




# Racial Disparities in Family Income, Assets, and Liabilities: A Century After the 1921 Tulsa Massacre

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## Abstract

This paper examines the financial health of racial-ethnic groups in Tulsa, Oklahoma, nearly a century after the 1921 Tulsa Massacre. We use data from the Tulsa National Asset Scorecard for Communities of Color (NASCC) survey to assess the financial health of two demographic groups that were historically the victims of racial violence - Native Americans and Black Americans. Specifically, we investigate financial outcomes a century after these groups made significant economic gains during the Tulsa oil boom in the early 1900s and were subsequently victimized by racial violence. We find that Black households have statistically significantly less wealth and income than Whites in Tulsa. Our decomposition analysis shows household demographic differences between Blacks and Whites largely do not explain these wealth and income gaps, suggestive of historical discrimination. While in the case of the Native American tribes and Whites, the findings generally show no statistical significance. Compared to other NASCC-surveyed cities that did not experience destruction to the level of the Tulsa Massacre, the Black-White wealth and income gaps and the unexplained portion of the decompositions are the largest in Tulsa. Our results provisionally suggest that past exposure to racial violence can have long-term effects on the economic outcomes of the affected groups decades later.

**Keywords** Tulsa Massacre · Racial discrimination · Household finance · Wealth accumulation · Intergenerational mobility

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## Introduction

Racial and ethnic wealth disparities are substantial and persistent in the United States (Chiteji & Hamilton, 2002; Conley, 2000; Oliver & Shapiro, 2006). The largest wealth disparity is between Black and White Americans, with White Americans having six times the per capita wealth of Black Americans (Derenoncourt et al., 2022). Understanding what drives these wealth disparities is of interest to academics, policymakers, and the general public. Numerous studies have documented several drivers of these gaps, including racial differences in the opportunity to transfer wealth across generations (Gittleman & Wolff, 2007; Hamilton & Darity, 2017) and differential access to housing, employment, education, healthcare, and financial services (Conley, 2000). Recent research has built on this by investigating the role of exposure to racial violence in the persistence of these gaps. Three studies, in particular, have found a causal link between racial violence and Black Americans' short- and long-run economic outcomes. Specifically, Feigenbaum et al. (2021)

finds that the intentional destruction of Black-owned assets during the 1921 Tulsa Massacre led to persistent declines in Black homeownership, while Cook (2014) and Williams et al. (2021) find that race riots, lynchings, and other types of hate violence in the post-Emancipation US suppressed Black entrepreneurship and political participation, which have long-lasting implications for investments in financial and human capital for Black Americans.

This paper examines the financial health of racial-ethnic groups that were exposed to racial violence in Tulsa, Oklahoma. We focus our study on the city of Tulsa for two reasons: One, in the early 1900 s, Tulsa was an economic power hub due to the oil boom, and, as a result, many racial-ethnic groups were made economically prosperous. Two, Tulsa is the setting of numerous instances of racial violence directly sought to destroy the economic gains of two groups, Native Americans and Black Americans.

For our analysis, we utilize data from the Tulsa sample of the National Asset Scorecard for Communities of Color (NASCC) survey, which provides a detailed snapshot of household-level asset, liability, and income information for racial and ethnic groups in Tulsa in 2012. First, we document wealth, income, and earnings differences between Whites, Blacks, and four Native American groups (i.e., the Cherokee Nation, the Muscogee Nation, Native Americans from other tribes, and Native Americans of mixed or no tribal affiliation). Second, we use the Kitagawa-Oaxaca-Blinder decomposition to estimate how much of the gaps in wealth, income, and earnings can be attributed to group-level differences in observable household demographic characteristics and how much cannot be explained by these group differences (Blinder, 1974; Kitagawa, 1955; Oaxaca, 1973). We interpret the relative size of the unexplained component as an indicator for group exposure to historical discrimination or group-specific shocks, which includes racial violence.

Our study has three key findings. First, we find significant wealth and income gaps between racial-ethnic groups in Tulsa. Specifically, we find that Black and Muscogee households have less wealth and household income than Whites. The findings show that White families have approximately eleven times more wealth than Black households and four times more wealth than Muscogee households. Regarding household income, the gap multipliers are 2 and 1.5, respectively. Second, our decomposition analysis shows demographic differences between Blacks and Whites largely do not explain these wealth and income gaps. For example, our conservative estimates of the unexplained portion of the decompositions, which can be suggestive of historical discrimination, show that approximately 72 percent of the Black-White wealth gap and 53 percent of the household income gap are unexplained. While in the case of the Native American tribes and Whites, the findings show no

significance.<sup>1</sup> Third, compared to the other NASCC cities in our sample that did not experience destruction to the level of the Tulsa Massacre (i.e., Boston, Washington D.C., Los Angeles, and Miami),<sup>2</sup> the Black-White wealth and income gaps are most prominent in Tulsa. Additionally, the unexplained portion of the Black-White wealth gap is 27–30 percentage points larger in Tulsa than in the rest of the NASCC cities in our sample. Together, these results suggest that past exposure to racial violence that directly affected wealth-building is highly correlated with the economic outcomes of targeted groups decades later or, in the case of Black Tulsans, a century later.

The contribution of our findings to the literature is twofold. One, to our knowledge, we are the first to use detailed financial information for Native Americans disaggregated by tribe broken down by assets and liabilities. Two, we build on the growing literature studying the impact of racial violence, in particular of Black Americans, on later economic outcomes (Cook, 2014; Feigenbaum et al., 2021; Williams et al., 2021; Williams, 2022) by estimating wealth and income gaps in a city marked by pervasive, historical racial violence against Black Americans and Native Americans.

The remainder of the paper is structured as follows. Sect. "Historical Context: Racial Violence in Tulsa" provides a historical overview of Black Americans and Native Americans in Tulsa and highlights the types of racial violence experienced by each group. Sect. "Data" describes the NASCC data and provides a discussion and context of the descriptive statistics. Sect. "Empirical Strategy" describes our empirical strategy, the Kitagawa-Oaxaca-Blinder decomposition method. Sect. "Results: Decomposition Analysis" presents the main results of the decomposition analysis. Sect. "Discussion, Implications, and Conclusion" concludes.

## Historical Context: Racial Violence in Tulsa

This section provides a quick overview of the history of Native Americans and Black Americans in Tulsa, Oklahoma, briefly describing each group's historical presence in Tulsa and detailing some of the racial violence each group experienced.

<sup>1</sup> A weak exception is the Muscogee-White wealth and household income gaps which shows weak statistical significance, but both the explained and unexplained portions of the decomposition are insignificant, which suggests inconclusive evidence in terms of what is driving the Muscogee-White wealth and income disparities.

<sup>2</sup> There are a total of six NASCC cities. In this study, we exclude the Baltimore survey because it was designed to over-sample individuals and households with incarceration exposure.

## Native Americans

Tulsa is located in what was once called “Indian Territory,” a region forcibly created through the U.S. occupation of land belonging to several Native American tribes. These included the Wichita, Caddos, Kiowa, Comanche and Quapaw, and Osage (Gibson, 1981). In 1830, President Andrew Jackson signed into law the Indian Removal Act, which led to the relocation of several Native American tribes from the eastern United States to the region. Under this policy, approximately 100,000 indigenous people from the Cherokee, Muscogee, Seminole, Chickasaw, and Choctaw nations, along with their Black slaves, were forced to move to the Indian Territory in what became known as the Trail of Tears. During the journey, an estimated 15,000 people died from exposure to harsh weather, starvation, insufficient rations, diseases, harassment from settlers, and other forms of violence (Johansen, 2005). In the present day, there are thirty-nine federally recognized Native American nations in Oklahoma, some of which are located on reservation lands, such as the Osage and the Muscogee (Healy, 2020).

The Trail of Tears is only one example of a long history of racial violence that includes forced displacement, deception, and genocide, targeted at indigenous peoples in the United States and Oklahoma, at the hands of government institutions and White Americans with the intention of seizing the economic resources and possessions of Native Americans. Another prominent example of this is the Osage Murders committed by Whites in the early twentieth century in the Osage Nation, located on oil-rich land slightly north of Tulsa, Oklahoma, to terrorize Native Americans and steal their possessions, which became known as the “Reign of Terror,” (Strickland, 1995; Fixico, 2012).

Furthermore, historical discrimination and racism toward Native Americans have created significant barriers to economic and social mobility (Biolsi, 1992; Cobb, 2008; Deloria, 2007). The effects of assimilation policies, such as policies aimed to eradicate native cultures and languages and forced assimilation into mainstream American society (Adams, 2020; Lomawaima & McCarty, 2006; Smith, 2021), and discriminatory policies, such as the Indian Removal Act, the Dawes Act, and the Indian Termination Policy (Fixico, 1986; Wilkinson & Biggs, 1977), continue to impact indigenous communities today (Hoxie, 2001; Prucha, 2000; Wilkinson, 2005). Additionally, differences in economic development policies and infrastructure investments contribute to varying levels of revenue and resources among tribes (Cornell & Kalt, 1992; Deloria & Lytle, 1998; Jorgensen, 2007).

In summary, throughout history, different Native American tribes have experienced various levels of disruptions, discrimination, and racial violence affecting their traditional economies and social structures, leading to greater

economic disparities and contributing to their persistence (Champagne, 1992; Fixico, 1986; Snipp, 1989; Taylor & Kalt, 2005; Wazyatawin & Yellow Bird, 2005; Wilkins & Stark, 2017).

## Black Americans

The presence of Black Americans in the Oklahoma Territory is often attributed to at least two major migration waves of Black Americans into the Oklahoma Territory. The first wave was during the forced relocation of the Cherokee, Chickasaw, Choctaw, Muscogee, and Seminole tribes to the Indian Territory; Black Americans were brought as enslaved people by the relocating tribes. Enslaved Blacks were freed in 1866 in the aftermath of the Civil War, and many elected to stay in Oklahoma (Roberts, 2018). In some cases, these individuals, known as “Freedmen,” were incorporated into the tribal nation; in other cases, they moved away and formed their own communities.

The second wave of Black migrants occurred in the late 1800 s and early 1900 s as Blacks from southern states migrated to take advantage of the booming oil economy (Ellsworth, 1992). The influx of Black migrants led to the development of the thriving Greenwood Tulsa business district, known as Black Wall Street, which met the needs of Black residents who were not served in other parts of Tulsa due to segregation. The district boasted a range of businesses and services built for and by the Black community, including hotels, restaurants, markets, beauty salons, and other establishments.

The booming local oil economy increased migration to the Tulsa area, increasing its population seven-fold within a thirty-year period (Ellsworth, 1992). This increased migration led to racial segregation and clashes among different ethnic groups. One of the most well-known is the Tulsa Massacre of 1921, in which, in just two days, the entire Black business district of Greenwood Tulsa was decimated by White mobs. Thirty-five city blocks of Black-owned homes and businesses were looted, burned, and destroyed (Messer et al., 2018a).

According to a report by the Red Cross at that time, the massacre resulted in over 1256 houses and businesses burned and other 215 looted, 300 deaths, and almost 10,000 displaced persons (Brown, 2021). Over \$4 million were requested in claims by survivors, but none of the requests were granted (Tulsa Race Riot Report). Some estimates put the damage in current dollars at \$200 million in property losses alone (Messer et al., 2018b) while others estimate the present value is closer to \$610 million in current dollars (Toole, 2021). Restitution has never been made for the survivors or their descendants (Messer et al., 2018a), nor has anyone ever been punished for the actions against the African American community in Tulsa. Most recently, in

September of 2020, the last three survivors of the Tulsa Massacre filed a lawsuit seeking reparations for the historical and long-run damage of the massacre (Li, 2020). However, in July 2023, an Oklahoma judge dismissed the case, and neither the survivors nor the community received anything (Romero, 2023).

The Tulsa Massacre has had long-term economic consequences. Feigenbaum et al. (2021) finds that the effect of the Tulsa Massacre resulted in a decline in homeownership and occupational status for Blacks. The study shows that the impact of the massacre persisted until the end of the 20th century. In the years that followed the massacre, as Black Tulsans tried to rebuild their homes and communities, racial segregation increased, Black "Freedmen" were taken their tribal rights away, and the increased presence of white supremacist ideologies led to a newly established branch of the Ku Klux Klan (KKK) resulting in the rise of acts of terrorism and hate-based activities in Tulsa (Krehbiel, 2019).

In addition to the Tulsa massacre, numerous studies have documented the effects of other forms of racial violence on the economic outcomes of Black Americans in the broader United States. For example, recent research finds that racial violence decreases patent rates (Cook, 2014), voter registration rates (Williams, 2022), property values (Collins & Margo, 2007), and employment and income (Collins & Margo, 2004) for the affected minority racial groups.

## Data

The NASCC surveys collect detailed data on assets and debts among sub-populations according to race, ethnicity, and country of origin in several major cities across the United States. These cities are Baltimore, Boston, Los Angeles, Miami, Tulsa, and Washington, DC.<sup>3</sup> The survey instruments are designed to gather information about a respondent's assets and liabilities - including financial resources, personal savings, and investment activities - at the household level. The Tulsa NASCC survey was conducted via telephone in the Tulsa Metropolitan Statistical Area (MSA) in 2012. The Tulsa NASCC survey captures information from various racial-ethnic subgroups, including tribal information. For our purpose, we focus on studying White, Black, and Native American households, given the relevance of these groups in the racial history of Tulsa. We further analyze Native American families at the dis-aggregated tribal level (i.e., Cherokee, Muscogee, mixed tribal affiliation, and "other tribes").

<sup>3</sup> As previously mentioned, we exclude the Baltimore survey because it focuses on incarceration and, consequently, over-sampled individuals and households with incarceration exposure.

The asset and debt modules of the NASCC questionnaire replicated questions used in the Panel Study of Income Dynamics (PSID), the longest-running national longitudinal household survey that collects data on employment, income, wealth, expenditures, health, marriage, education, and numerous other topics. The NASCC surveys utilized many of the questions found in the Multi-City Study of Urban Inequality (MCSUI) survey for the non-asset and debt-based questions. The MCSUI was a cross-section survey of four cities - Atlanta, Boston, Detroit, and Los Angeles, collected from 1991 to 1994 to gather socioeconomic data across ethnic and racial groups. The survey also includes weights based on family characteristics in the U.S. Census Bureau's American Community Survey (ACS) to generate results representative of specific ethnic group characteristics in Tulsa. This study uses survey weights in the regression and decomposition analyses to produce estimates representative of the Tulsa MSA.

The NASCC data have some limitations. First, due to the granularity of the questions asked about assets and debt types, there are some missing responses for some questions, which leads to a small estimation sample.<sup>4</sup> Second, the survey is a cross-section and not a longitudinal panel data; that is, it provides a snapshot of the households interviewed in 2012. Therefore, we are unable to estimate trends in the racial wealth gaps in Tulsa over time.

## Variable Descriptive Statistics

We start our analysis by providing general descriptive statistics by racial-ethnic groups and comparing these to White Tulsans.<sup>5</sup> Tables 1 and 2 provide the unweighted and weighted summary statistics for our key variables used for our decomposition broken down by broad racial-ethnic groups. *Wealth* is defined as total assets minus total liabilities or debts. *Household Income* is the sum of all earnings from all household members, while *Earnings* are the earnings of

<sup>4</sup> In Tables A7, A8, and A9 of our Online Appendix, we provide a detailed comparison between the characteristics of households with missing responses and those with completed responses. Additionally, we conduct a sensitivity analysis to determine how missing data impacts our results.

<sup>5</sup> Akee et al. (2017) uses this same data, the Tulsa NASCC survey, to investigate the role of race and political status (i.e., tribal enrollment) on wealth accumulation. Throughout the paper, the authors present unweighted and weighted summary statistics for the sample's wealth, assets, and debt. As expected, the unweighted summary statistics in Akee et al. (2017)'s Table 3 are equivalent to our unweighted descriptives in Table 1 given that we use the same data. However, our weighted estimates differ (see Akee et al. (2017)'s Table 2 and our Table 2.) The difference between the estimates may be due to using different survey weights to make the sample representative of the Tulsa metropolitan area. However, while the magnitudes of our weighted summary statistics differ, the ranking of racial and ethnic groups by wealth is equivalent.

**Table 1** Summary statistics (Unweighted): racial comparison in Tulsa

	All	White	Black	Diff	Native American	Diff
Wealth	144588.27	213075.47	19481.93	193593.54***	189173.53	23901.94
Household income	50737.20	57276.62	30385.53	26891.09***	61394.26	-4117.64
Earnings	32991.58	35708.11	16289.13	19418.98***	40307.18	-4599.07
Homeownership	0.69	0.88	0.50	0.38***	0.70	0.18***
Inheritance and gifts	0.29	0.33	0.15	0.17*	0.32	0.01
Business owner	0.08	0.13	0.02	0.12**	0.12	0.02
Self-Employed	0.05	0.04	0.06	-0.02	0.05	-0.01
Incarceration exposure	0.19	0.10	0.20	-0.10	0.28	-0.17***
Age	53.72	57.07	50.64	6.43**	57.52	-0.45
BA degree or higher	0.23	0.30	0.15	0.15*	0.22	0.09
Married	0.53	0.70	0.32	0.38***	0.51	0.19**
Female	0.69	0.73	0.77	-0.04	0.69	0.04
US born	0.89	0.98	1.00	-0.02	1.00	-0.02
Observations	396	89	66	155	156	245

Source National Asset Scorecard for Communities of Color (NASCC)'s Tulsa Survey (2012)

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

**Table 2** Summary statistics (Weighted): household characteristics

	All	White	Black	Native American
Wealth	143657.37	228295.49	19033.21	187521.70
Household income	59049.29	69563.40	38205.63	70687.44
Earnings	35438.10	36990.50	20529.81	41912.27
Homeownership	0.64	0.85	0.44	0.65
Inheritance and gifts	0.29	0.35	0.16	0.31
Business owner	0.09	0.14	0.01	0.13
Self-employed	0.04	0.06	0.06	0.04
Incarceration exposure	0.20	0.10	0.20	0.30
Age	52.56	56.81	50.04	55.64
BA degree or higher	0.26	0.34	0.21	0.23
Married	0.47	0.66	0.33	0.45
Female	0.68	0.71	0.76	0.69
US born	0.89	0.97	1.00	1.00
Observations	396	89	66	156

Source National Asset Scorecard for Communities of Color (NASCC)'s Tulsa Survey (2012)

the head of the household. *Wealth*, *Household Income*, and *Earnings* are given in 2012 dollar values. *Homeownership* is a dummy variable that equals one if at least one household member owns the home. *Inheritance and Gifts* is a dummy that equals to one if any member of the household (or their parents) has received a substantial inheritance or gift from any family or friends, including stocks, homes, and contributions to down payments for a mortgage, help pay for college, or loans without interests, etc. *Business Owner* and *self – employed* are dummy variables with one if true and zero otherwise. *Incarceration Exposure* is a binary variable

with a value of one if any household member has been to jail, prison, reformatory school, or youth detention center.<sup>6</sup>

We also include standard demographic variables such as *Age*, given in levels, and binary variables for education (*BA Degree or Higher*); marital status (*Married*); gender (*Female*), and US-born (*US Born*). We find that relative to White households, Black heads of household tend to be younger (50.64 vs. 57.07 for Whites), less educated, with 15 percent having a bachelor's degree or higher (vs. 30 percent

<sup>6</sup> Table A1 shows the number of households in our sample where the household head was incarcerated versus another member of the

Footnote 6 (continued)

household for each racial-ethnic group. Unfortunately, the NASCC data does not break down incarceration exposure by the type of incarceration (jail, prison, reformatory school, or youth detention center).



for Whites), and are less likely to be married (32 percent vs. 70 percent for Whites). In the case of Native Americans, the demographics are very comparable to those of White households, with only one exception: marriage rate (51 percent for Native American households vs. 70 percent for White households).<sup>7</sup>

Regarding the wealth and income variables, Table 1 shows that the unweighted average wealth in our Tulsa sample is \$144,588. However, wealth varies tremendously by racial and ethnic groups. For example, the average wealth for White, Black, and Native American households is \$213,075, \$19,482, and \$189,174, respectively. We find statistically significant evidence of a Black-White wealth gap of approximately \$194,000. The findings in the weighted sample are similar (see Table 2). The weighted average wealth for White, Black, and Native American households is \$228,295, \$19,033, \$187,521, respectively, and the Black-White wealth gap is \$209,262. Surprisingly, the wealth gap is insignificant when comparing Whites and Native Americans (aggregated across tribes) in Tulsa. We find similar trends for the household income and earnings gaps across the racial-ethnic groups with respect to White households, in which the gaps are only significant when comparing Black and White households and not when comparing White to Native American households. A potential explanation for these surprising results is that some Native American tribes obtain payments generated from oil, land, and gaming/casinos, which are then shared among the community and different members of the tribes (Dean, 2017; Haslett & Romero, 2020). Such economic resources offsets some of the adverse effects of racial violence and discrimination on wealth for some Native American households.

In terms of the wealth and income distributions, it is possible that outlier households or super-rich Tulsans may drive the wealth and income gaps shown in Tables 1 and 2. Therefore, in Table 3, we provide the point estimate of the median across wealth, household income, and earnings among different ethnic groups. We find that while the median wealth of White households remains the highest (\$78,005), followed by Native Americans (\$57,850), the wealth of Black households significantly lags behind, with a median wealth of \$5,000.

The evidence above is consistent with the existence of barriers that differentially impact Black Tulsans in markets

**Table 3** Median wealth, household income, and earnings

	Statistic	Whites	Blacks	Native Americans
Wealth	Median	78005	5000	57850
	(N)	(55)	(45)	(92)
Household income	Median	50000	22000	34000
	(N)	(76)	(55)	(129)
Earnings	Median	31000	9000	32000
	(N)	(36)	(30)	(61)
Observations in full sample		89	66	158

Source National Asset Scorecard for Communities of Color (NASCC)'s Tulsa Survey (2012)

important for wealth-building. For example, we find evidence of compounding effects in other markets, such as the real estate markets, where the homeownership rate gap is 38 percent relative to White households, the largest gap across all racial-ethnic groups (Table 1). This finding is important because racial disparities in homeownership tend to amplify other forms of inequalities given that homeownership affects multiple socio-economic dimensions, including the quality of the neighborhood and school district, the size of the business loan you can qualify for (because homes can be used as collateral for business loans or can be refinanced), among others. Last but not least, as an asset, a home can be passed down as a bequest to family members. Our findings, further discussed below, support these hypotheses.

In Tulsa, we find White-Black disparities in inheritance receivership (17 percentage point gap) and entrepreneurship rate (12 percentage point gap). Research shows that inheritance (or inter-generational transfers) and gifts from family and friends play an important role in wealth and income generation (Feiveson et al., 2018; Gale & Scholz, 1994; Hamilton & Darity, 2010). By definition, only those generations that own assets can leave a bequest to younger generations. Therefore, as a social construct, wealth is path-dependent from a historical perspective and can, directly and indirectly, affect present levels of racial wealth and income gaps. By some estimates, bequests and transfers account for at least half of aggregate wealth (Gale & Scholz, 1994), have recently averaged 3 percent of total household disposable personal income (Feiveson et al., 2018), and account for more of the racial wealth gap than any other demographic or socioeconomic indicator (Hamilton & Darity, 2010). This also means that any interruption of wealth-building activity that involves a particular group will have future consequences on wealth levels for that specific group with respect to others, such as in the case of the 1921 Tulsa Massacre. Consistent with this view, we find corroborative evidence showing that White Tulsan households are twice as likely to receive inheritance or gifts from family and friends. The

<sup>7</sup> Here, we report unweighted estimates in parentheses; however, our weighted estimates have similar magnitudes for these demographic variables (e.g., *Age, BA Degree or Higher, Married*). Notably, the weighted estimates for college-educated are slightly higher than the unweighted estimates for all racial groups. However, the difference is six percentage points at most. Additionally, the weighted estimate for Native American marital status is six percentage points higher than the unweighted estimate.

percentage of White households that reported receiving a substantial inheritance or gift from family and friends is 33 percent relative to 15 percent for Blacks, the largest gap across all racial-ethnic groups and the only statistically significant one.

An active and healthy entrepreneurial and business ecosystem helps build and maintain wealth within a community. Before 1921, Tulsa was one of the most prominent Black Wall Streets in the US, with a very active business community. Today, we find that the Black-White entrepreneurship rate gap is the largest compared to the other NASCC cities. In Tulsa, the entrepreneurship rate for Whites is 6.5 times larger than that of Blacks (13 percent vs. 2 percent respectively), and the gap is statistically significant (Table 1).

An interesting question to explore is how entrepreneurial households, in which the head of the household is a business owner or self-employed, compare with non-entrepreneurial households in Tulsa. We find compelling results that entrepreneurs, in the long run, tend to have relatively more wealth, household income, and earnings compared to non-entrepreneurial households; the relative gaps are \$376,062, \$38,911, and \$11,583, respectively (see Table 4), with only the gaps in wealth and household income showing statistical significance.<sup>8</sup> Not surprisingly, we find that entrepreneurial families have higher homeownership rates (87 percent vs. 66 percent), are more educated (42 vs. 21 percent hold a BA degree or higher), are more likely to be married, and US born.<sup>9</sup> These results highlight the relationship between wealth accumulation and entrepreneurship and emphasize how disparities in access to entrepreneurship can lead to disparities in wealth.

Lastly, an impediment to building wealth and income is incarceration. One channel through which incarceration affects wealth is through the interruption of earnings. Additionally, having an incarceration record reduces future employment opportunities and income for the affected family member and the household. Recent research finds that incarceration exposure reduces household income and disproportionately affects Black communities (Colston et al., 2021; García-Perez et al., 2020). Although not statistically significant, we find that Black households are twice as likely to be exposed to incarceration, with 20 percent of respondents stating that at least one of the people within the home has been to jail, prison, or a juvenile correction

facility. Our findings show that incarceration exposure is a concern disproportionately affecting Native Americans. We find statistically significant incarceration exposure for Native Americans relative to White households, with 28 percent of Native Americans reporting incarceration exposure compared to only 10 percent of White Tulsa households. In other words, Native Americans are 2.8 times more likely to experience incarceration exposure than White households.

In summary, the descriptive findings discussed finds an association between homeownership, inheritance, entrepreneurship, incarceration, and the financial health and disparities among racial-ethnic households in Tulsa.

### Black-White Racial Disparities In Tulsa and Other NASCC Cities

The large Black-White wealth gap in Tulsa is striking. One crucial question is whether the differential correlation we see in Tulsa is unique to this city. It could be possible that similar household behavior and magnitudes are found throughout the United States, and the wealth and income gaps are not necessarily unique to Tulsa. To help answer this question, we compare the Black-White descriptive analysis shown above across four of the other NASCC cities for which the survey was conducted from 2011 to 2013, including Boston, Miami, Los Angeles, and Washington, DC. The below comparison focuses on analyzing the means across each city sample. Given that the NASCC surveys were conducted at different times from 2011 to 2013, the wealth, household income, and earnings data are in constant 2012 dollars.

The five-city comparison is reported in Table 5.<sup>10</sup> Our findings show that the city of Tulsa has the largest wealth and income gaps of all the NASCC cities. For example, we find that the average wealth of Black households represents only 9 percent of the average wealth of White households in Tulsa. In DC, Los Angeles, Boston, and Miami Black household wealth represents 28 percent, 34 percent, 36 percent, and 41 percent of white household wealth, respectively. Regarding the household income gap, only Los Angeles has a larger Black-White income gap than Tulsa, 36 percent versus 53 percent. Similarly, for earnings, Los Angeles has the largest White-Black earnings gap followed by Tulsa. The average earnings of Black Americans represent 41 percent of the earnings of White Americans in Los Angeles and 46 percent in Tulsa.

The findings for the wealth gap highlight that gaps in homeownership (38 percent gap) and entrepreneurship (12 percent gap) have a strong relationship with wealth

<sup>8</sup> Given the small numbers of entrepreneurial households in some ethnic racial groups in the US and Tulsa, we use all available data across all groups (include ethnic racial groups not included in our study, such as Hispanics and Asian Americans) in our entrepreneurial analysis.

<sup>9</sup> In Table A2, we provide additional details on the number of observations for the entrepreneurial and non-entrepreneurial samples by race and ethnicity.

<sup>10</sup> Here, we focus on unweighted estimates for the five-city comparison; however, we report weighted estimates in Table A3.

**Table 4** Summary statistics: entrepreneurial household comparison

	Non-entrepreneurial	Entrepreneurial	Diff
Wealth	111494.78	487557.14	-376062.36**
Household income	46091.06	85002.50	-38911.44*
Earnings	30885.65	42468.25	-11582.60
Homeownership	0.66	0.87	-0.20***
Inheritance and gifts	0.26	0.49	-0.23**
Incarceration exposure	0.19	0.20	-0.01
Age	53.51	55.43	-1.93
BA degree or higher	0.21	0.42	-0.22**
Married	0.51	0.67	-0.16*
Female	0.70	0.69	0.01
US born	0.88	0.98	-0.09**
Observations	351	45	396

Source National Asset Scorecard for Communities of Color (NASCC)'s Tulsa Survey (2012)

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

accumulation. Compared to the other NASCC cities, Tulsa has the largest gaps for both homeownership and entrepreneurship.

#### Breakdown of Native American Households by Tribe

The descriptive results above show no statistically significant racial gaps between Native American and White households for wealth, household income, and earnings. To investigate whether there are heterogeneous effects at the tribal level, we perform a comparative analysis.

Table 6 provides the summary statistics and compares White households to households from the different tribes. One interesting finding is that Native American households of mixed tribes or that claim no single tribe affiliation tend to have the largest wealth level (\$303,269), even larger than White households in Tulsa. In contrast, Muscogee households tend to have the lowest level of wealth, with a mean wealth of \$53,892. While Cherokee and Other Tribe households have similar wealth to White households with \$180,738 and \$180,189, respectively. Therefore, a surprising result is that we find statistically significant wealth and household earning differences between Whites and Muscogees only and not for any of the other tribes when compared to White households. Muscogee households also lag behind White and other Native American tribal households in homeownership, business ownership, and education. Our findings show that incarceration exposure primarily affects Cherokee, Other Tribes, and the Mix or No Tribe households. In comparison, Muscogee households have similar incarceration exposure as White households. Regarding marital status, only Mixed or Tribe affiliation households differ from White households, with only 40 percent reporting being married compared to 70 percent for White households. We find that White and Native American households across

different tribes in our sample are very similar in inheritance and gifts received, self-employment, age, gender, and percent of US-born.

The finding that Native American households of mixed or no tribe affiliation tend to have larger wealth than White households highlights the complexity of social and economic structures among Native Americans. Recent research suggests some of the underlying factors contributing to this finding include the role of geographic isolation, urban or rural status, assimilation, tribal enrollment, and historical differences between Native American tribes (Adams, 2020; Lomawaima & McCarty, 2006; Muscogee-Nation, 2019; Smith, 2021).

#### Household Assets and Liabilities

To understand wealth inequalities in Tulsa, we look at the composition of assets and liabilities at the household level across the different racial-ethnic groups. Table 7 provides the unweighted summary statistics for the total assets and liabilities by the racial-ethnic group.<sup>11</sup> The list of assets includes home equity, other real estates, vehicle, business equity, total account balances for checking, savings, and money market accounts, the total value for stocks, mutual funds and investment trusts, retirement assets, and other assets. For debt, the list includes credit cards, installment loans, student loans, medical, legal, friends, and family debts.

A key takeaway from the results shown in Table 7 is that household wealth differentials across racial-ethnic groups

<sup>11</sup> Weighted estimates are provided in Table 8. Tables A5 and A6 in our Online Appendix provide additional information about the sample size, mean, standard deviation, and maximum and minimum values for each type of asset and debt by race and tribal group.



**Table 5** Black-White disparities across the NASCC five-city surveys

	White	Black	Diff	Tulsa Diff	Boston Diff	DC Diff	LA Diff	Miami Diff
Wealth	429418.88	139594.55	297508.86***	193593.54***	183821.27**	452510.11***	556363.45**	220112.06*
Household income	97879.12	65580.71	32601.02***	26891.09***	20671.75*	30607.77*	86710.94***	34800.76*
Earnings	63882.49	44775.85	19548.63***	19418.98***	12121.60	3469.65	55956.53***	34268.61*
Homeownership	0.74	0.56	0.19***	0.38***	0.14*	0.20***	0.27**	0.19***
Inheritance and gifts	0.39	0.24	0.14***	0.17*	0.09	0.17**	0.17	0.14*
Business owner	0.10	0.06	0.04*	0.12**	-0.02	-0.01	0.06	0.10*
Self-Employed	0.06	0.03	0.02	-0.02	0.05*	0.03	0.00	0.02
Incarceration exposure	0.10	0.16	-0.06**	-0.10	-0.06	-0.05	-0.09	-0.06
Age	55.10	52.87	2.49*	6.43**	1.67	2.55	2.46	4.71*
BA degree or higher	0.53	0.36	0.17***	0.15*	0.06	0.31***	0.17	0.13
Married	0.57	0.33	0.24***	0.38***	0.08	0.22***	0.33***	0.30***
Female	0.60	0.72	-0.12***	-0.04	-0.21***	-0.12*	-0.03	-0.12
US born	0.88	0.97	-0.09***	-0.02	-0.20***	-0.03	-0.10*	-0.06
Observations	559	492	1039	155	253	282	101	248

Source National Asset Scorecard for Communities of Color (NASCC). The five NASCC cities included are Boston, Los Angeles, Miami, Tulsa, and Washington DC

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

**Table 6** Summary statistics: white and native American household comparison by tribe

	White	Cherokee	Diff	Muscogee	Diff	Other tribes	Diff	Mixed or no tribe	Diff
Wealth	213075.47	180738.30	32337.17	53891.81	159183.66**	180189.74	32885.73	303268.83	-90193.35
Household income	57276.62	88572.37	-31295.75	36702.33	20574.29*	50163.00	7113.62	58838.89	-1562.27
Earnings	35708.11	39386.61	-3678.50	38032.88	-2324.76	47239.40	-11531.29	35999.47	-291.36
Homeownership	0.88	0.80	0.08	0.62	0.25*	0.67	0.21*	0.68	0.20*
Inheritance and gifts	0.33	0.36	-0.04	0.24	0.08	0.36	-0.04	0.30	0.03
Business owner	0.13	0.11	0.02	0.00	0.13***	0.14	-0.00	0.17	-0.04
Self-employed	0.04	0.07	-0.02	0.03	0.01	0.03	0.02	0.06	-0.02
Incarceration exposure	0.10	0.32	-0.22**	0.21	-0.11	0.31	-0.20*	0.26	-0.15*
Age	57.07	54.77	2.30	57.31	-0.24	56.03	1.04	61.43	-4.37
BA degree or higher	0.30	0.23	0.08	0.14	0.17*	0.19	0.11	0.28	0.03
Married	0.70	0.61	0.08	0.48	0.21	0.53	0.17	0.40	0.29**
Female	0.73	0.70	0.03	0.66	0.08	0.69	0.04	0.68	0.05
US born	0.98	1.00	-0.02	1.00	-0.02	1.00	-0.02	1.00	-0.02
Observations	89	44	133	29	118	36	125	47	136

Source National Asset Scorecard for Communities of Color (NASCC)'s Tulsa Survey (2012)

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

stem more from differences in asset-building behavior than from differences in debt minimization or debt acquisition. In other words, in Tulsa, racial-ethnic groups tend to have similar debt acquisition levels but different asset levels. This means, for example, that Black households in Tulsa, who, on average, have lower wealth levels, are more likely to have a higher indebtedness ratio, or debt-to-assets ratio, than White Tulsans.

Regarding assets, we observe statistically significant differences between Black and White households when it

comes to home, vehicle, and business equity. The largest gap is for home equity, showing a differential of \$66,011 which is statistically significant. It is followed by racial disparities in retirement assets (\$27,702), however, the gap is not statistically significant. The fact that the gap in retirement assets is the second largest is not surprising since Blacks in Tulsa tend to be, on average, approximately six years younger. Regarding Native American households as a group, we find weak differences relative to White families only in

**Table 7** Household assets and liabilities (Unweighted): racial comparison

	All	White	Black	Diff	Native American	Diff
<b>Assets</b>						
Home equity	74715.08	105944.05	39933.33	66010.71***	77757.28	28186.77*
Other real estate	19340.30	24847.06	4545.45	20301.60	24973.39	-126.33
Vehicle equity	8879.10	9157.32	4446.55	4710.77**	10746.36	-1589.04
Business equity	15235.16	26632.18	0.00	26632.18*	16440.84	10191.34
Checkings, savings, and money market accounts	36588.63	55591.26	4896.65	17885.83	41081.55	14509.71
Stocks, mutual funds, inv trusts	15093.03	27905.42	156.25	17532.09	15513.96	12391.46
Retirement assets	19800.64	32622.77	4920.63	27702.14	21587.50	11035.27
Other assets	10763.86	11738.10	7296.72	4441.37	13298.61	-1560.52
<b>Liabilities (Debts)</b>						
Credit card debt	2761.15	3605.86	6686.84	-3080.98	1322.60	2283.26*
Installment loan debt	758.14	170.45	164.62	5.84	1224.03	-1053.57
Student loan debt	4463.41	3727.27	9942.86	-6215.58	3605.59	121.68
Medical debt	2285.52	757.65	2403.17	-1645.53	3946.38	-3188.73
Legal debt	10.28	0.00	0.00	0.00	9.80	-9.80
Debt to friends and relatives	99.79	0.00	0.00	0.00	187.01	-187.01
Observations	396	89	66	155	156	245

Source National Asset Scorecard for Communities of Color (NASCC)'s Tulsa Survey (2012)

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

home equity and credit card debt, with White families having larger home equity and credit card debt.

In Table 9, we break down the descriptive analysis of assets and liabilities by tribe. In terms of assets, we find only some significance (although weak) for home equity when comparing Whites to Cherokees, Muscogee, and mixed or no tribe Native Americans - the size of the home equity gaps are \$31,333, \$36,998, and \$31,399 respectively. Generally speaking, we do not find evidence of a differential gap with respect to Whites for Cherokees, Other Tribes, or Mixed or No Tribes Native Americans in any of the other listed assets. When comparing Whites and Muscogee, we find weak significance for business equity, stocks, mutual funds and investment trusts, and other assets - with Whites showing higher amounts. Generally, we do not find evidence of a differential gap with respect to Whites for Cherokees, Other Tribes, or Mixed or No Tribes Native Americans in any of the other listed assets. In terms of debt or liabilities, we find that, for the most part, the households from different Native American tribes behave similarly to White households, with the only exception being credit card debt, in which Whites have larger credit card debts than Native Americans from Other Tribes, or Mixed or No Tribes.

Lastly, in Table 10, we compare the assets and liabilities of entrepreneurial and non-entrepreneurial families. We find large gaps between entrepreneurial and non-entrepreneurial households across different types of assets, as expected. We find statistical significance for the gaps for

home equity (\$62,731), other real estate (\$68,941), vehicle equity (\$6,629), and business equity (\$147,400). In terms of liabilities, we find that non-entrepreneurial households tend to have, on average, larger installment loan debt (gap of \$822).<sup>12</sup>

## Empirical Strategy

The above discussion on the descriptive statistics suggests that the wealth and income disparities between Black and White households in Tulsa are correlated with differences in homeownership and entrepreneurship rates. However, access to credit and other resources can significantly affect both the ability to own a home and to start a business. Therefore, in this section, we explore to what extent we can decompose the existence of inequalities into those that we can observe and those that we are not able to control, such as discrimination and racism, among others, and their amplification mechanisms through society.

With that aim in mind, in this section, we estimate racial differences in wealth (or net worth), household income, and head of household earnings using the Kitagawa-Oaxaca-Blinder decomposition to shed some light on these

<sup>12</sup> See Table A2 in Online Appendix for a breakdown of the number of entrepreneurial households by race in Tulsa.

**Table 8** Household assets and liabilities (Weighted): Tulsa

	All	White	Black	Native American
<b>Assets</b>				
Home equity	72058.37	105078.18	40640.19	77005.97
Other real estate	19011.74	26435.89	4909.98	25157.41
Vehicle equity	9412.30	9797.95	4602.21	12000.46
Business equity	16450.87	28624.48	0.00	18688.07
Checkings, savings, and money market accounts	39190.03	65716.00	5532.19	44259.04
Stocks, mutual funds, inv trusts	17298.69	35369.83	402.24	17577.05
Retirement assets	23581.20	40415.45	6189.75	27367.27
Other assets	11297.68	13525.23	5845.76	14248.06
<b>Liabilities</b>				
Credit card debt	3194.82	5450.17	6348.11	1500.82
Installment loan debt	816.47	199.00	173.40	1322.37
Student loan debt	5282.58	6795.70	12275.05	3046.12
Medical debt	2150.63	743.65	1615.18	3952.70
Legal debt	22.90	0.00	0.00	20.39
Debt to friends and relatives	107.39	0.00	0.00	234.03
Observations	396	89	66	156

Source National Asset Scorecard for Communities of Color (NASCC)'s Tulsa Survey (2012)

**Table 9** Household assets and liabilities: white and native American comparison by tribe

	White	Cherokee	Diff	Muscogee	Diff	Other tribes	Diff	Mixed or no tribe	Diff
<b>Assets</b>									
Home equity	105944.05	74611.29	31332.75*	68946.43	36997.62*	93424.24	12519.81	74545.45	31398.59*
Other real estate	24847.06	11818.39	13028.67	14413.79	10433.27	12218.75	12628.31	53711.11	-28864.05
Vehicle equity	9157.32	8731.90	425.42	6184.62	2972.70	12183.87	-3026.55	14979.73	-5822.41
Business equity	26632.18	8256.00	18376.18	0.00	26632.18*	24000.00	2632.18	29090.91	-2458.73
Checkings, savings, and money market accounts	55591.26	42565.32	13025.94	31698.71	23892.55	33691.17	21900.10	51397.34	4193.92
Stocks, mutual funds, inv trusts	27905.42	20425.00	7480.42	50.00	27855.42*	3921.88	23983.55*	29154.97	-1249.55
Retirement assets	32622.77	19658.54	12964.24	6571.43	26051.34	25968.16	6654.61	30046.51	2576.26
Other assets	11738.10	27756.10	-16018.00	142.86	11595.24*	11470.59	267.51	9341.46	2396.63
<b>Liabilities (Debts)</b>									
Credit card debt	3605.86	1540.15	2065.71	2104.17	1501.70	598.39	3007.48**	1206.12	2399.75*
Installment loan debt	170.45	1911.63	-1741.17	2793.10	-2622.65	91.67	78.79	478.26	-307.81
Student loan debt	3727.27	4186.05	-458.77	5674.25	-1946.98	2373.83	1353.44	2741.02	986.25
Medical debt	757.65	1259.52	-501.88	11152.22	-10394.58	1574.29	-816.64	3975.56	-3217.91
Legal debt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	-33.33
Debt to friends and relatives	0.00	18.60	-18.60	0.00	0.00	0.00	0.00	608.70	-608.70
Observations	89	44	133	29	118	36	125	47	136

Source National Asset Scorecard for Communities of Color (NASCC)'s Tulsa Survey (2012)

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

disparities. Specifically, we use a twofold decomposition method with a pooled regression model. This method decomposes the gap in average outcomes (e.g., wealth,

household income, and head of household earnings) into one component that can be explained by observable differences in demographic characteristics (i.e., homeownership,

**Table 10** Household assets and liabilities: entrepreneurial comparison

	Non-entrepreneurial	Entrepreneurial	Diff
<b>Assets</b>			
Home equity	67234.96	129965.91	-62730.95***
Other real estate	11640.40	80581.40	-68940.99*
Vehicle equity	8072.66	14701.22	-6628.56*
Business equity	0.00	147400.17	-147400.17***
Checkings, savings, and money market accounts	30201.58	86374.92	-56173.35
Stocks, mutual funds, inv trusts	11831.44	41675.00	-29843.56
Retirement assets	17309.36	39487.80	-22178.45
Other assets	8793.25	26059.52	-17266.27
<b>Liabilities</b>			
Credit card debt	2758.43	2781.26	-22.84
Installment loan debt	851.06	29.55	821.51*
Student loan debt	4344.60	5381.52	-1036.93
Medical debt	2357.99	1720.93	637.05
Legal debt	11.59	0.00	11.59
Debt to friends and relatives	112.49	0.00	112.49
Observations	351	45	396

Source National Asset Scorecard for Communities of Color (NASCC)'s Tulsa Survey (2012)

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

age, education levels, gender, household size, marital status, and country of birth) and another component that differences in these covariates cannot explain. The unexplained component can be attributed to unobservable characteristics across racial and ethnic groups, including exposure to discrimination or the effects of significant local shocks, such as the Tulsa Massacre, in various markets - labor, housing, financial, education, healthcare, among others (Blinder, 1974; Card & Krueger, 1992; Fortin et al., 2011; Kitagawa, 1955; Oaxaca, 1973).

We use the Kitagawa-Oaxaca-Blinder method to decompose observed differences in wealth, household income, and head of household earnings between racial groups. We estimate the following baseline regression model for each racial group  $g$ . Group 1 and Group 2 households are represented by  $w$  and  $b$ , respectively, and  $g \in [w, b]$ . For simplicity, without loss of generality, we can call Group 1 and 2 White and Black, respectively:

$$Y_i^g = X_i^g + \epsilon_i^g \quad (1)$$

$Y_i$  is our outcome of interest – wealth, household income, or earnings in 2012.  $X_i$  is a vector of explanatory variables, including household and demographic characteristics of the head of household. The explanatory variables include household size, household income, homeownership, inheritance dummy, and incarceration exposure dummy, in addition to the head of household's characteristics such as age,

age-squared, and dummy variables for bachelor's degree or higher, married, female, and US-born.<sup>13</sup>

Next, we estimate the difference,  $\Delta$ , in average household income and wealth between the two groups as follows:

$$\Delta = \bar{y}^b - \bar{y}^w = \bar{x}^b \hat{\beta}^b - \bar{x}^w \hat{\beta}^w \quad (2)$$

where  $\bar{y}^b$  and  $\bar{y}^w$  are the average outcomes for Black and White households,  $\bar{x}^b$  and  $\bar{x}^w$  are vectors of the average demographic and household characteristics for each group, and  $\hat{\beta}^b$  and  $\hat{\beta}^w$  are the coefficients estimated in Eq. 1.

Next, by adding and subtracting  $\bar{x}^w \hat{\beta}^b$  and re-arranging, we get

$$\Delta = (\bar{x}^b - \bar{x}^w) \hat{\beta}^b + \bar{x}^w (\hat{\beta}^b - \hat{\beta}^w) \quad (3)$$

The first term in Eq. 3 is the portion of the difference in average outcomes that racial differences in demographic and household characteristics can explain. The second term is the portion of the gap that differences in these covariates cannot explain.

The unexplained component can be attributed to unobservable characteristics across racial groups. We follow the literature and interpret the statistical significance of the unexplained component as evidence of discrimination. This

<sup>13</sup> In the case when the outcome of interest is household income, we remove household income from the set of controls to avoid perfect multicollinearity.

unexplained component captures potential discrimination in various markets – labor, financial, housing, etc.– that limits household wealth accumulation and income in Tulsa households (Kitagawa, 1955; Blinder, 1974; Card & Krueger, 1992; Fortin et al., 2011).

In implementing the decomposition, we use survey weights based on family characteristics in the U.S. Census Bureau’s ACS to generate results representative of specific ethnic group characteristics in Tulsa MSA or the corresponding MSA when using the NASCC survey data for other U.S. cities.<sup>14</sup>

## Results: Decomposition Analysis

This section discusses the Kitagawa-Oaxaca-Blinder decomposition results and the associated robustness checks.

### Black-White Wealth and Income Gap Decompositions

We start by decomposing the racial wealth, household income, and earnings gaps between Black and White households in Tulsa. Our wealth variable is measured as the total household net worth - calculated by subtracting each respondent’s reported total debts from total assets as described above in Sect. "Data". Our subsample is composed of 155 households (89 Whites and 66 Blacks). We are able to obtain or calculate the net worth for 100 households, household income for 131, and earnings of the head of household for 66 of the families. We use these observations to perform our decomposition below.

For each decomposition discussed below, “group 1” denotes the comparison racial group (Whites), and “group 2” represents the minority racial or ethnic group of interest. The rows labeled “group 1” and “group 2” give the average outcome of each racial group, and the one labeled “difference” shows the disparity in outcome between the two groups. Positive differences mean that the average outcome for White households is higher than that for the comparison racial/ethnic group. The units for these estimates are in levels.

Table 11 gives the results of the Black-White decompositions of the wealth, household income, and earning gaps.<sup>15</sup>

<sup>14</sup> We use the Stata command *oaxaca* for the Kitagawa-Oaxaca-Blinder decomposition.

<sup>15</sup> In Table 11, the variable *incarceration exposure* includes families where either the household head or another family member has been incarcerated. In an analysis not included in this paper, we estimate the Black-White decomposition on a sample where the household head has been incarcerated. The estimated gaps are similar to the results in Table 11. Due to small sample sizes, we are unable to repeat this for the decompositions for other racial-ethnic groups.

For compactness purposes, we report only group means, the difference (or gap), and the explained and unexplained portions of the gap. We find substantial differences in the average wealth gap between Black and White households in Tulsa. The gap between the average wealth of Whites and that of Blacks is \$216,618, equivalent to 91 percent of White household wealth. In other words, the average Black household wealth in Tulsa represents only 9 percent of the wealth owned by the average White household. Interestingly, the wealth gap is not explained away by group differences in household income, homeownership, inheritance history, incarceration exposure, age, education, gender, and marital status. The findings show that 72 percent of the Black-White wealth gap is unexplained, which based on the literature, we attribute to other unobserved sources, including historical and systematic discrimination (Blinder, 1974; Card & Krueger, 1992; Fortin et al., 2011; Kitagawa, 1955). In terms of the Black-White household income gap, we find a gap of \$30,967, of which 53 percent is unexplained, and the other 47 percent left is explained by the observed household and demographic characteristics listed above. Additionally, we find that the unexplained portion accounts for 13 percent of the earning gap of \$14,295, but it is not statistically significant.

A deeper look into both the explained and unexplained components of the three decompositions and the untabulated coefficients for the corresponding control variables shows that differences in homeownership are the main drivers of the explained portion of the wealth gap. In contrast, differences in marital status are the main drivers of the explained portion of the household income and earnings gaps (untabulated results). These findings are important because they highlight the role of homeownership and marriage in building wealth and household income. These results are consistent with the literature that shows that homeownership and marriage affect racial disparities in socioeconomic outcomes; for instance, research has shown that the White-Black differential in the rate of incarceration has affected wealth accumulation in Black households through the channel of low marriage rates (Colston et al., 2021). This is important because marriage can bolster economic outcomes, including wealth accumulation and income stability. It can serve as a form of insurance against financial hardship and economic shocks by facilitating the sharing of resources between spouses to meet financial demands (Stevenson & Wolfers, 2007). Additionally, marriage can help alleviate credit constraints and facilitate investment (e.g., acquiring education), which can,



**Table 11** Racial gap decompositions: white vs. black households

	Wealth	Household income	Earnings
Group_1	236992.3*** (4.27)	69172.5*** (13.91)	36970.5*** (7.40)
Group_2	20374.6** (2.65)	38205.6*** (8.05)	22675.9*** (5.84)
Difference	216617.7*** (3.87)	30966.8*** (4.51)	14294.6* (2.26)
Explained	60174.4 (1.56)	14675.4** (2.81)	12464.3* (2.15)
Unexplained	156443.3** (2.73)	16291.4* (2.03)	1830.3 (0.27)
Unexplained %	0.72	0.53	0.13
Observations	95	130	61

The decomposition regression controls for household size, household income, homeownership, inheritance dummy, and exposure to incarceration, in addition to the head of household's characteristics such as age, age-squared, and dummy variables for bachelor's degree or higher, married, female, and US-born

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

in turn, lead to higher household income, asset levels, and wealth (Iyigun & Lafortune, 2023).<sup>16</sup>

### Sensitivity Analysis

As discussed above, the average Black household in Tulsa owns about 9 percent of the wealth owned by the average White household. Our key finding shows that 72 percent of the Black-White wealth disparities in Tulsa are unexplained, which we attribute to unobserved sources, including historical and systematic discrimination (Blinder, 1974; Card & Krueger, 1992; Fortin et al., 2011; Kitagawa, 1955).

We argue that our baseline decomposition results represent a conservative measure of discrimination given that we control for household income, homeownership, inheritance history, and incarceration exposure, which are themselves

subject to historical discrimination.<sup>17</sup> Given the inclusion of these controls, how sensitive are our decomposition estimates to the inclusion and exclusion of these covariates? To help us answer this question, we conduct a sensitivity analysis by removing each of the wealth-building household covariates (household income, homeownership, inheritance history, and incarceration exposure) one at a time from the main baseline specification to investigate the sensitivity of our estimates. In particular, we are interested in knowing if differences in any of these wealth-building channels, such as household income, homeownership, inheritance, and incarceration exposure, can serve to explain the Black-White wealth gap better.

Table 12 shows our sensitivity analysis. All models control for the same covariates as in Table 11. Column (1) shows our baseline results. Columns (2–5) remove each covariate individually from the baseline model in column (1). Column (2) excludes household income; column (3) excludes the homeownership dummy; column (4) excludes the dummy for receiving a substantial inheritance or gifts from family or friends; and column (5) excludes the dummy for household incarceration exposure. Lastly, column (6) excludes household income and the dummies for homeownership, inheritance, and incarceration exposure jointly from the baseline model.<sup>18</sup>

Our findings provide some valuable and interesting insights. Generally speaking, the explained portion remains insignificant across the different specifications. Interestingly, only removing homeownership as a covariate increases the unexplained portion of the decomposition to 82 percent from a baseline of 72 percent. Removing household income, inheritance, and incarceration exposure individually does not drastically change the percentage of the unexplained portion of the decomposition. When we remove the four wealth-building covariates (household income, homeownership, inheritance, and incarceration) jointly, we find the unexplained portion shoots up to 90 percent from a baseline of 72 percent. These findings suggest that historical discrimination could account for 72–90 percent of the Black-White racial disparities in Tulsa, a substantial percentage of the gap.<sup>19</sup>

<sup>16</sup> However, while marriage can be economically beneficial, an important caveat is the difference in marriage benefits that the tax system has historically provided to single-earner married households, which have been disproportionately White households (Brown, 2022). From 1969–2017, married couples where both spouses were low- or middle-income wage earners faced a marriage penalty (i.e. a higher tax burden under joint filing than individual filing while single), whereas married couples with one working spouse received a marriage bonus (Brown, 2022). Given that White households are more likely to be single-earner, this increased White households' capacity to accumulate wealth relative to black households over this time period.

<sup>17</sup> Similarly, some could also argue that marriage rates and educational attainment are also influenced by discrimination.

<sup>18</sup> As part of the robustness checks, we are unable to include entrepreneurship rates due to the low number of entrepreneurs in the Black subsample that does not allow us to conduct the decomposition.

<sup>19</sup> We also conduct further sensitivity analysis in which we replace the assets and liabilities with missing values with zeros and with their corresponding means and calculate the wealth values. For these two analyses, we find that the unexplained portion of the Black-White racial wealth gap ranges between 65 and 82 percent, see Tables A8 and A9, respectively, in our Online Appendix.

**Table 12** Sensitivity analysis: whites vs. blacks wealth gap decomposition

	Baseline	(-) HH Income	(-) Homeownership	(-) Inheritance	(-) Incarceration	(-) All
Group_1	236992.3*** (4.27)	232560.1*** (4.29)	236992.3*** (4.18)	236992.3*** (4.28)	236992.3*** (4.29)	232560.1*** (4.18)
Group_2	20374.6** (2.65)	19033.2** (2.59)	20374.6** (2.65)	20374.6** (2.63)	20374.6** (2.65)	19033.2** (2.63)
Difference	216617.7*** (3.87)	213526.9*** (3.90)	216617.7*** (3.78)	216617.7*** (3.87)	216617.7*** (3.88)	213526.9*** (3.81)
Explained	60174.4 (1.56)	62135.0 (1.81)	39719.4 (0.97)	59137.4 (1.78)	60404.7 (1.57)	20782.8 (0.72)
Unexplained	156443.3** (2.73)	151391.9** (2.80)	176898.2** (2.90)	157480.2** (3.05)	156212.9** (2.75)	192744.1*** (4.01)
Unexplained %	0.72	0.71	0.82	0.73	0.72	0.90
Observations	95	99	95	95	95	99

The decomposition regression controls for household size, household income, homeownership, inheritance dummy, and exposure to incarceration, in addition to the head of household's characteristics such as age, age-squared, and dummy variables for bachelor's degree or higher, married, female, and US-born

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

There are two major takeaways from these robustness checks. The first one is that differences in wealth between Black and White households cannot be explained by observable characteristics alone. Our results support the argument that unexplained factors such as discrimination, prejudice, or racial bias (systematic or not) are important in driving the Black-White wealth gap in Tulsa. The second takeaway is that it is hard to completely disentangle the racial wealth gap from the multifaceted gaps in wealth and its components. In short, once compared by dividing into subgroups of White and Black households, covariates with a robust racial correlation will not add much to explaining the gap (i.e., household income, inheritance, and incarceration).

### Black-White Racial Disparities Across Other NASCC Cities

An important question is, how does the household racial wealth gap in Tulsa compare to other cities in the US that perhaps experienced different levels of racial violence in the past? To help answer this question, we conducted similar baseline and sensitivity analyses as described above using the joint sample of the other NASCC cities included in our analysis (Boston, DC, LA, and Miami). Table 13 shows the collective sample results. We find that the Black-White wealth gap is larger by approximately \$37,000 (\$253,466 vs. \$216,618 for Tulsa), which is likely due to the fact that the other NASCC cities are larger cities with a higher cost of living. However, two major findings are that the explained portion is highly significant, which is not the case in the Tulsa sample; this means that differences in household observables such as household wealth-building variables, education, age, marital status,

and gender of the head of household can explain a significant portion of the gap. The second important finding is that the unexplained portion is much smaller than the one for the Tulsa sample, 45% vs. 72% for the Tulsa baseline results and 60% vs. 90% when excluding all of our wealth-building variables as controls. The evidence suggests that racial discrimination in Tulsa has had a larger negative impact (27–30 percent larger) in wealth-building for Black households compared to other cities, consistent with the literature on racial violence and both short- and long-run economic outcomes for Black Americans (Cook, 2014; Feigenbaum et al., 2021; Williams et al., 2021).

### White-Native American Wealth and Income Decomposition

Table 14 shows that although there is a wealth gap of approximately \$48,000 between Whites and Native Americans in Tulsa, the gap is not statistically significant. Similarly, the table shows no statistically significant household income or earnings gaps between Whites and Native Americans. In fact, the average Native American household in Tulsa has a larger household income (\$1,632 higher) and earnings (\$7,708 higher). A potential explanation for this important result is that some Native Americans obtain payments generated from oil, land, and gaming/casinos, which are then shared among the community and different members of the tribes (Dean, 2017; Haslett & Romero, 2020).

We take a deeper look by conducting the wealth and income decompositions broken down by tribe. We first look at the Cherokee tribe, one of the major tribes in Tulsa. The results are tabulated in Table 15. Consistent with the results

**Table 13** Baseline and sensitivity analysis with other NASCC cities (Excluding Tulsa): whites vs. blacks wealth gap decomposition

	Baseline	(-) HH Income	(-) Homeownership	(-) Inheritance	(-) Incarceration	(-) All
Group_1	422868.9*** (11.38)	404652.6*** (11.38)	422868.9*** (11.35)	422868.9*** (11.37)	422868.9*** (11.39)	404652.6*** (11.34)
Group_2	169403.0*** (6.08)	151403.0*** (5.95)	169403.0*** (6.12)	169403.0*** (6.12)	169403.0*** (6.07)	151403.0*** (5.99)
Difference	253465.9*** (5.46)	253249.7*** (5.79)	253465.9*** (5.46)	253465.9*** (5.47)	253465.9*** (5.46)	253249.7*** (5.79)
Explained	140178.3*** (4.73)	144450.0*** (5.52)	122572.3*** (4.15)	131432.9*** (4.50)	138249.9*** (4.70)	100939.2*** (4.12)
Unexplained	113287.6** (2.80)	108799.7** (2.88)	130893.6** (3.16)	122033.1** (3.02)	115216.1** (2.83)	152310.5*** (3.96)
Unexplained %	0.45	0.43	0.52	0.48	0.45	0.60
Observations	563	596	563	563	563	596

The decomposition regression controls for household size, household income, homeownership, inheritance dummy, and exposure to incarceration, in addition to the head of household's characteristics such as age, age-squared, and dummy variables for bachelor's degree or higher, married, female, and US-born. The NASCC cities included are Boston, Los Angeles, Miami, and Washington DC

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

in Table 14, we find that Cherokee households have, on average higher wealth but lower household income and earnings than White households; however, none of the wealth and income gaps are statistically significant.

Similarly, we conduct the wealth and income decompositions comparing Whites and Muscogee (Creeks). The results are presented in Table 16. Interestingly, in the case of the comparison between Whites and Muscogee, we find weak statistically significant evidence of wealth and household income gaps. However, for the three decompositions, we find no significance for either or the explained or unexplained portions of the decompositions. There are multiple potential explanations why we find weak significance for the wealth and income gaps for Muscogee, one being that out of all the tribes in our studies, the Muscogees have a lower rate of entrepreneurship, lower business equity, lower home equity, and lower stock and other assets, as we find in our descriptive analysis. Furthermore, our results show no evidence of wealth, income, and earning gaps for households of other tribes (see Table 17) nor those with a mixed composition or no tribal affiliation (see Table 18).

The fact that we find some weak evidence of wealth and income gaps only for the Muscogee household relative to White households highlights that different Native American tribes have experienced different levels of disruptions, discrimination, and racial violence affecting their traditional economies and social structures, leading to greater economic disparities and contributing to their persistence (Champagne, 1992; Fixico, 1986; Snipp, 1989; Taylor & Kalt, 2005; Waziyatawin & Yellow Bird, 2005; Wilkins & Stark, 2017). Recent research suggests some of the underlying factors contributing to this finding include differential exposure

to forced displacement, land seizure, geographic isolation, (Hoxie, 2001; Prucha, 2000; Wilkinson, 2005), government assimilation policies (Adams, 2020; Lomawaima & McCarty, 2006; Smith, 2021), differences in political and economic institutions across Native American tribal nations (Cornell & Kalt, 1992; Deloria & Lytle, 1998; Jorgensen, 2007), and racial/ethnic violence (Biolsi, 1992; Cobb, 2008; Deloria, 2007).

## Discussion, Implications, and Conclusion

This study documents racial-ethnic wealth and income disparities in Tulsa by utilizing data from the NASCC survey to report differences in asset and liability holdings, labor force outcomes, and other financial activities between various racial-ethnic groups. While it is beyond the scope of this study to identify the causal mechanisms driving disparities between groups, the study provides strong descriptive evidence of differences in wealth-building channels, when combined with other data on Oklahoma native history, shedding light on the reasons behind observed disparities in wealth and income between racial-ethnic groups in Tulsa.

This study finds significant racial-ethnic differences in income and wealth in Tulsa. Although we do not find major differences in wealth between Native American and White households, we do find that Black and Muscogee households have less wealth than White households, with Black families having the least wealth across all groups. We also see lower household income levels for these same groups and lower earnings for Blacks compared to Whites.

**Table 14** Racial gap decompositions: whites vs. native Americans

	Wealth	Household income	Earnings
Group_1	236992.3*** (4.28)	69172.5*** (14.13)	36970.5*** (7.91)
Group_2	189136.0*** (4.72)	70804.4*** (7.51)	44678.3*** (9.81)
Difference	47856.3 (0.70)	-1631.9 (-0.15)	-7707.8 (-1.18)
Explained	81518.6 (1.93)	14354.6** (2.80)	3080.7 (0.71)
Unexplained	-33662.4 (-0.53)	-15986.5 (-1.28)	-10788.5 (-1.94)
Unexplained %	-0.70	9.80	1.40
Observations	138	203	91

The decomposition regression controls for household size, household income, homeownership, inheritance dummy, and exposure to incarceration, in addition to the head of household's characteristics such as age, age-squared, and dummy variables for bachelor's degree or higher, married, female, and US-born

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

**Table 15** Racial gap decompositions: whites vs. cherokees

	Wealth	Household income	Earnings
Group_1	236992.3*** (4.46)	69172.5*** (14.51)	36970.5*** (7.78)
Group_2	164018.6*** (4.07)	87126.6*** (3.87)	41566.0*** (5.70)
Difference	72973.7 (1.09)	-17954.1 (-0.78)	-4595.5 (-0.53)
Explained	39075.9 (0.94)	13052.5 (1.39)	-1039.3 (-0.15)
Unexplained	33897.7 (0.59)	-31006.6 (-1.19)	-3556.1 (-0.61)
Unexplained %	0.46	1.73	0.77
Observations	79	113	57

The decomposition regression controls for household size, household income, homeownership, inheritance dummy, and exposure to incarceration, in addition to the head of household's characteristics such as age, age-squared, and dummy variables for bachelor's degree or higher, married, female, and US-born

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

When examining the Black-White wealth gap across the NASCC cities included in our sample, the analysis shows Tulsa has the most pronounced disparity between Black and White households, surpassing the other NASCC cities in terms of wealth inequality.

**Table 16** Racial gap decompositions: whites vs. muscogee (Creeks)

	Wealth	Household income	Earnings
Group_1	236992.3*** (4.11)	69172.5*** (13.47)	36325.3*** (7.43)
Group_2	66438.3* (1.98)	47059.0*** (5.43)	32755.1* (2.35)
Difference	170554.0* (2.55)	22113.4* (2.19)	3570.2 (0.24)
Explained	13742.4 (0.17)	7732.6 (1.20)	5464.1 (0.63)
Unexplained	156811.6 (1.64)	14380.8 (1.60)	-1893.9 (-0.22)
Unexplained %	0.92	0.65	-0.53
Observations	68	99	43

The decomposition regression controls for household size, household income, homeownership, inheritance dummy, and exposure to incarceration, in addition to the head of household's characteristics such as age, age-squared, and dummy variables for bachelor's degree or higher, married, female, and US-born. For the Muscogee-White earning gap decomposition (column 3), the inheritance and incarceration exposure dummies were removed due to the small number of Muscogee households with those characteristics to be able to carry out the earning gap decomposition

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

**Table 17** Racial gap decompositions: whites vs. other tribes

	Wealth	Household income	Earnings
Group_1	236992.3*** (4.35)	69172.5*** (14.33)	36970.5*** (7.85)
Group_2	183343.4** (3.22)	55739.6*** (7.88)	49335.4*** (5.10)
Difference	53648.9 (0.68)	13432.9 (1.57)	-12364.9 (-1.15)
Explained	85784.2 (1.49)	8105.3 (1.42)	5197.9 (0.62)
Unexplained	-32135.3 (-0.49)	5327.6 (0.74)	-17562.7* (-2.57)
Unexplained %	-0.60	0.40	1.42
Observations	73	106	49

The decomposition regression controls for household size, household income, homeownership, inheritance dummy, and exposure to incarceration, in addition to the head of household's characteristics such as age, age-squared, and dummy variables for bachelor's degree or higher, married, female, and U.S.-born

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

In our sample, we observe substantial disparities in homeownership and entrepreneurship rates between Blacks and Whites in Tulsa, directly contributing to lower asset levels for Black individuals. Furthermore, our analysis

**Table 18** Racial gap decompositions: whites vs. mixed or no tribal affiliation

	Wealth	Household income	Earnings
Group_1	236992.3*** (4.34)	69172.5*** (14.22)	36970.5*** (7.85)
Group_2	288068.8* (2.18)	77411.1*** (3.56)	40248.8*** (5.76)
Difference	-51076.5 (-0.36)	-8238.6 (-0.37)	-3278.2 (-0.39)
Explained	86124.9 (0.83)	11906.1 (1.75)	1057.9 (0.15)
Unexplained	-137201.3 (-1.23)	-20144.7 (-0.85)	-4336.2 (-0.53)
Unexplained %	2.69	2.45	1.32
Observations	74	110	48

The decomposition regression controls for household size, household income, homeownership, inheritance dummy, and exposure to incarceration, in addition to the head of household's characteristics such as age, age-squared, and dummy variables for bachelor's degree or higher, married, female, and US-born

\*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively

reveals that a larger proportion of the wealth gap between Whites and Blacks remains unexplained when controlling for household demographic characteristics compared to any other racial-ethnic group. Even when conducting covariate sensitivity tests using our decomposition analysis by excluding, separately and jointly, our household wealth-building characteristics, the unexplained portion of the wealth gap increases and remains exceptionally high, which suggests that our baseline model is a conservative estimate. Our findings provide strong support for factors that we cannot control, such as historical racial bias and discrimination. Furthermore, our decomposition analysis comparing the five NASCC cities suggests that current and past racial violence and discrimination in Tulsa has had a larger and persistent negative impact on wealth-building for Black households compared to other cities, given that the unexplained portion of the Black-White wealth gap is 27–30 percentage points larger in Tulsa than in the rest of the NASCC cities in our sample.

Our findings provide strong support for factors that are not directly captured in our NASCC data, such as historical racial bias and discrimination. These results are consistent with conditions where Blacks in Tulsa have faced exceptionally high levels of historical discrimination (e.g., intentional destruction of assets in Black communities), which cannot be disentangled from race and cannot be accounted for in observable characteristics. These results align well with Feigenbaum et al. (2021), who find that

the Tulsa massacre caused a decrease in homeownership and occupational status for Blacks that grew cumulatively over the course of the twentieth century. Our results seem to support the hypothesis of a long-term effect of this massacre, as evidenced by the large gaps in homeownership and business ownership (i.e., entrepreneurship) between Blacks and Whites. These findings are important given that wealth provides access to economic opportunity and, thus, is critical for economic and intergenerational mobility.

Furthermore, these results have implications for the study of how positive wealth shocks (such as the oil boom experienced in Tulsa) are distributed across racial-ethnic groups and, more specifically, how the adverse effects of wealth shocks can be mitigated or eliminated for groups that are systematically discriminated against in various arenas. The turn of the twentieth century saw an oil boom that led to a positive wealth shock for all Tulsans. Still, racial violence and discrimination, including an intentional massacre and destruction of Black wealth, eradicated the gains for Black households.

These patterns persist to the current day. One of the latest prominent examples of this is the Paycheck Protection Program (PPP) loans given to small business owners to offset some of the negative impacts of the COVID-19 pandemic on business activity. However, research shows that Black business owners received 30–40 percent lower loan amounts even after controlling for business and lender characteristics (Atkins et al., 2022; Camara et al., 2021; García & Darity, 2022).

The above example highlights how systematic discrimination in the financial industry prevented Black business owners from accessing the needed help during the pandemic, which likely amplified the contemporaneous racial wealth gap. Therefore, this study helps accentuate the need to fully account for the historical mechanisms of systemic discrimination when studying policies targeting the closing of racial-ethnic wealth and income gaps.

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#### Ethical Approval

All research activities and protocols employed by the co-authors under the DuBois Center for Social Equity during the course of this study received approval from the Duke University Institutional Review Board, ensuring adherence to rigorous ethical standards and compliance with regulatory requirements.



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