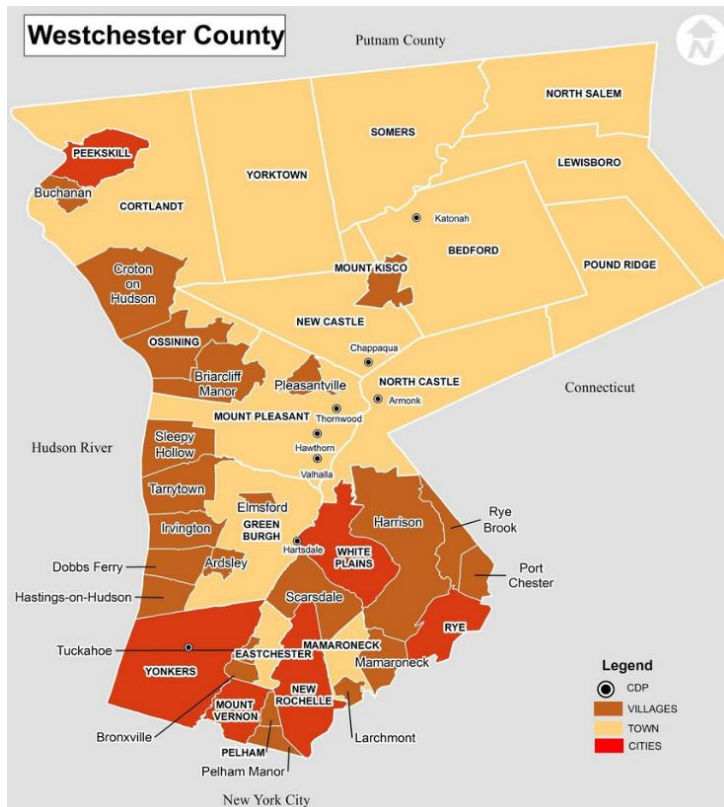


Source: NYC Department of City Planning (n.d.)

The map below of Westchester County from the real estate group Shelter (n.d.) shows the arbitrary divide between Northern and Southern Westchester. As mentioned above, the arbitrary divide starts at White Plains because the south is more densely populated compared to the north,

which is evident based on Southern Westchester's closer proximity to NYC, particularly The Bronx.

Figure 7: Westchester County Map



Source: Shelter (n.d.)

One of the wealthiest areas in Upstate NY is Bronxville, located in Southern Westchester less than 30 minutes away from The Bronx. From Data USA (n.d.-a), using data from the US Census 5-year ACS estimates, Bronxville in 2021 had a population of roughly 6,600 people, a median household income of around \$170,000, and a median housing value of roughly \$1 million. Demographics wise, roughly 85% of the population is White. Some of the most common employment roles for residents of Bronxville include managerial workers, financial and business workers, sales, and law. Finally, more than $\frac{3}{4}$ of residents in Bronxville are homeowners.

Rochester, once a thriving city, is today one of the poorest areas in NY state. Rochester is one of the many cities that were former industrial powerhouses that are in what today is coined the Rust Belt. From Rust Belt Recruiting (n.d.), Rochester and other Rust Belt cities started to see declining industrial output from the 1950s onwards as much of the industrialization was either

outsourced abroad or moved to the southern US. From Wikipedia (2024b), Rochester had a homicide rate of 35 per 100,000 residents in 2021, one of the highest in the US, which is comparable to cities such as Port-au-Prince, Haiti, Recife, Brazil, Johannesburg, South Africa, and Tegucigalpa, Honduras. According to Data USA (n.d.-b), the median household income in Rochester in 2021 was \$40,000, the median property value was \$93,000, and the population was slightly over 200,000 people. Rochester is an ethnically diverse city with roughly equal parts White and Black/African American, around 37% per ethnic group. While ethnically diverse, only about 9% of Rochester citizens were born outside of the US. Finally, Rochester has a homeownership rate of 37%.

3.1 Literature Review: Theories of Drivers of Inequality

While discussions, both in academia and the general public, on economic inequality have increased over the years, there is still no particular theory regarding inequality trends/causes that is widely accepted in all settings. The most famous theory is from Kuznets (1955), who theorizes that economic inequality depends on the current stage of economic development of a nation. Kuznets (1955) believes that there are two driving forces for the rise of inequality in developed nations. These are the hoarding of savings by the wealthiest individuals and the structure of the income distribution, mainly tied to increased urbanization rates (Kuznets, 1995, pp. 7-8). Kuznets (1955) believed that income inequality followed an inverse U-shaped trend, with inequality rising as a nation starts to develop and decreasing over time when the nation develops. This led to the Kuznets curve, which is widely used today to describe inequality trends over time. Piketty (2014) famously disagrees with Kuznets' interpretation from 1955. In his book titled "Capital in the twenty-first century" he argues that Kuznets' interpretation was wrong because of the intense nature of the political and economic context between 1914 and 1945, notably WWI, WWII, and the great depression (Piketty, 2014, p. 10). The main contribution that Piketty (2014, p. 17) adds to the theories surrounding economic inequality is his " $r > g$ " theory, where " r " represents the rate of return in a variety of assets, including interest, rents, and dividends and " g " represents economic growth. When " $r > g$ ", wealth inequality rises due to the wealthy gaining a larger share of the overall pie.

Milanovic (2016) writes about how globalization has played a role in both within and between country inequality. Milanovic (2016, p. 48) believes that the theory of Piketty (2014) cannot explain inequality trends in the period prior to industrialization. This inspires Milanovic (2016, p. 50) to come up with the Kuznets wave, where he believes that the past 500 years could be explained by wavelike trends in inequality. In the period prior to industrialization, Milanovic (2016, p. 50) believes that important events such as wars, plagues, and the discovery of new trade routes led to increasing or decreasing inequality.

The human capital theory is also of relevance. Becker (1962) wrote about how individuals have the ability to improve their earnings over time simply by investing in themselves. This investment can be in the way of continuing to higher levels of education, investing in skills related to particular jobs, and/or investing in one's own health. Becker (1962) believed that those who have invested more in themselves, and thus have higher skillsets than those who do not, are more likely to earn more money compared to those who do not invest in themselves. Thus, the human capital theory infers that the differences in skill and education level of workers play a role in the rise or fall of inequality in a nation. Thirty years later, Katz and Murphy (1992) investigated the role of changes in the US wage structure from the 1960s-1980s. Based on the findings from Katz and Murphy (1992), the increasing number of higher skilled and educated workers contributed to rising wage inequality.

3.2: Literature Review: Consequences of Inequality

Stiglitz (2016) investigated the link between economic growth and inequality, mainly focusing on the US. Stiglitz's (2016, p. 138) Figure 2 shows trends from OECD nations comparing GINI levels in 1985 and 2013. Out of the 22 nations in this figure, 17 have seen increases, 4 have seen little change, and only Turkey saw decreasing GINI levels. Some of the largest increases were in Sweden, New Zealand, and the US. Stiglitz (2016, p. 149) concluded that there need to be new ways to demonstrate overall economic performance, instead of just GDP, and suggests that a more regulated financial system, higher investment in public goods/services, and progressive tax rates, among others, could reverse the trend of increasing inequality in developed nations.

Wilkinson and Pickett (2009) investigated the relationship between income inequality and the social atmosphere of a nation. Wilkinson and Pickett (2009, p. 496) regressed inequality, in wealthy nations and all 50 US states, on health and social measures, such as trust, obesity rates, educational performance, and homicide rates. They found that an increase in trust, educational performance, and life expectancy correlated to decreases in inequality. Increases in teenage births, homicide, and obesity, among others, correlate with increases in inequality.

Piketty and Saez (2014) reported on the long-term trends of inequality in Europe and the US. Figure 1 shows that income inequality in Europe has steadily declined since 1900, with a slow increase to 1940 levels from 1980-2010, while in the US it has steadily risen since the 1970s (Piketty and Saez, 2014, p. 838). Piketty and Saez (2014, p. 842) concluded that wage inequality, changes in tax laws, and increased executive compensation all contribute to the sharp increases of inequality in the US since the 1970s. Alvaredo et al. (2013) discussed the reasons behind the rise of inequality in Anglo-Saxon nations, of which the US is a part of, since the 1970s. They find that four main reasons are tax policy, changes in the labor market, capital income, and the relationship between capital and labor income (Alvaredo et al., 2013, p. 18).

Snower (1999) investigated the drivers of inequality in the US and Europe from the 1970s to the 1990s. Snower (1999, pp. 44-46) concluded that the increasing shift away from low-skilled labor to high-skilled labor is a major driver of income inequality in developed nations. While Snower (1999, p. 44) highlights that the changes in technology, particularly with automation and computers, in addition to deindustrialization and globalization, have driven this skilled labor shift, it does not fully explain inequality within groups and the gender wage gap.

Förster and Tóth (2015) investigated potential drivers of inequality increases in OECD nations. There are 6 main drivers of income inequality that Förster and Tóth (2015, p. 1733) investigated, which include globalization, labor regulations, the macroeconomic structure, demographic structure, political system, and tax redistribution. Förster and Tóth (2015, pp. 1799-1806) concluded that, due to differences in countries, even when limiting the sample to EU nations, many of the variables they tested were inconclusive. To the authors, this means that the explanation of some studies reporting a positive effect while others report a negative effect highlights that the context, both in time and location, matters extensively when investigating drivers of inequality.

Neckerman and Torche (2007) highlighted the drivers of inequality and the effects they have had on the US since the 1970s. Neckerman and Torche (2007, pp. 336-338) mention wage inequality increases over the period, a stagnant minimum wage, declining union membership, and increasing percentage of wages at the top of the income spectrum as drivers of wage inequality increases. Inequality of opportunity is also discussed by Neckerman and Torche (2007, pp. 339-340), namely the decrease in economic class mobility, such as lower class to middle or upper class, from the 1970s onwards. In simpler terminology, this could be described as a decrease in the prospect of the “American Dream”, where an American can raise their standard of living solely with hard work. Finally, Neckerman and Torche (2007, pp. 340-345) discuss the consequences of this rise of inequality regarding health, education, crime, politics, and social relations.

Piketty and Saez (2003) showed the trends of income inequality in the US during the 20th century. While they discuss the trends from the entire century, they highlight “the decline of progressive taxation observed since the early 1980s... could very well spur a revival of high wealth concentration and top capital incomes during the next few decades” (Piketty & Saez, 2003, p. 37). Keister and Moller (2000, p. 76) investigated trends in wealth inequality in the US and concluded that it is nearly impossible to accurately determine the extent of the increase due to data limitations.

Lin and Tomaskovic-Devey (2013) investigated the relationship between increased financialization in the US with rising levels of income inequality from the 1970s until 2008. Lin and Tomaskovic-Devey (2013, p. 1313) conclude that increased levels of financial income, in nonfinancial industries, during the period contributed to higher levels of income inequality as it led to higher increases in top executives’ concentration of income, the increased level of income differences between the workers and owner class, and the overall decrease in the income share from labor.

3.3 How Inequality Differs in Different Environments

How does inequality look in a city vs a town or village? For this example, consider the GINI income index, the most common measurement of inequality. Assuming that the city and town are

both in the same country, is there a difference between a town of 500 people having a GINI coefficient of 0.5 vs a city of 1 million people having the same GINI? The number of people in poverty, in absolute terms, is significantly higher in the city compared to the town, even if the relative figures are the same. Are the drivers of inequality the same in these two instances? This small town could be close to a large natural resources area, close to a major city, or the town itself could be a popular tourist attraction. All 3 of these examples would lead to a select few controlling much of the income while a large percentage of the population struggles to make ends meet.

Meanwhile, this city could be the capital of a country, state, and/or one of the epicenters of a certain good or service of extreme importance to the nation. This figure also does not entirely represent social inequalities. For example, a certain ethnic group or ethnic groups could be the majority that lives in poverty while another ethnic group controls most of the wealth. A real-life example would be South Africa. While ethnic/social issues also exist in towns, the scale is much larger in cities and could create multiple communities, somewhat similar to cities within cities, that divide based on race/social class. An example of this could be the Brazilian favela of Rocinha in Rio de Janeiro, one of Brazil's largest favelas, which is only located a few kilometers away from the wealthy beach neighborhood of Leblon.

This example is comparing an imaginary town and city within the same nation. This begs the question of the accuracy of comparing inequality between nations. Two nations with similar GINI levels are Israel, with a value of 0.379 in 2021, and Malawi, with a value of 0.385 in 2019 (World Bank, 2024). While these values are nearly identical, it is not fair to compare these nations as Israel has a GDP per capita of around \$55,000 while Malawi's is \$480 (IMF, 2024). Israel is also strategically located near the Suez Canal and is one of the US's largest political allies, while Malawi has one of the highest poverty rates in the world and is located in Central Africa, without direct access to the ocean and surrounded by many of the poorest countries in the world.

The example above comparing Israel and Malawi above is to provide an explanation as to why comparing inequality between nations, regions, or even cities is not always feasible, even if inequality measurements are near identical. Geography, political climate, social climate, time period, and many other factors play roles in driving inequality up or down. This is not to suggest

that inequality should not be compared between different nations, states, or geographical areas. Instead, one should exercise caution when comparing based solely off of inequality figures alone as they do not tell the entire story without proper context. In conclusion, certain factors that impact inequality in one setting may be completely irrelevant in another, which is why it is important to investigate the historical patterns of an area to determine potential drivers of inequality. Keeping this in mind will make it simpler to understand why certain factors are considered when investigating rising inequality in NY that may not be relevant to the rise of inequality globally or vice versa.

3.4 Are there Positive Consequences from Increasing Inequality?

The topic of economic inequality, both globally and in NY, has garnered more attention ever since the 2008 recession. In 2011, Occupy Wall Street took place in NYC right by Wall Street to protest rising economic inequality and the role that corporate finance plays in rising inequality. While the average person is more likely to be aware of the negative effects of rising economic inequality, it is important to consider if there are any positive effects of rising inequality.

Pettinger (2019) presents the pros and cons of economic inequality, with his 4 main pros being that inequality promotes working hard, incentivizes individuals, rewards risk-taking, and eventually has a trickle-down effect, similar to Reagan's famous Trickle-down economics policy. Pettinger (2019) believes that if working hard can eventually promise the worker a higher wage, it incentivizes individuals to work harder, and those that do not work harder would have lower wages. He highlights that without economic incentives to take risks or be an entrepreneur, there would be far fewer risk-takers and business innovations would be much less frequent than today. Finally, regarding the trickle-down effect, he discusses that if an individual creates a successful business, their wealth would trickle down to the employees working at their business.

Welch (1999) wrote about defending inequality and how increasing income inequality is not always a problem. Welch (1999, p. 16) investigated the relationship between rising inequality and wage differentials and found that inequality between White and Black Americans and between men and women, has decreased since the 1960s, even though inequality figures have risen over this period. During this period, many safety net programs to help those at the bottom

of the income distribution, such as social security programs, were created (Welch, 1999, p. 16). Finally, even though overall wage inequality increased during the period, more Americans became university educated compared to their ancestors, leading to more specialized job prospects and higher wages for these higher educated individuals (Welch, 1999, p. 16).

Tselios (2011, p. 75) discussed the impact of rising inequality on innovation in the EU from 1995-2000 and concluded that rising inequality levels led to higher levels of innovation. In order to identify innovation in their study, Tselios (2011, p. 86) used patents as a proxy for innovation as there is data availability at the micro level and that patents can indicate new technologies that are innovative. Tselios (2011, pp. 87) controlled for GDP per capita, as a proxy of regional development, the highest level of educational attainment, population density, unemployment, individuals' access to work in the region, and the value added from different sectors of employment, namely services, industry, and agriculture. Finally, Tselios (2011, p. 97) believes that future research must be done on a longer timescale as he acknowledges that his time sample is quite short run.

Castells-Quintana and Royuela (2017) investigated positive and negative impacts of inequality on long term growth. Castells-Quintana and Royuela (2017, p. 1358) decided to control for log GDP per capita, life expectancy, natural endowments, proxied by mining as a percentage of GDP, the amount of years the economy has been open, and the fraction of primary exports to total exports, from 1970-2007 in 51 countries. Castells-Quintana and Royuela (2017, p. 1349) concluded that there is both a positive and negative effect of inequality on long run economic growth, with negative effects being seen at high levels of inequality and positive effects seen when inequality is not particularly high.

To conclude this section, while it is an unpopular opinion, it seems that inequality truly becomes a major problem once it surpasses a certain threshold. Now what is this threshold? This most likely depends on a variety of circumstances including the country, phase of development, and social atmosphere of a country. Unfortunately, there has been no long-term successful society that has completely eliminated inequality. Considering this reality, it is important to consider that there may still be benefits of rising inequality levels, as long as it does not spiral out of control.

3.5 The Problem of Increasing Inequality

Pettinger (2019) highlights 4 main cons of economic inequality: increased homelessness, increased rates of poverty, unfairness due to monopoly power, and unfairness due to inheritance of wealth. Regarding monopolies, he says that firms with monopoly or monopsony power are able to charge whatever they want for their goods or services and can pay workers less than their true marginal product of labor. He believes that inherited wealth is an issue due to giving these individuals an unfair head start in life and can lead to them being lazy as they live off of their wealth.

Stiglitz (2016, p. 146) said that “When those at the bottom of the income distribution are at great risk of not living up to their potential, the economy pays a price not only with weaker demand today, but also with lower growth in the future.”. This is one of his 3 main reasons for why inequality harms the economy in the long run. The other two reasons are that inequality leads to weaker overall demand and that countries with higher inequality are much less likely to make substantial investments in infrastructure (Stiglitz, 2016, pp. 146-147).

All 3 of Stiglitz’s arguments regarding why inequality is bad are logical. As inequality increases, the wealthy gain a larger share of the overall amount of capital. From Kuznets (1955, p. 7) the wealthiest 10% of Americans accounted for almost all of the savings in the US. This was in the 1950s, at a time when many economists and statistics considered inequality in the US to have been the lowest in recent history. Regarding living up to one's potential, it is quite difficult if one grows up in poverty or has to go into debt in order to have a chance at a successful life. The best recent example is the student loan crisis in the US. From the Federal Reserve (2024), in 2006, Americans owed roughly \$500 billion in student loans. In 2023, this figure rose to \$1.7 trillion.

Many Americans go into debt in order to go to university as they believe that is their best way to achieve higher earnings outcomes in the future. While there is some truth to this, the exponential increasing cost of university and increasing amount of student loans in the US show how dire the situation has gotten for working-class Americans. From the Hanson (2022), Public University tuition costs have risen from \$804 in 1980-81 to more than \$9000 in 2019-20, and this doesn’t even factor in the costs of housing, textbooks, or food.

Finally, regarding infrastructure, Stiglitz (2016, pp. 146-147) argues that the lack of investing in infrastructure happens because the wealthy are much less likely to use it, particularly public transportation and public healthcare, compared with the working class. He also mentions that, in the US and other nations with high inequality, government policies favor the financial sector over sectors that create meaningful value. Stiglitz highlights that the capital gains tax, the amount of money one has to pay if they make a positive return on an investment, is half the rate of labor taxation. There can be more said about why inequality is bad overall, particularly discussing social, ethnic, and political polarization. However, considering the extremely complex nature of all of these issues in the US, it would take a book to accurately represent these issues in full.

Overall, while inequality can lead to positive consequences for some, either intentionally or unintentionally, I stand on the side of increasing inequality being more of an overall negative than an overall positive. Stiglitz's (2016) arguments on the negative consequences of increasing inequality have been dissected. While inequality, both economic and social, takes on many different forms, and differs greatly depending on the context, increasing economic and social inequality has been negative for NY state and the US in the long run.

3.6 What is Relevant for this Study?

Kuznets (1955) has some relevance to this study. It is not possible to look at the entire Kuznets curve because inequality has only risen during the 40-year sample. Also, the US has been a developed nation for decades, even at the start of this study, and this inequality rise has occurred after it was already developed. This does not make Kuznets' theory irrelevant here. Milanovic's (2016) Kuznets waves have more relevance. As Milanovic believed that there are multiple periods of rising and shrinking inequality, it is possible that this rising inequality coincides with the start of a new Kuznets wave. Since Milanovic also believed that large factors and/or events led to rising or falling inequality, this begs the question of what these factors or events could be? Without a question, the sudden change from a progressive tax system on the wealthy to one of major tax cuts on the wealthy is relevant for the case of NY and the US.

Piketty (2014) has some relevance to this study, particularly the " $r > g$ " component. However, I am not interested in the relationship between economic growth and inequality in this context.

The human capital theory matters significantly in this study. The 1980s were the period when computers started to become more mainstream. Meanwhile, today it is almost impossible to imagine day-to-day life in most of the world without computers and mobile phones. During this time of rapid technological progress, the change in the amount of students who graduated from both high school and university in the US was massive. From Korhonen (2023), college graduate rates in 1980 were 16% of Americans aged 25 or older, while in 2020 this rate was 39%. In the same period, high school graduation rates rose from 67% to 91%. Clearly, Americans have become significantly more educated over this period. Unfortunately, I was unable to find long term data for university graduation rates at the state level. It would have been great to have this data available as it is extremely relevant to the changes that have gone on in NY and the US during this period, but the lack of this data is just another limitation of this study.

Stiglitz (2016) discussed the trends and his explanations for the rise of inequality since the 1980s. When discussing the growth of the top income brackets, the growth of the financial sector and CEO compensation are his two main points (Stiglitz, 2016, p. 141). Piketty and Saez (2014) also found that the increased compensation of CEOs and other corporate executives in the US has led to increasing inequality. Stiglitz (2016, p. 140) highlights that standard economic theory cannot accurately describe why two similar nations have extremely different income distributions because of tax and income distribution laws, citing both France and Norway as examples of wealthy nations with low inequality. Alvaredo et al. (2013) and Piketty and Saez (2014) also concluded that the change in the progressive tax structure in the 1970s and 1980s contributed to rising inequality in the US.

To investigate these main points from Stiglitz (2016), Piketty and Saez (2014), and Alvaredo et al. (2013) in the regression analysis section, there will be controls for the CEO-worker wage ratio and the top marginal income tax rate. The CEO-worker wage ratio is a proxy to measure the rising CEO compensation compared to the median wages of non-CEO workers and the top marginal tax rate shows the trends of the tax rates on the highest income earners. The reason that the top income tax value is used instead of the bottom 50% tax rates, aside from lack of data, is because the wealthy can lobby the government to lower their tax rate. Wealthy Americans are more likely to legally evade taxes compared to the average American via offshore bank accounts, legal loopholes, or other complicated measures that normal Americans cannot access.

Neckerman and Torche (2007) found that stagnant minimum wages and declining unionization rates contributed to rising wage inequality in the US. As mentioned in Section 3.2, Piketty and Saez (2014) confirmed that wage inequality has played a role in rising US inequality levels. While I am investigating income inequality instead of wage inequality, a stagnant minimum wage is related to increasing wage inequality, which can lead to higher income inequality. The minimum wage, at the NY state and federal level, will be controlled in the regression section. Unionization rates are also directly related to minimum wage figures, as unions often fight for better pay across the sector/company that they represent. Unionization rates as a percentage of workers in a union will be controlled to factor the role of unionization on inequality in NY.

3.7 Hypothesis

I hypothesize that there may be certain differences in the results, especially between the GINI index and the top 0.01% of income earners due to the sensitivity in the middle of the GINI index. For example, I hypothesize a stronger significance and effect for the minimum wage and unionization rate variables for the GINI model compared with the top 10% - 0.01% models as unionization and minimum wages overwhelmingly impact the middle end of the income spectrum. However, even with potential differences, I expect all the drivers of inequality to have statistically significant effects on the inequality dependent variables. Between the US and NY samples, I expect similar results in terms of statistical significance and larger positive or negative effects for the NY sample, as inequality rose faster in NY.

4.1 Data for New York State and US Samples

Regressions will be run for each of these 7 measures of inequality discussed in Section 2.1, with the inequality variables being the main dependent variables. This will be done for NY state and will then be compared with data for the entire US to investigate the similarities and differences between the entire US and the rise of inequality in NY state. Data from 1981-2020 will be used for the inequality data as 2020 is the last year of the inequality data compiled by Frank (2023). The main independent variables of interest will be the union membership rates, CEO-worker wage ratio, minimum wage, and top marginal tax rate. Please revisit Section 3.6 for a review as

to why these independent variables, or “drivers of inequality”, were chosen. Recessions will also be controlled for to ensure that they do not bias the results. The descriptive statistics and sources for each of the variables can be found in Appendix A.

4.2 Model and Equation Main Sample

Since this study uses annual data of 1 observation per year, OLS is the model that will be used. While always relevant, the small sample size makes it especially important to consider autocorrelation, multicollinearity, and heteroskedasticity. The presence of multicollinearity, autocorrelation, and heteroskedasticity in each model will be shown in Appendix A. To correct for issues with autocorrelation and heteroskedasticity, Newey-West standard errors will be used for each of the regressions. Finally, I will create an interaction term between the minimum wage and unionization rate variables. It is clear that during this time period, as the unionization rate has steadily declined, there has been little change in the minimum wage in the US. Considering that unions often fight for higher wages, which includes a higher minimum wage, there is a clear relationship between these two variables in this context, justifying the creation of an interaction term between minimum wage and unionization.

The main model for the regression analysis is as follows:

$$Y_{gt} = \beta_0 + \beta_1 CEO - WorkerWageRatio_t + \beta_2 MinimumWage_{gt} * UnionizationRate_{gt} + \beta_3 TopTaxRate_{gt} + \beta_4 RecessionDummy_t + \varepsilon$$

The main dependent variable, Y_{gt} , represents any of the 7 different measurements for inequality, as mentioned above, from 1981-2020 at time t and at the NY state and entire US geographic levels, g. The variable, β_1 , represents the CEO-worker wage ratio at time t. The variable, β_2 , represents the interaction term between the minimum wage and unionization rate variables, at time, t, and geographic levels, g. The variable, β_3 , represents the top marginal tax rate at time, t, and geographic levels, g. The variable, β_4 , represents the recessions at time, t. Finally, ε represents the error term.

4.3 Data for New York County Subsample

There is also data from the US Census at the NY state county level for the GINI and the top 5% income share from 2010-2022. However, only data from 2010-2019 will be considered as there is no data from 2020 and the post COVID-19 years would heavily bias the results. While this is a much shorter time period, it will be investigated to see if the main drivers of inequality throughout NY state from 1981-2020 are similar to those by NY state county during the 2010s. The benefit of using county level data, even in a shorter time period, is that there will be more observations. All the counties that are present from the US Census dataset will be presented in Appendix B. This county level regression analysis will give insight as to the importance of the mid 2010s on inequality today in NY state. The descriptive and summary statistics can be found in Appendix B. Since there were no recessions in this period, this variable has been removed.

4.4 Model and Equation New York County Subsample

The model used for the county level sample is different because of the presence of panel data. Panel data regressions with fixed effects will be used. Please see Appendix B to investigate the results of the Hausman test, which is a test that can be used to investigate if fixed effects or random effects should be used. The results confirm that fixed effects should be used. To address potential autocorrelation and heteroskedasticity issues, clustered standard errors will also be used. In this sample, there will be no interaction term between the unionization rate and the minimum wage. While there is county level data for the minimum wage, there is only state level data for the unionization variable. This lack of consistent data would not make this interaction term reliable, which is why there will be no interaction term in this instance.

The model for this sample is as follows:

$$Y_{st} = \beta_0 + \beta_1 CEO - WorkerWageRatio_t + \beta_2 MinimumWage_{st} + \beta_3 UnionizationRate_t + \beta_4 TopTaxRate_t + \epsilon$$

The main dependent variable, Y_{st} , represents the GINI index or top 5% income share, from 2010-2019 at time t and at the NY County levels, s. The variable, β_1 , represents the CEO-worker wage ratio at time t. The variable, β_2 , represents the minimum wage variable, at time, t, and NY

County level, s . The variable, β_3 , represents the unionization rate at time, t . The variable, β_4 , represents the top marginal tax rate at time, t . Finally, ε represents the error term.

5.1 Results for New York Sample

Table 1.1: Top 10% - 1% Income Share NY

Variables	(1) Top 10% Income Share	(2) Top 10% Income Share	(3) Top 5% Income Share	(4) Top 5% Income Share	(5) Top 1% Income Share	(6) Top 1% Income Share
CEO-Worker Ratio	0.0402*** (0.00712)	0.0549*** (0.00679)	0.0460*** (0.00787)	0.0591*** (0.00733)	0.0431*** (0.00688)	0.0513*** (0.00632)
Minimum Wage * Union Rate	0.0624* (0.0308)		0.0553 (0.0347)		0.0347 (0.0307)	
Top Tax Rate	-0.129 (0.366)	0.604* (0.306)	-0.132 (0.414)	0.517 (0.336)	-0.00939 (0.396)	0.398 (0.285)
Recession	-0.342 (1.509)	0.597 (1.859)	0.128 (1.688)	0.960 (2.031)	0.384 (1.456)	0.906 (1.684)
Constant	35.62*** (2.574)	34.68*** (2.609)	24.21*** (2.899)	23.37*** (2.917)	11.10*** (2.500)	10.57*** (2.481)
Observations	40	40	40	40	40	40
R-squared	0.849	0.819	0.832	0.811	0.825	0.814

Standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 1.2: Top 0.5% - 0.01% Income Share NY

Variables	(1) Top 0.5% Income Share	(2) Top 0.5% Income Share	(3) Top 0.1% Income Share	(4) Top 0.1% Income Share	(5) Top 0.01% Income Share	(6) Top 0.01% Income Share
CEO-Worker Ratio	0.0365*** (0.00617)	0.0472*** (0.00589)	0.0266*** (0.00515)	0.0350*** (0.00509)	0.0147*** (0.00367)	0.0206*** (0.00364)
Minimum Wage * Union Rate	0.0458* (0.0259)		0.0356 (0.0222)		0.0252 (0.0158)	
Top Tax Rate	-0.197 (0.327)	0.340 (0.244)	-0.177 (0.297)	0.241 (0.219)	-0.0909 (0.213)	0.204 (0.160)
Recession	0.248 (1.286)	0.936 (1.544)	0.497 (1.121)	1.033 (1.348)	0.563 (0.796)	0.942 (0.967)
Constant	8.146*** (2.067)	7.452*** (2.032)	4.042** (1.824)	3.502* (1.797)	0.863 (1.297)	0.482 (1.292)
Observations	40	40	40	40	40	40
R-squared	0.847	0.823	0.801	0.776	0.750	0.718

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Tables 1.1 and 1.2 show the results of the potential drivers of NY state inequality using the top 10% - top 0.01% inequality variables. As mentioned, these tables use Newey-West standard errors to correct for autocorrelation and heteroskedasticity. The only consistently significant variable throughout is the CEO-worker compensation ratio. This figure is positive and significant at the 1% level for all 6 income shares and has the strongest effect on the top 5% income share group. When not including the interaction term, the effect is stronger, but there is no effect on the significance of the CEO-worker compensation variable regardless of the interaction term being included or not. The VIF value of 5.20 for the interaction term motivates not including it in columns (2), (4), and (6) in Tables 1.1 and 1.2. This may explain why the top tax rate sign flips between the columns that include the interaction term and the ones that don't. However, this is not of concern as the significance of the top tax rate and interaction term are extremely weak when they are significant, only at the 10% level.

Table 2: NY Model GINI

Variables	(1) GINI	(2) GINI
CEO-Worker Ratio	0.0329*** (0.00637)	0.0481*** (0.00729)
Minimum Wage * Union Rate	0.0645** (0.0257)	
Top Tax Rate	-0.233 (0.465)	0.524** (0.253)
Recession	-0.414 (1.509)	0.557 (1.526)
Constant	49.01*** (2.294)	48.03*** (2.251)
Observations	40	40
R-squared	0.822	0.782

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 2 also shows that the CEO-worker ratio is significant and positive at the 1% level. The model without the interaction term, column (2), sees the top tax rate positive and significant at the 5% level. When the interaction term is included in column (1), the significance is lost and the interaction term is positive and significant at the 5% level.

5.2 Results for US and Comparison with New York Results

Table 3: Top 10% - 0.01% Income Share US

Variables	(1) Top 10% Income Share	(2) Top 5% Income Share	(3) Top 1% Income Share	(4) Top 0.5% Income Share	(5) Top 0.1% Income Share	(6) Top 0.01% Income Share
CEO-Worker Ratio	0.0326*** (0.00326)	0.0347*** (0.00302)	0.0301*** (0.00254)	0.0270*** (0.00236)	0.0198*** (0.00187)	0.0104*** (0.00121)
Minimum Wage * Union Rate	0.117*** (0.0344)	0.0753** (0.0335)	0.0126 (0.0313)	0.00287 (0.0296)	0.00162 (0.0236)	0.0110 (0.0146)
Top Tax Rate	-0.155*** (0.0373)	-0.135*** (0.0373)	-0.0878** (0.0328)	-0.0701** (0.0306)	-0.0373 (0.0244)	-0.0165 (0.0149)
Recession	0.0114 (0.593)	0.0561 (0.593)	0.127 (0.543)	0.146 (0.508)	0.174 (0.404)	0.162 (0.249)
Constant	36.05*** (1.848)	26.05*** (1.834)	14.36*** (1.665)	11.16*** (1.565)	5.611*** (1.269)	1.523* (0.769)
Observations	40	40	40	40	40	40
R-squared	0.921	0.923	0.915	0.907	0.893	0.865

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3 is the same idea as Table 1, except it considers the entire US as opposed to just NY state. The reason that there are no models that remove the interaction term is because multicollinearity is of no concern when all variables are used together in this instance, see Appendix A. Once again, the CEO-worker ratio variable is positive and significant at the 1% level in all instances. The difference compared to the NY sample is that the effect is stronger in the NY sample. The effect of the interaction term is positive and significant at the 1% and 5% levels for columns (1) and (2), compared to a positive significance at the 10% level only for the top 10% income share in NY. Finally, the top tax rate is negative and significant at the 1% level for columns (1) and (2) and at the 5% level for columns (3) and (4).

Table 4: US Model GINI

Variables	(1) GINI
CEO-Worker Ratio	0.0222*** (0.00281)
Minimum Wage * Union Rate	0.156*** (0.0272)
Top Tax Rate	-0.282*** (0.0284)
Recession	0.469 (0.460)
Constant	54.84*** (1.810)
Observations	40
R-squared	0.921

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

The results from Table 4 are similar to those from Table 2. The realized CEO-worker compensation ratio is positive and significant at the 1% level in all instances and once again weaker for the US sample compared to the NY sample. The interaction term increases significance and effect in this US sample. Finally, the top tax rate becomes statistically significant at the 1% level compared to no significance for the NY sample, despite near identical values.

5.3 Results for New York County Sample

Table 5: GINI and Top 5% Income Share NY County Using Fixed Effects and Clustered Standard Errors

Variables	(1) GINI	(2) GINI	(3) GINI	(4) GINI	(5) Top 5% Income	(6) Top 5% Income Share	(7) Top 5% Income	(8) Top 5% Income Share
CEO-Worker Ratio	0.00485*** (0.00166)		0.00493*** (0.00166)		0.00498** (0.00216)		0.00506** (0.00215)	
Union Rate	-0.243*** (0.0825)		0.103 (0.132)	0.0124 (0.137)	-0.183* (0.108)		0.193 (0.160)	0.0991 (0.167)
Minimum Wage		0.204*** (0.0584)	0.331*** (0.0840)	0.211** (0.0918)		0.179** (0.0802)	0.360*** (0.102)	0.235* (0.119)
Top Tax Rate		9.002*** (2.032)		8.955*** (2.093)		9.648*** (2.827)		9.278*** (2.936)
Constant	49.50*** (1.947)	- 70.77*** (25.58)	38.43*** (3.663)	- 70.54*** (25.72)	23.27*** (2.694)	- 103.5*** (35.47)	11.24** (4.413)	- 101.7*** (35.86)
Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Observations	390	390	390	390	390	390	390	390
R-squared	0.059	0.118	0.109	0.118	0.035	0.086	0.080	0.088
Number of Counties	39	39	39	39	39	39	39	39

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 shows the results for the drivers of inequality, from 2010-2019, at the county level in NY state. There are 62 counties in the state of NY (New York State Department of Labor, n.d.). However, due to the lack of data, the US Census Bureau only has data for 39 of the 62 counties during this period. To see a complete list of counties that are included in Table 5, please see Appendix B. The reason that all 4 independent variables are never put together in the same regression is due to the high levels of multicollinearity when all 4 are included. See appendix B for a complete breakdown of the VIF values for each of the models.

The CEO-worker ratio is positive and significant at the 1% level for the GINI models and significant at the 5% model for the top 5% income models. The unionization variable is positive

and negative significant at the 1% level for model (1) with the GINI index and significant at the 10% level for model (5) with the top 5% income share. When the minimum wage is added in models (3) and (7) the sign flips and the significance disappears. It also does not gain significance when added in models (4) and (8). Every model that includes the minimum wage variable is positive and significant, with stronger significance trends observed for the GINI models. Finally, the top tax rate variable is positive and significant at the 1% level in each instance where it is included.

6.1 Main Discussion

As discussed in Section 5.1, it seems that the main driver of the rise of inequality in NY state since the 1980s was the increased CEO-worker compensation ratio. When compared to the US sample, the CEO-worker ratio was also positive and significant at the 1% level throughout. This should not be seen as a surprise considering that wages for the bottom 90% of Americans have stagnated in the US since the 1970s (Mishel et al., 2015). As for the top earners, Bivens and Kandra (2023) showed that the realized CEO-worker compensation ratio rose from 39 in 1981 to a peak of 380 in 2000, hovering between 185 and 350 in the 2000s until peaking at 395 in 2020.

What explains the stronger effect in NY vs the US? To me, this is somewhat unclear, but I will attempt to theorize. Unfortunately, this variable only represents the CEO-worker ratio rise throughout the US. There is no way to know what this rise was for CEOs and companies based in NY state as data was only available at the national level. I believe that this stronger effect in NY has to do mainly with the particular corporations headquartered in NY. From Baruch College (n.d.), in 2019 many of the top 25 companies, according to revenue, based in NYC were financial institutions such as J.P. Morgan, Morgan Stanley, Goldman Sachs, Blackrock, Citigroup, and American Express. From Horton (2024) at Forbes, NY is home to 3 of the 10 largest banks, J.P. Morgan, Citigroup, and Goldman Sachs in terms of assets under management; no other US state has more than 1 in the top 10. This list does not consider Blackrock, the largest asset manager in the world with over \$10 trillion (Sovereign Wealth Fund Institute, n.d.), more than triple the amount of J.P. Morgan, the US bank with the most assets under management. Other notable, non-financial, companies were Philip Morris, Verizon, Pfizer, Twenty-First Century Fox, and CBS. The sheer might and influence, both politically and in their respective

markets, of these companies give context to the amount of corporate power that NY state has compared to the average US state. In my opinion, this explains the stronger effect of the CEO-worker ratio in NY state compared to the entire US.

For the income share variables, it seems that the top tax rate and interaction term between minimum wage and unionization rate play little to no role in driving inequality in NY. For the US sample, the interaction term had positive and significant effects on the top 10% and 5% models, at the 1% and 5% levels respectively. For the tax rate, the top 10% - 0.5% models, there were negative and significant rates at the 1% or 5% levels. The moderate VIF levels for the sample of all variables in the NY models may explain why there is no significance for the top tax rate variable, as the VIF levels are low in the US sample. With the GINI models, both the NY and US samples have positive and significant effects for the interaction term, even though the significance and strength is stronger in the US sample. The top tax rate variable is negative and significant at the 1% level in the US sample, while there is no significance in the NY sample with all variables.

It is surprising that the unionization and minimum wage interaction term was not significant in more instances. For the minimum wage, the increases in NY were small, from \$3.35 in 1981 to \$11.80 in 2020. This does not dismiss the role of a stagnant minimum wage on rising inequality, this is just the result with this set of observations. However, this does not mean that a stagnant minimum wage plays no role in rising inequality in other states, countries, and/or time periods. I am not suggesting that the extremely low minimum wage is fine, it is not. From Nova (2023), in no US state can an individual earn the minimum wage and afford a 2-bedroom apartment. The average hourly wage needed to afford a 2-bedroom apartment is around \$28 per hour and in NY that value is closer to \$40. Even if the relationship between the minimum wage, both in NY and the US, is not statistically significant, it is clear that raising the minimum wage significantly is necessary to increase the standards of living of those at the bottom of the income spectrum.

After unionization rates peaked around WWII, they have slowly declined since the mid-1950s, with a more pronounced decline occurring starting in the Reagan presidency. Again, the lack of significance in the NY sample does not reduce the negative consequences of the shrinking unionization rates. Unions in the late 1800s and early 1900s helped the US establish a minimum wage, 8 hour working days, and strict anti-child labor laws. The declining membership rates of

unions during the past 70 years, combined with increasing anti-union opinions that gained prevalence during the Reagan presidency, without a doubt has given US workers fewer opportunities to bargain with their bosses and companies. This could partly explain the stagnant wages in the US since the 1970s, lack of time off compared to other developed nations, and declining work-life balance.

The top tax rate having no statistically significant relationship is the most surprising to me. Again, this does not mean that decreasing tax rates on the wealthy has no effect on inequality in general. There is, however, no evidence of this effect in this sample. Taxes are extremely complex and there are many ways, especially for the wealthy, to reduce or avoid paying their tax burden. This nonsignificant relationship may be related to the fact that the inequality variables in question are related to income instead of wealth. However, considering the tax variable used in this study considers the top income tax rate, I do not understand why there was no statistically significant relationship between the shrinking top income tax rate and inequality.

6.2 Discussion of County Level Results

Unfortunately, there was no data for all 62 counties in NY. Even though roughly 1/3 of the NY state counties did not have data availability, this is because of the small population size of these 23 counties and not a cause of concern. This would be a cause of concern if counties with major cities lacked data, but thankfully this was not the case.

The positive and highly significant effect of the CEO to worker ratio on inequality is once again shown. The sign for the top tax rate is surprising to me. As taxes on the top income earners rise, I would've expected the GINI and top 5% income shares to also rise. This is not what the results suggest. This could be due to an increased incentive for the wealthy to engage in tax avoidance when the top marginal tax rate increases, as discussed in Section 6.1. The positive and highly significant effect of the minimum wage on inequality is the most interesting. At face value, one would assume that raising the minimum wage increases inequality. However, this ignores the fact that raising the minimum wage could lead to rises of similar or greater magnitude across the income spectrum. Finally, the effect of unionization seems to be captured by the minimum wage, as seen in models (3), (4), (7), and (8). Even with this shorter time period where inequality rates

have stayed relatively constant, it gives meaningful insight into the main relationship between these drivers of inequality in NY.

6.3 Limitations

A small sample size is a major limitation due to data limitation issues. The reason that there are only 40 observations in the sample, aside from the fact that 1981-2020 is 40 years, is that there is a lack of long-term data available at the county level. If every variable had data at the NY state county level from 1981-2020, that would equate to 2480 observations, which would make the results more precise due to a larger sample size. Even if the data availability was again restricted to 39 counties, there would be 1560 observations. This would also give the opportunity of separating the state into the 3 main regions, or even possible subregions, of Long Island, NYC, and Upstate NY. Unfortunately, data from the US census at the county level only started in 2010. To conclude, the small sample size is not as much due to the time period of the study, but the fact that there are data availability issues at the county level throughout the period of study.

The low number of observations does not invalidate my results, it just makes them less reliable than they could have been if data availability was better. This is not to say that this county level data does not exist in NY state. If it does, I believe that one would have to contact each county's government office and comb through reports in person. This would take an immense amount of time, money, and may not even lead to anything of value. A potential issue is that county A may record a certain variable throughout the period, but counties B and C may not. Regardless, if one desires to create a similar long-term study of the drivers of inequality in a geographical region, country, state etc., this must be considered. Unfortunately, this is always one of the major issues when doing long-run historical studies and should not deter researchers from doing such long-run studies. These data availability issues should just be dealt with as best as possible.

One issue of Frank's (2023) gathering of data, particularly for the GINI index, is that the values are significantly higher than those reported by the World Bank and the US Census, with a value of 0.65 for the US in 2020 from Frank compared to a value of 0.398 from the World Bank (2024) in 2021. However, this is not a cause for concern as the trend is consistent with the overall rise of inequality from 1981-2020. Particularly with the GINI index, values are extremely different

depending on where one looks, which I assume is due to differences in measurement. For example, in 2021, the US Census reports a GINI index of 0.485 in the US compared to the World Bank (2024) value of 0.398. What is important is that the trends are consistent, which they are, which is why the Frank (2023) values of GINI are not concerning.

As autocorrelation, heteroskedasticity, and multicollinearity have presence in my variables, it was necessary to control for them as best as possible. While it certainly would have been better to have none of these issues, it was necessary to correct each of these issues to the best of my ability. Regardless, this is still a limitation with my study. Finally, as with almost any empirical study, it is necessary to remember that correlation does not automatically equal causation. When I mention “drivers of inequality” in this paper, it does not mean that the rise of the CEO to worker ratio directly causes inequality to rise. This means that the relationship is strong and it plays a role in increasing inequality, but there are many other factors that matter.

7. Conclusion

To conclude, the main driver of inequality in NY state from 1981-2020 was the increasing ratio of earnings between CEOs and their workers. This was also the main driver of inequality in the entire US, albeit with a weaker relationship compared to NY state. The top tax rate and interaction term between minimum wage and unionization rate were also highly significant in much of the US sample. Finally, the NY County sample gave context that in the 2010s, at least prior to the COVID-19 pandemic, the same variables that were significant in the US sample were also significant.

Further research opportunities could take a closer look across different political parties in power to further compare drivers of inequality in the US and NY state. This would be immensely important research as it would give other US states, especially those with rising inequality, historical context as to why inequality got so much worse in NY state compared to the rest of the US in the 1980s and beyond. It would also help in understanding, both at the country and state levels, the role of politicians and political parties on inequality during this period. As mentioned in Section 6.3, researchers should look for data at the lowest governmental level possible, which would ensure the most possible observations to lead to the most concrete conclusions possible.

The problem with this approach is related to data issues, whether it be lack of data, data consistency issues, or difficulty in retrieving the data.

Similar studies to mine should be replicated throughout the US, particularly in states of high inequality and high economic importance, such as California, Texas, and Florida. These 3 states are extremely different from both NY and from one another, which would give further insight as to some potential similarities and differences. As the US has the highest levels of inequality out of all developed nations, more research should be done in this field of study to come up with effective policy solutions to pause and reverse inequality in the US. Considering the vast differences across all 50 US states in terms of geography, history, ethnic makeup, and economic makeup, among many other differences, a policy that can effectively reverse inequality in NY state may do the opposite in Mississippi or Nebraska. The complex nature of inequality throughout the world suggests that there is no one-size-fits-all approach to address inequality globally. Instead, every case of high inequality needs to be investigated in depth to accurately come up with solutions to address this major issue.

Since the CEO-worker compensation ratio was highly significant and positive throughout the sample, it is evident that this issue needs to be addressed. One thing that can be done to reduce this CEO to worker pay gap is addressing stock buybacks, which has gained traction in congress over the past few years. There needs to be a complete overhaul or ban on stock buybacks. From Shilon (2021, p. 308), over 1/3 of CEOs' wages came from stock buybacks in the mid-2000s. Stock buybacks kill innovation, are used as excuses to not raise their workers' wages, and only benefit high level shareholders of a company. Overhauling or banning stock buybacks could force companies to invest in innovation and/or raise the wages of their workers, something beneficial for the 99% and society as a whole.

The state of NY, aside from being my home, is without a question one of the most important states in the US in modern times and historically. The US would not be the country that it is today without the massive influx of immigrants arriving in the late 19th and early 20th centuries, most of whom had to stop in Ellis Island and eventually call NYC their home. Wall Street has made NYC the financial capital of the world for over 100 years. Many media conglomerates, such as NBC, have made NY the media capital of the world. The cultural, economic, and political significance of NY heightens the importance of addressing the worsening trends of

income inequality in the state. Further research will equip policymakers with the tools to hopefully address the extremely high levels of inequality in NY state to make NY a better place to live for all New Yorkers.

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Appendix A:

Table A1: NY State Descriptive Statistics and Variable Explanations

Variable	Source	Data Availability	Units	Observations	Mean	Standard Deviation
Top 10% Income Share	Frank (2023)	1981-2020	Scale from 0-100. A 50 represents that the top 10% has 50% of the overall income.	40	51.38	7.44
Top 5% Income Share	Frank (2023)	1981-2020	Scale from 0-100. Same logic as top 10% income share.	40	40.17	7.87
Top 1% Income Share	Frank (2023)	1981-2020	Scale from 0-100. Same logic as top 10% income share.	40	24.7	6.76
Top 0.5% Income Share	Frank (2023)	1981-2020	Scale from 0-100.	40	20.25	6.16

			Same logic as top 10% income share.			
Top 0.1% Income Share	Frank (2023)	1981-2020	Scale from 0-100. Same logic as top 10% income share.	40	12.95	4.67
Top 0.01% Income Share	Frank (2023)	1981-2020	Scale from 0-100. Same logic as top 10% income share.	40	6.72	2.92
GINI	Frank (2023)	1981-2020	Scale from 0-100. A value of 50 represents a GINI value of 0.5.	40	62.62	6.66
CEO-Worker Compensation Ratio	(Bivens & Kandra, 2023)	1981-2020	The value represents the ratio of earned	40	198.02	114.18

			income from the CEO compared to the workers. A 200 represents CEOs earning 200 times more, on average, than non-CEO workers. Only available at US level, hence these values are the same as those from the US sample.			
Unionization Rate	Girardin (2023)	1981-2020	Scale from 0-100. A 50	40	26.52	2.8

			represents 50% of workers belonging to a union.			
Minimum Wage	New York State Department of Labor (2024)	1981-2020	USD figures. A 5 represents a minimum wage of \$5.	40	5.7	2.4
Top Income Tax Rate	Fiscal Policy Institute (n.d.) from 1981-2007. Rich States Poor States (n.d.) from 2008 onwards.	1981-2020	Scale from 0-100. A 50 represents a top marginal tax rate of 50%.	40	9.41	2.3
Recession	Hamilton (n.d.)	1981-2020	Dummy variable with 1 indicating a recession in any part of the calendar	40	0.25	.44

			year, 0 otherwise.			
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Table A2: US Descriptive Statistics and Variable Explanations

Variable	Source	Data Availability	Units	Observations	Mean	Standard Deviation
Top 10% Income Share	Frank (2023)	1981-2020	Same as NY sample.	40	44.55	5.00
Top 5% Income Share	Frank (2023)	1981-2020	Same as NY sample.	40	32.88	4.92
Top 1% Income Share	Frank (2023)	1981-2020	Same as NY sample.	40	17.79	3.90
Top 0.5% Income Share	Frank (2023)	1981-2020	Same as NY sample.	40	14.00	3.44
Top 0.1% Income Share	Frank (2023)	1981-2020	Same as NY sample.	40	8.22	2.49
Top 0.01% Income Share	Frank (2023)	1981-2020	Same as NY sample.	40	3.73	1.37
GINI	Frank (2023)	1981-2020	Same as NY sample.	40	59.11	4.56
CEO-Worker Compensation Ratio	(Bivens & Kandra, 2023)	1981-2020	Same as NY sample.	40	198.02	114.18
Unionization Rate	Hirsch et al. (2024)	1981-2020	Same as NY sample.	40	14.13	2.99

Minimum Wage	United States Department of Labor (n.d.)	1981-2020	Same as NY sample.	40	5.17	1.51
Top Income Tax Rate	Tax Policy Center (2023)	1981-2020	Same as NY sample.	40	39.08	7.49
Recession	Hamilton (n.d.)	1981-2020	Same as NY sample.	40	0.25	.44

Table A3: Heteroskedasticity and Autocorrelation for Full NY State Model

Dependent Variable	Autocorrelation from Durban Watson Test	Heteroskedasticity P-Value from White Test
Top 10% Income Share	0.66 (Indicates Positive Autocorrelation)	0.005 (Indicates Heteroskedasticity)
Top 5% Income Share	0.59 (Indicates Positive Autocorrelation)	0.005 (Indicates Heteroskedasticity)
Top 1% Income Share	0.74 (Indicates Positive Autocorrelation)	0.011 (Indicates Heteroskedasticity)
Top 0.5% Income Share	0.84 (Indicates Positive Autocorrelation)	0.018 (Indicates Heteroskedasticity)
Top 0.1% Income Share	0.68 (Indicates Positive Autocorrelation)	0.035 (Indicates Heteroskedasticity)
Top 0.01% Income Share	0.58 (Indicates Positive Autocorrelation)	0.023 (Indicates Heteroskedasticity)
GINI	0.42 (Indicates Positive Autocorrelation)	0.016 (Indicates Heteroskedasticity)

Table A4: NY Model Results Prior to Correcting for Heteroskedasticity and/or Autocorrelation for Top 10% - 1% Income Shares

Variables	(1) Top 10% Income Share	(2) Top 10% Income Share	(3) Top 5% Income Share	(4) Top 5% Income Share	(5) Top 1% Income Share	(6) Top 1% Income Share
CEO-Worker Ratio	0.0402*** (0.00665)	0.0549*** (0.00607)	0.0460*** (0.00732)	0.0591*** (0.00649)	0.0431*** (0.00648)	0.0513*** (0.00564)
Minimum Wage * Union Rate	0.0624** (0.0254)		0.0553* (0.0285)		0.0347 (0.0253)	
Top Tax Rate	-0.129 (0.295)	0.604** (0.271)	-0.132 (0.332)	0.517* (0.292)	-0.00939 (0.319)	0.398 (0.250)
Recession	-0.342 (1.437)	0.597 (1.625)	0.128 (1.601)	0.960 (1.787)	0.384 (1.401)	0.906 (1.519)
Constant	35.62*** (2.166)	34.68*** (2.280)	24.21*** (2.422)	23.37*** (2.519)	11.10*** (2.117)	10.57*** (2.163)
Observations	40	40	40	40	40	40
R-squared	0.849	0.819	0.832	0.811	0.825	0.814

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A5: NY Model Results Prior to Correcting for Heteroskedasticity and/or Autocorrelation for Top 0.5% - 0.01% Income Shares

Variables	(1) Top 0.5% Income Share	(2) Top 0.5% Income Share	(3) Top 0.1% Income Share	(4) Top 0.1% Income Share	(5) Top 0.01% Income Share	(6) Top 0.01% Income Share
CEO-Worker Ratio	0.0365*** (0.00586)	0.0472*** (0.00529)	0.0266*** (0.00467)	0.0350*** (0.00444)	0.0147*** (0.00320)	0.0206*** (0.00313)
Minimum Wage * Union Rate	0.0458** (0.0218)		0.0356* (0.0183)		0.0252* (0.0129)	
Top Tax Rate	-0.197 (0.270)	0.340 (0.220)	-0.177 (0.245)	0.241 (0.189)	-0.0909 (0.177)	0.204 (0.135)
Recession	0.248 (1.214)	0.936 (1.353)	0.497 (1.033)	1.033 (1.166)	0.563 (0.724)	0.942 (0.830)
Constant	8.146*** (1.780)	7.452*** (1.820)	4.042** (1.530)	3.502** (1.546)	0.863 (1.074)	0.482 (1.085)
Observations	40	40	40	40	40	40
R-squared	0.847	0.823	0.801	0.776	0.750	0.718

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A6: NY Model Results Prior to Correcting for Heteroskedasticity and/or Autocorrelation for GINI

VARIABLES	(1) GINI	(2) GINI
CEO-Worker Ratio	0.0329*** (0.00554)	0.0481*** (0.00580)
Minimum Wage * Union Rate	0.0645*** (0.0210)	
Top Tax Rate	-0.233 (0.355)	0.524** (0.215)
Recession	-0.414 (1.373)	0.557 (1.350)
Constant	49.01*** (1.799)	48.03*** (1.857)
Observations	40	40
R-squared	0.822	0.782

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A7: Multicollinearity for Independent Variables in NY State Sample Prior to Creation of Interaction Term

Variable	VIF
Minimum Wage	8.50
Unionization Rate	7.18
CEO-Worker Ratio	4.67
Top Tax Rate	2.92
Recession	1.14

Table A8: Multicollinearity for Independent Variables in NY State Sample with Full Model

Variable	VIF
Minimum Wage * Union Rate	5.20
CEO-Worker Ratio	2.81
Top Tax Rate	2.79
Recession	1.14

Table A9: Multicollinearity for Independent Variables in NY State Sample Without Minimum Wage and Unionization Interaction Term

Variable	VIF
CEO-Worker Ratio	1.12
Top Tax Rate	1.08
Recession	1.04

Table A10: Heteroskedasticity and Autocorrelation by Model US Sample

Dependent Variable	Autocorrelation from Durban Watson Test	Heteroskedasticity P-Value from White Test
Top 10% Income Share	0.66 (Indicates Positive Autocorrelation)	0.005 (Indicates Heteroskedasticity)
Top 5% Income Share	0.59 (Indicates Positive Autocorrelation)	0.005 (Indicates Heteroskedasticity)
Top 1% Income Share	0.74 (Indicates Positive Autocorrelation)	0.011 (Indicates Heteroskedasticity)
Top 0.5% Income Share	0.84 (Indicates Positive Autocorrelation)	0.018 (Indicates Heteroskedasticity)
Top 0.1% Income Share	0.68 (Indicates Positive Autocorrelation)	0.035 (Indicates Heteroskedasticity)
Top 0.01% Income Share	0.58 (Indicates Positive Autocorrelation)	0.023 (Indicates Heteroskedasticity)
GINI	0.42 (Indicates Positive Autocorrelation)	0.016 (Indicates Heteroskedasticity)

Table A11: US Model Results Prior to Correcting for Heteroskedasticity and/or Autocorrelation for Top Income Shares

Variables	(1) Top 10% Income Share	(2) Top 5% Income Share	(3) Top 1% Income Share	(4) Top 0.5% Income Share	(5) Top 0.1% Income Share	(6) Top 0.01% Income Share
CEO-Worker Ratio	0.0326*** (0.00293)	0.0347*** (0.00274)	0.0301*** (0.00229)	0.0270*** (0.00212)	0.0198*** (0.00166)	0.0104*** (0.00107)
Minimum Wage * Union Rate	0.117*** (0.0316)	0.0753** (0.0312)	0.0126 (0.0293)	0.00287 (0.0277)	0.00162 (0.0220)	0.0110 (0.0138)
Top Tax Rate	-0.155*** (0.0325)	-0.135*** (0.0327)	- 0.0878*** (0.0294)	-0.0701** (0.0275)	-0.0373* (0.0219)	-0.0165 (0.0134)
Recession	0.0114 (0.539)	0.0561 (0.536)	0.127 (0.480)	0.146 (0.447)	0.174 (0.352)	0.162 (0.216)
Constant	36.05*** (1.553)	26.05*** (1.572)	14.36*** (1.497)	11.16*** (1.424)	5.611*** (1.158)	1.523** (0.705)
Observations	40	40	40	40	40	40
R-squared	0.921	0.923	0.915	0.907	0.893	0.865

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A12: US Model Results Prior to Correcting for Heteroskedasticity and/or Autocorrelation for GINI

VARIABLES	(1) GINI
CEO-Worker Ratio	0.0222*** (0.00246)
Minimum Wage * Union Rate	0.156*** (0.0247)
Top Tax Rate	-0.282*** (0.0300)
Recession	0.469 (0.499)
Constant	54.84*** (1.840)
Observations	40
R-squared	0.921

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A13: Multicollinearity for Independent Variables in US Sample

Variable	VIF
CEO-Worker Ratio	1.90
Minimum Wage * Union Rate	1.68
Top Tax Rate	1.23
Recession	1.05

Appendix B:

Counties Included from US Census in NY County Sample:

Albany County, Bronx County, Broome County, Cattaraugus County, Cayuga County, Chautauqua County, Chemung County, Clinton County, Dutchess County, Erie County, Jefferson County, Kings County, Livingston County, Madison County, Monroe County, Nassau County, New York County, Niagara County, Oneida County, Onondaga County, Ontario County, Orange County, Oswego County, Putnam County, Queens County, Rensselaer County, Richmond County, Rockland County, St. Lawrence County, Saratoga County, Schenectady County, Steuben County, Suffolk County, Sullivan County, Tompkins County, Ulster County, Warren County, Wayne County, and Westchester County.

Table B1: NY County Descriptive Statistics and Variable Explanations

Variable	Source	Data Availability	Units	Observations	Mean	Standard Deviation
Top 5% Income Share	US Census Bureau (2024b)	2010-2019	Same as NY sample.	390	20.39	3.07
GINI	US Census Bureau (2024a)	2010-2019	Same as NY sample.	390	45.18	3.86
CEO-Worker Compensation Ratio	(Bivens & Kandra, 2023)	2010-2019	Same as NY sample.	390	294.1	42.84
Unionization Rate	Girardin (2023)	2010-2019	Same as NY sample.	390	23.63	1.07
Minimum Wage	New York State Department of Labor (2024)	2010-2019	Same as NY sample.	390	8.67	1.51
Top Income Tax Rate	Fiscal Policy Institute (n.d.) from 1981-2007. Rich States Poor States (n.d.) from 2008 onwards.	2010-2019	Same as NY sample.	390	12.68	0.32

Table B2: NY County Hausman Tests

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
P-Value	0.00 (Indicating that Fixed Effects should be used)	-0.16 (Indicating that assumptions needed for Hausman test do not hold)	-0.28 (Indicating that assumptions needed for Hausman test do not hold)	-0.34 (Indicating that assumptions needed for Hausman test do not hold)	0.00 (Indicating that Fixed Effects should be used)	-0.38 (Indicating that assumptions needed for Hausman test do not hold)	-0.68 (Indicating that assumptions needed for Hausman test do not hold)	-0.83 (Indicating that assumptions needed for Hausman test do not hold)

Table B3: NY County Model Results Prior to Correcting for Heteroskedasticity and/or Autocorrelation for Top Income Shares with Fixed Effects

Variables	(1) GINI	(2) GINI	(3) GINI	(4) GINI	(5) Top 5% Income	(6) Top 5% Income Share	(7) Top 5% Income	(8) Top 5% Income Share
CEO-Worker Ratio	0.00485*** (0.00183)		0.00493*** (0.00179)		0.00498** (0.00212)		0.00506** (0.00207)	
Union Rate	-0.243*** (0.0732)		0.103 (0.106)	0.0124 (0.106)	-0.183** (0.0845)		0.193 (0.123)	0.0991 (0.123)
Minimum Wage		0.204*** (0.0565)	0.331*** (0.0751)	0.211** (0.0826)		0.179*** (0.0655)	0.360*** (0.0869)	0.235** (0.0958)
Top Tax Rate		9.002*** (2.648)		8.955*** (2.681)		9.648*** (3.072)		9.278*** (3.107)
Constant	49.50*** (1.906)	-70.77** (33.36)	38.43*** (3.123)	-70.54** (33.47)	23.27*** (2.200)	- 103.5*** (38.70)	11.24*** (3.616)	- 101.7*** (38.78)
Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Observations	390	390	390	390	390	390	390	390
R-squared	0.059	0.118	0.109	0.118	0.035	0.086	0.080	0.088
Number of Counties	39	39	39	39	39	39	39	39

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table B4: Multicollinearity for Independent Variables in NY County Sample

Variable	VIF
Top Tax Rate	7.22
CEO-Worker Ratio	5.70
Minimum Wage	4.97
Unionization Rate	3.09

Table B5: Multicollinearity for Independent Variables in NY County Sample cont.

Variable	VIF
Unionization Rate	2.26
Minimum Wage	2.22
CEO-Worker Ratio	1.04

Table B6: Multicollinearity for Independent Variables in NY County Sample cont.

Variable	VIF
Minimum Wage	2.70
Unionization Rate	2.26
Top Tax Rate	1.31

Table B7: Multicollinearity for Independent Variables in NY County Sample cont.

Variable	VIF
Top Tax Rate	1.08
Unionization Rate	1.08

Table B8: Multicollinearity for Independent Variables in NY County Sample cont.

Variable	VIF
CEO-Worker Ratio	1.02
Minimum Wage	1.02