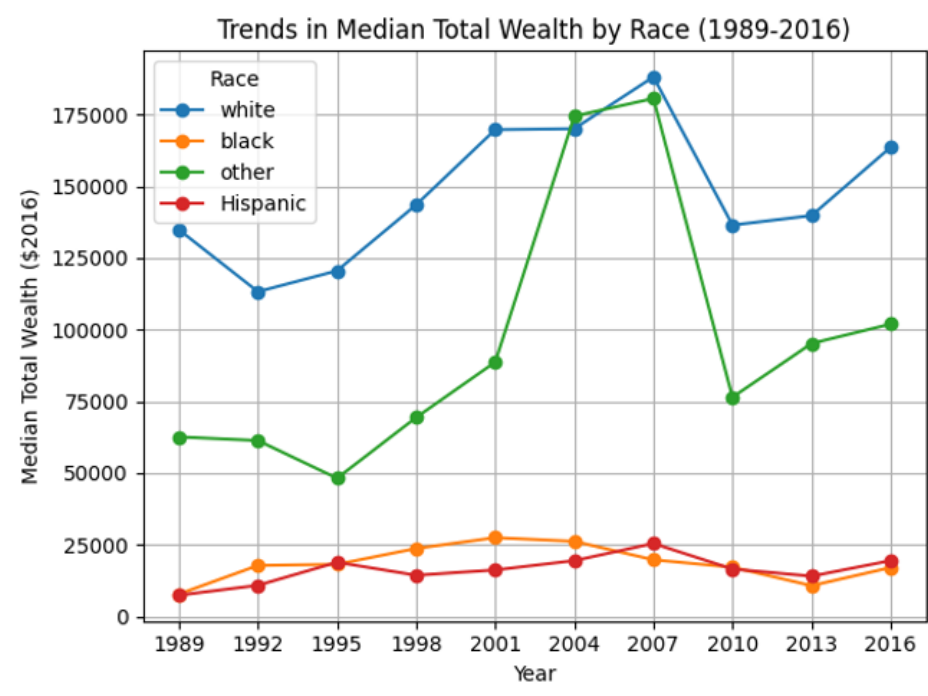


Report

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1) I) The graph illustrates the trends in median total wealth by race from 1989 to 2016, highlighting how different racial groups experienced varying levels of financial growth and decline over the years.



From 1989 to 2016, the median total wealth for white households climbed from approximately \$134,901 in 1989 to a peak of \$188,177 in 2007, demonstrating a substantial rise of about 39.45% over that period. Despite the 2008 financial crisis, which led to a sharp dip by 2010, their wealth remained resilient and recovered significantly, climbing back to \$166,001 by 2016. Although this represents a decline from the 2007 peak, the overall trend indicates a steady recovery after the recession, showing how white households managed to maintain a relatively stable and high wealth level over time.

In contrast, the median total wealth for black households showed a different trajectory. Starting at \$7,836 in 1989, it increased to \$19,802 by 2007, marking a considerable rise of approximately 152.53%. However, during the economic crisis, black household wealth plummeted to \$15,650 by 2016, indicating a dramatic decline of about 21.43% from 2007, and minimal long-term growth, with wealth levels staying far below those of white households.

Hispanic households exhibited slight growth in median total wealth, starting at \$7,463 in 1989 and increasing to \$25,499 by 2007, reflecting a huge increase of about 241.57%. However, similar to black households, they also faced a steep decline during the 2008 recession, with wealth falling to \$16,581 in 2010. By 2016, their wealth had recovered slightly to \$21,300, reflecting a considerable decrease of approximately 16.47% from 2007. This wealth level remained steady but was still significantly lower than that of white households. The overall trajectory was marked by a considerable drop during the recession and modest gains afterward.

The group categorized as “Other” exhibited more volatile changes in wealth. Starting at \$62,637 in 1989, their wealth rose dramatically to \$180,650 by 2007, showing a huge boom over the years. This can be analyzed from this perspective. Between 2000 and 2005-2006, there was a significant increase in mortgage

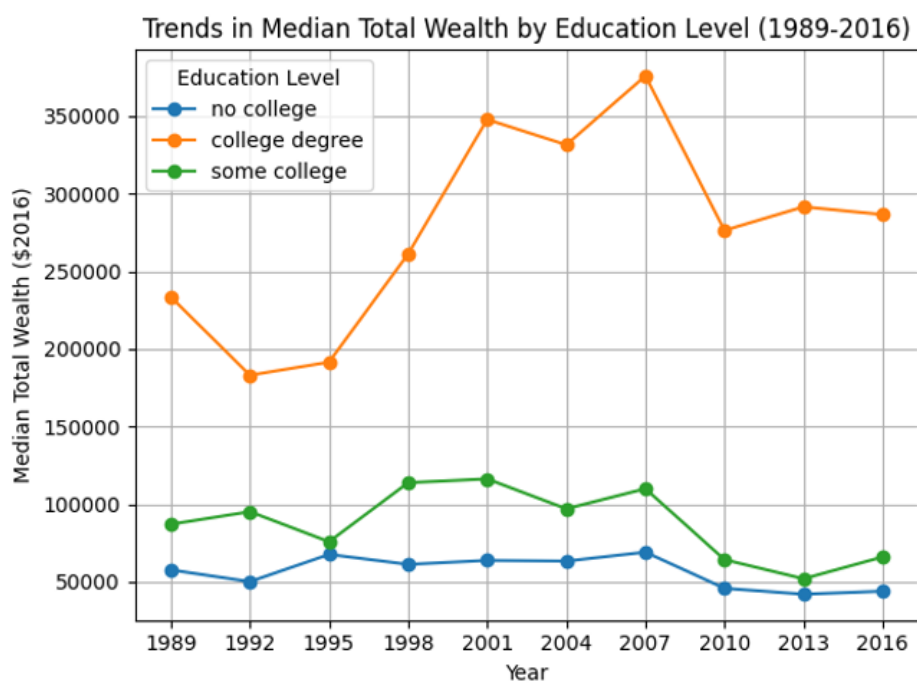
loans. Individuals with low incomes and high credit risk (perhaps with some leniency, we could refer to them as the "other" group) were able to obtain these loans and purchase homes, which led to a boom and increase in housing prices. This boom spread to other sectors of the economy, resulting in an increase in assets and wealth (both financial and housing).

However, this sharp rise in wealth was disproportionately impacted by the 2008 financial crisis, as evidenced by the significant drop to \$76,489 in 2010. In the following years (post-2007), when the loans came due, individuals with low incomes and high credit risk were unable to repay the loans. As a result, the banks repossessed the homes. Since there were no buyers for the properties owned by the banks, housing prices dropped. Moreover, because most of these loans were insured by insurance companies, the insurers went bankrupt, which spread to the banking sector. Consequently, the entire asset market (both housing and financial) fell into a deep recession, leading to a decrease in wealth and assets in the subsequent years (post-2008). Despite the setback, there was a strong recovery by 2016, with wealth rebounding to \$102,000, reflecting a substantial post-crisis recovery.

Overall, white households experienced a considerable rise in wealth over the 30-year period, with substantial growth and a sharp recovery post-2008. Black households had a minimal increase in wealth, with sharp declines during economic downturns, resulting in stagnant growth over time. Hispanic households showed modest gains, with a significant drop in wealth after 2007, followed by a slow recovery. Other racial groups experienced dramatic growth, followed by a steep decline, but their wealth rebounded sharply by 2016. This dramatic contrast underscores the ongoing issues of wealth inequality and the need for policies aimed at addressing these disparities.

Note: Upon examining this graph, I became suspicious of the years 2004 and 2007. I proceeded by calculating the IQR (Interquartile Range) to identify outliers and even removed them, but it had no significant effect on our chart. The formula used for this identification is: $Q1 = df['total_wealth'].quantile(0.25)$, $Q3 = df['total_wealth'].quantile(0.75)$, and $IQR = Q3 - Q1$. The minimum and maximum values for identifying outliers are defined as $lower_bound = Q1 - 1.5 \times IQR$ and $upper_bound = Q3 + 1.5 \times IQR$. Outliers are identified using: $outliers = df[(df['total_wealth'] < lower_bound) \mid (df['total_wealth'] > upper_bound)]$.

II) This graph shows median total wealth trends by education level from 1989 to 2016, highlighting the effects of the 2008 financial crisis and the long-term impact of education on financial stability.

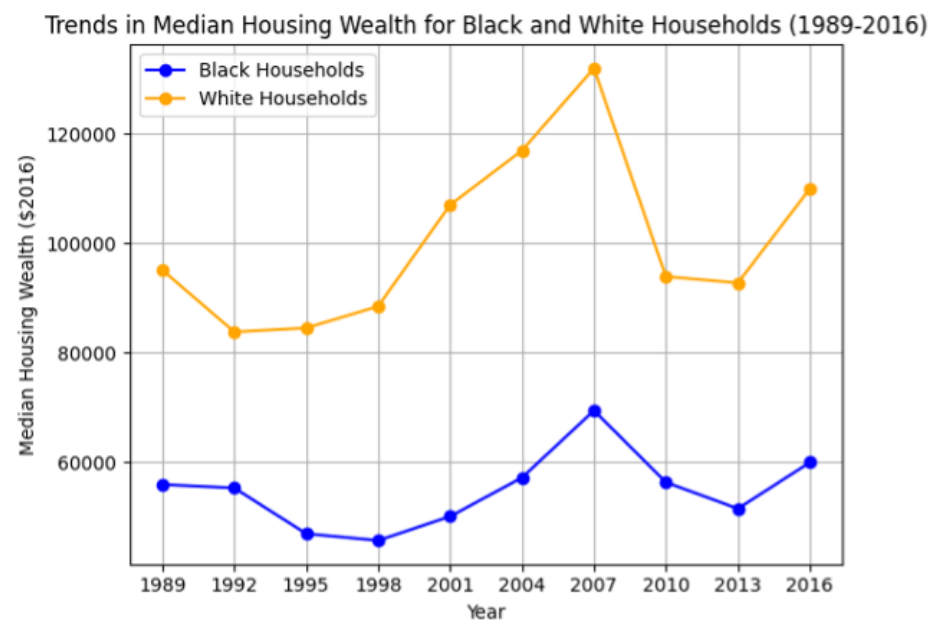


For individuals with a college degree, median total wealth increased steadily from 1989 to 2007, rising from \$233,419 to \$375,822. This substantial increase was driven by rising asset values and income growth among highly educated households. In 2007, the wealth for this group peaked at around \$375,822, but the 2008 financial crisis caused a sharp decline, with wealth dropping to \$276,332 by 2010, a significant drop of nearly 26.5%. Post-crisis recovery was gradual but steady, and by 2016, median total wealth for college graduates had climbed back up to \$293,500, although it never fully returned to pre-crisis levels.

People with some college saw a much more modest increase in wealth compared to college graduates. From 1989 to 2007, their wealth rose gradually, going from \$87,061 to \$109,954. The financial crisis, however, had a massive impact on this group. Their median total wealth plummeted, falling from \$109,954 in 2007 to \$64,275 in 2010—a 41.5% drop. This dramatic collapse highlights how vulnerable this group was to economic shocks. In the post-crisis years, some college graduates experienced only a slight recovery, with wealth increasing minimally to about \$66,040 by 2016, far below pre-crisis levels.

In contrast, households with no college degree showed consistently low levels of wealth throughout the period. In 1989, their median total wealth was around \$57,655, and by 2007 it had increased slightly to \$69,110. After the 2008 crisis, their wealth fell sharply, dropping to \$45,810 by 2010, representing a steep 33.7% decline. Unlike other groups, those without a college degree saw almost no recovery. By 2016, their wealth had remained steady at \$45,030, indicating a complete lack of rebound from the economic downturn.

Overall, households with higher education levels experienced substantial growth in wealth leading up to the 2008 financial crisis but were also more capable of recovering gradually. In contrast, less-educated groups saw their wealth plummet dramatically and struggled to recover, leading to a widening gap in wealth between different education levels. This analysis underscores the critical role education plays in wealth accumulation and economic resilience over time. 2) The graph shows the trends in median housing wealth for Black and White households between 1989 and 2016.

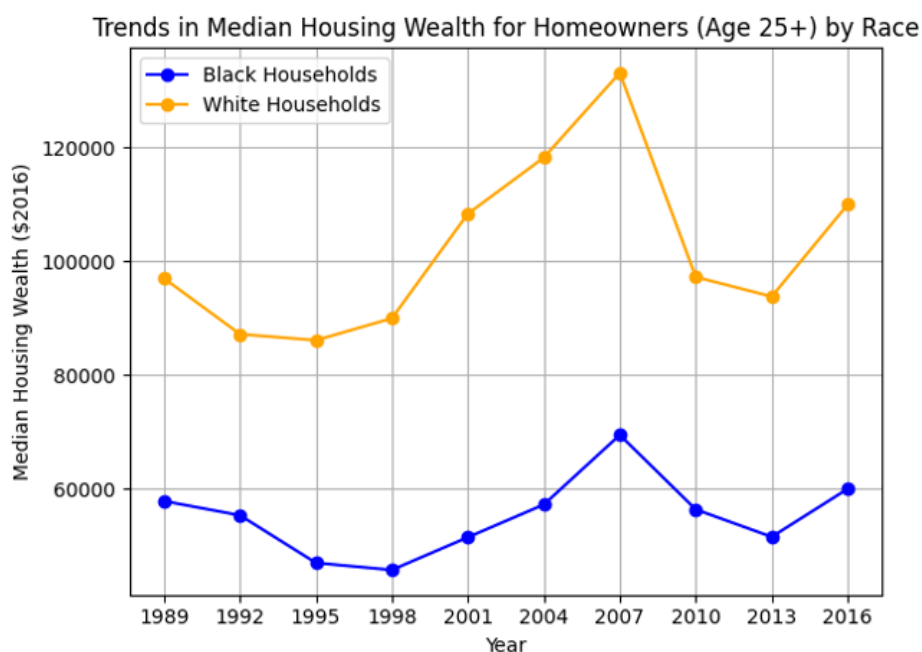


In 1989, the median housing wealth for Black households was approximately \$55,976, indicating that many Black families had little equity in their homes. By 2007, just before the housing crisis, their wealth had risen substantially to about \$69,481, marking a period of growth during the housing boom. However, following the 2008 financial crisis, Black households experienced a sharp decline in wealth, and by 2016, their median housing wealth had plummeted to approximately \$60,000, representing a dramatic reduction compared to the pre-crisis peak.

In contrast, White households had a significantly higher median housing wealth in 1989, at around \$95,159. By 2007, their wealth had increased sharply, reaching \$132,014 at the height of the housing boom. Although they also experienced a decline after the financial crisis, White households fared better overall. By 2016, their median housing wealth remained robust at \$112,000, showcasing a considerable recovery compared to the minimal recovery seen among Black households.

In summary, the median housing wealth for Black households has not only declined sharply since 2007 but has also failed to recover, remaining substantially lower than that of White households. This analysis highlights the persistent challenges that Black households face in building and maintaining housing wealth, particularly following economic downturns. The widening disparity in housing wealth between Black and White households underscores the ongoing impact of systemic inequalities, with Black households disproportionately affected by financial crises and slower to recover in terms of wealth accumulation.

3) I) This graph displays the trends in median housing wealth for Black and White households aged 25 and older between 1989 and 2016.

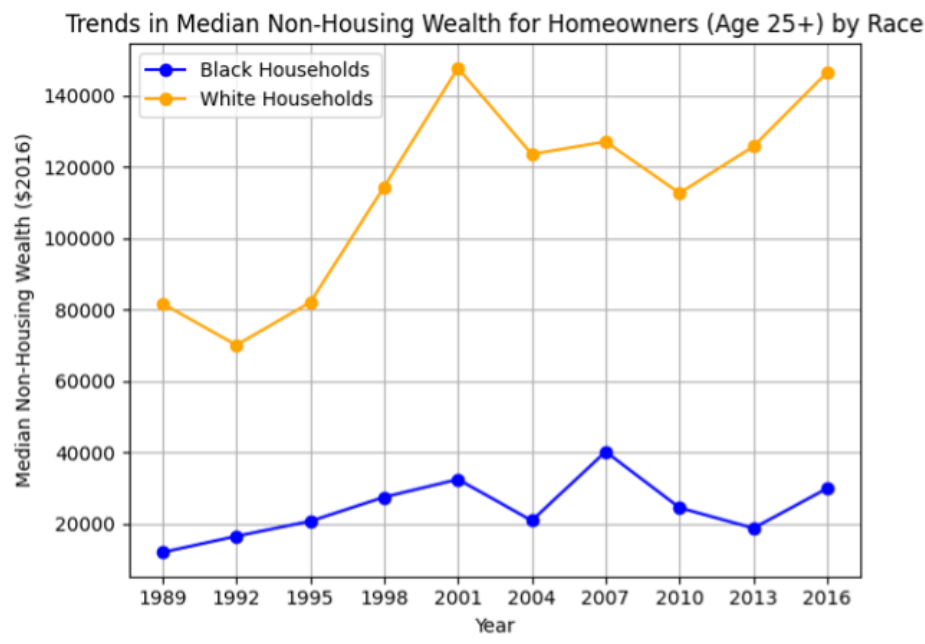


In 1989, the median housing wealth for Black households was \$57,842. By 2007, this figure had increased to \$69,481, reflecting a gradual rise in wealth over the years. However, after the 2007 financial crisis, Black households saw their wealth drop to \$60,000 by 2016, which indicates a partial recovery but still lower than the peak in 2007. Overall, Black households experienced minimal increases in wealth, and their gains were relatively modest, with some loss during the post-recession period.

For White households, the growth in housing wealth was much more pronounced. In 1989, White households had a median housing wealth of \$97,025, significantly higher than Black households. By 2007, their wealth had risen sharply to \$133,172, marking a substantial increase. However, White households also saw a decline after the financial crisis, with their wealth dropping to \$114,000 in 2016. Despite this reduction, White households consistently maintained a much higher level of housing wealth compared to Black households, and their decline in 2016 still left them with significantly more wealth than Black households.

In summary, both groups experienced growth followed by a decline, but the gap in housing wealth remained substantial throughout. White households consistently held far more wealth, and their gains were more substantial, while Black households saw slower growth and were more affected by the economic downturn. This persistent gap underscores the challenges Black households face in accumulating housing wealth, even as both groups weathered the ups and downs of the economy.

II) The trends in median non-housing wealth for homeowners aged 25 and older reveal significant disparities between Black and White households over the years, particularly from 1989 to 2016.



In 1989, the median non-housing wealth for Black households was approximately \$12,128, while White households had a significantly higher median of \$81,781. This stark contrast illustrates the systemic inequalities that have historically disadvantaged Black families in wealth accumulation.

Between 1989 and 2007, both Black and White households experienced growth in their non-housing wealth. For Black households, wealth increased steadily, reaching a peak of \$40,299 by 2007. This period can be characterized as a time of relative economic optimism for Black homeowners, as they began to see improvements in their financial standing. Conversely, White households saw a more pronounced increase, with their median non-housing wealth rising to \$127,173 by 2007. This growth further widened the wealth gap, highlighting the persistent disparities in wealth accumulation between the two racial groups.

The 2008 financial crisis marked a critical turning point for both Black and White households. The economic downturn had a disproportionate impact on Black households, which were already at a disadvantage. The wealth of Black homeowners fell sharply, reflecting the vulnerabilities they faced in the housing market and broader economy.

By 2010, the median non-housing wealth for Black households had dropped to \$24,594, while White households experienced a decline to \$112,760. Although both groups suffered losses, the decline for Black households was more severe, exacerbating the existing wealth gap.

In the years following the crisis, the recovery trajectory for Black households remained sluggish. By 2016, their median non-housing wealth had only partially rebounded to \$30,020. This slow recovery underscores the long-term effects of the financial crisis on Black households, which struggled to regain their footing in the wake of economic instability. In contrast, White households demonstrated a more robust recovery, with their median non-housing wealth reaching \$146,470 by 2016. This recovery not only highlights the resilience of White households but also emphasizes the widening wealth gap that persisted in the aftermath of the crisis.

The analysis of median non-housing wealth trends for homeowners aged 25 and older by race reveals significant disparities that reflect broader systemic issues. The critical points identified throughout the timeline—from initial wealth disparities to the impact of the financial crisis and the subsequent recovery—

ery—underscore the persistent challenges faced by Black households in building and maintaining wealth. Addressing these disparities is essential for fostering economic equity and ensuring that all households have the opportunity to achieve financial stability and prosperity.

III) The dollar loss from 2007 to 2016 is calculated as:

$$\text{Dollar Loss} = \text{Wealth in 2016} - \text{Wealth in 2007}$$

For Black households:

$$\text{Dollar Loss}_{\text{Black}} = 60000.00 - 69480.90 = -9480.90$$

For White households:

$$\text{Dollar Loss}_{\text{White}} = 114000.00 - 133171.73 = -19171.73$$

The proportional loss as a percentage is given by:

$$\text{Proportional Loss (\%)} = \frac{\text{Wealth in 2016} - \text{Wealth in 2007}}{\text{Wealth in 2007}} \times 100$$

For Black households:

$$\text{Proportional Loss}_{\text{Black}} = \frac{60000.00 - 69480.90}{69480.90} \times 100 \approx -13.65\%$$

For White households:

$$\text{Proportional Loss}_{\text{White}} = \frac{114000.00 - 133171.73}{133171.73} \times 100 \approx -14.40\%$$

After the onset of the economic recession in 2008, which started in the housing sector, the value of financial assets (financial markets) and housing prices declined, leading to a decrease in individuals' assets and wealth. As the recession ended in 2013, housing prices and the value of financial assets (financial markets) increased, resulting in a rise in individuals' assets and wealth.