

# After The Burning: The Economic Effects of the 1921 Tulsa Race Massacre

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**ABSTRACT:** The 1921 Tulsa Race Massacre resulted in the burning and leveling of 35 square blocks of a once-thriving Black neighborhood. Nearly every Black-owned home in the city was looted and then burned, resulting in the complete destruction of the vibrant community, once hailed as “Black Wall Street.” We report initial estimates from a larger project aimed at understanding the consequences of this event. We use a triple differences strategy to estimate the effect of the Massacre on the Black population of Tulsa up until 1940. We find that for the Black population of Tulsa, the Massacre resulted in a decline in home ownership, occupational status, and educational attainment. It also resulted in an increase in labor force participation, particularly for women. We also find evidence that Black people living in Oklahoma, but outside of Tulsa county, were also affected by the Massacre. These spillover effects tend to be in the same direction as the direct effects but are smaller in magnitude.

**Key words:** race, violence, economic well-being.

**JEL classification:** J62; J69; N31; N41; N91.

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## 1. Introduction

Between May 31 and June 1, 1921, Tulsa experienced one of the largest and worst incidents of racial violence, murder, and destruction in postbellum U.S. history. During the course of the massacre, 35 square blocks of the thriving Black community were completely destroyed. Black people were taken to internment centers at gunpoint. Their homes and businesses were looted and then set on fire. The vibrant Black community of Greenwood, Tulsa which was once hailed as “Black Wall Street,” had literally been burned to the ground. Figure 1 provides photographs of Greenwood prior to, during, and after the Massacre. These images help make clear the extent of the damage and loss from the event.

While there were many other incidents of racial violence in this time period, the Tulsa Massacre<sup>1</sup> of 1921 was unique for both the level of property damage and the affluence of the targeted Black community. A common narrative is that the event had long-term and widespread effects on Black people. If the riot had not occurred, “Black Wall Street” would have been an example of the achievement and economic success that was possible for other Black people across the country. Instead, the massacre sounded a warning of what would happen if other Black communities became too successful. The view that the Tulsa massacre had such lasting effects, was described by State Senator Maxine Horner in the 2001 Report on the Massacre. She writes that those who had been through the Tulsa Massacre (Horner, 2001, p. 177),

emerged haunted as a result of that experience. The way they relate to their children and grandchildren and the world around them is not how they may have related had it not been for that experience. If a people have been terrorized to the degree that North Tulsa survivors and descendants were, it could be expected that they would not make themselves noticed or be noticed by the group that terrorized them in the first place.

While there are many other incidents of racial violence that are worth investigating for the sake of understanding the short and long-run effects of racial violence,<sup>2</sup> the Tulsa massacre is particularly well suited for focused empirical investigation given the historical context and data

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<sup>1</sup>While this event used to be called a ‘Riot’, this was changed to ‘Massacre’ 2018 by the 1921 Centennial Commission (Krehbiel, 2018). We use the term ‘Massacre’ in this paper in line with the Commission’s decision.

<sup>2</sup>See Craemer, Smith, Harrison, Logan, Bellamy and Darity Jr (2020) for a striking list of incidents of white mob violence against Black communities (p. 26) as well as Cook (2014) for tables and context on mob violence and violent events from 1870–1940 (pp. 222–227).



(a) The Greenwood neighborhood of Tulsa prior to the Massacre



(b) Greenwood burning during the Massacre



(c) The internment of Black Tulsans during the Massacre



(d) Greenwood after the Massacre

Figure 1: Images from the Tulsa Race Massacre of 1921

available. The Greenwood area of Tulsa was known for its affluence. Prior to the Massacre, the area had 191 businesses (including solo-practice lawyers and doctors), a library, two schools, and a hospital. During the Massacre, over one thousand houses were burned and thousands of Black people were held in internment centers. While there are death certificates for thirty-nine victims, estimates for those killed in the event range up to 300.

Despite the historical importance of this event, there is little empirical evidence on its effects in the short or long run. While previous empirical work has highlighted important dynamics between racial violence, segregation, innovative activity, and property values (e.g., Collins and Margo, 2004, 2007, Cook, 2014, Cook, Logan and Parman, 2018), our broader project stands to progress existing knowledge by estimating individual-level effects. Individual historical narratives and stories suggest that the Massacre had severe consequences for the Black community of Tulsa. What were the consequences of the massacre for those whose businesses and homes were looted and destroyed? How did they cope with the loss? What were the longer-term effects for them and their descendants? Were the consequences of the massacre different for those that owned homes or businesses relative to those that did not? Were the consequences different for those who had relatives or neighbors who were killed during the massacre? These are the questions that our study seeks to empirically examine.

In addition to the potential direct impacts on those who experienced the massacre, other Black communities in the state, region, or country, may have also been affected. The Greenwood neighborhood of Tulsa that was looted and destroyed was economically vibrant, dynamic, and affluent; it provided one of the best examples of Black entrepreneurship and success in the early twentieth century. The 1921 massacre put an abrupt end to this, destroying nearly all of the community's wealth and assets. Given the widespread media coverage of the massacre at the time, it is possible that this affected the expectations, aspirations, and economic decisions of Black entrepreneurs, business owners, and even homeowners in other parts of the state or even country.

If one believed there was a non-trivial chance of a similar race riot occurring in one's own community, then the incentives to invest in a business or purchase a home may have been significantly reduced. If one believed the likelihood of a massacre occurring was increasing with the economic success of the local Black community, these effects would be even greater. These possible shifts in incentives raise a larger set of questions. Did the Tulsa race massacre have



an effect on Black entrepreneurship and home ownership in other parts of the United States? If there are such spillover effects of the massacre to other communities, how far-reaching were they? Were the effects weaker in communities that were more geographically distant or located in other regions or states? Our study intends to examine and provide evidence for these broader questions as well.

We make progress on these questions by tracing the effects of the Tulsa Massacre, both for those who directly experienced the event, as well as for Black people in other parts of the state whose behavior may have been affected due to economic linkages or because the news of the massacre was particularly salient for them. The outcomes and time period that we examine are limited by data availability. We are able to trace the effects of the Massacre by examining home ownership, occupational status, educational attainment, and labor force participation from 1910–1940.

We find that the Massacre is associated with a decline in home ownership, lower average occupational status, less educational attainment, and higher rates of labor force participation, particularly for women. We also find evidence of spillover effects to other Black people within Oklahoma, which tend to be in the same direction as the direct effects, although smaller in magnitude. Thus, our estimates suggest that the Massacre led to a loss of wealth, lower occupational status, less educational attainment, and women being forced into employment. These effects persist until at least 1940 when our sample ends.

Our findings contribute to a rich pre-existing literature on the history of race, coercion, violence, and unrest in the United States. Collins and Margo (2004, 2007) study the effects of the race riots of the late 1960s. Their analysis takes a place-based approach and estimates the effect that the riots had on the locations in which they occurred. The authors find that the riots had a negative and persistent effect on Black incomes, employment, and property values. Cook (2014) studies the effects of race riots and lynchings between 1870 and 1940 and finds that these forms of violence and insecurity reduced patenting by Black people by more than 15% annually from 1882–1940. Williams (2018) estimates a county-level relationship between lynchings from 1882–1930 and lower rates of voter registration among Black people today. Acharya, Blackwell and Sen (2016) study the lasting consequences of slavery on racial and political attitudes of white people today. Counties with more slavery in the past are more racist today, have strong support for the Republican Party, and are more likely to oppose policies that provide support for Black people, such as affirmative action. Logan (2019) documents a relationship between

violence against Black politicians and declines in tax revenues between 1870 and 1880. Ample additional research, some outside the US context, speaks to the effects of exposure to violence and exploitation on outcomes ranging from: mistrust (Alsan and Wanamaker, 2018, Nunn and Wantchekon, 2011), political participation and political attitudes (Bautista, 2015), labor market and education outcomes (Blattman and Annan, 2010), and views about freedom of expression (Garcia Ponce and Wantchekon, 2011).

Our findings also contribute to a deeper understanding of the broader determinants of the economic success of Black people in the early and mid-20th Century (Clarke, 2019). Our work adds to existing descriptive accounts of the Tulsa Massacre and its consequences (e.g., Halliburton, 1972, Horner, 2001, Messer, 2011, Messer, Shriver and Adams, 2018).

## **2. Background on Tulsa**

### ***A. Tulsa's Growth before 1921***

When Oklahoma was established as a state in 1907, the area was seen as an opportunity for Black people seeking freedom from Southern oppression (Ross, 2001). In fact, of the approximately 50 “all-Black towns” (i.e., municipalities established for or by a predominantly Black population), more than 20 were located in Oklahoma (Ross, 2001). Despite the promising setting, the first bill passed after Oklahoma statehood was “Senate Bill One”, which aggressively segregated the state. The Greenwood neighborhood in Tulsa and its vastly different racial makeup from the rest of Tulsa was a mechanical consequence of these strict Jim Crow laws. See Appendix Figure A9 for a visual of where the Greenwood area was located within Tulsa.

Tulsa experienced an oil boom in the 1910's due to Glenn Pool, which was known as the “richest small oil field in the world” (Ellsworth, 2001). By 1921, Tulsa was home to more than 400 different oil and gas companies, 4 different railroads, and even a commercial airport (Ellsworth, 2001). Excitement about the prospects of oil and broader economic opportunity meant that Tulsa's population boomed between 1910 and 1920. To illustrate this empirically, we use county population data from the 1910-1940 US censuses.

Tulsa county more than tripled in population size from around 35,000 to 109,000 residents between 1910 and 1920. The evolution of Tulsa's population over time is shown in Figure 2, which reports Tulsa's population in 1910, 1920, 1930 and 1940 broken down by race (left graphs)

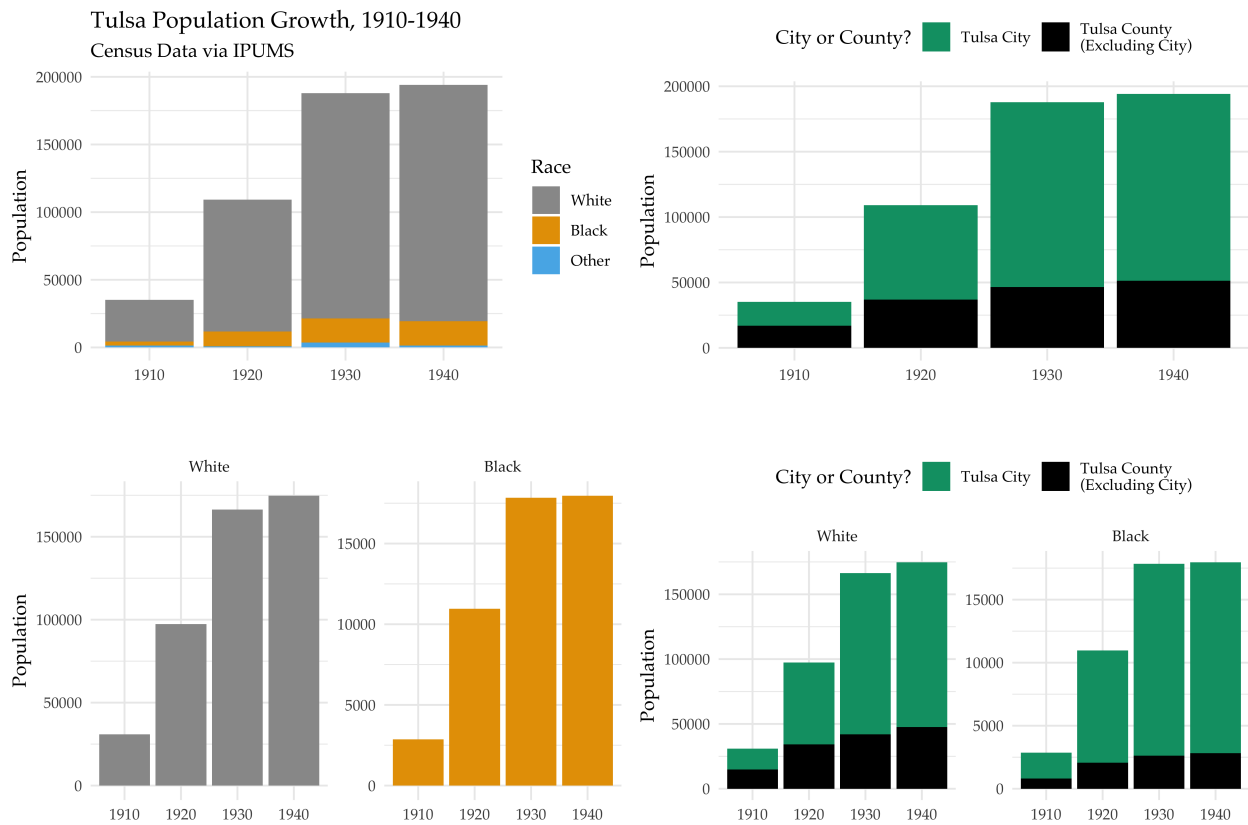


Figure 2: Population growth of rural and urban Tulsa county, 1910–1940

and by Tulsa county within/outside Tulsa city (right graphs). The figure shows that most of the population of Tulsa county was within the city of Tulsa. Both rural Tulsa county (i.e., Tulsa county excluding the city) and Tulsa city grew significantly from 1910 to 1920. The city grew four-fold while the rural parts of Tulsa county doubled. Figure 2 also shows that the Black Tulsans were consistently around 10 percent of the Tulsa population and that the Black and white populations of Tulsa grew at similar rates from 1910–1940.<sup>3</sup>

To put into context the population boom in Tulsa before the Massacre, we provide Appendix Table A10, that shows the 20 counties in the US with the highest ratios of 1920 to 1910 populations. Tulsa is the tenth county on the list. Note that many of the boom towns on this list are in Oklahoma and Texas, which were also experiencing population growth due to interest in oil. Figure 3 traces the population size of each county in Oklahoma between 1910 and 1940. Tulsa county is indicated by the red line and all other counties by gray lines. From the figure it is clear

<sup>3</sup>A few thousand people were not white or Black in the census over this whole time, as seen in the small blue slice in the upper-left panel of Figure 2. For the rest of the panels, we focus on only the Black and white population groups.

that, from 1910 to 1920, Tulsa was one of the fastest growing counties within Oklahoma in terms of population.

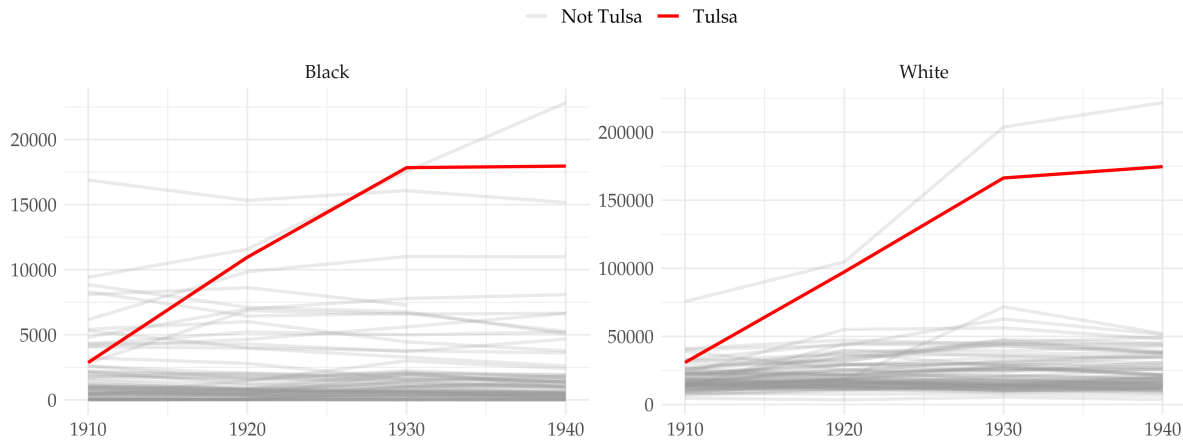


Figure 3: Population growth of Tulsa county compared to other counties in Oklahoma from 1910–1940

### B. *The 1921 Race Massacre*

On May 31, 1921, Dick Rowland, a Black man, was accused of assaulting a white woman named Sarah Page.<sup>4</sup> As Rowland was held at the courthouse, crowds of white people showed up outside. Members of the Black community grew concerned that the white mob might try to lynch Rowland – people were skeptical of law enforcement’s ability to keep defendants safe, as a mob had successfully taken a white man from the courthouse and lynched him in 1920.<sup>5</sup> A confrontation in the crowd between Black and white Tulsans lead to mob violence against the Black community. Motivated in part by fear that “the color line” was being erased, armed white people broke into Black homes and businesses (Ellsworth, 2001).<sup>6</sup> These white Tulsans then looted homes and

<sup>4</sup>Rowland was a shoe-shiner who would take an elevator, operated by Page, to use a restroom in a nearby building since the shine parlor where he worked had no restrooms for Black people (Ellsworth, 2001). There is no record as to what Sarah Page initially said to police who had interviewed her (Ellsworth, 2001).

<sup>5</sup>This was the Nida-Benton incident, described by Ellsworth (2001). Ellsworth (2001) also explains that ten days before riot, the media conflated crime rates in Tulsa with pointed commentary on Black men and white women: “[i]n a lengthy, front-page article concerning the ongoing investigation of the police department, not only did racial issues suddenly come to the foreground, but more importantly, they did so in a manner that featured the highly explosive subject of relations between black men and white women” (p.55).

<sup>6</sup>A 1921 NAACP report stated that “[t]he negro in Oklahoma has shared in the sudden prosperity that has come to many of his white brothers, and there are some colored men there who are wealthy. This fact has caused a bitter resentment on the part of the lower order of white people, who feel that these colored men [...] are exceedingly presumptuous in achieving greater economic prosperity than they who are members of a divinely superior race.”

businesses before setting them on fire with oil-rags and torches.<sup>7</sup> As many as five-hundred white men and boys were sworn-in by police officers as “Special Deputies” during the riot who then participated in burning homes (Ellsworth, 2001).

Thousands of Black Tulsans were taken to internment centers at gunpoint. They were detained during the Massacre in make-shift internment centers at the Convention Hall, the fairgrounds, and a baseball park (Goble, 2001, Ellsworth, 2001). Even after the restoration of order it was official policy to only release a Black detainee upon the application of a white person (Goble, 2001). The Frissell Memorial Hospital, the only hospital that served Black people, burned down, meaning that Black victims with injuries went untreated in internment centers or were eventually treated in a converted basement of a white hospital (Morningside Hospital). While there are 39 deaths confirmed by death certificates, the Red Cross estimates as many as 300 deaths (Snow, 2001, Brooks and Witten, 2001). One hundred years later, the city of Tulsa still plans to search for mass graves.<sup>8</sup>

In terms of property damage, 1,256 homes were burned down, leaving thousands homeless (Goble, 2001). In all, 35 square blocks of the Black community were completely destroyed. About \$25 million (in 2020 dollars) of property damage was estimated using Tulsa Real Estate Exchange Commission records, claims from Tulsa City Commission meetings, and court cases (O’Dell, 2001). This is surely an underestimate of actual losses since not all residents took insurance companies or the city to court. Professor Alicia Odewale estimates financial losses at \$50–100 million (Chang, 2019). Black residents who filed insurance claims were never compensated since companies, as it is was standard in their contracts, were not liable for loss caused by “riot”.<sup>9</sup> The Red Cross remained in Tulsa for months to provide relief. Despite the Red Cross’s enormous relief efforts, Ellsworth (2001) writes that “thousands of black Tulsans were forced to spend the winter of 1921–22 living in tents. Others simply left. They had had enough of Tulsa, Oklahoma” (p.88-89).

Months later, in the autumn of 1921, the *Tulsa World* ran an article saying “Grand Jury Blames Negroes for Inciting Race Rioting: Whites Clearly Exonerated” (Brophy, 2001). That

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<sup>7</sup>Some account also mention gunshots and the dropping of incendiaries from airplanes.

<sup>8</sup>Excavation at Oaklawn Cemetery was scheduled to begin in April 2020, but has been postponed due to COVID-19 (Brown, 2020, Trotter, 2020).

<sup>9</sup>The cases against insurance companies were inert for years and then dismissed in 1937 (Brophy, 2001). See Appendix Figure A7 for the “riot exclusion clause” language in contracts, as found in court documents at the Oklahoma Historical Society.

same autumn, Dick Rowland's case was dismissed because Sarah Page failed to appear in court (Brophy, 2001). For decades after 1921, Tulsa and Oklahoma possessed "historical amnesia" when it came to the Massacre, leaving it out of textbooks and newspapers.<sup>10</sup> The following words of Oklahoma Governor James B. A. Robertson seemed to dictate how the Massacre was approached: "riots are unfortunate affairs at all times and the less said about them the better for all concerned."<sup>11</sup> The 2020-21 academic year, will be the first year that the Massacre is included in the curriculum of all Oklahoma schools (Maxouris, 2020).

While our analysis examines aggregate figures and calculated effects of the Massacre, it is important to note that each person behind the aggregate numbers has their own story and experience. Concrete accounts of experiences during the massacre were collected in January and February 1999, by the *Tulsa World* and the *Oklahoma Eagle* newspapers, which put out calls requesting information on the 1921 Massacre from its readers. More than 150 people called in with family stories, eye witness accounts, and more. These accounts were then converted to draft write-ups of telephone conversations. Images of the text from some of these conversations, which are from the Oklahoma Historical Society's Tulsa Race Riot Commission Collection, are shown in Appendix Figure A10.

The four accounts shown in Figure A10, although brief, provide rich context to the experiences of those who experienced the Massacre. They describe a man, who after hearing of the riot, "tore down the stairs" to his family's apartment and "stationed himself with a shotgun at the top" (no. 25); firemen in Greenwood who were forced to "let it burn by armed white civilians" and who witnessed "two flat bed trucks with bodies" (no. 71); a private trash hauler who was forced to transport "six bodies to a hole... in Oaklawn Cemetery (no. 76); and a man "who had been in the riot and shot many Blacks... He said hundreds of them were buried under the railroad. He was proud of this and said he would do it again." (no. 37).

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<sup>10</sup>Even the *Tulsa Tribune's* "Fifteen Years Ago" feature failed to talk about the Massacre on its 15 year anniversary – "as as if the greatest catastrophe in the city's history simply had not happened at all" (Franklin and Ellsworth, 2001, p. 26).

<sup>11</sup>See Appendix Figure A8 for the full letter from which the quote is taken.

### 3. Data and Descriptives

#### A. *Measuring Outcomes*

We now turn to an overview of the primary outcomes of interest in our analysis. The finer details of each measure are provided in the Appendix. Our analysis uses the complete count U.S. census microdata from the 1910, 1920, 1930, and 1940 (Minnesota Population Center, 2019).

Given the nature of the Massacre, one of our primary variables of interest is home ownership. The census collected information on whether the home (where the interaction was taking place) was owned or rented. A home is classified as owned if it's owned by one of its inhabitants. Since people, unrelated to the household head, may also be living in a home as roomers, boarders, lodgers, or employees, the measure that we construct takes this into account by only counting individuals as living in an owned home if the home is owned by someone living there and that owner is a family member. As such, the variable that we construct is conceptually equivalent to asking: "Does someone in your family own the house you live in?".

The second measure that we are interested in is income. Unfortunately, the census does not record income directly. Instead, it must be proxied. The primary method we use to do this is to use an individual's reported occupation. Occupations have been assigned income values which are based on "the median total income (in hundreds of 1950 dollars) of all persons with that particular occupation in 1950."<sup>12</sup> In the analysis, we take the natural log of the income measure, which is less skewed (and more normally distributed) than the raw income measure.

In terms of education outcomes, we measure literacy as well as school attendance. Literacy, as captured by census enumerators, indicates if a person can read and write. When examining this outcome, we focus on children aged 12–22. The school attendance variable captures if a person had recently attended school. We focus on children ages 5–17 for this outcome to focus on the core school-attending population.

We also measure participation in the labor force. The 1910–1930 and 1940 labor force definitions are different within the census. From 1910 to 1930, "participation is defined as reporting any gainful occupation." In 1940, "participation follows the modern labor force definition", meaning "within a specific reference week, having a job from which one is temporarily absent (e.g., on vacation), working, or seeking work." To create a consistent definition across all census years in

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<sup>12</sup>See the description section at: <https://usa.ipums.org/usa-action/variables/OCCSCORE>



our analysis, we measure whether an individual is coded as being “in the labor force” and has a valid occupational response. When examining this outcome, we restrict the sample to individuals who are 18 years or older.

Further details on these variables can be found in Appendix A1.

## **B. *Empirical overview of Tulsa***

The Greenwood neighborhood boasted 191 businesses before the Race Massacre.<sup>13</sup> There were doctors, dentists, lawyers as well as two newspaper offices. Residents had access to a public library, two schools, and a hospital. The incredible economic success of a number of Black entrepreneurs such as Loula and John Williams (owners of the Dreamland Theater), O.W. Gurley (owner of the Gurley Hotel), and J.B. Stradford (owner of the 54-room Stradford Hotel) added to the striking picture of Tulsa as a “Black Wall Street”. However, as Ellsworth (2001) points out most Black-owned businesses were more modest than hotels or theaters, such as many small barber shops and groceries, and, moreover, “the vast majority of Greenwood’s adults were neither businessmen nor businesswomen, but worked long hours, under trying conditions, for white employers” (p.43). Legally barred from oil industry jobs and most manufacturing facilities, Black Tulsans they were largely unable to take up the professions that their white counterparts could enjoy during the county’s oil boom (Ellsworth, 2001).

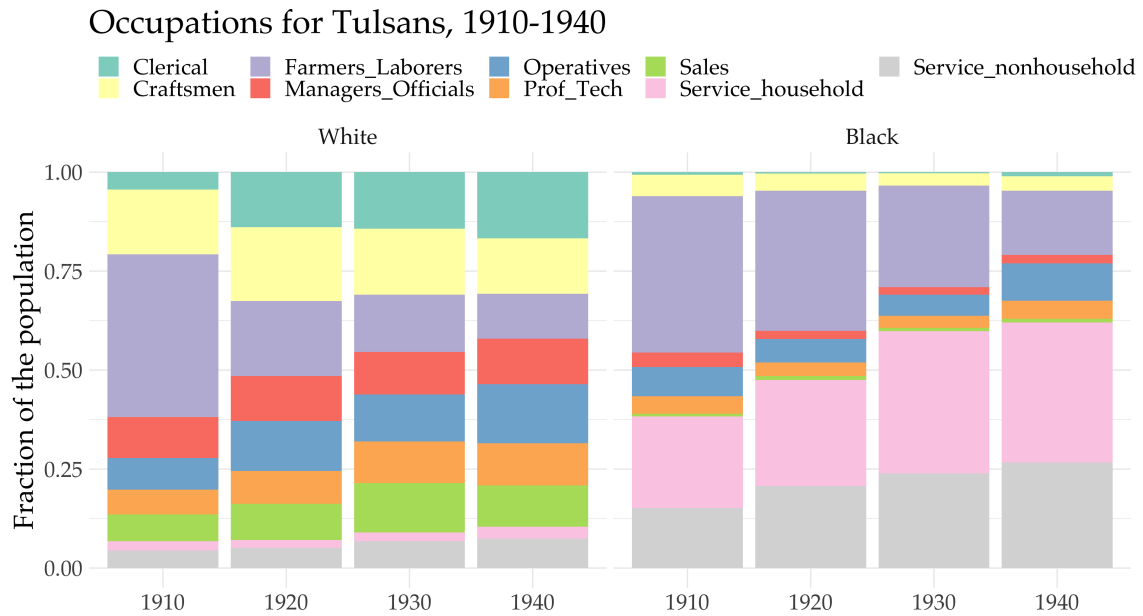
Madigan (2001) writes that by 1921, about a third of the Greenwood population lived in servant’s quarters of white Tulsa. Doormen and shoeshine boys would pick up tips of ten dollars per day (despite making five dollars per week). The city’s tight segregation laws meant that money earned in the white downtown area was then spent in Greenwood. Michelle Place, executive director of the Tulsa Historical Society and Museum, explains “[i]t is said within Greenwood every dollar would change hands 19 times before it left the community” (Clark, 2020).

Exploring the census data on occupation categories provides evidence consistent with these descriptive accounts. Figure 4 includes two panels. The top panel shows the occupation composition for the white and Black Tulsa populations from 1910 to 1940.<sup>14</sup> In 1920, around 48 percent of Black Tulsans in the labor force were in service jobs, compared with 7 percent of

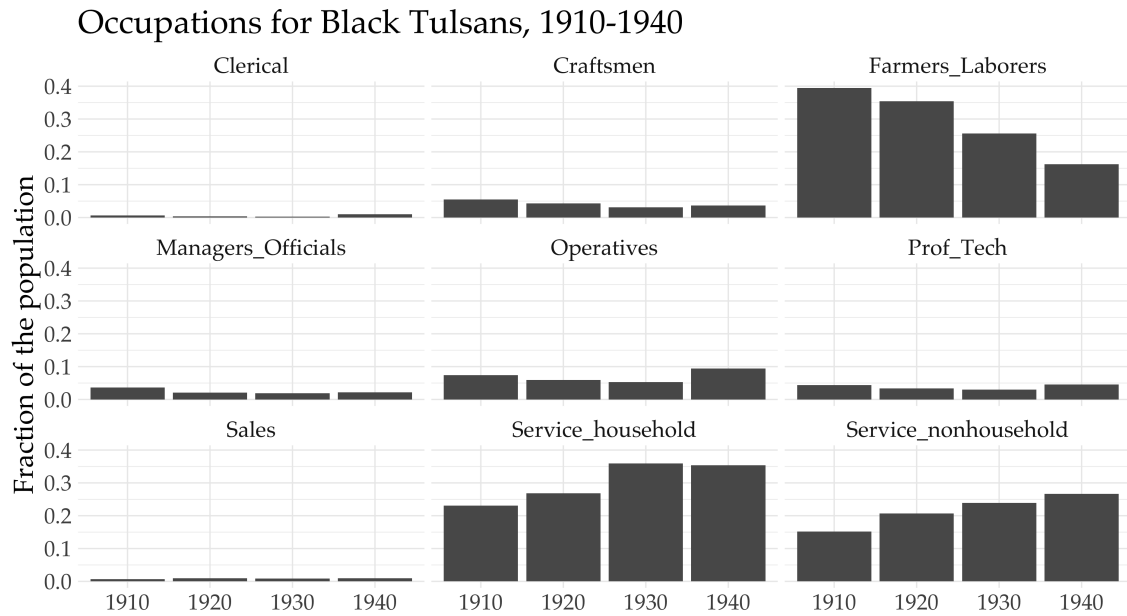
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<sup>13</sup>The 1920 city directories “listed 159 businesses in 1920; after the riot in the 1922 city directories, 120 businesses are listed (O’Dell, 2001).”

<sup>14</sup>As is standard in this draft, when talking about occupation we only consider individuals who are in the labor force and have a valid occupation code.



Subset to population in the labor force with a valid occupational code.



Subset to population in the labor force with a valid occupational code

Figure 4: Occupations in Tulsa, 1910–1940

white Tulsans. (For service in private households, the numbers are 27 and 2 percent, respectively.) Black Tulsans were also more likely to be farmers or laborers (or farm laborers) than were white Tulsans. The bottom panel of Figure 4 shows how occupation composition changes over time in the Black population of Tulsa. The main change is that the population shifts away from farmer and laborer occupations towards service occupations.

Of course, occupation codes might not capture some specific elements of what made Tulsa unique (like business ownership or entrepreneurship). If we consider Clarke's (2019) definition of business ownership – having employees according to the census – there are 41 Black Tulsans in 1920 who are employers. The three most common employer occupations are: 'managers, officials, and proprietors' (17), 'farmers (owners and tenants)' (11), and 'private household workers' (3). There are 559 who are self-employed (which is a broader category). The three most common self-employed occupations are: 'farmers (owners and tenants)' (185), 'laundresses, private household' (79), and 'managers, officials, and proprietors' (72).

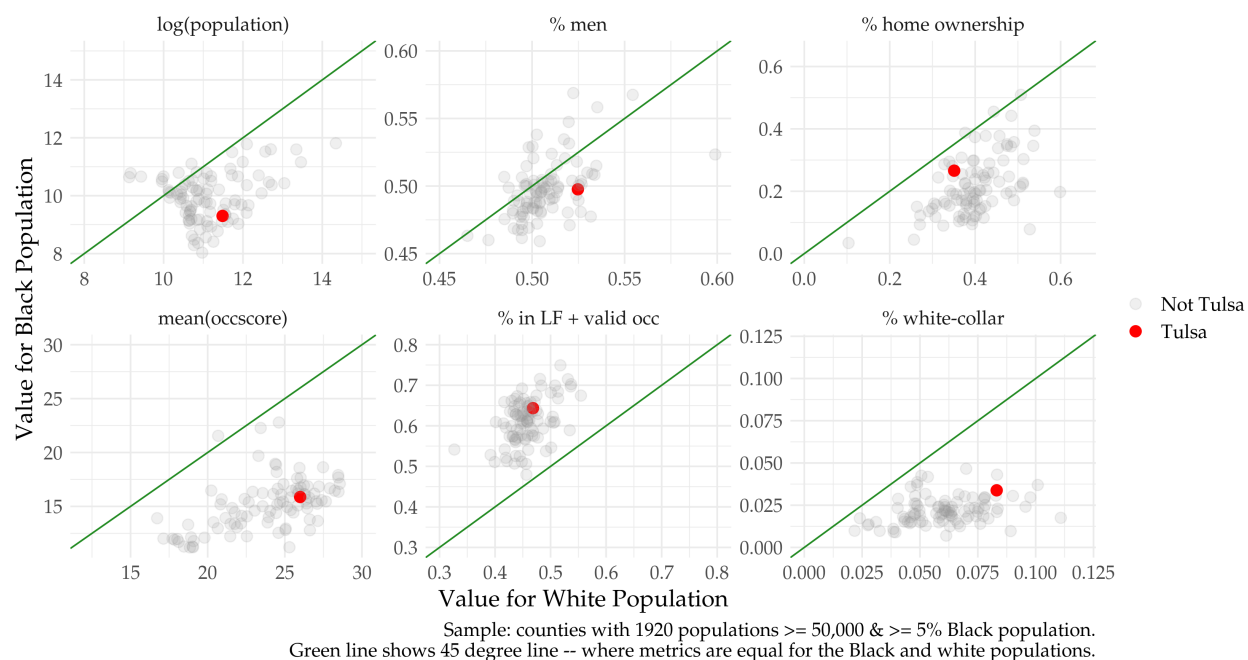
We next turn to an examination of how the relative economic status of Black people and white people in Tulsa compares to the relative status in other counties at the time. One narrative that has emerged is that of Tulsa being truly exceptional in terms of community affluence. According to the 1920 Census, Black people in Tulsa were wealthy, but Tulsa was not an extraordinary outlier in terms of community wealth, income, and occupation measures.

There were many other counties like Tulsa elsewhere in the United States. To see this, consider the top panel of Figures 5 which report a series of graphs. In each, the *y*-axis reports a county average of a particular 1920 statistic for Black people in the county and the *x*-axis reports the average for the same statistics but for white people. Each dot indicates a county. Figure 5 includes a sample of all counties with a 1920 population of at least 50,000 people and at least a 5 percent Black population, while Figure A11 (reported in the Appendix) further restricts the comparison sample to counties within the segregated South. In the graphs, Tulsa is indicated by a red dot and other counties by gray dots.

In Tulsa, the average home ownership rate was around 35% for white people and around 30% for Black people. While this Black-white gap was smaller than most counties in the U.S., the rate itself is not particularly high compared to other counties. The location of Tulsa relative to the distribution of each measure among Black residents in each county is shown in the bottom panels of Figures 5 and A11. This too shows that Tulsa was not an extreme outlier though it is on the

## Tulsa, OK compared to other counties in 1920

Using 1920 census data



## Tulsa, OK compared to other counties in 1920

Using 1920 census data

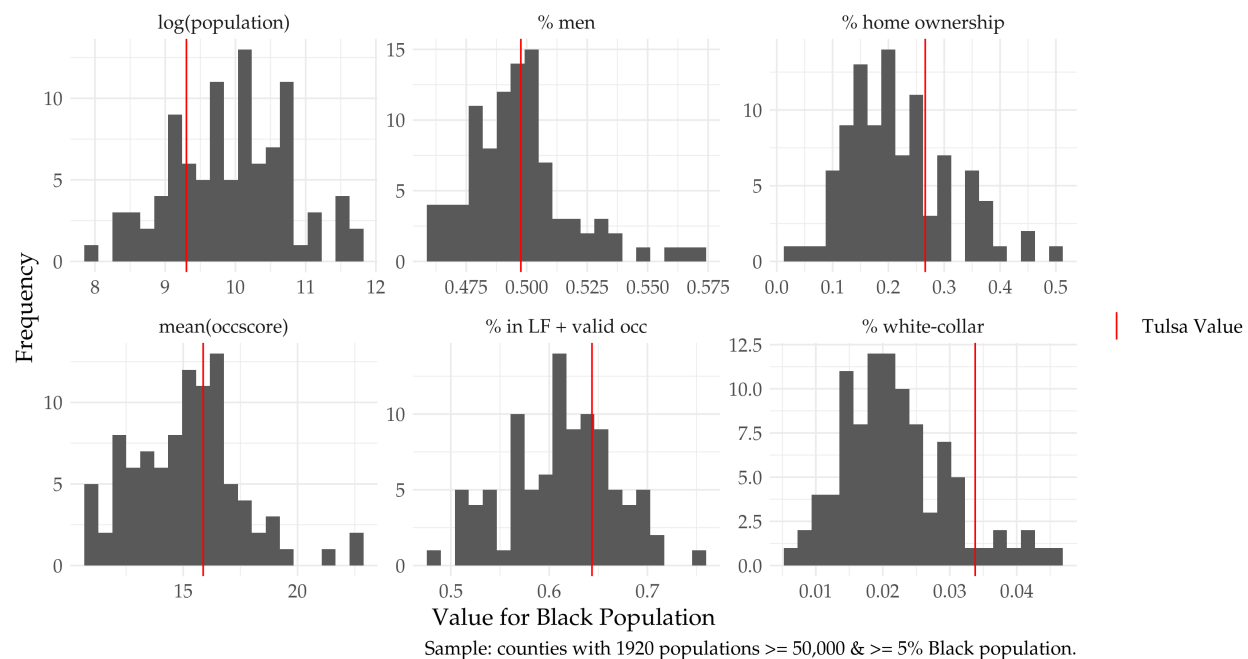


Figure 5: Comparing Black and white characteristics in Tulsa and all other counties with populations larger than 50,000 people and at least 5% Black population in the 1920 Census.

higher-end when it comes to white-collar occupations. In addition, even in terms of the equality between Black and white people, Tulsa does not appear to be a clear outlier.

The data suggest that Black Tulsa was a success story. Black wealth, as measured by home ownership rates, was high. The average occupational status was also high with a very high proportion of population engaged in white collar jobs. However, the data also suggest that there were also many other counties in the U.S., and even in the segregated South, that were similarly successful. This is particularly important for potential spillover effects, since knowledge of the events of the Tulsa Massacre may have been particularly salient for Black people living in counties that were similarly prosperous to Tulsa.

Having compared Tulsa to other counties in 1920, we now provide a comparison of the evolution of the different characteristics from 1910 to 1940. This is shown in Figure 6. Again, we see that while Tulsa does lie at the ends of some of the distributions of some variables, generally, it is not an extreme outlier. In addition, the pattern of change over time is typically similar to other counties. The one clear exception is the share of Black people who are in the labor force (and with a valid occupation score).<sup>15</sup> While the trend is slightly downward over time for other counties, for Tulsa there is a consistent increase between 1910 and 1930. Part of this may be due to the effects of the Massacre. We return to this when we report our estimates below.

## 4. Specifications and results: Place-based analysis

### A. Estimates without spillovers

To generate location-based estimates of the effect of the Massacre, we calculate means of our outcomes of interest at the level of race-county-year.<sup>16</sup> This approach allows us to estimate the effect of the Massacre on the place in which it happened and not necessarily on the individuals who experienced it given that they may have moved away.

We use a triple differences approach with the following specification:

$$y_{crt} = \psi_{rt} + \theta_{ct} + \tau_{cr} + \beta_1 (I_c^{Tulsa} \times I_r^{Black} \times I_t^{Post}) + \epsilon_{crt}, \quad (1)$$

where  $c$  denotes U.S. counties,  $t$  decades (1910–1940), and  $r$  race (either Black, white, or other). Thus, the unit of observation is a county by race by decade group. The dependent variable,  $y_{crt}$ , is

<sup>15</sup>In 1910, Tulsa has the highest white-collar occupation rate, but this falls with time in 1920 and 1930, which is likely driven in part by the labor force increase.

<sup>16</sup>For the binary variables, this is equivalent to calculating the share of the relevant population with that feature.

### Comparing counties over time, 1910-1940

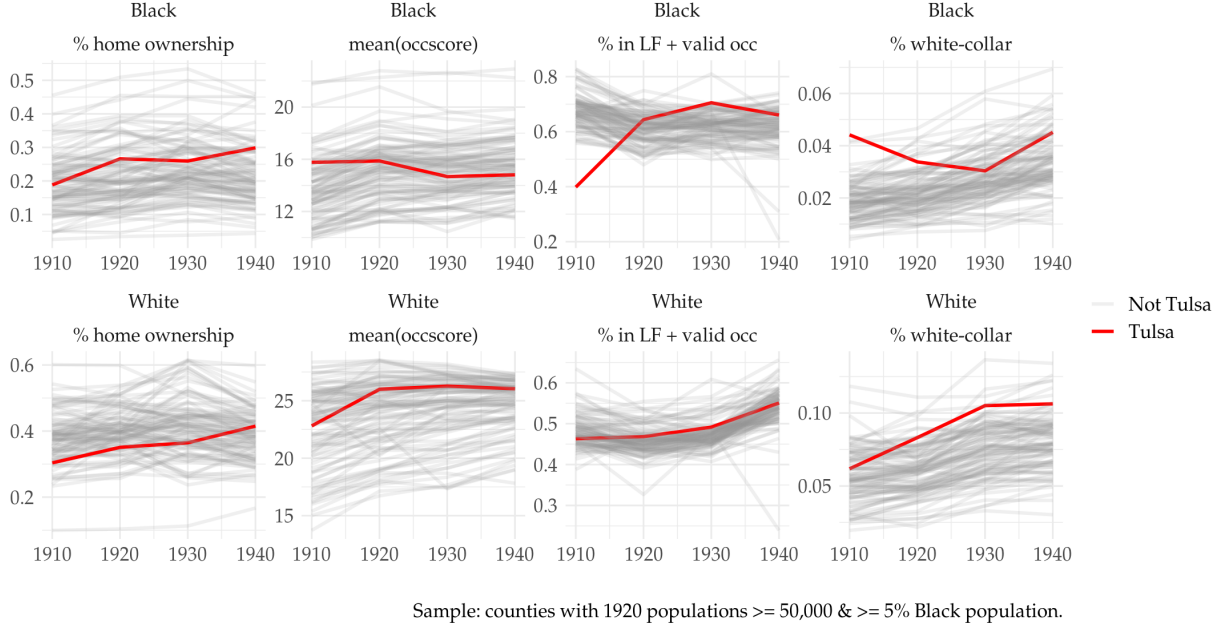


Figure 6: The growth trajectories of Tulsa compared to other counties, 1910–1940

the group mean of one of our outcomes of interest discussed above.  $I_c^{Tulsa}$  is an indicator variable that equals one if county  $c$  is Tulsa,  $I_r^{Black}$  is an indicator variable that equals one if the row is the aggregate for the Black county population, and  $I_t^{Post}$  is an indicator variable that equals one if decade  $t$  is after 1920. Our interest is in the coefficients for the interaction term  $\beta_1$ . These tell us the difference in the outcome of interest for Black Tulsans after the 1921 Massacre. The relevant double interactions are absorbed by the fixed effects that are also included in the specification, which include: decade-race fixed effects  $\psi_{rt}$ , decade-county fixed effects  $\theta_{ct}$ , and county-race fixed effects  $\tau_{cr}$ . We cluster standard errors at the county level.

Weighting by the relevant population of each observation, we estimate equation (1) using weighted least squares (WLS). We provide estimates of equation (1) for the full population, as well as separately by gender. This is motivated by the possibility that the estimated effects of interest likely differ by gender.<sup>17</sup>

Table 1 reports WLS estimates of equation (1) for the full population, while Tables 2 and 3 report estimates for men and women, respectively. In column 1, we report estimates where the dependent variable is the fraction of individuals who live in a home that is owned rather than rented. In all three samples, we find a negative and significant estimate that ranges from  $-.045$

<sup>17</sup>When we examine gender-specific populations, we weight by the gender-specific population within a group.

Table 1: Estimating place-based Massacre effects, full sample

	Dependent variable is the average of:				
	Home ownership	Log(Occscore)	Literacy	School Attendance	Labor Force Participation
	(1)	(2)	(3)	(4)	(5)
Post x Tulsa x Black	−0.048*** (0.004)	−0.073*** (0.004)	−0.027*** (0.002)	0.003 (0.003)	0.088*** (0.002)
Year-County FEs?	Y	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y	Y
Average for Black Tulsa, 1920	0.266	2.765	0.975	0.757	0.644
Sample	All	in labor force	12<=age<=22	5<=age<=17	18<=age
Observations	30,496	29,413	20,363	26,640	30,296

Notes: The table reports WLS estimates. Coefficients are reported with standard errors (clustered by county) in parentheses. The unit of observation is a racial group (Black, white, and other), living in a county, and observed in a census year. The dependent variables, reported at the top of the table, are averages for each observation. The population of each observation is used as weights for the WLS estimates. All specifications include decade-race fixed effects, decade-county fixed effects, and county-race fixed effects. \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1% levels.

to −0.50 or 4.5 to 5.0 percentage points, depending on the sample. This is a sizable effect given that the sample average for the Black population of Tulsa in 1920 is about 26 percent depending on the sample.

In column 2, we report estimates where the dependent variable is the natural log of estimated income as determined by their reported occupation. The sample in the analysis includes all individuals who are in the labor force with an occupational response. We find that the estimated effect of the Massacre on the income measure is negative and statistically significant in all three samples. According to the full-sample estimates, the Massacre reduced average incomes by 7.3 percent, which is a sizable effect. Interestingly, when one looks at the effects for the men's or women's samples, the effects are approximately 2.5 percent, which is smaller in magnitude than the aggregate effects. As we will see, part of this is explained by the entry of women, who are in lower-paying occupations, into the labor force.

Of course, the occupation-based income measure is only a rough proxy of actual income. It does, however, provide an income figure on earnings-power of occupations. To test the robustness of this finding, we estimate auxiliary regressions where the dependent variables are alternative measures of occupational status or prestige. A detailed description of the construction of each measure is provided in the data appendix. The estimates are reported in columns 1–4 of Table 4. Across all four measures, we see consistent evidence of occupational downgrading among the



Table 2: Estimating place-based Massacre effects, men

	Dependent variable is the average of:				
	Home ownership	Log(Occscore)	Literacy	School Attendance	Labor Force Participation
	(1)	(2)	(3)	(4)	(5)
Post x Tulsa x Black	−0.045*** (0.004)	−0.024*** (0.003)	−0.029*** (0.002)	−0.007** (0.003)	0.010*** (0.002)
Year-County FEs?	Y	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y	Y
Average for Black Tulsa, 1920	0.255	2.971	0.968	0.757	0.834
Sample	All	in labor force	12<=age<=22	5<=age<=17	18<=age
Observations	30,031	29,188	19,722	25,863	29,790

Notes: The table reports WLS estimates. Coefficients are reported with standard errors (clustered by county) in parentheses. The unit of observation is a racial group (Black, white, and other), living in a county, and observed in a census year. The dependent variables, reported at the top of the table, are averages for each observation. The population of each observation is used as weights for the WLS estimates. All specifications include decade-race fixed effects, decade-county fixed effects, and county-race fixed effects. \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1% levels.

Table 3: Estimating place-based Massacre effects, women

	Dependent variable is the average of:				
	Home ownership	Log(Occscore)	Literacy	School Attendance	Labor Force Participation
	(1)	(2)	(3)	(4)	(5)
Post x Tulsa x Black	−0.050*** (0.004)	−0.025*** (0.009)	−0.025*** (0.002)	0.013*** (0.003)	0.137*** (0.003)
Year-County FEs?	Y	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y	Y
Average for Black Tulsa, 1920	0.277	2.218	0.981	0.758	0.452
Sample	All	in labor force	12<=age<=22	5<=age<=17	18<=age
Observations	28,163	24,760	19,091	25,651	27,810

Notes: The table reports WLS estimates. Coefficients are reported with standard errors (clustered by county) in parentheses. The unit of observation is a racial group (Black, white, and other), living in a county, and observed in a census year. The dependent variables, reported at the top of the table, are averages for each observation. The population of each observation is used as weights for the WLS estimates. All specifications include decade-race fixed effects, decade-county fixed effects, and county-race fixed effects. \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1% levels.

Black population of Tulsa following the Massacre. The same estimates by gender are reported in columns 1–4 of Tables A11 and A12. We find that the estimated effects for men are also negative and statistically significant. Interestingly, the magnitudes for the men’s sample are similar to the full sample. The estimates for women appear to be less robust. The sign of the estimated effect depends on which measure one considers. The estimated effect of the Massacre is negative for only two of the four occupation-based measures. This is driven by differences in how particularly important occupations are ranked. Specifically, for Black women in Tulsa, the vast majority in the labor force report being a teacher (see Appendix Figure A9). Thus, the estimated effects are particularly sensitive to how the occupation of teacher is scored in the rankings.

Overall, the findings indicate that the Massacre had a negative effect on occupation status for Black people in general and that this effect is driven by occupational downgrading among men.

We next turn to activities other than employment, beginning with schooling. When considering the potential effects of the Massacre on educational attainment, there are different potential forces. The disruption, trauma, and economic loss caused by the Massacre will tend to reduce educational attainment. However, it is also possible that the display of violence made the Black population perceive their wealth as insecure and incentivized them to invest in alternative forms of wealth that could not be as easily destroyed such as human capital. Such a mechanism has been found in other similar contexts (Becker, Grosfeld, Grosjean, Voigtlaender and Zhuravskaya, 2020) and it is consistent with recent findings that Black people within the contemporary United States tend to have higher levels of college attainment once one conditions on observables (Mangino, 2010).

The two measures of education that we use are both intended to capture the extent to which youth are being educated. The first measure is the literacy rate among individuals aged 12–22. The second is school attendance among individuals who are aged 5–17. The estimates are reported in columns 3 and 4 of Tables 1–3. For this outcome, we find different effects for young men and young women. For the male sample, we estimate a negative effect of the Massacre on literacy and school attendance (in the last few months).<sup>18</sup> For women, we also find a negative effect on literacy, but a positive effect on school attendance. The full sample shows a negative (and significant) effect on literacy and a positive (but insignificant) effect on school attendance. Thus, the estimates appear to show a robust adverse effect of the Massacre on the literacy of Black

<sup>18</sup>See the Data Appendix for changes in the reference time period for school attendance.

Table 4: Estimating place-based Massacre effects (robustness), full sample

	Dependent variable is the average of:				
	SEI Score	Occupational Earnings Score	Occupational Prestige Score	Occupational Status Score	Labor Force Participation (2)
	(1)	(2)	(3)	(4)	(5)
Post x Tulsa x Black	-1.606*** (0.101)	-12.668*** (1.193)	-0.686*** (0.074)	-13.327*** (1.176)	0.131*** (0.002)
Year-County FEs?	Y	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y	Y
Average for Black Tulsa, 1920	13.869	26.253	23.368	23.256	0.729
Sample	in labor force	in labor force	in labor force	in labor force	18<=age
Observations	29,413	29,413	29,413	29,413	30,296

Notes: The table reports WLS estimates. Coefficients are reported with standard errors (clustered by county) in parentheses. The unit of observation is a racial group (Black, white, and other), living in a county, and observed in a census year. The dependent variables, reported at the top of the table, are averages for each observation. The population of each observation is used as weights for the WLS estimates. All specifications include decade-race fixed effects, decade-county fixed effects, and county-race fixed effects. \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1% levels.

youth, while the adverse effect on school attendance appears to only be observed for men.

As was noted, an important aspect of our previous occupation estimates is that they are conditional on employment. We now turn to an examination of whether entry into the labor force was affected by the Massacre. The estimates are reported in column 5 of Tables 1–3, where the dependent variable is the fraction of individuals 18 years or older who are in the labor force. We find that the Massacre resulted in a general increase in labor force participation (Table 1). Further, this appears to be driven primarily by women than by men (Tables 2 and 3). The estimated effect of the Massacre for women is a 13.7 percentage point increase in the labor force participation rate, while the same effect for men is a 1.0 percentage point increase. Both estimates are precisely estimated and statistically different from zero.

We also check the robustness of our findings to the use of an alternative measure of labor force participation. The variable is measured as the off-the-shelf census labor force participation measure, not taking into account the definitional change in 1940. The estimates, which are reported in column 5 of Tables 4, A11, and A12, show that the estimates are qualitatively identical when we use this alternative measure.

While there are many explanations for this, it is consistent with those on the margin of employment, who are primarily women but also some men, being drawn into work out of necessity due to the Massacre. The magnitudes that we estimate are large.

### *Estimates allowing for Oklahoma-level spillovers*

We next turn to estimates that allow for the possibility that the Tulsa Massacre also affected the behavior of Black residents living in other communities near to Tulsa. This could either be due to economic linkages or to the effects of the dramatic event on the fears and concerns of the Black population, which may have affected their economic decisions.

We estimate the following specification, which allows for the possibility of spillovers to the Black population of Oklahoma:

$$y_{crt} = \psi_{rt} + \theta_{ct} + \tau_{cr} + \beta_1 (I_c^{Tulsa} \times I_r^{Black} \times I_t^{Post}) + \beta_2 (I_c^{Other\ OK} \times I_r^{Black} \times I_t^{Post}) + \epsilon_{crt}. \quad (2)$$

As before,  $c$  denotes U.S. counties,  $s$  states,  $t$  decades (1910–1940), and  $r$  race (either Black, white, or other). The dependent variables  $y_{cst}$  are the same outcomes of interest discussed above.  $I_c^{Tulsa}$  is an indicator variable that equals one if county  $c$  is Tulsa,  $I_c^{Other\ OK}$  is an indicator that equals one if county  $c$  is not in Tulsa but is in Oklahoma,  $I_r^{Black}$  is an indicator variable that equals one if the observation is for the Black population of the county, and  $I_t^{Post}$  is an indicator variable that equals one if decade  $t$  is after 1920. Our interest is in the coefficients for the two triple-interaction terms,  $\beta_1$  and  $\beta_2$ . These tell us the difference in the outcome of interest for Black Tulsans and Black Oklahomans (outside Tulsa) after the 1921 Massacre. The relevant double interactions are absorbed by the following fixed effects, which are also included in the specification: decade-race fixed effects,  $\psi_{rt}$ , decade-county fixed effects  $\theta_{ct}$ , and county-race fixed effects  $\tau_{cr}$ . Standard errors are clustered at the county-level.

We weight by the year's county population and use WLS to estimate specification (2) for all individuals and then separately for men and women. The estimates of equation (2) are reported in Tables 5–7. Each column reports estimates for the same dependent variables as in Tables 1–3. Interestingly, we find evidence of spillover effects of the Massacre to Black people living outside of Tulsa county but within Oklahoma. In general, we find that the spillover effects are the same sign as the direct effect but are smaller in magnitude. In addition, we find that our estimated direct effects of the Massacre remain very similar when we account for the spillover effects.

Column 1 reports estimates for home ownership. We estimate sizable negative spillover effects for this outcome. The estimated magnitudes are about 80% the magnitude of the direct effect. While it is possible that this is due to economic spillovers since commercial links did exist between the Black communities of Oklahoma, it is also possible that the effects are due to the effects

Table 5: Estimating place-based Massacre effects with spillovers, full sample

	Dependent variable is the average of:				
	Home ownership	Log(Occscore)	Literacy	School Attendance	Labor Force Participation
	(1)	(2)	(3)	(4)	(5)
Post x Tulsa x Black	−0.049*** (0.004)	−0.073*** (0.005)	−0.027*** (0.002)	0.003 (0.003)	0.089*** (0.002)
Post x OK x Black	−0.040*** (0.012)	−0.032** (0.015)	−0.026*** (0.005)	0.007 (0.009)	0.021** (0.009)
Year-County FEs?	Y	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y	Y
Average for Black Tulsa, 1920	0.266	2.765	0.975	0.757	0.644
Sample	All	in labor force	12<=age<=22	5<=age<=17	18<=age
Observations	30,496	29,413	20,363	26,640	30,296

*Notes:* The table reports WLS estimates. Coefficients are reported with standard errors (clustered by county) in parentheses. The unit of observation is a racial group (Black, white, and other), living in a county, and observed in a census year. The dependent variables, reported at the top of the table, are averages for each observation. The population of each observation is used as weights for the WLS estimates. All specifications include decade-race fixed effects, decade-county fixed effects, and county-race fixed effects. \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1% levels.

that the Massacre had on the expectations of the Black population within Oklahoma. The data are consistent with the dramatic event being taken as a warning by other Black communities, particularly prosperous ones, within Oklahoma. Rather than purchasing homes, which were a highly visible form of wealth, Black people may have accumulated less wealth or other forms of wealth resulting in lower rates of home ownership.

We also find negative spillover effects for the occupation-based income measure among the full population and among men and women, although the within-gender effects are insignificant (column 2 of Tables 6 and 7). The estimated spillover effect for the full sample is a decline of 3.2 percent, which is a non-trivial value. For men and women, the effect is 1.8 and 0.05 percent, respectively. The fact that the within-gender effects are smaller in magnitude indicates that a large proportion of the aggregate spillover effect is due to Black women, who are in lower paying occupations, entering the workforce.

We also, find evidence for literacy spillovers, which is found in all three samples. The magnitude of the effect – about 2.5 percentage points – is similar to that of the direct effect. We find no evidence for spillovers when we examine school attendance. In all three samples, the estimates spillover effect is fairly small in magnitude and statistically insignificant.

Lastly, we now turn to labor force participation. We find positive, significant, and sizable

Table 6: Estimating place-based Massacre effects with spillovers, men

	Dependent variable is the average of:				
	Home ownership	Log(Occscore)	Literacy	School Attendance	Labor Force Participation
	(1)	(2)	(3)	(4)	(5)
Post x Tulsa x Black	−0.046*** (0.004)	−0.024*** (0.003)	−0.029*** (0.003)	−0.006** (0.003)	0.010*** (0.002)
Post x OK x Black	−0.036*** (0.013)	−0.018 (0.012)	−0.028*** (0.006)	0.009 (0.009)	−0.019** (0.009)
Year-County FEs?	Y	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y	Y
Average for Black Tulsa, 1920	0.255	2.971	0.968	0.757	0.834
Sample	All	in labor force	12<=age<=22	5<=age<=17	18<=age
Observations	30,031	29,188	19,722	25,863	29,790

*Notes:* The table reports WLS estimates. Coefficients are reported with standard errors (clustered by county) in parentheses. The unit of observation is a racial group (Black, white, and other), living in a county, and observed in a census year. The dependent variables, reported at the top of the table, are averages for each observation. The population of each observation is used as weights for the WLS estimates. All specifications include decade-race fixed effects, decade-county fixed effects, and county-race fixed effects. \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1% levels.

spillover effects for the full sample (2.1 percentage point increase) and for women (4.8 percentage point increase). These effects are about 1/4 to 1/3 the magnitudes of the direct effect. For men, we continue to estimate a very small positive direct effect (1.0 percentage point increase). Interestingly, we find a sizable, and significant, negative spillover effect (1.9 percentage point decrease). Thus, according to the estimates, the Massacre resulted in a decrease of labor force participation by men outside of Tulsa but within Oklahoma.

Estimates examining the alternative measures of occupational status and labor force participation are reported in Appendix Tables A13 –A15 for each of the three samples. We find that while the spillover estimates appear sensitive to the occupation ranking that one uses, the direct effect of the Massacre on the Black population of Tulsa remains robust even when accounting for spillovers. The findings for labor force participation are very similar when we use the alternative measure.

Table 7: Estimating place-based Massacre effects with spillovers, women

	Dependent variable is the average of:				
	Home ownership (1)	Log(Occscore) (2)	Literacy (3)	School Attendance (4)	Labor Force Participation (5)
Post x Tulsa x Black	−0.051*** (0.004)	−0.025*** (0.009)	−0.026*** (0.002)	0.013*** (0.003)	0.137*** (0.003)
Post x OK x Black	−0.044*** (0.012)	−0.005 (0.030)	−0.024*** (0.005)	0.006 (0.011)	0.048*** (0.015)
Year-County FEs?	Y	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y	Y
Average for Black Tulsa, 1920	0.277	2.218	0.981	0.758	0.452
Sample	All	in labor force	12<=age<=22	5<=age<=17	18<=age
Observations	28,163	24,760	19,091	25,651	27,810

*Notes:* The table reports WLS estimates. Coefficients are reported with standard errors (clustered by county) in parentheses. The unit of observation is a racial group (Black, white, and other), living in a county, and observed in a census year. The dependent variables, reported at the top of the table, are averages for each observation. The population of each observation is used as weights for the WLS estimates. All specifications include decade-race fixed effects, decade-county fixed effects, and county-race fixed effects. \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1% levels.



## 5. Discussion and Preliminary Conclusions

We have reported preliminary estimates of the effects of the 1921 Tulsa Massacre. The estimates use a place-based triple differences approach and estimate the effect of the Massacre on the Black population of Tulsa. The estimates compare Black people to white people, within Tulsa county versus elsewhere, before versus after the 1921 Massacre.

We find that the Massacre is associated with a decline in home ownership, lower average occupational status, less educational attainment, and with higher rates of labor force participation, particularly for women. We also find evidence of spillover effects to other Black people within Oklahoma, which tend to be in the same direction as the direct effects, although smaller in magnitude. The spillovers could be due to economic linkages between Tulsa and the Black communities of the state or they could be due to knowledge of the Massacre changing expectations and incentives, which had economic consequences. Future research aims to better understand the exact nature of these spillovers.

In ongoing work, we seek to better understand many aspects of these preliminary findings. An important part of our larger project involves the matching of respondents (and parents and children) across census years, which allows us to study the longer-term intergenerational effects of the Massacre by tracing individuals and their descendants even if they relocate. This allows us to estimate the effects of the Massacre on the descendants of those who experienced the events. It is possible that individuals who were not alive during the Massacre are still affected by it through the intergenerational persistence of wealth and economic well-being.

Another part of our ongoing endeavors is the linking (and digitization when necessary) of diverse historical sources, including the complete-count micro-Censuses (from 1910, 1920, 1930 and 1940), census enumeration maps, court records, death records, historical accounts, genealogical records, and the Tulsa City Directory, which is available annually. These efforts will allow us to better understand whether different experiences during the Massacre, such as the extent of property loss or death of family, friends, or loved ones, is an important determinant of the magnitude and nature of the effects. In addition to the purely economic outcomes that we examine here, in future research we will also examine a variety of outcomes that provide evidence about the psychological or social effects of the massacre.

## References

- Acharya, Avidit, Matthew Blackwell, and Maya Sen**, "The Political Legacy of American Slavery," *Journal of Politics*, 2016, 78 (3), 621–641.
- Alsan, Marcella and Marianne Wanamaker**, "Tuskegee and the Health of Black Men," *Quarterly Journal of Economics*, 2018, 133 (1), 407–455.
- Bautista, Maria Angélica**, "Political Effects of State-Led Repression: The Chilean Case," 2015. Working Paper, University of Chicago.
- Becker, Sascha, Irena Grosfeld, Pauline Grosjean, Nico Voigtlaender, and Ekaterina Zhuravskaya**, "Forced Migration and Human Capital: Evidence from Post-WWII Population Transfers," *American Economic Review*, 2020, 110 (5), 1430–1463.
- Blattman, Christopher and Jeannie Annan**, "The consequences of child soldiering," *The review of economics and statistics*, 2010, 92 (4), 882–898.
- Brooks, Robert and Allan Witten**, "The Investigation of Potential Mass Grave Locations for the Tulsa Race Riot," *Tulsa Race Riot: A Report by the Oklahoma Commission to Study the Tulsa Race Riot of 1921*, 2 2001.
- Brophy, Alfred**, "Assessing State and City Culpability: The Riot and the Law," *Tulsa Race Riot: A Report by the Oklahoma Commission to Study the Tulsa Race Riot of 1921*, 2 2001.
- Brown, L DeNeen**, "Tulsa Plans to Dig for Suspected Mass Graves from a 1921 Race Massacre," *The Washington Post*, 2 2020.
- Chang, Natalie**, "The Massacre of Black Wall Street," *The Atlantic*, 2019.
- Clark, Alexis**, "Tulsa's 'Black Wall Street' Flourished as a Self-Contained Hub in Early 1900s," *History.com*, 2020.
- Clarke, Geoffrey**, "Banking on African-American Business," 2019. Working paper, Rutgers University.
- Collins, William and Robert Margo**, "The Economic Aftermath of the 1960s Riots in American Cities: Evidence from Property Values," *Journal of Economic History*, 2007, 67 (4), 849–883.
- Collins, William J. and Robert A. Margo**, "The Labor Market Effects of the 1960s Riots," *Brookings-Wharton Papers on Urban Affairs*, 2004, 2004 (1), 1–46.
- Cook, Lisa**, "Violence and Economic Activity: Evidence from African American Patents, 1870–1940," *Journal of Economic Growth*, 2014, 19 (2), 221–257.
- , **Trevon Logan, and John M. Parman**, "Rural Segregation and Racial Violence: Historical Effects of Spatial Racism," *American Journal of Economics and Sociology*, 2018, 77 (3–4), 821–847.
- Craemer, Thomas, Trevor Smith, Brianna Harrison, Trevon Logan, Wesley Bellamy, and William Darity Jr**, "Wealth Implications of Slavery and Racial Discrimination for African American Descendants of the Enslaved," *The Review of Black Political Economy*, 2020, pp. 1–37.
- Ellsworth, Scott**, "The Tulsa Race Riot," *Tulsa Race Riot: A Report by the Oklahoma Commission to Study the Tulsa Race Riot of 1921*, 2 2001.
- Franklin, John Hope and Scott Ellsworth**, "History Knows No Fences: An Overview," *Tulsa Race Riot: A Report by the Oklahoma Commission to Study the Tulsa Race Riot of 1921*, 2 2001.

- Goble, Danney**, "Final Report of the Oklahoma Commission to Study the Tulsa Race Riot of 1921," *Tulsa Race Riot: A Report by the Oklahoma Commission to Study the Tulsa Race Riot of 1921*, 2 2001.
- Halliburton, R.**, "The Tulsa Race War of 1921," *Journal of Black Studies*, 1972, 2 (3), 333–357.
- Horner, Maxine**, "Epilogue," *Tulsa Race Riot: A Report by the Oklahoma Commission to Study the Tulsa Race Riot of 1921*, 2 2001.
- Krehbiel, Randy**, "1921 centennial commission to replace Riot with Massacre in official title," *Tulsa World*, 11 2018.
- Logan, Trevon**, "Whitelashing: Black Politicians, Taxes, and Violence," 2019. NBER Working Paper No. 26014.
- Madigan, Tim**, *The Burning: Massacre, Destruction, and the Tulsa Race Riot of 1921* 2001.
- Mangino, William**, "Race to College: The "Reverse Gap"," *Race Soc Probl*, 2010, 2, 164–178.
- Maxouris, Christina**, "The 1921 Tulsa Race Massacre will Soon be a Part of the Curriculum for Oklahoma Schools," *CNN*, 2020.
- Messer, Chris M.**, "The Tulsa Race Riot of 1921: Toward an Integrative Theory of Collective Violence," *Journal of Social History*, 2011, 44 (4), 1217–1232.
- , **Thomas E. Shriver, and Alison E. Adams**, "The Destruction of Black Wall Street: Tulsa's 1921 Riot and the Eradication of Accumulated Wealth," *American Journal of Economics and Sociology*, 2018, 77 (3–4), 789–819.
- Minnesota Population Center**, "Integrated Public Use Microdata Series [dataset]," <https://doi.org/10.18128/D020.V7.2> 2019.
- Nunn, Nathan and Leonard Wantchekon**, "The Slave Trade and the Origins of Mistrust in Africa," *American Economic Review*, 2011, 101 (7), 3221–3252.
- O'Dell, Larry**, "Riot Property Loss," *Tulsa Race Riot: A Report by the Oklahoma Commission to Study the Tulsa Race Riot of 1921*, 2 2001.
- Ponce, Omar Garcia and Leonard Wantchekon**, "Echoes of Colonial Repression: The Long-Term Effects of the 1947 Revolt upon Political Attitudes in Madagascar," in "APSA 2011 Annual Meeting Paper" 2011.
- Ross, Don**, "Prologue," *Tulsa Race Riot: A Report by the Oklahoma Commission to Study the Tulsa Race Riot of 1921*, 2 2001.
- Snow, Clyde**, "Confirmed Deaths: A Preliminary Report," *Tulsa Race Riot: A Report by the Oklahoma Commission to Study the Tulsa Race Riot of 1921*, 2 2001.
- Trotter, Matt**, "Tulsa Mass Graves Excavation Postponed over COVID-19 Threat," *Public Radio Tulsa*, 2020.
- Williams, Jhacova**, "Historical Lynchings and Contemporary Voting Behavior of Blacks," 2018. Mimeo, Louisiana State University.

## A1. Data: Measurement and Sources

### *Outcomes of interest*

We use complete count U.S. census microdata from the 1910, 1920, 1930, and 1940 (Minnesota Population Center, 2019). These datasets include detailed information at the person-level. We describe below the outcome variables of interest in this draft.<sup>19</sup>

### *Home ownership*

We want to capture whether someone in a person’s family owns their home. Currently, the ownership variable sometimes only shows whether someone in the household head’s family owns the home, meaning a servant can have an “owned” value for her home even though it’s really her employer who owns the home.

The measure we construct takes non-primary-family members into account by only counting individuals as living in an owned home if the home is owned by someone living there and that owner is a family member. On a technical level, under our definition, a person owns a home if and only if they are marked as living in an “owned home” in the census and they are in the primary family unit.

Our slight alteration to this variable makes it consistent over time.<sup>20</sup> The way the home ownership variable was assigned to non-family house hold members differs based on census year. For instance, in 1930 the questionnaire instructions differentiate between family units in the same household. But in 1940, they do not.

As such, we make the variable equivalent of the question “does someone in your family own the house you live in?” to get at a *person-level* of “home ownership” rather than a *household-level* of home ownership. Our home ownership variable is a binary variable for each person that is the same at the family-level.

### *Occupation-based income proxy*

We use a measure of income constructed based on occupation responses, called the occupational income score, *occscore*. The variable, “assigns each occupation in all years a value representing

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<sup>19</sup>Highest grade of schooling and educational attainment are also variables of interest but are only available in 1940.

<sup>20</sup>See the questionnaire text at: <https://usa.ipums.org/usa-action/variables/OWNERSHP>

the median total income (in hundreds of 1950 dollars) of all persons with that particular occupation in 1950.” The measure converts occupational responses in the census median income values. IPUMS documentation explains that “[f]or years prior to 1940, information on occupation was collected for persons who had not permanently retired”, but, in 1940, “only persons in the labor force responded to the occupation inquiry.” Therefore, to “construct a fully compatible universe,” we follow IPUMS recommendations and restrict the sample to persons currently in the labor force with valid occupational responses.<sup>21</sup>

Since we measure occupational scores for those in the labor force with valid occupation responses, our income measure is necessarily an intensive-margin measure of economic status. That is, the measure will always be non-zero. In the analysis, we take the natural log of the measure, which is less skewed than the raw measure.

For reference, the ten most common white collar occupations in Tulsa in the 1920 census, broken down by race, are reported in Appendix Tables A8 (for men) and A9 (for women).

### *Literacy*

The 1910–1940 censuses collect information on whether all persons ages 10 and over can read in any language and, separately, whether they can write in any language. Our literacy variable is an indicator for if someone can both read and write in any language.

### *School attendance*

The school attendance variable captures if a person was attending school during some specified period that varied by census year. The question was framed as “attended school or college any time since XX” with the census date and reference date changing by year.

For 1910, the census day was April 15 and the reference date was September 1. For 1920, the census day was January 1 and the reference date was September 1. For 1930, the census day was April 1 and the reference date was September 1. For 1940, the census day was April 1 and the reference date was March 1.

The definition of schooling slightly changed as well. In 1910 and 1920, schooling meant any school, college, or educational institution. In 1930, this then included attendance at night school. In 1940, night school, extension classes, and vocational training counted only if they were part

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<sup>21</sup>See the description section at: <https://usa.ipums.org/usa-action/variables/OCCSCORE>.

of the “regular school system,” where “regular school system” is defined as advancing a person toward an elementary or high school diploma or a college, university, or professional degree. Correspondence courses did not count.<sup>22</sup>

### *Labor force participation*

We also measure labor market participation. The 1910–1930 and 1940 labor force definitions are different within the census.<sup>23</sup> From 1910 to 1930, “participation is defined as reporting any gainful occupation.”<sup>24</sup> In 1940, “participation follows the modern labor force definition”, meaning “within a specific reference week, having a job from which one is temporarily absent (e.g., on vacation), working, or seeking work.” As such, in the census data, people can be in the labor force, but have an invalid occupational response. By invalid we mean that their `occ1950` value is one of the following: not classified, non-occupational response, occupation missing/unknown, or N/A (blank). Non-occupational responses include: Keeps house/housekeeping at home/housewife, Imputed keeping house (1850–1900), Helping at home/helps parents/housework, At school/student, Retired, Unemployed/without occupation, Invalid/disabled w/ no occupation reported, Inmate, New Worker, Gentleman/lady/at leisure, Other non-occupational response. A respondent can also have a valid occupational response, but not be coded as being in the labor force. To create a consistent definition across all years in our sample, we measure labor force participation using a variable that equals one if an individual is in the labor force and has a valid occupational response.

In our analysis, we restrict the sample to individuals who are 18 years or older. This is aimed at removing mechanical effects due to children not being in the labor force.

The alternative labor force participation variable that we use in our robustness check is the off-the-shelf `labforce` census variable. We call this ‘Labor Force Participation (2)’ in the tables. While our preferred labor force variable requires a valid occupational response, we also report robustness results without this constraint.

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<sup>22</sup>More information here: <https://usa.ipums.org/usa-action/variables/SCHOOL>

<sup>23</sup>See the discussion about comparability at: <https://usa.ipums.org/usa-action/variables/LABFORCE>

<sup>24</sup>On a technical level, this means you have a valid occupation response for `OCC1950`, which must be from 0 to 970.

### *Additional occupation-based measures*

Our baseline occupation-based measure, *occscore*, is the median 1950 income of each occupation. IPUMS also provides other variables on occupational standing that we use for robustness. These capture different elements of occupations. Similar to the occupational income score measure, these variables are intensive measure of labor market position, meaning we only have entries for the variables for individuals who are in the labor force with a valid occupation code. The alternative measures that we use are summarized below.

**SEI:** Quoting from IPUMS, “SEI is a constructed measure that assigns a Duncan Socioeconomic Index (SEI) score to each occupation using the 1950 occupational classification scheme available in the OCC1950 variable. The SEI is a measure of occupational status based upon the income level and educational attainment associated with each occupation in 1950.”<sup>25</sup>

**Occupational Earnings Score:** This variable, ERSCOR50 in IPUMS, assigns a measure of the median earned income for each occupation. “In order to maximize comparability over time, the median earned income reported in ERSCOR50 is standardized as a “z-score” and then converted to a percentile rank. ERSCOR50 reports the percentage of persons in occupations having lower standardized median earnings than the respondent’s occupation.”<sup>26</sup>

**Occupational Prestige Score:** This variable, PRESGL in IPUMS, assigns a Siegel prestige score to each occupation. This assignment was based on surveys conducted at NORC in the 1960s.<sup>27</sup>

**Occupational Status Score:** Quoting from IPUMS, “The NPB0SS50 is a measure of occupational status based upon the median earnings and median educational attainment associated with each category in the occupational scheme available in OCC1950 variable. Occupational status score gives equal weights to education and earnings, and can be interpreted as the percentage of persons in the civilian labor force who are in occupations having combined levels of education and earnings below that occupation. The scores can vary from 0 to 100.”<sup>28</sup>

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<sup>25</sup>More information here: <https://usa.ipums.org/usa-action/variables/SEI>

<sup>26</sup>More information here: <https://usa.ipums.org/usa-action/variables/ERSCOR50>

<sup>27</sup>More information here: <https://usa.ipums.org/usa-action/variables/PRESGL>

<sup>28</sup>More information here: <https://usa.ipums.org/usa-action/variables/NPB0SS50>



## A2. Additional Figures and Tables

This company shall not be liable for loss caused directly or indirectly by invasion, insurrection, riot, civil war or commotion, or military or usurped power, or by order of any civil authority; or by theft; or by negligence of the insured to use all reasonable means to save and preserve the property at and after a fire or when the property is endangered by fire in neighboring premises; or (unless fire ensues, and, in that event, for the damage by fire only) by explosion of any kind, or lightning; but liability for direct damage by lightning may be assumed by specific agreement hereon. -----

Figure A7: The riot exclusion clause in insurance policies (via OHS)

Mr. D. P. Bailey,  
Care Bailey & Collier,  
Insurance Managers,  
Dallas, Texas.

Dear Mr. Bailey:

I thank you for your letter, written from New York, relative to the Tulsa riot. I concur in your observations and conclusions. These riots are unfortunate affairs at all times and the less said about them the better for all concerned.

I have no sympathy with the so-called friends of the negro who live in the North and are always so anxious to give us advice on this and kindred subjects.

I appreciate what you have to say with reference to "Dr." Du Bois. He is an agitator of the worst type and I have directed the Attorney General, who has charge of the investigation now under way at Tulsa, to inquire about his activities and if he is in any way responsible for this outrage, I am going to have him indicted and tried as any other criminal should be.

Again thanking you for the interest manifested,  
I remain

Respectfully,

Governor.

Figure A8: Letter from Oklahoma Governor (via OHS)

# The African American Section, 1921



## Tulsa Oklahoma

The African American section of Tulsa contained 191 businesses prior to the Race Riot of 1921, which included 15 doctors, a chiropractor, 2 dentists, and 3 lawyers. The residents also had access to a library, 2 schools, a hospital, and a Tulsa Public Health Service. The *Polk City Directory* listed 159 businesses in 1920 and after the riot, in 1922, there were 120 businesses in the directory. In the *City Directory* in 1921 there were 1,149 residences and most of them were occupied by more than one person—or even one family; the 1920 *directory* reported 1,126 residences. After the riot, the 1922 *directory* listed 1,134 residences.

The Red Cross reported that 1,256 houses were burned, 215 houses were looted but not burned, and the total number of buildings not burned but looted and robbed were 314. The Tulsa Real Estate Exchange estimated \$1.5 million worth of damages and one-third of that in the Black business district. The Exchange claimed personal property loss at \$750,000. Between June 14, 1921, and June 6, 1922, \$1.8 million of claims were filed against the city of Tulsa and disallowed.

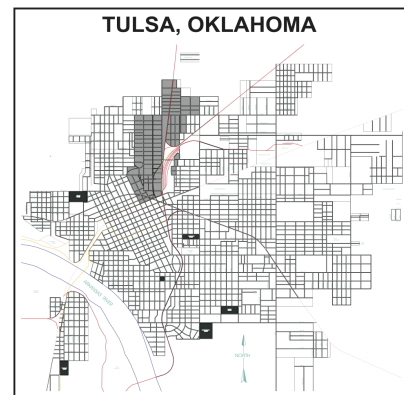


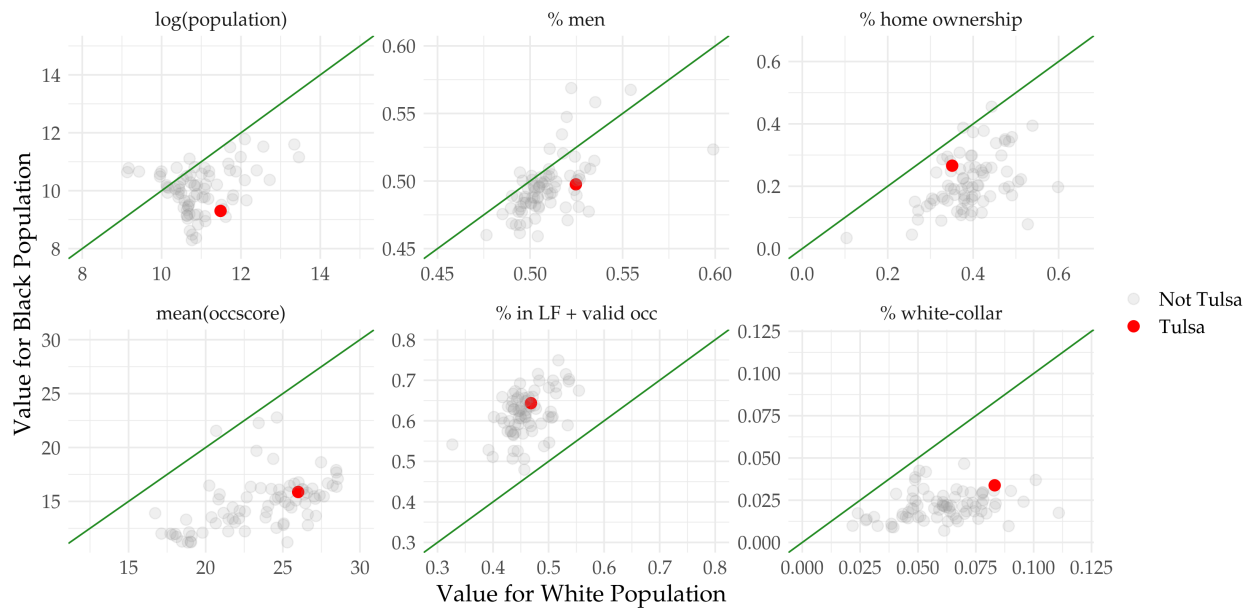
Figure A9: Map of Tulsa City and Greenwood (from the 2001 Report on the Massacre)

- |   |  |
|---|--|
| <p>25. (wouldn't give her name)<br/>A woman who was born in 1927 said her grandparents owned a grocery store at th and South . They lived upstairs and their apartment was reached by an outside wooden stairway. When her grandfather heard of the riot, he took his family to the upstairs apartment, tore down the stairs, and stationed himself with a shotgun at the top.</p>            | <p>76. Virginia<br/>Her great grandfather started a trash hauling service in Tulsa before the riot. Her father was a private trash hauler at the time of the riot. He had a team and wagon. His father was forced to haul six bodies to a hole in a low place in Oaklawn Cemetery. He didn't want to do it, but a deputy sheriff rode along with him.</p>              |
| <p>71. Paul W<br/>His father was a fireman at the time of the riot and was stationed at Station #2 on North Main. He told him that when the fire alarm rang they drove to Archer and Greenwood to fight a fire, but were told to let it burn by armed white civilians and they returned to the station. He said that he had seen two flat bed trucks with bodies heading towards Sapulpa.</p> | <p>37. Carol W.<br/>When she was a nurse intern at St. Francis Hospital in about 1978 she sat with a man who was about 70 years old. He was dying and he told her that he had been in the riot and had shot many Blacks. He said hundreds of them were buried under the railroad. He mentioned the RR station. He was proud of this and said he would do it again.</p> |

Figure A10: Images of the text of stories of the 1921 Tulsa Massacre from Oklahoma Historical Society Archives.

## Tulsa, OK compared to other counties in 1920

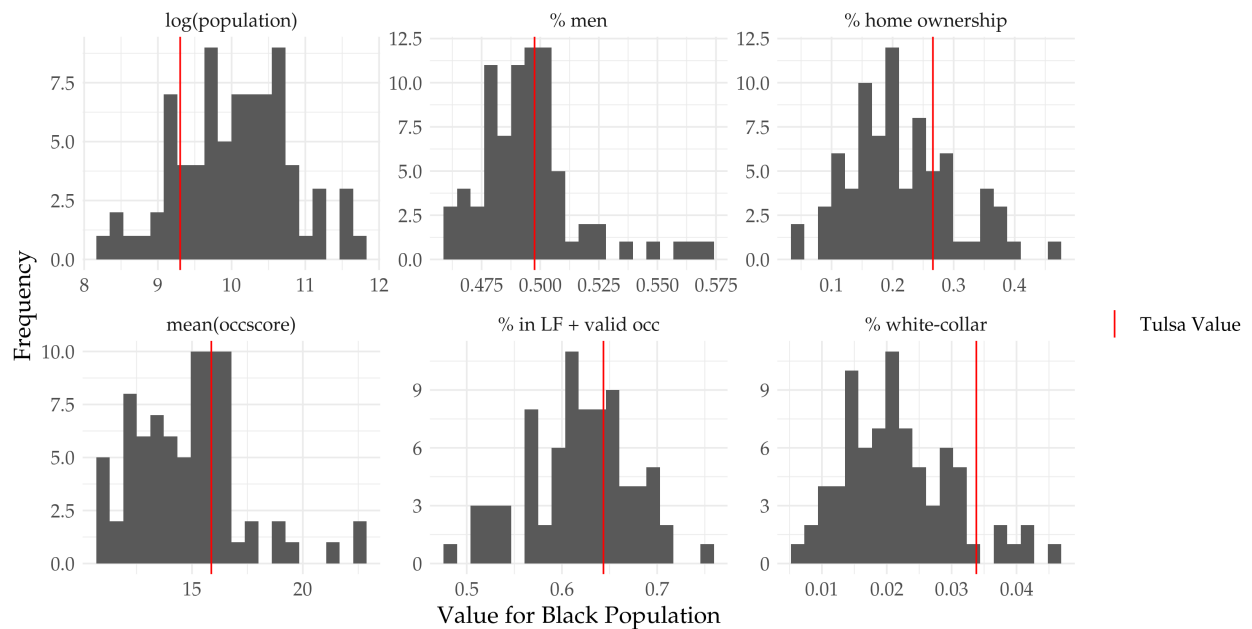
Using 1920 census data



Sample: Jim Crow state counties with 1920 populations  $\geq 50,000$  &  $\geq 5\%$  Black population.  
Green line shows 45 degree line -- where metrics are equal for the Black and white populations.

## Tulsa, OK compared to other counties in 1920

Using 1920 census data



Sample: Jim Crow state counties with 1920 populations  $\geq 50,000$  &  $\geq 5\%$  Black population.

Figure A11: Comparing Black and white characteristics in Tulsa and all other counties with segregation and populations larger than 50,000 people with at least 5% Black population in the 1920 Census.

Table A8: Ten Most Common White-Collar Occupations for Men by Race in Tulsa in 1920

Rank	White Men Top Occupations	White Men Count	Black Men Top Occupations	Black Men Count
1	Accountant	464	Clergyman	29
2	Lawyer or Judge	279	Physician or surgeon	20
3	Physician or surgeon	160	Teacher	18
4	Engineers, civil	105	Musician or Music teacher	9
5	Teacher	104	Lawyer or Judge	8
6	Pharmacist	99	Pharmacist	7
7	Musician or Music teacher	62	Actor	2
8	Dentist	59	Dentist	2
9	Clergyman	58	Accountant	1
10	Draftsman	46	Editors/Reporters	1

Table A9: The ten most common white-collar occupations for women by race in Tulsa in 1920

Rank	White Women Top Occupations	White Women Count	Black Women Top Occupations	Black Women Count
1	Teacher	606	Teacher	51
2	Nurse, professional	107	Nurse, professional	6
3	Musician or Music teacher	60	Musician or Music teacher	5
4	Accountant	23	Artist or Art Teacher	1
5	Actor	16	Physician or surgeon	1
6	Nurse, student professional	15	NA	NA
7	Photographer	9	NA	NA
8	Professor/Instructor	8	NA	NA
9	Recreation or group worker	6	NA	NA
10	Editors/Reporters	5	NA	NA

Table A10: List of counties with highest 1910–1920 population increases

County Name	State	1910 Pop	1920 Pop	(1920 Pop/1910 Pop)
Bennett County	South Dakota	3	1923	641.000
Wichita County	Texas	16114	72917	4.525
Dewey County	South Dakota	1148	4802	4.183
Baca County	Colorado	2516	8730	3.470
Crosby County	Texas	1772	6137	3.463
Palm Beach County	Florida	5594	18681	3.339
Imperial County	California	13546	43461	3.208
Luna County	New Mexico	3913	12170	3.110
<b>Tulsa County</b>	<b>Oklahoma</b>	<b>35135</b>	<b>109149</b>	<b>3.107</b>
Natrona County	Wyoming	4769	14663	3.075
Lubbock County	Texas	3624	11126	3.070
Harlan County	Kentucky	10563	31583	2.990
Lynn County	Texas	1673	4760	2.845
Logan County	West Virginia	14476	41025	2.834
Hidalgo County	Texas	13748	38147	2.775
Ottawa County	Oklahoma	15745	41632	2.644
Summit County	Ohio	108275	285994	2.641
Okmulgee County	Oklahoma	21150	55148	2.607
Eastland County	Texas	23425	58502	2.497
Maricopa County	Arizona	34502	85772	2.486

Table A11: Estimating place-based Massacre effects (robustness), men

	Dependent variable is the average of:				
	SEI Score	Occupational Earnings Score	Occupational Prestige Score	Occupational Status Score	Labor Force Participation (2)
	(1)	(2)	(3)	(4)	(5)
Post x Tulsa x Black	−2.185*** (0.103)	−11.459*** (1.309)	−0.906*** (0.089)	−12.570*** (1.295)	0.046*** (0.001)
Year-County FEs?	Y	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y	Y
Average for Black Tulsa, 1920	13.807	34.898	24.159	28.168	0.960
Sample	in labor force	in labor force	in labor force	in labor force	18<=age
Observations	29,188	29,188	29,188	29,188	29,790

Notes: The table reports WLS estimates. Coefficients are reported with standard errors (clustered by county) in parentheses. The unit of observation is a racial group (Black, white, and other), living in a county, and observed in a census year. The dependent variables, reported at the top of the table, are averages for each observation. The population of each observation is used as weights for the WLS estimates. All specifications include decade-race fixed effects, decade-county fixed effects, and county-race fixed effects. \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1% levels.

Table A12: Estimating place-based Massacre effects (robustness), women

	Dependent variable is the average of:				
	SEI Score	Occupational Earnings Score	Occupational Prestige Score	Occupational Status Score	Labor Force Participation (2)
	(1)	(2)	(3)	(4)	(5)
Post x Tulsa x Black	3.209*** (0.131)	-4.763*** (0.718)	1.820*** (0.083)	-3.058*** (0.733)	0.176*** (0.003)
Year-County FEs?	Y	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y	Y
Average for Black Tulsa, 1920	13.981	13.981	10.368	21.914	14.232
Sample	in labor force	in labor force	in labor force	in labor force	18<=age
Observations	24,760	24,760	24,760	24,760	27,810

*Notes:* The table reports WLS estimates. Coefficients are reported with standard errors (clustered by county) in parentheses. The unit of observation is a racial group (Black, white, and other), living in a county, and observed in a census year. The dependent variables, reported at the top of the table, are averages for each observation. The population of each observation is used as weights for the WLS estimates. All specifications include decade-race fixed effects, decade-county fixed effects, and county-race fixed effects. \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1% levels.

Table A13: Estimating place-based Massacre effects (robustness) with spillovers, full sample

	Dependent variable is the average of:				
	SEI Score	Occupational Earnings Score	Occupational Prestige Score	Occupational Status Score	Labor Force Participation (2)
	(1)	(2)	(3)	(4)	(5)
Post x Tulsa x Black	-1.597*** (0.103)	-12.722*** (1.206)	-0.680*** (0.075)	-13.365*** (1.188)	0.132*** (0.002)
Post x OK x Black	0.567 (0.443)	-3.502 (2.252)	0.416 (0.326)	-2.431 (2.175)	0.023** (0.009)
Year-County FEs?	Y	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y	Y
Average for Black Tulsa, 1920	13.869	26.253	23.368	23.256	0.729
Sample	in labor force	in labor force	in labor force	in labor force	18<=age
Observations	29,413	29,413	29,413	29,413	30,296

*Notes:* The table reports WLS estimates. Coefficients are reported with standard errors (clustered by county) in parentheses. The unit of observation is a racial group (Black, white, and other), living in a county, and observed in a census year. The dependent variables, reported at the top of the table, are averages for each observation. The population of each observation is used as weights for the WLS estimates. All specifications include decade-race fixed effects, decade-county fixed effects, and county-race fixed effects. \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1% levels.

Table A14: Estimating place-based Massacre effects with spillovers (robustness), men

	Dependent variable is the average of:				
	SEI Score	Occupational Earnings Score	Occupational Prestige Score	Occupational Status Score	Labor Force Participation (2)
	(1)	(2)	(3)	(4)	(5)
Post x Tulsa x Black	-2.180*** (0.105)	-11.508*** (1.324)	-0.901*** (0.090)	-12.603*** (1.310)	0.046*** (0.001)
Post x OK x Black	0.316 (0.447)	-2.954 (2.372)	0.331 (0.349)	-1.992 (2.306)	-0.018** (0.008)
Year-County FEs?	Y	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y	Y
Average for Black Tulsa, 1920	13.807	34.898	24.159	28.168	0.960
Sample	in labor force	in labor force	in labor force	in labor force	18<=age
Observations	29,188	29,188	29,188	29,188	29,790

Notes: The table reports WLS estimates. Coefficients are reported with standard errors (clustered by county) in parentheses. The unit of observation is a racial group (Black, white, and other), living in a county, and observed in a census year. The dependent variables, reported at the top of the table, are averages for each observation. The population of each observation is used as weights for the WLS estimates. All specifications include decade-race fixed effects, decade-county fixed effects, and county-race fixed effects. \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1% levels.

Table A15: Estimating place-based Massacre effects with spillovers (robustness), women

	Dependent variable is the average of:				
	SEI Score	Occupational Earnings Score	Occupational Prestige Score	Occupational Status Score	Labor Force Participation (2)
	(1)	(2)	(3)	(4)	(5)
Post x Tulsa x Black	3.231*** (0.133)	-4.779*** (0.726)	1.835*** (0.083)	-3.064*** (0.741)	0.177*** (0.003)
Post x OK x Black	1.653** (0.744)	-1.220 (1.484)	1.139** (0.521)	-0.460 (1.587)	0.048*** (0.016)
Year-County FEs?	Y	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y	Y
Average for Black Tulsa, 1920	13.981	13.981	10.368	21.914	14.232
Sample	in labor force	in labor force	in labor force	in labor force	18<=age
Observations	24,760	24,760	24,760	24,760	27,810

Notes: The table reports WLS estimates. Coefficients are reported with standard errors (clustered by county) in parentheses. The unit of observation is a racial group (Black, white, and other), living in a county, and observed in a census year. The dependent variables, reported at the top of the table, are averages for each observation. The population of each observation is used as weights for the WLS estimates. All specifications include decade-race fixed effects, decade-county fixed effects, and county-race fixed effects. \*, \*\*, and \*\*\* indicate significance at the 10, 5, and 1% levels.