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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 looting, burning, and leveling of 35 square blocks of a once-thriving Black neighborhood. Not only did this lead to severe economic loss, but the massacre also sent a warning to Black individuals across the country that similar events were possible in their communities. We examine the economic consequences of the massacre for Black populations in Tulsa and across the United States. We find that for the Black population of Tulsa, in the two decades that followed, the massacre led to declines in home ownership and occupational status. Outside of Tulsa, we find that the massacre also reduced home ownership. These effects were strongest in communities that were more exposed to newspaper coverage of the massacre or communities that, like Tulsa, had high levels of racial segregation. Examining effects after 1940, we find that the direct negative effects of the massacre on the home ownership of Black Tulsans, as well as the spillover effects working through newspaper coverage, persist and actually widen in the second half of the 20th Century.

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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 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. Losses are estimated to be between \$32,560,722 and \$47,376,836 in 2020 USD (\$2,212,600 and \$3,219,400 in 1921 USD).<sup>1</sup>

While there were many other incidents of racial violence during this time period, the Tulsa Massacre<sup>2</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 “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

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<sup>1</sup>We arrive at this range using data on insurance claims amounts from the Oklahoma Historical Society’s (OHS) Tulsa Race Riot Commission Collection combined with Red Cross reports of the number of residential buildings and businesses destroyed.

The claims for damages to residential buildings generally range from \$22,074 to \$29,432 (\$1,500 to \$2,000 in 1921 USD), and the Red Cross reports 1,256 destroyed homes. We multiply the damage amount by the number of houses to arrive at \$27,724,944 to \$36,966,592 in residential damage (\$1,884,000 to \$2,512,000 in 1921 USD). Following the same procedure, there were 529 looted homes with personal property claims generally ranging from \$5,886 to \$8,830 (\$400 to \$600 in 1921 USD), giving \$3,113,694 to \$4,671,070 in property damages (\$211,600 to \$317,400 in 1921 USD). There were 39 destroyed businesses with damage claims ranging from \$44,148 to \$147,160 (\$3,000 to \$10,000 in 1921 USD), giving \$1,721,772 to \$5,739,240 in business damages (\$117,000 to \$390,000 in 1921 USD).

The total amount of claims reported in the OHS records is \$21,643,064 (\$1,470,712 in 1921 USD). This amount is lower than our finding since we take into account the total number of buildings damaged (as reported by the Red Cross), even when a claim was not filed. Additionally, these are estimates of insurance claims, not necessarily the worth of the property. There are several instances where the property worth is listed along with the claim amount, and in these instances the claim amount is usually about half of the original worth of the property.

<sup>2</sup>While the Tulsa Race Massacre was commonly called a ‘Race Riot’, this terminology is misleading. The 1921 Centennial Commission (Krehbiel, 2018) changed the official designation to ‘Massacre’ in 2018 and we use the term ‘Massacre’ in this paper in line with the Commission’s decision.

Figure 1: Images from the Tulsa Race Massacre of 1921

(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



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.” (Horner, 2001, p. 177).

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>3</sup> the Tulsa Massacre was exceptional historically and marked a turning point in expectations and beliefs about racial violence in the United States. As Lisa Cook (2014, p. 235) puts it, “...before 1921 potential victims implicitly believed that, if implored, the federal government would act. The response to the Tulsa riot was considered a major policy shift in favor of nonintervention by federal and state governments. Accounts of the Tulsa riot suggest that many at the time believed that government

<sup>3</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).

failed at all levels, and that this was a turning point in federal policy and national practice related to property-rights protection, and that the country was likely headed towards racial warfare.”

In addition to being historically significant, the Tulsa Massacre is particularly well suited for focused empirical investigation given the historical context and data 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 study adds to existing knowledge by providing an in-depth empirical analysis of the effects of one particularly important event. 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 very real 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. 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?

We make progress on these questions by tracing the effects of the Tulsa Massacre. We begin by examining the short- and medium-run effects of the massacre on the home ownership and occupational status of Black Tulsans. We examine a panel that has three dimensions: racial group (white, Black, and other), a city or county, and a Census year (initially 1910, 1920, 1930 and 1940). We estimate effects using a triple-difference design, where the coefficient of interest is for an interaction between a post-massacre indicator, an indicator for the racial group being Black individuals, and an indicator for Tulsa being the county of residence. In the specifications, we control for county-race, county-year, and race-year fixed effects. Thus, the estimates effectively compare Black people to white people, within Tulsa county versus elsewhere, before versus after the 1921 Massacre.

We estimate a version of the equation that is at the individual-level but restricted to Tulsa and a set of control cities that have a 1920 total population greater than 25,000 and a Black population greater than 1,000 individuals, are located within 400 miles of Tulsa, and are in one of the states that border Oklahoma (Arkansas, Kansas, Missouri, and Texas). We also estimate a version of the equation using weighted least squares where the unit of observation is a racial group, county and census year. Regardless of which specification we use, we find consistent evidence that the Massacre is associated with a sizeable decline in home ownership and lower average occupational status. The estimates are large in magnitude and highly significant. For example, we estimate that the massacre resulted in a decline in the likelihood of home ownership among male household heads of 4.2 percentage points, which can be compared to a baseline of 30 percent among Black Tulsans in 1920, just prior to the massacre.

We then turn to the question of whether the massacre also affected Black communities in other parts of the country. We test whether we observe reduced rates of home ownership and lower occupational status in Black communities that received greater exposure to the massacre through newspaper articles published at the time of the event. Greater newspaper coverage

would mean that the warning the massacre offered would have been more extensively and clearly communicated, particularly given that a sizeable portion of the articles described the massacre as justified, a blessing in disguise and for the greater good of the community. We also test whether we find evidence of effects in communities with a high level of racial segregation like Tulsa. In counties with segregated Black neighborhoods, spatial targeting, looting, and destruction of Black-owned buildings was possible.

We find evidence of spillover effects along both information and segregation dimensions that are in the same direction as the direct effects and most clearly observed in home ownership. Both estimates are sizeable, although the newspaper spillover effects are less precisely estimated compared to the segregation spillover effects. For example, the estimated spillover effect for Black individuals in the state with the greatest newspaper exposure is about 75% the size of the direct effect experienced by Black Tulsans. For those in the least exposed state, there is no spillover effect. The findings are consistent with the Massacre being a warning about the potential destruction of wealth, which in turn affected the decision to invest in assets like homes.

We then turn to an examination of the longer-run dynamics of the effects of the massacre. For home ownership, we are able to extend the period of analysis to 2000 and estimate longer-term consequences. We find that the direct effects of the massacre on Black Tulsans persist and actually increase over time. We estimate the effect of the massacre on home ownership of Black Tulsans in 2000 to be over twice the magnitude of the effect in 1940. Similarly, we find that the newspaper spillover effect persists past 1940 and increases in size and precision. The estimated effect in 2000 is over 60% the magnitude in 1940. By contrast, we find that the segregation spillovers do not persist, instead dying out over time and approaching zero by 2000.

Our findings add to the rich existing literature on the history of race, coercion, violence, and unrest in the United States. 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 the 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. Collins and Margo (2004, 2007) study the effects of the race riots of the late 1960s. The authors find that the riots had a negative and persistent effect on Black incomes, employment, and property values. Ample additional research, some outside the US context, speaks to the effects of exposure to violence and exploitation on outcomes ranging from: distrust (Nunn and Wantchekon, 2011, Alsan and Wanamaker, 2018, Archibong and Obikili, 2020), political participation and political attitudes (Bautista, 2015), and views about freedom of expression (Garcia Ponce and Wantchekon, 2011).

Our findings also contribute to the existing literature within economics that studies the historical determinants, be they political, social, economic, or institutional, of the economic success of Black people in during the late-19th and 20th Centuries (e.g., Naidu, 2012, Hornbeck and Naidu, 2014, Logan and Parman, 2018, Clarke, 2019, Derenoncourt, 2019, Aneja and Xu, 2020). Lastly, our work also adds to descriptive accounts of the Tulsa Massacre and its consequences (e.g., Halliburton, 1972, Horner, 2001, Messer, 2011, Messer, Shriver and Adams, 2018). Our analysis builds on these accounts and provides estimates of the general effects of the Massacre, including spillovers effects to all parts of the country.

## **2. Tulsa Prior to the Massacre**

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 examine county population data from the 1910 to 1940 US censuses. Tulsa county more than tripled in population size from around 35,000 to 109,000 residents between 1910 and 1920.

To put into context the population boom in Tulsa before the Massacre, consider the 20 counties in the US with the highest population growth from 1910–1920. This list, which is reported in Appendix Table A13, shows that Tulsa ranks ninth on the list. Many of the boom towns on this list are in Oklahoma and Texas, which were also experiencing population growth due to interest in oil.

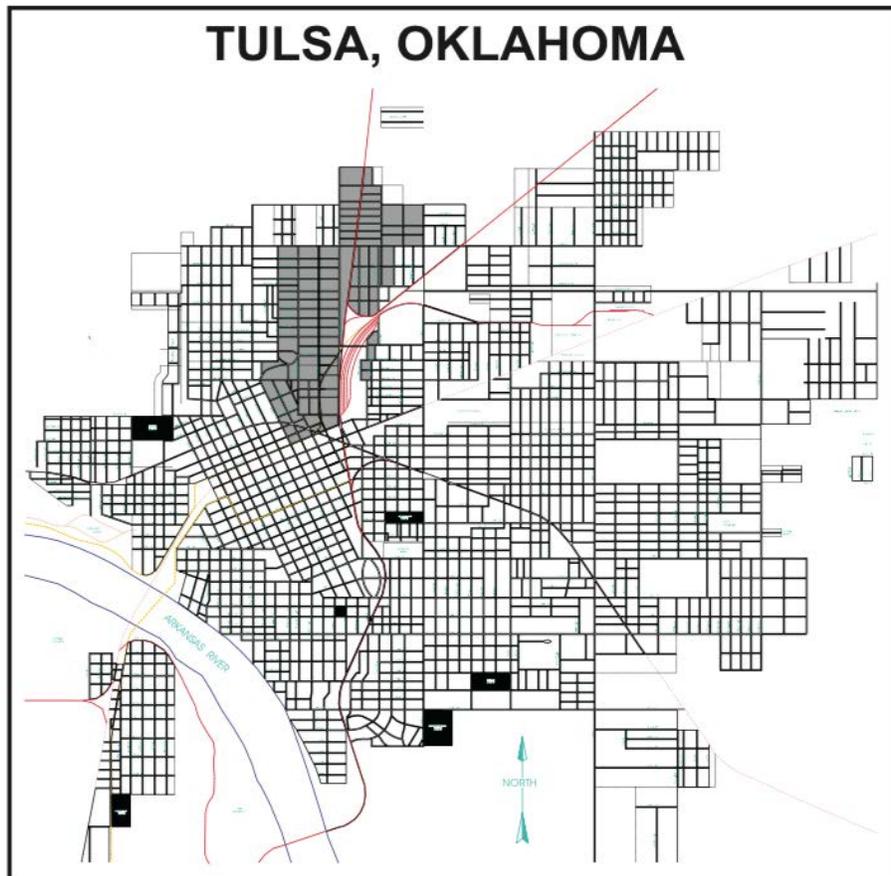


Figure 2: Map of Tulsa City and Greenwood, shown in dark gray. Source: *Tulsa Race Riot: A Report by the Oklahoma Commission to Study the Tulsa Race Riot of 1921*.

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.

The location of the Greenwood neighborhood within Tulsa is shown in Figure 2. The neighborhood boasted 191 businesses before the Massacre. There were doctors, dentists, lawyers as well as two newspaper offices. Residents had access to a public library, two schools, and a hospital. The 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 view of Tulsa as the “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 were largely unable to take up many of the professions that their white counterparts could during the county’s oil boom (Ellsworth, 2001).

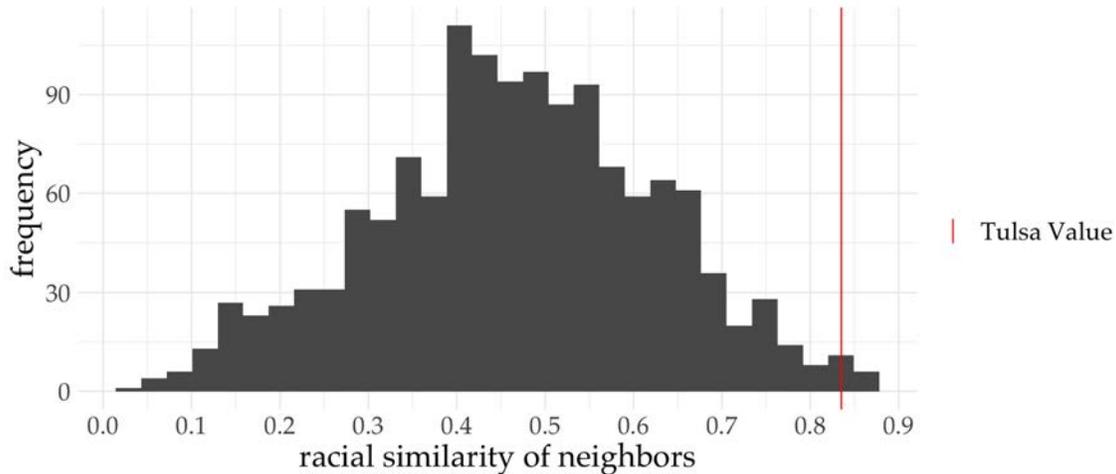
About a third of the Greenwood population lived in servant’s quarters of white Tulsa (Madigan, 2001). Doormen and shoeshine boys would pick up tips of ten dollars per day (despite making five dollars per week). The city’s tight segregation laws meant that money earned in the white downtown area was then spent in Greenwood (Clark, 2020).

Exploring the census data on segregation and occupation categories provides evidence consistent with descriptive accounts of a highly segregated Tulsa. We use Logan and Parman’s (2017a) measure of racial similarity of neighbors to examine how Tulsa’s segregation compared to other counties in the United States at the time. The segregation of Tulsa is shown in Figure 3, which reports the distribution of county-level segregation across the United States in 1920. Tulsa’s level of segregation is indicated by the vertical line. It is clear that consistent with descriptive accounts, Tulsa was one of the most segregated counties in the country.<sup>4</sup>

This high level of segregation is an important aspect of Tulsa that facilitated the events that followed. Because there was a Black neighborhood, where commercial buildings and homes were located, it was feasible to target Black-owned property and buildings. Relative to a setting of integration, it was relatively easy to know which properties were Black-owned and which were white-owned. In addition, integration meant there was less worry that if one set a structure on fire it might spread to the neighboring structure. In the segregated setting of Tulsa, the neighboring structure was almost certainly also Black-owned. The link between segregation and ease of identifying Black-owned buildings has important implications for the extent to which Black communities might be worried about similar events happening in their city. We might expect that the more spatially segregated a community was, the more feasible and likely an event

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<sup>4</sup>Tulsa’s high level of segregation is particularly noteworthy given our interest in home ownership. Logan and Parman (2017b) have shown that during this period, in the cross-section, there is a negative relationship between segregation and homeownership for Black and white households. We return to the relationship between the Massacre, segregation, and home ownership below.



Data from Logan + Parman (2017) segregation data.  
Subset to counties with 100+ Black people

Figure 3: Segregation in Tulsa County compared to other U.S. counties in 1920

like the Tulsa Massacre might be. This is something that we explore in our empirical analysis.

Although the extent of segregation within Tulsa was exceptional, in other dimensions the Black population of Tulsa was not very different from other Black communities across the country. Figure 4 reports the same histogram as in Figure 3 but for eight measures of the Black population of Tulsa.<sup>5</sup> In each of these dimensions, Tulsa appears more typical. If one restricts the comparison to other counties that are also in the segregated U.S. South, the same picture emerges (see Appendix Figure A18). The one exception is the proportion of individuals who are in white collar occupations. Though still low, at approximately 1.5%, the share of Tulsa’s Black population with white collar occupations was much higher than nearly every other county. This may be an important factor behind the perception of Tulsa as the “Black Wall Street.”

We probe the racial differences within Tulsa further by examining the differences between the white and Black population of Tulsa. Figure 5 reports a series of graphs that have the value of the characteristic of the white population on the  $x$ -axis and of the Black population on the  $y$ -axis.<sup>6</sup> Each graph also reports the 45-degree line which indicate Black-white equality for the dimension of interest. Tulsa is denoted by a solid red circle, while all other counties are denoted by an

<sup>5</sup>The comparison is restricted to a sample that includes counties with populations larger than 50,000 people and at least 5% Black population in the 1920 Census.

<sup>6</sup>The analogous figure but with the comparison counties restricted to those that are also in the segregated U.S. South is reported in Appendix Figure A19.

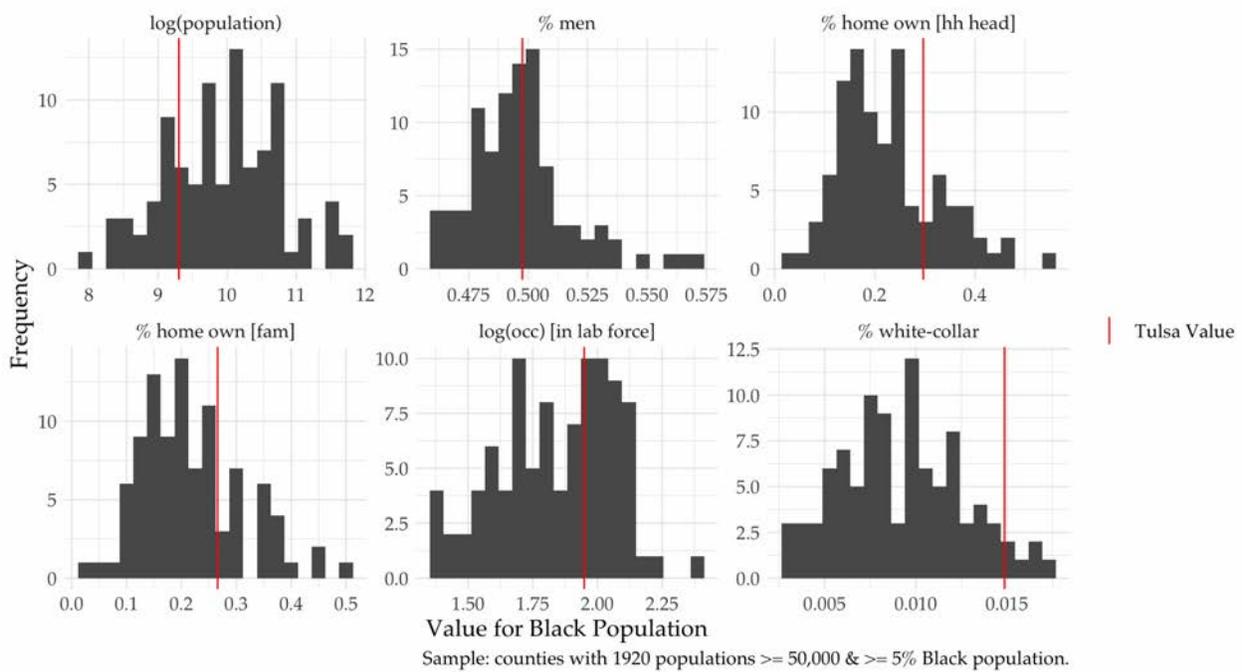


Figure 4: Characteristics of Tulsa County compared to other U.S. counties in 1920

opaque gray circle. The figures show clearly that, within a county, Black populations tended to have smaller populations, lower likelihood of home ownership, less white collar employment, lower average occupational status, and a higher proportion of individuals participating in the labor force. To understand how typical the Black-white differences in Tulsa were, we examine the location of Tulsa, particularly its distance to the 45-degree line, relative to the other counties. From the figures it is clear that Tulsa was not an extreme outlier.

The data suggest that Black Tulsa was a success story. Black wealth, as measured by the likelihood of home ownership, was high at 30%. Average occupational status was also high, with a relatively high proportion of population engaged in white collar jobs. However, the data also suggest that there were many other counties in the U.S., and even in the segregated South, that were similarly successful. This is also true when looking at the differences between the relative success of the white and Black populations. What appears most exceptional about Tulsa was not the absolute level of prosperity of the Black community – there were other communities within the country that were similar – but the level of segregation in the county.

The existence of many other prosperous Black communities is particularly important for potential spillover effects. At the time and today, a common perception was that an important determinant of the Massacre was the economic success of the Black population in a community

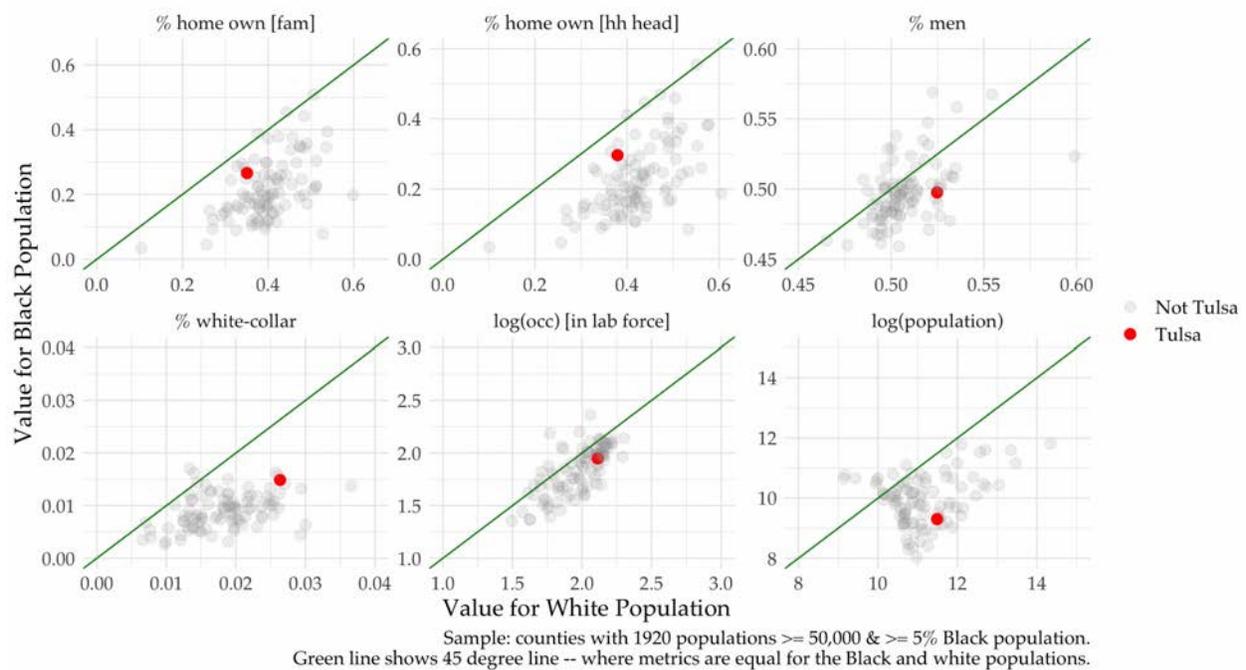


Figure 5: Characteristics of the Black and white populations of Tulsa County relative to other U.S. counties in 1920

relative to its white population. For example, a 1921 NAACP report wrote 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.” 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. Given that Tulsa was comparable to other counties in terms of both the absolute level of economic prosperity of the Black community and its level of relative prosperity relative to the white population, a large proportion of the Black population in other parts of the United States may have felt that their communities were also susceptible to the same events.

### 3. The 1921 Race Massacre

On May 31, 1921, Dick Rowland, a Black man, was accused of assaulting a white woman named Sarah Page. 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).

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 man from the courthouse and lynched him in 1920.<sup>7</sup> A confrontation in the crowd between Black and white Tulsans led 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). These white Tulsans then looted homes and businesses before setting them on fire with oil-rags and torches.<sup>8</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 makeshift 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>9</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,

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<sup>7</sup>This was the Nida-Benton incident, described by Ellsworth (2001). Ten days before riot, the media conflated crime rates in Tulsa with pointed commentary on Black men and white women. As (Ellsworth, 2001, p. 55) puts it: "[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."

<sup>8</sup>Some account also mention gunshots and the dropping of incendiaries from airplanes.

<sup>9</sup>Excavation at Oaklawn Cemetery was scheduled to begin in April 2020, but has been postponed due to COVID-19 (Brown, 2020, Trotter, 2020).

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>10</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” (pp. 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 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>11</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.” See Appendix Figure A15 for the full letter from which the quote is taken.

While our analysis estimates average effects of the Massacre, 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 A16.

The four accounts shown in Appendix Figure A16, 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

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<sup>10</sup>The cases against insurance companies were inert for years and then dismissed in 1937 (Brophy, 2001). See Appendix Figure A14 for the “riot exclusion clause” language in contracts, as found in court documents at the Oklahoma Historical Society.

<sup>11</sup>Even the *Tulsa Tribune*’s “Fifteen Years Ago” feature failed to mention the Massacre on its 15 year anniversary. It was “as if the greatest catastrophe in the city’s history simply had not happened at all” (Franklin and Ellsworth, 2001, p. 26).

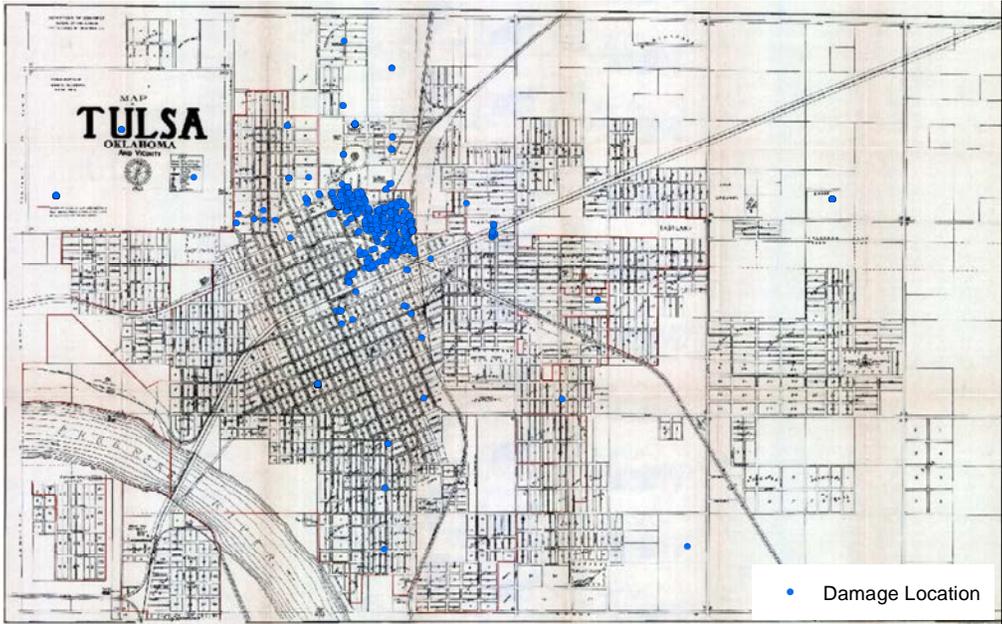
the top” (no. 25); firemen in Greenwood who were forced to “let it burn by armed white civilians” and who witnessed “two flat bed trucks with bodies” (no. 71); a private trash hauler who was forced to transport “six bodies to a hole... in Oaklawn Cemetery” (no. 76); and a man “who had been in the riot 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).

#### **4. Consequences of the Massacre**

Our analysis examines a number of consequences of the Massacre. The most obvious consequence is home ownership. Nearly every Black-owned business or home was looted and then burned. The locations of the destroyed buildings are shown in Figure 6 for Tulsa as a whole (Figure 6a) and for the neighborhood of Greenwood in particular (Figure 6b). It is clear that the destruction was concentrated within the Black neighborhood of Greenwood and that the destruction was extensive with full city blocks being burned to the ground. The high rate of segregation in Tulsa (which is shown in Figure 3) made it easy to target Black-owned buildings and reduced the risk of nearby white-owned buildings also accidentally catching fire.

Despite years of litigation, no compensation, either from insurance companies or the government, was received by any of the victims. Thus, the Massacre resulted in the permanent destruction of assets, buildings, and capital. Therefore, we expect that the massacre may have resulted in a decrease in home ownership, as well as occupational downgrading.

Beyond the direct effect of the Massacre for those who experienced it, we also expect that the event may have had effects on Black communities outside of Tulsa. In the aftermath of the Massacre, it became clear that such an event could easily occur again. The narrative that emerged from those in positions of power was that the blame for the Massacre fell squarely on the shoulders of the Black community and that they were to blame for the death and destruction. There was no regret or remorse for the events that had occurred. The mayor of Tulsa, T.D. Evans, in a statement to city commissioners on June 14 made clear his views that the Black community was to blame: “Let the blame for the Negro uprising lie right where it belongs – on those who armed negroes and their followers who started this trouble and who instigated it... Any person who seeks to put half the blame on the white people are wrong and should be told so in no uncertain terms.” He continued, arguing that “it was good generalship to let the destruction come to that section where the trouble hatched up... All regret the wrongs that fell upon the



(a) The broader city of Tulsa



(b) Zooming in to the Greenwood neighborhood

Figure 6: The locations of damaged property in the city of Tulsa and in the Greenwood neighborhood.

innocent Negroes [but] the fortunes of war fall upon the innocent as well as the guilty." (Hirsch, 2002, pp. 126–127).

Ironically, the only blame that was placed on white individuals was to ask why whites in positions of power allowed the Black community to exist in the first place. An editorial titled "It Must Not Be Again," published in the Tulsa Tribune on June 4, 1921, argued that the area must never be allowed in Tulsa again: "Such a district as the old "Nig\*\*\*town" must never be allowed in Tulsa again. It was a cesspool of inquiry and corruption... In this old "Nig\*\*\*town" were a lot of bad nig\*\*\*s and a bad nig\*\*\* is about the lowest thing that walks on two feet." The article goes on to ask why the community was not eradicated earlier and to blame the Police Commissioner for not doing so. "Well, the bad nig\*\*\*s started it. The public would now like to know: why wasn't it prevented? Why were these nig\*\*\*s not made to feel the force of law and made to respect the law?" (Titcomb, 1921)

This same narrative appeared in newspapers across the country. Greenwood was described as a cesspool that should never have existed and the Massacre as a welcome event that made Tulsa better off. As an example, The Fresno Morning Republican, in a July 18, 1921 article titled "The Tulsa Crime Belt" wrote "The city administration is being asked why it permitted such places as "Nig\*\*\*town" dives to exist. The city administration has created a special committee of prominent citizens to help cover the ash-covered acres in a much needed warehouse district which would give the land greater value and with the money from which the negroes might buy a better residential subdivision which might be carefully plotted and made sanitary and parked." The article continues, "The cause of the Tulsa race riot was the cause that is common to all race riots plus a city too busy building to give thought or care to the spawning pools of crime... Most such disasters bring their resultant good. Tulsa teaches a lesson to other cities. Don't neglect the "over there." Teach the "over there" to live more like the "over here." It is that kind of living that cultivates understanding and levels the rough prejudices into a smoother friendliness." (The Fresno Morning Republican, 1921).

To the Black population outside of Tulsa, the message was clear. Rather than regretting the destruction of Greenwood, authorities and the white population in general lamented the fact that it existed in the first place and felt that the Massacre resulted in a better city. This sent a clear message to Black populations across the country that an event like the Tulsa Massacre was easily possible in their community.

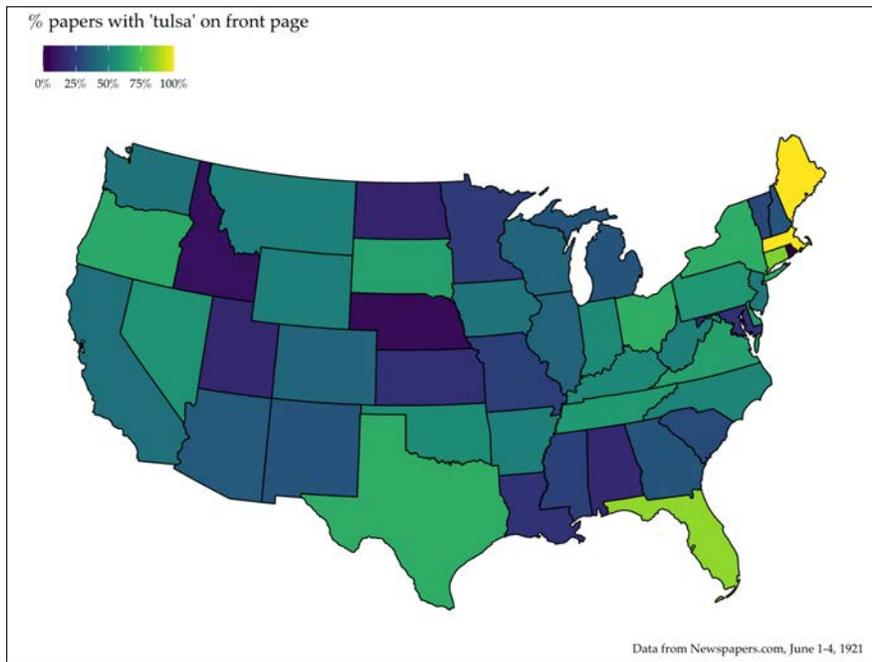


Figure 7: Fraction of Newspapers that Contain the Word ‘Tulsa’ on the Front Page, June 1–4, 1921

There is a question of the extent to which this message would have travelled beyond Oklahoma. While our statistical analysis tests for this explicitly, here we provide some preliminary evidence of the media coverage of the Massacre. Examining all available digitized newspapers from the days immediately following the Massacre (June 1–4, 1921), we calculate the proportion of newspapers that mention ‘Tulsa’ on their front page.<sup>12</sup> This proportion is shown in Figure 7. From the map, it is clear that for much of the country more than half of the newspaper editions mentioned the Tulsa Massacre on their front cover. Using coverage within Oklahoma as a baseline, we see that most states had coverage that was at least as extensive as Oklahoma’s. In addition, this coverage was not superficial. The massacre often comprised nearly all of the content on the front page. An example is provided in Appendix Figure A17, which shows the front page of the *The Selma Times-Journal* from June 21, 1921, which featured eight articles about the Tulsa Massacre. In all, there appears to have been immediate, widespread, and significant coverage of the event.

Another potential consequence that we consider is the effect of the event on the occupation of the victims. To see how this could happen, consider the case of Pressley and Mable Little (Hirsch,

<sup>12</sup>The data are from [newspapers.com](http://newspapers.com). Although the source does not contain complete nor representative coverage of all newspapers, the sample does provide some sense of the extent to which the news of the Tulsa Massacre immediately spread across the country.

2002, pp. 145–147). Prior to the Massacre, Mabel had owned a beauty salon, while Pressley ran a cafe. The couple also owned their own home, two rental properties, and a Model T Ford. All were destroyed during the Massacre. The couple fled their home after the first night of looting and destruction. After fleeing North, they were intercepted by the National Guard and brought back against their will to Tulsa. After the Massacre, the couple, with fifty dollars to their name, built a three-room shack without electricity, running water, or gas. To survive, Pressley, the once entrepreneur and landlord, did manual labor and carpentry to survive until his death three years later.

## 5. Data and Descriptive Analysis

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. The measures are constructed using the complete count U.S. census microdata from 1910, 1920, 1930, and 1940 (Minnesota Population Center, 2019).

Our primary variable of interest is home ownership. The census collected information on whether the home where the enumeration was taking place was owned or rented. A home is classified as owned if it is 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, we construct two measures of home ownership. The first variable measures the extent to which a household head owns the home. For each individual in the sample, we code a respondent-level indicator that equals one if the home is owned and the respondent is the household head (who we presume is likely to be the home owner). As such, the variable that we construct is conceptually equivalent to asking: “Is your home owned and are you the household head?”.

While this measure is suitable for a sample of men, who tend to be the household heads, it is problematic when the sample includes women. Therefore, we also construct a second measure of home ownership which doesn’t depend on a respondent’s status as the household head. The variable measures family home ownership by asking if the home is owned and the household head (assumed home owner) is a family member of the respondent. Thus, the variable that we construct is conceptually equivalent to asking: “Is your home owned by a family member that you live with?”.

We are also interested in income. Because the census does not record income directly, it must be proxied by 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>13</sup> We take the natural log of the income measure since this makes the variable less skewed (and more normally distributed) than the raw income measure. We also construct a measure for whether an individual reports a professional or technical occupation, which we call “white collar” occupations. Further details on these variables can be found in Appendix A1.

A natural first step in examining the consequences of the Massacre is to consider the trajectory of the Black population of Tulsa over time. This is shown in Figure 8, which reports the evolution of each of the outcomes of interest for Tulsa and other counties in the United States from 1910–1940. The first four graphs report patterns for the Black population of Tulsa. As shown, the change over time appears to be roughly similar in Tulsa relative to other counties. Looking at the following four graphs, which are for the white populations of Tulsa, there is some indication that the trajectory of home ownership, occupation score, and white collar share is increasing faster in Tulsa than in other counties.

## **6. Empirical Analysis of the Short and Medium-Term Effects of the Massacre, 1910–1940**

### ***A. Estimates using comparison cities***

We begin our empirical analysis by first studying the direct effects of the Massacre on Black inhabitants of Tulsa by using a set of comparison cities that have a similar geography and population to Tulsa. We pool unlinked individuals living in Tulsa and the comparison cities from 1910 to 1940 and analyze home ownership and occupational earnings.

We estimate a difference-in-difference-in-differences specification, where we compare outcomes of Black Tulsans with control groups for which the massacre should have no direct effect: white Tulsans and Black and white individuals in comparison cities. The identifying assumption of our DDD approach is that there exist no changes, contemporaneous to the effects of the massacre, to black-white trends between Tulsa and the other cities.

Here, we begin by comparing Tulsa to a set of fourteen comparison cities. Specifically, the comparison cities are all cities that have a 1920 population greater than 25,000 and a Black

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<sup>13</sup>See the description section at: <https://usa.ipums.org/usa-action/variables/OCCSCORE>

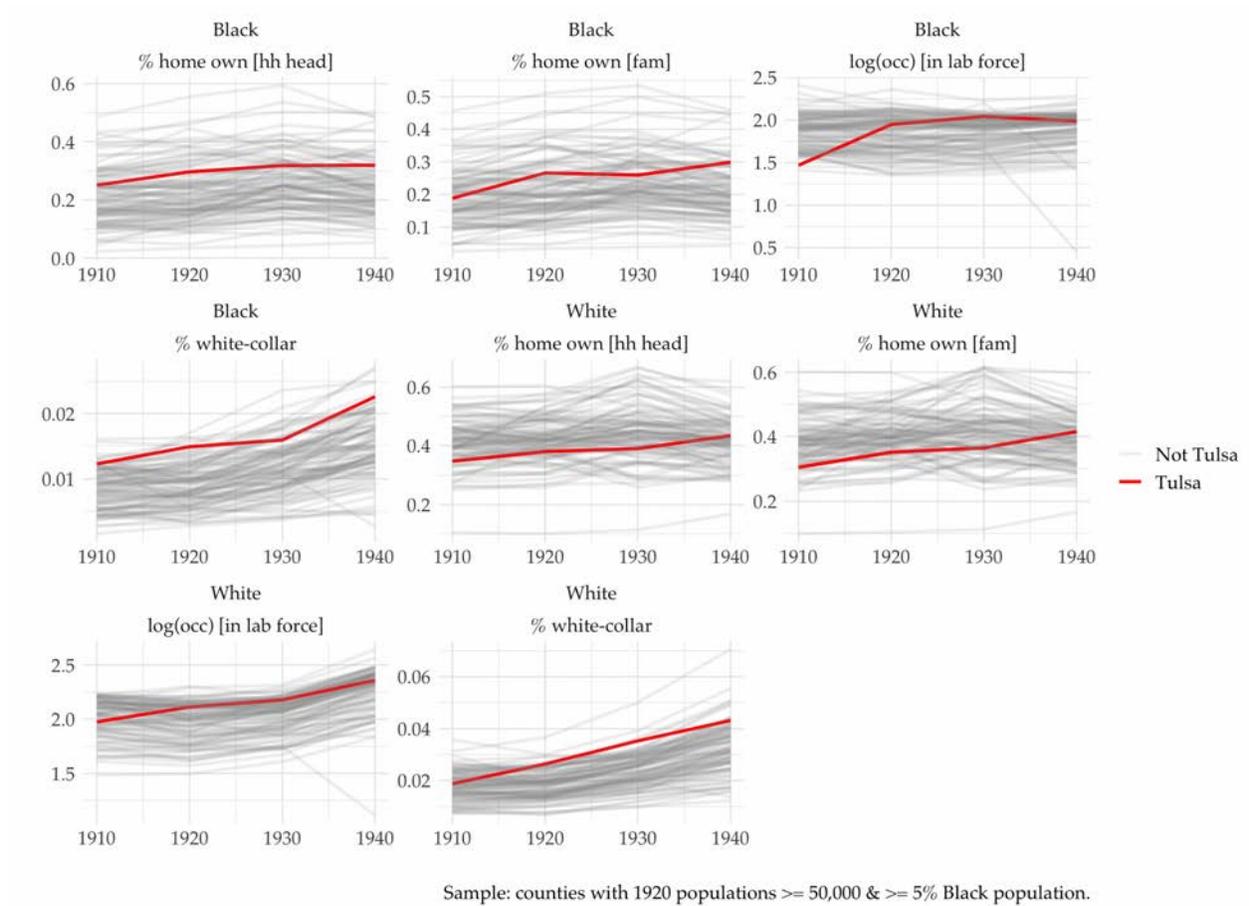


Figure 8: The trajectories of the characteristics of Tulsa and of other U.S. counties from 1910–1940

population of at least 1,000 individuals, are located within 400 miles of Tulsa, and are in one of the states that border Oklahoma (Arkansas, Kansas, Missouri, and Texas).<sup>14</sup>

Our estimating equation is given by:

$$y_{ijrt} = \psi_{rt} + \theta_{jt} + \tau_{jr} + \alpha_1 (I_j^{Tulsa} \times I_r^{Black} \times I_t^{Post}) + \varepsilon_{ijrt}, \quad (1)$$

where  $i$  indexes individuals,  $j$  cities (Tulsa and comparison cities),  $r$  race (Black, white and other), and  $t$  census years (1910, 1920, 1930 and 1940).  $y_{ijrt}$  is an outcome of interest measured for individual  $i$  living in city  $j$  who reports being of race  $r$  in census year  $t$ .  $I_j^{Tulsa}$  is an indicator that equals one if individual  $i$  lives in Tulsa,  $I_r^{Black}$  is an indicator that equals one if individual  $i$  is a Black individual, and  $I_t^{Post}$  is an indicator that equals one if decade  $t$  is after 1920. We cluster all standard errors at the city level.

Our interest is in the coefficients on the interaction term  $\alpha_1$ , which captures 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 race-year fixed effects  $\psi_{rt}$ , city-year fixed effects  $\theta_{jt}$ , and city-race fixed effects  $\tau_{jr}$ .

The estimates of equation (1) are reported in Table 1. Due to the fact that men were the primary home owners and income earners at the time, our baseline analysis focuses on a sample of men only. We report additional estimates using a sample that includes both men and women in Table 2. Column 1 reports estimates where the sample is all household heads and the dependent variable is an indicator that equals one if the household head reports owning their home. Column 2 reports estimates that also examine home ownership but looks at all individuals, not only household heads. The dependent variable in this specification is an indicator that equals one if the home in which the individual lives is owned by someone in their family. For both outcomes and both samples, we find evidence that the massacre resulted in a statistically significant decrease in home ownership. Because we report marginal effects, the reported coefficients indicate the estimated effects (evaluated at the means of the relevant variables). According to the sample of men (Table 1), the Tulsa Massacre is associated with a decline in the likelihood of home ownership of 4.5 percentage points for household heads. This can be compared to the home ownership rate of Black individuals in Tulsa in 1920, which was 31.6 percent. The massacre reduced the rate of

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<sup>14</sup>The cities are Dallas, TX; Fort Smith, AR; Fort Worth, TX, Kansas City, KS & MO; Little Rock, AR; Muskogee, OK; Oklahoma City, OK; St Joseph, MO; St Louis, MO; Springfield, MO; Topeka, KS; Waco, TX; Wichita, KS; and Wichita Falls, TX.

Table 1: Economic effects of the Tulsa Massacre, sample of men

	Dependent variable:			
	Home own [hh head] (1)	Home own [fam] (2)	Log(occscore) (3)	White-Collar (4)
Post×Black×Tulsa	-0.045*** (0.012)	-0.063*** (0.011)	-0.058*** (0.008)	-0.023*** (0.002)
Num.Obs.	1,963,834	3,824,861	2,481,761	3,066,243
Year-City FEs?	Y	Y	Y	Y
Race-City FEs?	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y
Sample	HH Heads	All	In lab force	All
Method	Logit	Logit	OLS	Logit
Average for Black Tulsa, 1920	0.316	0.275	2.934	0.031

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

The table reports OLS estimates. Coefficients are reported with standard errors (clustered by city) in parentheses. The unit of observation is an individual. The dependent variables are reported at the top of the table. The relevant population is indicated by the 'Sample' row. For the sample of individuals in the labor force, we examine individuals who report being in the labor force and who have a valid occupational code (see the Appendix for further explanation). All specifications include year-race fixed effects, year-city fixed effects, and city-race fixed effects.

individuals living in a home owned by a family member by 6.3 percentage points, which is relative to a baseline rate of 27.5 percent among Black Tulsans in 1920.

Columns 3 and 4 report estimates that provide evidence on the effect of the massacre on occupational status. In Column 3, we examine the natural log of the occupation score among all individuals who are in the labor force and have a valid occupation code. In Column 4, we examine all individuals who are in the labor force and report a valid occupation code and examine an indicator variable that equals one if an individual is employed in a profession or technical position, which we call a white collar occupation. The estimates provide evidence that the Massacre led to a decline in occupational status – i.e., occupational downgrading – for Black Tulsans. This decline is consistent with historical accounts of former professionals, after losing their business, having to enter into manual occupations in order to survive economically following the Massacre.

We probe the robustness of our occupation findings by using alternative measures of occupation-based income. A detailed description of the construction of each alternative measure is provided in the Appendix. The estimates for the male sample are reported in Table 3. Across all four measures, we see consistent evidence of occupational downgrading among the Black male

Table 2: Economic effects of the Tulsa Massacre, sample of men and women

	Dependent variable:			
	Home own [hh head] (1)	Home own [fam] (2)	Log(occscore) (3)	White-Collar (4)
Post×Black×Tulsa	-0.042*** (0.012)	-0.067*** (0.011)	-0.096*** (0.018)	-0.028*** (0.003)
Num.Obs.	2,353,772	8,660,561	3,467,812	4,304,052
Year-City FEs?	Y	Y	Y	Y
Race-City FEs?	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y
Sample	HH Heads	All	In lab force	All
Method	Logit	Logit	OLS	Logit
Average for Black Tulsa, 1920	0.311	0.284	2.580	0.032

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

The table reports OLS estimates. Coefficients are reported with standard errors (clustered by city) in parentheses. The unit of observation is an individual. The dependent variables are reported at the top of the table. The relevant population is indicated by the 'Sample' row. For the sample of individuals in the labor force, we examine individuals who report being in the labor force and who have a valid occupational code (see the Appendix for further explanation). All specifications include year-race fixed effects, year-city fixed effects, and city-race fixed effects.

Table 3: Occupational effects of the Tulsa Massacre, sample of men

	Dependent variable:			
	SEI Score (1)	Earnings Score (2)	Prestige Score (3)	Status Score (4)
Post×Black×Tulsa	-2.386*** (0.470)	-9.847*** (1.854)	-1.036*** (0.319)	-10.085*** (1.660)
Num.Obs.	2,481,761	2,481,761	2,481,761	2,481,761
Year-City FEs?	Y	Y	Y	Y
Race-City FEs?	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y
Sample	In lab force	In lab force	In lab force	In lab force
Average for Black Tulsa, 1920	14.163	37.312	23.305	29.820

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

The table reports OLS estimates. Coefficients are reported with standard errors (clustered by city) in parentheses. The unit of observation is an individual. The dependent variables are reported at the top of the table. The relevant population is indicated by the 'Sample' row. For the sample of individuals in the labor force, we examine individuals who report being in the labor force and who have a valid occupational code (see the Appendix for further explanation). All specifications include year-race fixed effects, year-city fixed effects, and city-race fixed effects.

population of Tulsa following the Massacre. All coefficients are negative and highly significant. The effects are sizeable in magnitude and can be compared to the mean values for Black Tulsans in 1920, which are reported in the final row of the table.

### B. National estimates without spillovers

The next step in our analysis examines variation across all counties in the United States. We begin by first considering the case without spatial spillovers to Black populations outside of Tulsa. While the assumption of no spillovers is likely unrealistic, it provides a useful benchmark against which to compare our estimates that allow for spillovers. If the spillover effects are of the same sign as the direct effects, then not accounting for them will tend to bias the estimated direct effects towards zero since the observations that we compare to the treated group are also affected, resulting in a smaller difference between the two groups. As we will see, our estimates are consistent with this being the case.

In our first specification, we continue to estimate a standard diff-in-diff-in-diff regression where we compare individuals who are living in Tulsa, before and after the Massacre, and who are white or Black. While we could continue to estimate the regression at the individual-level as above, for computational efficiency, we aggregate the data and perform the analysis at the county, race, and census year level using weighted least square. Our estimating equation is as follows:

$$y_{crt} = \psi_{rt} + \theta_{ct} + \tau_{cr} + \beta_1 (I_c^{Tulsa} \times I_r^{Black} \times I_t^{Post}) + \mathbf{X}'_{crt} \boldsymbol{\Gamma} + \varepsilon_{crt}, \quad (2)$$

where  $c$  denotes U.S. counties,  $r$  race (Black, white, or other), and  $t$  census years (1910–1940).<sup>15</sup> The dependent variable,  $y_{crt}$ , is the group mean of one of our outcomes of interest discussed above.  $I_c^{Tulsa}$  is an indicator that equals one if county  $c$  is Tulsa,  $I_r^{Black}$  is an indicator that equals one if the race of the aggregated observation is Black individuals, and  $I_t^{Post}$  is an indicator that equals one if decade  $t$  is after 1920. Our interest is in the coefficients on the interaction term  $\beta_1$ , which capture 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  $\tau_{cr}$ . The equation also includes a vector of covariates denoted by  $\mathbf{X}'_{crt}$ . These covariates include a control for the 1919 race riots: the interaction of an indicator for the

<sup>15</sup>Observations from Alaska and Hawaii exist for 1910 but no other years in our time period of interest (likely due to the fact that they were not yet states). We exclude the 1910 observations for those two states in our analysis.

Table 4: Economic effects of the Tulsa Massacre, sample of men

	Dependent variable is the average of:			
	Home own [hh head] (1)	Home own [fam] (2)	Log(occscore) (3)	White-Collar (4)
Post x Black x Tulsa	-0.042*** (0.007)	-0.047*** (0.008)	-0.023*** (0.005)	-0.012*** (0.001)
Num.Obs.	28654	29815	29004	29815
Year-County FEs?	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y
1919 Riot Controls?	Y	Y	Y	Y
Sample	HH Heads	All	In lab force	All
Average for Black Tulsa, 1920	0.298	0.255	2.971	0.018

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

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. Regressions are weighted by the relevant population in each county, racial group, and year. The relevant population is indicated by the 'Sample' row. For the sample of individuals in the labor force, we examine individuals who report being in the labor force and who have a valid occupational code (see the Appendix for further explanation). All specifications include year-race fixed effects, year-county fixed effects, and county-race fixed effects.

presence of a riot in the county, a post 1919 indicator, and an indicator for the race being Black individuals. We estimate equation (2) using weighted least squares (WLS) with weights given by the population of each observation. All standard errors are clustered at the county level.

Estimates of equation (2) are reported in Table 4 for men and Appendix Table A14 for men and women combined. In Columns 1 and 2, we report estimates examining home ownership as the dependent variable. As before, the dependent variable in Column 1 is the fraction of household heads who report owning their home. In Column 2, the dependent variable is the fraction of individuals who live in a home that is owned by a family member. For both measures, we find a significant negative effect. For example, the Tulsa Massacre is associated with a decline in the share of male household heads who own their home by 4.2 percentage points and a decline in the share of men who live in a home owned by a family member by 4.7 percentage points. These estimates are qualitatively identical and quantitatively very similar to the estimates from the individual-level regressions where the comparison locations were restricted to a set of control cities.

We next turn to an examination of income as proxied by the natural log of the occupation score of those in the labor force. As reported in Column 3, for the male sample, we find that the Massacre had an adverse effect on the occupational score. For men, the Massacre resulted in a decline of 2.3%.

Motivated by the fact that the occupation-based income measure is only a rough proxy of

Table 5: Occupational effects of the Tulsa Massacre, sample of men

	Dependent variable is the average of:			
	SEI Score (1)	Earnings Score (2)	Prestige Score (3)	Status Score (4)
Post x Black x Tulsa	-2.179*** (0.168)	-11.519*** (1.334)	-0.898*** (0.173)	-12.665*** (1.266)
Num.Obs.	29004	29004	29004	29004
Year-County FEs?	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y
1919 Riot Controls?	Y	Y	Y	Y
Sample	in labor force	in labor force	in labor force	in labor force
Average for Black Tulsa, 1920	13.807	34.898	24.159	28.168

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

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. Regressions are weighted by the relevant population in each county, racial group, and year. The relevant population is indicated by the 'Sample' row. For the sample of individuals in the labor force, we examine individuals who report being in the labor force and who have a valid occupational code (see the Appendix for further explanation). All specifications include year-race fixed effects, year-county fixed effects, and county-race fixed effects.

actual income, we examine an alternative measure of occupational success, measured as employment in a professional or technical position, which we call white-collar jobs. The estimates are reported in Column 4. We find a statistically significant decline in employment in white collar occupations. For men, the massacre resulted in a decline of white collar employment by 1.2 percentage points, which is enormous given that the baseline share for Black male Tulsans was 1.8 percent in 1920. The estimates are consistent with the estimate of occupational downgrading found in Column 3. They are also consistent with historical accounts of individuals who were previously in professional occupations having to take jobs as manual laborers after the Massacre.

As before, we probe the robustness of our occupation findings by examining alternative measures of occupation-based income. The estimates for the male sample are reported in Table 5. Across all four measures, we see consistent evidence of occupational downgrading among the Black male population of Tulsa following the Massacre.

### C. National estimates allowing for 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. There are a number of potential dimensions for such spillover effects and we focus on two that we expect to be the most important. One is of spillover effects that occur through the media coverage of the Massacre. Locations with extensive news coverage, much of which actually justified the Massacre and described it as being

in the long-term best interest of all involved, would have experienced a stronger warning and a more salient signal of what was possible in their own community. A second characteristic that was also likely important in this regard was the extent to which a county was segregated at the time. Places that, like Tulsa, were highly segregated were vulnerable to large-scale violence, theft, and destruction that targeted black neighborhoods. In integrated counties, precise racial-targeting would be much more difficult or even impossible. Without segregated neighborhoods, common knowledge of which houses were Black-owned and which were white-owned would have been limited. Beyond this, burning a home would have been risky to the neighbors. If the neighbors of a burned home were white, this risk would have different consequences than if the neighbors (and the whole nearby neighborhood) were Black-owned.

We measure information flows about the massacre using information on newspaper coverage of the event using data from Newspapers.com, which covers about 31,000 pages of newspapers from about 2,000 different publications across the United States. We search all pages from June 1–4, 1921 of all papers in the database for mentions of ‘tulsa’ or ‘tulsa riot.’ We also search for the term ‘june.’ Since the date of each search is in June 1921, all pages should include this phrase and this count serves as a measure of the total number of newspapers or pages.

We use these data to construct six state-level measures of newspaper coverage of the 1921 Tulsa Massacre. For each term (‘tulsa’ or ‘tulsa riot’), we calculate the fraction of: (1) all newspaper pages with the term, (2) newspapers with the term anywhere on the pages, and (3) newspapers with the term somewhere on their front page. As reported in Appendix Table A15, the six state-level measures tend to be positively correlated with each other. In all cases but one, the pairwise correlations are positive and in all cases but two, the correlation coefficient is above 0.19 and they are generally above 0.5.

While it is reassuring that the variables tend to be positively correlated, the differences in the strength of the correlations also indicate that there is variation in the underlying variables even though they were each constructed to capture the extent to which the newspapers in a county discussed the Tulsa Massacre. To back out this underlying variable of interest from our multiple measures, we use factor analysis and calculate the first principal component of the six measures. The factor loadings are reported in Appendix Table A16. All loadings for the first principal component are positive with weights ranging from 0.18 to 0.48. The fact that all loadings are positive is reassuring. The weights on each variable are very similar, except for the fraction of

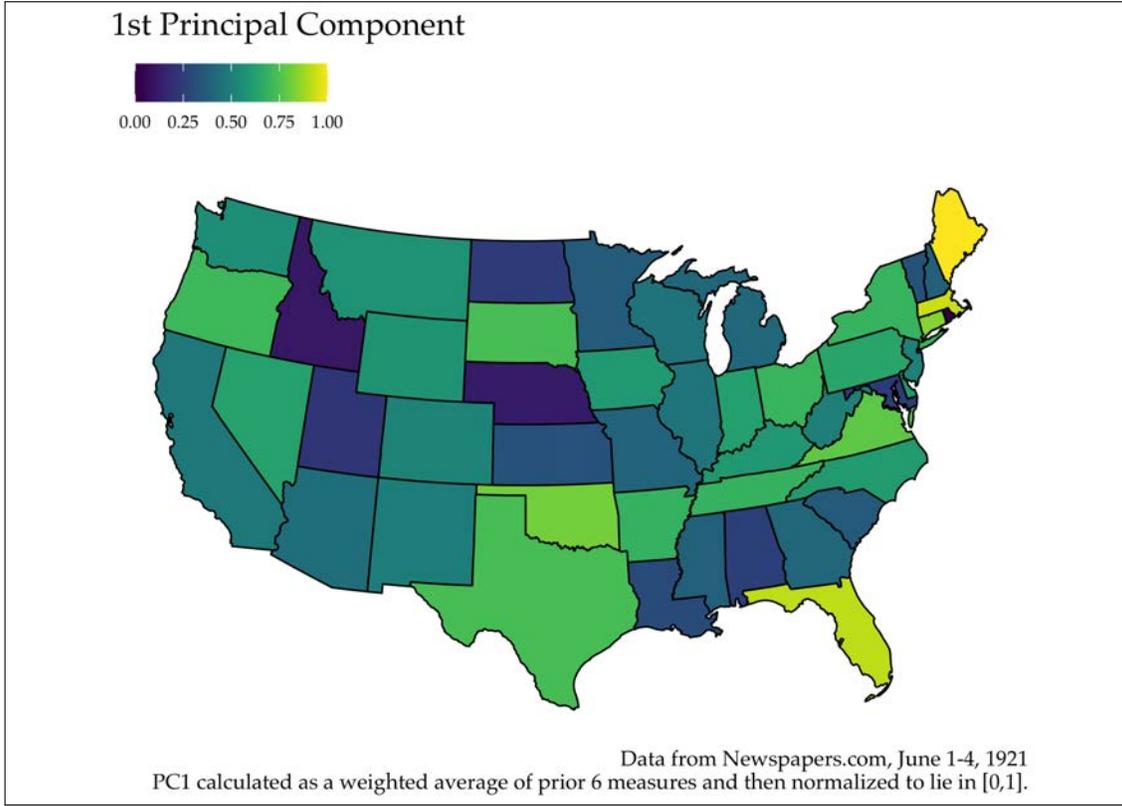


Figure 9: Index of Newspaper Coverage of the Tulsa Massacre, using Principal Components Analysis

pages with the word Tulsa, which has a weight that is less than half of the other variables.

We normalize the principal component to lie between zero and one and to facilitate a clean interpretation of the estimates as spillovers, assign a value of zero to Tulsa. The resulting variable, which we denote  $Newspaper_{s(c)}$ , is displayed visually in Figures 9 and 10. As shown, there appears to be rich variation between states and even between states in the same regions.

To account for spillovers that depend on the extent of segregation in a county at the time, we rely on Logan and Parman’s (2017a) measure of the racial similarity of neighbors of a county. We use the 1920 measure and normalize it to range between zero and one. To facilitate a clean interpretation of spillovers, we assign the measure the value of zero for Tulsa. We denote the variable  $Segregation_c$ .

With our constructed spillover variables, we then estimate the following equation:

$$\begin{aligned}
 y_{crt} = & \psi_{rt} + \theta_{ct} + \tau_{cr} + \kappa_1 (I_c^{Tulsa} \times I_r^{Black} \times I_t^{Post}) + \kappa_2 (Newspaper_{s(c)} \times I_r^{Black} \times I_t^{Post}) \\
 & \kappa_3 (Segregation_c \times I_r^{Black} \times I_t^j) + \mathbf{X}'_{crt} \boldsymbol{\Omega} + \varepsilon_{crt}.
 \end{aligned} \tag{3}$$

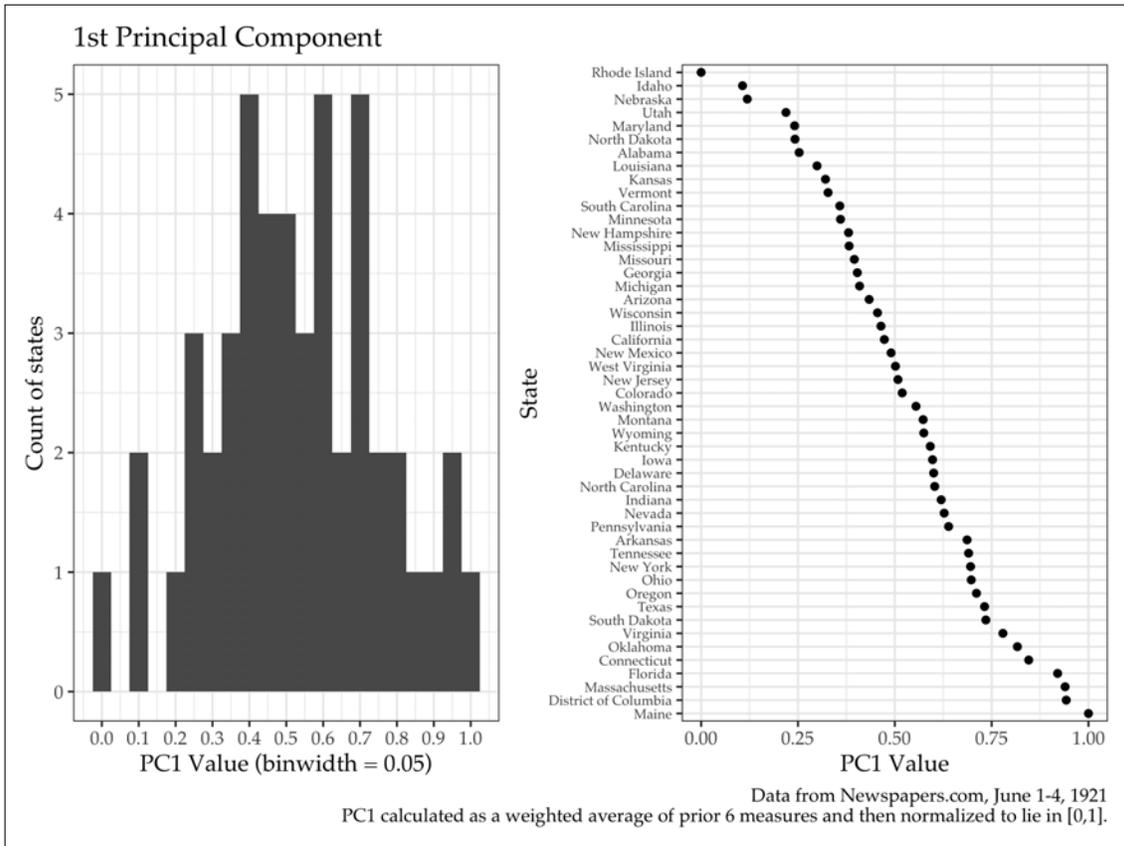


Figure 10: Index of state-level average newspaper coverage of the Tulsa Massacre

Table 6: Estimates allowing for newspaper coverage spillovers, 1910-1940, men sample

	Dependent variable is the average of:			
	Home own [hh head] (1)	Home own [fam] (2)	Log(occscore) (3)	White-Collar (4)
Post x Black x Tulsa	-0.071*** (0.018)	-0.080*** (0.023)	-0.031** (0.015)	-0.015*** (0.002)
Post x Black x News Coverage	-0.052 (0.033)	-0.061 (0.041)	-0.015 (0.027)	-0.005 (0.004)
Num.Obs.	28654	29815	29004	29815
Year-County FEs?	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y
1919 Riot Controls?	Y	Y	Y	Y
Sample	HH Heads	All	In lab force	All
Average for Black Tulsa, 1920	0.298	0.255	2.971	0.018

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

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. Regressions are weighted by the relevant population in each county, racial group, and year. The relevant population is indicated by the 'Sample' row. For the sample of individuals in the labor force, we examine individuals who report being in the labor force and who have a valid occupational code (see the Appendix for further explanation). All specifications include year-race fixed effects, year-county fixed effects, and county-race fixed effects.

where  $c$  continues to denote counties,  $t$  census years, and  $r$  a racial group (either Black, white, or other). The index  $s(c)$  denotes the state of county  $c$ . All variables are as defined above. As noted,  $Newspaper_{s(c)}$  is our state-level measure of newspaper exposure and  $Segregation_c$  is the measure of segregation of a county in 1920. Since for Tulsa, which directly experienced the massacre, the spillover variable takes on the value of zero,  $\kappa_1$  captures the total (direct) effect of the massacre on Black inhabitants of Tulsa, and  $\kappa_2$  and  $\kappa_3$  provide measures of the (indirect) effect of the Massacre on locations other than Tulsa through newspaper articles about the Massacre and the extent of segregation in their county (as of 1920).

The estimates of equation (3) are reported in Table 6 for the male sample. We find that accounting for spillovers does not qualitatively alter our estimate of the direct effect of the Tulsa Massacre. The estimated direct effects are very similar to the estimates of equation (2) reported in Table 4. We find evidence of sizeable spillover effects on home ownership. Despite being sizeable, the estimates lack precision and are not significant at conventional levels. For Black people living in counties outside of Tulsa, home ownership rates after 1921, relative to before, tend to be lower the greater the newspaper coverage of the Tulsa Massacre. According to the magnitude of the estimates, if a Black community lived in a state with the maximum level of coverage in the sample (Maine), then the effect of the Massacre on home ownership was approximately the same as for Tulsa. For the median state, with a value of 0.37, the estimated effect is approximately 37% of the

direct effect.

The most likely explanation for the spillover effects is that the massacre altered the beliefs and expectations of Black people across the country. At the time, the massacre was the largest single episode of property destruction experienced by a Black community.<sup>16</sup> It provided a warning of the danger of the accumulation of wealth through home ownership. In an instant, one's home and possessions could be destroyed. This could have certainly affected one's decision of whether to accumulate wealth through housing stock. Our findings are consistent with this.

We next turn to our estimates that allow for spillovers to the Black community of a county depending on the extent of racial segregation in the county in 1920. The estimates are reported in Table 7. The direct effects remain nearly identical when accounting for this additional spillover type. In addition, the newspaper spillover estimates remain very similar. We find that the segregation spillover estimates for home ownership is negative and significant. This is consistent with the Massacre reducing rates of Black homeownership in counties across the country that, like Tulsa, were highly segregated. In segregated counties with distinctively Black neighborhoods, after 1921 there was the legitimate concern of the entire neighborhood being targeted and experiencing the same fate as Greenwood. We also find a spillover effect for individuals being in a white collar occupation. This is potentially explained by the fact that these occupations are typically associated with the ownership of one's own place of business (e.g., law firms, newspaper offices, etc) and of being a particular target of racial animosity.

## **7. Long-Term Effects of the Massacre on Home Ownership, 1910–2000**

To this point, we have focused on the effects of the Massacre until 1940. We now turn to an examination of the longer-term effects of the massacre on home ownership. While for the post-1940 years, we do not have access to the micro-Census, we are able to use county-level data by race from the NHGIS, which are available for 1980, 1990, and 2000. The NHGIS include data on the number of household heads who live in owned housing units and the number who live in rented housing units, broken down by county and race. We use these data to construct a measure of the home ownership rate (owners divided by the sum of owners and renters).<sup>17</sup> While there

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<sup>16</sup>The Rosewood Massacre, another large-scale destruction of Black-owned property, occurred two years later in January of 1923.

<sup>17</sup>For all the finer detail of the data construction and differences between the pre-1940 and post-1940 measures, see the Appendix.

Table 7: Estimates allowing for segregation and newspaper coverage spillovers, men sample, 1910–1940

	Dependent variable is the average of:			
	Home own [hh head] (1)	Home own [fam] (2)	Log(occscore) (3)	White-Collar (4)
Post x Black x Tulsa	-0.103*** (0.025)	-0.116*** (0.030)	0.017 (0.022)	-0.020*** (0.003)
Post x Black x News Coverage	-0.051 (0.034)	-0.060 (0.042)	-0.018 (0.030)	-0.005 (0.004)
Post x Black x Segregation	-0.072* (0.036)	-0.079* (0.044)	0.105*** (0.027)	-0.011*** (0.003)
Num.Obs.	27529	28530	27787	28530
Year-County FEs?	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y
1919 Riot Controls?	Y	Y	Y	Y
Sample	HH Heads	All	In lab force	All
Average for Black Tulsa, 1920	0.298	0.255	2.971	0.018

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

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. Regressions are weighted by the relevant population in each county, racial group, and year. The relevant population is indicated by the 'Sample' row. For the sample of individuals in the labor force, we examine individuals who report being in the labor force and who have a valid occupational code (see the Appendix for further explanation). All specifications include year-race fixed effects, year-county fixed effects, and county-race fixed effects.

are some slight differences between the post- and pre-1940 Census measures, the full series does provide measures that are comparable for 1910, 1920, 1930, 1940, 1980, 1990, and 2000, allowing us to examine longer-term effects.

We begin the analysis by extending our panel to include 1980, 1990, and 2000. Because the post-1940 data do not allow us to focus specifically on the sample of men, we must use the full sample. Thus, for comparison we report estimates for the full sample where the dependent variable is the share of household heads that are home owners. As reported in Table 6, the estimates are nearly identical to the same estimates when the sample of men is used.

The estimates of equations (2) and (3) for a panel that includes 1980, 1990 and 2000 are reported in Table 9. Column 1 reports estimates of equation (2), which is our baseline equation without spillovers. Columns 2–4 then report estimates of version of equation (3), where newspaper and/or segregation spillovers are included in the equation. We continue to estimate a negative and statistically significant negative direct effect of the Tulsa Massacre on home ownership. In addition, the magnitude of the estimated direct effect is about twice as large when we extend the sample period to 2000. This can be seen by directly comparing the estimates of each column of Table 8 with the estimates from the same column in Table 9. The 1910–1940 estimates of the direct effect range from  $-0.042$  to  $-0.097$ . By contrast, the 1910–2000 estimates range from  $-0.130$  to

Table 8: Estimates for HH Head Home Ownership, 1910–1940, full sample

	Dependent variable is the average of HH Head Home Ownership:			
	No Spillovers (1)	News Spillovers (2)	Segregation Spillovers (3)	News and Segregation Spillovers (4)
Post x Black x Tulsa	-0.042*** (0.007)	-0.064*** (0.018)	-0.076*** (0.020)	-0.097*** (0.025)
Post x Black x News Coverage		-0.042 (0.033)		-0.041 (0.035)
Post x Black x Segregation			-0.073** (0.034)	-0.071** (0.035)
Num.Obs.	28853	28853	27712	27712
Year-County FEs?	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y
1919 Riot Controls?	Y	Y	Y	Y
Sample	HH Heads	HH Heads	HH Heads	HH Heads
Average for Black Tulsa, 1920	0.296	0.296	0.296	0.296

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

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. Regressions are weighted by the relevant population in each county, racial group, and year. The relevant population is indicated by the 'Sample' row. All specifications include year-race fixed effects, year-county fixed effects, and county-race fixed effects.

−0.198.

We find that in the sample that is extended to 2000, the estimated newspaper effects are larger in magnitude but the segregation effects are smaller.<sup>18</sup> The newspaper spillover estimate is either −0.042 or −0.041 depending on whether or not we also account for segregation spillovers. In the longer-run sample, the same estimates are −0.115 and −0.114. By contrast, we find the longer-term estimates of the segregation spillover effects to be noticeably smaller in magnitude, which suggests that unlike the other effects these may have been temporary.

These estimates provide evidence that the effects of the Massacre – namely, the direct effects and newspaper spillover effects – were not temporary but persistent, and that the effects may actually be widening overtime. The Massacre may have put Black Tulsans and some Black communities on a different trajectory, at least in terms of home ownership. We now turn to a more detailed examination of these dynamics by estimating a flexible dynamic equation, which allows the post treatment effects of the Massacre to vary by decade:

$$\begin{aligned}
 y_{crt} = & \psi_{rt} + \theta_{ct} + \tau_{cr} + \sum_{j \in J} \kappa_1^j (I_c^{Tulsa} \times I_r^{Black} \times I_t^j) + \sum_{j \in J} \kappa_2^j (Newspaper_{s(c)} \times I_r^{Black} \times I_t^j) \\
 & + \sum_{j \in J} \psi_2^j (Segregation_c \times I_r^{Black} \times I_t^j) + \mathbf{X}'_{crt} \boldsymbol{\Omega} + \varepsilon_{crt}, \tag{4}
 \end{aligned}$$

<sup>18</sup>As before, accounting for the spillover effects also increases the estimated magnitude of the direct effect.

Table 9: Estimates for HH Head Home Ownership, 1910–2000, full sample

	Dependent variable is the average of HH Head Home Ownership:			
	No Spillovers (1)	News Spillovers (2)	Segregation Spillovers (3)	News and Segregation Spillovers (4)
Post x Black x Tulsa	-0.130*** (0.012)	-0.191*** (0.039)	-0.135*** (0.041)	-0.198*** (0.061)
Post x Black x News Coverage		-0.115* (0.062)		-0.114* (0.061)
Post x Black x Segregation			-0.011 (0.078)	-0.015 (0.078)
Num.Obs.	54757	52275	52063	49648
Year-County FEs?	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y
1919 Riot Controls?	Y	Y	Y	Y
Sample	HH Heads	HH Heads	HH Heads	HH Heads
Average for Black Tulsa, 1920	0.296	0.296	0.296	0.296

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

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. Regressions are weighted by the relevant population in each county, racial group, and year. The relevant population is indicated by the 'Sample' row. All specifications include year-race fixed effects, year-county fixed effects, and county-race fixed effects.

where all variables are as defined prior, except now  $t$  indexes the larger set of Census years: 1910, 1920, 1930, 1940, 1980, 1990, and 2000.  $I_t^j$  is an indicator variable that equals one if year  $t = j$ , where  $j \in \{1910, 1920, 1930, 1940, 1980, 1990, 2000\}$ . We estimate versions of equation (4) without and with each of the spillover measures:  $Newspaper_{s(c)} \times I_r^{Black} \times I_t^j$  and  $Segregation_c \times I_r^{Black} \times I_t^j$ .

The estimates of equation 4 are reported in Table 10, which has the same structure as Table 9. We report the estimates that do not account for the spillover measures in Column 1 and estimates with either the newspaper and/or the segregation spillover measures in Columns 2–4. To help visualize the dynamics, we also graph the estimated coefficients and 95% confidence intervals for the direct effect estimates (Figure 11), the newspaper spillover estimates (Figure 12), and the segregation spillover estimates (Figure 13).

A number of interesting patterns emerge from the estimates. As shown in Figure 11, as long as we account for either newspaper or segregation spillovers, we find no evidence for pre-trends in either the direct effect or the spillover effect, which is reassuring. In addition, for both spillover effects, we also find no evidence of pre-trends (Figures 12 and 13).

We also find that for both the direct effect and for the newspaper spillover effects, the estimates show that the legacy of the massacre persists in the long-run. For both effects, we see an immediate short-run effect that is large in 1930 and then grows slightly in 1940. The direct effects appear to then remain constant until 1980, after which the adverse effect grow over time

Table 10: Dynamic Difference in Difference for HH Head Home Ownership, 1910–2000, full sample

	Dependent variable is the average of HH Head Home Ownership:			
	No Spillovers (1)	News Spillovers (2)	Segregation Spillovers (3)	News and Segregation Spillovers (4)
Year 1910 x Black x Tulsa	-0.015* (0.008)	-0.012 (0.019)	-0.017 (0.013)	-0.012 (0.020)
Year 1930 x Black x Tulsa	-0.013 (0.009)	-0.038** (0.018)	-0.033 (0.026)	-0.054* (0.030)
Year 1940 x Black x Tulsa	-0.066*** (0.007)	-0.105*** (0.013)	-0.088*** (0.027)	-0.123*** (0.030)
Year 1980 x Black x Tulsa	-0.053*** (0.012)	-0.123*** (0.041)	-0.056 (0.044)	-0.124* (0.063)
Year 1990 x Black x Tulsa	-0.137*** (0.013)	-0.213*** (0.044)	-0.146*** (0.045)	-0.221*** (0.067)
Year 2000 x Black x Tulsa	-0.199*** (0.012)	-0.265*** (0.044)	-0.201*** (0.044)	-0.265*** (0.067)
Year 1910 x Black x News Coverage		0.005 (0.034)		0.005 (0.034)
Year 1930 x Black x News Coverage		-0.050 (0.032)		-0.048 (0.033)
Year 1940 x Black x News Coverage		-0.075*** (0.023)		-0.074*** (0.023)
Year 1980 x Black x News Coverage		-0.127* (0.064)		-0.127** (0.062)
Year 1990 x Black x News Coverage		-0.139* (0.070)		-0.132* (0.068)
Year 2000 x Black x News Coverage		-0.123* (0.069)		-0.132** (0.062)
Year 1910 x Black x Segregation			-0.004 (0.034)	0.000 (0.031)
Year 1930 x Black x Segregation			-0.042 (0.044)	-0.036 (0.044)
Year 1940 x Black x Segregation			-0.048 (0.050)	-0.040 (0.049)
Year 1980 x Black x Segregation			-0.006 (0.086)	-0.004 (0.089)
Year 1990 x Black x Segregation			-0.025 (0.087)	-0.031 (0.090)
Year 2000 x Black x Segregation			0.001 (0.084)	0.020 (0.090)
Num.Obs.	54757	52275	52063	49648
Year-County FEs?	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y
1919 Riot Controls?	Y	Y	Y	Y
Sample	HH Heads	HH Heads	HH Heads	HH Heads
Average for Black Tulsa, 1920	0.296	0.296	0.296	0.296

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

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. Regressions are weighted by the relevant population in each county, racial group, and year. The relevant population is indicated by the 'Sample' row. All specifications include year-race fixed effects, year-county fixed effects, and county-race fixed effects.

We use NHGIS data on home ownership from 1980-2000. For each county by race by year observation, NHGIS provides the number of householders who live in owner occupied housing units and rented housing units. We calculate the share of owners as the number of householders who report living in an owned unit, divided by the sum of householders living in owned and rented units. Additional details are available in the appendix.

until 2000, the last period in our sample. The newspaper spillover effects also grow but appear more constant after 1940. We also find that, as expected, the magnitudes of the direct effects are much greater than the spillover effects. To see this, consider the state with the greatest newspaper exposure with a normalized exposure measure of one. For this state, the estimated newspaper effect in 2000 is only half the size of the direct effect.

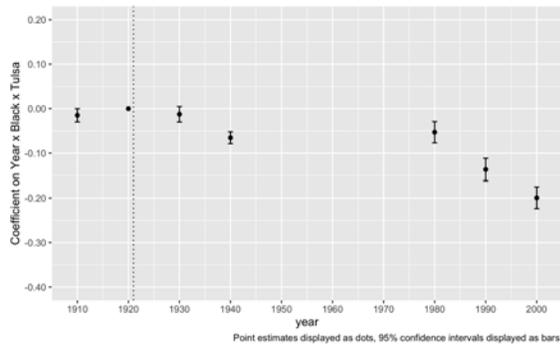
Lastly, we find that the segregation spillover effects do not persist. After 1940, the estimated effects are close to zero (and sometimes positive and sometimes negative). Thus, we do not see persistently lower rates of home ownership after 1921 among Black inhabitants in counties that were more segregated in 1920. The Massacre appears to have reduced Black home ownership in places that were more segregated until 1940 but not afterwards.

One may have expected the segregation effect to persist. A potential explanation for the lack of persistence of the importance of 1920 segregation is that what is important is the contemporaneous measure of segregation and that the extent of segregation does vary over time. The relationship between segregation measures in different years between 1880 and 1940 is reported in Appendix Table A17. As shown, there is change in segregation over time. For example, while the correlation between segregation in 1880 and 1900 is 0.70 the correlation weakens over time. The same correlation between 1880 and 1940 is 0.53. Thus, the lack of persistence of this spillover might be due to the fact that the importance of segregation works through a contemporaneous effect and over time 1920 segregation becomes a weaker predictor of current segregation.

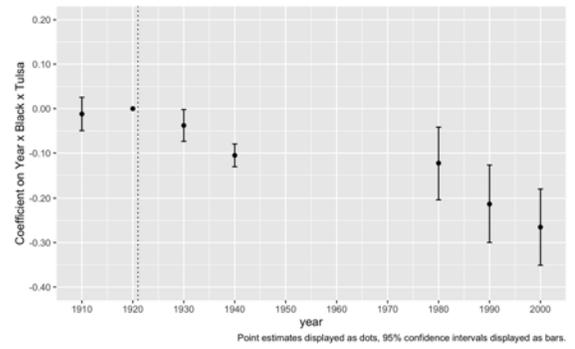
## **8. Conclusions and Future Research**

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.

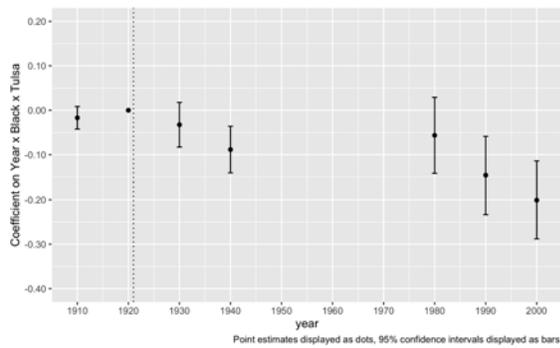
We find that the Massacre is associated with a decline in home ownership and lower average occupational status. We also find evidence of spillover effects to Black people in other parts of the United States that were either exposed to extensive newspaper coverage of the Massacre (much of it supportive of the events) or, like Tulsa, had high levels of racial segregation which made widespread and targeted destruction of black homes and businesses possible. The spillover effects tend to be in the same direction as the direct effects, although smaller in magnitude, and



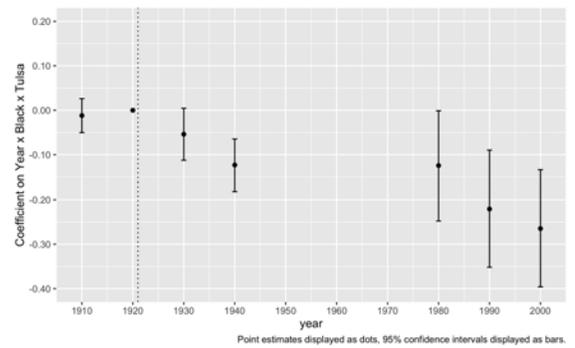
(a) Column 1 of Table 10



(b) Column 2 of Table 10

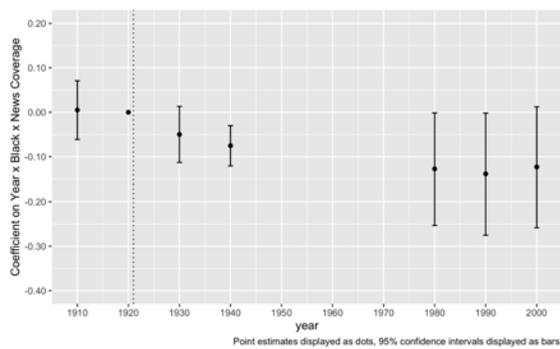


(c) Column 3 of Table 10

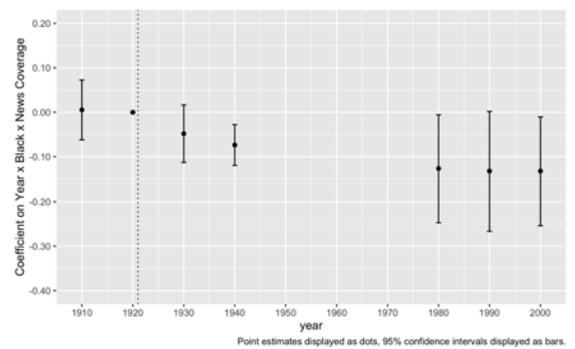


(d) Column 4 of Table 10

Figure 11: Dynamic DD estimates, direct Tulsa effects, full sample, 1910–2000

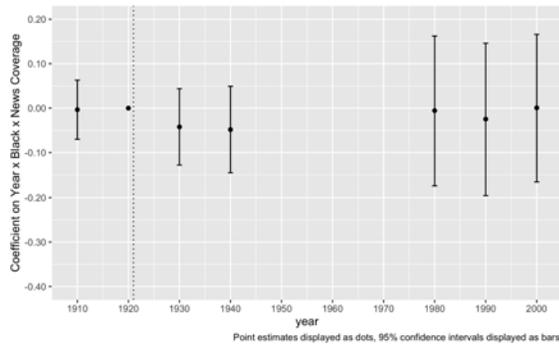


(a) Column 2 of Table 10

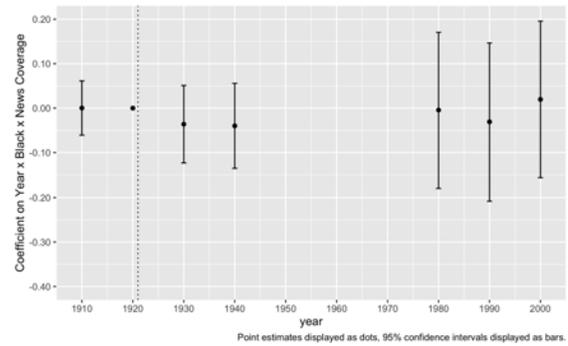


(b) Column 4 of Table 10

Figure 12: Table 10 Dynamic DD estimates, newspaper spillover effects, full sample, 1910–2000



(a) Column 3 of Table 10



(b) Column 4 of Table 10

Figure 13: Dynamic DD estimates, segregation spillover effects, full sample, 1910–2000

are most clearly seen in home ownership. The clear impact on home ownership is consistent with the Massacre being a warning about the potential destruction of wealth, which in turn affected the decision to invest in assets like homes.

When we extend the analysis past 1940 to include 1980, 1990, and 2000, we find that the direct effects of the massacre persist and actually grow. The same is found for the newspaper coverage spillover effects. However, we find that the spillover effects working through historical racial segregation (measured in 1920) do not persist over time. This is potentially explained by the imperfect persistence of county-level segregation over time.

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 matching 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.

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## A1. Data: Measurement and Sources

### *Outcomes of interest*

We use complete count U.S. census microdata from 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>

### *HH Head Home Ownership*

For household head home ownership, we require that a respondent report living in an owned home and also report being the household head. We assume household heads of owned home are the people who own the homes. For the hh head home ownership measure, we restrict the sample to household heads, so that the variable is missing for all non-household heads.

### *Family 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*

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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>

of home ownership. Our home ownership variable is a binary variable for each person that is the same at the family-level.

*Home ownership, 1980, 1990, 2000*

In addition to the micro-census data, we use county-level data on home ownership from the NHGIS to examine longer-run impacts in the years 1980, 1990, and 2000. We use the following NHGIS data files on tenure: `nhgis0011_ds104_1980_county`, `nhgis0011_ds104_1990_county`, and `nhgis0011_ds104_2000_county`. These data and corresponding codebooks can be downloaded from <https://data2.nhgis.org/main>, with additional documentation and source information at <https://www.nhgis.org/documentation/tabular-data>.

To construct a measure of county-level household head ownership by race, we rely on the counts of householders who live in an owner-occupied housing unit and householders who live in a renter occupied housing unit (for example, variables `CY001` through `CY010` in the 1980 data). A “householder” is “The person, or one of the people, in whose name the home is owned, being bought, or rented. If there is no such person present, any household member 15 years old and over can serve as the householder. Two types of householders are distinguished: a family householder and a nonfamily householder. A family householder is a householder living with one or more people related to him or her by birth, marriage, or adoption. The householder and all people in the household related to him are family members. A nonfamily householder is a householder living alone or with nonrelatives only.”

The variables draw from the universe of occupied housing units and are available for 1980, 1990, and 2000. We take the number of owner occupied housing units in the county as the numerator and the number of owner occupied housing units plus the number of renter occupied housing units as the denominator. To create the ownership measure for Black individuals in 1980, our calculation is  $C7Y002 / (C7Y002 + C7Y007)$ . For white individuals it is  $C7Y001 / (C7Y001 + C7Y006)$ . The NHGIS describes these count variables as the number of units, which we take to be the same as the number of householders.

As with the complete-count measures, we combine other races into one category, so that the races we analyze are Black, white, and other. For example, in the 1980 data, we simply take the sum of American Indian, Eskimo, and Aleut owners (`C7Y003`), Asian and Pacific Islander owners (`C7Y004`), and Other owners (`C7Y005`) to create the other category.

The ownership share for the other category is calculated as  $(C7Y003+C7Y004+C7Y005) / (C7Y003+C7Y004+C7Y005+C7Y008+C7Y009+C7Y010)$ .

We use the population of householders as weights in the regressions. As with the complete count data, weights vary by census year, county, and racial group.

Our measure of home ownership in the NHGIS corresponds closely with the household head ownership measure in the complete count census (described above). Both samples restrict analysis to householders (in the NHGIS) or household heads (in the complete count census), and calculate home ownership rates at the year, race and county level. Since the NHGIS does not include a gender breakdown, we append the NHGIS data to the full sample complete count data and report estimates using this dataset.

#### *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 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>

For one measure we condition on being in the labor force, while in the other we do not. If we condition on being 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. If we don’t condition in this way, we need to take the natural log of the measure plus 1 (to avoid undefined values).

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

### *White-collar jobs*

We also capture if someone reports a professional or technical job in the census, which we call white-collar jobs. For reference, the ten most common white collar occupations in Tulsa in the 1920 census, broken down by race, are reported in Appendix Tables A11 (for men) and A12 (for women).

### *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>22</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>23</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>24</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

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

<sup>23</sup>More information here: <https://usa.ipums.org/usa-action/variables/ERSCOR50>

<sup>24</sup>More information here: <https://usa.ipums.org/usa-action/variables/PRESGL>

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>25</sup>

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<sup>25</sup>More information here: <https://usa.ipums.org/usa-action/variables/NPBOSS50>

## A2. Archival Data

To supplement our complete count census data, we also use archival data on Massacre casualties and property losses to more finely define treatment. These other records 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 Massacre effects.

### A1. Deaths

We compiled our list of those killed from four sources, all of which we digitized from the Oklahoma Historical Society's Tulsa Race Riot Commission Collection. The first is the table of 39 confirmed casualties (killed) according to death certificates, which is referenced as "Table 1: Tulsa Race Riot Deaths" in the Oklahoma Commission Report. The second is "Race Riot Dead" by Dick Warner, which is a listing of people proven dead by cemetery burial records or funeral home records. The third is "Computations as to the Deaths from the 1921 Tulsa Race Riot" also written by Dick Warner, which lists individuals who were issued death certificates or were listed as dead in funeral home records, legal claims, or newspapers or were mentioned dead by family or neighbors. Lastly, we use the "A working list of the confirmed victims of the riot compiled by Dick Warner, Dr. Scott Ellsworth, and Dr. Clyde Snow," which includes names from death certificates, funeral home records, newspapers, court case petitions, and interviews.

These four sources identify deaths on the basis of the following distinct kinds of primary sources: death certificates<sup>26</sup>, funeral records<sup>27</sup>, cemetery burial records (graves), legal claims, newspaper articles<sup>28</sup>, and interviews.<sup>29</sup> The list of those killed and the source of the information is provided in Appendix Table A19.

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<sup>26</sup>Death Certificates were issued by the City of Tulsa.

<sup>27</sup>The funeral houses providing the records were Stanley & McCune and Mitchell-Flaming.

<sup>28</sup>The main newspapers reporting on mortalities were the June 1, June 2, and June 3 1921 editions of Tulsa World, the June 1 and June 2 1921 editions of the Tulsa Tribune, the June 1 1921 edition of the Guthrie Daily Leader, and the June 1 1921 edition of the Muskogee Phoenix.

<sup>29</sup>We cross-validated these listings, which have been compiled by the Oklahoma Historical Society, against a listing of Tulsa Race Riot victims compiled by I. Marc Carlson, a librarian at the University of Tulsa. All names in our listing were also in his listing.

## *A2. Injuries*

Since no comparable listing of individuals injured during the massacre has been made available by the Oklahoma Historical Society, we relied on listings by the June 1, June 2, and June 3 1921 editions of *Tulsa World*, the June 1 and June 2 1921 editions of the *Tulsa Tribune* and the 1921 Red Cross report to assemble a list of individuals admitted to hospitals due to massacre-induced wounds.<sup>30</sup> The final list, which contains 99 injured individuals, is reported in Appendix Table A19.

## *A3. Property Losses*

We compiled our list of those who lost property from three sources. First, we used the “Database of damage claims filed through the City of Tulsa by Blacks and Whites after the riot,” which we digitized from the Oklahoma Historical Society’s Tulsa Race Riot Commission Collection. This source includes names and amounts of losses in dollars. Second, we use a partial list of financial and property losses in the Massacre from the book “Race riot 1921” by Mary E. Jones Parrish (we digitized pages 115–126). The list includes losses in dollar amounts by addresses, businesses, and people. Third, and largest, we use the “Cases Filed Database” as compiled by OHS during the preparation of the 2001 report on the Massacre.<sup>31</sup> This source includes plaintiff names, addresses, defendants, property loss details, and an amount in dollars.

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<sup>30</sup>The 1921 Red Cross Disaster Relief Report summarizes the impact of the Tulsa Massacre on the health and economic well-being of the local population, and includes the names, ages, and biographical details of 10 patients who were in hospital on December 30th, 1921 due to riot-induced wounds. Although the American Red Cross paid for the hospitalization of 183 (48 black and 153 white) individuals that suffered riot-induced wounds, it does not provide the names of those that were discharged before the publication of the report. As a result, our count necessarily represents a lower bound on the true number of individuals injured by the massacre.

<sup>31</sup>Larry O’Dell shared a digitized version of this database with us.

### A3. Appendix Figures

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 A14: 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 A15: Letter from Oklahoma Governor (via OHS)

25. (wouldn't give her name) 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.	76. Virginia 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.
71. Paul W 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.	37. Carol W 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.

Figure A16: Images of the text of stories of the 1921 Tulsa Massacre from Oklahoma Historical Society Archives.

WEATHER  
Washington, June 1—  
Fair tonight and Thurs-  
day; little change in tem-  
perature.  
Relative humidity... 10%

# The Selma Times-Journal

Business Circulation  
of advertising—call 342  
News or Social—Call 77

VOL. 2, NO. 93. SELMA, ALABAMA, WEDNESDAY, JUNE 1, 1921. EIGHT PAGES TODAY

## 175 DEAD-TULSA. KLANA, OUT OF FRENZY OF RACE RIOT

### Ten Blocks Set Afire--Planes Hover over Quarter, Potting Blacks from Sky

#### RIFLE FIRE BREAKS OUT AT DAWN

Rising Sun Reveals 1,000 Whites Facing 500 Negroes, All Armed.

#### REPORT 4 RAILWAY EMPLOYEES ARE SHOT

#### Refused to Carry Whites On An Engine Into Negro Stronghold.

#### At Least 75 Dead, Including Six Whites--2,000 Negroes Taken and Prisoned--Machine Guns Arrive; Siren Call Panic at Muscogee

State Troops March in At 9 O'Clock and Take Possession of City--Negroes Rounded Up and Put in Camps--Threat of March Of Negroes Of Muscogee To Aid Tulsa, With Siren Call For Guards, Throws City in Panic.

#### 10 BLOCKS OF TULSA BURNING

#### Fire Spreading and Threatening To Wipe Out Sunset Hill White Section.

#### ARMED NEGROES DASH SCRAMBLING OUT OF BURNING HOUSES

#### Surrender to Grim-Faced Whites and Are Whirled in Autos To Prison Camps.

#### America in Vanguard of Nations in Human Activity, Says Jusserand at Centennial of Uni. of Virginia

"America's Universities, Laboratories, Scientific Periodicals and Libraries are Every Of the Whole World," Says French Ambassador--Magnificent Tributes Heaped Upon Famous Old Southern Institution.

#### HARDING TAKES UP RATES

Makes Personal Visit Afoot To The I. C. C. Members.

#### WHOLE SUBJECT TO BE THRESHED OUT

#### Plans To Pay Railroads Every Cent Due Right Now.

Okla. City, June 1.—Several fire engines, white and negro, have been killed by the race riot in Tulsa, according to a telephone message today from the chief of police at Tulsa.

White men killed 1,000 negroes, according to a telephone message today from the chief of police at Tulsa.

#### 70 Autos Surrounded Negro Section; Planes Hover Overhead

Tulsa, Okla., June 1.—As the dawn broke on an 18-hour day filled with armed white men, a siren call was heard through the city, and a panic was spread among the negroes.

#### DERBY IS TAKEN BY HUMORIST

#### Astor's Cane Horse Second in Great English Classic.

#### New Month

Charlotteville, Va., June 1.—America is in the vanguard of civilization as regards housing and education, Jules J. Jusserand, the French ambassador, declared today in an address of welcome at the formal opening of the centennial of the founding of the University of Virginia.

#### 175 DEAD

BULLETIN, 3:15

Tulsa, Okla., June 1.—Major Charles W. Daley of the police force, this afternoon estimated the number of dead from the race clash here at 175. He said he believed a number of negroes had burned to death when they had been in their homes swept by fire.

#### Gasoline Down Two Cents in Alabama

Birmingham, June 1.—Effective today a reduction of two cents in the price of gasoline in Alabama was announced by the Standard Oil Company.

#### MARTIAL LAW IS DECLARED

#### Governor Orders Entire County of Placed Under Military

Okla. City, June 1.—The martial law order was extended to include all of Tulsa county, the order placed the adjutant general in command of the city and county.

#### RIOTERS SHOOT FIREMEN DOWN

#### Work A Fireman's Life To Turn Streets On Those Burning Buildings," Says Chief.

#### LOOT BANK FRONT OF POLICE HOQ.

#### Five Bandits in Auto Drive Blue Coats Across The Street.

#### SELMAS TO HAVE BANG-UP TEAM

#### If Necessary League Will Go Outside For Players.

#### PALSIED BLACKS FLEE TO SAFETY

The trouble in Tulsa is not over, according to a report that three railway employees and a brakeman had been shot to death in the riot.

#### REFUSES PLEA OF GA. NEGROES

#### Supreme Court Will Not Review Charge Of Injustice.

#### THREAT MADE SOME TIME AGO, BUT NO TIME OR DATE SET

Charlotte, N. C., June 1.—The textile strike in North Carolina was reported to be continuing today and every effort was being made to keep the mills open.

#### THREE MORE IN CRITICAL CONDITION, BUT MAY RECOVER.

Aberdeen, Md., June 1.—The death of a man at the army proving grounds here yesterday, it was reported, was the result of a bullet wound in the chest.

#### 400 Starving In Little Town Of Alabama

Golden, June 2.—There are 400 starving men, women and children in the little town of Golden, in the western part of Alabama, as the result of the cotton strike.

#### Two Lumber Plants Burn At Monroe, La.

Monroe, La., June 1.—Two large lumber plants owned by the Clinton-Brownell Company, at Hattiesburg, La., and another owned by the same company, were destroyed by fire which originated in the dry kiln last night. Loss is estimated at \$750,000.

#### THREAT MADE SOME TIME AGO, BUT NO TIME OR DATE SET

Charlotte, N. C., June 1.—The textile strike in North Carolina was reported to be continuing today and every effort was being made to keep the mills open.

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#### THREAT MADE SOME TIME AGO, BUT NO TIME OR DATE SET

Charlotte, N. C., June 1.—The textile strike in North Carolina was reported to be continuing today and every effort was being made to keep the mills open.

Figure A17: Images of the front page of The Selma Times-Journal from June 1, 1921.

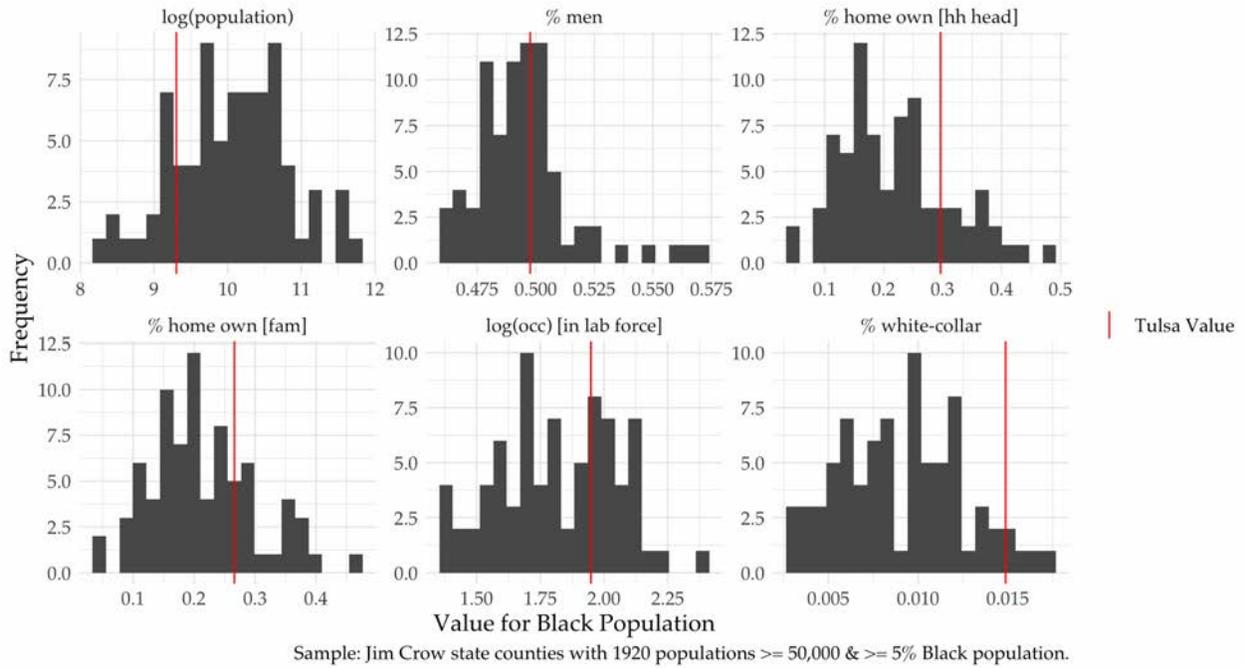


Figure A18: Characteristics of Tulsa County compared to other counties in the segregated U.S. South in 1920

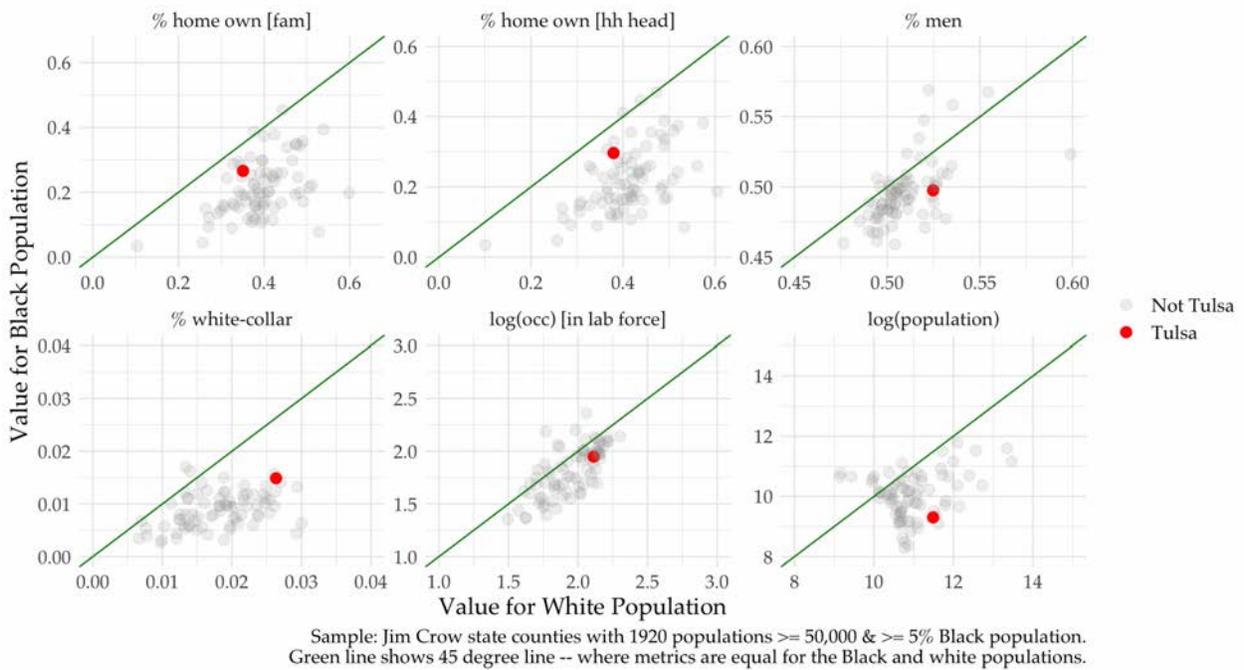


Figure A19: Characteristics of the Black and white populations of Tulsa County relative to other counties in the segregated U.S. South in 1920

#### A4. Appendix Tables

Table A11: 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 A12: 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 A13: List of counties with highest 1910–1920 population growth

County Name	State	1910 Pop	1920 Pop	Pop Growth 1910-20
Bennett County	South Dakota	3	1923	640.000
Wichita County	Texas	16114	72917	3.525
Dewey County	South Dakota	1148	4802	3.183
Baca County	Colorado	2516	8730	2.470
Crosby County	Texas	1772	6137	2.463
Palm Beach County	Florida	5594	18681	2.339
Imperial County	California	13546	43461	2.208
Luna County	New Mexico	3913	12170	2.110
<b>Tulsa County</b>	<b>Oklahoma</b>	<b>35135</b>	<b>109149</b>	<b>2.107</b>
Natrona County	Wyoming	4769	14663	2.075
Lubbock County	Texas	3624	11126	2.070
Harlan County	Kentucky	10563	31583	1.990
Lynn County	Texas	1673	4760	1.845
Logan County	West Virginia	14476	41025	1.834
Hidalgo County	Texas	13748	38147	1.775
Ottawa County	Oklahoma	15745	41632	1.644
Summit County	Ohio	108275	285994	1.641
Okmulgee County	Oklahoma	21150	55148	1.607
Eastland County	Texas	23425	58502	1.497
Maricopa County	Arizona	34502	85772	1.486

Table A14: Estimating the effects of the Tulsa massacre, men and women

	Dependent variable is the average of:			
	Home own [hh head] (1)	Home own [fam] (2)	Log(occscore) (3)	White-Collar (4)
Post x Black x Tulsa	-0.042*** (0.007)	-0.050*** (0.008)	-0.071*** (0.007)	-0.004*** (0.001)
Num.Obs.	28853	30277	29228	30277
Year-County FEs?	Y	Y	Y	Y
Race-County FEs?	Y	Y	Y	Y
Year-Race FEs?	Y	Y	Y	Y
1919 Riot Controls?	Y	Y	Y	Y
Sample	HH Heads	All	In lab force	All
Average for Black Tulsa, 1920	0.296	0.266	2.765	0.015

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

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. Regressions are weighted by the relevant population in each county, racial group, and year. The relevant population is indicated by the 'Sample' row. For the sample of individuals in the labor force, we examine individuals who report being in the labor force and who have a valid occupational code (see the Appendix for further explanation). All specifications include year-race fixed effects, year-county fixed effects, and county-race fixed effects.

Table A15: Correlation Matrix for Newspaper Coverage Measures

	'Tulsa Riot' Pages	'Tulsa' Pages	'Tulsa Riot' Front Pages	'Tulsa Riot' Papers	'Tulsa' Front Pages	'Tulsa' Papers
'Tulsa Riot' Pages	1.0000					
'Tulsa' Pages	0.5249	1.0000				
'Tulsa Riot' Front Pages	0.3959	-0.0201	1.0000			
'Tulsa Riot' Papers	0.6395	0.0274	0.7627	1.0000		
'Tulsa' Front Pages	0.4141	0.1900	0.5569	0.6774	1.0000	
'Tulsa' Papers	0.4097	0.2961	0.4901	0.5669	0.9237	1.0000

Table A16: Factor Loading for Newspaper Coverage PCA

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6
'Tulsa Riot' Pages	0.3846	0.4004	0.4986	-0.4314	-0.4923	0.1210
'Tulsa' Pages	0.1772	0.8060	-0.0593	0.4457	0.3418	-0.0065
'Tulsa Riot' Front Pages	0.4078	-0.3549	0.3156	0.7277	-0.2672	0.0848
'Tulsa Riot' Papers	0.4686	-0.2311	0.3514	-0.2452	0.6772	-0.2913
'Tulsa' Front Pages	0.4754	-0.1029	-0.4625	-0.1522	0.1280	0.7141
'Tulsa' Papers	0.4570	0.0112	-0.5575	-0.0495	-0.3073	-0.6191

Table A17: Pairwise Correlation of Segregation by Year

	Segregation 1880	Segregation 1900	Segregation 1910	Segregation 1920	Segregation 1930	Segregation 1940
Segregation 1880	1.000					
Segregation 1900	0.705	1.000				
Segregation 1910	0.500	0.596	1.000			
Segregation 1920	0.636	0.767	0.653	1.000		
Segregation 1930	0.611	0.708	0.595	0.852	1.000	
Segregation 1940	0.531	0.610	0.525	0.755	0.797	1.000

This table reports the pairwise correlations of Logan and Parman's segregation measure. Alaska and Hawaii are excluded. No data is available for 1890.

Table A18: Individuals Killed in the Massacre

Last Name	First Name	Gender	Race	Birthplace	Age	Source
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Adams	Ed	Male	Black	...	32	Death Certificate, Funeral Record or Grave
Alexander	Greg	Male	Black	...	35	Death Certificate, Funeral Record or Grave
Austin	Edward	Male	White	...	38, 39 †	Newspaper (Source Conflict)
Austin	Earnest	Male	White	NY	39	Death Certificate, Funeral Record or Grave
Baker	F.M.	...	White	KY	48, 28 †	Wrong name reported
Barker	Harry	...	Black	CO	37	Death Certificate, Funeral Record or Grave
Barrens	Howard	...	Black	CO	19	Death Certificate, Funeral Record or Grave
Belshmer	E.F.	Male	White	...	...	Newspaper
Berrell	John	Male	White	PA	85, 86 †	Death Certificate, Funeral Record or Grave
Brown	Andy	Male	Black	...	...	Likely alive (Source conflict)
Bryant	Tom	Male	Black	...	...	Newspaper
Cline	Homer C.	Male	White	AR	16, 17 †	Death Certificate, Funeral Record or Grave
Curry	H. Lewis	Male	White	...	28	Likely alive (Source conflict)
Daggs	George Walter	Male	White	...	27	Death Certificate, Funeral Record or Grave
Deary	? (Mrs.)	Female	White	...	...	Wrong name reported
Diamond	Carrie	Female	Black	...	...	Death Certificate, Funeral Record or Grave
Everett	Reuben	Male	Black	...	...	Death Certificate, Funeral Record or Grave

Table A18: Individuals Killed in the Massacre (continued)

Last Name	First Name	Gender	Race	Birthplace	Age	Source
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Fisher	Lee	Male	White	...	21	Likely alive (Source conflict)
Gilliland	Norman	Male	White	...	...	Newspaper
Gilmore	Ila	...	White	...	...	Likely alive (Source conflict)
Hawkins	George	Male	Black	...	78	Death Certificate, Funeral Record or Grave
Hawkinson	Robert C.	Male	White	IN	22	Death Certificate, Funeral Record or Grave
Hill	Clarence	Male	White	...	...	Newspaper
Hobson	Billy	Male	Black	...	...	Newspaper
Howard	Ed	...	Black	...	...	Death Certificate, Funeral Record or Grave
Jackson	Andrew C.	Male	Black	...	40	Death Certificate, Funeral Record or Grave
James	Arthur	Male	White	OK	35	Death Certificate, Funeral Record or Grave
James	?	...	White	...	...	Wrong name reported
Jeffrey	George	...	Black	...	36	Death Certificate, Funeral Record or Grave
Johnson	H.	...	Black	...	...	Death Certificate, Funeral Record or Grave
Knox	Commodore	Male	White	MS	21	Death Certificate, Funeral Record or Grave
Lewis	?	Male	Black	...	...	Death Certificate, Funeral Record or Grave
Lockard	Ed	Male	Black	...	33	Death Certificate, Funeral Record or Grave
Lotspeich	Charles D.	Male	White	IO	22	Death Certificate, Funeral Record or Grave

Table A18: Individuals Killed in the Massacre (continued)

Last Name	First Name	Gender	Race	Birthplace	Age	Source
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Miller	Joe	...	Black	...	35	Death Certificate, Funeral Record or Grave
Morrison	?	Female	Black	...	...	Newspaper
Olson	?	...	White	...	...	Wrong name reported
Osborne	Robert L.	...	White	CO, IN	25	Death Certificate, Funeral Record or Grave
Palmer	Robert	Male	White	...	23	Likely alive (Source conflict)
Palmer	John	...	White	...	28	Likely alive (Source conflict)
Paris	James R.	...	White	TX	33	Death Certificate, Funeral Record or Grave
Pierce	S.H.	...	Black	...	...	Death Certificate, Funeral Record or Grave
Ree	Sam	...	Black	..	30	Death Certificate, Funeral Record or Grave
Roberts	Harry	Male	White	OK	27	Death Certificate, Funeral Record or Grave
Sandridge	M.M.	...	Black	...	...	Death Certificate, Funeral Record or Grave
Selby	Olive	Female	White	Tulsa, OK	...	Newspaper
Shelton	Lewis	Male	Black	TN	77	Death Certificate, Funeral Record or Grave
Sherrill	T.J.	...	White	...	51	Death Certificate, Funeral Record or Grave
Shumate	Cleo	...	White	OK	24	Death Certificate, Funeral Record or Grave
Slinkard	L.C.	Male	White	...	25	Newspaper
Stovall	?	Male	Black	...	...	Newspaper

Table A18: Individuals Killed in the Massacre (continued)

Last Name	First Name	Gender	Race	Birthplace	Age	Source
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Talbot	?	Male	Black	...	...	Newspaper
Talbot	?	Female	Black	...	...	Newspaper
Turner	William	Male	Black	...	35	Death Certificate, Funeral Record or Grave
Walker	Henry	...	Black	...	40	Death Certificate, Funeral Record or Grave
Walker	Curly	Male	Black	...	30	Death Certificate, Funeral Record or Grave
Weaver	G.E.	...	White	...	24	Death Certificate, Funeral Record or Grave
Wheeler	John	...	Black	...	63	Death Certificate, Funeral Record or Grave
Wilson	J.H.	...	White	...	74	Death Certificate, Funeral Record or Grave
Withrow	Samuel J.	Male	White	IN	19, 28 †	Death Certificate, Funeral Record or Grave
Woffard	Shirly F.	...	Black	...	...	Death Certificate, Funeral Record or Grave

Notes: † In some cases, sources offer conflicting ages for individuals. We report both ages here.

Table A19: Individuals Injured in the Massacre

Last Name	First Name	Gender	Race	Source
(1)	(2)	(3)	(4)	(5)
Abernathy	J.L.	...	Black	Newspaper
Arnley	Cal	Male	Black	Newspaper; Red Cross
Austin	Edward	...	White	Newspaper
Belshmer	E.F.	...	White	Newspaper
Carr	Ruth	...	Black	Newspaper
Chapple	P.A.	...	Black	Newspaper
Curry	H. Lewis	Male	White	Newspaper
Epps	William	...	Black	Newspaper
Fisher	Lee	Male	White	Newspaper
Gamble	Henry	Male	...	Newspaper
Gilliland	Norman	...	White	Newspaper
Gilmore	Ila/S.A.	Female	White	Newspaper
Glaze	Miranda	...	Black	Newspaper
Griffin	Clarence	...	Black	Newspaper
Hartshone	E.	...	White	Newspaper
Hileman	Earl R.	...	White	Newspaper
Jackson	Ulysses	...	Black	Newspaper
Joiner	G.F.	...	White	Newspaper
Knox	Commodore	...	Black	Newspaper
Lane	Oliver	...	Black	Newspaper
Lasley	Leroy	...	Black	Newspaper
Logsdon	K.G.	...	White	Newspaper
Mardick	C.E.	...	White	Newspaper
Masek	A.E.	...	White	Newspaper
Maynor	Willis	...	Black	Newspaper
McDonald	H.D.	...	White	Newspaper

Table A19: Individuals Injured in the Massacre (continued)

Last Name	First Name	Gender	Race	Source
(1)	(2)	(3)	(4)	(5)
Meadows	Chester	...	Black	Newspaper
Moore	Ruth	...	Black	Newspaper
Neel	Andrew	...	Black	Newspaper
Nelson	Tom	...	Black	Newspaper
Oliver	Ruth	...	Black	Newspaper
Owens	Ross G.	...	White	Newspaper
Palmer	Robert	Male	White	Newspaper
Paris	James	...	White	Newspaper
Perry	A.	...	White	Newspaper
Prunkard	G.T.	Male	White	Newspaper
Rhodes	Homer	...	White	Newspaper
Robinson	Lane	...	Black	Newspaper
Sherrick	Otto	...	White	Newspaper
Slinkard	L.	...	White	Newspaper
Smith	Florida	...	Black	Newspaper
Smith	Franklin T.	...	Black	Newspaper
Taliafirio	Lily	...	Black	Newspaper
Tyson	Sam	...	Black	Newspaper
Vickers	E.F.	...	White	Newspaper
Walker	Elsie	Female	Black	Newspaper; Red Cross
White	George N.	Male	White	Newspaper
Williams	Porter	...	Black	Newspaper
Woffard	Shirley	...	Black	Newspaper
Woodard	Ora	Male	Black	Newspaper

*Notes:*