Broadcasting Equality:

Media Narratives and the Rise of Civil Rights[*]

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Abstract

We document the influence of media narratives in counteracting racial prejudice by exploring the emergence of socially inclusive narratives in post-WWII U.S. media. We exploit an unprecedented experiment that created exogenous exposure to these narratives: in 1946, amid widespread racial divisions, the popular children's radio series *The Adventures of Superman* suddenly decided to promote equality by reframing its fictional stories. We find that exposure to these narratives significantly contributed to the advancement of civil rights in subsequent decades. Specifically, we uncover increased support for civil rights and civil rights organizations, deeper racial assimilation, and more progressive political positions. (*JEL* D7, D83, I24, J15, L82, N32)

Keywords: Mass Media; Narrative; Radio; Segregation; Ku Klux Klan; Superman; Intolerance; Civil Rights; Racism; Protest.

1 Introduction

Narratives in mass media, such as television, cinema, and radio, deeply influence how minority groups are perceived.[1] Portrayals often rely on deeply ingrained cultural beliefs and stereotypes, thus reinforcing existing prejudices (Bordalo et al., 2016; Glover et al., 2017). In some cases, narratives directly justify discrimination by falsely blaming minorities for societal problems or normalizing discriminatory practices. Such representations contributed to racial discrimination against African Americans in the United States (Ang, 2023; Esposito et al., 2023), and to the spread of anti-Semitism in 1930s Germany (Adena et al., 2015). Accepting narratives that challenge status quo views about minority groups is more difficult due to inherent resistance to change in human nature and society.[2] As a result, progressive narratives–those that challenge predominant beliefs and promote new perspectives–are much less frequent in popular media.[3] In the literature, there is virtually no quantitative evidence on narratives that promote inclusion and challenge existing prejudices.

In this paper, we provide one of the first studies examining the role of narratives in counteracting prejudice. The U.S. offers a unique setting to research this question thanks to the sudden rise of progressive narratives around race relations following WWII. During the first half of the twentieth century, most white Americans openly tolerated or furthered race-based exclusion, and narratives supporting such racism (particularly against African Americans) were commonplace in cultural products (Williams, 2014; Fredrickson, 2015). In a society deeply divided along racial lines, WWII brought forth a reexamination of these divides and their role in the nation's future (Goldman, 1956; Kellogg, 1979), while narratives depicting a society built upon equality and justice began to quickly spread through popular media (Benshoff and Griffin, 2021).

According to historians, the cultural change that arose from WWII laid the foundations for the dramatic social changes of the following decades, in particular for the Civil Rights Movement–the mass protest movement that culminated in vital civil rights victories in the 1960s (see, for instance, Hall, 2005). We document how the progressive narratives that emerged, by portraying equality, influenced the spread of racial tolerance and support for civil rights in post-WWII American society. To this purpose, we exploit a

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[1]See Abbott (2020) for a comprehensive introduction to the concept of narrative. A narrative is defined as a "representation of an event or a series of events."

[2]Social psychology literature highlights the roots of prejudice persistence (see, for instance, Allport, 1954; Cramer, 2020). Prejudices are reinforced by cognitive biases such as categorization, leading to stereotypes and confirmation bias, which strengthen existing beliefs. Additional contributing factors include emotional ties to social identities and fear of the unfamiliar, social pressures from early socialization and group conformity, and structural elements like discriminatory institutional practices, power dynamics, and limited opportunities for inter-group contact.

[3]Michalopoulos and Rauh (2024) show that more successful movies are indeed those reinforcing core cultural values.

groundbreaking experiment that portrayed these narratives in fictional stories for children and broadcast them on mass media at the onset of this historical period. In 1946, the popular children's radio program *The Adventures of Superman* embarked on *Operation Intolerance*, a deliberate and sudden change in the show's thematic content to promote moral values, such as equality, and a positive non-stereotypical depiction of minorities. The fictional character Superman suddenly shifted from battling supernatural threats to combating intolerance and racism in the American society (Klein, 1946). Such message of tolerance, in particular of racial equality, targeted at millions of children listening to the show every day was unprecedented at that time (Wall, 2009).

We first collected and digitized comprehensive data on all U.S. radio stations active in 1946, including those of the Mutual Broadcasting System (MBS) network, one of the four main commercial radios at that time and the exclusive broadcaster of *The Adventures of Superman*. We employ Amplitude Modulation (AM) radio propagation models to create detailed maps of radio signal coverage. Our main source of variation is the share of a county's population that could have listened to the narratives of *Operation Intolerance* in 1946, conditional on the share that could have listened if there were no propagation obstacles. In line with the existing literature on the impact of Frequency Modulation (FM) radio and TV broadcasts (see, for instance, Olken, 2009), but adapted to AM broadcasting, this approach allows capturing plausibly exogenous exposure to the radio network that broadcast the series in 1946.

We study the effects of *Operation Intolerance* using two complementary approaches. First, we study how being exposed during childhood influenced individual-level support for civil rights, interracial assimilation, institutional trust, as well as political attitudes and behavior during adulthood.[4] Using survey data covering a pivotal period for civil rights in the U.S. (1964–1980), we disentangle the effects of progressive narratives from the effect of radio broadcasts using a cohort study specification. This involves comparing individuals exposed to the signal of *Operation Intolerance* with those who were not *within specific age cohorts*, exploiting the fact that the target audience of the show comprised children and young adults and that only those that listened to the show after 1946 were exposed to progressive narratives. We support these estimates with various robustness checks and placebo tests to ensure we are accurately capturing the effect of the changed narratives in the series. Second, we study how the rise of progressive narratives influenced society as a whole. Using historical records at the local level to measure interracial assimilation, voting behavior, and mobilization over the period 1930–2020, we estimate these

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[4]Our expectations are guided by the social psychology concept known as the *persistence hypothesis* (Torney-Purta, 2017), which highlights the significance of forming values early on. Evidence highlights that adult levels of social tolerance are influenced primarily by both pre-adult and early adult attitudinal environments (Miller and Sears, 1986). See Dhar et al. (2022) for complementary evidence on gender attitudes.

effects using an event study approach, comparing over time counties that were covered by the signal in 1946 to those that were not.

We uncover significant positive effects of *Operation Intolerance* on racial tolerance among those who were children in 1946 and lived in areas covered by the radio broadcast. We find an increase of 0.17 standard deviations in the support for civil rights in these cohorts, a change comparable to a 25-year generational gap for a child born in the 1940s. These results are driven by more favorable attitudes towards civil rights leaders and African Americans, and increased support for racial desegregation and affirmative action for African Americans. The broadcasts also significantly enhanced racial assimilation, with an increased likelihood of reporting mixed-race friendships by 0.19 standard deviations in the cohort exposed to the broadcast. Event study estimates also demonstrate notable increases in interracial marriages, one of the clearest markers of racial assimilation (Fryer Jr, 2007; Fouka, 2020). In counties fully covered by the broadcast, compared to those that were not exposed, there was an increase of 3.5 interracial marriages per 1,000 marriages.

Increased racial tolerance directly relates to the dynamics of civil rights support in the 1960s, and in particular to support for the Civil Rights Movement. We document that cohorts targeted by the broadcast have stronger alignment with three core values of the movement: opposition by the means of protest, rejection of police force, and objection to the Vietnam War.[5] We observe a 0.25 to 0.30 standard deviation increase in support for protests among the targeted cohorts, together with a significant decline in favorable views towards the police (0.29 standard deviations) and the military (0.17 standard deviations), and a decreased military participation in the Vietnam War by 0.02 percentage points.

Finally, the broadcast significantly influenced political attitudes, mobilization, and civil rights discourse in the decades following WWII. The target cohorts became more progressive and less supportive of the Republican Party, showing changes of 0.27 and -0.18 standard deviations, respectively. Event study estimates support this result. In the Deep South, voting data indicate a 4.9 percentage point decrease in support for pro-segregation candidates in counties exposed to the broadcast. Additionally, after 1946, counties that received the broadcast experienced a substantial decrease of 7.5 percentage points in the presence of active Ku Klux Klan (KKK) chapters and an increase of 6.6 percentage points in the presence of the pro-civil rights National Association for the Advancement of Colored People (NAACP). These shifts were also accompanied by an overall narrative change toward civil rights in local newspapers

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[5]The Vietnam War is considered one of the most polarizing moments in 20th century American politics and culture. Objections to the war were closely related to support for the Civil Rights Movement. Many civil rights leaders, including Martin Luther King, Jr and Muhammad Ali, openly discouraged participation (Newton, 1980; Lucks, 2014). For further reading about the relationship between the Civil Rights Movement and the Vietnam War, see Harrison (1996).

during the peak of the Civil Rights Movement in the 1960s.

Our findings contribute to several different strands of the literature. First, we contribute to the literature on racial prejudice. An extensive literature documents its negative impacts across various settings, including human capital accumulation (Billings et al., 2014; Alsan and Wanamaker, 2018; Bor et al., 2018; Eli et al., 2023), access to housing and services (Logan and Parman, 2017; Bayer et al., 2018; Cook et al., 2023), labor market outcomes (Bayer and Charles, 2018), and the use of police violence (Knox et al., 2020; Ang, 2021). However, devising effective anti-prejudice policies remains an elusive quest. Available evidence is derived from experimental approaches that increase inter-group contact (Boisjoly et al., 2006; Rao, 2019; Mousa, 2020; Bursztyn et al., 2021; Lowe, 2021; Corno et al., 2022), and lab-in-the-field experiments (Paluck and Green, 2009; Blouin and Mukand, 2019), neither of which are easily scalable.[6] Our study presents a real-world example of how a deliberate at-scale intervention that promotes progressive narratives among children can have persistent impacts on racial tolerance.

Second, we contribute to the burgeoning literature on the interplay between culture and institutions (Alesina and Giuliano, 2015; Bisin and Verdier, 2024). Existing research has highlighted the deep cultural roots of intolerance (Voigtländer and Voth, 2012; Bazzi et al., 2023b). Specific to civil rights institutions, recent studies illustrate the role of politically active groups and of African American WWI veterans in shaping civil rights activism (Dippel and Heblich, 2021; Ang and Chinoy, 2024), and the importance of internal migration for the diffusion of both progressive and conservative values (Calderon et al., 2023; Bazzi et al., 2023a). Our findings introduce a novel mechanism: portraying racial tolerance on mass media stimulates progressive attitudes in the long run and shapes support for civil rights. By relating these effects with the Civil Rights Movement, we provide a new dimension to our understanding of social movements (see, for instance, Madestam et al., 2013; Cantoni et al., 2024).

Finally, we offer new insights on the impacts of media on social and political outcomes (Strömberg, 2015; DellaVigna and Gentzkow, 2010; DellaVigna and La Ferrara, 2015; Campante et al., 2022). The existing literature often highlights the role of cinema and radio in fostering intolerance and hatred (DellaVigna et al., 2014; Yanagizawa-Drott, 2014; Adena et al., 2015; Wang, 2021; Ang, 2023; Esposito et al., 2023). In contrast, we uncover evidence demonstrating that mass media can also be a force for promoting more inclusive societal norms.[7] To our knowledge, our study is among the first to explore the long-

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[6] Large scale interventions fostering inter-group contact are scarce in the literature. Bazzi et al. (2019), who study a resettlement program in Indonesia in the 1980s, is a rare exception.

[7] In complementary research, Armand et al. (2020) and Gagliarducci et al. (2020) document the role of radio broadcasts for the demobilization of rebel fighters in central Africa and for the mobilization of Resistance fighters in Italy during WWII, respectively.

term positive effects of mass media on racial equality and integration. Along these lines, we indirectly contribute to the literature on *edutainment* programs (see, for instance, DellaVigna and La Ferrara, 2015), which shows impacts on attitudes and behavior as by-products of demand for entertainment.[8] While most studies focus on the effects of a specific program, thanks to the design of *Operation Intolerance*, we are able to isolate the impact of narrative from the overall influence of an existing program. This novel approach complements the scarce evidence on the importance of media narratives.[9]

2 Historical background

2.1 United States in the 1940s and the rise of progressive narratives

The socio-economic transformations that characterized the first part of the twentieth century, particularly the *Great Migration* (Bonomi et al., 2021; Bazzi et al., 2023a; Calderon et al., 2023), favored only a slow decline in overt racism. According to opinion polls, in 1942 only 42% believed African Americans to be as intelligent as white Americans, and 84% preferred segregated neighborhoods (Schuman, 1997). In the Southern states, Jim Crow laws institutionalized de jure segregation in public facilities and imposed harsh voting restrictions on African Americans. In the North, while the demand to end racial segregation grew significantly among African Americans (Gilmore, 2009) and prejudicial treatment was no longer legally inscribed, it was still a fact of everyday life, perpetuating economic, social, and political disenfranchisement. Portrayals of racial prejudice were in fact common in media outlets across the country. Prominent examples of narratives modeling racial prejudice are the *Lost Cause* narrative–a revisionist and racist interpretation of the U.S. Civil War–promoted in the 1915 movie *The Birth of a Nation*, or the stereotypical depiction of African Americans in the 1939 movie *Gone with the Wind* (Benshoff and Griffin, 2021).

A rapid counter to these discriminatory narratives was brought about by WWII. Fueled by the unifying experience of the war and the cruelty of the Nazi regime, a new awareness of racial injustices within American society evolved. Coined the "American Dilemma", the miserable situation of African Ameri-

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[8]Estimating the effects of *The Adventures of Superman* is beyond the scope of this paper, which aims to estimate the change in narratives during *Operation Intolerance*. Evidence on *edutainment* programs has documented impacts on educational outcomes (Gentzkow and Shapiro, 2008; Kearney and Levine, 2019), gender norms (Chong and Ferrara, 2009; Jensen and Oster, 2009), fertility decisions (La Ferrara et al., 2012; Kearney and Levine, 2015), and voting behavior (Durante et al., 2019).

[9]The type of narrative in *The Adventures of Superman* is a fiction proper narrative, i.e., entirely imagined or created by the author. In our case, the narrative is designed for children. Other examples in the literature cover fiction proper narrative targeted at an adult audience (see, for instance, Chong and Ferrara, 2009), or fictionalization of historical events, i.e., a blending of factual history with imaginative elements (Adena et al., 2015; Ang, 2023; Esposito et al., 2023).

cans became a common topic of societal discourse (Myrdal, 1944). By the end of war, overtly supporting white supremacy was no longer publicly acceptable in the North, and civil rights for African Americans started to become a national issue (Goldman, 1956; Kellogg, 1979).

In the center of these developments lay the rise of a significant counter-narrative of the "American Creed", based on ideals of individualism, civil liberties and equality of opportunity, which quickly spread through popular culture in the post-WWII period (Myrdal, 1944). In cinema, this is reflected in the rise at the end of the 1940s of movies addressing racism against African Americans, the so-called *post-war social problem* films (Benshoff and Griffin, 2021). Some examples are the independent movies *Home of the Brave* (1949) and *Lost Boundaries* (1949), and the Hollywood movies *Pinky* (1949), *Intruder in the Dust* (1949), and *No Way Out* (1950).

A similar development was observed in the radio industry, where a series of new productions depicted the struggles of African Americans and immigrants in American society (Savage, 1999). Importantly, before the advent of television in the late 1950s, radio was the dominant mass medium in the U.S., exerting significant cultural influence across the entire spectrum of American society. In the mid-1940s, television ownership was limited to a mere 8,000 U.S. households (Anderson, 2005). Meanwhile, the proportion of households with radio receivers grew from 68% to 96% during the 1940s, marking the peak of the "Golden Age" of radio in terms of both its reach and societal impact (Craig, 2004).

2.2   *The Adventures of Superman* and *Operation Intolerance*

In the 1940s, the national syndicated network Mutual Broadcasting System (MBS) was one of the four main commercial radio networks operating. It had been active since 1934 and had achieved success by specializing in recorded transcription series (Ackerman, 1945).

On August 31, 1942, MBS started broadcasting *The Adventures of Superman*, a radio series featuring the DC Comics character Superman that had began airing in 1940 on just 10 regional radio stations and had received a significant initial success (De Haven, 2010). The series targeted children and young adults, airing in an after-school afternoon slot initially as a 15-minute serial five times a week before transitioning to a thrice-weekly half-hour show. Individual story arcs ranged from 15 minutes to over three hours of broadcast time. Their content was specifically designed for the radio series with its own writers producing the scripts (Daniels, 1998). During the 1940s, the show consistently featured amongst the most popular youth radio programs, regularly drawing millions of young listeners (Hooper Inc.,

1949).[10]

The content of the series pointedly constructed Superman as a moral and brave defender of Earth dressed in the colours of the U.S. flag, mixing war-time patriotism with the concept of a righteous triumph over evil (Finney, 2011; Freeman, 2015). Along these lines, the first years of the series are "years of pure blood, thunder and atomic energy" (Daniels, 1998), with Superman fighting mad scientists, atomic weapons and supernatural menaces.

In the year 1946, the narrative of the series suddenly changed, in what remains a unique experiment in the history of radio broadcasting. Amid the resurgence of racial tensions following the end of WWII, in October 1945, the producers of *The Adventures of Superman* started working on scripts that would pitch Superman on "crusades against intolerance…in terms which children could understand" (Wall, 2009). The objective was two-fold: advocate among young listeners for a united American society that embraces individuals irrespective of their religion or origins, while guaranteeing the commercial interests of the serial's sponsor (Kellogg Company).[11] In just a few months, the new episodes were ready to go on air, and on April 15, 1946, MBS started broadcasting *Operation Intolerance*, a series of new episodes where Superman fights bigots in the American social landscape, making the "enemy" real and familiar to the audience (Klein, 1946).[12]

The first sequence of episodes, *The Hate Mongers' Organisation*, centered around the attempt of a characteristic white supremacist group to prevent the creation of the Unity House community center, a place "where children of every race, ethnic background, and spiritual belief can play and interact to learn that all people are the same" (*The Adventures of Superman*, episodes 1254–1278). Following the positive reception of the first sequence of episodes, the creators collaborated with Stetson Kennedy, a human rights activist who had helped infiltrate the KKK in the mid-1940s, to produce a story arc pointedly confronting the KKK and its ideology. Over two weeks in June 1946, MBS broadcast a series of episodes titled *The Clan of the Fiery Cross*, in which Superman directly battled "the Clan", derisively exposing the KKK's rituals, code words, and bigotry to its audience.

Other illustrations of *Operation Intolerance* occur in the story arcs titled *George Latimer, Crooked Political Boss*, broadcast in August–September 1946, and *Knights of the White Carnation*, broadcast in

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[10]The show left the MBS network in June 1949 and moved to the competing ABC network in October 1949, targeting an adult audience (Winona Republican-Herald, 1949). It was eventually discontinued in 1951 after airing 2,088 original episodes.

[11]In current terminology, the sponsorship of the Kellogg Company would be akin to corporate social responsibility. Kellogg Company was the exclusive sponsor of the series throughout the MBS period (De Haven, 2010).

[12]The term "Operation Intolerance" does not appear in internal documents of the program. We adopt this term from the media of that time (Appendix B).

February-March 1947. In the former, Superman thwarted attempts by the antagonist George Latimer to implement discriminatory hiring practices for veterans, insisting only native-born, white, Protestants be considered. This story line resonated with concerns surrounding WWII veteran reintegration and was praised by the American Veterans Committee (Goodrum, 2008). In the latter, Superman directly fights against the racist agenda of a secret organization, who plots to eliminate foreigners from the Metropolis High School Varsity Basketball Team. Appendix B.1 provides detailed summaries of the plots with the highest share of content related to tolerance and intolerance during *Operation Intolerance*.

This unexpected shift in the program's narrative was an unprecedented and progressive departure from the dominant traditional narratives of popular media of those years. Explicitly designed to impact the social values of children who were listening, the construction of the narrative in *Operation Intolerance* is characterized by two key elements. First, a set of moral values promoted by depicting lead characters as models to follow or to avoid, in line with social learning through role models (see, for instance, Bandura and Walters, 1977). New episodes depicted an ideal society where the forces of good, represented by advocates of communal harmony, justice, and equality, stood against the forces of evil, symbolized by hate groups like the KKK and those perpetuating racial discrimination. Second, a positive depiction of minorities, as sympathetic, moral and hardworking. By directly contrasting some of the most common stereotypes at that time, this element is in line with the parasocial contact hypothesis, which suggests that media exposure to out-group members can decrease prejudice (see, for instance, Schiappa et al., 2005).

In a period in which racial segregation was widespread across many states, promoting a message of tolerance on a mass media series for children was unprecedented to the point that both the producers and the sponsor considered it as an experiment (Appendix Figure B7). Content analysis of the story scripts, summarized in Figure 1, reveals that the proportion of words related to intolerance increased by 3.2 times in the 12 months following the start of *Operation Intolerance*, compared to the pre-intervention period.[13] For the four most notable episodes, highlighted in red, this increase jumps to 7.7 times. While focusing solely on the salience of keywords may underestimate the actual share of content attributed to intolerance, this figure highlights the clear shift in the series' narrative. In addition, in Appendix D.3, we show that such change was not accompanied by a contemporaneous broader paradigm shift in youth radio programming. Although the intensity of tolerance focused content began to diminish after one year, the series broadcast a total of 65.25 hours in the year following the launch of *Operation Intolerance*, including 18 hours dedicated to the four most notable story arcs. This extensive coverage,

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[13]Appendix B.2 describes the methodology to compute this measure. The analysis is based on a bag-of-words approach using a list of 50 keywords to quantify the share of content addressing intolerance and tolerance towards racial, ethnic, and religious differences applied to the transcripts from 1,019 episodes broadcast on MBS between 1942 and 1949.

together with the number and the loyalty of listeners, make the overall scale of the intervention a rare occurrence as compared to other interventions targeting prejudice (Bertrand and Duflo, 2017).

Figure 1: The change in narrative in *The Adventures of Superman*
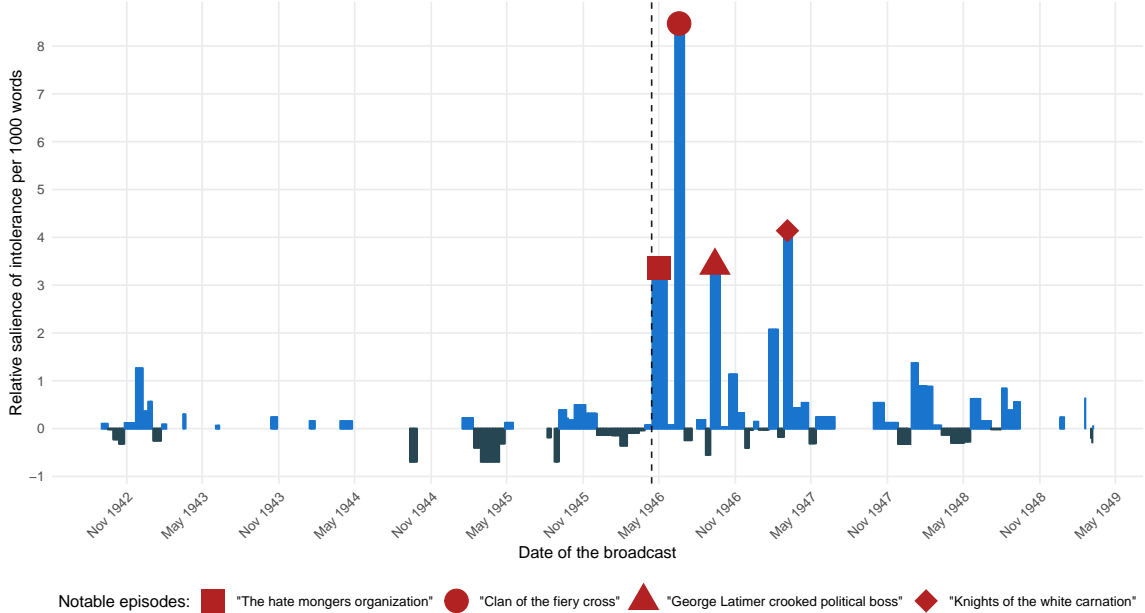
Note. For each episode transcript in *The Adventures of Superman*, the figure illustrates the share of keywords (per 1,000 words) related to tolerance or intolerance. The series is centered around the average share in the period preceding *Operation Intolerance*. We consider all available broadcasts on the MBS network from August 1942 to June 1949. The full methodology is described in Appendix B.2. Each bin in the figure represents a story arc, the broadcast of which may span multiple weeks. The width of the bin represents the duration of the story arc. Appendix B.1 provides detailed summaries of the plots of story arcs with the highest shares.

Operation Intolerance was a huge success. The show reached 4.5 million listeners from its target demographic, making it the highest rated youth program on the air.[14] Appendix B.3 provides historical evidence about the positive reception of the series in public opinion. Among these, former Vice President Henry A. Wallace, endorsed in an official statement the plan to use Superman to teach children that "Democracy includes the idea of tolerance and equal opportunity for all races, creeds and colors" (Janesville Daily Gazette, 1946). Similar endorsements emanated from President Harry S. Truman, and various religious and civil rights organizations (see, for instance, The Pittsburgh Press, 1946).

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[14]The only available source on the number of listeners comes from Whiteside (1947), based on the March–April 1947 Hooper Ratings (Hooper Inc., 1949)–a radio audience measurement system that covered a sample of 14 cities. Using census data from the 1940 and 1950 and the coverage of the MBS signal in 1946 (see Section 3.1), we assume a (uniform) radio penetration of 85% (in line with US Bureau of the Census, 1975), and we estimate that the show could have been listened directly by 3.1 million children aged 3–6 years (37% of the total population in this age group), 5.6 million children aged 7–13 years (35%), and 2.1 million children aged 14–17 years (34.6%). An audience of 4.5 million listeners corresponds to roughly 42% of children in the age group 3–17.

3 Data

We combine a wide variety of data, ranging from surveys to historical and archival data, including the geographical processing of historical radio coverage. This section describes the data sources used in the paper. Section 3.1 describes how we build exposure to *Operation Intolerance*. Section 3.2 provides a description of data on attitudes related to support for civil rights, dissent and institutional trust, and political attitudes. Section 3.3 describes data on racial assimilation. Section 3.4 discusses data about participation in the Vietnam War. Section 3.5 describes data on salience of topics from local newspapers. Finally, Section 3.6 describes data on voting and mobilization.

3.1 Exposure to *Operation Intolerance*

We digitize data from the Radio Annual 1946 yearbook (Radio Daily, 1946) to construct a comprehensive database on the universe of U.S. radio networks operational in 1946. Radio Annual serves as a comprehensive annual reference guide to the broadcasting industry in the U.S., providing detailed information about radio stations, broadcasting companies, and regulatory agencies. The publication includes listings of stations by state and city, along with information on station ownership, frequency, power and the location of transmitters. The entire digitized network consists of 986 individual antennas broadcasting radio programs on different frequencies. We complement our database with information on broadcasting schedules and network affiliations derived from the advertising records published in two other publications: the 1947 Yearbook Number of the Broadcasting magazine (Broadcasting, 1947), and the 1945 Standard Rate and Data Service (SRDS) media buying publication (The National Authority, 1945). Using these sources, we identify when and which radio stations broadcast *The Adventures of Superman* in 1946. Appendix Section A contains further explanation of the methodology and extracts of the original data sources. Appendix Figure A4 provides the geographical distribution of antennas.

To ensure accurate radio coverage calculations, it is important to note that in the 1940s, the vast majority of radio broadcasting in the U.S. was based on Amplitude Modulation (AM) transmissions. AM stations had been very influential in the U.S. since the 1920s, and in 1940 and 1950, they represented 99.6% and 74% of radio stations, respectively (US Bureau of the Census, 1975; Strömberg, 2004). Although the Frequency Modulation (FM) network expanded rapidly, actual listenership remained low: in 1960, 92% of all radio sets were AM only, and it was only in 1979 that FM overtook AM in total listenership (Kleinfeld, 1979).

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AM signal propagation has two main components: a ground wave and a sky wave. The ground wave's propagation depends not only on topography but also on soil conductivity—the ability of the soil to conduct electromagnetic waves, which depends on moisture, soil composition, and mineral content. The sky wave primarily depends on ionospheric refraction–the bending of radio waves by the ionosphere layer of the Earth's atmosphere–and is influenced by the degree of solar radiation. Unlike FM transmission, which depends on line-of-sight propagation, the propagation of signals at lower frequencies, typically used for AM, is much less affected by physical obstacles. AM transmissions can pass through buildings, foliage, and other obstructions, and bend over hills and other obstacles, enabling radio waves to travel beyond the horizon and follow the contour of the Earth (see, e.g., Reed and Sander, 1987). Consequently, radio coverage models that focus solely on topographic corrections, such as the Longley-Rice/Irregular Terrain Model (ITM), are not accurate predictors of AM radio coverage (Crabtree and Kern, 2018; Gagliarducci et al., 2020).

Using a state-of-the-art radio propagation model tailored to AM broadcasting in 1946, we estimate the precise radio coverage for each station that broadcast *The Adventures of Superman* in that year. The algorithm used to estimate signal strength accounts for both the ground and the sky wave of the AM transmission, and considers a broad array of input values, including frequency, power, antenna type, topography, soil conductivity and sun spot numbers.[15] For each station, the algorithm produced a raster covering the continental U.S. at a resolution of 400 meters. We overlay the signal strength of each station to create a coverage map of *Operation Intolerance*, which we depict in Figure 3. It is worth noting that accurate AM propagation models became feasible only in 1958 (Bremmer, 1958), more than a decade after the launch of *Operation Intolerance*. Prior to that, radio operators had an incomplete understanding of potential signal coverage when setting up their antennas.

3.2   Attitudes and behavior in the target population

We gather data about attitudes for the U.S. population directly targeted by the broadcast in 1946 from the American National Election Studies (ANES, 2021). ANES is a nationally-representative survey of the voting-age population conducted every two years during and after each U.S. presidential election. It collects information about public opinion, voter behavior, and political attitudes.

We use all survey waves collected in the period 1964–1980, a period characterized by high salience of civil rights in American politics. Though major events are concentrated in the initial part of the

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[15]We collaborated with ATDI, a global leader in radio engineering, to ensure accuracy in coverage calculations.

Figure 2: Signal strength of *The Adventures of Superman* in 1946

Signal strength in dBµV/m   40   60   80   100

Note. The left panel shows the geographical distribution of the signal strength of the *Superman* broadcast at a resolution of $400m^2$. Signal strength is reported in $dB\mu V/m$, with higher values indicating stronger signals. The figure is generated by overlaying the signal from each individual antenna. In areas covered by multiple antennas, we select the strongest signal at each point, assuming listeners would tune into the station with the strongest reception. The right panel zooms into a specific portion of the U.S., indicated by the rectangle in the left panel. Details about the geo-location of antennas and the computation of signal strength are described in Section 3.1.

period, such as the enactment of the Civil Rights and the Voting Rights Acts in 1964 and 1965, and the assassination of Martin Luther King, Jr. in 1968, the relevance of civil rights in the public sphere remained high throughout the period.[16] In line, the 1964–1980 survey waves are also those in which a variety of questions related to racial tolerance and civil rights are consistently collected in multiple (consecutive) survey rounds (see Appendix C.1). It therefore enables us to draw on a wide array of consistently covered survey items to track attitudes related to civil rights, while previous and following periods do not have the same wealth of information covering these topics.

We merge responses from the ANES surveys with data on exposure to *Operation Intolerance* using the year of birth and the county of residence of each respondent. To accurately measure exposure to the broadcast during childhood, we restrict our analysis to individuals residing in the same state where they grew up, and assign the county of residence in the survey year as the county of residence during childhood. Kearney and Levine (2019) provide empirical evidence supporting this approach to account for potential migration.[17]

We focus on three sets of attitudes that relate to the rise of civil rights in the U.S. Appendix C.1 provides the exact definition of each variable, the data availability across survey waves, and descriptive statistics

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[16]For instance, the 1978 Supreme Court decision in Regents of the University of California v. Bakke declared unconstitutional the use of racial quotas in higher education.

[17]In Appendix D.3, we replicate our main results in the sample of migrants. We do not observe any effect in this sample, highlighting the importance of selecting non-migrants.

by cohort and survey wave. For cross question comparability, in the tables, all attitude questions are standardized into z-scores. In addition, all variables are reported in such a way that higher values indicate pro-civil rights attitudes or alignment with the Civil Rights Movement.

First, because *Operation Intolerance* directly spreads a message of racial tolerance, we examine **attitudes in support of civil rights**. We identify nine questions across multiple survey rounds that capture this dimension.[18] The first four questions assess favorable feelings towards civil rights leaders and Black Americans, and unfavorable feelings towards Southerners, and the well-known segregationist George Wallace.[19] Favorable feelings towards a person or a group are gauged using the ANES *Feeling Thermometer*, a widely used method for collecting attitudinal data (see, for instance, Tyler and Iyengar, 2023). It uses a scale ranging from 0 to 100, where 100 indicates very warm (favorable) feelings and 0 indicates very cold (unfavorable) feelings. We measure unfavorable feelings by the *Inverted Feeling Thermometer*, which inverts the standard survey scale. On average, respondents are less favorable towards civil rights leaders compared to the Black population in general, with average Feeling Thermometer scores of 44.7 (standard deviation 26.6) versus 62.8 (standard deviation 21.1), respectively. In addition, they are divided regarding George Wallace, with an average Inverted Feeling Thermometer score of 52.6 (standard deviation 28.5), while attitudes towards Southerners are not strongly negative, evidenced by an average Inverted Feeling Thermometer score of 33.8 (standard deviation 20.1).

The remaining five questions capture attitudes in support of affirmative action for the Black population, integrated schools, Black representation, desegregation, and speeding up civil rights legislation. Respondents are on average supportive of affirmative action, with an average score of 3.61 (standard deviation 1.89), ranging from 1 (no action) to 7 (the Government should help). They are divided on whether African American are appropriately represented in society and in politics, with an average score of 1.98 (standard deviation 0.79), ranging from 1 (too much) to 3 (too little). On average, they tend to support policies to end racial segregation: 45% of respondents (standard deviation 0.50) support integrated schools, 86% (standard deviation 0.50) are in favor of desegregation, and 47% (standard deviation 0.50) support speeding up the civil rights legislation.

The second set of attitudes concerns **dissent and institutional trust** and aims at capturing alignment with the Civil Rights Movement as a mass protests movement. The first 2 questions capture whether

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[18]Appendix D.2 provides their partial correlations.

[19]George C. Wallace Jr served as governor of Alabama for four terms between 1963 and 1987, and ran as Presidential candidate in 1968. He openly supported racial segregation, especially in the first part of his career ("segregation now, segregation tomorrow, segregation forever" is a popular quote from his 1963 inaugural speech; The New York Times, 1963). At the time of the survey, the term *Southerner* referred not only to people residing in the southern states, but also to the fact that major resistance to the promotion of civil rights was in the southern states (Bartley and Graham, 2019).

the respondent approves of participation in protests and in demonstrations. Protests includes "protest meetings or marches that are permitted by the local authorities", while demonstrations are attempts at stopping the government from going about its activities with "sit-ins, mass meetings, demonstrations" (ANES, 2021). The latter three questions concern institutional trust, capturing whether the respondent trusts the Federal Government, a major source of changes toward equality, and favorable feelings towards the police and the military. On average, approval of protests and demonstrations is low, with a sample average of 1.72 (standard deviation 0.71) and 1.55 (standard deviation 0.62) out of 3, respectively, with 1 indicating approval and 3 disapproval. Respondents have favorable feelings towards the police and the military, with an average Feeling Thermometer score of 76.3 (standard deviation 18.4) and 71.1 (standard deviation 18.4). Respondents are divided in terms of trust, with an average score of 2.52 (standard deviation 0.63), ranging from 1 (never trust the Federal Government) to 4 (always trust).

Finally, we focus on **political attitudes**. We measure whether the respondent reports being progressive, measured using ANES's Conservative–Liberal Scale, and the favorable/unfavorable feelings towards the Republicans, which held the more conservative position in the period from 1964 to 1980. Respondents are divided between conservative and liberal values, with an average Conservative–Liberal Scale of 52.8 (standard deviation of 14.5) out 100, with 100 indicating the highest degree of liberal values. At the same time, they tend to have slightly less favorable feelings towards Republicans, with an average Inverted Feeling Thermometer score of 60.6 (standard deviation of 20.7).

3.3 Racial assimilation

We measure individuals' degree of racial assimilation using two alternative data sources. First, using the ANES data presented in Section 3.2, we measure whether respondents report having a mixed composition of friends or whether all friends are from the same race. This measure, being self-reported, captures both actual behavior and attitudes toward racial integration in society. We complement individual-level information with aggregate level measures of interracial marriages. Marital decisions are a strong and robust measure of actual behavioral change, and a powerful measure of cultural assimilation. We exploit census data from Ruggles et al. (2024), leveraging 5% of the sample from the 1980 U.S. Census. As the 1980 Census does not disclose counties below 100,000 inhabitants, we focus on the Principal Statistical Units (PSU) as the unit of aggregation. From a total of 11,274,348 individuals in the continental U.S., we consider 4,699,099 married individuals living in 1148 PSUs. For each PSU, we calculate the share of individuals in interracial marriages by year of marriage. The aggregate share of interracial marriages

is equal to 1.65%, with 58.79% of these being marriages between White and Black individuals.

3.4 Vietnam War participation

The U.S. government's deep involvement in the Vietnam War (1955–1975) faced mass public dissent in the form of debates and protests questioning the moral and political grounds of its continued engagement from as early as 1963. To capture this indirect dimension of dissent, we gather information on participation in the Vietnam War. Because individual level information on origin and deployment is not publicly available, we use casualties as a proxy for participation. In line with Esposito et al. (2023), who use casualties during World War I as a measure of participation, this approach assumes that among those mobilized, being wounded or dying (versus not) was largely random. Notably, participation in the Vietnam War was primarily characterized by volunteers (Davidson, 1988).[20]

To compute casualties, we obtain data about the casualty date and the hometown of each individual from the *Defense Casualty Analysis System (DCAS)* database (U.S. Department of Defense, 2006). We gather records documenting the deaths of U.S. military officers and soldiers resulting from hostile or non-hostile occurrences during the Vietnam War. These records contain many details such as the service member's name, rank, gender, date of birth, hometown, marital status, religion, race, casualty circumstances, unit, duty, date of death, and information regarding the conflict and incident in which the casualty occurred.[21]

In total, we observe 56,630 casualties. From these, we remove casualties assigned to a hometown address that corresponds to a military base, and casualties caused by illness or self-inflicted harm. The resulting number of casualties is 55,266, of which 86% is represented by white soldiers, and 13% by African American soldiers. The geographical distribution of casualties spans the entire U.S., and it is not specific to the cohorts born before or after 1946. Casualties are in fact concentrated in the period 1965–1973, and are almost entirely represented by the generation born in the 1940s, with an average age at death of 23 (Appendix C.3). Because the probability of death during the conflict is cohort-specific (i.e., some cohorts enter the war in the period with the largest mortality), we compute as the main outcome variable the cohort-specific share of deaths from each county. For each cohort h and county c combination, this is defined as the ratio between the number of casualties in cohort h whose hometown was in county c

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[20]Only 25% of those who served were draftees, as compared to 66% during World War II. Eligible men aged 17 or older had the option to volunteer. Alternatively, when men reached the age of 18, they were obligated to report to their local draft board. Those classified as available for service had the option to volunteer, allowing them to select the service branch and serving for a shorter period. Draftees were typically assigned to the Army and served for up to three years (Card and Lemieux, 2001).

[21]Concerning the location of birth, the dataset provides the *home of record* address, that is, the place recorded as the home of the individual when commissioned, appointed, enlisted, inducted or ordered on active duty. Due to the young age of most soldiers, we assume this is the place where they grew up.

over the total total number of casualties in cohort h. We define cohorts using the exact date of birth and computing age relative to the start date of *Operation Intolerance*.

3.5 Salience of civil rights on newspapers

Newspapers complemented radio broadcasting and played a crucial role in disseminating information, facilitating public discourse, and influencing opinions. To build a measure of salience of civil rights, we collect data from local newspapers using the online archive at `newspapers.com`, mapping newspapers to counties based on the location of their headquarters.

The main limitation of this archive is that it only allows computing the number of pages containing a specified word or combination of words. We impose a bag-of words approach (see, e.g., Gentzkow and Shapiro, 2010; Beach and Hanlon, 2022), treating each page in a newspaper as an unstructured matrix of words and exploring the unconditional frequency of words' appearance. For each month t in the period 1930–1980, we compute the total number of pages in the newspapers published in a specific county c, which we label $all\_pages_{c,t}$. For the U.S., the archive contains more than 51 million pages for this period.[22] For a pre-specified theme k, we compute the number of pages mentioning the word or combination of words indexing the theme, which we label $pages_{kc,t}$. We then aggregate these monthly-specific data into annual measures by grouping information in periods of 12 months relative to the launch of *Operation Intolerance*. We indicate these year-groups by y. For instance, $all\_pages_{c,y=1946}$ and $pages_{kc,y=1946}$ are the total number of pages published in newspapers, and the total number of pages covering theme k in the period running from April 1946 to March 1947. In line with Beach and Hanlon (2022), we finally define the salience of a theme k in county c in year-group y as the frequency of the theme:

$$salience_{kc,t} = \frac{pages_{kc,t}}{all\_pages_{c,t}}. \tag{1}$$

While equation (1) focuses on a specific theme, we are interested in measuring the overall salience of civil rights. We therefore collect this measure for 25 themes that were salient in the rise of the civil rights narrative in the U.S. throughout the period 1930–1980. Appendix D.6 provides further details on how themes were identified, the search strings assigned to each theme, and descriptive statistics on the

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[22]In the archive, newspapers are not present for all counties, either because they are missing from the archive or because the county had no active newspaper at that time. In regression analysis, to avoid focusing on an unbalanced panel, we select only counties where newspapers are present in the dataset for at least 70% of observations in the period of analysis. Appendix Figure D25 highlights the counties with available data. Appendix D.6 provides estimates selecting counties where newspapers are present in the dataset for at least one period.

salience of each theme.

Our measure of salience of civil rights, which we label *Civil Rights Narrative*, is then constructed by aggregating individual measures using Principal Component Analysis (PCA). To maintain consistency in thematic analysis and avoid conflating the intensity of certain themes with the emergence of new ones, we exclude themes that were not used before 1946 from this index. Specifically, we exclude themes that fall into the bottom 20% of average salience for the period from 1930 to 1946, and we winsorize each series at the 1st and 99th percentiles to avoid over-weighting abnormally large values in the index. We calculate the index using the first principal component, which captures 33.3% of the variation in our sample. Appendix D.6 presents alternative procedures for building the index and selecting themes.

3.6 Voting and mobilization

We first focus on a measure of voting in favor of segregation at the county level. We limit this indicator to the core Deep Southern states (Alabama, Georgia, Louisiana, South Carolina and Mississippi), where segregation was enforced by law in the 1940s. We gather county-level vote shares for local elections from 1926 to 1964 from Heard and Strong (2006) and Bartley and Graham (2006), including the elections of Governor, Lieutenant Governor, National Committeeman, President and Senators.

Building a measure of pro-segregation voting requires classifying all candidates based on their stance on segregation. However, in the vast majority of cases, explicit positions are not available, especially for those who lose the elections. Additionally, such public positions might also change over time. Therefore, we classify politicians implementing a data-driven approach based on voters' behavior. We first collect data on the outcomes of public referendums related to segregation at the county level between 1946 and 1960. Referendums typically involved constitutional amendments on school desegregation and voter disenfranchisement laws. Using the results of these referendums, we define for each state the county with the strongest support of segregationist policies as the one with the largest vote share in favor of segregation, and assume this dimension is constant over the period of analysis. Appendix Table C.4 provides an overview of the utilized referendums and the respective vote share for segregationist policies in the majority county, as well as the corresponding state averages. In each election, we classify a candidate as being relatively more pro-segregation if they obtained the largest share of votes in this county. Finally, we compute our measure as the county-specific share of votes devoted to a pro-segregation candidate.

We complement the voting data with information on mobilization related to segregation and civil rights. First, we focus on county-level presence of KKK chapters. We collect this information for periods before

and after *Operation Intolerance* from separate sources. For 1932 and 1942, we use Kneebone and Torres (2015), which lists KKK chapters active during the Second KKK (1919–1942) and provides the dates on which each chapter first appeared. We obtain presence in 1965 from the list of chapters analyzed in the Committee on Un-American Activities (1967), a source also used in Mazumder (2018). Finally, we obtain presence in 2000 and 2020 from the Southern Poverty Law Center (2023), which provides an annual census of hate groups operating in the U.S. starting from the year 2000.

Second, we focus on county-level presence of NAACP branches. NAACP is the most prominent civil rights organization in the U.S., promoting advocacy, legal rights, and grassroots mobilization to end racial discrimination and voter suppression, and to establish criminal justice and equality of access to education. Founded in 1909, the organization experienced significant growth during the 20th century and remains active. We obtain the location of NAACP chapters in 1925, 1942, and 1961 from Estrada and Hermida (2023), and in 2020 using web-scraping.[23]

Appendix C.2 provides descriptive statistics about the share of counties in which each group is found from the 1920s to current times. The KKK was present in 36.5% of counties in 1942, a share that decreased to 11.7% in 1964, and had almost disappeared in 2020 with only 25 active branches. In contrast, the NAACP was present in 12.3% of counties in 1942, in 22.4% in 1964, and in 22% in 2020.

4 Empirical approach

This paper aims to identify the causal effects of *Operation Intolerance*, a sudden and unanticipated shift in the narrative of the popular radio program *The Adventures of Superman* in 1946. We encounter two main challenges in achieving this objective. The first challenge is establishing that exposure to the signal of *Operation Intolerance* during 1946 was effectively random. The second challenge is disentangling the effects of narrative from those of *The Adventures of Superman* and of other content broadcast on the same network during the same period.

Let us start with the first challenge. A large number of papers exploits variation in signal reception induced by topographic obstacles to construct random exposure to either radio or television signals (see, for example, Enikolopov et al., 2011; Yanagizawa-Drott, 2014; Olken, 2009; Adena et al., 2015; DellaVigna

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[23]Estrada and Hermida (2023) provide the list of chapters in the period 1957–1963 (which we label as 1961), and in 1964. We do not use information for the year 1964 due to the large discrepancy between the number of geo-coded chapters and the aggregate number of chapters reported by NAACP for the same year. For the year 2020, we collected addresses of currently-active branches by scraping all active NAACP websites, Google Maps locations, and the list of chapters registered in the U.S. Internal Revenue Services database. We geo-located each branch using the city reported in their address. Web-scraping was performed in May 2023, but we assign the year 2020 because we do not observe the exact moment in which a branch is active.

et al., 2014; Armand et al., 2020). As discussed in Section 3.1, this strategy is suitable for identifying the causal effects of programs broadcast on either FM radio or television, but is unsuitable for our setting because AM propagation can surpass topographic obstacles. Our radio signal coverage calculations are designed to accurately capture AM radio signal propagation. This approach is specifically tailored to account for the unique characteristics of AM transmission, including its ability to travel beyond line-of-sight through surface waves, which are less affected by topographic obstacles and more influenced by soil conductivity. This specificity ensures that our analysis accurately reflects the reach of the broadcasts of *Operation Intolerance*. Furthermore, because soil conductivity between the transmitter of the signal and the receiver is arguably random (Strömberg, 2004), in equidistant points from a transmitter, the relative probability to receive or not the signal is plausibly exogenous.

We define our main treatment variable as the share of the population living in each county that was covered by the signal of *The Adventures of Superman* in 1946.[24] We label this variable as R_c^{1946} and plot the geographical distribution in Panel A of Figure 3. This measure is similar to an *intention-to-treat* exposure because it captures the probability of listening to the radio program, rather than the actual take-up (which is unobservable in our setting). Following the large literature on mass media, we combine the predicted coverage R_c^{1946} with the targeted coverage of *Operation Intolerance*, that is, the theoretical coverage of the broadcast assuming for the entire country the maximum soil conductivity found in the U.S. (30 mS/m; Appendix Figure A4 provides a detailed map of different conductivity zones). We label this variable as $free_c^{1946}$ and plot the geographical distribution in Panel B of Figure 3. This is comparable to the "free field coverage"–the theoretical coverage in the absence of topographic obstacles–used to identify causal effects in the context of FM or TV broadcasts (see, for example, Olken, 2009), capturing any remaining unobserved heterogeneity related to the antenna placement.

The second challenge involves disentangling the effect of narratives from the effects of *The Adventures of Superman* and other content broadcast on the same network around this time. This is a challenge distinct from most papers focusing on the impact of a radio program. Unlike the extant literature our goal is to estimate the effect of a change in the content of an existing program. To address this challenge, we rely on a **cohort study** specification. We undertake within-age cohort comparisons of individuals from different age groups in 1946—those living within the coverage area of the radio signal to those outside it.

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[24]We convert the continuous values of radio coverage described in Section 3 into binary coverage indicators using the threshold of $66 dB\mu V/m$ field strength, broadly considered as the required sensitivity limit for successful AM reception (ETSI, 2021). We then calculate the share of the population of each county covered by the signal by overlaying the 1940 population data from the History database of the Global Environment (HYDE), available at the spatial resolution of 5 arc-minutes, which is approximately 10 kilometers at the equator (Klein Goldewijk et al., 2017). Appendix D.4 shows robustness of main results to using alternative definitions of coverage.

Figure 3: Radio coverage of *The Adventures of Superman* in 1946

A. Actual coverage
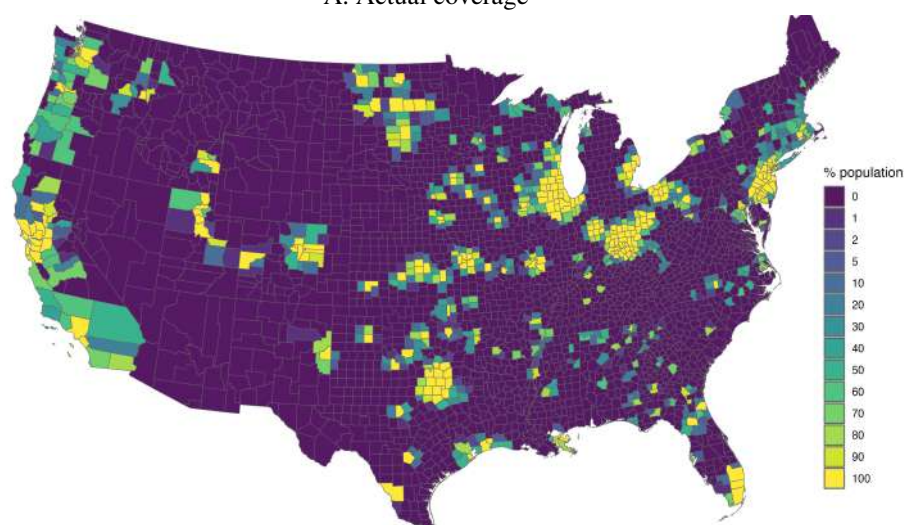
B. Targeted coverage
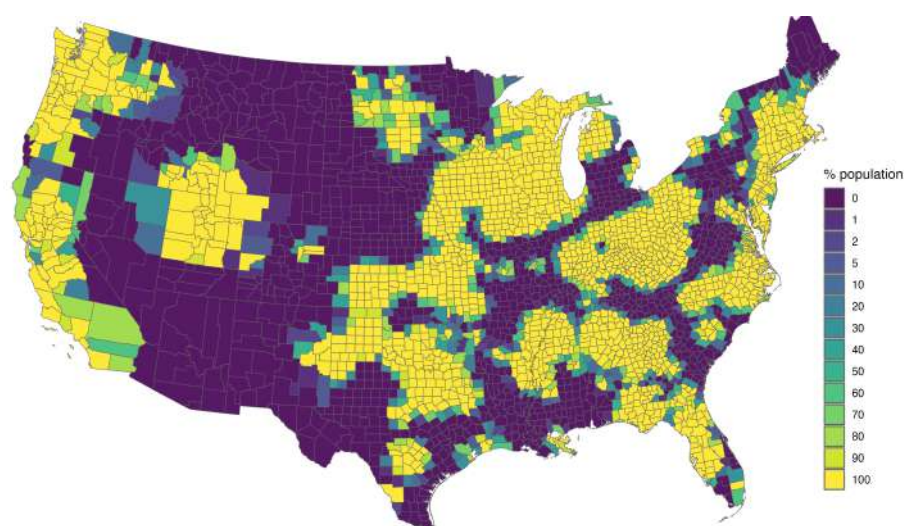
Note. Panel A displays the geographical distribution of the share of a county's population covered by the signal of the radio program *The Adventures of Superman* in 1946, based on the coverage calculations described in Section 3.1, overlaid with the 1940 cell-level population estimates from Klein Goldewijk et al. (2017). Panel B shows the same distribution, but using a signal strength computed assuming homogeneous ground conductivity across the U.S. at 30 mS/m (the maximum observed in the country). Signal strength under maximum conductivity is computed using the *Field Strength Calculator One* software and applying the ITU-R P.368-7 algorithm, the same algorithm used to generate actual coverage predictions in panel A. In both panels, we consider a cell as covered if it has a medium signal strength of at least $66dB\mu V/m$. Each cell is the weighted by population to compute a county-level average.

The underlying assumption is that individuals in the age groups targeted by *Operation Intolerance* could have listened to the program, whereas those who were either too old, too young, or not yet born would not have been directly exposed to the episodes. This method allows us to isolate the effect of exposure to the progressive narratives in *Operation Intolerance* from the potential influence of the program (*The Adventures of Superman*) by focusing on demographic segments most likely to have been affected by the

change in narratives in 1946. We estimate the following specification:

$$Y_{ihc,t} = \sum_{\tau=\underline{h}}^{\bar{h}} \gamma_\tau D_\tau \cdot R_c^{1946} + \sum_{\tau=\underline{h}}^{\bar{h}} \gamma_\tau D_\tau \cdot \text{free}_c^{1946} + X'_{ihc,t}\lambda + \mu_h + \mu_c + \mu_{c,t} + \epsilon_{ihc,t} \qquad (2)$$

where $Y_{ihc,t}$ is the outcome variable for individual i of cohort h (relative to 1946) born in county c and interviewed at time t, and D_τ is an indicator variable if individual i is from cohort $h = \tau$, with cohorts ranging from $\underline{h}$ to $\bar{h}$. To define cohorts, we consider (hypothetical) age at the beginning of *Operation Intolerance* in 1946. For the analysis of attitudes, we pool cohorts into groups of 5 years to obtain sufficient within-cohort variation in the outcome variables. $X'_{ihc,t}$ is a set of individual-characteristics, including age, gender and whether the respondent lived in a rural setting during childhood, while μ_h and μ_c are cohort and county fixed effects, respectively. To control for local trends in both the outcome variable and radio exposure, $\mu_{c,t}$ controls for spatially specific time effects, including survey year fixed effects, interaction terms between survey year indicators and state indicators, and between survey year indicators and county characteristics that predict the expansion of the MBS radio network before 1946.[25] Finally, the error term $\epsilon_{ihc,t}$ is assumed to be clustered at the county level. Appendix D.4 shows robustness of our main results to alternative sets of controls and to assuming spatial correlation in the errors.

To provide a single estimate for the effect on the population directly targeted by the program (i.e., children and young adults), in the tables, we provide estimates of equation (2) but grouping the age groups 5–15 (i.e., those 3–17 years old in 1946) into a single cohort, which we label as the *target* cohort. These estimates are thus comparing respondents in this group with those in older cohorts (i.e., those too old to be targeted by the broadcast) and younger cohorts (i.e., those not born or too young to be able to hear the broadcast). As is common in mass media research, we do not observe who actually listened to the full set of episodes of *Operation Intolerance*. We therefore need to make assumptions regarding the cohorts most likely targeted by the program, basing this decision on the time slot used by *The Adventures of Superman* and on qualitative evidence (see Section 2). We provide further evidence on this grouping in Section 5. Additionally, for each outcome variable, we also present estimates from equation (2), which treats cohorts separately and does not require this grouping assumption.

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[25]Appendix A shows that the expansion of this radio network was primarily driven by new antennas built in the 1920s and 1930s. By examining changes in county-level characteristics between the 1930 and 1940 censuses, we show that a wide variety of indicators–pertaining to population composition and economic and political outcomes–are uncorrelated with the 1946 coverage. Although differences in trends would not pose a threat to identification in a cohort study, to further control for unobserved heterogeneity in antenna placement, our main specification includes characteristics whose trends predict coverage with a p-value smaller than 0.2. These variables include population density, the share of the population living in urban areas, the share owning a radio, the share of illiterate individuals, and the share of male population. Results are robust to removing these interaction terms from the main specification (Appendix D.4).

We complement the cohort study specification with an **event study** specification applied to county-level panel data, rather than individual observations. This approach compares over time counties covered by the signal of *Operation Intolerance* in 1946 with counties not covered. We estimate the following specification:

$$Y_{c,t} = \sum_{\tau=0}^{\bar{T}} \gamma_\tau P_\tau \cdot R_c^{1946} + \sum_{\tau=0}^{\bar{T}} \gamma_\tau T_\tau \cdot \text{free}_c^{1946} + \mu_c + \mu_{c,t} + \epsilon_{c,t} \tag{3}$$

where $Y_{c,t}$ is the outcome variable for county c at time t, P_τ is an indicator variable if the observation refers to the period $t = \tau$, with t ranging from time 0 to time $\bar{T}$. The remaining terms are defined in line with equation (2).

While the cohort study specification enables us to disentangle the impact of narratives from the effects of *The Adventures of Superman* and the broader content broadcast by MBS in 1946, the event study approach complements this by capturing all these effects combined. It is important to highlight that the radio network broadcasting *Operation Intolerance* was specific to 1946. Therefore, it is unlikely that our identification strategy captures the effect of radio broadcasts beyond those transmitted by MBS in that year. Radio networks in the U.S. expanded and changed significantly in the 1940s, with MBS representing only one of the active networks of that decade. The 1950s marked the beginning of television's expansion, which substantially reduced the centrality of radio as a mass medium over time (Gentzkow, 2006). In addition, all the units covered by the intervention are "treated" simultaneous, rendering our specification immune to problems associated with heterogeneity in the dynamic treatment effects observed in staggered designs. Similarly to equation (2), in the tables, we provide estimates by pooling post-1946 observations while maintaining all other variables consistent with those in equation (3).

The interpretation of estimates in both approaches relies on understanding whether *Operation Intolerance* involved anticipation effects or spillover effects onto individuals who were not directly targeted by the broadcasts, such as adults, through other prominent media channels. We discount the possibility of spillover through television, as only 8,000 U.S. households owned television sets in 1946 (Anderson, 2005), and we investigate the possibility of spillovers related to newspapers by examining the share of newspaper pages from that period that references topics related to *Operation Intolerance*.

Overall media attention to Superman in local newspapers was relatively small. Figure 4 shows that at the time of the launch of *Operation Intolerance*, in April 1946, newspapers made reference to Superman in 1.39% of pages. The share was relatively stable throughout the period, starting at 1.15% in August 1942 and ending at 0.86% in May 1949. Restricting to pages covering Superman on radio, we observe a

small drop in the share of pages, but the pattern is unchanged.[26] This suggests that the vast majority of mentions were about radio schedules. Importantly, we do not observe major changes right before or right after the launch of *Operation Intolerance*.[27] In addition, discussions on the core themes in *Operation Intolerance* did not show significant changes in newspapers. Mentions of bigotry, intolerance, prejudice, or related derivatives of these words, were slightly more prevalent than mentions of *Superman*, with an average share of pages mentioning these topics standing at 2.23% in April 1946. These findings allow us to rule out anticipation or spillover effects. Furthermore, in Appendix D.6, we observe parallel trends in the evolution of attention to these topics prior to the launch of *Operation Intolerance*, further strengthening our identification strategies.

Figure 4: Newspaper coverage of Superman and topics related to *Operation Intolerance*
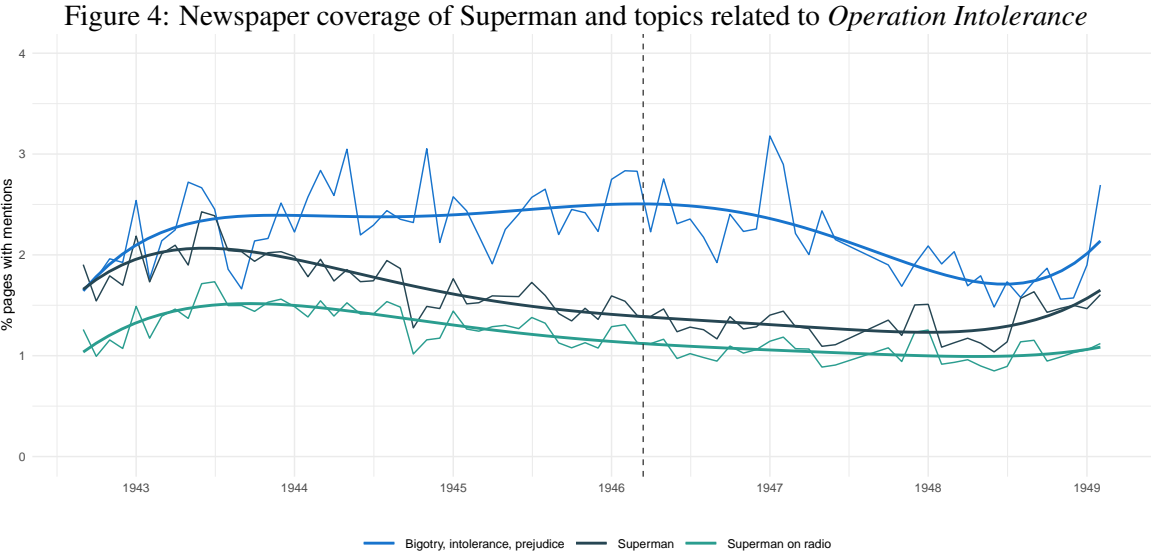
Note. This figure displays the share of pages published in local newspapers that cover specific topics, with shares multiplied by 100. It spans the same period as Figure 1, covering August 1942 to February 1949. The terms *bigotry*, *intolerance*, and *prejudice* refer to pages where any of the words—*bigotry*, *intolerance*, *prejudice*, or their related derivatives—appear at least once. Our search targets pages containing words starting with *intoleran*, *bigot*, or *prejudic*. For example, searching words starting with *intoleran* captures pages with the noun *intolerance*, the adjective *intolerant*, or the adverb *intolerantly*. *Superman* refers to pages where the word *Superman* appears at least once. *Superman on radio* refers to pages where the words *Superman* and *radio* appear on the same page at least once. See Section 3.5 for details about the data source.

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[26]These pages encompass a wide range of references to Superman, including articles about Superman (including those about *Operation Intolerance* published in and after April 1946), radio schedules featuring *The Adventures of Superman*, and comic strips with Superman. We provide some examples in Appendix D.6.

[27]*Superman* was more salient in newspapers published in areas covered by the radio signal of *Operation Intolerance*, but we do not observe any significant change in media attention even when focusing specifically on those areas or examining the likelihood of mentions of related topics instead of just the share of pages (Appendix D.6).

5 Results

5.1 Support for civil rights

We begin by investigating the effects on attitudes towards civil rights. Since support for civil rights is captured through several survey questions that may not be collected in every survey round, we first focus on a single indicator, which we label the *Support for Civil Rights Index*. This index combines responses from the questions described in Section 3.2, following the approach of Kling et al. (2007).This approach facilitates a canonical interpretation of the estimation results and addresses potential issues related to multiple hypothesis testing.[28] It involves standardizing individual indicators and averaging the z-scores for all available variables for each respondent. Panel A of Figure 5 plots the average of the index for different cohorts. We first observe that younger cohorts in 1946 are more supportive of civil rights compared to those born before 1946. This is in line with American society becoming more progressive over time. We find a difference of 0.29 standard deviations between the respondents in the age cohort -10 (i.e., those born in the years 1954–1958) and those in the age cohort 50 (i.e., those born in the years 1894–1898).

Panel B of Figure 5 provides cohort study estimates on the Support for Civil Rights Index using equation (2). We observe an increase in support for civil rights among the respondents in the age cohorts 5–15 (i.e., those who were 3–17 years old in 1946). The estimates are highest and significant at the 1% level for the age cohort 15, while they are smaller for the age cohorts 10 (significant at the 5% level) and 5 (significant at the 12% level). This result further supports the fact that the program targeted children and young adults, justifying our definition of target cohorts (see Section 4).

We do not observe any effect on older or younger cohorts, showing that effects on support for civil rights are specific to the cohorts that were specifically targeted by and able to listen to the program. Importantly, the absence of effects among younger cohorts (i.e., those who were not yet born or too young to understand the program) indicates that the narrative of *Operation Intolerance* was either not passed down to younger siblings in the years following the broadcast, or that generational convergence is absorbing the effect (i.e., over time, all younger generations become more supportive of civil rights, with larger gains in areas not covered by the broadcast). Nevertheless, this result underscores the importance of direct exposure to the program, rather than an effect transmitted across generations.

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[28]Appendix D.2 presents results using an alternative index built using regularized iterative PCA (Josse and Husson, 2012), a method that accommodates incomplete data structures into a principal component analysis. Results are in line with those presented in the main text.

The observed effects are specific to *Operation Intolerance*. One potential concern is that these effects might partly reflect exposure to radio in general or youth programming, particularly if similar narrative changes occurred across different radio networks in 1946. To address this, we gathered data on the radio coverage of other commercial networks active in 1946, including the main contemporary competitor to *The Adventures of Superman*, the series *The Lone Ranger*, broadcast on the ABC network. In Appendix D.3, we estimate the effect of *Operation Intolerance* among targeted cohorts, controlling for interaction terms between indicator variables for the targeted cohorts and both actual and targeted exposures to these alternative contents. We find no significant effect on support for civil rights from exposure to other radio networks or *The Lone Ranger*. This result suggests that our main estimates do not reflect an overall narrative change broadcast in 1946 by radio in general or programs targeting younger audiences.

Figure 5: Support for civil rights

A. Average index, by cohort

B. Cohort study on the index
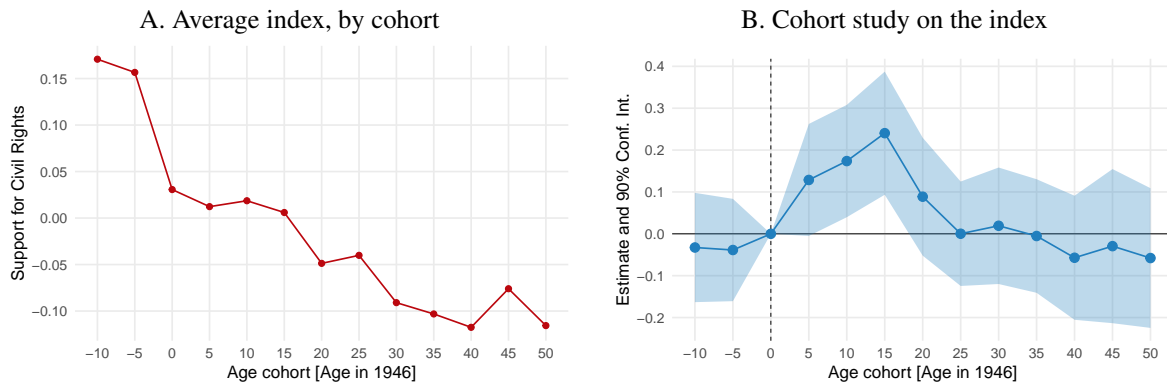
Note. Panel A plots the *Support for Civil Rights Index*, averaged by age cohort in 1946. The index aggregates z-scores from individual questions that capture support for civil rights. Descriptive statistics and temporal coverage of the variables comprising the index are presented in Appendix C.1. Panel B presents the cohort study plot of the effects of *Operation Intolerance* on the *Support for Civil Rights Index*. This figure plots the coefficients from equation (2) of the interaction term between the age cohort in 1946 and exposure to *Operation Intolerance* in the county, defined as the share of the population in the county that was covered by the radio signal of the program in 1946. The shaded area indicates the confidence intervals at the 10% level, computed clustering errors at the county level. The vertical line indicates the cohort born at the time of *Operation Intolerance*. Additional details about the variables are available in Appendix C.1.

To summarize main effects into a single estimate, in Table 1, we provide estimates of equation (2) grouping the *target* cohorts into a single cohort. Panel A provides estimates of equation (2) using all available cohorts in the data. Panel B excludes younger cohorts, comprising individuals who were younger than three years or those who were yet to be born in 1946. Column (1) focuses on the Support for Civil Rights Index, while columns (2)–(10) provide estimates for each individual indicator comprising the index, reported in z-scores for comparability. For these outcome variables, the estimates using equation (2) without grouping any cohort are presented in Appendix D.1.

Being exposed to progressive narratives leads to a significant increase in the support for civil rights. In the target cohorts, the Support for Civil Rights Index is 0.18 standard deviations higher among children

who lived in areas fully covered by *Operation Intolerance* compared to those who did not. If we consider the age cohort 15 as our baseline—the cohort showing the largest effects—this difference is equivalent to a generational gap of approximately 20 years. In other words, to observe a difference in the index of a magnitude equivalent to what the cohort study estimate shows, we need to compare it to the index of the age cohort -5. Furthermore, dropping younger cohorts (who are more progressive than older cohorts, independent of the exposure to the broadcast) from the specification (panel B) leads to comparable estimates, reinforcing the importance of being able to directly listen to the program at the time of the broadcast in explaining the increase in support for civil rights. Results are robust to alternative specifications, to alternative measures of exposure to the broadcast, and to controlling for coverage of other radio stations, for which we record no effect on the index (Appendix D.4).

Columns (2)–(10) in Table 1 show that the increase in support for civil rights resulting from exposure to *Operation Intolerance* is not driven by any single one of the nine individual variables that constitute the index of support for civil rights. In the target cohorts, those who lived in areas fully covered by the broadcast are significantly more favorable towards civil rights leaders and the Black population, and more unfavorable towards Southerners and segregationists. Additionally, they significantly support affirmative action for the Black population and racial desegregation. Increased support for civil rights leaders and for affirmative action represent endorsements of the Civil Rights Movement. We estimate an effect of 0.22 standard deviations on favorable feelings towards civil rights leaders (0.26 when excluding younger cohorts), and of 0.40 standard deviations on support for affirmative action (0.47 when excluding younger cohorts). Estimates for the effect on other indicators are not statistically significant at conventional levels, but they all indicate increases in support for civil rights.

The effects of *Operation Intolerance* specifically relate to attitudes toward racial discrimination, which were among the most salient in the period 1964–1980. In Appendix D.5, we show the absence of effects on attitudes unrelated to racial prejudice, such as those towards religious groups, economically disadvantaged or advantaged individuals, or towards the white population.

Table 1: Cohort study estimates on the effect on the support for civil rights

	Support for Civil Rights Index	Favorable towards...		Unfavorable towards...		Support for...				
		Civil rights leaders	Black population	George Wallace	Southerners	Affirmative action	Integrated schools	Black rep-resentation	Desegregation	Speeding up civil rights
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
A. All cohorts										
Target × Exposure	0.179***	0.223**	0.176**	0.102	0.180**	0.393***	0.105	0.165	0.153**	0.113
	(0.044)	(0.101)	(0.071)	(0.081)	(0.077)	(0.100)	(0.078)	(0.138)	(0.067)	(0.078)
R^2	0.21	0.23	0.14	0.23	0.31	0.14	0.18	0.18	0.19	0.19
Observations	10503	5304	8145	8023	5207	6377	5872	3470	6836	7874
B. Exclude younger cohorts										
Target × Exposure	0.176***	0.259**	0.184**	0.043	0.105	0.472***	0.087	0.205	0.126*	0.133
	(0.047)	(0.119)	(0.080)	(0.091)	(0.094)	(0.110)	(0.084)	(0.160)	(0.076)	(0.088)
R^2	0.22	0.25	0.15	0.27	0.34	0.17	0.20	0.22	0.20	0.20
Observations	7842	3674	6368	5551	3934	4249	4562	2396	5086	6082

Note. Estimates are based on equation (2) grouping target cohorts into a single cohort. *Target* is an indicator variable equal to 1 for respondents who were 3–17 years old in 1946. *Exposure* denotes the share of the population in the county covered by the radio signal of *Operation Intolerance* in 1946. All specifications include controls for targeted coverage, state-by-year fixed effects, time effects, and individual controls (see Section 4). Panel A includes all available cohorts, while panel B excludes younger cohorts. Standard errors, clustered by county, are reported in parentheses (* $p < 0.1$, ** $p<0.05$, *** $p < 0.01$). Column (1) uses the *Support for Civil Rights Index* as the dependent variable, aggregating z-scores from individual questions that capture support for civil rights. Columns (2) through (10) analyze the individual components of the index, also reported in z-scores: (2) *favorable towards civil rights leaders* measures feelings towards civil rights leaders, ranging from 1 (unfavorable) to 100 (favorable); (3) *favorable towards Black population* measures feelings towards the Black population, ranging from 1 (unfavorable) to 100 (favorable); (4) *unfavorable towards George Wallace* measures feelings towards George Wallace, ranging from 1 (favorable) to 100 (unfavorable); (5) *unfavorable towards Southerners* measures feelings towards Southerners, ranging from 1 (favorable) to 100 (unfavorable); (6) *support for affirmative action* measures beliefs about governmental efforts to improve the position of Blacks, ranging from 1 (Blacks should help themselves) to 7 (Government should help Blacks); (7) *support for integrated schools* is an indicator variable equal to 1 if the respondent believes that the government should ensure racially-integrated schools; (8) *support for Black representation* measures beliefs about the influence of Blacks in American life and politics, ranging from 1 (too much influence) to 3 (too little influence); (9) *support for desegregation* is an indicator variable equal to 1 if the respondent rejects strict racial segregation; (10) *support for speeding up civil rights* is an indicator variable equal to 1 if the respondent believes that civil rights leaders are not pushing too fast for their goals. Descriptive statistics and temporal coverage of the variables are presented in Appendix C.1.

5.2 Interracial assimilation

In this section, we shift our focus from self-reported attitudes to examine real-life behavioral outcomes related to interracial assimilation. We begin by investigating whether respondents report having friends of a different race using the cohort study specification. Panel A of Figure 6 shows the average of mixed friendships across cohorts. In line with the ongoing process of racial assimilation throughout the 20th century, we observe that younger cohorts exhibit greater assimilation in terms of friendships. The share of mixed friendships more than doubled if we consider the two extreme cohorts. For respondents in the oldest cohort in the sample, the age cohort 40 (born in the years 1904–1908), less than 30% reports mixed friendships. On the other side of the spectrum, respondents in the younger cohort in the sample, the age cohort -5 (born in the years 1939–1943), 60% report mixed friends.

Panel B of Figure 6 plots estimates from equation (2), demonstrating how the probabilities of reporting mixed friendships across cohorts are influenced by the exposure to the broadcasts. Similar to the effect on support for civil rights (Figure 5), we observe an effect of *Operation Intolerance* primarily in the target cohorts. The largest effect is for the age cohort 10, while for the age cohorts 5 and 15 the estimates are not statistically significant.

Column (1) in Table 2 summarizes the effect of *Operation Intolerance* in the target cohorts, using equation (2) and grouping the target cohorts into a single cohort. As in the previous section, Panel A provides estimates using all available cohorts in the data, while Panel B excludes younger cohorts, comprising individuals who were younger than three years or those who were yet to be born in 1946. Respondents exposed to the broadcast in 1946 are significantly more likely to report mixed friendships. Respondents in the target cohorts who resided in counties where 100% of the population was covered by *Operation Intolerance* in 1946 experience a 9.1 percentage point increase in the likelihood of having mixed friendships. This effect is robust even when younger cohorts are excluded from the estimating equation, reducing the magnitude of the effect to 8.7 percentage points. If we take again the cohort 15 as our base, the magnitude of the effect corresponds to a generational gap of 10–15 years, meaning that it would have taken this amount of time to achieve such a change in racial assimilation among their friends. Similar to the results on support for civil rights (Section 5.1), the magnitude of the effects is large compared to societal progress in this dimension.

We complement cohort study estimates with society-wide estimates on racial assimilation by focusing on interracial marriages, , defined as the number of marriages (per 1,000) where spouses are of different races, from 1931 to 1979. Panel C in Figure 6 shows event study estimates for interracial marriages,

using equation (3). This graph plots the coefficients for each year (relative to 1945), illustrating how the estimates evolve over time. Meanwhile, Table 2 presents estimates of the same equation (3), pooling post-1946 observations. Column (2) shows results by pooling all post-1946 observations, while column (3) takes into account the landmark 1967 Supreme Court ruling in *Loving v. Virginia*, which declared anti-miscegenation laws unconstitutional. This column pools observations separately for the periods 1946–1967 and post-1967 and adds an interaction term between exposure to *Operation Intolerance* and the period after 1967. As discussed in Section 3.3, these regressions use the census enumeration area as the unit of observation.

Figure 6: The effect of *Operation Intolerance* on interracial assimilation

A. Average mixed friendships, by cohort   B. Cohort study on mixed friendships

C. Event study on interracial marriages (per 1,000 marriages)
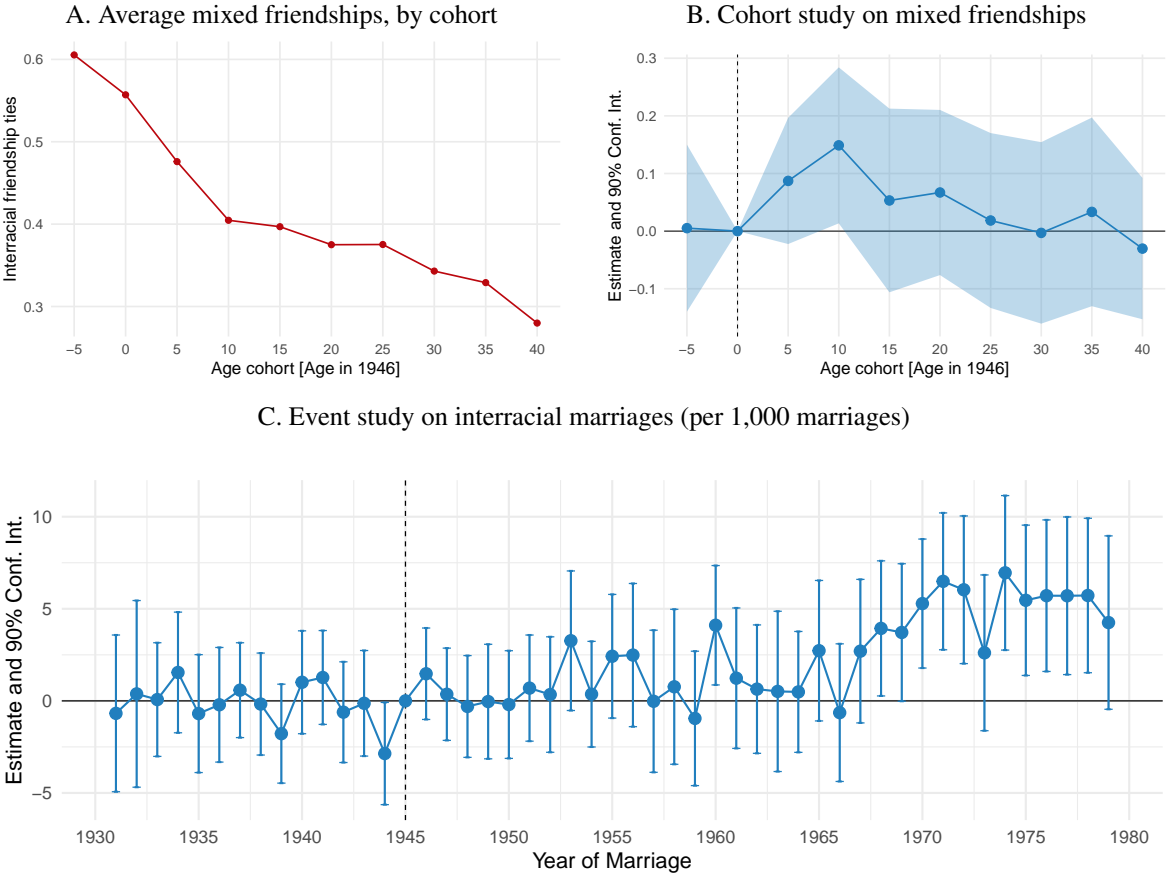
Note. Panel A displays the average by age cohort in 1946 for *mixed friendships*, an indicator variable set to 1 if the respondent reports having friends of different races, and 0 otherwise. Panel B illustrates the cohort study effects of *Operation Intolerance* on this indicator. It plots the coefficients from equation (2), of the interaction term between the age cohort in 1946 and the exposure to *Operation Intolerance* in the county. The shaded area represents the confidence intervals at the 90% level with errors clustered at the county level. Panel C plots the event study effects of *Operation Intolerance* on *interracial marriages*, defined as the number of marriages where spouses are of different races per 1,000 marriages, specific to each census enumeration area. It plots the coefficients from equation (3) of the interaction term between year indicators and exposure to *Operation Intolerance* in the county. Confidence intervals are computed at the 90% confidence level with errors clustered at the county level. The vertical lines in Panel B indicate the cohort born at the time of *Operation Intolerance*, and in Panel C, the year of *Operation Intolerance*. Additional details about the variables are presented in Appendix C.1.

We observe a notable increase in the share of mixed marriages in counties that were covered by *Op-*

eration Intolerance in 1946 compared to those that were not covered. In areas where the population was fully covered, there is an increase of 1.76 additional mixed marriages for every 1,000 marriages in the post-1946 period, relative to 1945. Conversely, we do not find any differential pattern before 1945. Importantly, this estimate is primarily driven by the post-1967 period, highlighting the importance of removing legal barriers to interracial marriages in promoting assimilation. Before 1967, we do not observe clear differences in mixed marriage rates between areas with varying degrees of exposure to the program. Brought together, the cohort study and the event study estimates highlight that *Operation Intolerance* was influential not only in shifting attitudes in support of civil rights in 1946, but also in influencing racial assimilation during the decades following the broadcast.

Table 2: The effect on interracial assimilation

	Mixed friendships	Interracial marriages (per 1,000 marriages)	
	(1)	(2)	(3)
A. Cohort study – All cohorts			
Target × Exposure	0.091**		
	(0.042)		
R^2	0.24		
Observations	5,662		
B. Cohort study – Exclude younger cohorts			
Target × Exposure	0.087*		
	(0.051)		
R^2	0.24		
Observations	4,487		
C. Event study			
Post 1946 × Exposure		1.76**	0.888
		(0.735)	(0.646)
Post 1967 × Exposure			3.49***
			(1.08)
R^2		0.46	0.46
Observations		55,958	55,958

Note. Estimates in Panels A and B are based on equation (2), grouping target cohorts into a single cohort. *Target* is an indicator variable set to 1 for respondents aged 3–17 years in 1946, while *exposure* measures the share of the county population covered by the radio signal of *Operation Intolerance* in 1946. Panel A includes all available cohorts, whereas Panel B excludes younger cohorts. In panel C, estimates are based on equation (3) and pooling all post-1946 observations. All specifications include controls for targeted coverage, state-by-year fixed effects, time effects, and individual controls (see Section 4). *Post 1946* is an indicator variable set to 1 for observations after 1946, and *post 1967* similarly indicates observations after 1967. Standard errors, clustered by county, are reported in parentheses (* $p < 0.1$, ** $p<0.05$, *** $p < 0.01$). Dependent variables, reported in the column headers, are defined as follows: *mixed friendships* is an indicator variable equal to 1 if the respondent reports having friends of different races, and 0 if all friends are of the same race; (2) *interracial marriages* represents the number of marriages per 1,000 where spouses are of different races, specific to each census-enumeration-area. Additional details about the variables are presented in Appendix C.1.

5.3   Dissent and institutional trust

The rise of civil rights in the U.S. during the 1950s and 1960s, marked by widespread mass protests, prompts us to examine whether being exposed to progressive narratives during childhood not only enhanced support for civil rights and racial assimilation but also contributed to the mass mobilization

characteristic of the Civil Rights Movement. While we do not observe direct participation in this move-ment, we focus on indirectly-related outcomes, such as dissent and institutional trust. Table 3 presents cohort study estimates on these outcomes using equation (2) and pooling target cohorts into a single group. Columns (1)–(5) focus on self-reported attitudes on dissent and institutional trust, while column (6) supplements these results with estimates of the effect on a behavioral outcome, participation in the Vietnam War. Because we do not observe participation in the war at individual level (see Section 3.2), we estimate this specification at the cohort-county level, thus comparing the distribution of deaths within a cohort across counties with varying exposure of *Operation Intolerance* in 1946 as a proxy for participa-tion. As in the previous sections, Panel A provides estimates using all available cohorts in the data, while Panel B excludes younger cohorts. This exclusion is not feasible in column (6) because the number of cohorts that participated in the war restricts comparisons to only the younger cohorts.[29] For each variable presented in Table 3, Appendix D.1 provides estimates using equation (2) without grouping cohorts.

Columns (1) and (2) focus on attitudes towards dissent by investigating whether respondents approve or disapprove of protests and demonstrations. In the target cohort, *Operation Intolerance* led to a significant increase in support for protests. Residing in a county that was fully covered by the broadcast increases support by 0.25 standard deviations compared to those living in a county that was not covered by the broadcast. Excluding the younger cohorts raises the estimate to 0.30 standard deviations, suggesting that part of the effect is absorbed by younger cohorts who are also relatively more supportive of protests in areas covered in 1946, albeit the effect is small. While these effects are specific to protests, a similar pattern is observed for the more general support for any demonstration. However, the estimate only becomes statistically significant when younger cohorts are excluded (Panel B). In this sample, we observe an increase of 0.20 standard deviations in support for demonstrations, significant at the 10% level. These results highlight that the effects of *Operation Intolerance* align with the mass protest nature of the Civil Rights Movement.

Columns (3)–(5) shift the focus to institutional trust by examining the level of trust in the federal gov-ernment and respondents' favorable feelings towards the police and the military. The use of force by the police was the catalyst for many of the race riots in 1960s, and the end of police brutality was one of the core demands of the Civil Rights Movement (Wasow, 2020). Similarly, attitudes towards the military were closely related to attitudes toward the Vietnam War, with objections to the war indicating support for the Civil Rights Movement.

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[29]Deaths are concentrated in a limited number of cohorts and over a short period of time (see Appendix C.3). We select only those cohorts where the number of casualties exceeds 400. This effectively selects individuals who were between -5 to 16 years old relative to the launch of *Operation Intolerance*.

We observe that *Operation Intolerance* led to reduced trust in the federal government, although the coefficients are not statistically significant. However, there is a statistically significant reduction in favorable feelings towards the police and the military. The estimates correspond to a reduction of 0.29 standard deviations for favorable views towards the police, and 0.17 standard deviations for favorable views towards the military. Excluding younger cohorts results in comparable estimates, indicating that the effects are primarily driven by the target cohorts rather than the subsequent ones. This underscores again the importance of having been born prior to the *Operation Intolerance* broadcasts to experience these effects.

Overall, these results suggest a shift in favor of civil disobedience and non-violence, which are key tenets of the Civil Rights Movement. We corroborate these findings on attitudes by examining participation in the Vietnam War. In line with the results on attitudes, column (6) reveals that the broadcast led to a significant reduction in participation among the target cohorts. In this group, we find a reduction of 0.02 percentage points in participation in counties fully covered by the broadcast, compared to those with no coverage. Appendix Figure D21 shows how estimates vary by cohort using equation (2). The reduction is primarily observed in individuals who were at least 4 years old in 1946. We observe no significant effect in younger individuals or those not yet born in 1946.

Table 3: Cohort study estimates of the effect on dissent and institutional trust

	Dissent		Institutional Trust			
	Approve of...		Trust in the	Favorable towards the...		Vietnam War
	protests	demonstrations	government	police	military	participation
	(1)	(2)	(3)	(4)	(5)	(6)
A. All cohorts						
Target × Exposure	0.253**	0.171	-0.084	-0.290***	-0.166**	-0.015***
	(0.097)	(0.111)	(0.061)	(0.087)	(0.075)	(0.004)
R^2	0.20	0.18	0.18	0.15	0.19	0.72
Observations	4,253	5,481	9,777	6,405	7,333	68,134
B. Exclude younger cohorts						
Target × Exposure	0.297**	0.202*	-0.092	-0.297***	-0.164*	-
	(0.115)	(0.119)	(0.070)	(0.092)	(0.087)	-
R^2	0.20	0.19	0.21	0.14	0.16	-
Observations	3,331	4,125	7,235	5,025	5,587	-

Note. Estimates based on equation (2), grouping target cohorts into a single cohort. *Target* is an indicator variable set to 1 for respondents aged 3–17 in 1946, and *exposure* measures the share of the county population covered by the radio signal of *Operation Intolerance* in 1946. All specifications include controls for targeted coverage, state-by-year fixed effects, time effects, and individual controls (see Section 4). Panel A includes all available cohorts, while panel B excludes younger cohorts. Standard errors, clustered by county, are reported in parentheses (* $p < 0.1$, ** p<0.05, *** $p < 0.01$). The dependent variables in columns (1)–(5), denoted by the column headers, are z-scores of the following variables: (1) *approve of protests* is the degree of approval of participation in protests, ranging from 1 (disapprove) to 3 (approve); (2) *approve of demonstrations* is the degree of approval of participation in demonstrations, ranging from 1 (disapprove) to 3 (approve); (3) *trust in the government* is the degree of trust in the federal government doing the right thing, ranging from 1 (never) to 4 (always); (4) *favorable towards the police* measures the feelings towards police, ranging from 1 (unfavorable) to 100 (favorable); (5) *favorable towards the military* measures the feelings towards the military, ranging from 1 (unfavorable) to 100 (favorable). The dependent variable is column (6), *Vietnam War participation*, represents the cohort-specific share of deaths assigned to each county based on the birthplace of the deceased (multiplied by 100). Descriptive statistics and temporal coverage for variables in columns (1)–(5) are presented in Appendix C.1, and for column (6) in Appendix C.3.

5.4 Political change and public opinion

Results discussed in Sections 5.1–5.3 highlights the contribution of *Operation Intolerance* to the support of the Civil Rights Movement in the 1960s and 1970s. In this section, we aim to determine whether progressive narratives led to changes in political attitudes and mobilization, particularly making target cohorts' political preferences more progressive.

Columns (1) and (2) in Table 4 concentrate on cohort study estimates of self-reported political attitudes using equation (2) and grouping target cohorts into a single group. Appendix D.1 provides estimates using equation (2) without grouping cohorts. Panel A provides estimates using all available cohorts in the data, while panel B excludes younger cohorts.

Column (1) examines the Conservative–Liberal Scale, which assesses a respondent's progressiveness, while column (2) assesses respondents' favorable feelings towards Republicans, who represented more conservative views on civil rights issues at the time of the survey. We observe that *Operation Intolerance* caused target cohorts to become more progressive and less supportive of Republicans. In counties fully covered by the broadcast, target cohorts experienced an increase of 0.27 standard deviations towards progressiveness on the Conservative–Liberal Scale and a decrease of 0.18 standard deviations in support for Republicans. Estimates remain comparable when excluding younger cohorts from the cohort study specification, underscoring the importance of experiencing *Operation Intolerance* firsthand. In this subset, the coefficients for progressiveness and support for Republicans are 0.33 and -0.18, respectively.

To complement these results based on the cohort study specification, in columns (3) to (6), we shift our focus to county-level outcomes and present event study estimates using equation (3), pooling all post-1946 observations.

Column (3) focuses on voting behavior, using the measure of voting in support of segregation in the Deep South (see Section 3.6). Our findings consistently indicate a reduction in the vote share for pro-segregation candidates, with the effect in the post-1946 period amounting to a decrease of 4.9 percentage points. Panel A in Figure 7 shows no systematic differences between counties that were covered by the broadcast in 1946 and those that were not, prior to the programming shift. Because these estimates are not based on cohort comparisons, we interpret these effects within the context of broader change in narratives implemented by the MBS network beyond *Operation Intolerance*.

To complement this result, in Appendix D.7, we focus on voting for pro-segregation presidential candidates. We focus on Strom Thurmond in 1948 and George Wallace in 1968, two presidential candidates

with clear pro-segregation profiles and programs. Both candidates ran for Presidential elections only in the post-broadcast period, and we therefore can only compare the changes in votes from 1948 to 1968 in counties covered by *Operation Intolerance* in 1946 versus those not covered, interpreting a significant difference as indicative of a progressive movement away or towards segregationist politicians when more cohorts targeted by *Operation Intolerance* enter voting age.[30] From 1948 to 1968, counties covered by *Operation Intolerance* in 1946 experience a reduction in the vote share for a segregationist candidate by 5.1 percentage points compared to the counties that were not covered. This estimate increases to 6.2 percentage points if we restrict the sample to Southern states.[31]

Finally, in columns (5) and (6), we focus on mobilization by estimating the effects on the likelihood of a county having an active branch of the KKK or the NAACP. These estimates are based on equation (3), grouping all post-1946 periods. In the post-broadcast period, in counties where 100% of the population was covered by the signal of *Operation Intolerance*, we observe a significant reduction of 7.5 percentage points in the probability of having an active KKK chapter. Consistent with this result, we also observe a significant increase of 6.6 percentage points in the probability of a county having a NAACP branch. Panel B of Figure 7 illustrates the temporal evolution of these effects by providing estimates from equation (3) at each data point. The effects on the presence of both KKK chapters and NAACP branches are persistent and increasing over time. In 2020, 74 years after the broadcast of *Operation Intolerance*, counties that were covered by the broadcast are roughly 10 percentage points less likely to have an active KKK chapter and 10 percentage points more likely to have an active NAACP branch compared to counties that were not covered. Before 1946, there were no significant differences between these areas in terms of the presence of KKK chapters or NAACP branches.

While estimates suggest that coverage of *Operation Intolerance* promoted more liberal attitudes toward civil rights among both target cohorts and counties, we aim to ascertain whether a tolerant, pro-civil-rights narrative was already prevalent in public discourse before 1946. For this purpose, we examine newspaper coverage of civil rights issues using the Civil Rights Narrative measure (discussed in Section 3.5), which quantifies the salience of civil rights topics in newspapers. Figure 8 plots event study esti-

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[30]In the 1948 Presidential elections, Strom Thurmond ran as a third-party candidate for the States' Rights Democratic Party (or *Dixiecrats*), which was formed in response to the increasing support of the Democratic Party for civil rights. The political program of Thurmond centered around racial segregation, advocating for the preservation of Jim Crow laws in the Southern states. In 1968, George Wallace ran as a third-party candidate for the American Independent Party, with a populist program and a political history of strong opposition of desegregation (see Section 3.2). Refer to Mieczkowski (2020) for an overview of these elections.

[31]Appendix D.7 discusses the effects of *Operation Intolerance* on aggregate electoral outcomes. Using equation (3) to estimate impacts, we show that in the period from 1948 to 1972, counties that were covered by *Operation Intolerance* in 1946 tended to have a higher share of votes for the Democratic Party (compared to the Republican Party), while we do not observe any difference in the pre-broadcast period (1932–1944).

Table 4: Political outcomes and mobilization

	Political attitudes		Voting behavior	Mobilization	
	Conservative– Liberal Scale (1)	Support for Republicans (2)	Support for segregation (3)	KKK (4)	NAACP (5)
A. Cohort study – All cohorts					
Target × Exposure	0.273***	-0.183**			
	(0.085)	(0.081)			
R^2	0.14	0.16			
Observations	7,377	8,088			
B. Cohort study – exclude younger cohorts					
Target × Exposure	0.330***	-0.180*			
	(0.090)	(0.094)			
R^2	0.16	0.17			
Observations	5,742	6,340			
C. Event study					
Post 1946 × Exposure			-0.049***	-0.074***	0.078***
			(0.013)	(0.032)	(0.023)
R^2			0.76	0.64	0.65
Observations			22,824	15,485	12,388

Note. In Panels A and B, estimates are based on equation (2), grouping target cohorts into a single cohort. *Target* is an indicator variable set to 1 for respondents aged 3–17 in 1946, and *exposure* measures the share of the county population covered by the radio signal of *Operation Intolerance* in 1946. Panel A includes all available cohorts, while panel B excludes younger cohorts. In Panel C, estimates are based on equation (3), pooling all post-1946 observations. All specifications include controls for targeted coverage, state-by-year fixed effects, time effects, and individual controls (see Section 4). *Post 1946* is an indicator variable set to 1 for observations after 1946. Standard errors, clustered by county, are reported in parentheses (* $p < 0.1$, ** $p<0.05$, *** $p < 0.01$). The dependent variables in columns (1) and (2), detailed in the column headers, are the z-scores of the following variables: (1) *Conservative–Liberal Scale* measures political preferences, ranging from 1 (most conservative) to 100 (most liberal); (2) *support for Republicans* measures the feelings towards Republicans, ranging from 1 (favorable) to 100 (unfavorable). The dependent variable in column (3), *Support for segregation* measures the share of votes to pro-segregation candidates in local elections in the Deep South (see Section 3.3 for details). The dependent variables in columns (4) and (5) refer to mobilization: (4) *KKK* is an indicator variable equal to 1 if the county has at least one KKK chapter at time t, and 0 otherwise; (5) *NAACP* is an indicator variable equal to 1 if the county has at least one NAACP branch at time t, and 0 otherwise. Additional details about the variables are presented in Appendix C.1.

Figure 7: The effect on support for segregation and on mobilization

A. Support for segregation

B. Mobilization
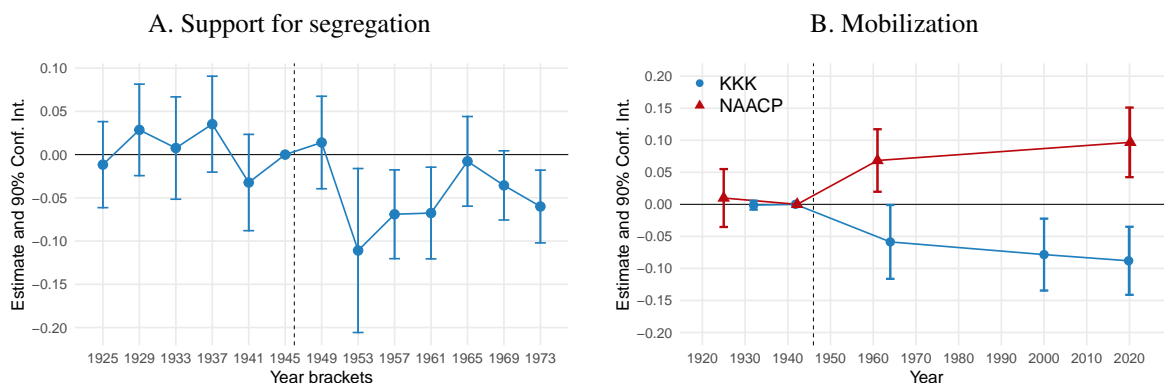
Note. Estimates based on equation (3). Confidence intervals at the 90% of confidence level are obtained from standard errors clustered at the county level. In panel A, the dependent variable is the share of votes to pro-segregation candidates in the Deep South. The procedure to compute this measure is described in Section 3.6. The sample is restricted to counties in the Deep South. In panel B, the dependent variables are *KKK*, an indicator variable equal to 1 if the county has at least one KKK chapter at time t, and 0 otherwise; and *NAACP*, an indicator variable equal to 1 if the county has at least one NAACP branch at time t, and 0 otherwise. Additional details about the variables are presented in Appendix C.1.

mates from equation (3). Appendix D.6.2 provides descriptive statistics, and Appendix Table D11 shows estimates across various specifications of equation (3) pooling post-1946 observations.

Newspapers discussed themes related to civil rights throughout the period 1930–1980, but most notably during the 1960s, at the height of the Civil Rights Movement. Newspapers published in counties not covered by *Operation Intolerance* in 1946 tend to have a lower Civil Rights Narrative throughout the period, indicating that areas covered by the signal were indeed more tolerant throughout the period of analysis. However, both covered and not covered counties follow a parallel trend with respect to Civil Rights Narrative. Beginning in the 1960s, counties where *Operation Intolerance* covered 100% of the population in 1946 started exhibiting a significantly higher prominence of civil rights issues in local newspapers compared to those not covered by the broadcast. These effects diminish and become insignificant by the end of the 1970s. The effect for the post-1946 period corresponds to an increase of 0.53 standard deviations in Civil Rights Narrative, mostly concentrated in the post-1955 period, during which we observe an increase by 0.67 standard deviations. The year 1955 is central in the history of the Civil Rights Movement due to the arrest of Rosa Parks and the Montgomery Bus Boycott. We do not observe any significant differences in the period before 1946.

Figure 8: Civil rights narrative in local newspapers

6 Conclusion

Minoritized communities around the world confront deeply engrained prejudice as they seek equality. This paper demonstrates that media can serve as a powerful antidote to prejudice. By examining the remarkable experiment that used the popular children's radio program *The Adventures of Superman* to foster tolerant attitudes in the 1940s, we highlight how progressive narratives for children not only fostered a generation more supportive of civil rights but also laid the groundwork for significant social and political changes, contributing to the civil rights advancements of the 1960s.

While our study draws from the post-war era in the U.S., it offers several key insights for contemporary policy. Firstly, it demonstrates that media interventions can be powerful tools in combating racial prejudice. Just as *Operation Intolerance* used the radio to reach millions of young listeners, modern campaigns can leverage digital media platforms to spread messages of equality and counteract misinformation and hate-based content. This is a crucial priority, given the evidence highlighting the role of social media in spreading hatred toward minorities (Bursztyn et al., 2019).

Secondly, our study highlights the importance of targeting young generations. Early exposure to progressive narratives can have long-lasting effects, fostering a more tolerant and equitable society in the future. Inclusive media programming should be prioritized and supported by policymakers to ensure that

young people are equipped with tolerant values.

Lastly, by linking support for civil rights to increased dissent and mistrust of some public institutions, we show that changes in social narratives can not only foster greater preferences for inclusion, but also shift individual political preferences. This finding is particularly relevant to contemporary social movements that combat racial inequality, such as the Black Lives Matter movement. The decline in institutional trust observed in our study aligns with current calls for policing reforms and enhanced oversight of law enforcement agencies to address systemic racism and ensure justice.

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ONLINE APPENDIX
Supplementary material to *Broadcasting Equality:*
Media Narratives and the Rise of Civil Rights

Alex Armand, Paul Atwell, Joseph Flavian Gomes, Giuseppe Musillo, Yannik Schenk

A   Radio network in 1946

We reconstruct historical broadcast exposure from three different data sources. Firstly, we retrieve information from the 1947 Broadcasting Yearbook, identifying Kellogg Company as sponsor of *The Adventures of Superman* and the precise broadcasting schedule in 1946 (Figure A1). The 1945 publication of Standard Rate and data service (SRDS) holds detailed information on sales of advertising slots for the subsequent year, including the list of stations constituting the packaged advertising group on the Mutual network (see Figure A2 for an extract). Finally, drawing on the Radio Annual publication from 1946 we collect data on the precise location and transmitter specifications of the complete 1946 U.S. radio network. Figure A3 shows an example of information it contains. Figure A4 shows the map of effective ground conductivity based on the original publication of the Federal Communications Commission (FCC) in 1954 and the geographical distribution of radio antennas in 1946, used as input for our final coverage estimations presented in Section 3.1.

Figure A5 shows the expansion of the MBS network active in 1946 over the period 1920–1946. To understand how county-level characteristics explain this expansion, we identify the counties in which there is a least one MBS antenna at two points in time (1935 and 1945), and match this information with county-level demographic characteristics using census data from 1930 and 1940 from Haines et al. (2010). In Table A1, we estimate a fixed effect model at the level of the county-year, in which the dependent variable is an indicator variable equal to one if the county has an MBS antenna, and zero otherwise. We then turn our attention to the relationship between county-level characteristics in the period 1930–1940 and the radio coverage of *Operation Intolerance* in 1946. We estimate these differences using a panel regression at county level for the census characteristics in the years 1930 and 1940 on an interaction term between an indicator variable for the year 1940 and the coverage of *Operation Intolerance* in 1946, accounting for county FEs and state-by-year FEs. Table A2 presents the results. A statistically significant coefficient on the interaction terms indicates that the expansion on MBS before the 1940s targeted the corresponding characteristic. As a consequence, our measure of radio coverage could be correlated with these characteristics. Despite our main specification introduces county fixed effects, we introduce controls for trends specific to these characteristics (i.e., interaction terms between time indicators and county-specific characteristics) to capture further unobserved heterogeneity related to the placement of antennas and the planning of the radio network.

Figure A1: Example of information digitized from the Broadcasting Yearbook

ADVERTISERS USING MUTUAL NETWORK DURING 1946
(Continued)

Sponsor	Product	Program	Time	No. of Stations	Duration of Contract	Agency & City
General Motors Corp., Detroit	Institutional	Your Land and Mine with Henry J. Taylor	Mon., Fri., 10:00-10:15 P.M. eff 4/1/46 Mon., Fri., 7:30-7:45 P.M.	309	12/21/45—	Kudner Agency, Detroit
Gillette Safety Razor Co., Boston	Safety Razors and Blades	World Series	1:15 P.M. to conc.	424	10/6, 7, 10, 11, 13, 16/46	Maxon Inc., N. Y.
		Cotton Bowl Game	2:00 P.M. to conc.	236	1/1/46 only	
		East-West Football Game	4:45 P.M. to conc.	250	1/1/46 only	
		All-Star Baseball Game	1:15 P.M. to conc.	290	7/9/46 only	
Gospel Broadcasting Assn. (eff 11/3/46 Dr. Fuller Foundation)	Evangelical Talks	Pilgrim Hour	Sun., 12:00-12:30 P.M.	185	9/6/42—	R. H. Alber Co., Los Angeles
Grove Laboratories Inc., St. Louis	Four Way Cold Tablets, B-Complex Vitamins	The Shadow	Sun., 5:00-5:30 P.M.	51	9/9/45-3/3/46	Russell M. Seeds Co., Chicago
Gum Laboratories Inc.	Ivoryne Chewing Gum	Sweetheart Time eff 6/16/46 Singing Sweethearts	Sun., 1:30-2:00 P.M. Sun., 1:30-1:45 P.M. eff 12/8/46 Sun., 8:45-9:00 P.M.	94	3/18/45-12/8/46	McJunkin Advertising, Chicago eff 11/1/45 Makelim Assoc., N. Y.
Hastings Manufacturing Co., Hastings, Mich.	Piston Rings	Michael Shayne	Tues., 8:00-8:30 P.M.	307	10/22/46—	Keeling & Co. Inc., Indianapolis
Heilbros Watch Co., New York	Watches	Pick and Pat Time eff 7/16/44 Quick As A Flash eff 6/10/45 The Abbott Mysteries eff 9/9/45 Quick As A Flash eff 6/9/46 The Abbott Mysteries eff 1/20/46 Sun., 6:30-6:00 P.M. eff 9/8/46 Quick As A Flash	Tues., 8:30-9:00 P.M. Sun., 6:00-6:30 P.M.	300	1/18/44—	Wm. H. Weintraub & Co., N. Y.
Horwitz & Duberman, New York	Junior Miss Fashion Products	Judy 'N Jill 'N Johnny	Sat., 12:00-12:30 P.M.	53	10/12/46—	Sterling Advertising Co., N. Y.
Household Finance Corp., Chicago	Finance Service	Square With the World	Thurs., 9:30-10:00 P.M.	6	11/29/45-2/21/46	BBDO Inc., Chicago
Ice Capades	Ice Capades	Ice Capades	Wed., 10:15-10:30 P.M.	2	9/4/46 only	Smith, Bull, McCreery, N. Y.
I. J. Fox, New York	Institutional	I. J. Fox Testimonial Dinner	Thurs., 10:00-10:30 P.M.	4	6/6/46 only	Peck Advertising Agency Inc., N. Y.
Kellogg Company, Battle Creek	Kellogg's Pep	Superman	Mon.-Fri., 6:45-6:00 P.M., local eff 7/4/44 Tues., Thurs., 5:45-6:00 P.M., local eff 1/15/45 Mon.-Fri., 5:15-5:30 P.M., local	220	1/4/43-9/28/44 1/15/45—	Kenyon & Eckhardt, N. Y.

Note. Extract from the 1947 Broadcasting Yearbook identifying Kellogg Company as sponsor of *The Adventures of Superman*, with broadcasting schedule in 1946.

Figure A2: Example of information digitized from Standard Rate and Data Service (SRDS) publication

MUTUAL BROADCASTING SYSTEM

Tribune Tower, Chicago, Ill., Whitehall 5060.
Sales Office—1440 Broadway, New York City, Pennsylvania 6-9600.
Rates effective July 15, 1944. (Card No. 13.)
Card revised March 15, 1945.

Agency Commission
15% is allowed recognized agencies on all network station time charges (after all discounts and rebates are deducted).
Terms of payment: 2 points of each discount earned by the advertiser are contingent upon full payment of bills on or before 20th day of month following the month in which the broadcast occurred.

General Advertising
MUTUAL NETWORK RATE CLASSIFICATIONS
Units of Time
Rates for all time periods (based on the gross evening hour rate) according to this table:

	% of br. rate
Evening:	
45 minutes	80%
30 minutes	60%
15 minutes	40%

Daytime rates for these units are exactly half the evening cost, except where noted under Time Classifications below.

Time Classifications

6:00 p.m. to 10:30 p.m. nightly	Full evening rate
10:30 p.m. to 11:00 p.m. nightly	2/3 evening rate
11:00 p.m. to 12:00 mid. nightly	1/2 evening rate
12:00 mid. to 8:00 a.m. daily	1/3 evening rate
8:00 a.m. to 6:00 p.m. week days	daytime rate
8:00 a.m. to 12:00 noon Sunday	1/2 evening rate
12:00 noon to 6:00 p.m. Sunday	2/3 evening rate

All classifications are based on local time.
Service available to advertisers only if a regularly scheduled program precedes or follows.

Network advertisers whose actual gross billings within a 52 week period are 1,200,000.00 or more earn maximum discounts on all facilities used.

Maximum Discounts

Basic Group	50%
Basic Supplementary Group	50%
Special Supplementary Group	60%

BASIC GROUP
Basic Network qualifying for "Required Basic" discounts consists of all 38 stations in basic group plus 7 Yankee stations and a minimum of any 16 supplementary stations from the groups other than the basic.

GROSS COST PER BROADCAST
(Evening)

	1 hr.	1/2 hr.	1/4 hr.
*†Akron (WHKK)	120.00	72.00	48.00
Baltimore (WFBR)	300.00	180.00	120.00
Boston (WNAC)	440.00	264.00	176.00
Bridgeport (WICC)	160.00	96.00	64.00
Buffalo, N. Y. (WEBR)	175.00	105.00	70.00
Canton (WHBC)	150.00	90.00	60.00
Chicago, Ill. (WGN)	800.00	480.00	320.00
†Cincinnati (WKRC)	340.00	204.00	136.00
†Cleveland (WHK)	340.00	204.00	136.00
†Columbus (WHKC)	130.00	78.00	52.00
Denver (KFEL)	200.00	120.00	80.00
Detroit-Windsor (CKLW)	320.00	192.00	128.00
Fresno (KFRE)	100.00	60.00	40.00
§Hartford (WTHT)	120.00	72.00	48.00
Indianapolis (WIBC)	220.00	132.00	88.00
‡Kansas City, Mo. (WHB) ‡Kansas City, Kan. (KCKN)	240.00	144.00	96.00
Los Angeles (KHJ)	375.00	225.00	150.00
Louisville (WGRC)	125.00	75.00	50.00
Minn.-St. Paul (WLOL)	200.00	120.00	80.00
New York (WOR)	1200.00	720.00	480.00
Omaha (KBON)	110.00	66.00	44.00
Fremont (KOBN)....Bonus with KBON in option time			
Philadelphia (WIP)	390.00	234.00	156.00

Note. Extract from the May 1945 Standard Rate and Data Service (SRDS) publication allowing to identify the precise composition of broadcasting network of *The Adventures of Superman* in 1946.

Figure A3: Example of information digitized from the 1946 Radio Annual

MISSOURI

For Major Markets—Radio Homes 1946 Please Turn to Pages 247-255

K F V S

CAPE GIRARDEAU—EST. 1925

Frequency: 1400 Kc.........Power: 250 Watts
Owned By.................Oscar C. Hirsch
Operated By................Oscar C. Hirsch
Address......................324 Broadway
Phone Number...................2104, 2105
Transmitter Location......3½ miles west of
  Cape Girardeau on Highway No. 61
Time on the Air....................Unlimited
News Service...........................UP
Transcription Service.........Standard Radio
Representative..............John E. Pearson

Personnel

President-General Manager...Oscar C. Hirsch
Station-Sales Manager........Ralph L. Hirsch
Production-Program Director.....Virginia Bahn
Chief Engineer..................R. L. Hirsch
Promotion-Publicity.............R. L. Hirsch

K F R U

COLUMBIA—EST. 1925
ABC

Frequency: 1400 Kc.........Power: 250 Watts
Owned By......................KFRU, Inc.
Address..............Ninth and Elm Sts.
Phone Number 414L
Transmitter Location..........Hickman Hall,
  Stephens College
Time on the Air.........6:30 a.m. to 11 p.m.
Newspaper Affiliation.....Star Times Publish-
  ing Company, St. Louis
News Service.....................AP & UP
Transcription Service.........NBC Thesaurus
Representative..............John Blair & Co.

Personnel

President......................Elzey Roberts
General Manager...........Mahlon Aldridge
Program Director............Harold Douglas
Musical Director............Dorothy Jacques
Chief Engineer................Robert Haigh
Record M. C.................Dorothy Jacques

K H M O

HANNIBAL—EST. 1941
MUTUAL

Frequency: 1340 Kc.........Power: 250 Watts
Owned-Operated By.....Courier Post Publish-
  ing Co.
Address..................102½ S. Main St.
Phone Number.....................3450-51
Transmitter Location............Lindell Ave.

Time on the Air......5:30 a.m. to 12 midnight;
  Sundays, 8 a.m. to 12 midnight
Newspaper Affiliation.....Hannibal Courier-
  Post
News Service...........................AP
Transcription Service...........NBC & Cole
Representative..........John E. Pearson Co.

Personnel

General Manager-Sales Promotion
  Manager.................Wayne W. Cribb
Commercial Manager...........Chris Jensen
Program-Musical Director.......Dud Dawson
Production Manager........Maxine Dierking
Publicity Director-Record M. C...Gene Hoenes
Chief Announcer................Bob McCoy
Chief Engineer..................Ben Parrish

K W O S

JEFFERSON CITY—EST. 1936
MUTUAL BROADCASTING SYSTEM

Frequency: 1240 Kc.........Power: 250 Watts
Owned-Operated By.....Tribune Printing Co.
Business Address...............210 Monroe
Phone Number........................4000
Studio Address.................210 Monroe
Transmitter Location........St. Mary's Blvd.
Time on the Air..........6 a.m. to midnight
Newspaper Affiliation...Jefferson City Capitol
  News & Post Tribune
News Service ....AP
Transcription Service ....Lang-Worth
Representative................Sears & Ayer

Personnel

President....................R. C. Goshorn
General Manager.................R. L. Rose
Station Manager.................R. L. Rose
Commercial Manager.............R. L. Rose
Sales Promotion Manager-Publicity
  Director ....Natalie LePage
Program Director..............Ray Manning
Chief Engineer...............Harold White

W M B H

JOPLIN—EST. 1933
MUTUAL BROADCASTING SYSTEM

Frequency: 1450 Kc.........Power: 250 Watts
Owned-Operated By...Joplin Broadcasting Co.
Address.....Frisco Bldg.. Sixth and Main Sts.
Phone Number 330
Transmitter Location......1334 Roosevelt Ave.
Time on the Air..........6 a.m. to midnight
Newspaper Affiliation...........Joplin Globe
  Publishing Co.
News Service...........................UP

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Note. Extract from the 1946 Radio Annual showing some of the active antennas in Missouri, including information on power, frequency and precise location of the transmitters. If precise location is not available we set it equal to the business address, or to the centroid of the respective county for the few remaining cases.

Figure A4: Ground conductivity and radio antennas in 1946

A. Ground conductivity

B. Distribution of radio antennas in 1946

- Other radio
- The Adventures of Superman
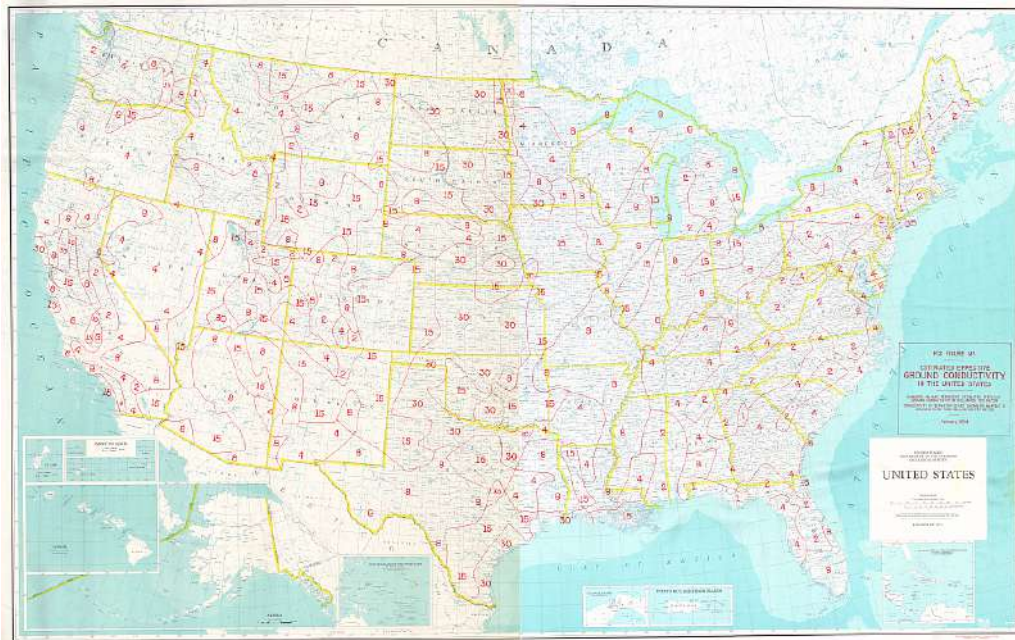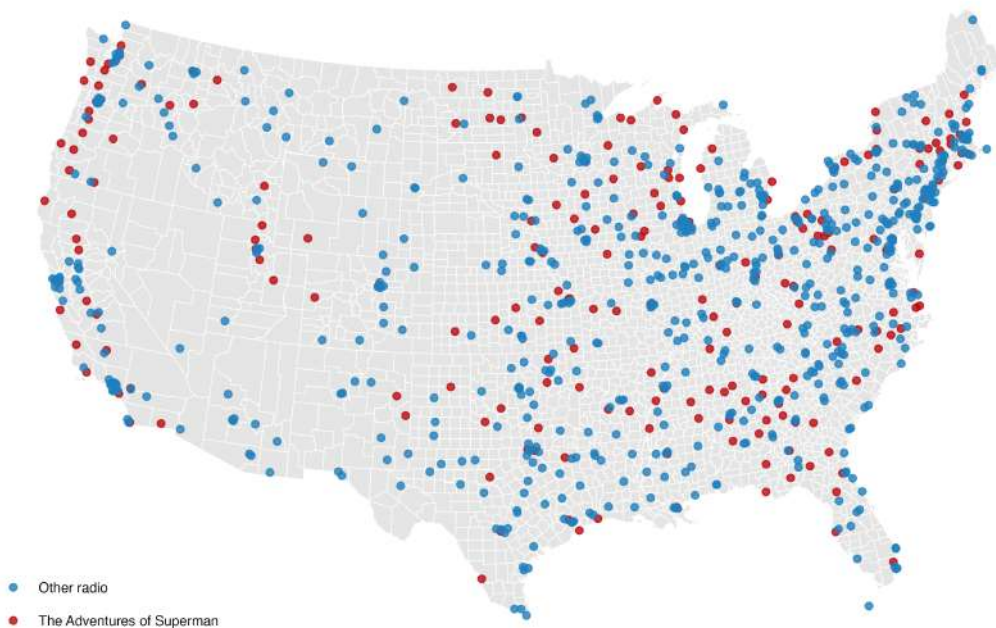
Note. Panel A is the ground conductivity map published by the Federal Communications Commission in 1954 (Federal Communication Commission, 1954). This data is used as one of the inputs to predict the propagation of AM signals across the country. The map shows that the ground conductivity in the U.S. ranges between 0.5 and 30 millimhos (or millisiemens) per meter. Panel B shows the geographical distribution of antennas for the complete U.S. radio network of 1946. The location of antennas is geo-reference using information about the address of each transmitter, as printed in the Broadcasting Yearbook 1947. When information on the location of the transmitter is missing, we set it equal to the business address of the respective station. When the location of the transmitter and the business address of the station are both missing, we use the centroid of the county.

Figure A5: Expansion of MBS network until 1946
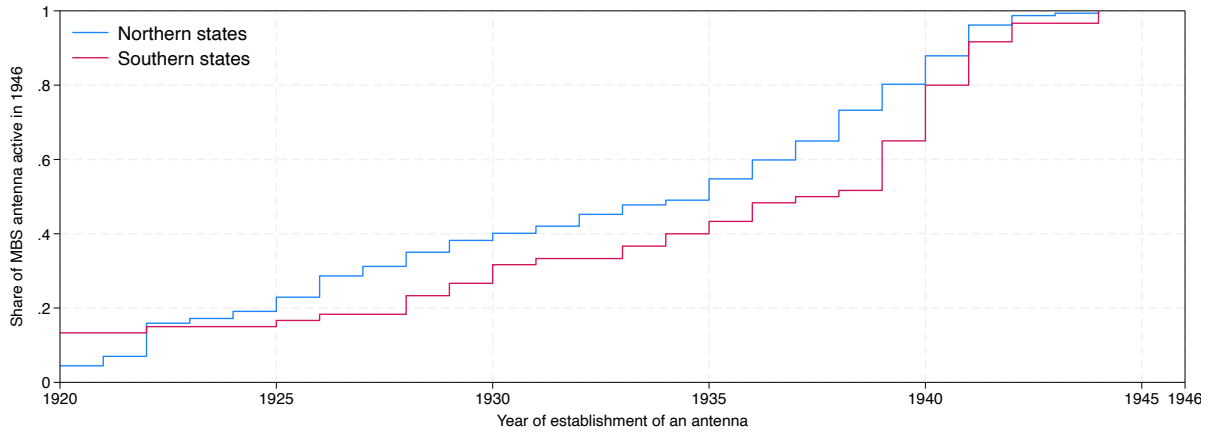
Note. The figure show the distribution of MBS antennas active in 1946 by the year of establishment. Data is obtained from the Broadcasting Yearbook 1947. When the year of establishment is not available (6% of antennas), we assume the year of establishment is equal to minimum year of establishment in the sample (1920). *Southern states* are Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas. *Northern states* are all remaining states, excluding Alaska and Hawaii, which are excluded from the study.

Table A1: Predictors of MBS expansion

	Dep.var.: county has active MBS antenna at time $t+5$			
	(1)	(2)	(3)	(4)
Population (per sq. mile)	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
% urban population	0.000	-0.005	-0.004	-0.001
	(0.029)	(0.029)	(0.030)	(0.031)
% living in city	0.005	0.003	0.003	-0.077**
	(0.077)	(0.076)	(0.076)	(0.036)
% male population		-0.088	-0.053	-0.049
		(0.261)	(0.273)	(0.311)
% adult population		-0.304	-0.360*	-0.343
		(0.201)	(0.205)	(0.219)
% white population		-0.218	-0.266	-0.217
		(0.343)	(0.352)	(0.397)
% white native population		0.302	0.363	0.299
		(0.362)	(0.372)	(0.414)
% Black population		0.151	0.177	0.330*
		(0.166)	(0.164)	(0.198)
% illiterate		0.022	0.011	0.024
		(0.106)	(0.109)	(0.125)
% owning a radio		0.140***	0.142***	0.126***
		(0.038)	(0.040)	(0.041)
% owning their dwelling		0.071	0.074	0.064
		(0.050)	(0.052)	(0.053)
% working-age population employed			0.010	-0.025
			(0.070)	(0.074)
% manufacturing establishments			-0.096	-0.119
			(0.072)	(0.080)
% workers in manufacturing/commerce			0.065	0.070
			(0.046)	(0.044)
Farms			-0.006	-0.009
			(0.021)	(0.022)
Establishments			-0.011	-0.015
			(0.012)	(0.013)
Value farms			-0.004	0.001
			(0.015)	(0.017)
Value manufacturing output			0.000	0.000
			(0.006)	(0.006)
Share of democratic vote				0.015
				(0.022)
F-test (p-value)	0.609	0.004	0.696	0.076
Observations	6192	6192	6188	5566

Note. Census data at county level is obtained from Haines et al. (2010). For electoral outcomes corresponding to the years of the census, we use the Congressional elections in 1930 and 1940, obtained from Clubb et al. (1987). The dependent variable is an indicator variable if the county has an active MBS antenna, and 0 otherwise. Independent variables are measured at the time of the census (1930 and 1940), while the dependent variable is measured 5 years ahead in 1935 and 1945. Working-age population is the population older than 10 years old in 1930, and older than 14 years old in 1940. For employment, we consider manufacturing and commerce because these sectors were defined consistently across census rounds. The number of *farms*, *establishments* and the *value of manufacturing output* is reported in logarithms, adding one unit to account for zeros. All specifications include county FE, and state by year FE. Standard errors in parenthesis are clustered at the county level (* $p < 0.1$, ** $p<0.05$, *** $p < 0.01$).

Table A2: Determinants of coverage

	Census (average)		Year 1940 · MBS radio coverage in 1946			
	1930	1940	Coeff.	Std. error	p-value	N
	(1)	(2)	(3)	(4)	(5)	(6)
Population and composition						
Population (per sq. mile)	187.250	194.605	38.383	15.601	0.014	6192
% urban population	0.214	0.232	-0.006	0.004	0.159	6192
% living in city	0.059	0.061	-0.000	0.004	0.967	6192
% male population	0.517	0.513	-0.001	0.001	0.136	6192
% adult population	0.553	0.595	-0.001	0.001	0.556	6192
% white population	0.863	0.885	-0.003	0.003	0.430	6192
% white native population	0.815	0.848	0.002	0.003	0.454	6192
% Black population	0.112	0.107	0.000	0.001	0.632	6192
% other race	0.026	0.008	0.002	0.003	0.502	6192
% illiterate	0.054	0.025	0.006	0.001	0.000	6192
% owning a radio	0.258	0.675	-0.016	0.005	0.002	6192
% owning their dwelling	0.509	0.459	0.003	0.003	0.450	6192
Growth rates						
Population growth	0.198	0.065	0.074	0.101	0.467	6120
Urbanization rate	0.437	0.482	-0.144	0.166	0.385	6122
Economy						
% working-age population employed	0.480	0.431	0.001	0.003	0.743	6192
% workers in manufacturing/commerce	0.146	0.181	0.003	0.004	0.535	6192
Farms	7.287	7.248	0.007	0.021	0.742	6192
Establishments	5.515	5.659	-0.005	0.013	0.719	6192
% manufacturing establishments	0.075	0.057	-0.001	0.002	0.743	6188
Value farms	9.490	9.204	0.061	0.029	0.036	6192
Value manufacturing output	1.286	1.127	-0.040	0.043	0.351	6192
Electoral outcomes						
% votes to Democratic party	0.575	0.589	0.000	0.011	0.982	5682
% votes to Republican party	0.382	0.370	0.010	0.011	0.381	5684
Share of democratic vote	0.591	0.607	-0.002	0.011	0.885	5566

Note. Census data at county level is obtained from Haines et al. (2010). For electoral outcomes corresponding to the years of the census, we use the Congressional elections in 1930 and 1940, obtained from Clubb et al. (1987). *Population growth* and *urbanization rate* are computed as the average yearly growth rate in total population and in urban population from the previous census (e.g., growth in 1930 is the growth rate from 1920 to 1930). Working-age population is the population older than 10 years old in 1930, and older than 14 years old in 1940. For employment, we consider manufacturing and commerce because these sectors were defined consistently across census rounds. The number of *farms*, *establishments* and the *value of manufacturing output* is reported in logarithms, adding one unit to account for zeros. All specifications include county FE, and state by year FE. Standard errors are clustered at the county level.

B Additional information about *The Adventures of Superman*

B.1 Plot summary of exemplary story arcs

The Hate Mongers Organisation (broadcast from 16/04/1946 to 20/05/1946). Clark arrives at the hospital to find Jimmy in the waiting room. Danny O'Neil is in critical condition, badly beaten by Muggs and Skinny, and may have a brain concussion. Father Francis Shian of Saint Mary's Catholic Church is with Danny. Shian, Jimmy, and Clark talk with Danny, who reveals his attackers and fears for his mother's safety. Shian explains that he met with local religious leaders and others to create Unity House, a community center for children of all backgrounds to learn and interact. However, committee members received threatening letters, and Shian believes those who sent the notes ordered Muggs to start the fire on Morton Street. Clark plans to bring down the hate mongers organization, "Guardians of America," which opposes Unity House. Jimmy's involvement is crucial, and he will pose as a hoodlum to join Muggs' gang, with Superman providing protection if needed.

The Clan of the Fiery Cross (broadcast from 10/06/1946 to 01/07/1946). Tommy Lee and Chuck Riggs fight when Jimmy arrives. Chuck, upset at losing his position as the top pitcher on the Union House baseball team to Tommy, crowds the plate and gets hit by a pitch. Chuck accuses Tommy of doing it intentionally, leading to his removal from the team by Jimmy. Chuck's uncle Matt, leader of The Clan of the Fiery Cross, exploits the situation by inviting Chuck to a secret meeting and convincing him that Tommy, an Asian American, is a threat. The Clan aims to cleanse the country of those they consider not "True Americans."

George Latimer, Crooked Political Boss (broadcast from 03/09/1946 to 25/09/1946). Joe Martin, a war hero, joins his Jewish friend Sam Robbins in protesting Governor Frank C. Wheeler's discriminatory hiring policies against returning war veterans. Joe suggests a more confrontational tactic, while Sam prefers a peaceful approach. Governor Wheeler, influenced by the corrupt George Latimer, incites hatred toward minorities, leading to chaos and the state police firing on protesters. Joe is shot, prompting his brother Beany, Clark Kent, and Perry White to seek justice. Clark uncovers that Latimer manipulated the police and framed Sam Robbins. Sergeant Adams' testimony and the bullet type that struck Joe are key to clearing Sam's name.

Knights of the White Carnation (broadcast from 26/02/1947 to 17/03/1947). In Vincent Kirby's aristocratic home, the Knights of the White Carnation plot to remove "Un-American foreigners" from the Metropolis High School Varsity Basketball Team. Charles Canfield, who disagrees with the group's racist agenda, plans to expose them but is mysteriously murdered. Clark Kent and Jimmy Olsen investigate, discovering that four of the five targeted players were suspended for gambling under suspicious circumstances. Clark, as Superman, saves the day by preventing a stampede at a basketball game. The coach reveals he was coerced by the chairman of the Metropolis School Board to remove the players.

B.2 Quantifying content related to tolerance and intolerance

We conducted a content analysis based on transcripts of collected audio recordings of 1019 episodes broadcast on MBS between August 1942 and February 1949. Transcripts are collected from two complementary YouTube channels specialized in the collection and distribution of historic radio programming, containing recordings of all available episodes.[2]

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[2]We want to thank the maintainers of the channels "The Classic Archives Old Time Radio Channel" (@theclassicarchivesoldtimer8078) and "Nikola Tesla Wireless Radio" (@nikolateslawirelessradio) for their invaluable work in collecting and preserving these pieces of historic evidence.

This sample covers 64% of the 1592 episodes aired in the same period, while the remaining share is entirely missing. When recordings of story arcs are only partially available, we extrapolate based on the observed content of the respective story arc. We analyze transcripts using a bag-of-words approach using a list of 50 keywords returned by an AI prompt to compute the share of content in an episode covering intolerance and tolerance for racial, ethnic, and religious differences.[3]

We obtain the following list of keywords: acceptance, animosity, antisemitism, appreciation, bias, bigotry, chauvinism, closed-mindedness, community, compassion, cosmopolitanism, discrimination, disunity, diversity, division, dogmatism, empathy, empowerment, equality, equity, exclusion, fairness, gender equality, harmony, hate, homophobia, inclusion, individualism, inequality, injustice, integration, intolerance, justice, love, misogyny, open-mindedness, pluralism, prejudice, racism, respect, sectarianism, segregation, sexism, stereotyping, tolerance, tribalism, understanding, unity, xenophobia.

Figure B6 provides a graphical depiction of the frequency of these themes in all available transcripts of *The Adventures of Superman*. To measure the share of related content per episode, we remove stop words and apply basic stemming, and compute frequencies by dividing count of keyword occurrences by the total number of words.

Figure B6: Frequency of keywords related to tolerance and intolerance

Note. Word cloud illustrating the frequency of terms related to intolerance, bigotry and prejudice. Larger and more central words reflect higher frequencies. To build the word cloud, we use a dictionary of 50 key terms related to intolerance, bigotry and prejudice (see Section B.2).

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[3]We used ChatGPT-3.5 with the following request: "Give us a list of 50 words that are closely related to intolerance, bigotry, and prejudice, and their respective antonyms."

B.3 Historical evidence from newspaper articles

Figures B7–B9 provide examples of coverage of *Operation Intolerance* on newspapers in 1946. Figure B10 shows examples of general coverage of Superman on radio on newspapers.

Figure B7: *Operation Intolerance* as historical experiment in the radio industry

Reformers Challenged by Superman

Excitement, Message Are Blended in Child Series

By WILLIAM B. LEWIS
Vice President and Radio Director
Kenyon & Eckhardt

SUPERMAN'S 'Operation Intolerance" had its begining at a Kenyon & Eckhardt plan board meeting last October—and before we put the new *Superman* on the air just two weeks ago we had almost given up the idea that a children's program could be socially conscious as well as interesting.

Most of radio now knows what we are currently trying to accomplish with our *Superman* series on behalf of our client, the Kellogg Co. *Superman* has been a Kellogg radio property since 1943. We do not feel that the general run of *Superman* stories has been harmful in any way to its millions of juvenile followers, who have comprised one of the most loyal audiences in radio history.

However, we did feel that the time had come for a definite concentrated effort in the realm which had previously been untouched by radio programs built for juveniles—the realm of everyday life, with its problems and solutions spelled out in strong language that no child could misunderstand.

Enemy of Intolerance

When the subject of pitting *Superman* against intolerance, juvenile delinquency and the allied subjects which bulk so largely in American consciousness was first broached, it seemed a logical and fairly simple idea. Bob Maxwell, of Superman Inc., was most enthusiastic, for the idea was one which had long been a particular pet of his own. We brought the matter to the attention of the Kellogg Co. and recommended that the experi-

ment—for experiment it is—be tried. W. H. Vanderploeg, president of Kellogg, concurred heartily, with the only stipulation that the program be kept as exciting as the series had been up to the time of change.

So it was that October 1945, found Superman Inc. and K&E looking for writers who could combine cliff-hanging technique with crusades against intolerance, state a case and a solution in terms which children could understand, keep the character of Superman alive and combine exciting entertainment with a plain spoken message.

The Norman Corwin technique is a vastly different radio concept from the slam bang artifices needed to keep juvenile interest afire 15 minutes a day, five days a week. Another stumbling block, which tripped many writers, was the commission of crime without being able to explain the actions or catch the culprits on the same program.

Lesson Fought

On a program such as *Mr. District Attorney*, the entire story is wrapped up and happily finished in 30 minutes. Our problem was to work out a way in which children who heard two or three episodes of *Superman* during a week wouldn't learn about throwing stones at a church—and miss the message that such tactics are wrong.

During the winter of 1945, and the spring months of 1946, we (*Superman* and the agency) must have seen scores of scripts and ideas for the new story line. Some were good, others missed the point. None, however, combined the two essential factors of entertainment and educational value which we were seeking. Actually, we had almost given up the idea when a writer finally came through with the outline and scripts now riding the Mutual air.

We believe that the experiment currently being conducted is of interest to the entire radio industry. Many Mutual stations have written and told us that they heartily approve the action we have taken.

organizations have pitched in with a will. The National Conference for Christians & Jews has been especially helpful.

There's one point I'd like to make which may be a signal for other agencies and sponsors who may come after us in this field. It's about time for the organizations who find enough energy to rap children's programs and radio public service in general to put up—or shut up! That may be rude—but it's honest. If these organizations get behind a campaign such as *Superman* is conducting and back it down the line in their publications, meetings and by word of mouth, they will help to get the kind of programs they want on the air.

If these organizations only pay lip service to the kind of ideals which they ask for in radio programming, they will find themselves being ignored in future radio thought.

Henry Morgan, in a recent article, blamed radio audiences for the ills of broadcasting. The *Superman* experiment should determine whether or not some people mean what they say about radio.

Converts GE Sets

TELEVISION TECHNICIANS Inc., Brooklyn, is handling conversion of General Electric video receivers in New York area to receive stations at new frequencies. Charge is $15. Owners of RCA and DuMont sets are paying $30 for the conversion.

KID SHOWS on the air, like the weather, have been the subject of much conversation, largely condemnatory. Individually and in their organizations parents, teachers and others concerned with the welfare and education of American youth have urged that radio's juvenile fare be made less fantastic, more reasonable. Now "Superman," never one to avoid a challenge, has taken up this one. Bill Lewis, in this space, describes the new Superman pattern, calls for the reformers to work for its success if they really mean what they have been saying all these years.

Note. The article is extracted from the edition of 13/05/1946 of the magazine Broadcasting. At the time of Operation Intolerance, William B. Lewis was the radio director at the advertising agency Kenyon & Eckhardt advertising agency and was a key promoter of linking the series (*The Adventures of Superman*) with social causes under the commercial interests of Kellogg Co. (Wall, 2009).

Figure B8: Evidence of political endorsements at the launch of *Operation Intolerance*

A. Harry S. Truman (U.S. President 1945–53)

Superman 'Reformer'
Will Combat Intolerance

Superman zooms off on a new adventure starting Tuesday, April 16 at 5:15 p. m. over KQV, with the avowed intention of combating bigotry and intolerance.

Superman is the first network children's radio series to take up the cudgels for tolerance, in support of a movement which has the blessing of every church and the endorsement of President Truman as well as a large group of organizations. Scripts for the new series were prepared with the co-operation of the National Conference of Christians and Jews.

"The plan for using this juvenile series to generate the principles of brotherhood has been in the works for some time," Robert Maxwell, producer of Superman, declared today. "We felt an obligation to perform a public service in addition to entertaining the youngsters. Superman reaches a large audience of children whose opinions and characters are being formed in a mold which will influence their entire lives. To influence them constructively is our purpose."

The new Superman theme has the hearty endorsement of the sponsor, whose president, W. H. Vanderploeg, declared: "For some time we have been planning a more direct approach to the problems for some time," Robert Maxwell, producer of Superman, declared today. "We felt an obligation to perform a public service in addition to entertaining the youngsters. Superman reaches a large audience of children whose opinions and characters are being formed in a mold which will influence their entire lives. To influence them constructively is our purpose."

The new Superman theme has the hearty endorsement of the sponsor, whose president, W. H. Vanderploeg, declared: "For some time we have been planning a more direct approach to the problems now facing young boys and girls in their schools, their social clubs and their homes. We felt that given the proper entertainment values as a base, children would listen to a direct and exciting Superman series with a thoroughly American message of brotherhood. We hope, with the aid of our new Superman story approach, that the children of America will continue to be friendly with all other children, regardless of difference in race, creed or color."

The advertising agency for the company, in a statement heartily concurred with their client about the espousing of the new "Superman" story line. W. B. Lewis, vice president and radio director of the agency, said: "The story will be just as exciting as the usual Superman adventures. In fact, we think it will be even more exciting. The difference lies in the fact that Superman, if this first experiment is successful, will go to war against juvenile delinquency, racial intolerance, school absenteeism and the other problems of child behaviorism which bulk so large in the public consciousness."

B. Henry A. Wallace (U.S. Vice President 1941–45)

"Superman" Tolerance Campaign Wins Praise

The new tolerance theme recently inaugurated on the "Superman" radio series (WCLO, 5:15 p. m. Monday through Friday) has been the object of many accolades from organizations and educational groups throughout the country, including a special commendation from Secretary of Commerce Henry A. Wallace. In an effort to combat bigotry and racial prejudice, the adventures of the "man of tomorrow" have been turned from his more mythical enemies to real life foes of boys and girls the world over.

Citations and commendations have been received from the Calvin Newspaper Service, who state—"We applaud heartily this noble attempt to make better citizens of our children and to eradicate from their minds all thoughts of racial and religious intolerance," from the Associated Negro Press who commend the program and its sponsors for slanting the radio series in this vein, and from the Child Study Association of America who applaud the current Superman program.

Secretary of Commerce Wallace states—"I am happy to learn that you are using Superman for the purpose of teaching children that democracy includes the idea of tolerance and equal opportunity for all races, creeds and colors. It is much easier to plant the truth in young minds before anti-social teachings have taken firm root."

• • •

The Real Story!

The secret is out. Mrs. Fred Van Deventer, better known to "Twenty Questions" listeners as Florence Rinard, didn't go into radio for fame and fortune, but because she wanted to see her commentator husband once in a while. "I got tired of being a golf widow by day

Figure B9: Evidence of post-broadcast increase in audience

AROUND THE DIAL

Superman Wins Over Intolerance

Young Fans Accept Moralizing; Program's Hooper Rating Rises

SUPERMAN has unleashed his super-powers against intolerance and juvenile delinquency.

He has become a moral force as sincere and full of purpose as the most zealous Sunday school teacher. And so far his young admirers haven't minded one bit.

Apparently they don't object to having their radio entertainment teach a lesson—as long as the lesson is so camouflaged by the usual blood-and-thunder trappings that they aren't even aware that it is a lesson.

* * *

IN FACT, the latest Hooper survey—the measuring stick of radio—reveals that Superman is a lot more popular since he started serving a purpose other than that of making his listeners' cowlicks stand on end.

In the previous Hooper poll he had rated fourth among children's radio programs. Several weeks ago he started his tolerance campaign, and his popularity dramatically shot up into first place among all juvenile shows.

* * *

THE SECRET of his success is simple, his representatives say. He simply sugar-coats his constructive messages.

"At no time is Superman mounting the soap box and preaching," explain his spokesmen with dignity.

"What he has to say is made to sound perfectly logical and appropriate to the script. The producers of Superman keep their minds on the issue, which is to entertain."

* * *

THEY IMPLY rather smugly that if he were so inclined Superman could teach the teachers a thing or two.

"All too seldom do education's leaders recognize," they assert, "that to win mass audiences a program must be top-grade listening, produced, as it were, with showmanship.

"By all odds, the policy followed by Superman seems the most sensible one, and one which educators could study with considerable care."

FOR THE benefit of said educators and of all non-parents who may not be in the habit of tuning their radios to WHKK daily at 5:15, Superman's adventures have been going something like this:

For the last few weeks he has concentrated on fighting intolerance. He has been helping his young, non-super friend, Jim, smash a ring called "Guardians of America."

Members of the ring were wrecking the business places of Jews, desecrating Catholic churches, attacking Negroes — performing easily recognizable acts of intolerance against groups which were clearly labeled so that young listeners could not miss the point.

* * *

MONDAY afternoon the ring was finally smashed. Jim got in the clutches of the intolerant villains, Superman arrived to rescue him in the nick of time, and it was discovered that the leader of the gang was a Nazi spy.

Then yesterday, with hardly a pause for breath, Superman began his campaign against delinquency.

He wasn't on hand himself, because things hadn't gotten bad enough yet to require his services. But the Metropolis newspaper started a campaign to clean up the city's slums, "breeding place of delinquency."

* * *

Note. The article is extracted from the edition of 22/05/1946 of The Akron Beacon Journal, a newspaper published in Akron, Ohio. The Hooper Ratings were a radio audience measurement system provided by the American company C. E. Hooper Company and based on surveys of listeners contacted during the shows.

Figure B10: Examples of overall presence in newspapers

A. Radio schedules

B. Comic strips + elements using the word "radio"

C   Additional descriptive statistics

C.1   Descriptive statistics and data availability of ANES data

The following table provides definitions of the variables used from ANES surveys, including descriptives for the sample used in the main text and a reference to the survey questions. Figure C13 shows the availability of each question across different survey rounds. We consider the survey waves from 1964 to 1980, because during these waves we observe at least half of the questions used to build the support for civil rights index in each wave. Figure C12 and Figure C13 shows descriptive statistics about the variables used in the main text. For comparability, we standardize all variables with in-sample average 0 and unit standard deviation. Figure C12 focuses on the cohort-level average of the standardized variables, while Figure C13 on the average by survey wave.

Variable	Description	Mean	SD	N	ID
Main text variables					
Approve of …					
demonstrations	Degree of approval of participation in demonstrations, ranging from 1 (disapprove) to 3 (approve). Demonstrations are attempts at stopping the government from going about its activities with "sit-ins, mass meetings, demonstrations."	1.55	0.620	5481	0603
protests	Degree of approval of participation in protests, ranging from 1 (disapprove) to 3 (approve). Protests includes "protest meetings or marches that are permitted by the local authorities."	1.72	0.718	4253	0601
Conservative–Liberal scale	Political preferences, ranging from 1 (most conservative) to 100 (most liberal). This measure is provided by ANES as a composite measure from different questions based on the Feeling Thermometer (see Section 3.2).	52.8	14.5	7377	0801
Favorable towards (the) …					
Black population	Feelings towards the black population, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the Feeling Thermometer (see Section 3.2).	62.8	21.1	8145	0206
civil rights leaders	Feelings towards civil rights leaders, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the Feeling Thermometer (see Section 3.2).	44.7	26.6	5304	0216
military	Feelings towards the military, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the Feeling Thermometer (see Section 3.2).	71.1	21.6	7333	0214
police	Feelings towards the police, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the Feeling Thermometer (see Section 3.2).	76.3	18.4	6405	0214
Mixed friendships	Indicator variable equal to 1 if the respondent reports having friends of different races, and 0 if all friends share the same race.	0.409	0.492	5662	0866
Support for …					
affirmative action	Beliefs over whether the government should make efforts to improve the position of Blacks, ranging from 1 (Blacks should help themselves) to 7 (Government should help Blacks).	3.61	1.89	6377	0830
Black representation	Beliefs over the influence of Blacks in American life and politics, ranging from 1 (too much influence) to 3 (too little influence).	1.98	0.785	3470	9274
desegregation	Indicator variable equal to 1 if the respondent rejects strict racial segregation.	0.864	0.342	6836	0815
integrated schools	Indicator variable equal to 1 if the respondent believes that the government should ensure racially-integrated schools.	0.45	0.498	5872	0816
Republicans	Feelings towards Republicans, ranging from 1 (favorable) to 100 (unfavorable). The variable is measured using the Feeling Thermometer (see Section 3.2). The variable has been rescaled from the original scale to have higher values representing support for civil rights.	60.6	20.7	8088	0202

Variable	Description	Mean	SD	N	ID
speeding up civil rights	Indicator variable equal to 1 if the respondent believes that civil rights leaders are not pushing too fast for their goals.	0.469	0.499	7874	0814
Unfavorable towards …					
George Wallace	Feelings towards George Wallace, ranging from 1 (favorable) to 100 (unfavorable). The variable is measured using the Feeling Thermometer (see Section 3.2). The variable has been rescaled from the original scale to have higher values representing support for civil rights.	52.6	28.5	8023	0439
Southerners	Feelings towards Southerners, ranging from 1 (favorable) to 100 (unfavorable). The variable is measured using the Feeling Thermometer (see Section 3.2). The variable has been rescaled from the original scale to have higher values representing support for civil rights.	33.8	20.1	5207	0208
Trust in the government	Degree of trust in the federal government doing the right thing, ranging from 1 (never) to 4 (always).	2.52	0.633	9777	0604
Appendix variables					
Favorable towards (the) …					
big businesses	Feelings towards big businesses, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the Feeling Thermometer (see Section 3.2).	53.6	21.5	6976	0209
Catholics	Feelings towards people of Catholic religion, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the Feeling Thermometer (see Section 3.2).	65.2	21.5	5133	0204
Jews	Feelings towards people of Jewish religion, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the Feeling Thermometer (see Section 3.2).	62.1	19.9	5075	0205
poor people	Feelings towards poor people, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the Feeling Thermometer (see Section 3.2).	73.5	17.3	4517	0223
Protestants	Feelings towards people of Protestant religion, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the Feeling Thermometer (see Section 3.2).	74.6	19.1	5208	0203
Unions	Feelings towards labor unions, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the Feeling Thermometer (see Section 3.2).	54.5	23.3	7022	0210
White population	Feelings towards the white population, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the Feeling Thermometer (see Section 3.2).	78.8	17.7	8197	0207

Note. *ID* is the ANES code of the question, starting with *VCF*. The scripts of questions are available from ANES (2021). In ANES dataset, variables measured with the feeling thermometer are top-coded at 97.

Figure C11: Data availability by year and survey item
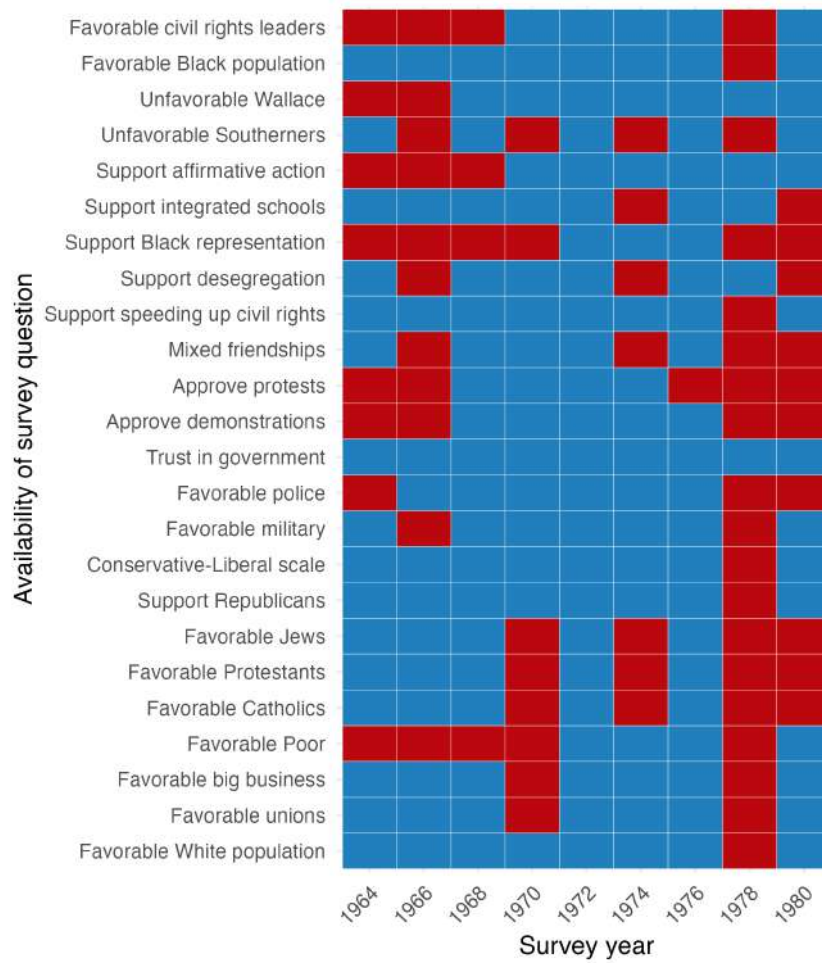
Note. The figure visualizes the availability of questions across the available set of survey waves in ANES. Blue indicates that the question was asked in the corresponding survey year.

Figure C12: Average attitudes by age cohort on civil rights related issues
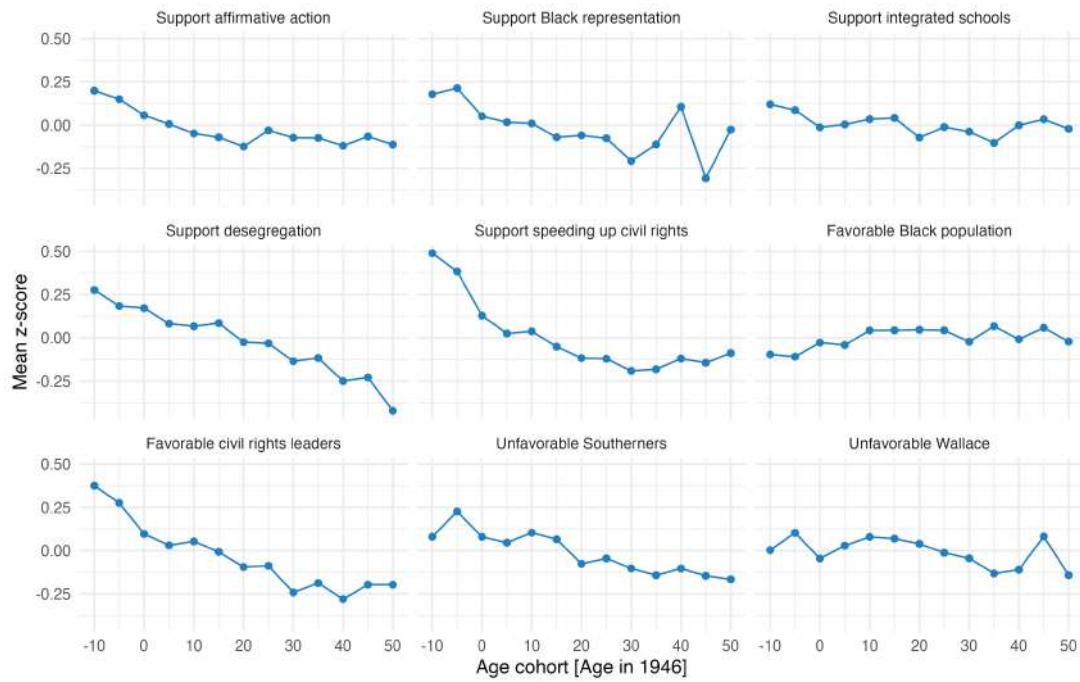
Note. The figure shows the mean attitudes by age cohort for each of the respective survey items. Age cohorts comprise 5 years and are centered around the value noted on the x-axis. Outcomes are standardized and centered at 0. Data availability for each question is reported in Appendix Figure C11.

Figure C13: Average attitudes by survey year on civil rights related issues

Note. The figure shows the mean attitudes by survey year for each of the respective survey items. Outcomes are standardized and centered at 0. Data availability for each question is reported in Appendix Figure C11.

Figure C14: Average attitudes by age cohort on other issues

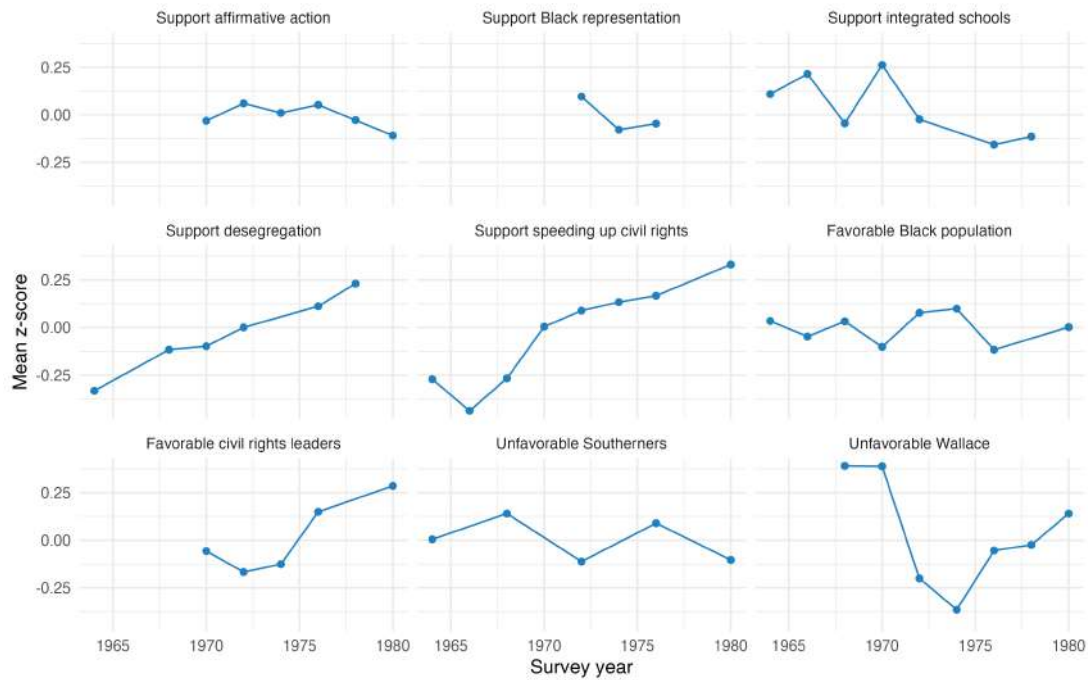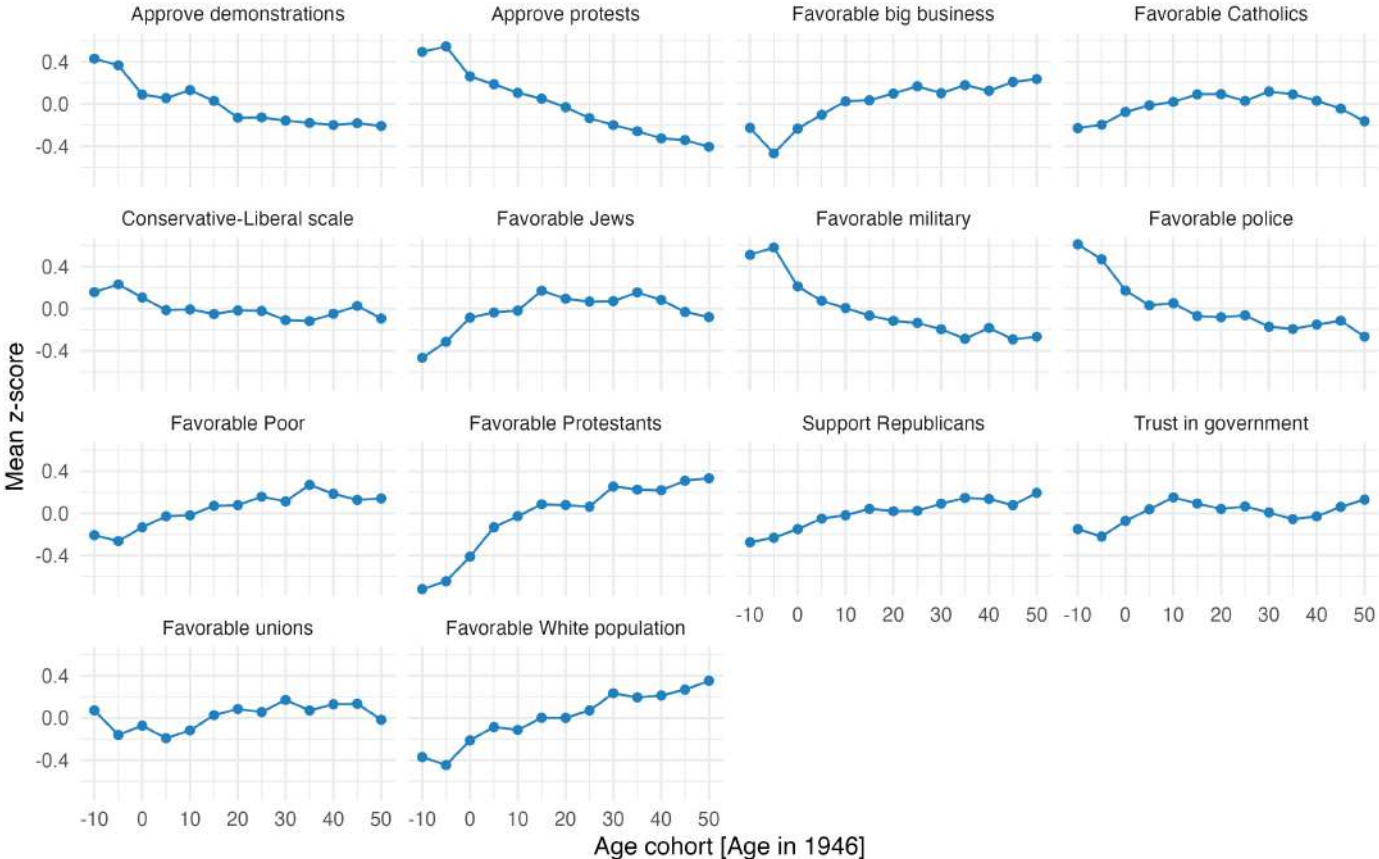*Note.* The figure shows the mean attitudes by age cohort for each of the respective survey items. Age cohorts comprise 5 years and are centered around the value noted on the x-axis. Outcomes are standardized and centered at 0. Data availability for each question is reported in Appendix Figure C11.

Figure C15: Average attitudes by survey year on other issues

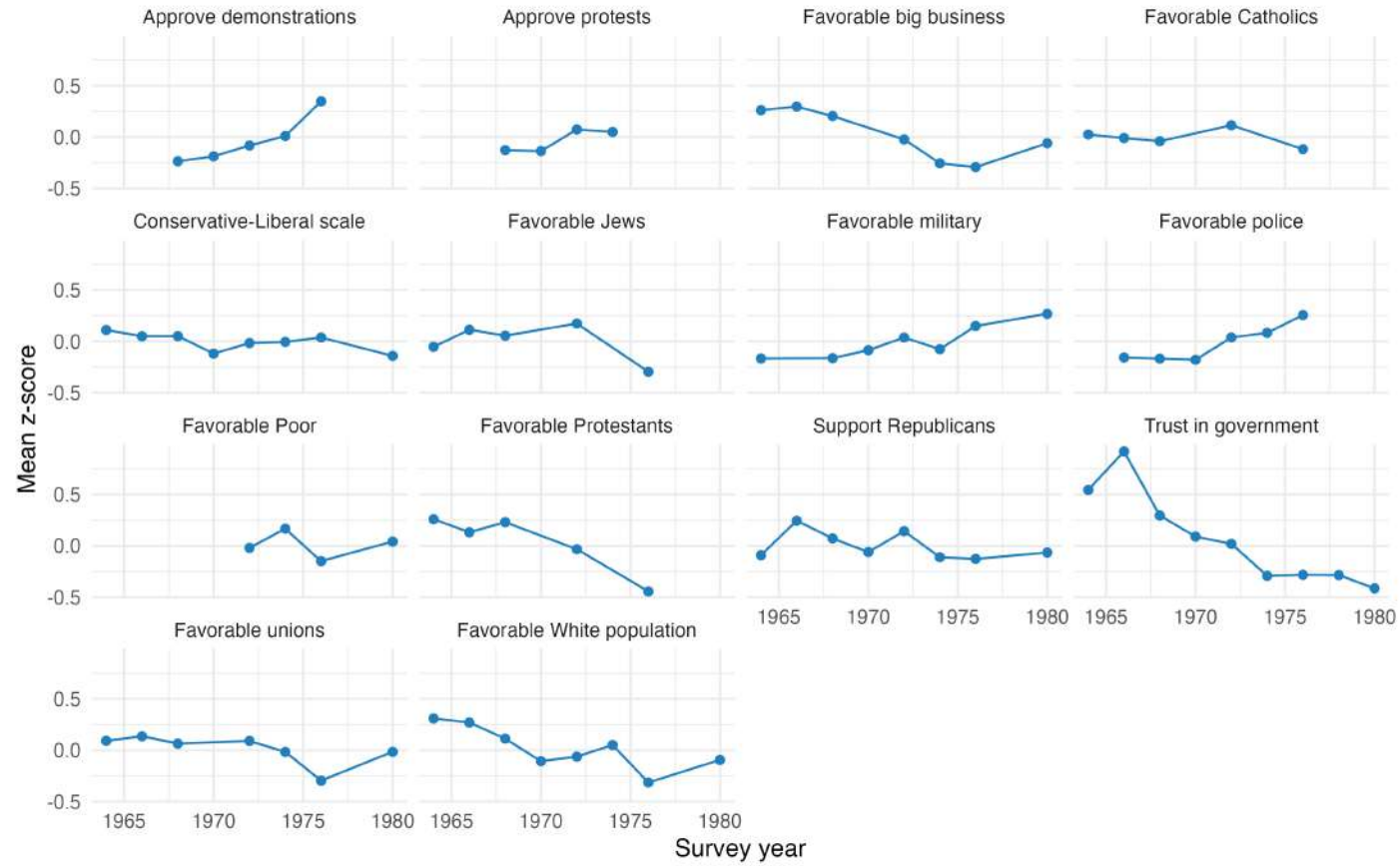
Note. The figure shows the mean attitudes by survey year for each of the respective survey items. Outcomes are standardized and centered at 0. Data availability for each question is reported in Appendix Figure C11.

C.2   Presence of KKK and NAACP

Figure C16 shows the share of counties with KKK branch and NAACP chapter presence over time.

Figure C16: Mobilization against and in favor of civil rights, over time
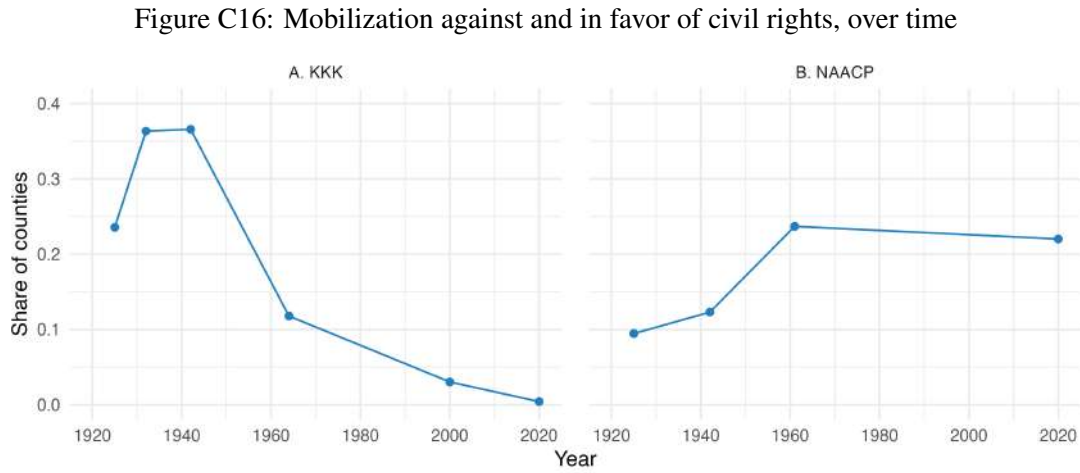
Note. The figure shows the share of counties where KKK (panel A) or NAACP (panel B) are present. Data is obtained from multiple sources described in Section 3.6.

C.3   Casualties during the Vietnam War

Figure C17 shows the geographical distribution of casualties reported by DCAS for the Vietnam War, depending on the year of birth of the soldier. Each casualty is geo-coded using the city of the home of record. Figure C18 shows instead the distribution of casualties by year of birth and by year of death.

Figure C17: Geographic distribution of U.S. casualties during the Vietnam War
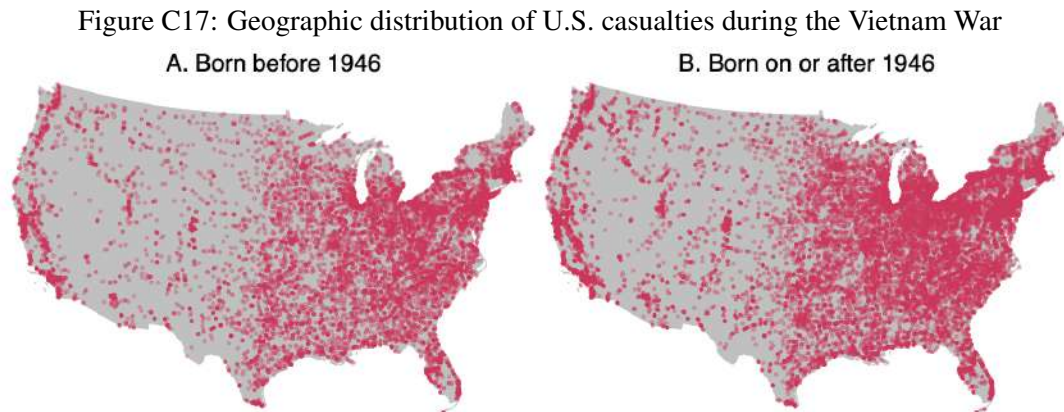
Note. The figure shows the geographical distribution of casualties using the home of record city. Each dot represents a single casualty. All casualties are attributed to the conflict in Vietnam. The left figure selects only soldiers born before 1946, while the right figure selects only soldiers born on or after 1946. The data source is the DCAS dataset, described in Section 3.

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Figure C18: U.S. casualties during the Vietnam War, by year of birth and death

A. By year of birth B. By year of death
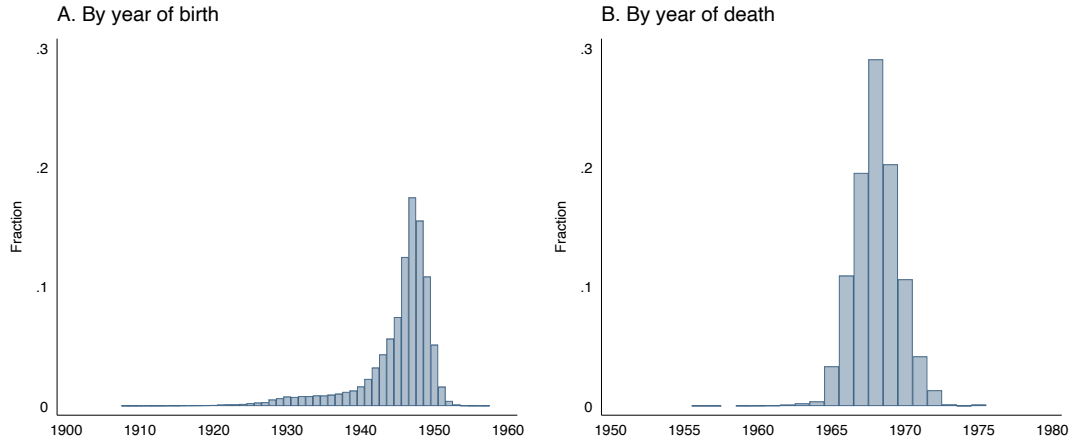
Note. The figure shows the distribution of casualties during the Vietnam War, distinguishing by birth year (left figure), and by death year (right figure). The data source is the DCAS dataset, described in Section 3.

C.4 Voting for segregationist candidates in the Deep South

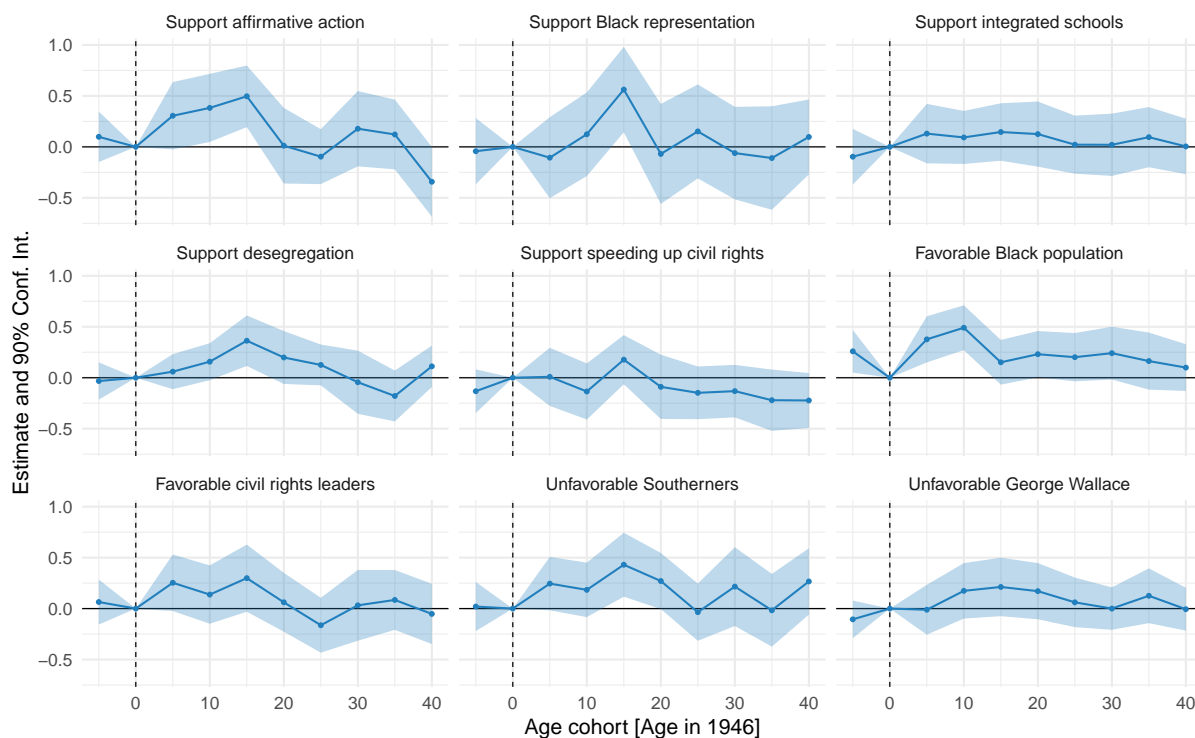| State	Referendum	Detail	Majority county	Share county	Share state
Alabama	Boswell Amendment (1946)	Act designed to prevent African Americans from registering to vote by requiring potential voters to "understand and explain" any section of the U.S. constitution, giving large discretionary powers to local registrars. Introduced following the outlawing of the common practice of holding "whites-only" primaries.	Sumpter	0.94	0.59
Georgia	Private School Amendment (1954)	Amendment authorizing the conversion of public schools to private schools. Allowing upholding of racial segregation in schools in response to the U.S. Supreme Court's public-school desegregation decision.	Baker	0.94	0.62
Louisiana	Closure of integrated public facilities Amendment (1960)	Amendment authorizing the closure of any integrated public schools, in response to the U.S. Supreme Court's public school desegregation decision.	Winn	0.92	0.70
Mississippi	Morals as voter qualification Amendment (1960)	Act designed to prevent African Americans from registering to vote by requiring potential voters to be of "good moral character", giving large discretionary powers to local registrars. Introduced following the outlawing of the common practice of holding "whites-only" primaries.	Carroll	0.93	0.76
South Carolina	Private School Segregation Amendment (1952)	Amendment authorizing the conversion of public schools to private schools. Allowing upholding of racial segregation in schools anticipating the U.S. Supreme Court's public-school desegregation decision.	Calhoun	0.96	0.74

Note. Public referendums used for classification of politicians in the Deep South. Data stems from Bartley and Graham (2006). Refer to Section 3.6 for a detailed explanation of the methodology. *Majority county* indicates the state's county with the highest share of segregationist votes. *Share county* is the referendum vote share in the respective county for a pro-segregationist position, and *share state* indicates the average pro-segregation vote share across all counties within the respective state.
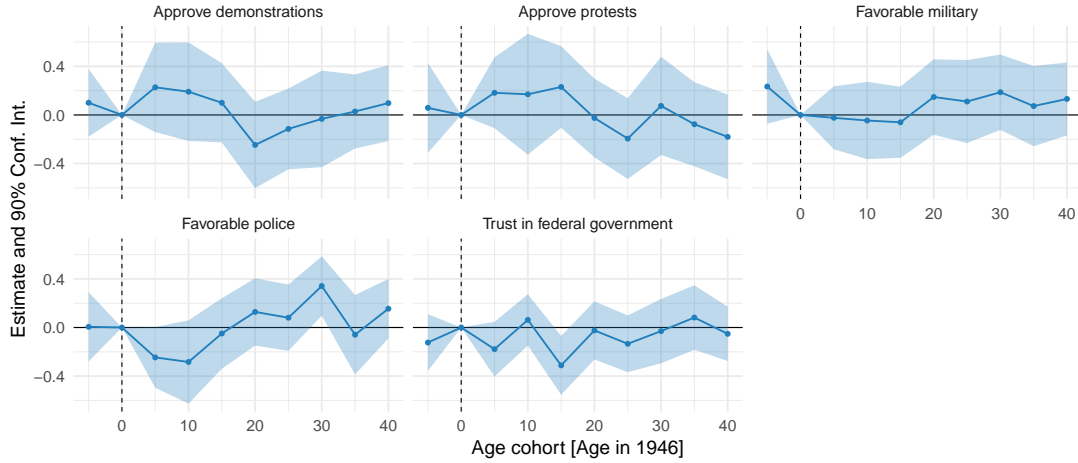
D Additional analysis

D.1 Cohort study for individual survey questions

Figure D19: Cohort study estimates on the Support for Civil Rights Index, by individual survey items

Note. The figure presents the cohort study plot of the effects of *Operation Intolerance* on the variables comprising the *Support for Civil Rights Index*. Each panel plots the coefficients from equation (2) of the interaction term between the age cohort in 1946 and the exposure to *Operation Intolerance* in the county, defined as the share of the population in the county that was covered by the radio signal of the program in 1946. The shaded areas indicate the confidence intervals at the 10% confidence level, computed assuming errors clustered at the county level. The vertical line indicates the cohort that is born at the time of Operation Intolerance. The dependent variables are reported in z-scores and defined by: *favorable towards civil rights leaders* measures the feelings towards civil rights leaders, ranging from 1 (unfavorable) to 100 (favorable); *favorable towards Black population* measures the feelings towards the Black population, ranging from 1 (unfavorable) to 100 (favorable); *unfavorable towards George Wallace* measures the feelings towards George Wallace, ranging from 1 (favorable) to 100 (unfavorable); *unfavorable towards Southerners* measures the feelings towards Southerners, ranging from 1 (favorable) to 100 (unfavorable); *support for affirmative action* measures the beliefs over whether the government should make efforts to improve the position of Blacks, ranging from 1 (Blacks should help themselves) to 7 (Government should help Blacks); *support for integrated schools* is an indicator variable equal to 1 if the respondent believes that the government should ensure racially-integrated schools; *support for Black representation* measures the beliefs over the influence of Blacks in American life and politics, ranging from 1 (too much influence) to 3 (too little influence); *support for desegregation* is an indicator variable equal to 1 if the respondent rejects strict racial segregation; *support for speeding up civil rights* is an indicator variable equal to 1 if the respondent believes that civil rights leaders are not pushing too fast for their goals. Additional details about the variables are presented in Appendix C.1.

Figure D20: Cohort study estimates on dissent and institutional trust, by individual survey items
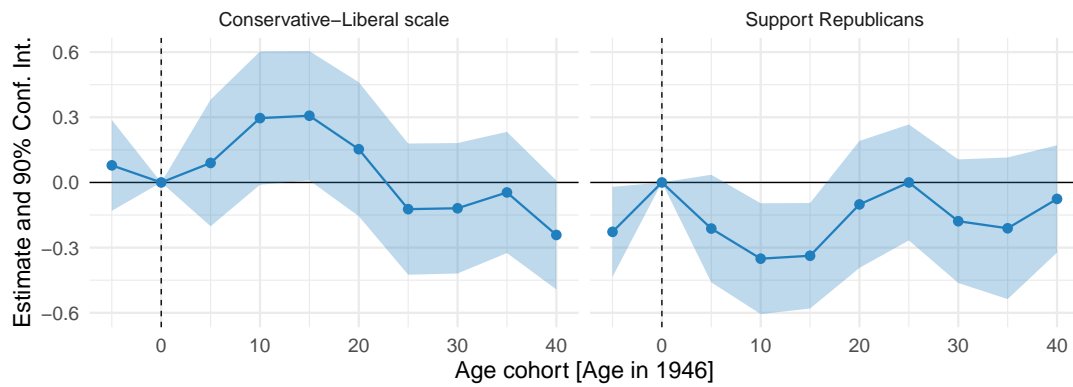

Note. The figure presents the cohort study plot of the effects of *Operation Intolerance* on the variables comprising the *Support for Civil Rights Index*. Each panel plots the coefficients from equation (2) of the interaction term between the age cohort in 1946 and the exposure to *Operation Intolerance* in the county, defined as the share of the population in the county that was covered by the radio signal of the program in 1946. The shaded areas indicate the confidence intervals at the 10% confidence level, computed assuming errors clustered at the county level. The vertical line indicates the cohort that is born at the time of Operation Intolerance. The dependent variables are reported in z-scores and defined by: *approve of protests* is the degree of approval of participation in protests, ranging from 1 (disapprove) to 3 (approve); *appove of demonstrations* is the degree of approval of participation in demonstrations, ranging from 1 (disapprove) to 3 (approve); *trust in the government* is the degree of trust in the federal government doing the right thing, ranging from 1 (never) to 4 (always); *favorable towards the police* measures the feelings towards police, ranging from 1 (unfavorable) to 100 (favorable); *favorable towards the military* measures the feelings towards the military, ranging from 1 (unfavorable) to 100 (favorable). Additional details about the variables are presented in Appendix C.1.

Figure D21: Cohort study estimates on the participation in the Vietnam war
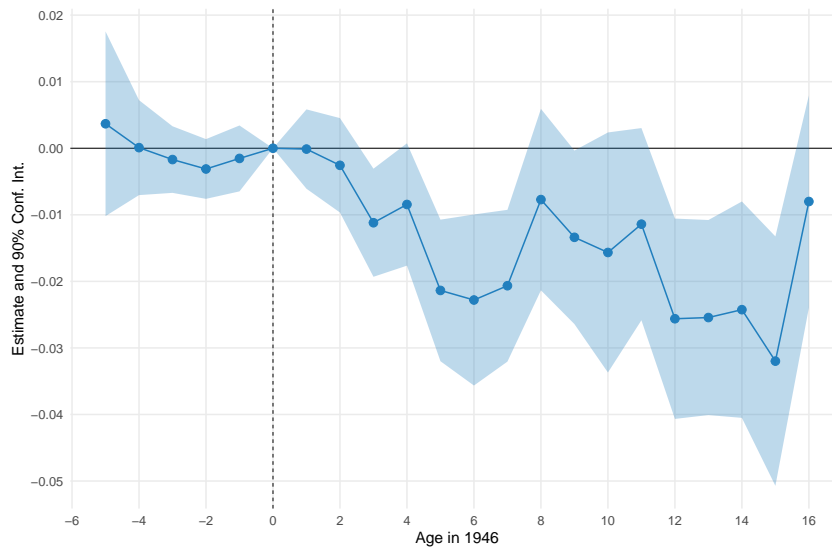
Note. Estimates based on equation (2). The dependent variable is is the cohort-specific share of deaths assigned to a county based on the place of birth (multiplied by 100). We estimate equation (2) at the cohort-county level, thus comparing the distribution of the outcome variable within a cohort across counties with varying exposure of *Operation Intolerance* in 1946. The shaded area indicates the confidence intervals at the 10% confidence level. The vertical line indicates the cohort born when *Operation Intolerance* was launched. Additional information about the data is provided in Section 3.

Figure D22: Cohort study estimates on political attitudes by individual survey items

Note. The figure presents the cohort study plot of the effects of *Operation Intolerance* on the variables comprising the *Support for Civil Rights Index*. Each panel plots the coefficients from equation (2) of the interaction term between the age cohort in 1946 and the exposure to *Operation Intolerance* in the county, defined as the share of the population in the county that was covered by the radio signal of the program in 1946. The shaded areas indicates the confidence intervals at the 10% confidence level, computed assuming errors clustered at the county level. The vertical line indicates the cohort that is born at the time of Operation Intolerance. The dependent variables are reported in z-scores and defined by: *Conservative–Liberal Scale* measures political preferences, ranging from 1 (most conservative) to 100 (most liberal); *support for Republicans* measures the feelings towards Republicans, ranging from 1 (favorable) to 100 (unfavorable). Additional details about the variables are presented in Appendix C.1.

D.2 Alternative approach to compute the Support for Civil Rights index

Panel A of Figure C13 shows the partial correlation of each variable used. To address the relatively high share of missing observations in our dataset, we complement results presented in Figure 5 with an alternative index built on a regularized iterative principal component analysis (RPCA) methodology (Josse and Husson, 2012). This iterative procedure corresponds to an expectation maximization algorithm estimating missing values and resulting principal components. We use the first principal component as dependent variable, capturing 46.5% of the variation in our sample. Panel B of Figure D23 reveals that the alternative modelling choice leads to qualitatively similar conclusions as compared to Figure 5.

Figure D23: Support for Civil Rights Index, partial correlations and effect on the RPCA index

A. Partial correlations   B. Effect on RPCA index
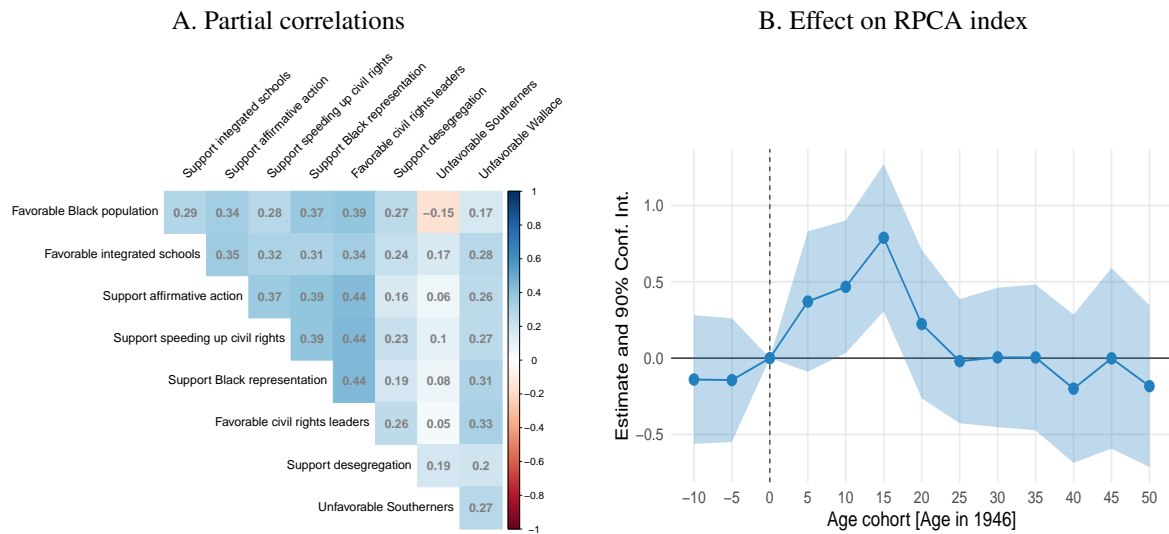
Note. Panel A visualizes partial correlation between individual responses across different survey items measuring civil rights related attitudes. Outcomes are standardized and centered at 0. Panel B plots the cohort study effects of *Operation Intolerance* on the Support for Civil Rights index, computed using the BPCA methodology described in Appendix D.2. The figure plots the coefficients from equation (2) of the interaction term between the age cohort in 1946 and the exposure to *Operation Intolerance* in the county, defined as the share of the population in the county that was covered by the radio signal of the program in 1946. The shaded area indicates the confidence intervals at the 10% confidence levels, computed assuming errors clustered at the county level. The vertical line indicates the cohort that is born at the time of Operation Intolerance. Additional details about the variables are presented in Appendix C.1.

D.3 Alternative samples and placebo tests

In this Section, we present estimates of the effect on support for civil rights using alternative samples and different placebo tests. Table D5 shows the results. Columns (1)–(2) present the effect on the Support for Civil Rights Index, but excluding the counties where the MBS antennas were placed, and focusing uniquely on migrants, i.e. individuals who grew up in a different location from where they were living at the time of the interview. Column (1) suggests that the results are not solely driven by counties hosting MBS antennas but are also applicable to areas indirectly exposed to *The Adventures of Superman*. Column (2) reveals non-significant effects for migrant individuals who were potentially not exposed to the show during their youth.

Table D5: Alternative samples and placebo tests

	Dependent variable: Support for Civil Rights Index				
	Alternative samples		Placebo tests		
	Counties without MBS antennas	Migrants	Other content	*The Lone Ranger*	Other content by commercial radio network
	(1)	(2)	(3)	(4)	(5)
A. All cohorts					
Target × Exposure	0.158***	-0.030		0.179***	0.176***
	(0.050)	(0.061)		(0.048)	(0.051)
Target × Exposure to other networks			0.019		
			(0.055)		
Target × Exposure to ABC				0.024	0.030
				(0.044)	(0.051)
Target × Exposure to CBS					-0.036
					(0.044)
Target × Exposure to NBC					0.027
					(0.043)
R^2	0.21	0.28	0.21	0.21	0.21
Observations	7,652	4,692	10,503	10,503	10,503
B. Exclude younger cohorts					
Target × Exposure	0.157***	-0.006		0.180***	0.179***
	(0.054)	(0.065)		(0.050)	(0.055)
Target × Exposure to other networks			-0.007		
			(0.0054)		
Target × Exposure to ABC				0.021	0.025
				(0.046)	(0.053)
Target × Exposure to CBS					-0.052
					(0.047)
Target × Exposure to NBC					0.045
					(0.049)
R^2	0.21	0.29	0.22	0.22	0.22
Observations	5,791	3,798	7,842	7,842	7,842

Note. Estimates based on equation (2) grouping target cohorts into a single cohort. *Target* is an indicator variable equal to 1 if the respondent was 3–17 years old in 1946, while *exposure* is the share of the population in the county that was covered by the radio signal of *Operation Intolerance* in 1946. *Exposure to other network* is the share of the population in the county that was covered by the radio signal of any network not broadcasting *The Adventures of Superman*. *Exposure to ABC, CBS, or NBS* is the share of the population in the county that was covered by the radio signal of the corresponding network in 1946. Panel A includes all available cohorts, while panel B excludes the younger cohorts. Standard errors clustered by county are reported in parentheses (* p < 0.1, ** p<0.05, *** p < 0.01). Dependent variable in all columns is the support for civil rights measured by an index as presented in Section 5.1. Column (1) excludes counties which host a MBS antenna from the estimation. Column (2) limits the sample to individuals who grew up in a different state from their state of residence. Column (3) replaces exposure to *Operation Intolerance* by exposure to any other radio signal and their targeted coverage. Column (4) adds actual exposure to the series *The Lone Ranger* and its targeted coverage. Column (5) adds target times coverage interactions for all major radio networks and the targeted coverage for each network.

In Columns (3)–(5), we present placebo tests based on exposure to alternative radio content contemporaneous to the launch of *Operation Intolerance*. First, in column (3), we estimate equation (2) using as main source of

variation the indicator variable of the target cohort interacted with exposure to the signal of any commercial radio not broadcasting *The Adventure of Superman*.

Second, to verify whether exposure to *Operation Intolerance* captures a general shift in the programming of youth radio series, in column (4), we estimate equation (2) using as control the interaction term between the indicator variable of the target cohort and the coverage of the main competitor of *The Adventure of Superman*, i.e., *The Lone Ranger*, a radio series featuring a masked former Texas Ranger who fought outlaws in the American Old West. The series targeted a similar demographic group and aired 2,956 episodes between 1933 and 1954. Initially broadcast on MBS network, the show moved to the competing network ABC, and was replaced on MBS by *The Adventures of Superman* (Dunning, 1998). We find no effect of *The Lone Ranger*, indicating the uniqueness of Superman's *Operation Intolerance* in driving changes in support for civil rights. Figure D24 illustrates a content analysis of *The Lone Ranger*, replicating Figure 1 in the main text.[4] In line with the previous result, we find no evidence of a paradigm shift, with the average salience of tolerance related keywords remaining constantly low and *decreasing* marginally by 1.34% (from 1.49 to 1.47 per 1000 words) after April 1946.

Finally, to verify whether exposure to *Operation Intolerance* captures a general shift in the overall radio programming, in column (5), we estimate equation (2) using as control variables the interaction terms between the indicator variable of the target cohort and the coverage of each commercial radio active in 1946.

Figure D24: Content analysis of narrative in *The Lone Ranger*
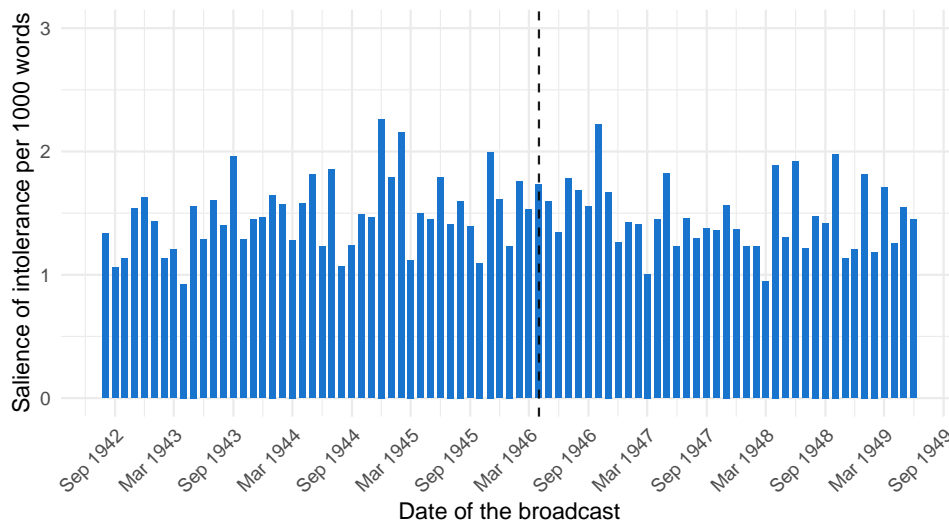
Note. The figure illustrates the share of keywords (per 1,000 words) related to tolerance or intolerance for each episode transcript in *The Lone Ranger*. The series is centered around the average share in the period preceding *Operation Intolerance*, with its starting date indicated by the dotted line. We consider broadcasts on the ABC network from August 1942 to February 1949. The full methodology is described in Appendix B.2.

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[4]We aggregate transcripts of 987 separate episodes into monthly indicators, based on their precise broadcasting date. We exclude three episodes ("Chuck Wagon Champ", "Frontier Day Race", and "Racer of Turtles") from the analysis due to their racing-centric plots, which result in a high number of false positives caused by the ambiguity of the word "race" during content classification.

D.4 Robustness checks

In this Section, we perform alternative robustness checks for our main results on the Support for Civil Rights Index. First, Table D6 shows robustness of main results to alternative specifications for equation (2). Second, in our main analysis we measure radio exposure as the share of population of a county that is covered by a sufficiently strong radio signal. Table D7 shows results using alternative measures for coverage, varying the minimum level of signal strength to consider a cell covered, using binary coverage, and using the share of a county's area that is covered (without correcting for the distribution of population). Finally, Table D8 shows results correcting standard errors for spatial correlation in the errors using the Conley (1999) correction.

Table D6: Alternative specifications for equation (2)

| | Dependent variable: Support for Civil Rights Index | | | | |
	(1)	(2)	(3)	(4)	(5)
A. All cohorts					
Target × Exposure	0.156***	0.167***	0.167***	0.169***	0.179***
	(0.033)	(0.043)	(0.044)	(0.045)	(0.044)
Targeted coverage		Yes	Yes	Yes	Yes
State × year fixed effects			Yes	Yes	Yes
Time effects				Yes	Yes
Individual controls					Yes
R^2	0.14	0.14	0.19	0.20	0.21
Observations	10,503	10,503	10,503	10,503	10,503
B. Exclude younger cohorts					
Target × Exposure	0.181***	0.182***	0.181***	0.180***	0.176***
	(0.036)	(0.045)	(0.048)	(0.048)	(0.047)
Targeted coverage		Yes	Yes	Yes	Yes
State × year fixed effects			Yes	Yes	Yes
Time effects				Yes	Yes
Individual controls					Yes
R^2	0.15	0.15	0.20	0.21	0.22
Observations	7,842	7,842	7,842	7,842	7,842

Note. Estimates based on equation (2) grouping target cohorts into a single cohort. *Target* is an indicator variable equal to 1 if the respondent was 3–17 years old in 1946, while *exposure* is the share of the population in the county that was covered by the radio signal of *Operation Intolerance* in 1946. Panel A includes all available cohorts, while panel B excludes the younger cohorts. Standard errors clustered by county are reported in parentheses (* $p < 0.1$, ** $p<0.05$, *** $p < 0.01$). Descriptive statistics and temporal coverage of the variables comprising the index are presented in Appendix C.1.

Table D7: Alternative measures of coverage

	Baseline $\tau = 66$ (1)	Optimistic $\tau = 60$ (2)	Pessimistic $\tau = 72$ (3)	Binary (4)	Area coverage (5)
Dependent variable: Support for Civil Rights Index					
A. All cohorts					
Target × Exposure	0.179***	0.159***	0.186***	0.142***	0.1792***
	(0.044)	(0.039)	(0.044)	(0.036)	(0.041)
R^2	0.21	0.21	0.21	0.21	0.21
Observations	10,503	10,503	10,503	10,503	10,503
B. Exclude younger cohorts					
Target × Exposure	0.176***	0.16***	0.211***	0.138***	0.174***
	(0.047)	(0.041)	(0.048)	(0.039)	(0.045)
R^2	0.22	0.22	0.22	0.22	0.22
Observations	7,842	7,842	7,842	7,842	7,842

Note. Estimates based on equation (2) grouping target cohorts into a single cohort. *Target* is an indicator variable equal to 1 if the respondent was 3–17 years old in 1946, while *exposure* is the share of the population in the county that was covered by the radio signal of *Operation Intolerance* in 1946. Panel A includes all available cohorts, while panel B excludes the younger cohorts. Standard errors clustered by county are reported in parentheses (* $p < 0.1$, ** $p<0.05$, *** $p < 0.01$). In columns (1-3) we apply different thresholds values to classify sufficient signal strength, before calculating the share of the population in the county that was covered by the radio signal of *Operation Intolerance* in 1946. Column (4) uses an indicator variable equal 1 if more than 50 percent of the county population is covered. Column (5) measures exposure as the share of county area covered. The dependent variable is the *Support for Civil Rights Index*, which aggregates z-scores from individual questions capturing support for civil rights. Descriptive statistics and temporal coverage of the variables comprising the index are presented in Appendix C.1.

Table D8: Robustness to spatial correlation in the error terms

	25km (1)	50km (2)	100km (3)	200km (4)	300km (5)	400km (6)
Dependent variable: Support for Civil Rights Index						
A. All cohorts						
Target × Exposure	0.179***	0.179***	0.179***	0.179***	0.179***	0.179***
	(0.043)	(0.044)	(0.043)	(0.037)	(0.047)	(0.05)
R^2	0.21	0.21	0.21	0.21	0.21	0.21
Observations	10,503	10,503	10,503	10,503	10,503	10,503
B. Exclude younger cohorts						
Target × Exposure	0.176***	0.176***	0.176***	0.176***	0.176***	0.176***
	(0.045)	(0.044)	(0.042)	(0.041)	(0.043)	(0.046)
R^2	0.22	0.22	0.22	0.22	0.22	0.22
Observations	7,842	7,842	7,842	7,842	7,842	7,842

Note. Estimates based on equation (2) grouping target cohorts into a single cohort, correcting standard errors for spatial correlation in the errors using the Conley (1999) correction. Standard errors are reported in parentheses (* $p < 0.1$, ** $p<0.05$, *** $p < 0.01$). Column headers indicate distance cut-off values to spatially cluster standard errors. *Target* is an indicator variable equal to 1 if the respondent was 3–17 years old in 1946, while *exposure* is the share of the population in the county that was covered by the radio signal of *Operation Intolerance* in 1946. Panel A includes all available cohorts, while panel B excludes the younger cohorts. Descriptive statistics and temporal coverage of the variables comprising the index are presented in Appendix C.1.

D.5 Effect on attitudes towards other groups

Table D9 provides cohort study estimates on favorable feelings towards other groups. Columns (1)–(3) focuses on attitudes towards religious groups. Columns (4)–(6) focuses on attitudes towards markets and inequality. Column (7) provides instead estimates for attitudes towards the White population.

Table D9: Cohort study estimates of the effect on religious tolerance and market attitudes

Favorable towards...	Religious groups			Markets and inequality			Other
	Jews	Protestants	Catholics	Poor people	Big businesses	Unions	White population
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. All cohorts							
Target × Exposure	-0.064	-0.106	0.022	-0.023	-0.061	-0.081	-0.115
	(0.112)	(0.077)	(0.109)	(0.119)	(0.076)	(0.107)	(0.075)
R^2	0.17	0.23	0.20	0.17	0.17	0.14	0.19
Observations	5,075	5,208	5,133	4,517	6,976	7,022	8,197
B. Exclude younger cohorts							
Target × Exposure	-0.088	-0.054	0.067	0.140	-0.074	-0.110	-0.112
	(0.122)	(0.090)	(0.112)	(0.146)	(0.085)	(0.114)	(0.085)
R^2	0.18	0.19	0.21	0.19	0.17	0.16	0.19
Observations	4,173	4,288	4,218	3,010	5,378	5,425	6,415

Note. Estimates based on equation (2) grouping target cohorts into a single cohort. *Target* is an indicator variable equal to 1 if the respondent was 3–17 years old in 1946, while *exposure* is the share of the population in the county that was covered by the radio signal of *Operation Intolerance* in 1946. All specifications include controls for targeted coverage, state-by-year fixed effects, time effects, and individual controls (see Section 4). Panel A includes all available cohorts, while panel B excludes the younger cohorts. Standard errors clustered by county are reported in parentheses (* $p < 0.1$, ** $p<0.05$, *** $p < 0.01$). The dependent variables are reported in z-scores and defined by column's header: (1) *favorable towards Jews* measures the feelings towards people of Jewish religion, ranging from 1 (unfavorable) to 100 (favorable); (2) *favorable towards Protestants* measures the feelings towards people of Protestant religion, ranging from 1 (unfavorable) to 100 (favorable); (3) *favorable towards Catholics* measures the feelings towards people of Catholic religion, ranging from 1 (unfavorable) to 100 (favorable); (4) *favorable towards poor people* measures the feelings towards poor people, ranging from 1 (unfavorable) to 100 (favorable); (5) *favorable towards big businesses* measures the feelings towards big businesses, ranging from 1 (unfavorable) to 100 (favorable); (6) *favorable towards Unions* measures the feelings towards labor unions, ranging from 1 (unfavorable) to 100 (favorable); (7) *favorable towards the White population* measures the feelings towards the white population, ranging from 1 (unfavorable) to 100 (favorable). Descriptive statistics and temporal coverage of the variables are presented in Appendix C.1.

D.6 Additional evidence concerning newspapers

D.6.1 Salience of Superman in local newspapers

Figure D25 shows the geographical distribution of newspapers used in the analysis. Figure D26 shows the salience of Superman on radio in local newspapers around the launch of Operation Intolerance, depending on whether a county was covered by the broadcast in 1946. In Panel A, for each county-month we create a binary variable taking the value of 1 if we find at least one reference to the words *Superman* and *radio* in the same page of a newspaper, and 0 otherwise. In Panel B, for each month, we focus on the share of total pages published that has a reference to the words *Superman* and *radio* in the same page of a newspaper (multiplied by 100). We distinguish counties covered by *Operation Intolerance* in 1946, defined as whether in a county a positive share of inhabitants was covered. Figure D27 shows the same descriptive analysis, but focusing on themes related to intolerance, bigotry and prejudice (and related derivatives).[5]

D.6.2 Salience of civil rights in local newspapers

We focus on 25 themes that capture the salience of civil rights on local newspapers. The themes are bigotry, civil disobedience, civil liberty, civil rights, desegregation, discrimination, equal opportunity, equal rights, human rights, integration, intolerance, Jim Crow laws, KKK, NAACP, negro, prejudice, race relations, racial, racial justice, racial quality, segregation, social justice, states' rights, tolerance, and voting rights. The list is AI-generated by ChatGPT 3.5 using the following request: *I am an academic economist. I am analysing a sequence of U.S. local newspapers published in the period 1930–1980. I am interested in finding articles promoting the narrative of the Civil Rights Movement and of racial tolerance, but I can only search for words or sequence of two words. Can you list the most important ones I should focus on? Restrict the result to words that were in use throughout the period and not only after the 1950s.* The following table provides the search strings used to compute salience of each theme.

N.	Theme	Search string 1	Search string 2
1	Bigotry	bigot*	
2	Civil liberty	civil liberty	
3	Civil rights	"civil rights"	civil rights
4	Civil disobedience	civil disobedience	nonviolent OR nonviolence
5	Discrimination	discriminat*	
6	Desegregation	desegregat*	
7	Equal opportunity	"equal opportunity"	
8	Equal rights	"equal right"	
9	Human rights	"human right"	
10	Integration	integration	integrat*
11	Intolerance	intoleran*	hate
12	Jim Crow laws	"jim crow" OR "separate but equal"	separate equal
13	KKK	klan OR klux	lynching OR lynched
14	NAACP	naacp OR "advancement of colored"	
15	Negro	negro*	
16	Prejudice	prejudic*	
17	Race relations	"race relation"	
18	Racial	racial	
19	Racial equality	(race OR racial) (equal* OR inequal*)	race creed color
20	Racial justice	(race OR racial) (justice OR injustice)	
21	Segregation	segregat*	
22	Social justice	social (justice OR injustice)	
23	States' rights	"states' rights"	
24	Tolerance	toleran*	
25	Voting rights	voting right	"voting rights" OR "right to vote"

Note. For certain themes, multiple searches were performed. Each column indicates a separate search. Words enclosed in quotes are searched in the way they appear. *OR* is the OR operator, meaning that either of the conditions is searched. * is used to allow a search for all words starting with the same root.
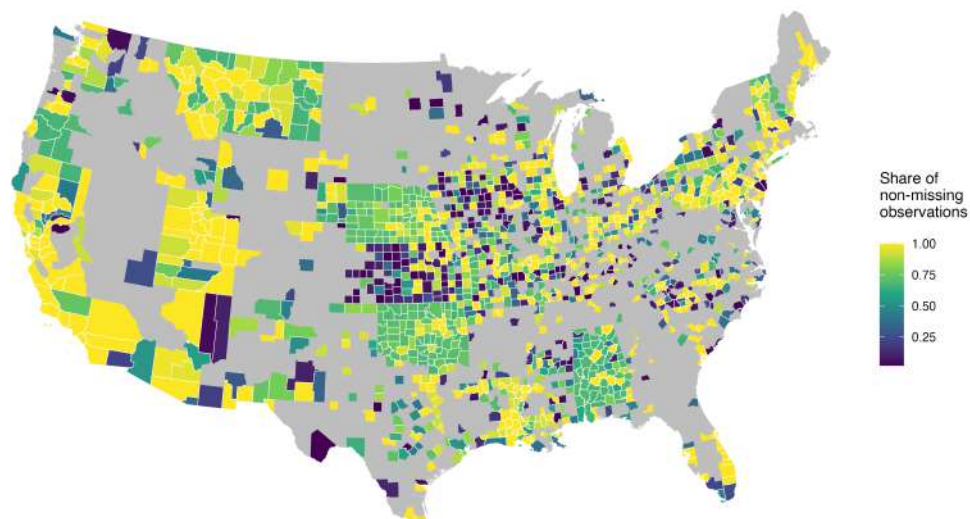
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[5]We search for pages mentioning words starting in either *intoleran*, *bigot*, or *prejudic*. For instance, the first would capture pages containing the noun *intolerance*, the adjective *intolerant* or the adverb *intolerantly*.

Figure D25: Descriptive statistics for local newspapers, 1930–1980

A. Total number of pages
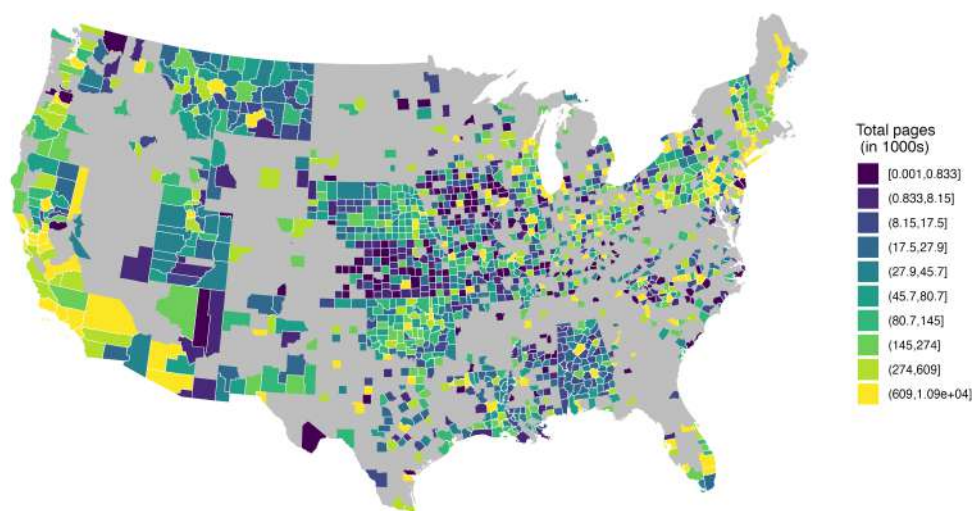
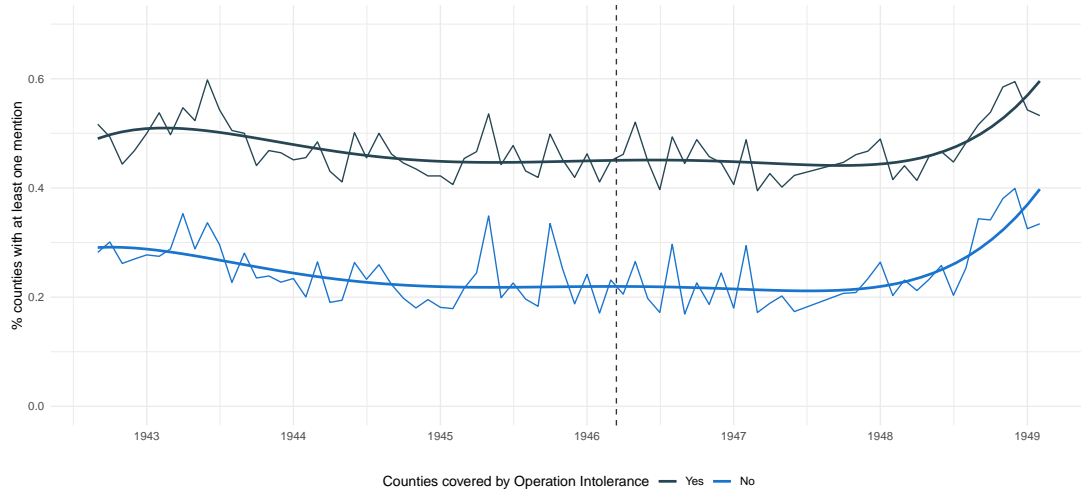B. Share of non-missing observations (yearly level)

Note. The figure shows descriptive statistics for the data gathered from the online archive newspapers.com (see Section 3.5 for further details). Data are a time series at county-monthly level. Gray areas are counties without any data in the archive. Panel A shows the geographical distribution of the total number of pages per county in the period January 1930 – December 1980. Panel B shows the share of non-missing observations, when we compute the total number of pages at yearly level using all available data within each county-year. In this case, the number of pages is aggregated for the whole U.S. by year relative to the launch of *Operation Intolerance* in April 1946.
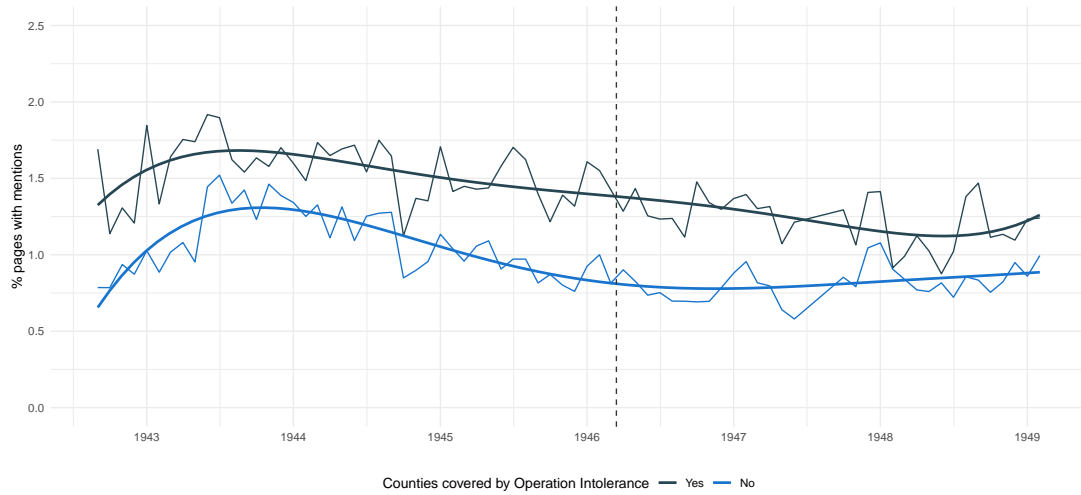
Figure D26: Salience of Superman in local newspapers

A. Share of counties with at least one mention

Counties covered by Operation Intolerance — Yes — No

B. Share of total published pages with at least one mention

Counties covered by Operation Intolerance — Yes — No

Note. Panel A shows for each month the share of counties in which there is at least one reference to the words *Superman* and *radio* in the same page of a newspaper. Panel B shows the share of total pages published that has a reference to the words *Superman* and *radio* in the same page of a newspaper (multiplied by 100). Counties covered by *Operation Intolerance* are those in which a positive share of inhabitants was covered by *Operation Intolerance* in 1946. See Section 3.1 for the procedure to compute coverage. Thicker lines provide a smoothed version of each series, estimated using a polynomial in time of degree 5. Section 3.5 provides further details about the source of newspaper data.

Figure D27: Bigotry, intolerance and prejudice in local newspapers, by coverage

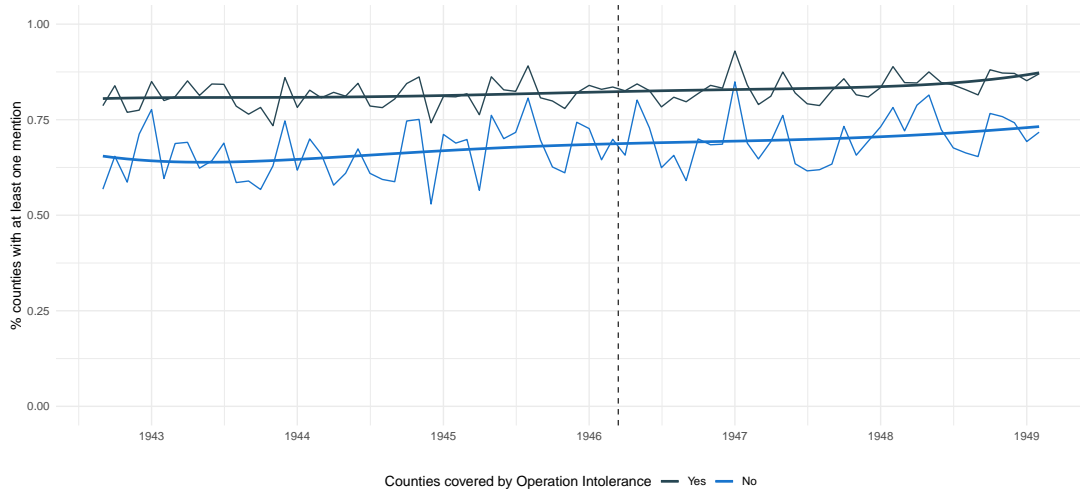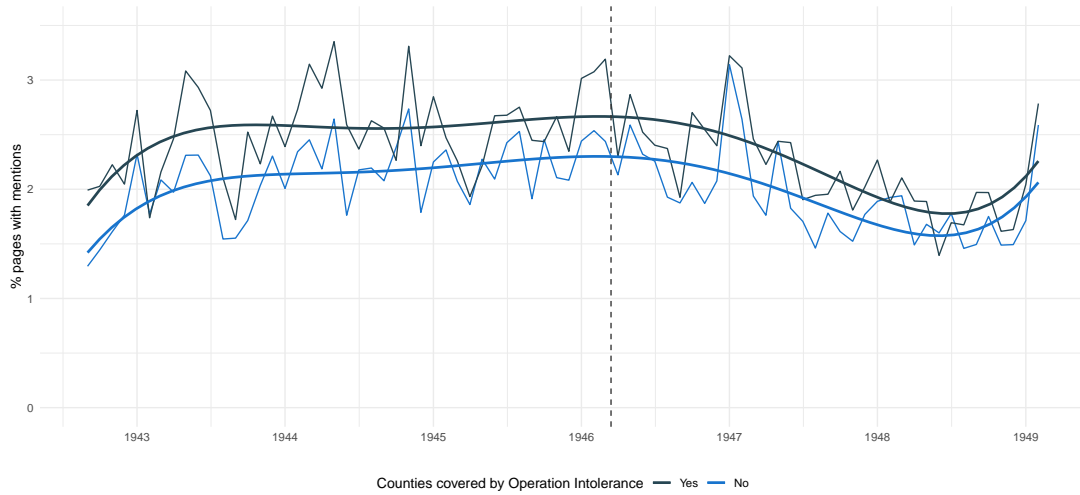### A. Share of counties with at least one mention


B. Share of total published pages with at least one mention

Note. Panel A shows for each month the share of counties in which there is at least one reference to any word starting with *intoleran*, *bigot*, or *prejudic*. Panel B shows the share of total pages published that has a reference to these words (multiplied by 100). Counties covered by *Operation Intolerance* are those in which a positive share of inhabitants was covered by *Operation Intolerance* in 1946. Thicker lines provide a smoothed version of each series, estimated using a polynomial in time of degree 5. See Section 3.1 for the procedure to compute coverage. Section 3.5 provides further details about the source of newspaper data.

Figure D28 shows the share of total pages published in each year containing a specific theme included in our measure of salience of civil rights on local newspapers (see Section 3.5). Figure D29 shows the average value over time of index capturing the salience of civil rights in local newspapers. We describe the construction in Section 3.5. Table D11 provides instead event study estimates of the effect of *Operation Intolerance* on the salience of civil rights in local newspapers, using alternative measures to build the index. Columns (1), (3), (5) and (7) provide estimates for the post 1946 periods using equation (3) and pooling all post-1946 observations, while columns (2), (4), (6) and (8) split the estimate of the effects in two periods, the 1946-1955 period and the post 1955 period. Columns (1)–(2) provide estimates for the index built using the procedure detailed in Section 3.5. Columns (3)–(4) follow the same procedure, but in this case the index is built by aggregating in the index all available themes. Columns (5)–(6) also follow the same procedure, but in this case the index is built using a more restrictive criteria to exclude themes not used in the pre-1946 period (excluding bottom half of the themes ranked on the average share of pages in the pre-1946 period). Finally, results in columns (7)–(8) follow a different approach by building a balanced panel for all counties in which at least one observation is available, and by building the index using regularized iterative principal component analysis (RPCA) methodology (Audigier et al., 2016), which deals with data structures characterized by missing data.

Figure D28: Share of total pages covered by each theme, by year (1930–1980)
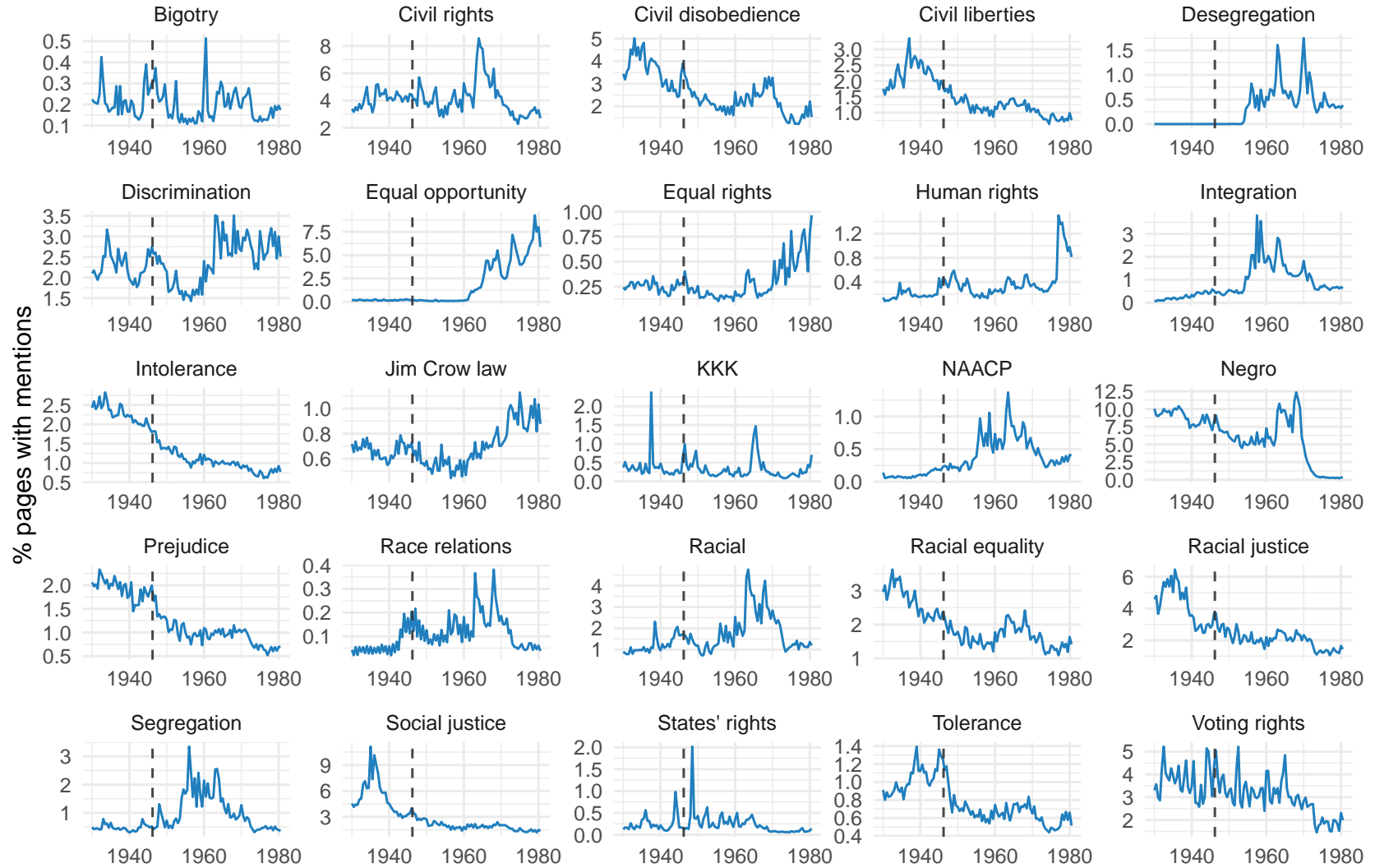
Note. The figure shows the share of total pages published in each year containing a specific theme. Themes are selected according to the procedure detailed in Section 3.5. The share is aggregated for the whole U.S. and by semester. Each data point includes one year relative to the launch of *Operation Intolerance* in April 1946. For instance, the data point for year 1946 includes the period April 1946 - March 1947. The vertical line indicates the year 1946, when *Operation Intolerance* was launched.

Figure D29: Salience of civil rights on local newspapers, by coverage of *Operation Intolerance*
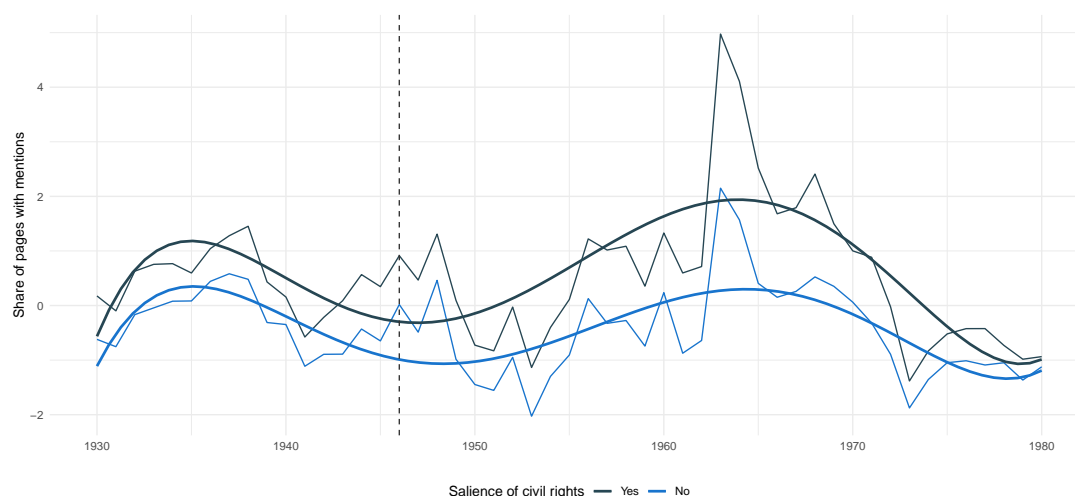
Note. The figure shows the yearly average of the measure of salience of civil rights in local newspapers using all available themes (see Section 3.5. This variable is used in Columns (3)–(4) of Table D11. *Counties covered by Operation Intolerance* are those in which a positive share of inhabitants was covered by *Operation Intolerance* in 1946. See Section 3.1 for the procedure to compute coverage. Section 3.5 provides further details about the source of newspaper data. Each data point includes one year relative to the launch of *Operation Intolerance* in April 1946. For instance, the data point for year 1946 includes the period April 1946 - March 1947. Thicker lines provide a smoothed version of each series, estimated using a polynomial in time of degree 5.

Table D11: The effect of *Operation Intolerance* on the salience of civil rights

		Salience of civil rights on local newspapers						
Method:		PCA (top 80% of themes)		PCA (all themes)		PCA (top 50% of themes)		RPCA (top 90% of themes)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post 1946 × Exposure	0.526**		0.498*		0.488**		0.315	
	(0.242)		(0.257)		(0.217)		(0.207)	
Period 1946–55 × Exposure		0.152		0.130		0.183		0.039
		(0.194)		(0.184)		(0.178)		(0.175)
Post 1955 × Exposure		0.668**		0.637**		0.603**		0.411*
		(0.281)		(0.307)		(0.248)		(0.236)
R^2	0.710	0.710	0.713	0.713	0.734	0.734	0.610	0.610
Counties	845	845	845	845	845	845	1,475	1,475
Observations	39,797	39,797	39,797	39,797	39,797	39,797	75,225	75,225

Note. Estimates based on equation (3) and pooling all post-1946 observations. Standard errors clustered at the county level are presented in parentheses (* $p < 0.1$, ** $p<0.05$, *** $p < 0.01$). *Post 1946* is an indicator variable equal to 1 if the period of observation is posterior to the year 1946, *Period 1946–55* is an indicator variable equal to 1 if the period of observation is between the years 1946 and 1955, and *Post 1955* is an indicator variable equal to 1 if the period of observation is posterior to the year 1945. *Exposure* is the share of the population in the county that was covered by the radio signal of *Operation Intolerance* in 1946. Dependent variables are reported in the column's header and defined as follows: (1)–(2) index built using the procedure detailed in Section 3.5; (3)–(4) index built using the procedure detailed in Section 3.5, but aggregating all available themes; (5)–(6) index built using the procedure detailed in Section 3.5, but including only the top half of the themes ranked on the average share of pages in the pre-1946 period; (7)–(8) index built using a balanced panel for all counties in which at least one observation is available, and aggregating themes using the RPCA methodology. In columns (1)–(6), the sample is restricted to counties where newspaper data are available for more than 70% of the observations in the period 1930–1980. Columns (7)–(8) include all counties with at least 1 observation in the period 1930–1980. Additional details about the variables are presented in Appendix C.1.

D.7 Evidence on electoral returns

We gather information about voting in national elections from Clubb et al. (1987), gathering county-level returns for elections to the the U.S. House of Representatives and the U.S. presidency for the period 1932–1972. Table D12 shows estimates of the effect of *Operation Intolerance* on county-level electoral returns. In panel A, we compare

the pre-broadcast period to the post-broadcast period, while in panel B, we further split the post-broadcast period in two periods depending on the salience of the Civil Right Movements, divided by the year 1955. The year indicates an increase in salience due to the centrality in the history of the Civil Rights Movement of the arrest of Rosa Parks in 1955 and of the Montgomery Bus Boycott. In columns (1)-(2), we focus on the elections of the House of Representatives, while columns (3)–(4) focus on Presidential elections. Columns (1) and (3) include all counties where both the Democratic and the Republican party have non missing vote shares, while columns (2) and (4) include all counties where both parties have positive vote shares. Because the timing of elections is different, we use only elections in the years in which both elections happened. The House of Representatives elections directly impacted the passage of the civil rights legislation, and thus provided the opportunity of more marginalized groups to elect representatives who would advocate for their concerns. Presidential elections brought instead executive authority and influence over civil rights policy. We use as our main outcome variable the vote share obtained by the Democratic Party over the total votes obtained by the Democratic and the Republican parties. We label this variable as the *Democratic vote share*.[6] Figure D30 shows the estimates corresponding to columns (2) and (4), but using equation (3) to highlight how effects evolve over time. In columns (5)–(6), we focus instead on the vote for pro-segregation presidential candidates. Namely, Strom Thurmond in 1948 and George Wallace in 1968. We estimate a version of equation (3) in which we compare the 1948 and the 1968 elections, thus studying whether *Operation Intolerance* reduced the vote for pro-segregation candidates in these two elections.
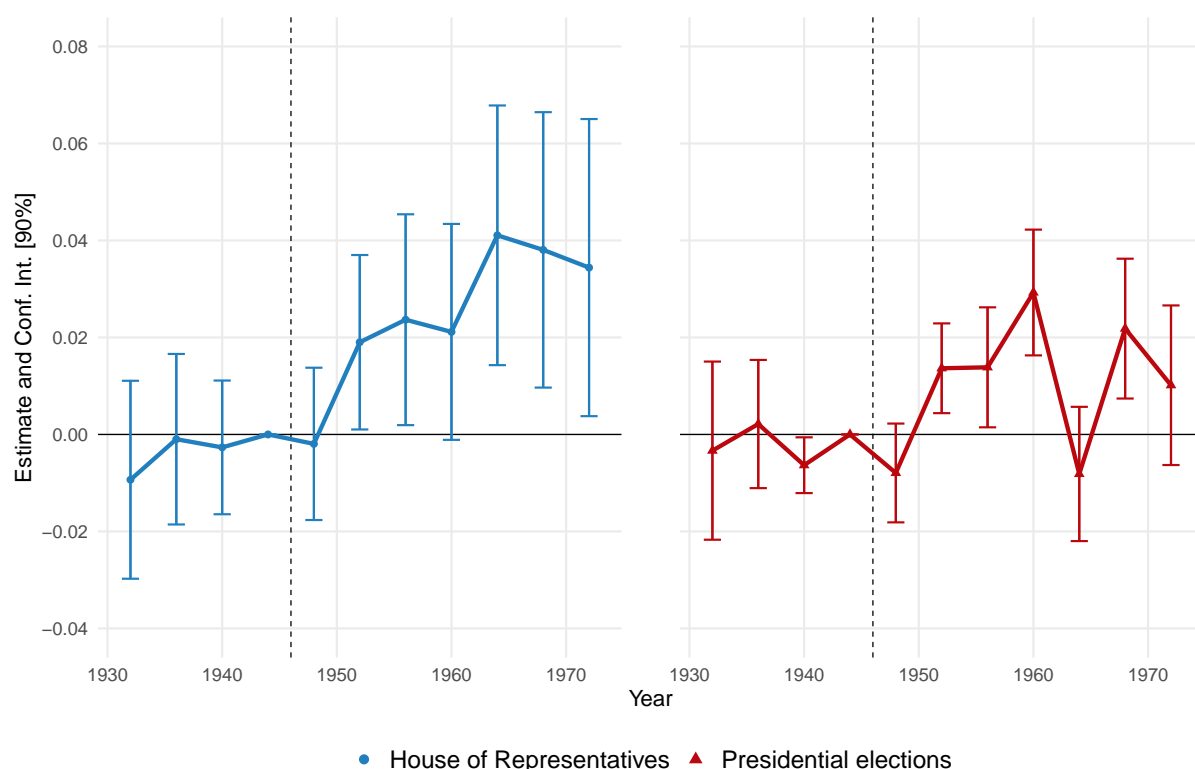
Table D12: The effect of *Operation Intolerance* on electoral returns

	Democratic vote share				Pro-segregation voting	
Elections:	House of Representatives		Presidential		Thurmond vs Wallace	
Counties selected:	All	Positive returns	All	Positive returns	All	South
	(1)	(2)	(3)	(4)	(5)	(6)
A. Event study						
Post 1946 × Exposure	0.027***	0.027***	0.013**	0.013**		
	(0.010)	(0.010)	(0.006)	(0.006)		
R^2	0.8747	0.8513	0.9198	0.9192		
Observations	24,125	28,495	33,836	33,940		
B. Event study – by salience of civil rights						
Period 1946–55 × Exposure	0.012	0.011	0.005	0.005		
	(0.009)	(0.010)	(0.005)	(0.005)		
Post 1955 × Exposure	0.021**	0.024**	0.010*	0.010*	-0.051***	-0.062***
	(0.009)	(0.012)	(0.006)	(0.006)	(0.019)	(0.020)
R^2	0.8749	0.8514	0.9199	0.9193	0.9575	0.9284
Observations	24,125	28,495	33,836	33,940	4,221	2,018

Note. Estimates based on equation (3) and pooling all post-1946 observations. Standard errors clustered at the county level are presented in parentheses (* $p < 0.1$, ** $p<0.05$, *** $p < 0.01$). Observations are weighted by the voting age population, provided by Clubb et al. (1987). *Post 1946* is an indicator variable equal to 1 if the period of observation is posterior to the year 1946, *Period 1946–55* is an indicator variable equal to 1 if the period of observation is between the years 1946 and 1955, and *Post 1955* is an indicator variable equal to 1 if the period of observation is posterior to the year 1945. *Exposure* is the share of the population in the county that was covered by the radio signal of *Operation Intolerance* in 1946. Dependent variables are reported in the column's header and defined as follows: (1)–(4) *Democratic vote share* is the county-level vote share obtained by the Democratic Party over the total votes of the Democratic Party and the Republican Party; (5)–(6) *Pro-segregation voting* is the county-level vote share obtained by Thurmond in the 1948 Presidential elections, and by Wallace in the 1968 Presidential elections. *Positive returns* indicates that the sample is restricted to counties where both the Democratic Party and the Republican Party have positive vote shares. *South* restricts the sample to counties in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas. Additional details about the variables are presented in Appendix C.1.

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[6]The division between Democratic Party and Republican Party became evident in the 1960s when the Democratic Party adopted major civil rights reforms. The tendency of the Democratic Party to sustain civil rights became evident during the 1948 Presidential elections, when, in response to the increasing support of the Democratic Party for civil rights, the States' Rights Democratic Party (or *Dixiecrats*) was formed in the South (Sitkoff, 1971; Morris, 1984; Dierenfield, 2013).

Figure D30: The effect of *Operation Intolerance* on the Democratic vote share

● House of Representatives ▲ Presidential elections

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