

# Media Narratives and the Rise of Civil Rights\*

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## Abstract

We examine the power of media narratives to counter racial prejudice by analyzing the emergence of socially inclusive motifs in post-WWII U.S. media. We exploit an unprecedented natural experiment: in 1946, amid widespread and entrenched racial divisions, the popular children's radio series *The Adventures of Superman* abruptly began promoting equality by reframing plots around progressive themes. This shift generated exogenous variation in exposure to progressive narratives across cohorts and locations. We find that exposure to these narratives significantly contributed to the advancement of civil rights in subsequent decades, increasing support for civil rights, pushing political preferences towards progressive positions, and reducing voting in favor of segregation. However, the effects on racial assimilation remain limited. (*JEL D7, D83, I24, J15, L82, N32*)

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# 1 Introduction

Narratives in mass media play a powerful role in shaping public perceptions of minority groups. The representation of these groups in movies, television series, or radio dramas often relies on entrenched cultural beliefs and stereotypes, thereby reinforcing existing prejudices (Bordalo et al., 2016; Glover et al., 2017).<sup>1</sup> In some cases, narratives actively legitimize discrimination, scapegoating minorities for societal problems, or normalizing exclusionary practices (e.g., Wang, 2021; Ang, 2023; Esposito et al., 2023). This pattern is prevalent because it reflects deeper mechanisms in human psychology, making individuals more likely to accept representations that align with preexisting beliefs and to resist those that challenge dominant norms (e.g., Michalopoulos and Rauh, 2024).<sup>2</sup> As a result, progressive narratives that challenge predominant beliefs and promote new perspectives are much less frequent in media. Accordingly, while academic research has examined the impact of discriminatory narratives, there remains a striking lack of evidence on narratives that confront and counteract existing prejudices.

In this paper, we provide one of the first studies that examines the role of narratives in counteracting prejudice in the long run. 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 tolerated or openly engaged in race-based exclusion, and narratives that supported racism were commonplace in American cultural products (Williams, 2014; Fredrickson, 2015). In a society deeply divided along racial lines, WWII fostered a reexamination of these divides and their role in the nation's future (Goldman, 1956; Kellogg, 1979). This cultural change was reflected in the media, as narratives depicting a society built on equality and justice began to spread through cinema and radio at the end of the 1940s (Benshoff and Griffin, 2021).

We document how progressive narratives shaped racial tolerance and support for civil rights in post-WWII American society. To this end, we exploit a groundbreaking experiment that began portraying these narratives in fictional stories for children and adolescents and broadcast them on mass media. In 1946, the popular radio program *The Adventures of Superman* embarked on *Operation Intolerance*, a deliberate and sudden change in the program's thematic content to promote progressive values, such as equality, and a positive non-stereotypical depiction of minorities. The fictional character Superman suddenly was no longer battling supernatural threats, but combating intolerance and racism in American

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<sup>1</sup>A narrative is a representation of an event or a series of events, real or fictional (Abbott, 2020). Narratives in movies, television series, and radio dramas are often fictional and primarily designed to entertain, evoke emotion, or explore human experience, while still leaving space for interpretation.

<sup>2</sup>The social psychology literature highlights the importance of cognitive biases such as categorization, which leads to stereotypes, and confirmation bias, reinforcing existing beliefs (see, e.g., Allport, 1954; Cramer, 2020).

society (Klein, 1946). Such messages, listened by millions of children and adolescents listening to the show every day, were unprecedented at that time. Qualitative evidence highlights the cultural impact that this broadcast had on the generation that experienced it (e.g., Wall, 2009), including obstructing the progress of the hate-based organization Ku Klux Klan (KKK; Levitt and Dubner, 2005; Bowers, 2012; Gavaler, 2017). More generally, the progressive racial narratives that emerged from WWII, such as those at the core of *Operation Intolerance*, were later organized and articulated within the policy platform of the Civil Rights Movement—the mass protest movement that culminated in vital civil rights victories in the 1960s (see Section 2 for historical background).

Guided by the *impressionable years* hypothesis (see, e.g., Krosnick and Alwin, 1989), which highlights the importance of forming persistent values early on in life, we investigate how exposure to *Operation Intolerance* during childhood and adolescence influence individual-level racial attitudes and support for civil rights later in life.<sup>3</sup> We started by collecting and digitizing comprehensive data on all radio stations active in 1946 in the U.S., including those that broadcast *The Adventures of Superman*. Next, using a radio propagation model tailored to the broadcasting technology in use in the 1940s, Amplitude Modulation (AM), we created detailed maps of radio signal coverage.<sup>4</sup> By overlaying these maps, we compute cross-sectional variation in the share of a county’s population exposed to *Operation Intolerance*.

We show that cross-sectional variation in exposure to the show is plausibly random conditional on propagation controls—that is, local geographic and environmental features that influence how radio waves travel through space—consistent with the literature studying the effects of radio and television (e.g., Olken, 2009; Yanagizawa-Drott, 2014; Adena et al., 2015). However, unlike prior work that exploits this exogenous variation to identify the overall effects of broadcasts, our goal is to isolate the effect of a narrative change from broader media effects. To this end, we use rich survey data spanning a pivotal period for civil rights in the U.S. (1964–1980) and implement a multi-year cohort-based difference-in-differences (DiD) design. This approach compares, at multiple points in time, the outcomes of individuals differentially exposed in 1946 to the signal of *Operation Intolerance*, leveraging the fact that the show specifically targeted children and adolescents (i.e., the *target cohorts*). As a result, while all cohorts alive at the time may have lived within range of the broadcasts, only the target cohorts would have been meaningfully exposed to its content. In contrast, older cohorts and those too young at the time would likely not have been exposed or cognitively able to process the progressive narratives of the

<sup>3</sup>Evidence highlights that adult levels of social tolerance are primarily shaped by pre-adult attitudinal environments (Miller and Sears, 1986). See Dhar et al. (2022) for complementary evidence on gender attitudes.

<sup>4</sup>AM was the dominant broadcasting technology in the U.S. from the 1920s until the 1970s. In 1960, 92% of all radio sets were AM only, and it was only in 1979 that FM (Frequency Modulation) overtook AM in total listenership (Kleinfeld, 1979).

show. Further, individuals slightly older may have listened to the show prior to 1946, but would have encountered a different narrative. The main identifying assumption behind these comparisons is the parallel trends assumption between exposed and unexposed groups, conditional on locality-, cohort-, and survey-year-specific effects. The results, together with a range of robustness checks, support the validity of this assumption.

We uncover significant positive effects of *Operation Intolerance* on racial tolerance among individuals who were 7–18 years old in 1946 and lived in areas with greater exposure to the broadcast. For this cohort, a one-standard-deviation increase in exposure to the show leads to a 0.06 standard deviation increase in support for civil rights, which is comparable to an 11-year generational gap in progressive racial attitudes when compared to peers born at the same time but not exposed to the show. We find no significant differences among other cohorts. These results are primarily driven by increased support for racial desegregation and affirmative action, along with more favorable attitudes toward African Americans.

We provide evidence that the estimated effects are not driven by urban-specific cultural trends, the location of radio stations and antenna placement, or changes in the content of other youth or commercial radio programming. Placebo tests using exposure to non-progressive broadcasts confirm the effect originates from *Operation Intolerance*. Furthermore, by examining a sample of internal migrants, we find that the results hold only for individuals who lived in exposed areas during childhood, supporting a mechanism based on direct exposure to the show.

These attitudinal shifts in the 1960s and 1970s extended beyond views on race, translating into broader political alignment with progressive positions, particularly those of the Civil Rights Movement. Consistent with this, we show that target cohorts exposed to the show became more supportive of civil rights leaders and less supportive of their political opponents, such as segregationist politicians and the Republican Party. We also document a stronger alignment with three core values of the Movement: support for protest as a means of political expression, distrust of police authority, and opposition to the Vietnam War. Among target cohorts, a one-standard-deviation increase in exposure to the show increases support for protests by 0.07 standard deviations and reduces favorable views of police and the military by 0.07 standard deviations. Using administrative data on casualties during the Vietnam War, we corroborate these findings, showing a 0.1 percentage point decline in military participation in more exposed areas.

While changes in attitudes are a crucial outcome, they may not always translate into meaningful social integration, especially when slow-changing legal and institutional constraints limit this outcome. We find that the broadcasts significantly improved racial assimilation, but only at lower levels. We observe an

increased likelihood of reporting interracial friendships by 0.03 standard deviations among target cohorts exposed to the broadcast. However, when looking at interracial marriages using census data, we find no effect. This pattern is not unexpected, as marriage represents a deeper form of assimilation, typically requiring a more sustained social change to vary meaningfully (Fryer Jr, 2007; Fouka, 2020).

These results highlight that in a crucial period for civil rights in the U.S., *Operation Intolerance* influenced support for civil rights, shifting political views towards progressive positions. We complement these findings by investigating whether the cohort-level effects we identify also manifest in broader, society-wide outcomes. Using historical records at the local level spanning from 1930 to 2020, we examine voting behavior and civic mobilization related to racial segregation. We estimate these effects using an event study DiD approach, comparing counties with varying degrees of exposure to the broadcast signal in 1946, again confirming that pre-trends prior to 1946 were parallel.

To identify the impact on electoral outcomes, we compare support for two openly segregationist presidential candidates: Strom Thurmond in 1948 (before members of the target cohorts reached voting age) and George Wallace in 1968 (by which point all target cohorts were eligible to vote). We find that in counties where broadcast exposure in 1946 was one standard deviation higher, the vote share of segregationist candidates was reduced by 2.4 percentage points in 1968, while overall turnout remained unaffected. This result is consistent with an effect driven solely by target cohorts, with an estimated persuasion rate (i.e., the share of listeners who changed their vote due to exposure to the program) of 13 to 20%. In line with this political shift, counties with higher broadcast exposure experienced a decline in the presence of active KKK chapters and an increase in the presence of the pro-civil rights National Association for the Advancement of Colored People (NAACP) after 1946. These shifts were accompanied by a marked increase in the salience of civil rights issues in local newspapers 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 pernicious effects across a variety of domains, 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 intergroup 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), none of which are easily scalable.<sup>5</sup> Our study presents a real-world example of how a deliberate at-scale intervention targeting children can have persistent impacts on racial tolerance.

Second, we contribute to the literature highlighting the deep cultural roots of intolerance (see, e.g., Voigtländer and Voth, 2012; Bazzi et al., 2023b). In the context of civil rights institutions, recent studies illustrate the role of politically active groups and African American WWI veterans in shaping civil rights activism (Dippel and Heblich, 2021; Ang and Chinoy, 2024), as well as the importance of internal migration (Calderon et al., 2023; Bazzi et al., 2023a). Our findings introduce a novel mechanism: the portrayal of racial tolerance in mass media can stimulate progressive attitudes in the long run and shape support for civil rights. By linking these effects to the Civil Rights Movement, we provide a new dimension to our understanding of social movements (see, e.g., Madestam et al., 2013; Cantoni et al., 2024).

Finally, we offer new insights on the impacts of media on social and political outcomes (DellaVigna and Gentzkow, 2010; DellaVigna and La Ferrara, 2015; Strömberg, 2015; Campante et al., 2022). The existing literature emphasizes 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 provide evidence that mass media can also be a force for promoting more inclusive norms. To our knowledge, our study is among the first to explore the long-term positive effects of mass media on racial equality and integration.

Unlike most prior work, which estimates the effects of entire media products, our design allows us to pinpoint the impact of a specific narrative change. This advances the scarce literature on the power of storytelling in media. We focus on fiction proper, defined as narratives entirely imagined by the author, and examine a case specifically targeted at children and adolescents, a demographic often overlooked in empirical media research. In contrast, most existing studies estimate the overall impact of media products that fictionalize historical events (Ang, 2023; Esposito et al., 2023), or assess fiction targeted at adults, such as *edutainment* programs.<sup>6</sup> Relatedly, another form of fiction narrative, folktales passed down over generations, has also been shown to influence contemporary values (Michalopoulos and Xue, 2021).

Fictional storytelling differs from other narrative forms in both intent and structure. Propaganda, for example, is a persuasive narrative designed to advance the goals of the propagandist. Although propaganda can incite hatred and violence (Yanagizawa-Drott, 2014; Adena et al., 2015), in certain contexts it can

<sup>5</sup>Large scale interventions fostering intergroup contact are scarce. Bazzi et al. (2019) is a rare exception.

<sup>6</sup>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).

also foster intergroup trust (Blouin and Mukand, 2019). News narratives, in contrast, typically aspire to inform rather than persuade, although their content and effects are often mediated by partisanship and framing choices (DellaVigna and Kaplan, 2007; Martin and Yurukoglu, 2017; Djourelova, 2023; Couttenier et al., 2024). By focusing on storytelling, our study underscores the underexplored potential of fiction as a vehicle for cultural change.

## 2 Historical background

### 2.1 The rise of progressive narratives in the 1940s and the struggle for civil rights

In the early twentieth century, portrayals of racial prejudice were common and widely accepted in American media. Prominent examples include the racist interpretation of the U.S. Civil War promoted in the 1915 film *The Birth of a Nation* (Ang, 2023; Esposito et al., 2023), and the harmful stereotypes of African Americans depicted in the 1939 film *Gone with the Wind* (Benshoff and Griffin, 2021). These portrayals mirrored the slow progress in overcoming racism despite significant socio-economic transformations, particularly the Great Migration (Bonomi et al., 2021; Bazzi et al., 2023a; Calderon et al., 2023). Institutionalized racism notably persisted through Jim Crow laws in the Southern states, enforcing segregation and severely restricting African American voting rights. In the North, although explicit legal segregation was less common, racial prejudice remained embedded in daily life.<sup>7</sup>

WWII constituted a significant disruption to these discriminatory narratives across many social domains. The unifying experience of the war and the revelation of Nazi atrocities brought heightened awareness of the racial injustices within American society, fueling national introspection. As a result, by the end of the war, explicit support for white supremacy began to lose public acceptability, particularly in the North (Goldman, 1956), and a powerful counter-narrative grounded in the “American Creed,” emphasizing the ideals of civil liberties and equality of opportunity, quickly spread through popular culture (Kellogg, 1979). On radio and in cinema, this transformation was reflected in the emergence at the end of the 1940s of new productions portraying the stark contrast between these ideals and the reality of racial discrimination in American society.<sup>8</sup>

<sup>7</sup> Schuman (1997) report that in 1942, 84% of white Americans preferred segregation in neighborhoods and 48% doubted that African Americans were as intelligent as white Americans.

<sup>8</sup> Myrdal (1944) termed this contrast the “American Dilemma.” Notable representations are the radio series *Destination Freedom*, broadcast on WMAQ in Chicago in 1948–1950 and dedicated to dramatizing the lives and achievements of African Americans (Savage, 1999); 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). In cinema, these new films addressing racism against African Americans from a white perspective were later labeled *post-war social problem* films (Benshoff and Griffin,

The emergence of these progressive narratives did not occur in a political vacuum. The post-war period saw a growing divide between those who embraced the ideals of liberty and equality and those who sought to preserve racial divisions. While there was little partisan polarization on civil rights before WWII, the issue gradually moved to the center of national political discourse in the post-war era. The Democratic Party's increasing support for civil rights became evident during the 1948 presidential election, when President Harry S. Truman—supportive of civil rights—won re-election despite a revolt by Southern Democrats. In response, the States' Rights Democratic Party (commonly known as the *Dixiecrats*), led by Strom Thurmond, broke away to oppose the national party's agenda. A clear partisan divide on civil rights did not solidify until the 1960s, when the Democratic Party passed major civil rights reforms, such as the Civil Rights Act of 1964 and the Voting Rights Act of 1965, and the Republican Party began attracting white, conservative, Southern, and rural voters, partly in response to backlash against that legislation ([Sitkoff, 1971](#); [Schickler, 2016](#)).

It was in this polarized context that the Civil Rights Movement gathered momentum, building on the cultural and institutional shifts of the post-war years ([Hall, 2005](#)). Although rooted in the earlier social changes of the twentieth century, mass activism in favor of racial equality intensified only in the mid-1950s and reached a peak with the legislative victories of the 1960s. Beyond advocating racial equality, the movement also tackled broader issues of justice closely intertwined with racial dynamics. A critical pillar was the fight against police brutality. In many Southern states, law enforcement agencies were directly involved in upholding segregation laws, and police brutality against peaceful protesters, such as during the Selma to Montgomery marches in 1965, further shaped public perceptions of the police as opponents of civil rights ([Wasow, 2020](#)). While the military played a more complex role, sometimes enforcing desegregation (as in the Little Rock Nine crisis of 1957) and other times suppressing civil unrest, opposition to the Vietnam War (1955–1975) also emerged as a significant dimension of the movement ([Lucks, 2014](#)). The U.S. government's deep involvement in the War faced mass public dissent questioning the moral and political grounds of its continued engagement from as early as 1963. The military often intervened to suppress anti-war protests, furthering anti-military sentiment in the Civil Rights Movement.

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

An early example of the progressive narratives that emerged after WWII was the radical narrative shift undertaken by MBS (Mutual Broadcasting System) in the radio drama *The Adventures of Superman* [\(2021\)](#).

during 1946. In this section, we describe the setting and characteristics of this initiative.

The 1940s marked the peak of the “Golden Age” of radio in terms of both its reach and societal impact (Craig, 2004). The proportion of households with radio receivers increased from 68% to 96% during the decade, and radio remained the dominant mass medium throughout this period. The significant cultural influence of radio was primarily determined by two actors: radio stations, spread throughout the country and operating like independent businesses, and four major national networks—NBC (National Broadcasting Company), CBS (Columbia Broadcasting System), ABC (American Broadcasting Company), and MBS. National networks focused on the production and distribution of programs such as dramas, news, and variety shows, while radio stations broadcast content locally.

Each station could decide to remain independent, focusing on self-produced content, or sign contracts with one or more networks. These contracts allowed stations to broadcast their productions during uniform time slots selected by the network, primarily during peak hours. These contracts, lasting 1 to 5 years, also established the network’s remuneration base. This system created intense competition to sign affiliates, resulting in rapid turnover between stations, moving from one network to another over short periods of time.<sup>9</sup> Appendix A.1 provides an overview of radio listenership in the period 1945–1947.

Among national networks, MBS became popular for specializing in recorded transcription series (Ackerman, 1945). One of its most successful productions was *The Adventures of Superman*, a radio drama featuring the DC Comics character Superman. The series began airing in 1940 on 10 regional radio stations and, after receiving significant initial success, was acquired by MBS on August 31<sup>st</sup>, 1942, for national distribution to its affiliates (De Haven, 2010). The series aired 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. This time slot was selected to directly target children and adolescents, as the 5–6 p.m. slot was the one with the highest number of listeners in this group.<sup>10</sup> Through the 1940s, the show was consistently among the most popular youth radio programs, regularly drawing millions of young listeners (Hooper Inc., 1949).<sup>11</sup>

The content of the show was specifically designed for the radio series, with its own writers producing the

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<sup>9</sup>The intense competition between networks to sign up affiliates was driven by the profitability of radio advertising. Competition was guaranteed by the Federal Communications Commission (FCC), which limited the number of stations affiliated to a single network.

<sup>10</sup>See Appendix A.1 for further details. In the 5–6 p.m. time slot, MBS productions were fully dedicated to children and adolescents. It is likely that adults listening to the radio during that time slot, either in other households or in households with multiple radios, were listening to different networks.

<sup>11</sup>The show moved to the competing ABC network in October 1949, now targeting an adult audience (Winona Republican-Herald, 1949), and was eventually discontinued in 1951 after airing 2,088 original episodes.

scripts rather than adapting the comics. Individual story arcs ranged from 15 minutes to over three hours of broadcast time, spread over several episodes. During the first years of the series (1940–1946), the narrative was built around Superman as a moral and courageous defender of Earth, blending war-time patriotism with the ideal of righteous triumph over evil (Finney, 2011; Freeman, 2015). In line with this theme, Superman battles mad scientists, atomic weapons, and supernatural threats (Daniels, 1998).

In 1946, the narrative of the series suddenly changed, in what remains a unique experiment in the history of radio broadcasting. In October 1945, amid the resurgence of racial tensions following the end of WWII, the producers of *The Adventures of Superman*, began developing scripts that would position Superman as a figure combating intolerance in ways accessible to children. They did so with guidance from the Anti-Defamation League, a prominent human rights advocacy organization at the time (Bowers, 2012). The objective was to advocate among young listeners for a united American society that embraces individuals irrespective of their religion or origin, while guaranteeing the commercial interests of the serial's sponsor.<sup>12</sup> In just a few months, the new episodes were ready to go on air, and on April 15<sup>th</sup>, 1946, radio stations affiliated with MBS in that year 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).<sup>13</sup> Section 3.1 provides descriptive statistics on the radio stations that broadcast the program in 1946, and the area covered by the signal.

Explicitly designed to shape the social values of children and adolescents, two key elements characterized the narrative structure of *Operation Intolerance*. First, it depicted an ideal society in which the forces of good, represented by advocates of communal harmony, justice, and equality, fought against the forces of evil, symbolized by hate groups and those perpetuating racial discrimination. By presenting lead characters as role models to emulate or avoid, this element is consistent with theories of social learning through role models (see, e.g., Bandura and Walters, 1977). The new episodes depicted Second, the series portrayed minority characters as sympathetic, upstanding, and hardworking individuals. This direct contrast to prevailing stereotypes aligns with the parasocial contact hypothesis, which posits that media exposure to out-group members can help reduce prejudice (see, e.g., Schiappa et al., 2005).

The first sequence of episodes, *The Hate Mongers' Organization*, centered on 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

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<sup>12</sup>Kellogg Company was the exclusive sponsor of the series throughout the MBS period (De Haven, 2010).

<sup>13</sup>The term *Operation Intolerance* does not appear in internal documents of the program. We adopt this term from the media of that time (Appendix C).

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 was involved in efforts to expose the activities of the KKK in the mid-1940s, to produce a story arc that pointedly confronted the KKK and its ideology (Levitt and Dubner, 2005). Over two weeks in June 1946, affiliated radios broadcast *The Clan of the Fiery Cross*, in which Superman fought “the Klan,” 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 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. 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 C.1 provides detailed summaries of the main plots of *Operation Intolerance*.

The unexpected shift in the program’s narrative was an unprecedented and progressive departure from the dominant media narratives of the time. It was so unusual that both the producers and the sponsor considered it an experiment (Appendix Figure C2). Appendix E.5 provides evidence against the announcement of *Operation Intolerance* in the months prior to the launch. In addition, in Appendix A.2, we analyze the content produced by MBS in 1946 and show that most programming was conservative. Apart from *The Adventures of Superman*, no other production promoted progressive views.

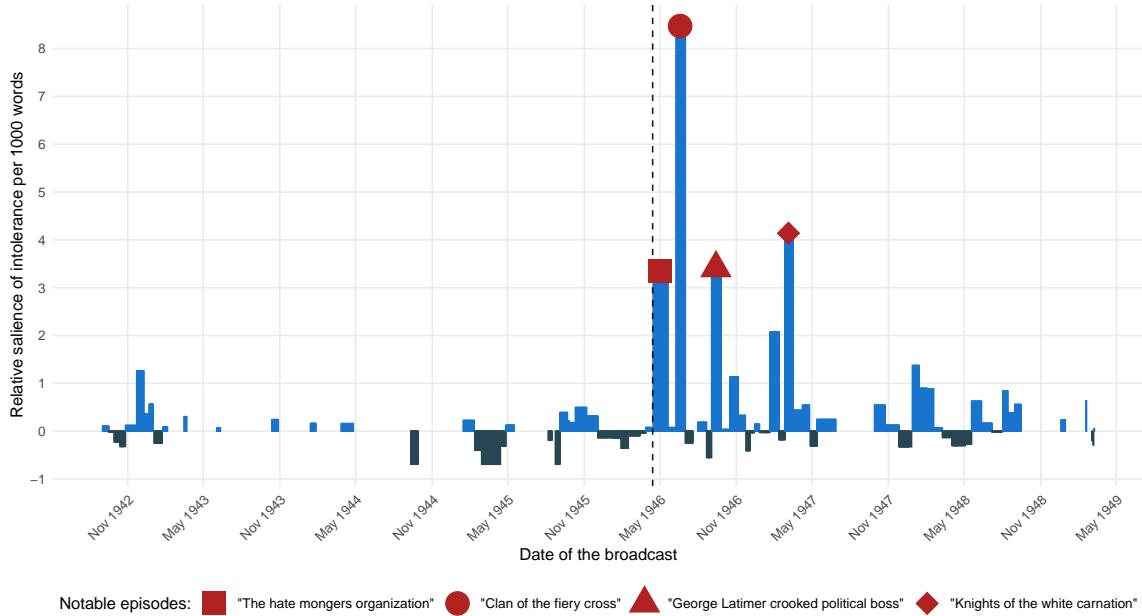
The content analysis of the story scripts, summarized in Figure 1, reveals the magnitude of the narrative change. The proportion of words related to intolerance increased by 3.2 times in the 12 months after the start of *Operation Intolerance*, compared to the pre-intervention period.<sup>14</sup> For the four most notable episodes, highlighted in red, this increase jumps to 7.7 times. While keyword salience alone may underestimate the actual extent of content devoted to intolerance, these figures highlight the clear narrative shift in the series. Moreover, in Section 5.1, we show that such a change was not accompanied by a broader contemporaneous paradigm shift in youth radio programming.

*Operation Intolerance* was a huge success, reaching 4.5 million listeners from its target demographic and making the show the highest-rated youth program on the air (Whiteside, 1947). The popularity of the show in 1946 is underscored by the fact that our estimates indicate that at least 41% of the audience

<sup>14</sup>The analysis is based on a bag-of-words approach using a list of 50 keywords to quantify the share of content that addresses intolerance and tolerance toward racial, ethnic, and religious differences applied to the transcripts of 1,019 episodes broadcast on MBS between 1942 and 1949. See Appendix C.2.

targeted by the show (roughly 45% of all school-age children in the U.S.) tuned in to listen (Appendix B.3). Although the intensity of tolerance-focused content in the show 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, combined with the size and loyalty of the audience, makes the overall scale of the intervention a rare occurrence compared to other interventions targeting prejudice (Bertrand and Duflo, 2017). Appendix C.3 provides historical evidence on the show's positive reception. Notably, in an official statement, former Vice President Henry A. Wallace endorsed the plan to use Superman as a tool to teach children that democracy encompasses tolerance and equal opportunity for people of all races, creeds, and colors.

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 C.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 C.1 provides detailed summaries of the plots of story arcs with the highest shares.

### 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 main data sources used in the paper, while complementary data sources are described in Section 5.

### 3.1 Exposure to *Operation Intolerance*

To determine individual exposure to *Operation Intolerance*, we compute the geographical coverage of the radio signal of the broadcasts by integrating three key sources: archival data on the stations that aired *The Adventures of Superman* in 1946, published radio schedules from historical newspapers, and a context-specific radio propagation model (i.e., a model that calculates the ability to receive a radio signal at a specific point relative to the transmitter). Accurate propagation models for our setting only became feasible in 1958 (Bremmer, 1958), more than a decade after the program's launch. Prior to that, broadcasters operated with limited knowledge of the actual reach of the signal when deploying transmission infrastructure.

As described in Section 2.2, *The Adventures of Superman* and the episodes in *Operation Intolerance* were produced by MBS, but broadcast only by the subset of radio stations that were affiliated with MBS in 1946 and aired the program. We identify this set of stations in three steps.

First, we digitized data from the *Radio Annual 1946* yearbook (Radio Daily, 1946) to create a comprehensive database of all U.S. radio stations operating in 1946. The Radio Annual served as a detailed reference guide to the U.S. broadcasting industry, listing stations by county, and providing information on ownership and technical specifications such as frequency, power, and transmitter location. The resulting dataset includes 998 radio stations, each with a unique antenna and frequency.<sup>15</sup>

Second, we complement this dataset with information on broadcasting content and network affiliations from the 1947 *Yearbook Number of Broadcasting* magazine (Broadcasting, 1947), and the 1945 *Standard Rate and Data Service* (SRDS) media buying publication (The National Authority, 1945). These sources enable us to identify 217 stations that, at the beginning of 1946, were involved in the advertising deal between MBS and Kellogg for the sponsorship of *The Adventures of Superman* and therefore likely broadcast the show during 1946 and the subsequent years.

Third, because affiliation or programming may have changed between the publication of the advertising records and the launch of *Operation Intolerance*, we cross-verified this information using radio schedules published in local newspapers, which listed whether a specific radio station broadcast the show. Using historical newspaper archives from [Newspapers.com](#), we identify 20 additional stations that broadcast *Operation Intolerance*, and rule out 16 stations from our original list. The final set of stations

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<sup>15</sup>An antenna is a physical device that transmits and receives radio signals. When connected to a transmitter, it broadcasts radio programs over the airwaves to be picked up by receivers. The frequency is the number of oscillations of a radio wave per second, measured in hertz (Hz), and was assigned by the FCC. It defines the channel on which a station transmits, allowing listeners to tune into specific broadcasts.

is therefore composed of 221 stations. Appendix Section B provides further details on our methodology and the geographical distribution of the radio transmitters that broadcast the show.

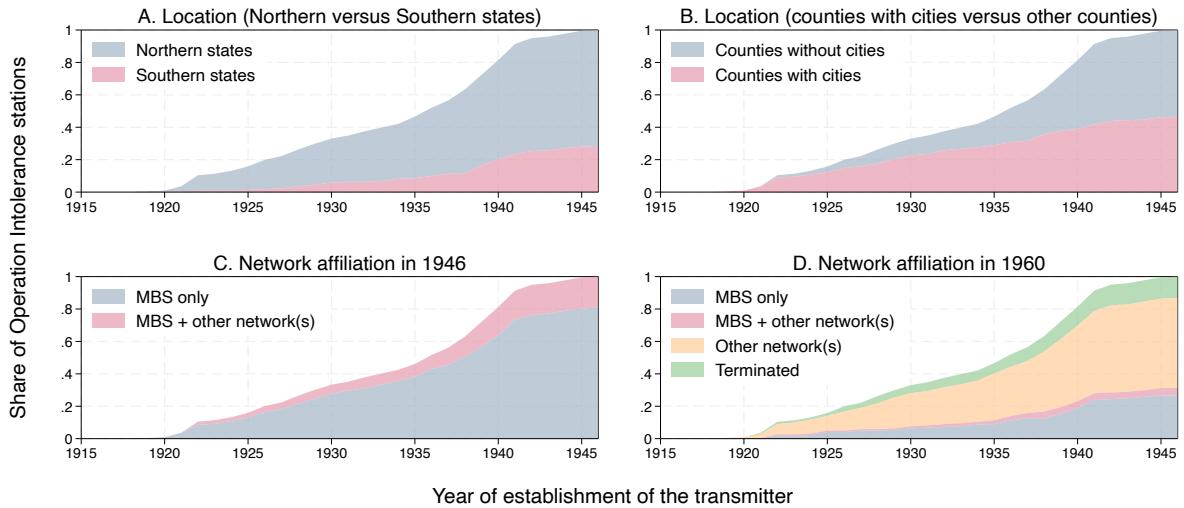
Figure 2 provides descriptive statistics on these radio stations, broken down by the year of establishment of each station (shown on the horizontal axes). First, we observe that the date of establishment is heterogeneous across stations, reflecting the evolving nature of the network, with older stations established in the 1920s and more recent stations established in the late 1930s and early 1940s. Concerning location, 71% of antennas were located in Northern states and 29% in Southern states (Panel A), while roughly 47% of antennas were located in a county with a city defined according to the 1940 U.S. Census (Panel B). These figures do not indicate any strong geographic targeting by the MBS network. Concerning affiliation with national networks (Panel C), 81% of the stations that aired *Operation Intolerance* were exclusively affiliated with MBS in 1946, while the remaining stations were affiliated with MBS and at least another national network, thus broadcasting mixed content. Panel D provides a similar analysis, but using the affiliation status of those same stations in 1960.<sup>16</sup> In line with the fluid nature of the radio market and the intense competition between national networks during this period, the affiliation of the stations that broadcast *Operation Intolerance* was very different in 1960 compared to 1946, highlighting the specificity of radio coverage in each year. Only 27% of the stations were still affiliated solely with MBS, 5% were affiliated with MBS and at least another network, 56% had left MBS and moved to another network, and 13% had terminated or transferred their activity to another location.

Having identified the set of stations that broadcast *Operation Intolerance*, we geo-locate the transmitters and use their technical specifications to compute the geographical coverage of radio signals. To ensure accurate coverage calculations, it is important to note that in the 1940s, the vast majority of radio broadcasting in the U.S. was based on AM transmissions, a technology used by 99.6% of radio stations in 1940 and 74% in 1950 ([US Bureau of the Census, 1975](#)). Signal propagation at lower frequencies, typically used for AM transmissions, is characterized by two components: a ground wave and a sky wave. The propagation of ground waves depends not only on topography but also on soil conductivity, which refers to the ability of the Earth's surface to conduct radio waves. This in turn affects how far and clearly AM signals propagate, and is influenced by factors such as moisture, soil composition, and mineral content. The propagation of sky waves primarily depends on ionospheric refraction (i.e., the bending of radio waves by the ionosphere layer of the Earth's atmosphere), and is influenced by the degree of solar radiation (which changes day to day). As a consequence, unlike FM transmissions, the propagation of AM

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<sup>16</sup>Similar to affiliation in 1946, we gathered this information by digitizing the 1960 *Yearbook Number of Broadcasting* magazine ([Broadcasting, 1960](#)).

Figure 2: Descriptive statistics of radio stations that broadcast *Operation Intolerance*



*Note.* The figures show descriptive statistics of the radio stations that broadcast *Operation Intolerance*, categorized by the year of establishment of the transmitter (on the horizontal axes), by transmitter location (Panels A and B), and by affiliation with national networks (Panels C and D). *Southern states* include Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas. *Other network(s)* includes only national networks (ABC, NBC, and CBS). Details about data sources are provided in Section 3.1.

signals is much less affected by physical obstacles, allowing radio waves to travel beyond the horizon (Reed and Sander, 1987). Thus, radio coverage models that focus solely on topographic corrections (e.g., the Longley-Rice Irregular Terrain Model) are less accurate predictors of AM radio coverage (Crabtree and Kern, 2018; Gagliarducci et al., 2020).

We estimate the precise radio coverage of each station that aired *Operation Intolerance* in 1946 using the propagation model designed for AM broadcasting built upon the methodological recommendations of the United Nations' International Telecommunication Union (ITU, 1995, 2007), incorporating a comprehensive set of input parameters. For each radio station, we obtain the signal strength at any given geographic point, defined as the measurable quality of the received signal that determines the ability to hear and understand a broadcast.<sup>17</sup> The output consists of raster datasets representing the signal strength of each radio station, covering continental U.S. territory at a 400-meter resolution. The individual rasters are then overlaid, using the strongest signal in each location, to generate a composite signal strength map of *Operation Intolerance*, shown in Panel A of Figure 3.

Because the county is the most disaggregated geographical level at which we observe most outcome

<sup>17</sup>Signal strength predictions were generated by ATDI, a global leader in radio engineering, using proprietary software and modeling the propagation of ground and sky waves according to ITU Recommendations *ITU-R P.368-9* and *ITU-R P.1147*, respectively. Input parameters include the technical characteristics of the transmitter (e.g., frequency, output power, antenna design), environmental factors such as terrain and soil conductivity, and temporal variables such as sunspot numbers at the time of broadcast. Signal strength predictions are calculated as the maximum value across the ground- and sky-wave propagation models at each location.

variables, we compute *exposure* to *Operation Intolerance* as the share of the population in each county that was covered by the signal of the program in 1946. We construct this variable by first converting the continuous signal strength values into binary indicators equal to 1 if the signal strength is greater than or equal to  $66 \text{ dB}\mu\text{V}/\text{m}$ , a value commonly considered the minimum required for successful AM reception (ETSI, 2021). This transformation allows obtaining a coverage map of the broadcast at the same resolution of signal strength. We then overlay this map with the geographical distribution of population in 1940, obtained from the History Database of the Global Environment (HYDE; Klein Goldewijk et al., 2017). The geographical distribution of the share of the population covered by the broadcast in 1946 is presented in Panel B of Figure 3. To simplify the interpretation of the effects discussed in Section 5, we standardize this variable in all our estimations. The average share is equal to 0.13, with a standard deviation of 0.29. Appendix E.4 discusses alternative measures of exposure.

### 3.2 Attitudes and behavior in the target population

We gather data on attitudes 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, collecting information about public opinion on a variety of topics.

We use all survey waves collected between 1964 and 1980, corresponding to 18 to 34 years after the broadcast of *Operation Intolerance*. This period is marked by the high salience of civil rights in American politics. Although major events were concentrated in the early part of this timeframe (see Section 2), civil rights remained a prominent issue in the public sphere throughout.<sup>18</sup> Accordingly, the 1964–1980 survey waves are also those in which questions related to racial tolerance and civil rights are consistently included across multiple consecutive rounds (see Appendix D.1), whereas earlier and later periods do not offer the same wealth of information on these topics.

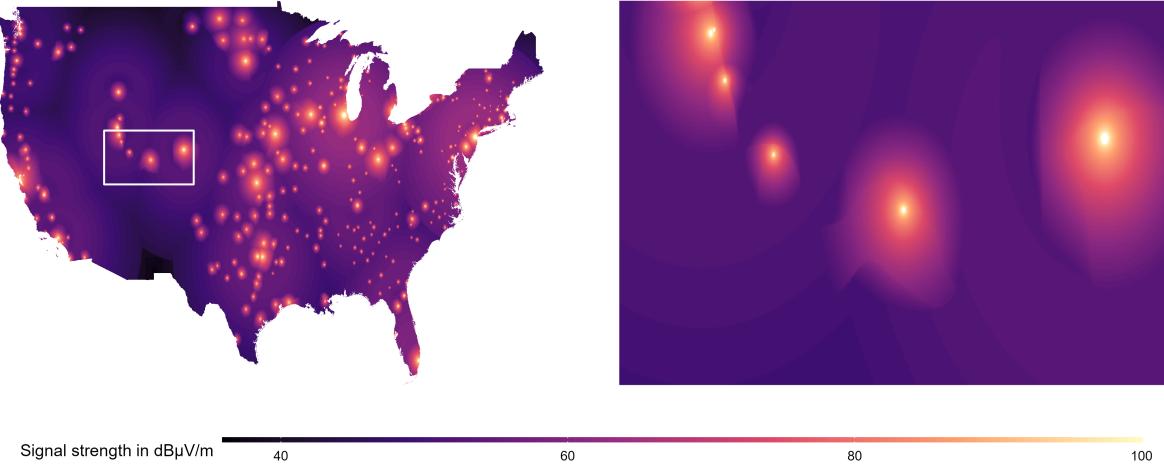
We merge survey responses with exposure to *Operation Intolerance* using the county of residence of each respondent. To accurately measure exposure during childhood, we restrict our analysis to individuals residing in the same state where they grew up, and assign the county of residence in the survey year as the county of exposure to the broadcast. Kearney and Levine (2019) provide empirical evidence supporting this approach to account for potential migration. Consistent with this, we do not observe evidence of selective migration in our sample as the main sample and the sample of internal migrants are

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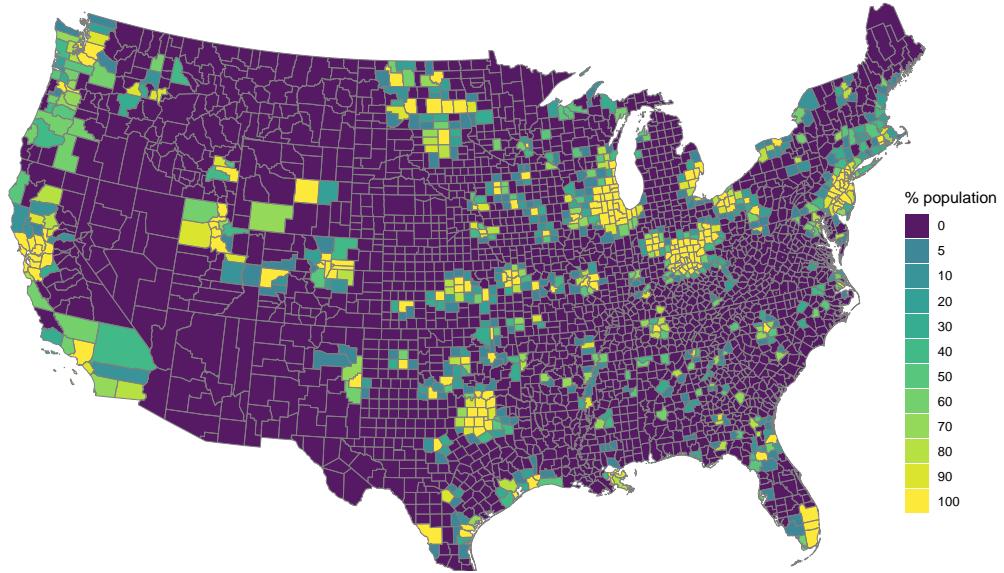
<sup>18</sup>For instance, it was only in 1978 that the Supreme Court decision in *Regents of the University of California v. Bakke* declared the use of racial quotas in higher education unconstitutional.

Figure 3: Exposure to *Operation Intolerance*

A. Signal strength



B. Share of population covered by the broadcast in 1946



*Note.* The left figure in Panel A displays the geographical distribution of the signal strength of the broadcast at a resolution of  $400m^2$ . Signal strength is reported in  $dB\mu V/m$ , with higher values indicating stronger signals. The right figure in Panel A zooms into a specific portion of the U.S., indicated by the rectangle. Details about the data sources, the geolocation of antennas and the computation of signal strength are provided in Section 3.1. Panel B 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. From the continuous map of signal strength (Panel A), we first convert continuous values into binary coverage indicators equal to 1 if signal strength is  $\geq 66 dB\mu V/m$ . For each grid cell, we then obtain population size in 1940 from the HYDE (Klein Goldewijk et al., 2017). Because the latter is available at a spatial resolution of 5 arc minutes (approx.  $85 km^2$  at the equator), we interpolate it to obtain a resolution of  $400m^2$ . The share of population covered by the radio signal in each county is then computed as the sum of the cell-level product of coverage and population size for all grid cells within a county's borders, divided by the total county population.

similar in terms of demographic and socioeconomic characteristics.<sup>19</sup> In Section 5.1, we provide further

<sup>19</sup>The two samples are comparable in terms of age (46.4 in the main sample versus 44.3 among internal migrants), gender (56.3% female in both), race (88.9% white versus 84.6%), education (63.1% with secondary or higher education versus 69.4%), and marriage status (67.3% married versus 68.5%).

evidence supporting this restriction.

We focus on three sets of attitudes that could have been affected by the progressive narratives portrayed in the show. Appendix D.1 provides the exact definition of each variable, the availability of data in the survey waves, and descriptive statistics by cohort and survey wave. For comparability across questions, all attitude questions in the tables estimating the effects of the show are standardized into  $z$ -scores.

First, because *Operation Intolerance* directly spreads a message of racial tolerance, we examine **racial attitudes and support for civil rights**. We identify eight questions in multiple survey rounds that capture this dimension (see Appendix E.3 for partial correlations). The first six questions capture attitudes in support of policies reinforcing civil rights, including racial desegregation, integrated schools, desegregation busing,<sup>20</sup> Black representation, affirmative action for the Black population, and speeding up civil rights legislation.

On average, respondents tend to support racial equality: they are supportive of desegregation (average score of 2.23, standard deviation 0.67, where 1 indicates strict segregation and 3 indicates desegregation), integrated schools (45% in favor, standard deviation 0.50), and affirmative action (average score of 3.47, standard deviation 2.17, where 1 indicates no action and 7 indicates that the government should help). However, respondents are more divided on whether African Americans are appropriately represented in society and politics (average score of 1.98, standard deviation 0.79, where 1 indicates too much and 3 too little), on support for desegregation busing (average score of 1.68, standard deviation 1.54, where 1 indicates opposition and 7 full support), and on support for civil rights legislation (average score of 1.55, standard deviation 0.64, where 1 indicates the legislation is moving too fast and 3 too slow).

The remaining two questions refer to more general feelings towards Black Americans and Southerners. At the time of the survey, the latter term was commonly associated with opposition to the civil rights movement, as the most vocal and organized resistance to racial equality was concentrated in the South (Bartley and Graham, 2019). Favorable feelings towards these groups are measured using the ANES *Feeling Thermometer*, a widely used method to collect attitudinal data using a scale ranging from 0 to 100, where 100 indicates very warm (favorable) feelings and 0 indicates very cold (unfavorable) feelings (see, e.g., Tyler and Iyengar, 2023). On average, respondents are favorable towards both groups, with average *Feeling Thermometer* scores of 62.8 (standard deviation 21.1) for the Black population and 63.2

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<sup>20</sup>Desegregation busing involved transporting students to schools outside their immediate neighborhoods to counteract the effects of *de facto* residential segregation (see, e.g., Billings et al., 2014). Busing faced strong opposition, especially from white communities, leading to protests and violent resistance. Civil rights organizations were instrumental in pushing for court-ordered busing in cases such as *Swann v. Charlotte-Mecklenburg Board of Education* (1971), which upheld busing as a legitimate tool to desegregate schools.

(standard deviation 28.5) for Southerners.

Second, because the narratives in *Operation Intolerance* promoted views that became associated with more progressive political positions in the 1960s and 1970s, we focus on **political preferences**. We begin by focusing on the political support for actors with relevance for civil rights using the ANES *Feeling Thermometer*. First, we measure favorable feelings toward civil rights leaders, which indicates progressive positions and support for the Civil Rights Movement. Second, we examine favorable feelings toward opponents of civil rights by focusing on George Wallace, an outspoken supporter of racial segregation who became the political face of the segregationist resistance. He served as governor of Alabama for multiple terms between 1963 and 1987 and ran as a presidential candidate in 1968 (see Section 6 for an analysis of these elections). Finally, we look at favorable feelings toward Republicans, who held the more conservative position about civil rights in the period from 1964 to 1980. The average *Feeling Thermometer* scores for these political actors are 44.7 (standard deviation 26.6), 44.4 (standard deviation 28.5) and 63.2 (standard deviation 20.1), respectively.

We supplement these attitudes with values that capture alignment with the Civil Rights Movement (see Section 2). As the rise of civil rights in the U.S. during the 1950s and 1960s was marked by widespread mass protests, the first question captures whether the respondent approves of participating in protests and demonstrations. On average, approval of protests and demonstrations is low, with a sample average of 1.60 (standard deviation 0.56), where 1 indicates approval and 3 disapproval. The second question concerns trust in the federal government, a key institution whose credibility was eroded among the supporters of the Movement. Respondents are divided in their trust in the federal government, with an average score of 2.52 (standard deviation 0.63), where 1 indicates the respondent never trusts and 4 always trusts. Finally, we focus on favorable feelings toward the police and the military. Conservatives viewed the police and military as defenders of law, order, and national security, while civil rights activists saw them as instruments of state repression. On average, respondents report favorable feelings towards both institutions, with an average *Feeling Thermometer* score of 76.3 (standard deviation 18.4) for the police and 71.1 (standard deviation 21.6) for the military.

Finally, we assess individuals' degree of **racial assimilation** by measuring whether respondents report having interracial friends or whether all their friends are of the same race. This self-reported measure captures both actual behavior and attitudes toward racial integration in society. On average, 41% of respondents report having interracial friendships.

### 3.3 Interracial marriage

We collect individual-level data on interracial marriages using the 5% sample of the 1980 U.S. Census, obtained from [Ruggles et al. \(2024\)](#). This dataset does not provide county identifiers for geographic areas with fewer than 100,000 residents. We therefore match observations with exposure to *Operation Intolerance* using the 1,148 Principal Statistical Units (PSUs), the most disaggregated geographic identifier available in the dataset. PSUs may combine entire counties or portions of adjacent counties..

We define a marriage as interracial if it involves one spouse of the white majority population and one spouse of another racial group. Because interracial marriages were extremely rare events during our study period (see Figure 5 in Section 5.3 for rates by age cohort), we restrict the analysis to PSUs with significant racial diversity, defined as those with at least a 5% non-white population in 1940. The rarity of such marriages partly reflects social norms and legal barriers. In many states, interracial marriage remained illegal until the Supreme Court's 1967 decision in *Loving v. Virginia*. As in previous analyses, we exclude individuals who resided in a different state from their state of birth to more accurately capture exposure to the broadcast during childhood. Our final sample contains 1,155,340 married individuals residing in 478 PSUs. The average share of interracial marriages is 1.02%.

### 3.4 Additional data sources

Additional data sources, described in Section 6, measure participation in the Vietnam War, electoral results, group mobilization, and the salience of civil rights in local newspapers.

## 4 Empirical approach

This paper estimates the causal effects of a sudden and unanticipated change in the narrative of the popular radio program *The Adventures of Superman* in 1946. This goal differs from the existing literature on media impacts because, rather than estimating the broader effects of exposure to mass media, we isolate the impact of a narrative shift within an existing program, allowing us to estimate the effects of content change *per se*.

We employ a multi-year cohort-based DiD design. This approach constructs birth-year cohorts from repeated cross-sectional data, allowing us to track age-specific exposure effects over time. Using observations of the same outcome at multiple points in time from 1964 to 1980, we conduct within-age-cohort

comparisons, distinguishing individuals who lived in areas with varying degrees of exposure to *Operation Intolerance* in 1946. Everyone alive at the time and living in an exposed area could, in theory, have listened to at least one of the radio stations that broadcast *The Adventures of Superman* in that year, which is the type of exposure that most of the literature has focused on. However, among those alive in 1946, only the target cohorts, who were the intended audience of the show, are likely to have listened to the program, whereas individuals who were too old or too young at the time are unlikely to have been directly exposed to the progressive narratives it portrayed. In addition, those slightly older than the target cohorts may have been exposed to *The Adventures of Superman* in previous years, when its narratives were not yet progressive.

We exploit the variation in the likelihood of having listened to the show in 1946 to isolate the effect of the narrative shift from the broader effect of exposure to radio. Based on qualitative evidence about the program, particularly the time slot chosen for the broadcast, we assume that the target cohorts are individuals of school age (7 to 18 years old) in 1946 (see Section 2). This choice, which we follow to define cohorts, is consistent with evidence from developmental psychology, indicating a dual threshold of cognitive maturity relevant to media influence: a comprehension threshold around the age of 7 and a socialization peak, fostering the formation of moral and political attitudes, during adolescence, approximately between 13 and 18 years of age.<sup>21</sup>

Our approach is similar in spirit to identification strategies exploiting cohort variation, such as in Duflo (2001), but with two important differences. First, we observe multiple post-intervention survey waves, allowing us to trace cohort-specific outcomes over almost two decades (i.e., for individuals of the same age in 1946, we observe outcomes at different ages across survey years). This feature reduces the risk of confounding from transitory shocks, such as macroeconomic shocks or policy changes, enabling us to track the trajectory of treatment effects over the long run, capturing gradual or delayed impacts that a single cross-sectional snapshot might miss. This feature also differs to most studies on the effect of mass media (e.g., Olken, 2009), which exploit cross-sectional comparisons in FM or television exposure, rather than cohort-based comparisons over time. Second, we explicitly test and flexibly control for potential non-random exposure to the intervention. Thus, while we build on a cohort-based DiD approach, our study combines a longitudinal framework with plausibly random media exposure, enabling a more robust

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<sup>21</sup>On average, it is not until the early school years that children develop the cognitive capacity to understand narratives with moral and political themes (Gibbons et al., 1986; Burris and Brown, 2014). Further, when considering long-term socialization and value formation, children and adolescents pass through distinct developmental windows of increased susceptibility to media influence. Adolescence (ages 13–18) is widely recognized as the most impressionable phase for the development of enduring political attitudes. During this time, narrative exposure can play an important role in shaping beliefs, especially with respect to social and moral issues (Krosnick and Alwin, 1989; Moyer-Gusé, 2008; Dahl et al., 2018).

analysis of the effects of a narrative shift.

Building on this methodology, we estimate the effect of *Operation Intolerance* on an outcome variable  $Y_{ihc,t}$ , for an individual  $i$  in cohort  $h$  (defined relative to 1946), residing in county  $c$  and surveyed at time  $t$ , using the following specification:

$$Y_{ihc,t} = \sum_{\tau=h}^{\bar{h}} \gamma_\tau D_\tau \cdot R_c + \mu_c + \mu_h + \mu_{t \times state} + (X_{ihc,t} \times D_h) + (X_{ihc,t} \times D_t) + \epsilon_{ihc,t} \quad (1)$$

Here,  $D_\tau$  is an indicator equal to 1 if individual  $i$  belongs to cohort  $h = \tau$ , where  $h \in [h, \bar{h}]$  is based on age in 1946, grouped into 6-year intervals (the excluded category is the cohort 19–24).  $R_c$  denotes the (standardized) share of county  $c$ 's population covered by the broadcast signal in 1946 (i.e., the exposure measure discussed in Section 3.1). The coefficients of interest,  $\gamma_\tau$ , capture the effect of broadcast exposure for each cohort. Following the media literature, these are intention-to-treat estimates, because  $R_c$  measures the share of the population that could have listened to the show in 1946, rather than the share that actually tuned in, which is unobservable at a disaggregated level in our setting (see Section 2.2). As noted in Section 3.1,  $R_c$  is specific to 1946 and may be correlated with, but differ from, exposure in other years.

The remaining terms in equation (1) include a set of fixed effects (FEs), a set of interaction terms and an idiosyncratic error term. First,  $\mu_c$  captures county FEs, which account for time-invariant county characteristics. Second,  $\mu_h$  captures cohort FEs, which account for unobserved cohort-level factors that are constant over time, such as being born before, during or after WWII. Third, because individuals from the same cohort are observed at different times, we also control for state-by-survey year fixed effects,  $\mu_{t \times state}$ , to absorb any time-specific shocks that may affect all cohorts equally within each state, such as changes in public views on civil rights, legal or institutional shifts, or election years. This control is particularly relevant given the stark North–South divide in racial attitudes during our study period. Fourth, we include interaction terms of observable individual characteristics and pre-intervention county characteristics where the respondent resides,  $X_{ihc,t}$ , with both cohort indicators ( $D_h$ ) and survey year indicators ( $D_t$ ). These interactions allow to control flexibly across cohorts and survey years for observable factors that could explain exposure to the broadcast. We describe in the remainder of the section how we select the variables included in  $X_{ihc,t}$ . Finally, the error term,  $\epsilon_{ihc,t}$ , is assumed to be clustered at the county level.

For identification, the approach described in equation (1) relies on a parallel trends assumption. That is,

in the absence of *Operation Intolerance*, the outcome variable for cohorts exposed to the program would have evolved similarly to that of non-exposed cohorts over time. This assumption does not require exposure to be plausibly random at the time of the broadcast, as in studies examining the effects of FM radio and television. Those settings typically compare areas with and without access to a given broadcast signal, conditional on geographical and technical controls, often referred to as *propagation controls*, such as elevation or distance to the transmitter (see, e.g., Yanagizawa-Drott, 2014). Such residual variation in cross-sectional exposure is generally assumed to be as-good-as-random.

Although our strategy does not hinge on the assumption of random cross-sectional exposure to the broadcast, we nonetheless examine whether it plausibly holds in our context, as it would reinforce the credibility of the parallel trends assumption. This check is particularly relevant, because unlike FM transmissions, AM radio signals are less affected by topographic obstacles (see Section 3.1).<sup>22</sup>

Table 1 presents the results of whether exposure to *Operation Intolerance* was plausibly random at the time of the broadcast (i.e., in the cross section), focusing on a variety of pre-broadcast county-level characteristics measured in 1940, based on data from the 1940 Census, as well as other information capturing racism and political preferences. Columns (1) and (2) present summary statistics, while columns (3) and (4) show correlation coefficients between county-level characteristics and  $R_c$ , computed using OLS regressions without controls. Following Wang (2021), in columns (5) and (6), we re-estimate the coefficients using the same regressions but adding controls for the propagation of AM signals, interpreting a non-significant coefficient as evidence for the randomness of exposure, conditional on these controls. Using propagation controls allows us to flexibly account for potential unobserved heterogeneity in the cross-sectional exposure to the broadcast, particularly related to transmitter proximity and the targeting of specific markets. For the selection of controls, we follow the literature on FM radio or TV broadcasts, adapting it to AM transmissions. Controls include a measure of radio coverage in the absence of any transmission obstacles (assuming perfect ground conductivity), an indicator variable for whether there is an antenna in the county and the minimum distance between the antenna location and the county centroid.<sup>23</sup> Appendix B provides further details about the construction of these variables.

Evidence presented in Table 1 supports the plausibly random assignment of the exposure to *Operation Intolerance* at the time of the broadcast, conditional on propagation controls. Exposure is strongly cor-

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<sup>22</sup>For instance, Strömberg (2004) uses soil conductivity as an instrumental variable for AM radio exposure, as soil conductivity, rather than topography, between transmitter and receiver is arguably random.

<sup>23</sup>The perfect conductivity coverage variable captures variation in antenna placement and the targeting of specific areas. This aligns with the theoretical coverage in the absence of topographic obstacles, often called *free field coverage*, used in the literature on FM radio or TV broadcasts (see, e.g., Olken, 2009). In addition, we also control for geographical characteristics (elevation, ruggedness, and ground conductivity of each county, measured in the country's centroid), and state indicators.

related with most county characteristics, reflecting the placement of radio antennas near urban centers, similar to other contemporaneous radio networks (see, e.g., Wang, 2021). However, residual exposure (i.e., after adding controls) is not significantly correlated with most pre-broadcast county characteristics.

Despite residual exposure being balanced across most dimensions, it tends to be higher in more urban counties, and as expected, in areas with higher radio ownership. Note that turning to our cohort-based approach, rather than this cross-sectional approach, allows controlling in equation (1) for county FEs,  $\mu_c$ , which control not only for urbanization levels before the launch of the broadcast, but also for all time-invariant characteristics that may be correlated with signal reception, including those not presented in Table 1.

Nevertheless, we follow a conservative approach and in equation (1) we control for potential factors that might violate the parallel trends assumption beyond  $\mu_c$ , and the other FEs  $\mu_h$ , and  $\mu_{t \times state}$ . The variables included in  $X_{ihc,t}$  in equation (1) are therefore selected to reflect this objective. First, we include individual characteristics, such as age at interview, sex, and race, to capture trends and cohort-specific effects along these dimensions.<sup>24</sup> Second, we address the potential risk that exposure reflects trends related to antenna placement, including the propagation controls from Table 1.<sup>25</sup> Finally, because urbanization predicts residual exposure in cross-section, we further control for trends and cohort effects specific to pre-broadcast urbanization. To this end, we include in  $X_{ihc,t}$  the 1940 share of county population living in cities. We present additional checks on the role of urbanization in Section 5. Overall, the interaction terms ( $X_{ihc,t} \times D_h$ ) and ( $X_{ihc,t} \times D_t$ ) capture any remaining concerns about non-parallel trends associated with the expansion of the radio network.

Appendix E.4 presents robustness checks for the main results using alternative sets of controls and fixed effects. These include a more parsimonious model including only  $\mu_c$ ,  $\mu_h$ , and  $\mu_t$ , alternative definitions of exposure to *Operation Intolerance*, and specifications that allow for spatial correlation in error terms. In addition, we discuss the potential threats from anticipation and spillover effects in Section 5.1.

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<sup>24</sup>Due to the limited variation in the sample (i.e., a large share of counties is composed only of white respondents) combined with the large set of FEs, we control for race using the share of white population living in the county in 1940. Appendix E.4 shows the robustness of the results to controlling for an extended list of individual-level controls, including race, though at the cost of a reduced sample due to missing observations.

<sup>25</sup>To reduce the number of interactions in the main specification, we do not include in  $X_{ihc,t}$  the geographic controls (elevation, ruggedness and conductivity). Appendix E.4 provides the results including these variables in  $X_{ihc,t}$ .

Table 1: Exposure to *Operation Intolerance* and county characteristics

	Pre-broadcast characteristics		Cross-sectional correlation with exposure					
	mean (1)	[std.dev.] (2)	$\beta$ (3)	(s.e.) (4)	R <sup>2</sup> (5)	$\beta$ (6)	(s.e.) (7)	R <sup>2</sup> (8)
<b>Census characteristics</b>								
Area ('000s squ. miles)	0.978	1.356	-0.269**	(0.129)	0.00	-0.056	(0.111)	0.54
Population ('000s per squ. mile)	0.195	1.984	1.161**	(0.559)	0.03	1.320	(0.897)	0.09
Population per dwelling	3.631	0.651	-0.243***	(0.065)	0.01	-0.074	(0.061)	0.35
% male population	0.513	0.020	-0.006***	(0.002)	0.01	-0.003	(0.002)	0.44
Average age (kids)	4.384	0.097	-0.005	(0.012)	0.00	-0.009	(0.008)	0.30
Average age (adults)	35.701	2.518	1.662***	(0.273)	0.04	0.329	(0.326)	0.66
% age $\geq$ 65 y.o.	0.071	0.023	0.008***	(0.003)	0.01	-0.003	(0.004)	0.57
% white population	0.848	0.168	0.022	(0.020)	0.00	-0.016	(0.012)	0.56
% white population (incl. non-native)	0.885	0.180	0.060***	(0.021)	0.01	0.007	(0.010)	0.62
% Black population	0.107	0.178	-0.054***	(0.021)	0.01	-0.009	(0.010)	0.66
% other race	0.008	0.043	-0.005	(0.004)	0.00	0.002	(0.003)	0.20
% illiterate	0.039	0.044	-0.018***	(0.004)	0.01	-0.002	(0.004)	0.48
% enrolled in school (5-17 y.o.)	0.791	0.104	0.066***	(0.014)	0.04	0.040	(0.025)	0.58
% owning their dwelling	0.498	0.118	-0.017	(0.015)	0.00	-0.019	(0.014)	0.51
% city population	0.061	0.194	0.225***	(0.025)	0.12	0.154***	(0.034)	0.19
% urban land	0.340	0.275	0.002	(0.036)	0.00	0.038	(0.035)	0.55
% unemployed	0.102	0.052	-0.013*	(0.007)	0.01	-0.009	(0.009)	0.30
# farms ('000s per squ. mile)	1.968	1.347	0.379**	(0.171)	0.01	-0.020	(0.170)	0.30
Average farm value (log)	15.650	1.755	0.663***	(0.209)	0.01	0.010	(0.286)	0.26
<b>Violence and racism</b>								
Lynchings	0.039	0.265	-0.014	(0.012)	0.00	-0.023	(0.016)	0.12
Lynchings (Black)	0.036	0.251	-0.012	(0.011)	0.00	-0.016	(0.015)	0.12
Green Book establishments	0.087	0.736	0.046	(0.031)	0.00	-0.050	(0.051)	0.02
<b>Electoral outcomes</b>								
Turnout	0.568	0.253	0.094***	(0.033)	0.01	0.014	(0.018)	0.80
% Democratic party	0.589	0.280	-0.085**	(0.038)	0.01	0.022	(0.020)	0.83
% Republican party	0.370	0.252	0.041	(0.034)	0.00	-0.019	(0.020)	0.79
<b>Access to radio network</b>								
% owning a radio	0.675	0.195	0.200***	(0.024)	0.09	0.078***	(0.015)	0.76

*Note.* Census characteristics and access to radio network are based on county-level information from the 1940 U.S. Census, obtained from Haines et al. (2010). For violence and racism, lynchings refers to the period 1931–1940 and is obtained from Bailey et al. (2011), while Green Book establishments denotes the number of establishments per person living in the county and is obtained from Cook et al. (2023). For electoral outcomes, we use the 1940 Congressional elections, obtained from Clubb et al. (1987). Columns (1) and (2) report means and standard deviations of the corresponding variables. Columns (3)–(5) present estimates, standard errors and R<sup>2</sup> of OLS regressions of the corresponding variable on exposure to *Operation Intolerance* ( $R_c$ ), without using additional controls. Columns (6)–(8) present the same statistics, but include propagation controls, geographical controls and state fixed effects in the estimating equation (the full list of controls is provided in Section 4). In columns (3)–(8), standard errors are clustered at the state level because we observe one observation per county.

## 5 Results

### 5.1 Racial attitudes and support for civil rights

We begin by investigating the effects on racial attitudes and support for civil rights. Since these dimensions are 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*. Following the approach of Kling et al. (2007), the index combines responses from the questions on racial attitudes and attitudes in support of civil rights described in Section 3.2. This approach involves standardizing individual indicators and averaging the  $z$ -scores across all available variables for each respondent, facilitating a

canonical interpretation of the estimation results and addressing potential issues related to multiple hypothesis testing. Appendix E.3 shows results using an alternative method, namely, regularized iterative PCA (Josse and Husson, 2012), which accommodates incomplete data structures.

Panel A of Figure 4 shows the average index for different cohorts. Younger cohorts are more supportive of civil rights compared to those born before 1946. This is in line with the trend of American society becoming more progressive over time. We find a difference of 0.28 standard deviations between the respondents in the two extreme cohorts, namely, those born after 1951 (i.e., born at least 6 years after 1946) and those born before 1904 (aged at least 43 in 1946), whose birth years are at least 47 years apart.

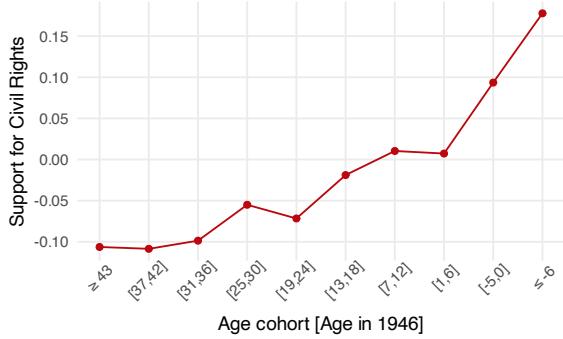
Panel B of Figure 4 presents cohort-level estimates, based on equation (1), of the effect of *Operation Intolerance* on the index. We observe no significant effects for cohorts that were either too young to meaningfully engage with the program's content, not yet born, or too old at the time of the broadcast. In contrast, exposure to *Operation Intolerance* led to a measurable increase in support specifically among the cohorts that constituted the program's primary audience. Respondents in the age cohorts 7–12 and 13–18 show significant increases in support, with a one-standard-deviation increase in exposure leading to gains of 0.07 (significant at the 5% level) and 0.09 standard deviations (significant at the 1% level), respectively. Consistent with evidence from developmental psychology, the strongest effects appear among individuals during adolescence, an age at which lasting political attitudes are most likely to form. These findings reinforce that the program effectively targeted children and adolescents, supporting our definition of target cohorts (see Section 4). Furthermore, the slightly older cohort, those aged 19–24, could have been exposed to *The Adventures of Superman* in the years before 1946, when the show did not promote a progressive narrative. Since the estimate for this cohort is not statistically different from older generations, the results reinforce the importance of the narrative change in the series.

To summarize the main effects in a single estimate, in Table 2, we provide estimates of equation (1) grouping the *target* and *non-target* cohorts into two composite groups. Column (1) focuses on the *Support for Civil Rights Index*, while columns (2)–(9) provide estimates for each individual indicator comprising the index, reported as standardized  $z$ -scores for comparability. For these outcome variables, estimates using equation (1) without grouping any cohort are presented in Appendix E.1.

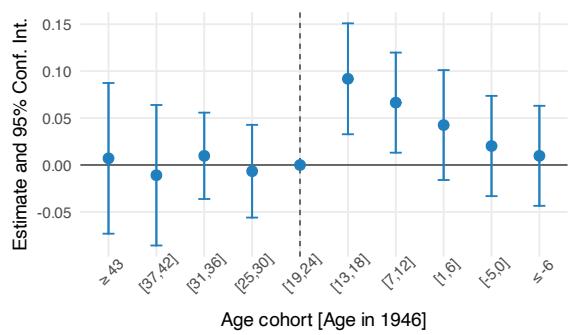
Panel A provides estimates using all available cohorts in the data, while Panel B excludes younger cohorts, namely those who were either not yet born in 1946 or were too young at the time to plausibly understand the broadcast. This distinction is informative about the nature of the effect of *Operation Intolerance* and potential spillovers. In principle, younger cohorts should serve as valid controls because

Figure 4: 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 racial attitudes and support for civil rights. Descriptive statistics and temporal coverage of the variables comprising the index are presented in Appendix D.1. Panel B presents the cohort study plot of the effects of *Operation Intolerance* on the index. This figure displays the coefficients from equation (1) of the interaction term between the age cohort in 1946 and exposure to *Operation Intolerance* in the county, defined as the (standardized) share of the county's population covered by the program's radio signal in 1946. The specification includes the set of controls and FEes described in Section 4. Error bars indicate 95% confidence intervals, computed using clustered standard errors at the county level. The vertical line indicates the reference cohort, young adults, at the time of *Operation Intolerance*. Additional details about the variables are available in Appendix D.1.

they were not directly exposed to the program content, either because they were not alive or too young to process its narratives. However, if they were indirectly exposed to the program through reruns, cultural diffusion, or family transmission, then including them in the analysis could bias estimates toward zero by introducing partially exposed individuals into the control group. If the estimate for the target cohorts increases when these cohorts are excluded (panel B), then the results would provide suggestive evidence that such contamination may exist. Alternatively, the absence of a clear effect among younger cohorts could reflect true cohort-specific exposure, or generational convergence (i.e., a broader societal trend toward more progressive views among all younger individuals, regardless of exposure, which narrows differences between exposed and unexposed cohorts).

Being exposed to progressive narratives leads to a significant increase in support for civil rights. Among target cohorts, a one-standard-deviation increase in exposure raises the index by 0.06 standard deviations. Dropping younger cohorts, who are more progressive than older ones regardless of exposure to the broadcast, results in a comparable estimate of 0.08 standard deviations (Panel B). This reinforces the importance of being able to directly listen to the program at the time of the broadcast and suggests that spillover effects on younger cohorts are minor (the estimate is only slightly larger in Panel B). If we consider that it took nearly 50 years for American society to gain 0.29 standard deviations in support for civil rights (Panel A in Figure 4), the magnitude of the effect corresponds roughly to a generational gap of 11 to 13 years. In other words, those who experienced just one additional standard deviation in exposure were effectively 11 to 13 years ahead in the natural progression toward civil rights. These results are

robust to alternative specifications, measures of exposure, and inference assumptions (Appendix E.4).

Columns (2)–(9) show that the increase in support for civil rights is driven by a generalized change in racial attitudes in favor of equality. In Panel A, we estimate that a one-standard-deviation increase in exposure leads to significant increases among target cohorts in the support for desegregation (0.07 standard deviations), desegregation busing (0.11), Black representation (0.10), affirmative action for the Black population (0.10), and civil rights legislation (0.06). The effect on support for integrated schools is also positive but not statistically significant. Furthermore, exposure increases favorable feelings toward the Black population by 0.05 standard deviations, while decreasing favorable feelings toward Southerners by 0.11 standard deviations. Excluding younger cohorts leads to comparable results (Panel B). Finally, in Appendix E.6, we show that these effects are specific to racial attitudes, as we find no significant changes in attitudes toward religious groups and other economically disadvantaged or advantaged individuals.

Table 3 presents a variety of sample exclusions and placebo checks, addressing potential threats to identification for the estimates presented in Table 2.<sup>26</sup> The first concern is urbanization and the risk that our estimates might capture attitude changes, particularly cultural shifts, specific to growing up in urban areas after 1946 and affecting only the target cohorts. Although all of our specifications control flexibly for this dimension (see Section 4), in column (1), we estimate equation (1) on a restricted sample excluding large urban areas, defined as counties where more than 50% of the population lived in a city (based on the 1940 U.S. Census). When focusing on this non-urban sample, we estimate a significant effect of 0.05 standard deviations, ruling out the possibility that our results are driven by urban-specific cultural or attitudinal changes.

The second threat to identification arises from the possibility that radio antennas broadcasting *Operation Intolerance* were intentionally placed in local radio markets with specific unobservable cultural dynamics. All of our specifications control for county FEs, which account for time-invariant characteristics that may have influenced antenna placement. In columns (2)–(4), we additionally estimate equation (1) after excluding counties that hosted one of the *Operation Intolerance* transmitters, as well as counties located within 10 or 50 km of a transmitter. This allows us to rule out the possibility of intentional targeting of local radio markets. Using only variation in exposure farther from a transmitter leads to statistically significant estimates of 0.06–0.08 standard deviations, further ruling out the possibility that our results are driven by the strategic placement of radio antennas.

The third threat relates to the possibility that our estimates reflect broader trends in radio content rather

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<sup>26</sup>Table 3 presents estimates using all cohorts. Consistent with Table 2, excluding younger cohorts leads to the same conclusions.

than the specific impact of *Operation Intolerance*. We provide evidence against this possibility by implementing three alternative placebo checks, each estimating equation (1) controlling for exposure of our target cohorts to alternative contemporaneous radio content.

In column (5), we test whether the results are driven by a general shift in overall radio programming. To do so, we augment our model with a measure of exposure to the signal of any commercial radio station that did not broadcast *Operation Intolerance*. The exposure measures in columns (5–7) are constructed using the same procedure as for exposure to *Operation Intolerance*. In all cases, we interact the respective propagation controls with cohort and survey year indicators (see Panel A of Appendix Figure B3 for the locations of the two distinct sets of stations).

In column (6), we examine whether our estimates reflect trends in youth radio series in a more general way. Specifically, we control for exposure to *The Lone Ranger*, the main competitor of *The Adventures of Superman*. This program, which aired from 1933 to 1954 and was produced by ABC during the 1940s, featured a masked former Texas Ranger who fought outlaws in the American Old West and was aimed at a similar demographic (Dunning, 1998). Unlike *Operation Intolerance*, however, *The Lone Ranger* did not undergo a narrative shift toward tolerance in 1946 (Appendix C.4).

In column (7), we test whether our results reflect a broader narrative change within the MBS network itself, especially in the years following 1946. In 1946, *The Adventures of Superman* was the only MBS production that promoted progressive narratives. By contrast, other major productions targeting adults, such as news and commentaries, remained neutral or conservative (Appendix A.2). To examine this channel, we estimate equation (1), controlling for exposure to radio stations that were not affiliated with MBS in 1946 but became affiliated in 1960.

Across all three specifications, the estimated effects remain robust, ranging from 0.06 to 0.07 standard deviations. Furthermore, exposure to these alternative programs has no significant effect on support for civil rights, underscoring the unique role of *Operation Intolerance* in shaping attitudes.

The fourth threat concerns whether exposure captures local cultural changes rather than the direct experience of listening to the show. In column (8), we estimate equation (1) using only the sample of migrants (i.e. individuals who grew up in a different location from where they were living at the time of the interview), which is excluded from our main analysis (see Section 3.2). This sample is composed of individuals who moved to the location where exposure in 1946 is measured but did not experience such exposure as children or adolescents because they grew up elsewhere. We find no significant effects for this group, reinforcing a mechanism based on direct exposure to the show.

Table 2: The effect on racial attitudes and support for civil rights

	<b>Support for Civil Rights Index</b>	<b>Support for...</b>						<b>Favorable towards...</b>	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>A. All cohorts</b>									
Target × Exposure	0.064*** (0.016)	0.070*** (0.027)	0.016 (0.030)	0.111** (0.052)	0.095** (0.037)	0.103*** (0.033)	0.056* (0.030)	0.045* (0.027)	-0.112*** (0.032)
R <sup>2</sup>	0.198	0.195	0.191	0.186	0.201	0.150	0.206	0.144	0.323
Observations	10,364	6,836	5,872	4,734	3,470	6,377	7,874	8,145	5,207
<b>B. Exclude younger cohorts</b>									
Target × Exposure	0.075*** (0.018)	0.084** (0.034)	0.013 (0.035)	0.041 (0.046)	0.169*** (0.053)	0.137*** (0.040)	0.077** (0.035)	0.059* (0.032)	-0.087** (0.040)
R <sup>2</sup>	0.210	0.221	0.223	0.233	0.261	0.197	0.213	0.167	0.359
Observations	6,895	4,509	4,045	2,778	2,122	3,726	5,408	5,677	3,496

*Note.* Estimates are based on equation (1), aggregating the target and control cohorts into two groups. All specifications include the set of controls and FEs described in Section 4. *Target* is an indicator variable equal to 1 for respondents who were 7–18 years old in 1946. *Exposure* denotes the share of the population in the county covered by the radio signal of *Operation Intolerance* in 1946. 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, which aggregates z-scores from individual questions capturing support for civil rights. Columns (2) through (9) analyze the individual components of the index, also reported as standardized z-scores: (2) *support for desegregation* is an indicator variable equal to 1 if the respondent rejects strict racial segregation; (3) *support for integrated schools* is an indicator variable equal to 1 if the respondent believes that the government should ensure racially-integrated schools; (4) *support for busing policies* measures the beliefs over whether the racial integration of schools justifies busing children to schools out of their own neighborhoods, ranging from 1 (keep children in neighborhood schools) to 7 (busing to achieve integration); (5) *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); (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 civil rights legislation* is an indicator variable equal to 1 if the respondent believes that civil rights leaders are not pushing too fast for their goals; (8) *favorable towards Black population* measures feelings towards the Black population, ranging from 1 (unfavorable) to 100 (favorable); (9) *unfavorable towards Southerners* measures feelings towards Southerners, ranging from 1 (unfavorable) to 100 (favorable). For ease of interpretation, all measures are standardized around 0. Descriptive statistics and temporal coverage of the variables are presented in Appendix D.1.

Table 3: The effect on racial attitudes and support for civil rights, robustness to sample selection and placebo tests

	Dependent variable: Support for Civil Rights Index							
	Urbanization		Exclude local radio markets		Exposure to other radio content			Unexposed
	Exclude cities	Counties with OI transmitter	Distance to transmitter $\leq 10km$	Distance to transmitter $\leq 50km$	Any	The Lone Ranger	MBS post 1946	Sample of internal migrants
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Target $\times$ Exposure	0.051*** (0.019)	0.062*** (0.018)	0.067*** (0.015)	0.078** (0.030)	0.071*** (0.015)	0.068*** (0.016)	0.064*** (0.017)	0.015 (0.024)
Target $\times$ Exposure to other content					0.005 (0.025)			
Target $\times$ Exposure to <i>Lone Ranger</i>						0.009 (0.023)		
Target $\times$ Exposure to MBS extension							0.015 (0.019)	
R <sup>2</sup>	0.22	0.21	0.19	0.22	0.20	0.20	0.20	0.27
Observations	6,686	7,717	9,315	5,466	10,364	10,364	10,364	4,647
Type of test	Sample selection	Sample selection	Sample selection	Sample selection	Placebo treatment	Placebo treatment	Placebo treatment	Sample selection

*Note.* Estimates are based on equation (1), which aggregates the target and control cohorts into two groups, and include all available cohorts. All specifications include the set of controls and FEs described in Section 4. Target is an indicator variable equal to 1 if the respondent was 7–18 years old in 1946, while exposure is the (standardized) share of the population in the county that was covered by the radio signal of *Operation Intolerance*. Exposure to other content is the (standardized) share of the population in the county covered by the radio signal of any network not broadcasting *The Adventures of Superman*. Exposure to *Lone Ranger* is the (standardized) share of the population covered by the radio signal of the network broadcasting *The Lone Ranger* in 1946. Exposure to MBS extension is the (standardized) share of population covered by the radio signal of radio stations not affiliated with MBS in 1946 and affiliated with MBS in 1960. Standard errors clustered by county are reported in parentheses (\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01). The dependent variable in all columns is the *Support for Civil Rights Index* (see Section 5.1). Column (1) excludes counties with more than 50% of the population residing in cities. Columns (2)–(4) exclude counties that host an MBS antenna, or are located within 10 km, or 50 km of an antenna. Columns (5)–(7) control for exposure to alternative content in 1946. In these specifications, we include interaction terms between propagation controls for the alternative content (i.e., maximum conductivity coverage, indicator variable for the presence of an antenna in the county, and minimum distance from an antenna) and cohort and survey year indicators. Column (8) mirrors our baseline analysis on the subsample of internal migrants, comprised of individuals who spent their youth in a different state than their current state of residence.

Finally, the interpretation of estimates relies on understanding whether *Operation Intolerance* involved anticipation or spillover effects on older cohorts, which could lead to an underestimation of the effect. The probability that adults would have listened to the radio during the time slot of *The Adventures of Superman* was relatively low (Section 3.1), and we discount the possibility of spillover through television, as only 8,000 households owned television sets in 1946 (Anderson, 2005). In Appendix E.5, we show that it is unlikely that anticipation or spillover effects operate through newspapers, an information medium that primarily targets adults. Overall, attention to Superman was relatively low in local newspapers. More importantly, we do not observe major changes in the period immediately before or after the launch of *Operation Intolerance*, either in coverage of Superman or in discussions of its core themes, namely bigotry, intolerance, and prejudice. Superman was more salient in newspapers published in areas with higher exposure to *Operation Intolerance*, reinforcing the relationship between our measure of exposure and listenership, but we do not observe any significant change in media attention, even when focusing specifically on those areas (Appendix E.7).

## 5.2 Political preferences

Section 5.1 shows that cohorts exposed to *Operation Intolerance* in 1946 evolved to express more positive racial attitudes and greater general support for racial equality in the 1960s and 1970s. As civil rights were at the center of the political agenda of these decades, this section examines how exposure shaped political preferences in the same period. The results are presented in Table 4. As in Table 2, we estimate equation (1) by grouping the *target* cohorts into a single cohort. Panel A reports estimates using all available cohorts, while Panel B excludes younger cohorts. Appendices E.1 and E.2 provide estimates using equation (1) without cohort grouping.

In columns (1)–(3), we examine effects on political support for figures and parties representing opposing stances on civil rights. Column (1) focuses on civil rights leaders, who embodied the most progressive positions on racial equality. Column (2) considers support for George Wallace, a prominent pro-segregation politician, and column (3) covers the Republican Party, which generally held more conservative views on civil rights during this period. We observe that *Operation Intolerance* shifted political preferences in a more progressive direction. A one-standard-deviation increase in exposure leads to an increase in support for civil rights leaders by 0.07 standard deviations, and to declines in support for Wallace and the Republican Party by 0.07 and 0.06 standard deviations, respectively. These patterns persist when the youngest cohorts are excluded from the analysis. In this restricted sample, the estimated effects are 0.10,

$-0.06$ , and  $-0.06$ , respectively. In Section 6, we discuss whether these results translated into electoral effects during the 1968 presidential elections, when George Wallace ran as a candidate.

In columns (4)–(7), we focus on institutional attitudes that signal alignment with the Civil Rights Movement (see Section 3.2 for the justification of each variable). Column (4) examines approval of protests and demonstrations, column (5) focuses on the level of trust in the federal government, and columns (6)–(7) on respondents’ perceptions of the police and the military. The results confirm a shift in favor of key tenets of the Civil Rights Movement. In the target cohort, a one-standard-deviation increase in exposure leads to a significant increase in support for protests by 0.07 standard deviations and a significant decrease in favorable views of the police and the military by 0.07 and 0.05 standard deviations, respectively. We also observe a decline in trust in the federal government, although this coefficient is not statistically significant.

Excluding the younger cohorts increases the estimate for protest approval to 0.13 standard deviations (Panel B), suggesting that part of the effect may be absorbed by younger cohorts, who are also relatively more supportive of protests in areas that were more exposed in 1946. The estimates for the other outcomes remain comparable whether younger cohorts are included or not.

Outcome variables in columns (1)–(7) rely on self-reported attitudes. In column (8), we corroborate these findings by examining a behavioral outcome: participation in the Vietnam War. As discussed in Section 2, willingness to serve in Vietnam provides an additional lens through which to assess individual commitment to civil rights ideals.

We gather information on participation using casualties as a proxy. In line with [Esposito et al. \(2023\)](#), who use World War I casualties to measure participation, this approach assumes that among those mobilized, the likelihood of being wounded or killed (versus not) was largely random. Notably, participation in the Vietnam War was driven primarily by volunteers, as only 25% of those who served were draftees, compared to 66% during World War II ([Davidson, 1988](#)). Data on the date of the casualty and the hometown of each individual are obtained from the *Defense Casualty Analysis System (DCAS)* database ([U.S. Department of Defense, 2006](#)), which documents the deaths of U.S. military personnel during the Vietnam War. Appendix D.3 provides further information about this data source and presents descriptive statistics. The geographical distribution of casualties spans the entire U.S., while nearly all casualties come from cohorts born in the 1930s and 1940s.

Table 4: The effect on political support and attitudes

	Political support			Alignment with the Civil Rights Movement				
	Civil Rights leaders	George Wallace	Republicans	Approve of protest	Trust in the federal government	Pro-police sentiment	Pro-military sentiment	Vietnam War participation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>A. All cohorts</b>								
Target × Exposure	0.068*	-0.069**	-0.055*	0.073*	-0.023	-0.065*	-0.053*	-0.078***
	(0.039)	(0.032)	(0.028)	(0.040)	(0.023)	(0.036)	(0.029)	(0.021)
Observations	5304	7883	8087	5487	9644	6404	7333	60585
R <sup>2</sup>	0.248	0.240	0.161	0.226	0.192	0.161	0.192	0.756
<b>B. Exclude younger cohorts</b>								
Target × Exposure	0.096**	-0.062*	-0.055*	0.125***	-0.022	-0.068**	-0.068**	-
	(0.047)	(0.036)	(0.031)	(0.043)	(0.026)	(0.032)	(0.032)	-
Observations	3233	4813	5644	3679	6360	4482	4969	-
R <sup>2</sup>	0.286	0.289	0.187	0.229	0.223	0.148	0.177	-
Type of data	Attitude	Attitude	Attitude	Attitude	Attitude	Attitude	Attitude	Behavioral

Note. Estimates are based on equation (1), aggregating the target and control cohorts into two groups. All specifications include the set of controls and FEes described in Section 4. Target is an indicator variable equal to 1 for respondents aged 7–18 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. Standard errors, clustered by county, are reported in parentheses (\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01). The dependent variables in columns (1)–(7), denoted by the column headers, are z-scores of the following variables: (1) support for Civil Rights leaders measures feelings towards civil rights leaders, ranging from 1 (unfavorable) to 100 (favorable); (2) support George Wallace measures feelings towards George Wallace, ranging from 1 (unfavorable) to 100 (favorable); (3) support Republicans measures the feelings towards Republicans, ranging from 1 (favorable) to 100 (unfavorable); (4) approve of protests is the degree of approval of participation in protests, ranging from 1 (disapprove) to 3 (approve); (5) trust in the government is the degree of trust in the federal government doing the right thing, ranging from 1 (never) to 4 (always); (6) pro-police measures the feelings towards police, ranging from 1 (unfavorable) to 100 (favorable); (7) pro-military measures the feelings towards the military, ranging from 1 (unfavorable) to 100 (favorable). The dependent variable in column (8), Vietnam War participation, represents the cohort-specific share of casualties assigned to each county based on the birthplace of the deceased (multiplied by 1,000). In column (8), we exclude counties without casualties during the Vietnam War. For ease of interpretation, outcome measures from columns (1)–(7) are standardized around 0. Descriptive statistics and temporal coverage for variables in columns (1)–(7) are presented in Appendix D.1, and for column (8) in Appendix D.3.

Because we do not observe participation directly at the individual level, and because the probability of death varied by cohort (with some cohorts entering during the war’s deadliest periods), we compare the distribution of deaths within each cohort across counties with different levels of exposure to *Operation Intolerance* in 1946. Our main outcome variable is the cohort-specific share of deaths per county, defined as the ratio between the number of casualties in cohort  $h$  whose hometown was in county  $c$ , and the total number of casualties in cohort  $h$ . We multiply the ratio by 1,000 to refer to 1,000 deaths. We define cohorts using the exact birth date and age relative to the start of *Operation Intolerance*. We drop from the estimation sample counties that did not experience any casualty during the conflict. In Appendix E.2, we provide estimates for counties with a larger number of casualties.

Consistent with our earlier findings on attitudes, column (8) reveals that exposure to the broadcast led to a significant reduction in participation among target cohorts. For this group, a one-standard-deviation increase in exposure leads to decline by 0.8 percentage points in participation. Due to the age distribution of deaths during the war, we estimate equation (1) by comparing the target cohorts only with younger cohorts, and thus cannot provide a corresponding estimate for Panel B in Table 4. Appendix Figure E2 displays how estimates vary by cohort using equation (1), indicating no significant effect among younger individuals or those not yet born in 1946.

### 5.3 Interracial assimilation

In this section, we examine whether the attitudinal and political shifts discussed in Sections 5.1 and 5.2 also translated into greater interracial assimilation.

We begin by examining interracial friendship, measured by an indicator variable for whether respondents report having friends of a different race. Friendly relations across racial lines were explicitly emphasized in several *Operation Intolerance* scripts (Appendix C.1). Panel A of Figure 5 shows the average share of interracial friendships across cohorts. In line with the broader process of racial assimilation over the 20<sup>th</sup> century, younger cohorts report substantially more interracial friendships. The share more than doubles when comparing the oldest and youngest cohorts: among respondents older than 42 years in 1946, 26% report interracial friendships, while among those born at least six years after 1946, the share increases to 64%.

Panel B plots estimates from equation (1) for interracial friendship. We observe a significant increase only among individuals in the 7–12 cohort, corresponding to a 6-percentage-point increase in the probability of having a friend of a different race, significant at the 5% level. We do not find any significant

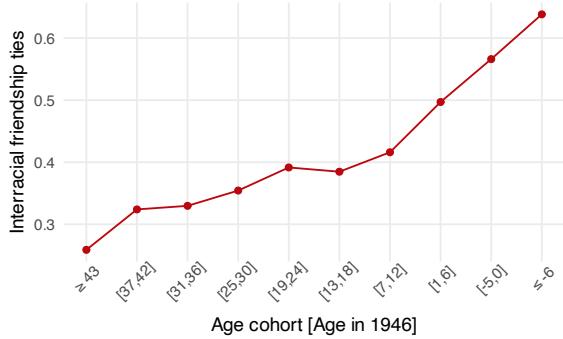
differences for other cohorts. Column (1) in Table 5 summarizes this effect for the target cohorts, using equation (1) and grouping the target cohorts into a single group. As in the previous section, Panel A provides estimates using all available cohorts, while Panel B excludes younger cohorts. In line with Panel B of Figure 5, individuals in the target cohorts who were exposed to the broadcast in 1946 are significantly more likely to report interracial friendships. An increase in exposure by one standard deviation increases the probability of having friends of a different race by 2.7 percentage points when using the full sample (Panel A), and by 3.7 percentage points when excluding younger cohorts (Panel B). The larger estimate in Panel B indicates that some of the effect is absorbed by younger cohorts, who also have a relatively higher (but not statistically significant) probability of interracial friendships in areas with greater exposure. The magnitude of the effect corresponds to a generational gap of 3–5 years, meaning that, in the absence of *Operation Intolerance*, it would have taken this amount of time to achieve a comparable change in racial assimilation among friends. Unsurprisingly, the magnitude of the effect on assimilation is smaller than the one on attitudes (Section 5.1).

We then turn to a more intensive form of assimilation: interracial marriage. As described in Section 3.3, we examine differences in interracial marriage rates (per 1,000 marriages) across cohorts using individual-level census data. Panel C of Figure 5 displays the average share of interracial marriages by cohort. Similar to the pattern observed for friendships, the incidence of interracial marriage increases more than threefold when comparing the oldest and youngest cohorts. Nonetheless, interracial marriages remain relatively rare, reaching only 17.5 per 1,000 marriages in the youngest cohort.

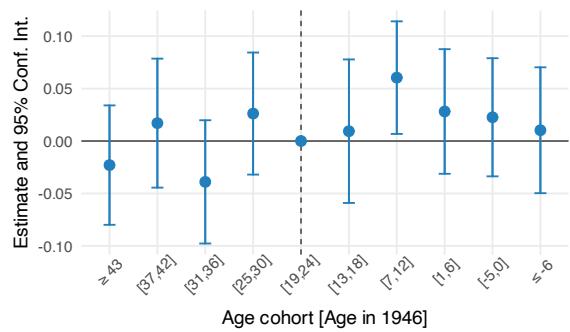
In Panel D, which plots cohort-level estimates of the effect of exposure to the show in 1946 on interracial marriage rates, based on equation (1), we find no statistically significant effect for any cohort. Column (2) of Table 5 summarizes the effect for the target cohorts. The results confirm the absence of any detectable impact of the broadcast on this deeper form of assimilation. This may reflect legal and institutional constraints. It was not until 1967 that the Supreme Court, in *Loving v. Virginia*, struck down anti-miscegenation laws as unconstitutional. Until then, interracial marriage remained illegal in several states, likely limiting its ability to reflect changes in individual attitudes. These findings suggest that *Operation Intolerance* did promote greater assimilation, though primarily at less intensive levels of social integration.

Figure 5: The effect of *Operation Intolerance* on interracial assimilation

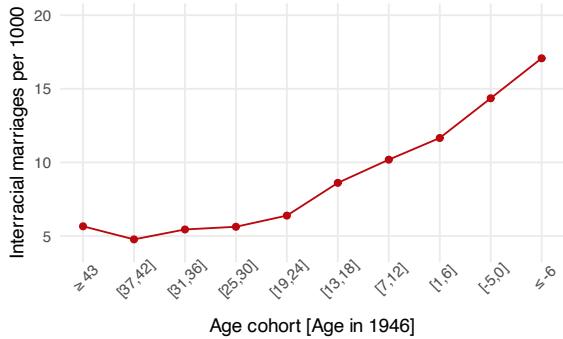
A. Share with interracial friendships, by cohort



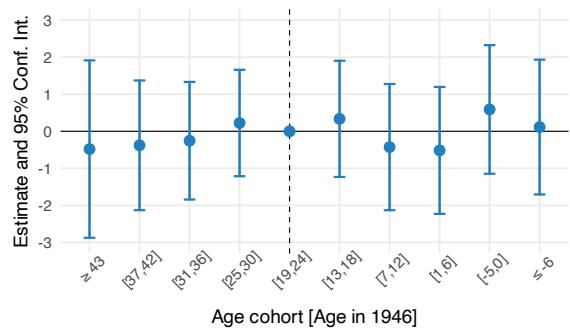
B. Cohort study on interracial friendships



C. Interracial marriage rate, by cohort



D. Cohort study on interracial marriages



Note. Panel A displays the average by age cohort in 1946 for *interracial friendships*, an indicator variable set to 1 if the respondent reports having friends of different races, and 0 otherwise. Panel C presents the interracial marriage rate, defined as the proportion of marriages between a white and a non-white spouse, by age cohort in 1946. Panels B and D illustrate the cohort study effects of *Operation Intolerance* on the likelihood of interracial friendships and marriages, respectively. The figures display the coefficients from equation (1) for the interaction term between the age cohort in 1946 and the (standardized) exposure to *Operation Intolerance* at the county level, defined as the share of the county's population covered by the program's radio signal in 1946. The specifications include the set of controls and FEes described in Section 4. Error bars indicate 95% confidence intervals, computed using standard errors clustered at the county level. The vertical line indicates the reference cohort, which was in adulthood at the time of *Operation Intolerance*. Additional details about the variables are presented in Appendix D.1.

Table 5: The effect on interracial assimilation

	Interracial friendships (1)	Interracial marriages (per 1,000 marriages) (2)
<b>A. Cohort study – All cohorts</b>		
Target × Exposure	0.027* (0.016)	-0.103 (0.553)
R <sup>2</sup>	0.255	0.029
Observations	5661	1167075
<b>B. Cohort study – Exclude younger cohorts</b>		
Target × Exposure	0.037** (0.018)	0.108 (0.563)
R <sup>2</sup>	0.268	0.035
Observations	4006	627395

*Note.* Estimates are based on equation (1), aggregating the target and control cohorts into two groups. All specifications include the set of controls and FEs described in Section 4. *Target* is an indicator variable set to 1 for respondents aged 7–18 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. Standard errors, clustered by county in column (1) and by household in column (2), are reported in parentheses (\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01). The dependent variables, reported in the column headers, are defined as follows: (1) *interracial friendships* is a binary 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* is a binary variable equal to 1 if the individual is married to someone of a different race and 0 otherwise, multiplied by 1,000 to rescale the indicator. Additional details about the variables are presented in Appendix D.1.

## 6 Voting and mobilization for Civil Rights

The results discussed in Sections 5.1–5.3 highlight the contribution of *Operation Intolerance* to the development of egalitarian racial attitudes, progressive political views, and racial assimilation in the 1960s and 1970s. In this section, our objective is to determine whether the effect of progressive narratives on targeted cohorts translated into broader, societal-level outcomes. To this end, we complement the cohort-based approach discussed in Section 4 with an event study DiD design that compares counties over time based on their differential exposure to *Operation Intolerance* in 1946.

The cohort study specification, presented in Section 4, leverages the sample's age structure to isolate the effect of exposure to the specific progressive narratives portrayed during *Operation Intolerance* in 1946. It separates this effect from two other potential influences: the broader impact of listening to *The Adventures of Superman* in general, and the influence of other programs broadcast by the same radio stations in 1946. Thus, the cohort study design isolates the effect of the narrative change within the show. In contrast, the complementary event study approach captures the combined effect of all programming broadcast by these stations. However, it is unlikely that our identification strategy captures effects beyond those of the content transmitted by radio stations that broadcast *Operation Intolerance*, and therefore beyond the effects on target cohorts. First, the set of radio stations that broadcast the show was specific to 1946 whereas the broader U.S. radio landscape expanded significantly after WWII, along with changes in station affiliations. Second, since our measure of exposure captures primarily content produced by MBS (Section 3.1), and in 1946 the only MBS production that promoted progressive values was *The Adventures of Superman*, broader effects from other MBS content are unlikely. Consistent with this, Table 3 in Section 5 shows limited effects of alternative radio content broadcast in 1946 on racial and political attitudes. Finally, the 1950s marked the beginning of the rise of television, which substantially reduced the centrality of radio as the dominant mass medium over time (Gentzkow, 2006).

The event study approach is based on the following specification:

$$Y_{c,t} = \sum_{\tau=0}^{\bar{T}} \gamma_\tau P_\tau \cdot R_c + \mu_c + \mu_{t \times state} + (X_c \times P_t) + \epsilon_{c,t} \quad (2)$$

where  $Y_{c,t}$  is the outcome variable for county  $c$  at time  $t$ ,  $P_\tau$  is an indicator variable if the observation refers to the period  $t = \tau$ , with  $t \in [0, \bar{T}]$ . The FEs,  $\mu_c$  (county FEs) and  $\mu_t$  (state by year FEs), and the county-specific trends ( $X_c \times D_t$ ) are defined as in equation (1), but we only retain interaction terms involving county-level characteristics. The error term  $\epsilon_{c,t}$  is assumed to be clustered at the county level.

All counties exposed to the intervention are “treated” simultaneously, which eliminates concerns about bias from treatment effect heterogeneity in staggered adoption designs. The results from estimating equation (2), pooling all post-intervention periods, are presented in Table 6. For variables observed in more than two time periods, we present the full dynamic effects using equation (2) in Figure 6.

We begin by focusing on electoral outcomes, particularly voting patterns related to segregation. Implementing a broad analysis across elections within our time frame is limited by the difficulty of classifying all candidates according to their stance on segregation. In most cases, explicit positions are unavailable, especially for losing candidates, and such public stances may also shift over time (see Section 2).

To overcome these limitations, we focus on two crucial presidential elections in which only one of the candidates presented a clear pro-segregation and racist platform: the 1948 and 1968 elections. In the 1948 elections, Strom Thurmond ran as a third-party candidate for the States’ Rights Democratic Party (or *Dixiecrats*), against Harry S. Truman (Democratic Party), Thomas E. Dewey (Republican Party), and Henry A. Wallace (Progressive Party). Thurmond’s political platform centered on racial segregation and the preservation of Jim Crow laws in Southern states. He won 39 electoral votes and 2.4% of the popular vote, carrying four Southern states (South Carolina, Alabama, Mississippi, and Louisiana).

In 1968, George Wallace ran as a third-party candidate for the American Independent Party, with a populist platform and a political history marked by strong opposition to desegregation (see Section 3.2). Running against Richard Nixon (Republican Party) and Hubert Humphrey (Democratic Party), Wallace secured 46 electoral votes and 13.5% of the popular vote, winning five Southern states (Alabama, Arkansas, Georgia, Louisiana and Mississippi). Refer to Mieczkowski (2020) for an overview of these elections.

We gather information on county-level electoral returns in the presidential elections of 1948 and 1968 from Clubb et al. (1987). Although both elections occurred in the post-broadcast period, we can exploit the fact that in 1948 most of *Operation Intolerance*’s target cohorts were not eligible to vote, since the right to vote was generally granted to U.S. citizens aged 21 and older.<sup>27</sup> In contrast, by 1968, all target cohorts had become eligible to vote. Due to regulatory barriers, these candidates ran only in a subset of states. We include in the analysis only the states in which both candidates appeared on the ballot (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia). Given these territorial restrictions, we estimate that in 1968, the votes of target cohorts were 29.5% of the total votes in these states in the presidential election (Appendix E.8).

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<sup>27</sup>In our sample, the sole exception was Georgia, which lowered its voting age to 18 in 1943. Nationwide, the voting age was reduced to 18 only in 1971.

Columns (1)–(2) in Table 6 present the results. From 1948 to 1968, an increase by one standard deviation in the share of population covered by *Operation Intolerance* in 1946 reduces the vote share for a segregationist candidate by 2.4 percentage points. At the same time, we do not observe any effect on voter turnout. These results suggest that the effects on support for civil rights leaders and opposition to segregationist politicians discussed in Section 5.2 translated into tangible changes in electoral outcomes.

To relate these effects to the exposure to *Operation Intolerance*, in Appendix E.8, we calculate the persuasion rate of the broadcast, following the approach of DellaVigna and Kaplan (2007) and Enikolopov et al. (2011). Assuming that only the target cohorts were influenced by the show, consistent with our results in Section 5.1–5.3, these estimates correspond to a persuasion rate ranging from 13.1 to 20.2%. This suggests that, even 22 years after *Operation Intolerance*, the decision to vote for George Wallace by approximately 1 in 5 to 8 listeners was influenced by the show. Given the amount of time that had passed between the broadcast and the 1968 election, this rate reflects not only the direct effect of the show, but also its long-term influence on the formation of attitudes.

The persuasion rate is lower than that found in studies of other contemporary radio shows with short-term electoral effects, such as 36.8% in 1930s Germany (Adena et al., 2015) and 28% in 1930s U.S. (Wang, 2021), but remains higher than persuasion rates observed in more recent periods characterized by a fragmented media market, where individuals consume content across differentiated platforms such as television, internet, and radio (DellaVigna and Gentzkow, 2010).

Next, we examine whether the effects on voting against segregation also manifest in mobilization efforts either supporting or opposing racial equality. We look at group mobilization, focusing in particular on the county-level presence of the KKK and the NAACP—the most prominent civil rights organization in the U.S., promoting advocacy, legal rights, and grassroots mobilization to end racial discrimination and voter suppression since the beginning of the twentieth century. We collect this information for periods before and after 1946 from separate sources. For the KKK, we use Kneebone and Torres (2015) for 1932 and 1942, which lists KKK chapters active during the Second KKK (1919–1942) and provides the dates on which each chapter first appeared. We obtain the 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 the presence in 2000 and 2020 from the Southern Poverty Law Center (2023). For the NAACP, we obtain the location of branches in 1925, 1942, and 1961 from Estrada and Hermida (2023), and in 2020 using web-scraping. See Appendix D.2 for details about these sources and descriptive statistics. KKK was present in 36.5% of counties in 1942, a share that decreased to 11.7% in 1964, and had almost

disappeared by 2020, with only 25 active branches. In contrast, the NAACP was present in 12.3% of counties in 1942, 22.4% in 1964, and 22% in 2020.

Columns (3)–(4) of Table 6 show the results. Exposure to *Operation Intolerance* appears to have played an important role in shaping these dynamics. In the post-broadcast period, an increase of one standard deviation in exposure in 1946 leads to a significant reduction of 2.7 percentage points in the probability of having an active KKK chapter. Consistent with this result, we also observe a significant decrease of 2.3 percentage points in the probability that a county has an NAACP branch.

Panel B of Figure 6 illustrates the temporal evolution of these effects by providing estimates from equation (2) at each data point. In line with the importance of the cohorts targeted by *Operation Intolerance*, the effects on both organizations appear in the 1960s (although estimates are significant at the 10% level) and remain persistent thereafter.

By 2020, 74 years after *Operation Intolerance*, counties with a higher broadcast coverage in 1946 have a significantly lower probability of having an active KKK chapter and a significantly higher probability of having an active NAACP branch, compared to counties with lower exposure. The estimated effects are -0.031 and 0.030 per standard-deviation increase in exposure, respectively.

Before 1946, there were no significant differences between these areas in terms of the presence of either organization. These findings are consistent with qualitative evidence on the influence of *Operation Intolerance* in decreasing KKK presence in the post-war decades (see, e.g., Levitt and Dubner, 2005), and suggest that this result is partly driven by a cultural shift toward racial equality, which was more pronounced in areas where target cohorts had greater exposure to progressive narratives during childhood or adolescence.

Although estimates suggest that coverage of *Operation Intolerance* promoted mobilization in favor of civil rights, we aim to ascertain whether a tolerant, pro-civil rights narrative was already prevalent in public discourse before 1946. For this purpose, we examine the salience of civil rights in local newspapers. We collect data from local newspapers using the online archive at [newspapers.com](#), mapping newspapers to counties based on the location of their headquarters. In line with Gentzkow and Shapiro (2010), we use a bag-of-words approach, treating each page in a newspaper as an unstructured matrix of words and exploring the unconditional probability that a word appears on a specific page.

To this end, for each month  $t$  in the period 1930–1980, we calculate the total number of pages in 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. For a pre-specified theme  $k$ , we compute the number of pages

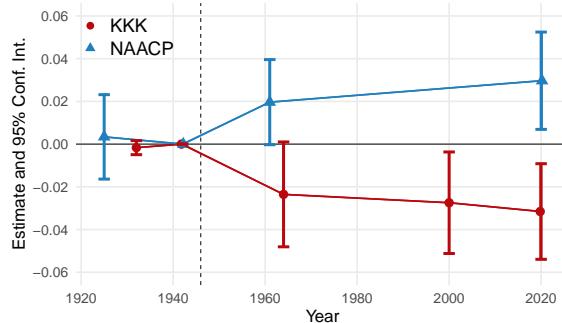
Table 6: Event study effects on voting and mobilization

	Electoral outcomes		Mobilization		
	Voting for segregation (1)	Turnout (2)	KKK (3)	NAACP (4)	Salience of civil rights (5)
Post-1948 × Exposure	-0.024*** (0.007)	-0.003 (0.004)			
Post-1946 × Exposure			-0.027** (0.011)	0.023*** (0.008)	0.182** (0.082)
Dependent variable mean	0.328	0.417	0.176	0.169	0.007
R <sup>2</sup>	0.931	0.942	0.627	0.654	0.648
Number of counties	1,133	1,133	3,098	3,098	1,103
Observations	2,261	2,261	15,490	12,392	18,751

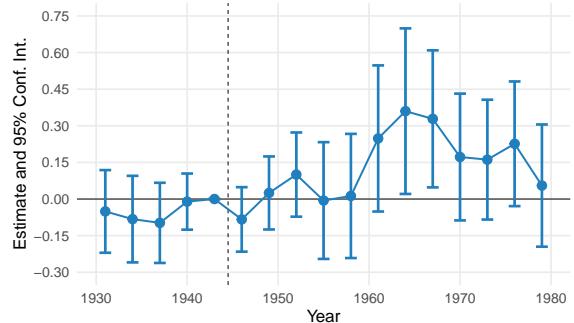
Note. Estimates are based on equation (2), pooling all post-intervention observations. *Post 1948* is an indicator variable set to 1 for observations after 1948. *Post 1946* is an indicator variable set to 1 for observations after 1946. Standard errors, clustered by county, are reported in parentheses (\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01). The dependent variables in columns (1) and (2) refer to electoral outcomes: (1) *voting for segregation* is the county-level vote share for Thurmond in 1948 and for Wallace in 1968; (2) *turnout* is the share of voters who voted in the same elections. The dependent variables in columns (3) and (4) refer to group mobilization: (3) *KKK* is an indicator variable equal to 1 if the county has at least one KKK chapter at time  $t$ , and 0 otherwise; (4) *NAACP* is an indicator variable equal to 1 if the county has at least one NAACP branch at time  $t$ , and 0 otherwise. The dependent variable in column (5) is the *salience of civil rights* measure, defined by the first principal component of the salience of civil rights-related themes in local newspapers (see Section 6 for details on the construction of this measure). Estimates and robustness checks for alternative procedures used to build the salience measure are presented in Appendix E.7.1. Additional details about the variables are presented in Appendix D.1.

Figure 6: The effect on mobilization

A. KKK versus NAACP



B. Salience of civil rights



Note. Estimates are based on equation (2). Confidence intervals at the 95% of confidence level are obtained using standard errors clustered at the county level. In Panel A, 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. In Panel B, the dependent variable is the *salience of civil rights* measure, defined by the first principal component of the salience of civil rights-related themes in local newspapers (see Section 6 for details on the construction of this measure). Estimates and robustness checks for alternative procedures used to build the salience measure are presented in Appendix E.7.1. Additional details about the variables are presented in Appendix D.1.

mentioning the word or combination of words indexing the theme, which we label  $pages_{kc,t}$ .

To reduce noise, we aggregate these monthly data into 36-month periods relative to the launch of *Operation Intolerance*. We index these periods by  $y$ , where  $y$  indicates the lower bound of the period. For example,  $all\_pages_{c,y=1946}$  is the total number of pages published in newspapers between April 1946 and March 1949. In line with Beach and Hanlon (2022), we define the salience of a theme  $k$  in county  $c$

in year-group  $y$  as the frequency of the theme:

$$salience_{kc,t} = \frac{pages_{kc,t}}{all\_pages_{c,t}}. \quad (3)$$

To measure the overall salience of civil rights, we collect this measure for 25 themes related to civil rights that were prevalent in the U.S. throughout the period 1930–1980. This approach is similar to the one followed by (Esposito et al., 2023). Appendix E.7 provides more details on how themes were identified and descriptive statistics on the importance of each theme.

Our measure of civil rights salience is constructed by aggregating individual measures using the regularized iterative principal component analysis (RPCA) methodology (Josse and Husson, 2012), which is designed to handle data structures with missing values.<sup>28</sup> We calculate the index using the first principal component, which captures 35.7% of the variation in our sample. Appendix E.7 presents alternative procedures for building the index and selecting themes.

Column (5) of Table 6 shows that in the post-1946 period, an increase by one standard deviation in the exposure to *Operation Intolerance* in 1946 leads to a significant increase in salience of civil rights by 0.184 units. Panel B of Figure 6 plots event study estimates from equation (2). The effect on salience is concentrated in the 1960s, highlighting not only that salience increases primarily at the height of the Civil Rights Movement, but also that target cohorts make up a substantial share of the adult population in this decade. These effects diminish and become statistically insignificant by the 1970s. Importantly, counties with varying degrees of exposure exhibit parallel trends before 1946, supporting the validity of the identification strategy.

These findings reinforce a mechanism in which greater exposure to the progressive narratives portrayed in *Operation Intolerance* in 1946 led to higher civic mobilization and advocacy for civil rights during the peak years of the Civil Rights Movement.

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<sup>28</sup>In the archive, newspapers are not present for all counties or for the entire period, either because they are missing from the archive or because the county had no active newspaper at a specific time. In the regression analysis, to avoid imputing a large share of data, we include only counties where newspapers are available for at least 50% of observations. In addition, we winsorize each series at the 1<sup>st</sup> and 99<sup>th</sup> percentiles to avoid over-weighting abnormally large values. Appendix Figure E6 highlights the counties with available data. Appendix E.7 shows robustness to alternative thresholds.

## 7 Conclusion

Minoritized communities around the world face deeply entrenched prejudice in their pursuit of equality. This paper demonstrates that media can serve as a powerful antidote to such bias. By examining a remarkable experiment that used the popular children's radio program *The Adventures of Superman*, to promote tolerance in the 1940s, we show how progressive narratives aimed at children not only fostered a generation more supportive of civil rights but also helped lay the foundation for broader social and political change, ultimately 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. First, 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 while countering misinformation and hate-based content. This is a crucial priority, given the evidence that highlights the role of social media in spreading hatred toward minorities ([Bursztyn et al., 2019](#)).

Second, our study highlights the importance of targeting young generations. Early exposure to progressive narratives can have long-lasting effects and promote 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.

Third, 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 for 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 promote justice.

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

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

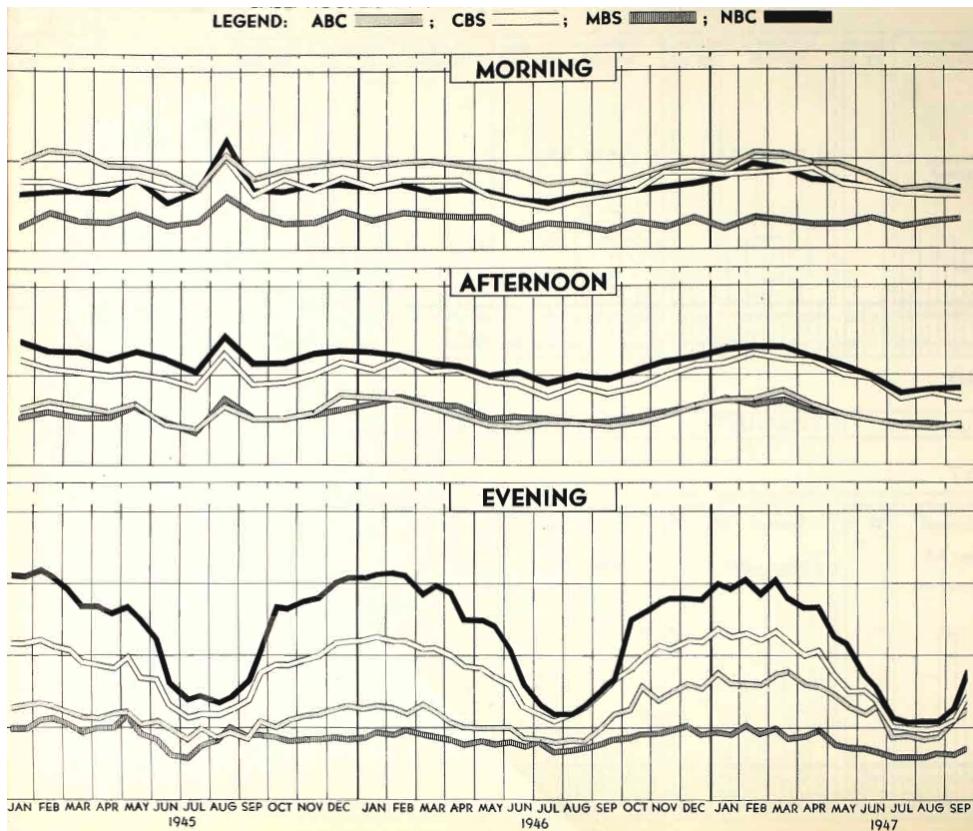
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## A Radio in 1946

### A.1 Radio listenership

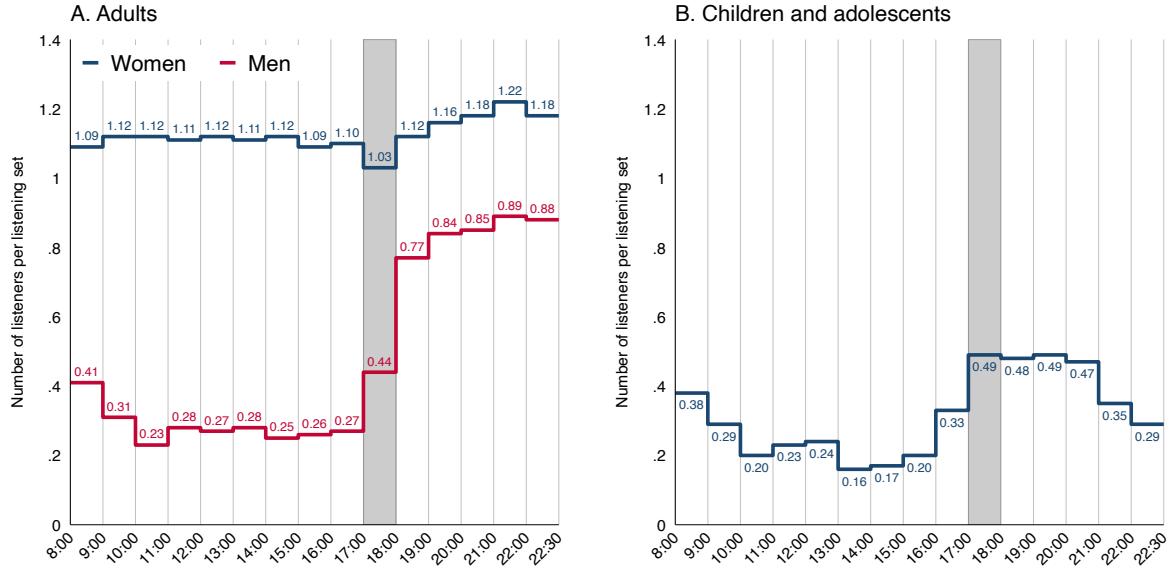
This section describes radio listenership in 1946. We capture listenership using data from [Hooper Inc. \(1949\)](#), which provides the share of respondents listening to a program at the time it airs, measured via telephone surveys. These measurements are based on data collected from households in 33 cities geographically distributed throughout the nation. Figure A1 summarizes the listenership of programs produced by major radio networks from January 1945 until September 1947. MBS scored the lowest listening rate on the four national networks. However, MBS was particularly competitive in the afternoon, the share of the day that was primarily aimed at adult (non-working) women and children and adolescents. Figure A2 reports the number of listeners per listening set, distinguishing between adults (Panel A) and children (Panel B). We highlight in gray the time slot that includes The Adventures of Superman. The figure shows that the 5–6 p.m. slot particularly targeted children, as during this hour the number of children per listening set was the highest of the day, while for adult women it is the lowest. Male adults listened primarily in the evening after 6pm, while female adults listened throughout the day, but with an increase during the evening.

Figure A1: Listenership, by radio network and period of the day



*Note.* Average listenership by network and period of the day. Data refer to the period from January 1945 to September 1947. The source of the graph is the Summer 1947 Comprehensive Report from [Hooper Inc. \(1949\)](#).

Figure A2: Number of listeners per listening set (November–December 1946)



Note. The figure shows the number of listeners per listening unit, distinguishing by adults (Panel A) and children and adolescents (Panel B). Data refer to the period November–December 1946 and are obtained from [Hooper Inc. \(1949\)](#).

## A.2 MBS productions

To understand whether MBS promoted progressive narratives in all its productions, in this section, we analyzes the content produced by MBS in 1946. We gather information on radio programs from [Hooper Inc. \(1949\)](#), which highlights programs with commercial value for advertisers and thus aimed at a large national audience, along with their listenership shares. The following table presents all programs reported for the period November–December 1946. For each program, we report the genre, a brief description, the time and days of the week it was broadcast, the duration of each episode and the total weekly airtime, as well as the listenership share (or *Hooperating*).

Program	Genre and description	Time (DoW)	Duration (min.)	Min./week	Share
The Shadow	DRAMA. Crime drama about a vigilante with the power to cloud men's minds.	17:00 (Su)	30	30	35.5
True Detective Mysteries	CRIME SHOW. Series on the history of actual crimes.	16:30 (Su)	30	30	27.2
Adventures of the Falcon	MYSTERY DRAMA. Crime drama featuring a detective solving mysteries.	20:30 (Tu)	30	30	25.1
Quick as a Flash	QUIZ. Game quiz show.	17:30 (Su)	30	30	24.5
Fulton Lewis	NEWS/COMMENTARY. News commentary program featuring journalist F. Lewis.	19:00 (MTuWThF)	15	75	23.0
Nick Carter, Master Detective	MYSTERY DRAMA. Detective drama featuring a private detective.	18:30 (Su)	30	30	22.6
Double or Nothing	QUIZ. Game quiz show.	19:00 (Su)	15	15	21.8
House of Mistery	MYSTERY DRAMA. Series on a scientist disproving the existence of phantoms.	16:00 (Su)	30	30	20.0
Those Websters	DRAMA. Sit-com on the daily life of an American family.	18:00 (Su)	30	30	18.8
Queen for a Day	QUIZ. Contestants shared their personal hardships for the chance to win prizes.	14:30 (MTuWThF)	30	150	18.6
Cedric Foster	NEWS/COMMENTARY. News commentary by C. Foster.	14:00 (MTuWThF)	15	75	17.9

(continued on next page)

Program	Genre and description	Time (DoW)	Duration (min.)	Min./ week	Share
Gabriel Heatter	NEWS/COMMENTARY. News commentary by G. Heatter.	21:00 (MTuWThF)	15	75	16.1
John J. Anthony	VARIETY. Talk show about marital relations.	13:45 (MTuWThF)	15	75	16.0
The Adventures of Superman	ADVENTURE FICTION. Adventure series featuring the superhero Superman.	17:15 (MTuWThF)	15	75	15.4
Tom Mix	ADVENTURE FICTION. Western adventure series about a heroic cowboy.	17:45 (MTuWThF)	15	75	15.3
Checkerboard Jamboree	VARIETY. Variety show.	13:00 (Sa)	0	60	15.2
Twenty Questions	QUIZ. Game quiz show.	20:00 (Sa)	30	30	14.5
Juvenile Jury	QUIZ. Quiz show where children answered questions from a jury.	13:30 (Su)	30	30	14.0
Arthur Hale	NEWS/COMMENTARY. Commentary program by A. Hale.	19:30 (TuThSa)	45	45	13.9
Warden Lawes' Crime Cases	CRIME SHOW. True-crime show discussing real cases and legal issues.	13:00 (Su)	15	15	13.8
Crimes of Carelessness	DRAMA. Drama portraying famous American fires.	15:30 (Su)	30	30	13.5
Captain Midnight	ADVENTURE FICTION. Series featuring a WWI aviator battling crime and espionage.	17:30 (MTuWThF)	15	75	12.6
Casebook of Gregory Hood	MYSTERY DRAMA. Detective series following an antiques dealer.	20:30 (M)	30	30	12.3
Exploring the Unknown	DRAMA. Science drama show exploring the natural world.	21:00 (Su)	30	30	11.3
Coke Club	VARIETY. Show sponsored by Coca-Cola featuring artist Morton Downey.	12:15 (MTuWThF)	15	75	10.8
Treasure Hour of Song	MUSIC. Music program.	21:30 (Th)	30	30	10.3
Real Stories from Real Life	DRAMA. Soap opera based on true stories.	21:15 (MTuWThF)	15	75	9.4
Buck Rogers in the 25 <sup>th</sup> Century	ADVENTURE FICTION. Show featuring the space adventures of Buck Rogers.	16:45 (MTuWThF)	15	75	9.3
Henry J. Taylor	NEWS/COMMENTARY. Commentary program by H.J. Taylor.	19:30 (MF)	30	30	9.2
Victor H. Lindlar	VARIETY. Talk show featuring V.H. Lindlar.	11:45 (MTuWThF)	15	75	9.0
Spotlight Bands	MUSIC. Music program.	21:30 (MWF)	30	90	8.7
Pilgrim Hour	RELIGION. Religious program.	12:00 (Su)	30	30	7.8
Judy 'n' Jill 'n' Johnny	MUSIC. Show featuring Johnny Desmond.	12:00 (Sa)	30	30	7.5
It's Up to Youth	VARIETY. Talk show about youth issues.	20:30 (W)	30	30	7.5
Inside of Sports	SPORT. Talk show covering sport news.	19:45 (MTuWThF)	15	75	7.2
A brighter tomorrow	NEWS/COMMENTARY. Program on American success stories.	22:00 (Su)	30	30	7.2
Lutheran Hour	RELIGION. Religious program.	12:30 (Su)	30	30	7.0
Burl Ives	MUSIC. Folk music show.	20:00 (F)	15	15	6.9
Upton Close	NEWS/COMMENTARY. News commentary program by journalist U. Close.	22:15 (Tu)	15	15	6.4
Spotlight on America	VARIETY. Program discussing American culture and issues.	22:00 (F)	30	30	5.8
Special Investigator	MYSTERY DRAMA. Detective drama.	20:30 (Su)	15	15	5.8
Singing Sweethearts	MUSIC. Music variety show.	13:30 (Su)	15	15	-
By Popular Demand	MUSIC. Popular songs requested by listeners.	21:30 (Th)	30	30	-

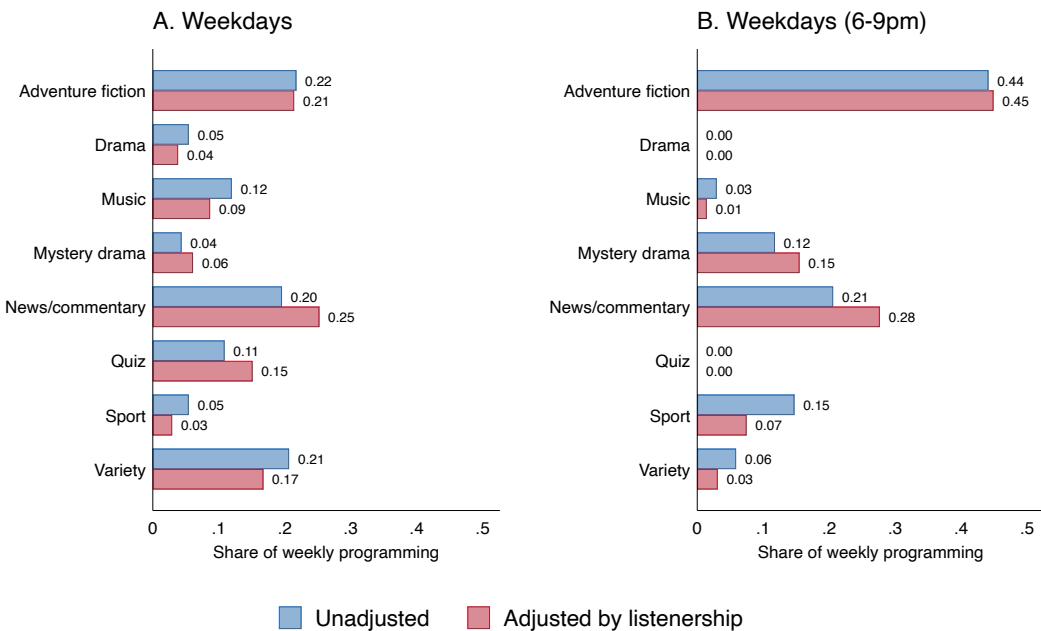
Note. The radio programs are sorted based on the average listenership share (or Hooperating). In column DoW, "M" indicates Monday, "Tu" Tuesday, "W" Wednesday, "Th" Thursday, "F" Friday, "Sa" Saturday, and "Su" Sunday. Data refer to the period November–December 1946 and are obtained from [Hooper Inc. \(1949\)](#). The column Hooperating averages all available ratings reported for the period. When ratings are not available, we use the ratings for the period March–April 1947.

For MBS productions, Figure A3 shows the share of weekly (Monday–Friday) hours of broadcasting by program category, both in absolute term (Panel A) and correcting for listenership (Panel B). In absolute terms, adventure fiction targeted at children received the highest share of programming, accounting for 22% of the MBS broadcasts. In the time slot with the highest share of children listening, the 5–6pm slot during the week, adventure fiction is predominantly the main category, accounting for 0.44 and 0.45 of weekly programming. In this time slot, MBS productions in 1946 were represented by 3 programs, all serial dramas: *The Adventures of Superman*, *Tom Mix*, and *Captain Midnight*. *Tom Mix* was a Western adventure series featuring a heroic cowboy, while *Captain Midnight* was an action adventure series

featuring a World War I aviator who contends with crime, espionage, and sabotage.<sup>2</sup> Apart from the *The Adventures of Superman*, the narrative of these other shows had elements of action and heroism, but they were not known to address issues of equality (Dunning, 1998).

The audience of the remaining programs was primarily adults. The second category of interest were variety programs and news and commentaries, covering 21% and 20% of Monday–Friday programming, respectively. There is no evidence that variety openly discussed equality, but we have evidence against news and commentaries discussing racial issues in a progressive way. In this category, we highlight six shows carrying the name of their commentator: *Arthur Hale*, *Henry J. Taylor*, *Fulton Lewis*, *Gabriel Heatter*, and *Upton Close*. None of these commentators were openly progressive (Hilmes, 1997; Dunning, 1998). In particular, Taylor, Lewis, and Close were openly conservative commentators, with the last two being close to right-wing positions, while Hale, Foster, and Heatter were less ideologically charged.

Figure A3: MBS content during weekdays in 1946, by program genre



*Note.* The figure shows the share of hours of broadcasting during weekdays (Panel A), and the share of hours of broadcasting during weekdays in the time slot with the largest share of children listening to the radio (Panel B). Data refer to the period November–December 1946 and are obtained from Hooper Inc. (1949).

## B Exposure to *Operation Intolerance*

### B.1 Historical sources

This section provides some examples of the documents digitized to produce the measure of exposure to the program. First, Panel A in Figure B1 provides an example retrieved from the 1947 Broadcasting Yearbook (Broadcasting, 1947), identifying Kellogg Company as sponsor of *The Adventures of Superman*, the precise broadcasting schedule in 1946 and the number of individual stations involved in the

<sup>2</sup>Weekends targeted different audiences in this time slot due to school closures. We highlight two programs in the 5–6pm slot, capturing a much larger audience as compared to the programs broadcast during the week. These are *The Shadow*, a crime drama, and *Quick as a Flash*, a game quiz show.

advertising deal at the start of 1946. Panel B shows an extract from the 1945 publication of the Standard Rate and Data Service ([The National Authority, 1945](#)), capturing detailed information on sales of advertising slots for the subsequent year, including the list of stations constituting the packaged advertising group on MBS. Panel C shows an extract from the Radio Annual publication from 1946 ([Radio Daily, 1946](#)), which provides data on the location and specifications of transmitters for the complete radio network. We validated and supplemented these data using digitized historical newspaper archives from [Newspapers.com](#), which allows searching pages in which specific keywords appear. Search strings combined specific radio station identifiers obtained from previous steps (e.g., WOR) with keywords such as “Superman” or “The Adventures of Superman”. When text recognition errors rendered identifiers illegible, we used alternative queries combining “Superman” or “MBS” with “schedule”. Searches were limited to the year 1946 and conducted state-by-state to ensure comprehensive geographic coverage. Figure B2 presents a representative example of a published schedule.

In total, we collect information of 998 radio stations, including 84 located in Canada but potentially covering areas within the U.S. Among these, 221 stations aired *Operation Intolerance*. We geo-reference the location of each station’s transmitter based on the precise address reported in ([Radio Daily, 1946](#)). If only the street name is provided, we assume the transmitter is located at the midpoint of that street. When transmitter location data is missing, we use the station’s business address instead. In the few remaining cases where both the transmitter and business address are unavailable, we assign the location to the centroid of the respective county. Panel A in Figure B3 shows the geographical distribution of all radio antennas active in 1946, distinguishing between those that aired the program (blue) and those that did not (red). The latter group is used to construct placebo exposure to alternative radio content, as presented in column 5 of Table 3 in Section 5.

Figure B1: Example of information digitized from historical publications

A. 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	12/21/46—	Kudner Agency, Detroit
Gillette Safety Razor Co., Boston	Safety Razors and Blades	World Series	1:15 P.M. to come.	424	10/6, 7, 10, 11, 18, 1/16/46	Maxon Inc., N. Y.
		Cotton Bowl Game	2:00 P.M. to come.	236	1/1/46 only	
		East-West Football Game	4:45 P.M. to come.	250	1/1/46 only	
		All-Star Baseball Game	1:15 P.M. to come.	290	7/9/46 only	
Gospel Broadcasting Assn. (eff 11/8/46 Dr. Fuller Foundations)	Evangelical Talks	Pilgrim Hour	Sun., 12:00-12:30 P.M.	185	9/6/42—	R. H. Albe 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	9/9/45-8/3/46	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 Makelin 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
Heilbro Watch Co., New York	Watches	Pick and Pat Time eff 7/16/44 Quick As A Flash eff 6/10/45 The Abbott Mystery eff 9/1/45 The Abbott Mystery eff 6/9/46 The Abbott Mystery eff 1/20/46 Sun., 5:30-6:00 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.
<b>Kellogg Company, Battle Creek</b>	Kellogg's Pep	<b>Superman</b>	Mon.-Fri., 6:45-6:00 P.M., local eff 7/4/44 Tues., Thurs., 5:45- 6:00 P.M., local eff 1/15/46 Mon.-Fri., 5:15- 6:30 P.M., local	220	1/4/43-9/28/44 1/16/46—	Kenyon & Eckhardt, N. Y.

B. Standard Rate and Data Service

**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 Evening:

	br. rate
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.

**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	138.00
†Cleveland (WHK)	340.00	204.00	138.00
†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. (WYB)	240.00	144.00	96.00

Note. Panel A is extracted from the 1947 Broadcasting Yearbook (*Broadcasting, 1947*), identifying Kellogg Company as sponsor of *The Adventures of Superman* and the broadcasting schedule in 1946. Panel B is extracted from the May 1945 Standard Rate and Data Service publication (*The National Authority, 1945*), allowing to identify the precise composition of broadcasting network of *The Adventures of Superman* in 1946. Panel C is extracted from the 1946 Radio Annual (*Radio Daily, 1946*), 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.

C. 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: 100 W. Main St., Cape Girardeau, Mo. 63415  
Phone Number: 324 Broadway  
Transmitter Location: 3 1/2 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

Time on the Air.....5:30 a.m. to 12 midnight:  
Sundays, 8 a.m. to 12 midnight  
Newspaper Affiliation: Hannibal Courier-Post

**Personnel**

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

**K W O S**

JEFFERSON CITY—EST. 1936

MUTUAL BROADCASTING SYSTEM  
Frequency: 1400 Kc. Power: 250 Watts  
Owned-Operated By: Tribune Publishing Co.  
Business Address: 210 Monroe  
Phone Number: 4000  
Studio Address: 210 Monroe  
Transmitter Location: St. Mary's Blvd.  
Time on the Air.....6:30 a.m. to midnight  
Newspaper Affiliation: Jefferson City Capital  
News & Post Tribune  
Representative: Sean & Ayer

**Personnel**

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

**K H M O**

HANNIBAL—EST. 1941

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

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.....8 a.m. to midnight  
Newspaper Affiliation: Joplin Globe  
Publishing Co.  
News Service: UP

**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.....8 a.m. to midnight  
Newspaper Affiliation: Joplin Globe  
Publishing Co.  
News Service: UP

Figure B2: Example of radio schedule extracted from newspapers

<b>Radio Schedules</b>	<b>WOMI</b>	<b>Chain Highlights</b>
<b>TODAY—WOMI</b>	<b>Tuesday, Feb. 5</b>	
4:00 Birthday Club.	6:58 Sign On.	3:15 The Johnson Family (MBS).
4:15 Strictly Informal.	7:00 News.	3:30 The Mutual Melody (MBS).
5:00 Novelty Hour	7:05 Morning Clock.	4:00 Birthday Club.
5:15 Superman (MBS)	8:00 News.	4:15 Strictly Informal.
5:30 News.	8:05 Cote Glee Club.	5:00 The Novelty Hour
5:35 Dinner Party.	8:30 Just Relax.	5:15 Superman (MBS).
5:45 Tom Mix (MBS).	8:45 Waltz Time (MBS).	5:30 News.
6:00 Fulton Lewis (MBS).	9:15 Just Relax.	5:35 Dinner Party.
6:15 Dinner Music.	9:45 Musical Album.	5:45 Tom Mix (MBS).
6:20 Livestock Report.	9:30 Tic-Toc-Time (MBS).	6:00 Fulton Lewis (MBS).
6:45 Lum 'N' Abner.	10:00 Maurice Davis.	6:15 Dinner Music.
7:00 Bulldog Drummond (MBS).	10:30 Mustard and Gravy.	6:25 Livestock Market.
7:30 Muzitest.	10:55 Interlude.	6:30 News.
7:50 U. S. Employment.	11:00 Wm. Lang (MBS).	6:35 Sweet Music.
8:00 Gabriel Heatter (MBS).	11:15 Broadway Band- wagon.	6:40 Owensboro Today.
8:15 Dance Tunes.	11:30 Stork Express.	6:45 Lum 'N' Abner.
8:30 Spotlight Bands (MBS).	11:55 Xavier Cugat.	7:00 Muzitest.
9:00 Your Land and Mine (MBS).	12:00 Tobacco News.	7:30 Dance Hour.
9:15 CIO Speaker.	12:05 Rhythm With Rein- hardt.	8:00 Gabriel Heatter (MBS).
9:30 News.	12:30 Novelty Tunes.	8:15 Keepsake Time.
9:35 Dance Hour.	12:45 John J. Anthony (MBS).	8:25 News.
10:00 News.	1:00 Cedric Foster (MBS).	8:30 American Forum of the Air (MBS).
10:05 Dance Hour (Con't).	1:15 Smile Time (MBS).	9:15 Sweet Music.
10:45 Buddy Morrow (MBS).	1:30 Queen For A Day	9:25 News.
10:55 News (MBS).	2:00 Baptist Hour.	9:30 The Better Half (MBS).
11:00 Chuck Foster (MBS).	2:30 Ann Doe Club.	10:00 Club Trianon.
11:30 Sign Off.	2:45 Hill-Billy Jamboree.	10:15 News.
	3:00 Erskine Johnson (MBS).	10:20 Basketball Game.
		11:00 Art Kassel (MBS).
		11:30 Sign Off.
<b>WITH THE CHAINS</b>		
MBS programs are listed above.		

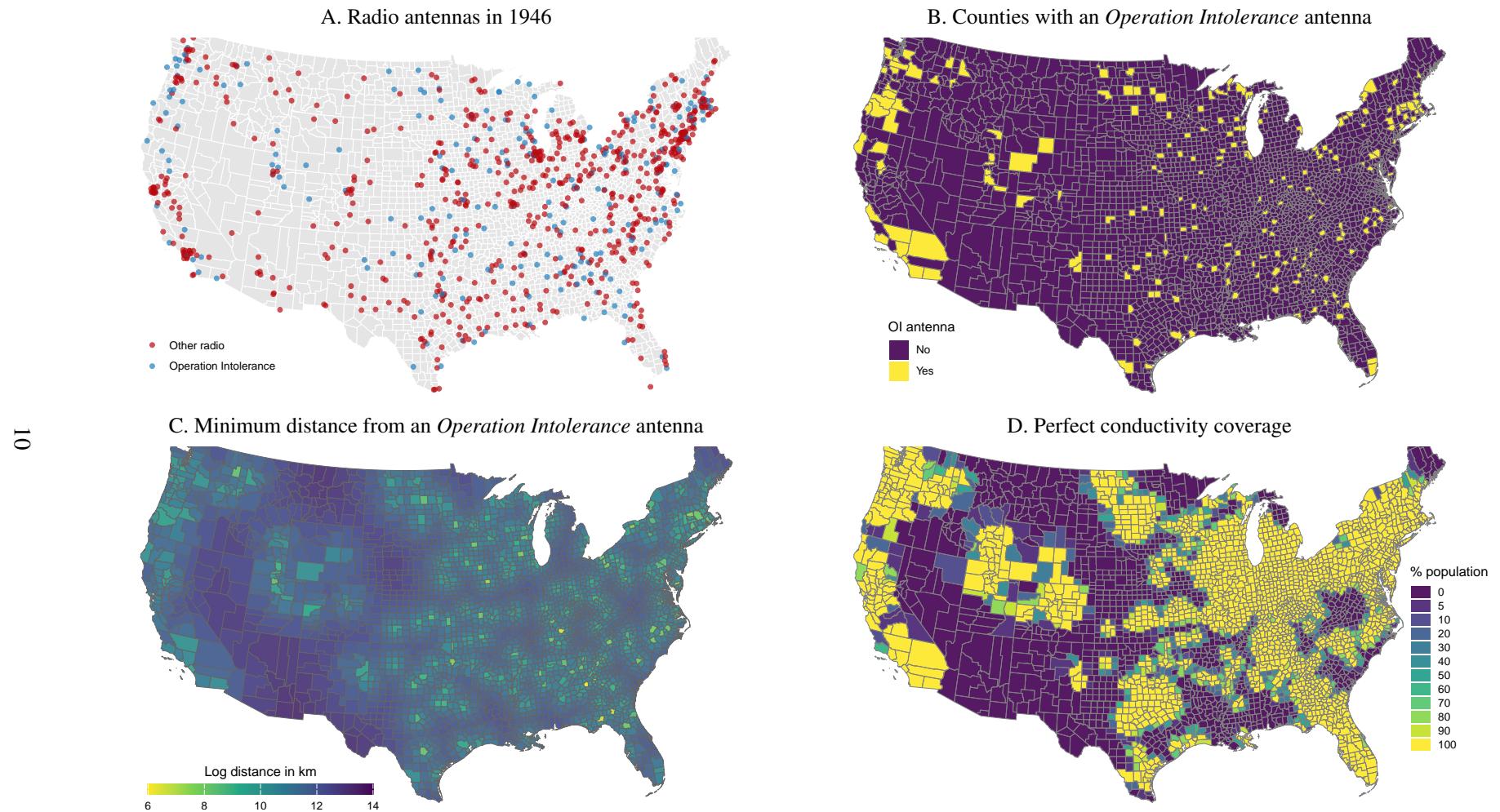
*Note.* Extract from the edition of 2/04/1946 of the Messenger-Inquirer, a newspaper published in Owensboro, Kentucky. WOMI is the identifier of the radio station. This station was an affiliate of MBS in April 1946, and the schedule indicates that the station broadcast both local content and MBS productions (indicated in parentheses).

## B.2 Propagation controls

This section provides details on the construction of three county-level measures used as controls in all estimations, which we refer to as propagation controls throughout the paper. See Section 4 for details about the use of these variables. Figure B3 presents the distribution of the three propagation control measures.

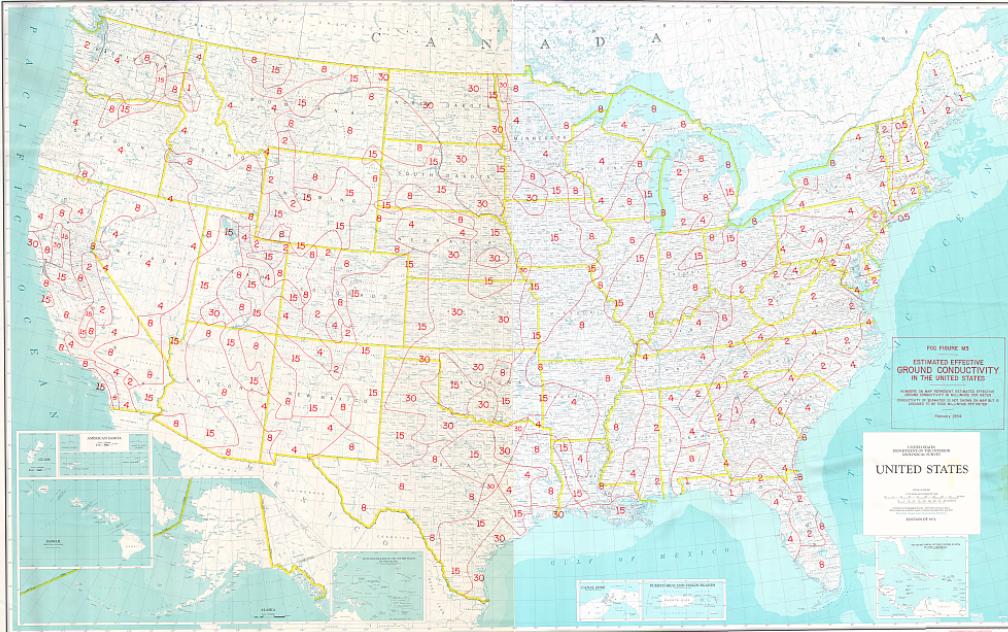
First, we generate a binary indicator equal to one if a county has at least one radio antenna that aired *Operation Intolerance* within its boundaries, and zero otherwise (Panel B). Second, we calculate the natural logarithm of the distance in kilometers between each county centroid and the nearest antenna that broadcast the program (Panel C). Third, we estimate theoretical radio coverage under the assumption of unobstructed signal propagation (Panel D). Pioneered in Olken (2009), this method is widely used for identification in the media literature, typically applied to FM radio or television broadcasting. We build a correspondent measure for AM transmissions, exploiting the fact that the ground wave is the dominant mode of AM signal propagation during the daytime hours of the broadcast and therefore the reach of the signal is highly dependent on ground conductivity between the transmitter and the receiver (Strömborg, 2004). Whereas actual coverage estimates account for spatial variation in ground conductivity, we also compute a theoretical “perfect conductivity” coverage assuming uniform ideal propagation conditions. Following the Federal Communication Commission (1954), we assign a conductivity value of 5 S/m, corresponding to salt water, which is commonly used to model minimal-loss AM signal propagation. The signal strength is then calculated using the software *Field Strength Calculator One* applying the ITU-R P.368-7 algorithm (ITU, 2007), the same algorithm used to generate actual coverage predictions in Section 3.1. The perfect conductivity coverage can be interpreted as a proxy for coverage as targeted by the radio station operators at that time. It is important to note that precise calculations of coverage were not possible at the time of the broadcast in 1946 (Bremmer, 1958). In addition, the first comprehensive ground conductivity map, allowing us to estimate AM propagation across the US, was published by the FCC only in 1954 (Figure B4).

Figure B3: 1946 radio network and propagation controls for *Operation Intolerance*



*Note.* Panel A shows the distribution of antennas of the complete U.S. radio network as of 1946. Stations that broadcast *Operation Intolerance* are marked in blue, while those that did not are shown in red. For visual clarity, stations located in Canada are omitted. Panel B shows the distribution of counties that have an antenna airing the program placed within county boundaries. Panel C plots the logarithm of the distance (in kilometers) between each county centroid and the nearest *Operation Intolerance* broadcasting antenna. Panel D displays the geographical distribution of the population share covered at the county level, computed assuming ideal radio signal propagation conditions. See Section 3 for details on the methodology used to construct these county-level measures.

Figure B4: Ground conductivity



Note. 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. varies strongly, reaching from 0.5 and 30 millimhos (or millisiemens) per meter.

### B.3 *Operation Intolerance* listenership

In 1946, there was not nationwide survey that could capture listenership of *Operation Intolerance*. The unique sources are [Whiteside \(1947\)](#); [Hooper Inc. \(1949\)](#), reporting a listening population of 4.5 million children and adolescents. This estimate, based on a sample of larger urban areas (see Appendix A.1), is potentially a lower bound of actual listenership. To corroborate this estimate, we compare it with potential exposure to the show as computed using the potential exposure to the signal. This estimate, based on a sample of larger urban areas (see Appendix A.1), is potentially a lower bound of actual listenership. Using county-level data on population (by age) and radio ownership for the years 1940 and 1950, obtained from census data provide by ([Haines et al., 2010](#)), together with the radio coverage described in Section 3.1, we compute that approximately 10.89 million people aged 7–18 in 1946 could have listened to the show. This represents 45% of the total U.S. population in this age group.

## C Additional information about *The Adventures of Superman*

### C.1 Exemplary story arcs of *Operation Intolerance*

**The Hate Mongers Organization (broadcast from 16/04/1946 to 20/05/1946).** “The Hate Mongers Organization” is a serial story arc that tackles the rise of racial and religious intolerance in post-war America. The story begins with the firebombing of a Jewish-owned drugstore in Metropolis and follows young newsboy Danny O’Neil, who witnesses the crime and is later brutally attacked for speaking out. As Clark Kent investigates, he uncovers a sinister plot by a secret hate organization using teenage gangs to sabotage Unity House, a planned community center aimed at fostering racial and religious unity

among children “of all creeds and colors”. Through undercover work by Jimmy Olsen and Superman’s intervention, the story exposes the manipulation of vulnerable youth, the tactics of hate groups, and the dangers of silence in the face of bigotry. With clear parallels to Nazi propaganda methods and the real-life activities of the Ku Klux Klan, the arc serves as a powerful indictment of intolerance.

**The Clan of the Fiery Cross (broadcast from 10/06/1946 to 01/07/1946).** The story arc of “The Clan of the Fiery Cross” boldly confronts racism and white supremacy. The story begins when Tommy Lee, a talented Chinese-American boy, joins the Unity House baseball team, replacing a white teammate, Chuck Riggs, as the starting pitcher. Jealous and resentful, Chuck’s bitterness is exploited by his uncle, Matt Riggs, a leader in the secretive hate group known as the Clan of the Fiery Cross. This organization uses violence and propaganda to enforce a twisted ideology of racial and religious “purity”. Inspired by real-life Klan activity, Tommy and his family are terrorized by burning crosses, physical assaults, and ultimately a near-fatal abduction, all for being non-white Americans. Superman, in his dual role as Clark Kent and hero, works with Jimmy Olsen and Perry White to expose the Klan’s lies, protect Tommy, and rally public support against intolerance. Meanwhile, Chuck’s conscience awakens, and he ultimately attempts to stop the group’s violent actions, underscoring the possibility of moral growth and redemption.

**George Latimer, Crooked Political Boss (broadcast from 03/09/1946 to 25/09/1946).**<sup>3</sup> This story arc confronts the corruption of political power in the light of racism in postwar America. When returning veterans protest discriminatory hiring practices, targeting Black, Jewish, and immigrant applicants, they are met with violence and lies. After veteran Joe Martin is shot during a peaceful demonstration, his Jewish friend Sam Robbins is falsely accused, as political boss George Latimer uses the incident to stir racial hatred and suppress dissent. Through planted evidence and a complicit press, Latimer frames the fight for equality as a “foreign threat”, equating whiteness with patriotism and using racism to maintain political control. Superman, as Clark Kent, works to uncover the truth and defend democratic values. By casting the spotlight on systemic discrimination and media-fueled hate, the story resonates directly with the real-world postwar struggles for civil rights: Prejudice can be weaponized from positions of power, not just by mobs, but by officials in suits and ties deeply embedded in political structures.

**Knights of the White Carnation (broadcast from 26/02/1947 to 17/03/1947).** “Knights of the White Carnation” story arc about another xenophobic secret society, exposing the dangers of organized racism masquerading as patriotism. In Metropolis, a hate group led by wealthy businessman Vincent Kirby targets four high school basketball players because of their ethnic backgrounds. Framing them as “un-American”, the group fabricates evidence of corruption, spreads propaganda, and pressures school officials to remove them from the High School Varsity Basketball Team. As violence escalates and a dissenting member is murdered, Superman and the Daily Planet team work to uncover the conspiracy. The arc reveals how racism operates through scapegoating, and public manipulation, highlighting how hatred cloaked in “American values” endangers lives and undermines democracy. The group’s eventual downfall is a clear condemnation of intolerance and a call for alertness and solidarity against injustice.

## C.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. The transcripts are collected from two complementary YouTube channels specialized in the collection and distribution of historic radio pro-

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<sup>3</sup>This story line was praised by the American Veterans Committee (Goodrum, 2008).

gramming, containing recordings of all available episodes.<sup>4</sup> The sample covers 64% of the 1592 episodes aired in the same period, while the remaining share is completely missing. When recordings of story arcs are only partially available, we extrapolate based on the observed content of the respective story arc. To calculate the share of content in an episode covering intolerance and tolerance for racial, ethnic and religious differences, we analyze transcripts using a bag-of-words approach using a the following list of 50 keywords returned by an AI prompt: 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.<sup>5</sup> Figure C1 provides a graphical depiction of the frequency of these themes in all available transcripts of *The Adventures of Superman*. Frequencies are computed as count of keyword occurrences over the total number of words, removing stop words and applying basic stemming.

Figure C1: 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 C.2).

<sup>4</sup>We 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 preserving these pieces of historical evidence.

<sup>5</sup>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.”

### C.3 Historical evidence from newspaper articles

Figures C2–C3 provide examples of coverage of *Operation Intolerance* on newspapers in 1946.

Figure C2: *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 beginning 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 entertaining.

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 C3: Political endorsements and success of *Operation Intolerance*

A. Endorsement of 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

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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. Endorsement of 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

at night," she

C. 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 WHK 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.

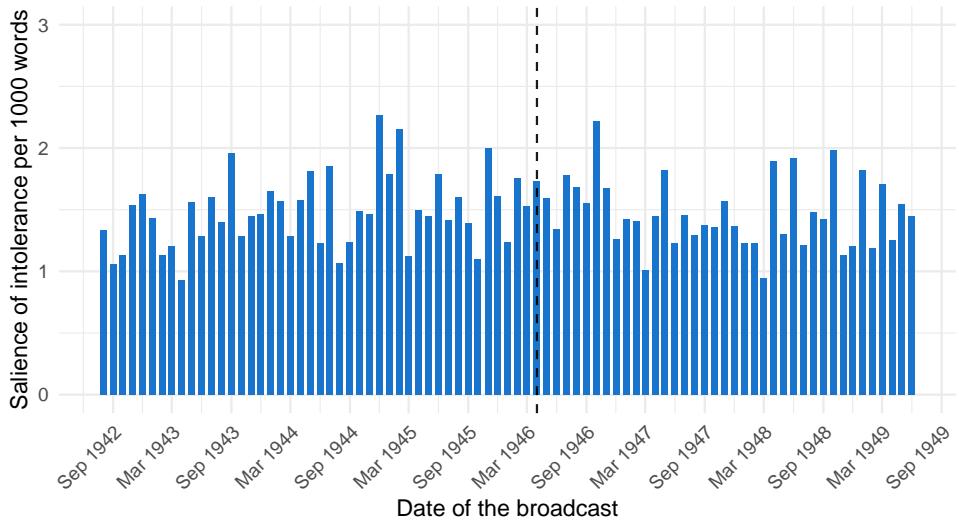
He wasn't on hand himself, because things hadn't gotten bad enough yet to require his services. But the Metropolis newspaper started a campaign to clean up the city's slums, "breeding place of delinquency."

Note. Panel A is extracted from the edition of 14/04/1946 of The Pittsburgh Press, a newspaper published in Pittsburgh, Pennsylvania. Panel B is extracted from the edition of 11/06/1946 of the Janesville Daily Gazette, a newspaper published in Janesville, Wisconsin. Panel C 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.

## C.4 Content analysis of main competitor *The Lone Ranger*

*The Lone Ranger* was a radio series featuring a masked former Texas Ranger who fought outlaws in the American Old West. Figure C4 illustrates a content analysis of *The Lone Ranger*, replicating Figure 1 in the main text. 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. 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.

Figure C4: 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 C.2.

## D Additional descriptive statistics

### D.1 ANES

The following table provides definitions of the variables used, including descriptive statistics for the sample used in the main text and a reference to the survey questions. Figure D2 shows the availability of each question in 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 D2 shows descriptive statistics of the variables used in the main text. For comparability, we standardize all variables. Figure D2 focuses on the cohort-level average of the standardized variables, while Figure D2 on the average by survey wave.

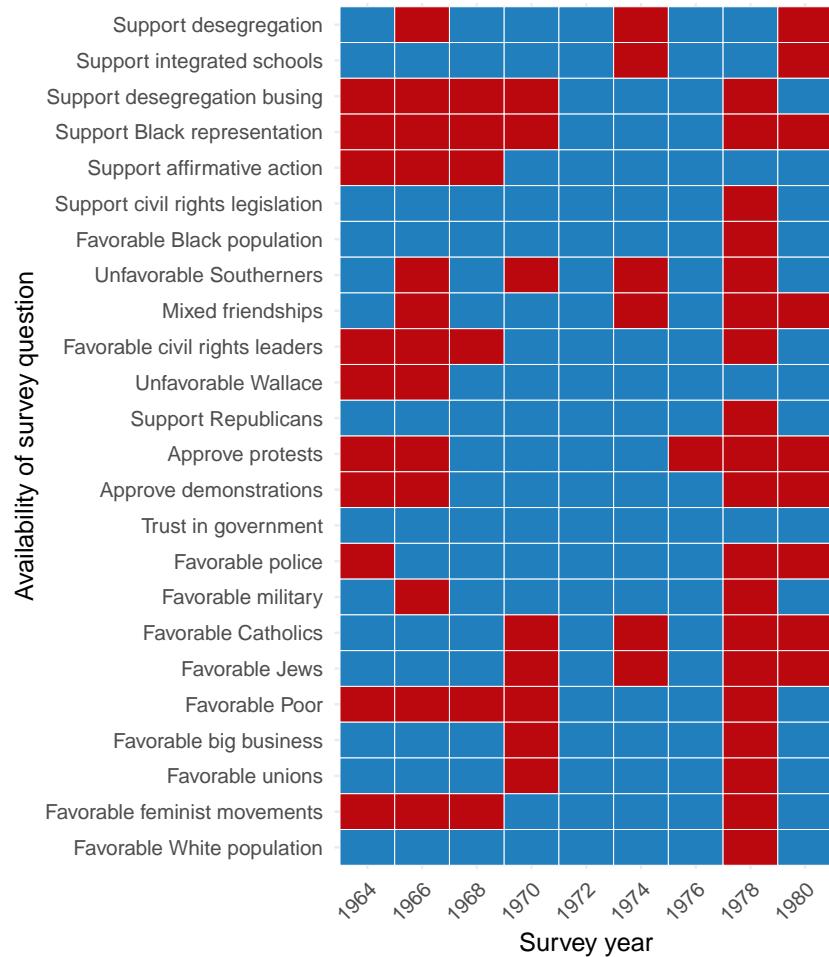
Variable	Description	Mean	SD	N	ID
<b>Main text variables</b>					
Approve of protests	Degree of approval of participation in protests and demonstrations. We average approval of “protest meetings or marches that are permitted by the local authorities”, and approval of “attempts at stopping the government from going about its activities with sit-ins, mass meetings, demonstrations”. Both items are measured ranging from 1 (disapprove) to 3 (approve).	1.60	0.56	4245	0601; 0603
Feelings towards (the) ...					
Black population	Feelings towards the black population, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	62.77	21.09	8145	0206
civil rights leaders	Feelings towards civil rights leaders, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	44.74	26.56	5304	0216
George Wallace	Feelings towards George Wallace, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	44.4	28.53	7883	0439
pro-military sentiment	Feelings towards the military, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	71.07	21.64	7333	0214
pro-police sentiment	Feelings towards the police, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	76.26	18.43	6405	0214
Republicans	Feelings towards Republicans, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	60.61	20.70	8087	0202
Southerners	Feelings towards Southerners, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	63.24	20.12	5207	0208
Interracial friendships	Indicator variable equal to 1 if the respondent reports having friends of different races, and 0 if all friends share the same race.	0.41	0.49	5661	0866
Support for ...					
affirmative action	Beliefs over whether the government should make efforts to improve the position of the Black population, ranging from 1 (Blacks should help themselves) to 7 (government should help Blacks).	3.47	2.17	4771	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	0.79	3470	9274
desegregation	Preference regarding racial desegregation, ranging from 1 (strict segregation) to 3 (desegregation).	2.23	0.67	6836	0815
desegregation busing	Beliefs over whether the importance of racial integration of schools justifies busing children to schools out of their own neighborhoods, ranging from 1 (Keep children in neighborhood schools) to 7 (Bus to achieve integration).	1.68	1.54	4468	0817
integrated schools	Indicator variable equal to 1 if the respondent believes that the government should ensure racially integrated schools.	0.45	0.50	5872	0816
civil rights legislation	Preference regarding the speed of civil rights progress, ranging from 1 (Too fast) to 3 (Too slow).	1.55	0.64	7874	0814
Trust in the fed. government	Degree of trust in the federal government doing the right thing, ranging from 1 (never) to 4 (always).	2.52	0.63	9644	0604
<b>Appendix variables</b>					
Feelings towards (the) ...					
big businesses	Feelings towards big businesses, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	53.56	21.52	6976	0209
Catholics	Feelings towards people of Catholic religion, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	65.22	21.47	5133	0204
Feminists	Feelings towards the feminist movement, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	47.46	26.47	5286	0225
Jews	Feelings towards people of Jewish religion, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	62.13	19.87	5075	0205
Poor	Feelings towards poor people, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	73.49	17.32	4516	0223

(continued on next page)

Variable	Description	Mean	SD	N	ID
Unions	Feelings towards labor unions, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	54.54	23.33	7021	0210
White population	Feelings towards the white population, ranging from 1 (unfavorable) to 100 (favorable). The variable is measured using the <i>Feeling Thermometer</i> (see Section 3.2).	78.81	17.72	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.

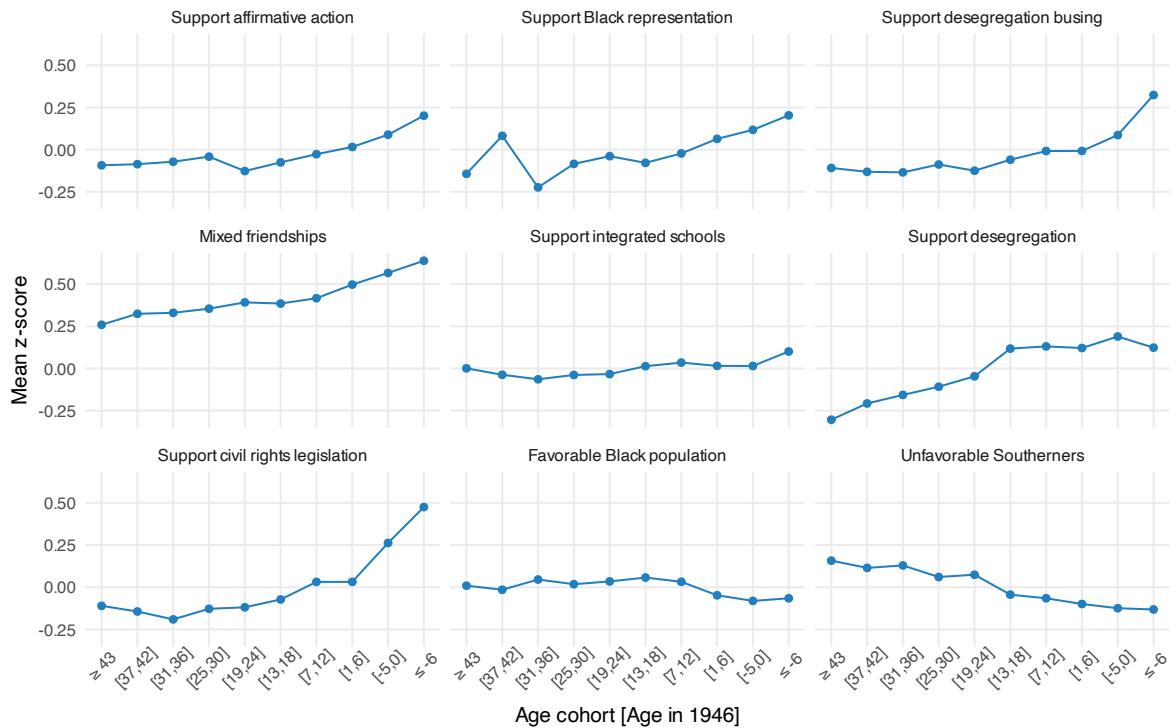
Figure D1: Data availability by year and survey item



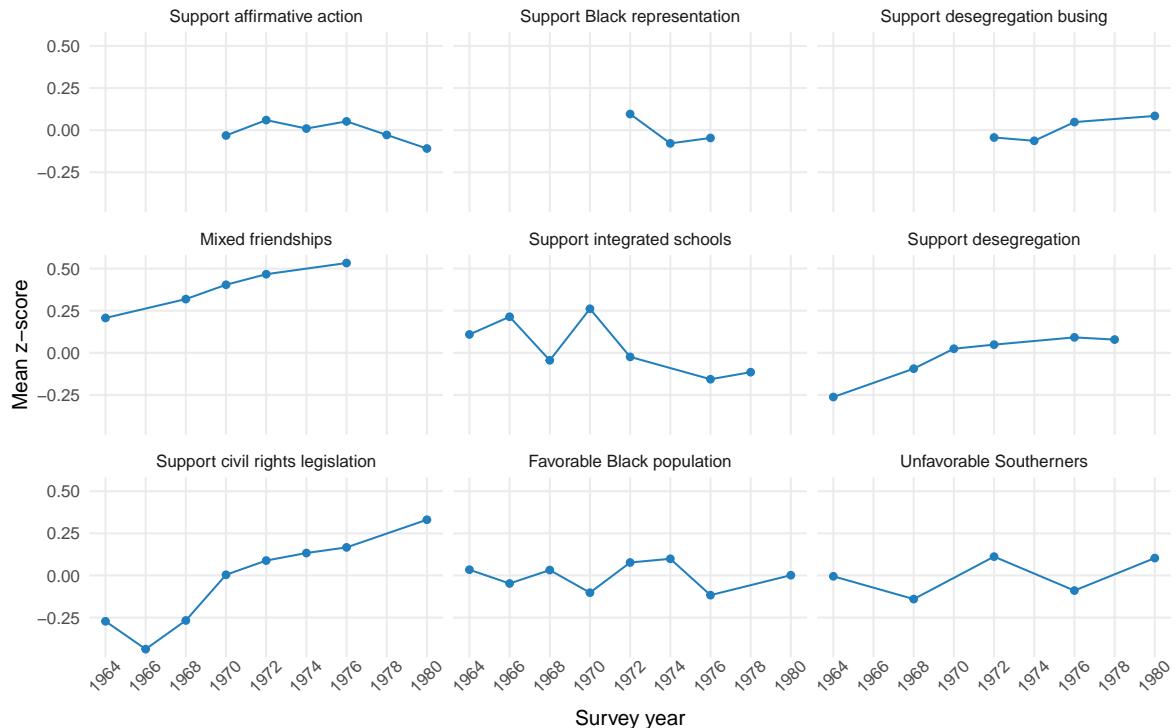
Note. The figure visualizes the availability of questions across the available set of survey waves in ANES. Blue indicates that the question was asked in the corresponding survey year.

**Figure D2: Descriptive statistics on racial attitudes, by cohort and survey year**

**A. By cohort**



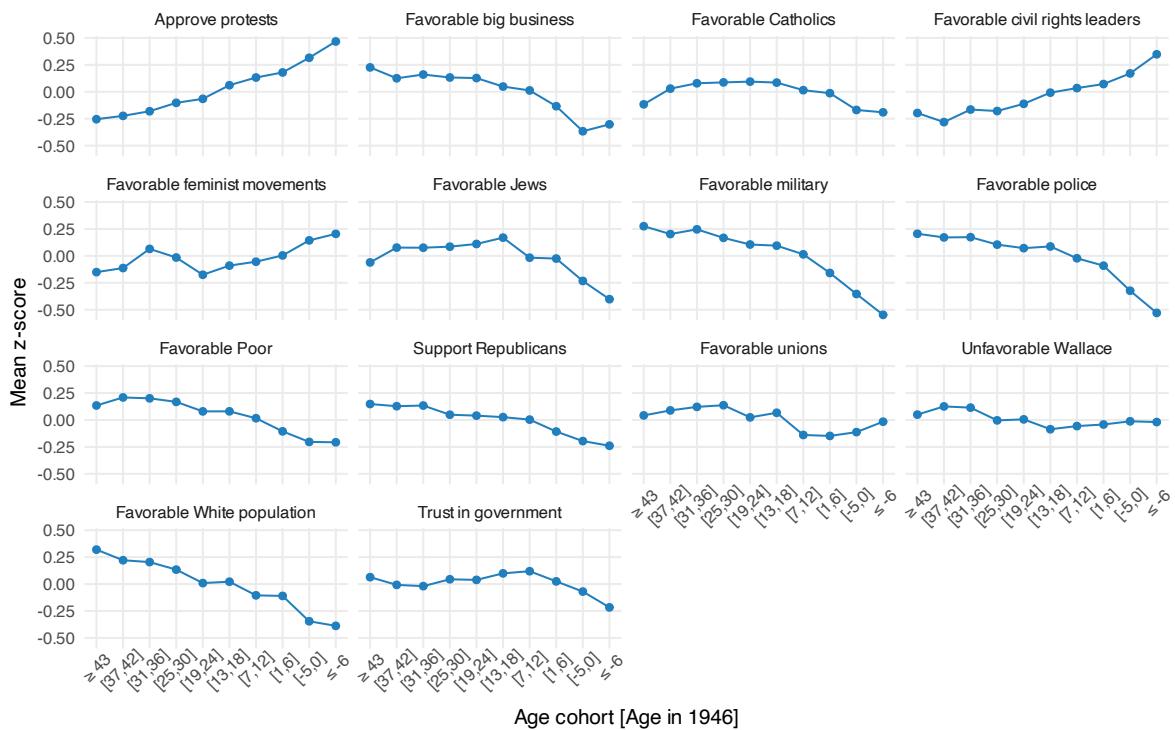
**B. By survey year**



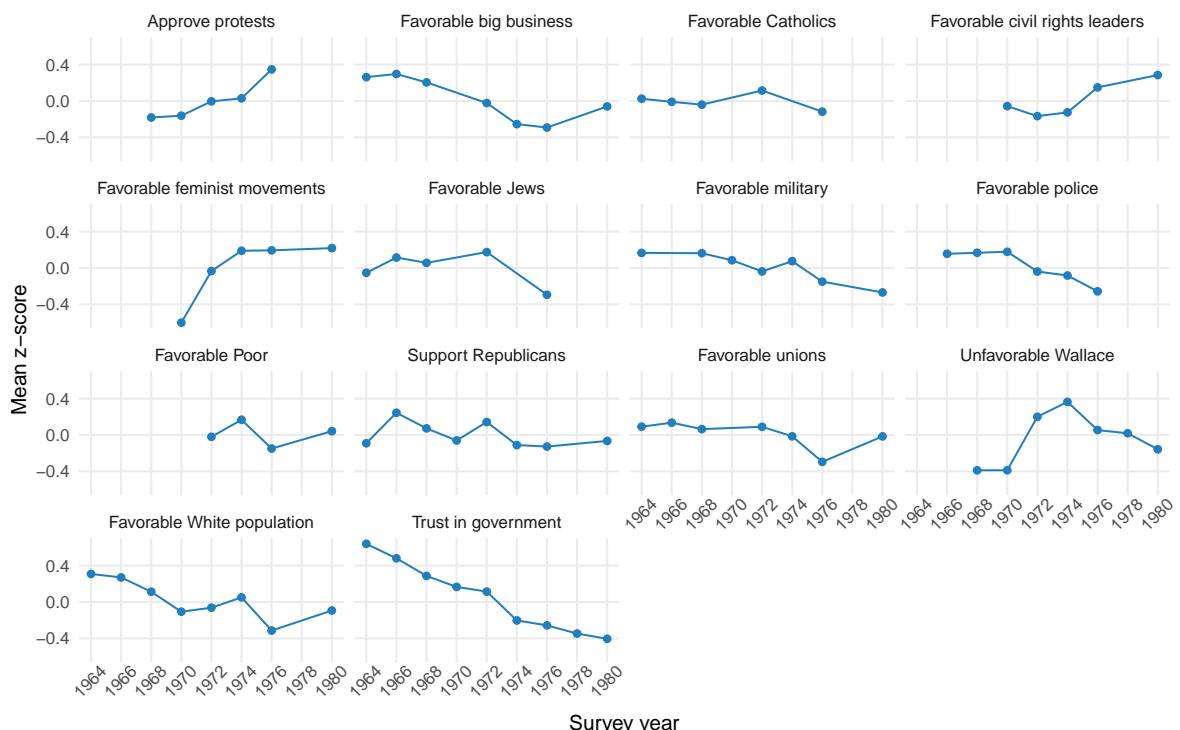
*Note.* Panel A shows the mean attitudes by age cohort for each of the respective survey items. Age cohorts comprise 5 years and are centered around the value noted on the x-axis. Panel B shows the mean attitudes by survey year for each of the respective survey items. Outcomes are standardized and centered at 0. The definition of variables is reported in Appendix D.1. Data availability for each question is reported in Appendix Figure D1.

Figure D3: Descriptive statistics on political attitudes and other attitudes, by cohort and survey year

A. By cohort



B. By survey year

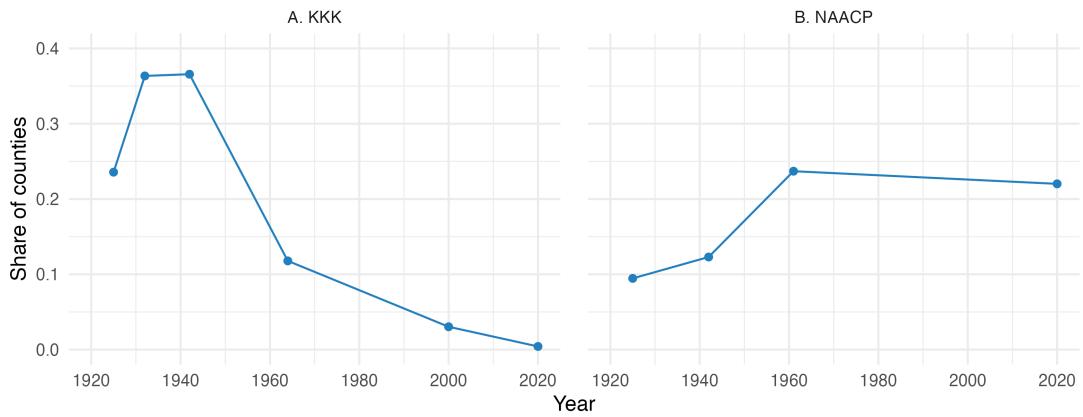


Note. Panel A shows the mean attitudes by age cohort for each of the respective survey items. Age cohorts comprise 5 years and are centered around the value noted on the x-axis. Panel B shows the mean attitudes by survey year for each of the respective survey items. Outcomes are standardized and centered at 0. The definition of variables is reported in Appendix D.1. Data availability for each question is reported in Appendix Figure D1.

## D.2 Presence of KKK and NAACP

Figure D4 shows the share of counties with the presence of KKK branches and NAACP chapters over time. For KKK, we use data from [Kneebone and Torres \(2015\)](#), [Committee on Un-American Activities \(1967\)](#), and [Mazumder \(2018\)](#). For NAACP, we obtain the location from [Estrada and Hermida \(2023\)](#), and using web-scraping. [Estrada and Hermida \(2023\)](#) provide the list of active chapters in two periods: 1957–1963 (which we label as 1961 for simplicity as 1961), and in 1964. We do not use information for the year 1964 due to the large discrepancy between the number of geolocated chapters in this source 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 geolocated each branch using the city reported in its address. Web scraping was performed in May 2023, but we assign the year 2020 because we do not observe the exact moment at which a branch became active.

Figure D4: 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 6.

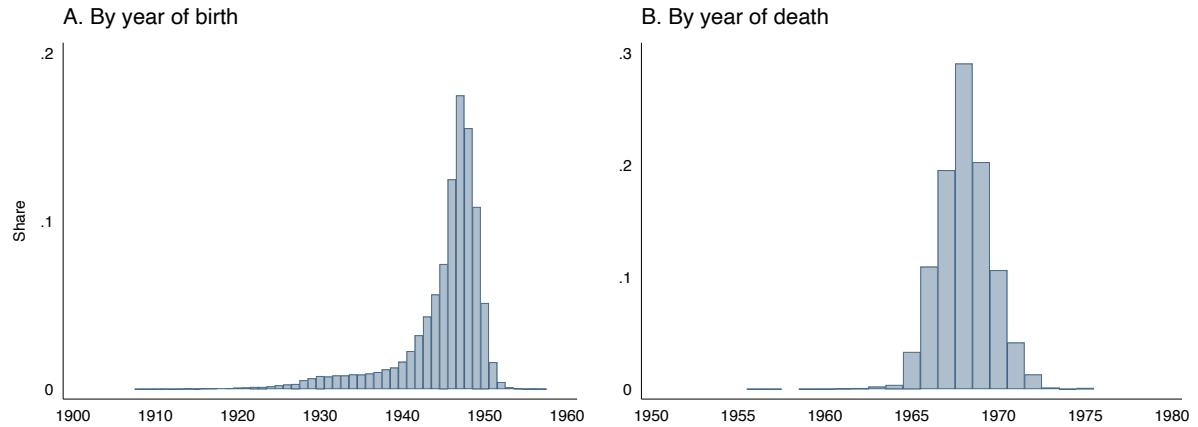
## D.3 Casualties during the Vietnam War

DCAS records contain the service member's date of birth and 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 that this is the place where they grew up. We use this information to match records to counties and to build exposure to *Operation Intolerance*. DCAS does not provide information on whether the record refer to a draftee or a volunteer. Eligible men aged 17 or older had the option of volunteering. Alternatively, at age 18, men were required to report to their local draft board. Those classified as available for service could volunteer, allowing them to choose their service branch and serve for a shorter period. Draftees were typically assigned to the Army and served for up to three years ([Card and Lemieux, 2001](#)).

In total, we observe 57,241 casualties. From these, we remove casualties assigned to a hometown address that corresponds to a military base, and casualties caused by self-inflicted harm. The resulting number of casualties is 56,779, of which 87% are white soldiers, and 13% African American soldiers. Casualties are concentrated in the period 1965–1973, with an average age at death of 23. Figure D6 shows the geographical distribution of casualties reported by DCAS for the Vietnam War, depending on the year of birth of the soldier.

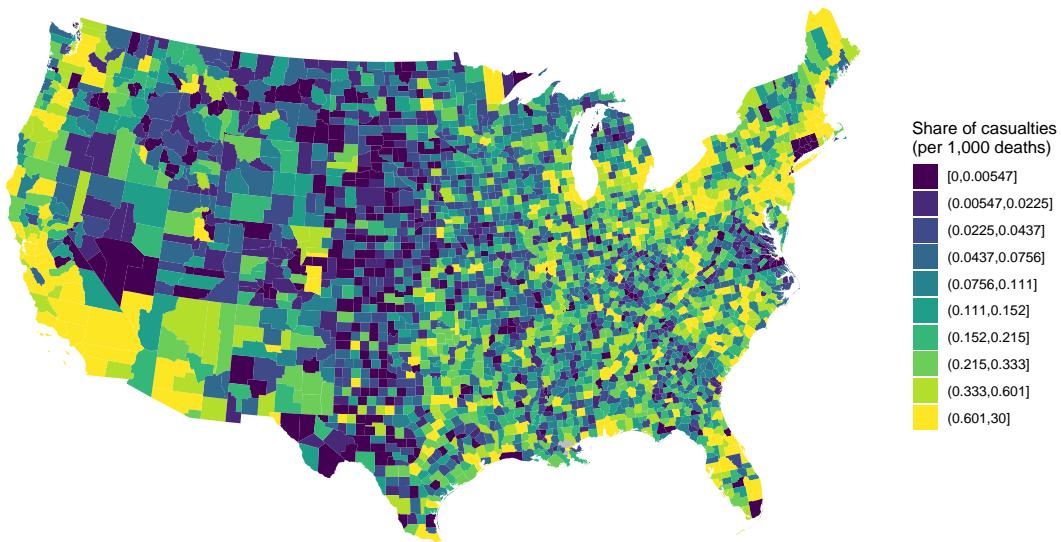
As discussed in Section 6, our main outcome variable is the cohort-specific share of casualties per county, defined as the ratio between the number of casualties in cohort  $h$  whose hometown was in county  $c$ , and the total number of casualties in cohort  $h$ . We multiply the ratio by 1,000 to refer to 1,000 deaths. Figure D5 shows the geographical distribution of the average value (across all cohorts) of this variable.

Figure D5: U.S. casualties during the Vietnam War, by year of birth and death



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

Figure D6: Geographic distribution of the share of casualties per county during the Vietnam War



*Note.* The figure shows the geographical distribution of the share of casualties per county (see Appendix D.3 for a definition). All casualties are attributed to the conflict in Vietnam. We exclude casualties from self-inflicted harm. The data source is the DCAS dataset, described in Section 3.

## E Additional analysis

### E.1 Cohort study for individual outcomes

Figures E1 plots cohort study estimates using equation (1) for each individual outcome variable (excluding the index) presented in the main text in Tables 2 and 4. The plot for participation in the Vietnam War is presented in Appendix E.2.

### E.2 Cohort study for participation in the Vietnam War

Figure E2 plots cohort study estimates using equation (1) for participation in the Vietnam War. In the main text, in Table 4, we present results including all counties with at least 1 casualty during the conflict. Table E1 provides the same estimate using equation (1) pooling the target cohorts, but restricting the sample to counties with a larger number of casualties over the conflict.

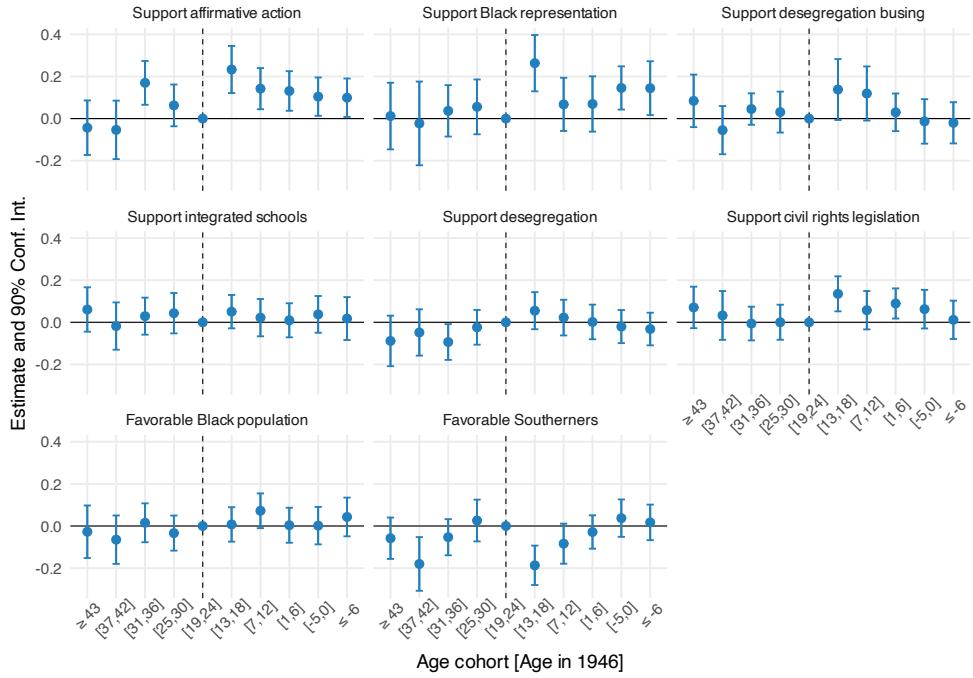
Table E1: The effect on the participation in the Vietnam War, robustness checks

Counties selected:	Dep. var.: Vietnam War participation			
	> 1 casualty (1)	> 5 casualties (2)	> 10 casualties (3)	> 25 casualties (4)
Exposure × Target	-0.082*** (0.022)	-0.108*** (0.029)	-0.154*** (0.041)	-0.252*** (0.073)
Dependent variable mean	1.62	1.62	1.62	1.62
R <sup>2</sup>	0.756	0.763	0.775	0.802
Counties	2,639	1,651	972	410
Observations	55,419	34,671	20,412	8,610

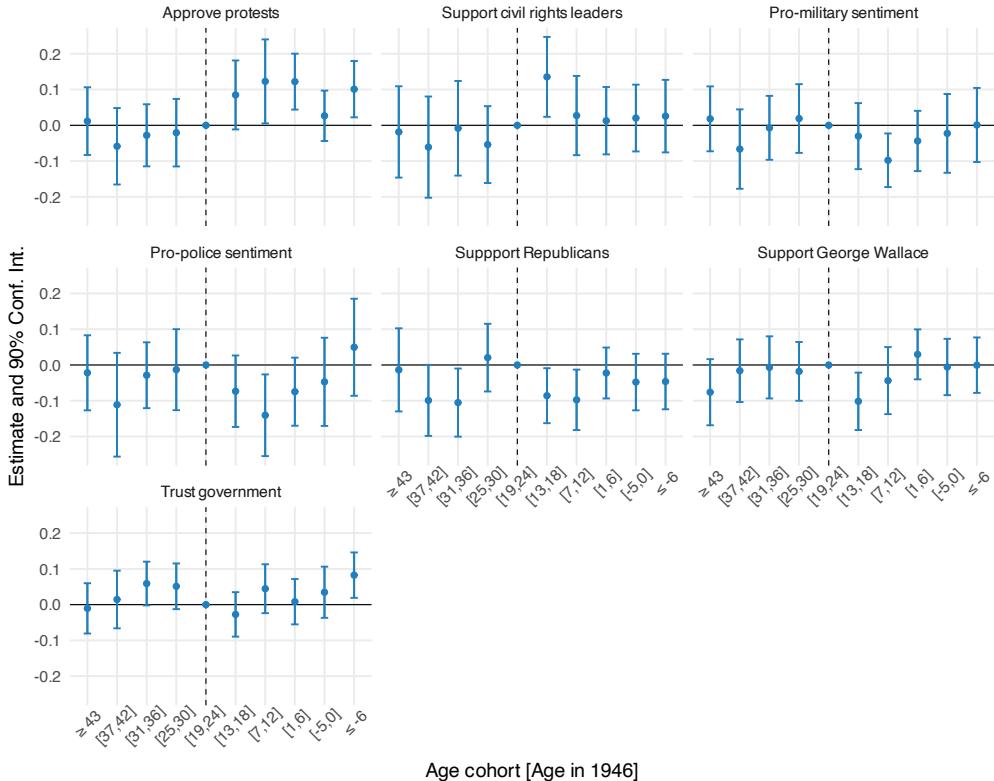
*Note.* Estimates are based on equation (1), aggregating the target and control cohorts into two groups. We include all available cohorts. All specifications include the set of controls and FEs described in Section 4. *Target* is an indicator variable equal to 1 for respondents aged 7–18 in 1946, and *exposure* measures the share of the county population covered by the radio signal of *Operation Intolerance* in 1946. Standard errors, clustered by county, are reported in parentheses (\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01). The dependent variable is *Vietnam War participation*, the cohort-specific share of casualties assigned to each county based on the birthplace of the deceased (multiplied by 1,000). The column header indicates the exclusion criteria for the sample selection. For ease of interpretation, outcome measures from columns (1)–(7) are standardized around 0. Descriptive statistics and temporal coverage are presented in Appendix D.3.

Figure E1: Cohort study estimates, by individual survey item

A. Racial attitudes

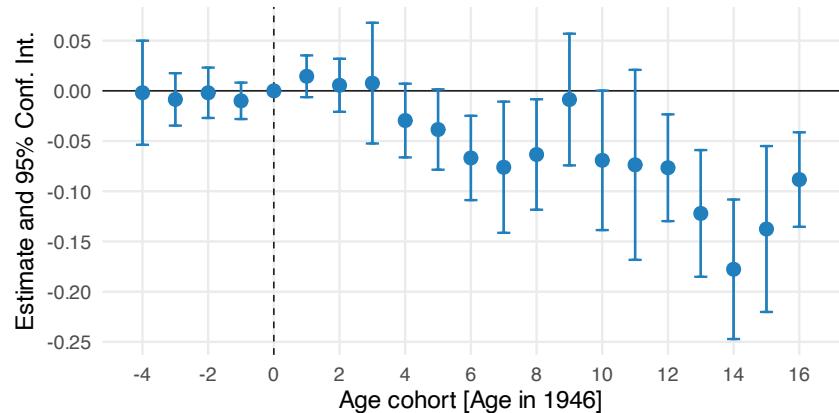


B. Political attitudes



*Note.* The figure presents the cohort study plot of the effects of *Operation Intolerance* on the variables comprising the *Support for Civil Rights Index* (Panel A), and on political attitudes (Panel B). Each panel plots the coefficients from equation (1) 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 as standardized *z*-scores. The definition of variables is reported in Appendix D.1.

Figure E2: Cohort study estimates on the participation in the Vietnam war

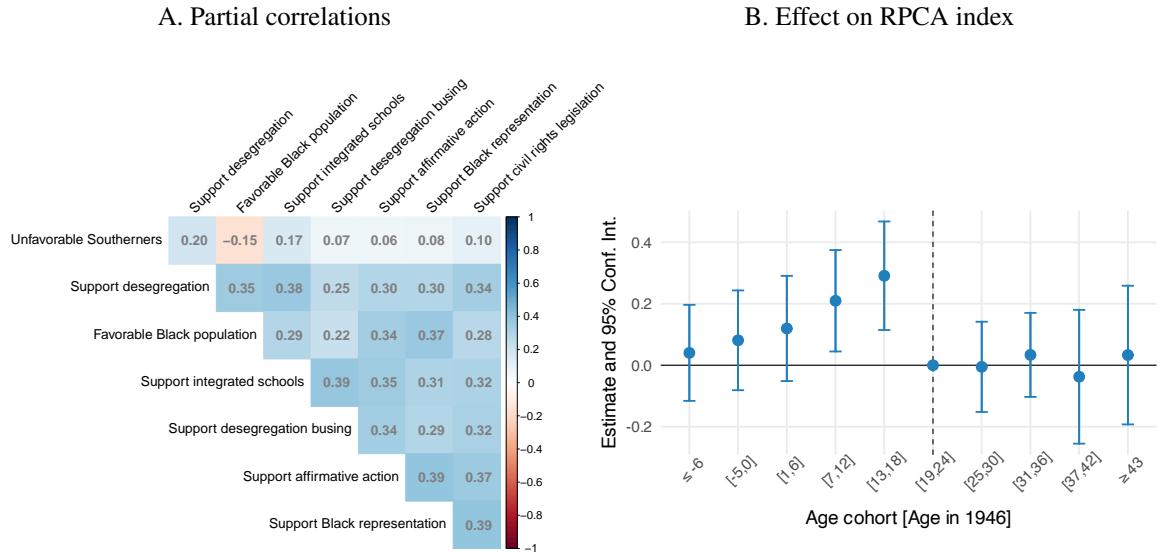


*Note.* Estimates based on equation (1). The dependent variable is the cohort-specific share of casualties assigned to a county based on the place of birth (multiplied by 1,000). We estimate equation (1) at the cohort-county level, thus comparing the distribution of the outcome variable within a cohort across counties with varying exposure of *Operation Intolerance* in 1946. The cohort -6 includes all cohorts whose age in 1946 was equal or smaller than -6. The cohorts 16 includes all cohorts whose age in 1946 was equal or larger than 16. The error bars indicate 95% confidence intervals. The vertical line indicates the cohort born when *Operation Intolerance* was launched. Additional information about the data is provided in Section 3.

### E.3 Alternative approach to compute the Support for Civil Rights index

Panel A of Figure E3 shows the partial correlation of each variable used to build the composite *Support for Civil Rights index*. To address the relatively high share of missing observations in our dataset, we complement results presented in Figure 4 with an alternative index built on a regularized iterative principal component analysis (RPCA) methodology (Josse and Husson, 2012). We use the first principal component, capturing 49.14% of the variation in our sample. Panel B replicates Panel B in Figure 4 using this index.

Figure E3: Support for Civil Rights Index, partial correlations and effect on the 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 E.3. The figure plots the coefficients from equation (1) 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. Error bars indicate 95% confidence intervals, computed using clustered standard errors 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 D.1.

### E.4 Specification and additional robustness checks

We perform alternative specification and robustness checks for our main results on the *Support for Civil Rights Index*. Table E2 presents estimates using equation (1), but varying the set of controls and FEs compared to the specification presented in the main text. Column (1) estimates a minimal cohort specification that includes only fixed effects for county, age cohort, and survey year. Column (2) adds the set of propagation controls discussed in Section B.2. Column (3) includes state-by-year FEs. Column (4) incorporates interactions between cohort dummies and county-level urbanization rates, as well as interactions between survey year indicators and county-level urbanization rates. Column (5) adds individual-level controls gender, age, and the share of the native white population (measured at the county level), interacted with cohort and survey year indicators. Column (6) augments the model with geographic controls (i.e. elevation, terrain ruggedness, and ground conductivity, all measured at the county centroid). Column (7) extends the set of individual-level controls by including additional variables: race, employment status, income, marital status, and an indicator variable for whether the respondent grew up in a city. As before, each of these variables is interacted with year and cohort dummies. Table E3 shows robustness of the results using survey weights, alternative coverage measures (based on alternative thresholds to translate signal strength into coverage, on county area covered rather than population share covered, or using a binary indicator for coverage), and assuming spatial correlation in error terms using the Conley (1999) correction. For brevity, we present results including all available cohorts, since excluding younger cohorts is comparable (Section 5.1).

Table E2: Alternative specifications for equation (1)

	Dependent variable: Support for Civil Rights Index						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Target $\times$ Exposure	0.067*** (0.013)	0.058*** (0.015)	0.057*** (0.015)	0.069*** (0.016)	0.064*** (0.016)	0.062*** (0.017)	0.053*** (0.017)
R <sup>2</sup>	0.139	0.143	0.183	0.185	0.198	0.201	0.397
Observations	10,364	10,364	10,364	10,364	10,364	10,364	8,848
County FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age cohort FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Propagation controls		Yes	Yes	Yes	Yes	Yes	Yes
State $\times$ year FEs			Yes	Yes	Yes	Yes	Yes
Urban trends				Yes	Yes	Yes	Yes
Individual controls					Yes	Yes	Yes
Geographic controls						Yes	Yes
Extended individual controls							Yes

Note. Estimates are based on equation (1) aggregating target and control cohorts into two groups. We include all available cohorts. *Target* is an indicator variable equal to 1 for respondents who were 7–18 years old in 1946. *Exposure* denotes the share of the population in the county covered by the radio signal of *Operation Intolerance* in 1946. 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 D.1.

Table E3: Alternative robustness checks

	Dependent variable: Support for Civil Rights Index							
	Survey weights (1)	Alternative measures of coverage				Conley Hsiang		
		Pessimistic $\tau = 60$ (2)	Optimistic $\tau = 72$ (3)	Area coverage (4)	Binary (5)	50km (6)	100km (7)	400km (8)
Target $\times$ Exposure	0.061*** (0.015)	0.053** (0.021)	0.050*** (0.013)	0.056*** (0.014)	0.155*** (0.041)	0.064*** (0.013)	0.064*** (0.014)	0.064*** (0.010)
R <sup>2</sup>	0.202	0.197	0.198	0.198	0.198	0.198	0.198	0.198
Observations	10,364	10,364	10,364	10,364	10,364	10,364	10,364	10,364

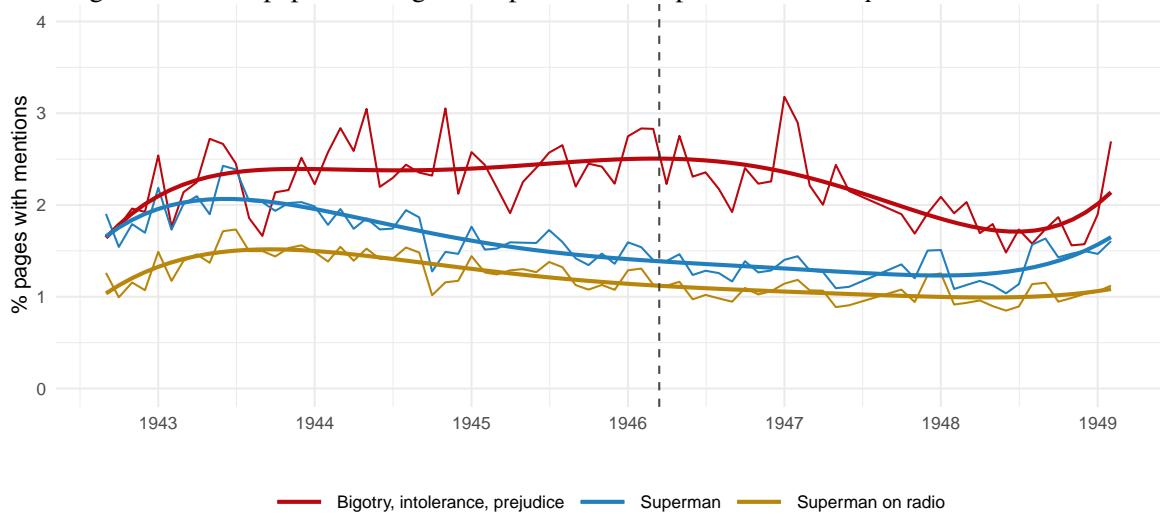
Note. Estimates are based on equation (1) aggregating target and control cohorts into two groups. We include all available cohorts. All specifications include the set of controls and FEs described in Section 4. *Target* is an indicator variable equal to 1 for respondents who were 7–18 years old in 1946. *Exposure* denotes the share of the population in the county covered by the radio signal of *Operation Intolerance* in 1946. Standard errors, clustered by county, are reported in parentheses (\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01).

## E.5 Anticipation and spillover effects

This section provides additional evidence on the absence of anticipation and spillover effects. We examine the share of newspaper pages that covered topics related to *Operation Intolerance* (refer to Section 6 and Appendix E.7.1 for details about the data source). Figure E4 shows that in April 1946, newspapers made reference to *Superman* in 1.39% of pages. Restricting to pages covering *Superman on radio*, we observe a small drop in the share of pages, but the pattern is unchanged. This restriction covers 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. This suggests that the vast majority of mentions were about radio schedules. Discussions on the core themes in *Operation Intolerance*—bigotry, intolerance, or prejudice—did not show significant changes in newspapers.

Figure E5 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 areas with no coverage, we still observe mentions of Superman on radio. This is mainly related to comic strips appearing on the same page of radio schedules or other references to radio. See Panel B for an example.

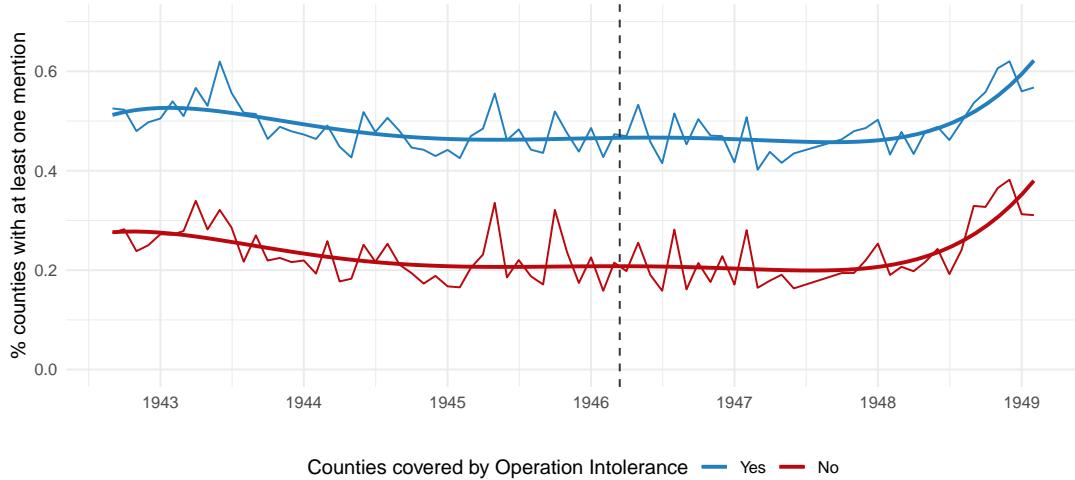
Figure E4: Newspaper coverage of Superman and topics related to *Operation Intolerance*



*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 6 for details about the data source.

Figure E5: Salience of Superman in local newspapers, by exposure

A. Share of counties with at least one mention



B. Example of comic strip with elements using the word “radio”



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. 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 6 provides further details about the source of newspaper data. Panel B is extracted from the edition of 04/04/1946 of the Sacramento Bee, a newspaper published in Sacramento, California.

## E.6 Effect on attitudes towards other groups

Table E4 provides cohort study estimates on the effect of *Operation Intolerance* on favorable feelings toward other groups. Columns (1)–(2) focus on attitudes towards the two main contemporary religious minority groups. Columns (3)–(5) provide estimates related to societal and economic inequality. Columns (6)–(7) present estimates for attitudes towards feminist movements and the white majority population, respectively.

Table E4: Cohort study estimates of the effect on attitudes towards other groups

Favorable towards...	Religious minorities		Inequality			Other	
	Jews	Catholics	Poor	Big business	Unions	Feminists	Whites
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>A. All cohorts</b>							
Target × Exposure	-0.009 (0.034)	-0.002 (0.032)	0.012 (0.043)	-0.027 (0.029)	0.016 (0.030)	-0.002 (0.041)	-0.030 (0.028)
R <sup>2</sup>	0.206	0.189	0.186	0.179	0.153	0.218	0.200
Observations	5,133	5,075	4,516	6,976	7,021	5,286	8,197
<b>B. Exclude younger cohorts</b>							
Target × Exposure	-0.006 (0.038)	-0.005 (0.036)	0.034 (0.049)	-0.042 (0.030)	-0.003 (0.034)	0.004 (0.043)	-0.031 (0.031)
R <sup>2</sup>	0.230	0.218	0.223	0.180	0.178	0.263	0.202
Observations	3,767	3,725	2,658	4,786	4,822	3,185	5,719

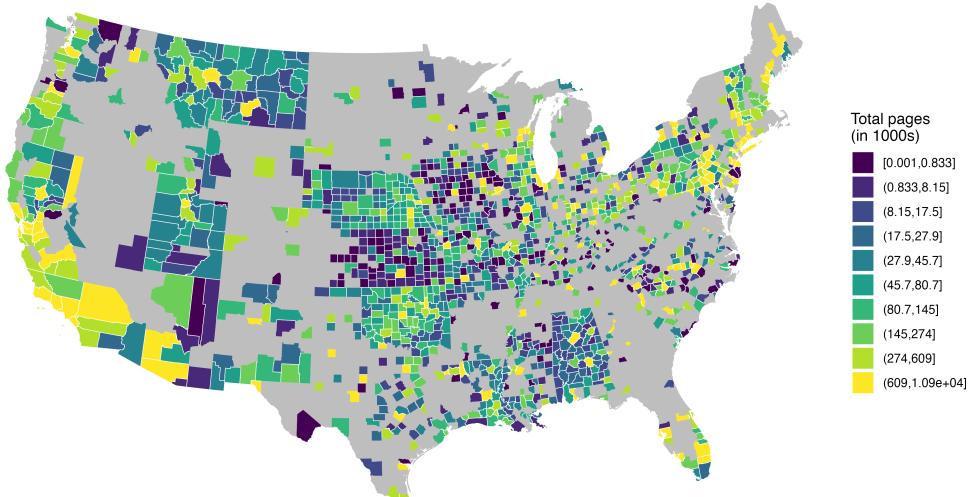
*Note.* Estimates are based on equation (1) aggregating target and control cohorts into two groups. All specifications include the set of controls and FEs described in Section 4. Target is an indicator variable equal to 1 for respondents who were 7–18 years old in 1946. Exposure denotes the share of the population in the county covered by the radio signal of *Operation Intolerance* in 1946. 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 are reported as standardized z-scores. The definition of variables is reported in Appendix D.1.

## E.7 Additional evidence concerning newspapers

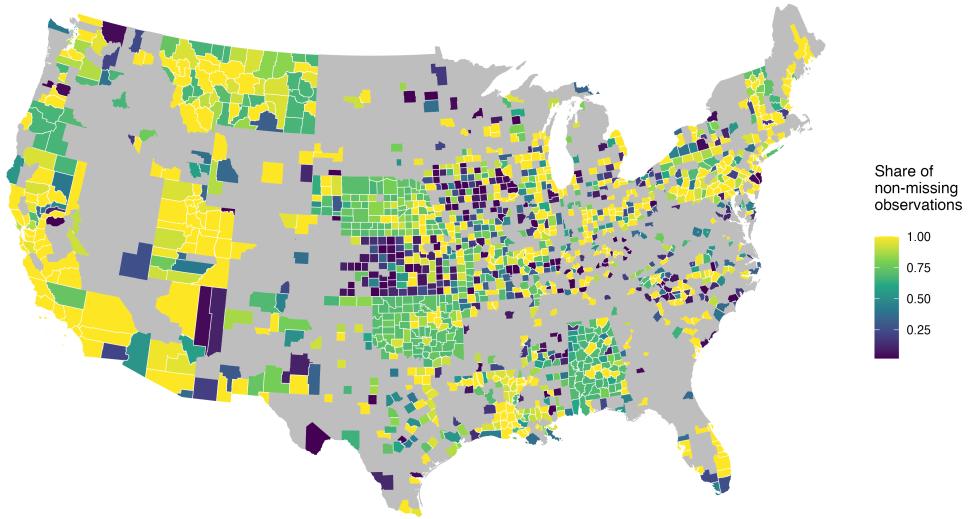
Figure E6 shows the geographical distribution of newspapers used in the analysis.

Figure E6: 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 6 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.

### E.7.1 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.

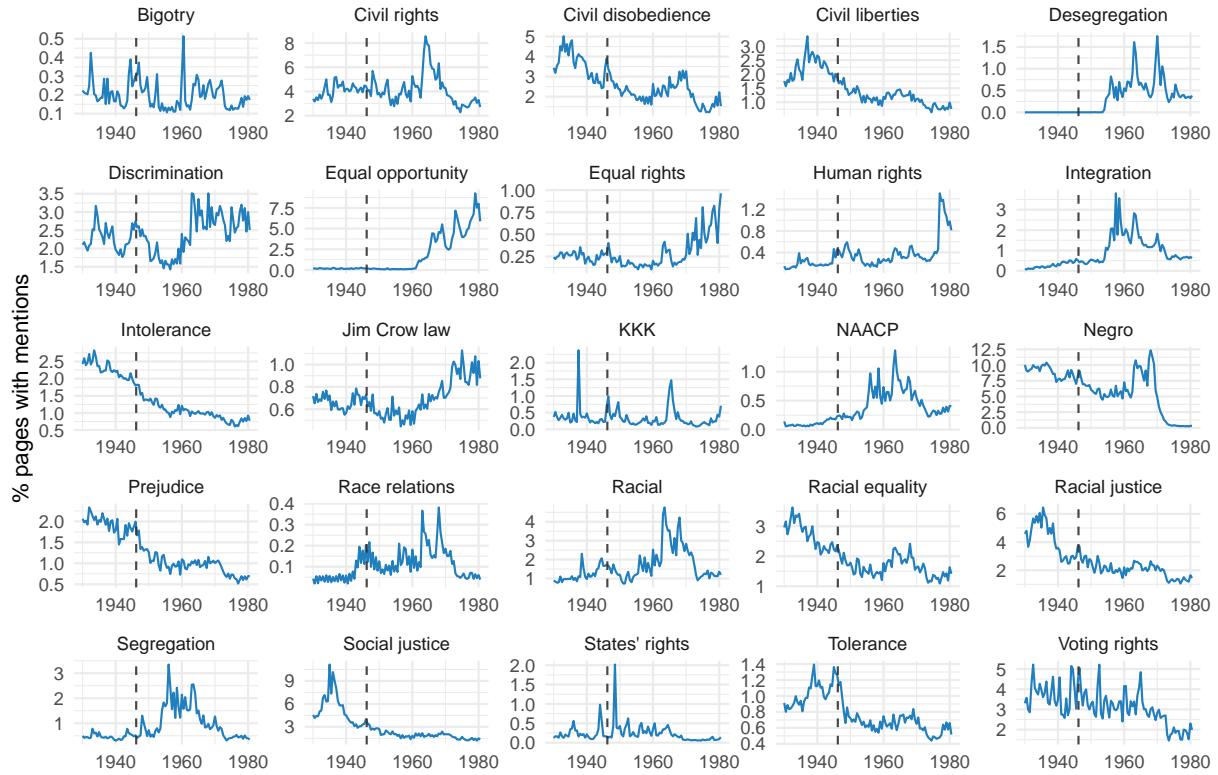
N.	Theme	Search string 1	Search string 2
1	Bigotry	bigot*	
2	Civil liberty	civil liberty	
3	Civil rights	"civil rights"	civil rights
4	Civil disobedience	civil disobedience	nonviolent OR nonviolence
5	Discrimination	discriminat*	
6	Desegregation	desegregat*	
7	Equal opportunity	"equal opportunity"	
8	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 unequal*)	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 quotations are searched as they appear. *OR* is the OR operator, which means that either of the conditions is searched. \* is used to allow a search for all words starting with the same root.

Figure E7 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 6). Figure E8 shows the average value over time of index capturing the salience of civil rights in local newspapers. We describe the construction in Section 6. Table E6 instead provides event study estimates of the effect of *Operation Intolerance* on the salience of civil rights in local newspapers, using alternative indices. Columns (1), (3), (5) and (7) provide estimates for the post-1946 periods using equation (2) and pooling all post-1946 observations, while columns (2), (4), (6) and (8) split the estimate of the effect in two periods, the 1946–1955 period and the post-1955 period (with 1955 being a crucial year for the Civil Rights Movement due to the Montgomery bus boycott).

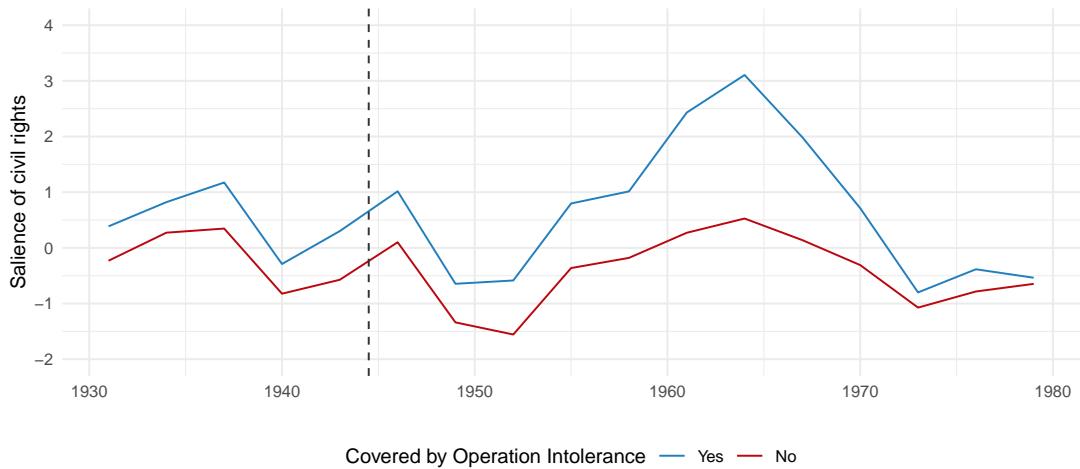
In columns (1)–(4), the index is built using the same procedure discussed in the main text, but selecting different sets of counties. In columns (1)–(2), we select counties with at least one non-missing observation in the dataset, while in columns (3)–(4) we select counties with at least 75% of non-missing observations. Since the procedure to build the index takes into account missing observations, these estimates highlight the robustness of the result to building the index with a larger versus smaller share of missing observations, compared to the share used to compute the index in the main text. Alternatively, in columns (5)–(8), we consider only counties without missing observations (i.e., a county has newspaper data for each period) and build the index using Principal Component Analysis (PCA). Because PCA is more sensitive to the presence of topics that are prevalent only in one part of the period, to maintain consistency in thematic analysis and avoid conflating the intensity of certain themes with the emergence of new ones, we exclude from this analysis some themes that were not used before 1946 from this index. In columns (5)–(6), we build the PCA index excluding themes that fall into the bottom 20% of average salience for the period from 1930 to 1946, while in columns (7)–(8), we build the PCA index excluding themes that fall into the bottom 50% of average salience for the period from 1930 to 1946.

Figure E7: Share of total pages covered by each theme, by year (1930–1980)



*Note.* The figure shows the share of the total pages published in each year that contain a specific theme. The themes are selected according to the procedure detailed in Section 6. 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 E8: 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 6). This variable is used in Columns (3)–(4) of Table E6. *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 6 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.

Table E6: The effect of *Operation Intolerance* on the salience of civil rights

Method: Counties selected (obs. per county): Themes selected:	Salience of civil rights on local newspapers							
	RPCA ≥ 1 All		RPCA ≥ 75% All		PCA 100% Top 75% of themes		PCA 100% Top 50% of themes	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post 1946 × Exposure	0.156** (0.076)		0.168* (0.089)		0.176* (0.092)		0.193** (0.085)	
Period 1946–55 × Exposure		0.049 (0.067)		0.035 (0.066)		0.005 (0.077)		0.051 (0.072)
Post 1955 × Exposure		0.192** (0.088)		0.212** (0.105)		0.233** (0.106)		0.240** (0.097)
Dependent variable mean	0.008	0.008	0.005	0.005	-0.008	-0.008	-0.008	-0.008
R <sup>2</sup>	0.594	0.594	0.686	0.687	0.762	0.762	0.780	0.781
Number of counties	1,467	1,467	804	804	483	483	483	483
Observations	24,939	24,939	13,668	13,668	8,211	8,211	8,211	8,211

*Note.* Estimates based on equation (2) 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 RPCA including all themes and selecting counties with at least one non-missing observation; (2)–(3) index built using RPCA including all themes and selecting counties with at least 75% of non-missing observations; (5)–(6) index built using PCA excluding themes that fall into the bottom 20% of average salience for the period from 1930 to 1946 and selecting counties with no non-missing observation; (7)–(8) index built using PCA excluding themes that fall into the bottom 50% of average salience for the period from 1930 to 1946 and selecting counties with no non-missing observation. Additional details about the variables are presented in Appendix D.1.

## E.8 Persuasion rate during the 1968 presidential elections

To evaluate the magnitude of the effect of *Operation Intolerance* on voting behavior discussed in Section 5.2, we calculate the persuasion rate of the program, i.e. the fraction of listeners who altered their voting behavior due to exposure to the program. We follow the methodology established by [Enikolopov et al. \(2011\)](#). We apply the following formula to compute the persuasion rate, which assumes that, in line with the results in Section 6, the broadcast had no effect on the turnout:

$$f = \frac{1}{-v_0} \cdot \frac{1}{\frac{de}{ds}} \cdot \frac{dv}{ds} \quad (4)$$

where  $v$  is the vote share for George Wallace during the 1968 presidential elections,  $v_0$  is the same vote share in the absence of *Operation Intolerance*,  $e$  is the listenership of the program, and  $s$  is the exposure to *Operation Intolerance* (defined in Section 4). The derivatives  $\frac{de}{ds}$  and  $\frac{dv}{ds}$  are the effects of exposure on listenership and vote share, respectively. In line with Section 5.2, we restrict the sample to counties in states where both Thurmond in 1948 and Wallace in 1968 ran for elections.

We begin by estimating  $v_0$ . Using the estimates presented in column (1) of Table 6, we predict  $v_0$  assuming that  $s$  is equal to the minimum observed value in the sample and that the time period is 1968, and compute the total votes and the votes for Wallace in the selected states. This counterfactual approach yields a  $v_0$  of 37.7%.

We then turn to the estimation of  $\frac{de}{ds}$ . In our setting, estimating how listenership changes as function of  $s$  is harder because we do not observe geographically disaggregated data on listenership. We therefore follow [Adena et al. \(2015\)](#), combining radio penetration with listenership at an aggregated level. We first construct a measure of county-level radio ownership in 1946,  $L$ , combining the county-level data in 1940 with the expansion rate of radios between 1940 and 1950 ([Haines et al., 2010](#); [U.S. Bureau of Census, 1999](#)). Using this measure, we estimate the following cross-sectional equation:

$$L_{cs} = \beta \cdot R_{cs}^{1946} + X'_{cs}\delta + \mu_s + \epsilon_{cs} \quad (5)$$

where  $L_{cs}$  is radio ownership for county  $c$  in state  $s$ ,  $R_{cs}^{1946}$  is exposure to *Operation Intolerance* in 1946,  $X_{cs}$  is a vector of controls, and  $\mu_s$  are state FEs. Because in this specification we cannot control for county FEs,  $X_{cs}$  includes propagation controls for *Operation Intolerance*, exposure to other commercial radio networks, and all the census-based controls presented in Table 1. We obtain an estimate of  $\beta$  equal to 0.0172. To obtain  $\frac{de}{ds}$ , we multiply the estimate with the number of children and adolescents per listening set during the time slot of *The Adventures of Superman* in 1946. We label this parameter  $\theta$ , such that  $\frac{de}{ds} = 0.0172 \times \theta$ .

We build two separate estimates for this parameter. First, [Hooper Inc. \(1949\)](#) estimates that at the time of *Operation Intolerance*, during the time slot that broadcast the show, there were on average 0.49 children per listening set across the U.S. (Section A.1). However, at that time, while MBS products were primarily targeted at children and adolescents, other networks instead targeted adults, mainly female adults. Adjusting the parameter for the share of radios listening to programs for adults, we obtain a first estimate of  $\theta = 0.96$ .<sup>6</sup> Second, we base our calculation on the total number of listeners of *Operation Intolerance* from [Whiteside \(1947\)](#), i.e., 4.5 million people. From our calculations (Section 2), we know that approximately 10.9 million children and adolescents could have listened to the show. Because at that time, each household had approximately 1.5 members in this group ([Haines et al., 2010](#)), we conclude that a listening population of 4.5 million children and adolescents is consistent with an estimate of  $\theta = 0.62$ .

Finally, to obtain  $\frac{dv}{ds}$ , we want to consider the effect specific to the cohort that was exposed to *Operation Intolerance* in 1946, while the estimate proposed in column (1) of Table 4, equal to -0.024, averages the effects across all voters. To focus specifically on the target cohorts, we compute the share of votes in the 1968 presidential elections attributed to this cohort. The target cohorts, aged 7–18 in 1946, turned 29–40 in 1968. In that year, this cohort represented approximately 13.7% of the total U.S. population of 201.2 million ([U.S. Bureau of Census, 1968a](#)). Applying this proportion to the population in the selected states, corresponding to 49.7 million ([U.S. Bureau of](#)

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<sup>6</sup>From [Hooper Inc. \(1949\)](#), we know that 49% of active radios were listening to programs targeting adults, such as NBC's *Portia Faces Life*, a soap-opera portraying a female lawyer. We assume that no child or adolescent listened to these shows, which allows us to rescale the average number of children and adolescents per listening set such that the overall average remains equal to 0.49.

Census, 1969a), we obtain a population aged 29–40 in the selected states of 6.8 million. Using this estimate, we compute the number of people in this group who voted in the 1968 presidential elections, assuming a turnout rate of 53.6%.<sup>7</sup> We obtain a total of 3.6 million people. To compute how many votes this number corresponds to, we compute the total number of votes in the selected states. Starting from a voting age population in these states of 26.6 million (corresponding to 24.0% of total votes in the U.S.; U.S. Bureau of Census, 1968b), we apply the turnout rate in the selected states (46.2%; U.S. Bureau of Census, 1969b), and obtain a total of 12.4 million people. We conclude that in 1968, in the selected states, the votes of those aged 29–40 corresponded to approximately 29.5% of all votes.

Using these estimates, we compute  $\frac{dv}{ds}$  under the assumption that only target cohorts were influenced by the program and, as a consequence, they changed their voting behavior. Given the proportion  $p$  of voters represented by target cohorts in 1968, and the derivative specific to the target cohort,  $\frac{dv^T}{ds^T}$ , and the remaining cohorts,  $\frac{dv^O}{ds^O}$ , we can derive  $\frac{dv^T}{ds^T}$  from the total derivative:

$$\begin{aligned}\frac{dv}{ds} &= p \cdot \frac{dv^T}{ds^T} + (1 - p) \cdot \frac{dv^O}{ds^O} \\ -0.024 &= 0.295 \cdot \frac{dv^T}{ds^T} + 0.71 \cdot 0 \Rightarrow \frac{dv^T}{ds^T} = -0.081\end{aligned}$$

Substituting estimates into equation (4), we obtain a persuasion rate ranging from 13.1% to 20.2%.

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<sup>7</sup>We estimate this rate from U.S. Bureau of Census (1969b). First, we compute the overall turnout rate in the US for the age group 29-44, combining the provided turnout rates for the age groups 18–24 and 25–44, assuming that the turnout for the group 25-29 is the same as that of the group 18-24. Second, to estimate the turnout for this group in the selected states, we compare the overall turnout in the U.S. (63.3%) with the one for selected states (46.5%), and decrease the turnout estimated for the age group 29-44 using the same rate.

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