Media Narratives and the Rise of Civil Rights*

Alex Armand Paul Atwell Joseph F. Gomes
Giuseppe Musillo Yannik Schenk

Abstract

We examine the power of media narratives to counter prejudice, a dimension often overlooked in a literature that predominantly documents how media reinforce it. We study an unprecedented experiment from post–WWII United States: in 1946, amid entrenched racial divisions, the producers of the popular children's radio series *The Adventures of Superman* suddenly replaced its usual fantasy plots with stories confronting intolerance in American society, designed to elicit moral and emotional engagement among millions of young listeners. The shift generated exogenous variation in exposure to anti-prejudice narratives across cohorts and locations, a feature that we verify using historical listenership records. We show that childhood exposure produces lasting changes in social and political preferences, including greater racial tolerance, stronger support for civil rights, and higher civic mobilization later in life. These individual-level effects translate into societal shifts in favor of civil rights. Our results confirm that countering prejudice requires deeper and more enduring psychological processes compared to persuasion through information or framing. (*JEL* D7, D83, I24, J15, L82, N32)

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*__Armand__: Nova School of Business and Economics – Universidade Nova de Lisboa, CEPR, IZA, NOVAFRICA, and Institute for Fiscal Studies (e-mail: alex.armand@novasbe.pt); **Atwell**: Ohio State University (e-mail: atwell.54@osu.edu); **Gomes**: IRES/LIDAM, UCLouvain, and CEPR (e-mail: joseph.gomes@uclouvain.be); **Musillo**: Tilburg University (e-mail: g.musillo@tilburguniversity.edu); **Schenk**: Nova School of Business and Economics – Universidade Nova de Lisboa, NOVAFRICA (e-mail: yannik.schenk@novasbe.pt). We would also like to thank Leonardo Bursztyn, Davide Cantoni, Irma Clots-Figueras, Victoire Girard, Andreas Madestam, Mounu Prem, Imran Rasul, Christopher Rauh, David Strömberg, Mathias Thoenig, Noam Yuchtman, and seminar participants at CUNEF, LISER, CAGE, Virginia Tech, Paris Dauphine Workshop on Social Norms, University of Cambridge, Royal Holloway, King's College, UCL, UAB, SAEe, ULB, LMU, University of Essex, Tilburg, Maastricht, Media Bias Workshop in Cologne, PSE, and Workshop in Economic History at ENS de Lyon for helpful comments. Armand acknowledges the funding from the Fundação para a Ciência e a Tecnologia (UIDB/00124/2025, UID/PRR/124/2025, Nova School of Business and Economics) and LISBOA2030 (DataLab2030 - LISBOA2030-FEDER-01314200). Schenk acknowledges funding from the Fonds National de la Recherche Scientifique (FNRS–T025320F). A version of this paper was previously circulated with the title "*It's a Bird, it's a Plane, it's Superman! Using Mass Media to Fight Intolerance*".

1 Introduction

Mass-media narratives both reflect and shape how societies perceive minority and marginalized groups. They reinforce entrenched stereotypes (DellaVigna et al., 2014; Adena et al., 2015; Bursztyn et al., 2020) and legitimize discrimination through scapegoating and the normalization of social hierarchies (Yanagizawa-Drott, 2014; Wang, 2021; Ang, 2023; Esposito et al., 2023).[1] Such narratives are powerful precisely because they exploit psychological mechanisms, such as categorization and confirmation bias, that predispose individuals to accept information consistent with existing stereotypes (Allport, 1954; Cramer, 2020; Michalopoulos and Rauh, 2024). In contrast, narratives that challenge prejudice are rare, and their potential effects cannot be inferred from existing evidence, as the underlying psychological processes are fundamentally different. Social psychology shows that reducing prejudice is cognitively and emotionally demanding, as stereotypes are automatically activated, while overcoming them requires the internalization of new value systems grounded in moral reasoning, emotional engagement, and identity formation.[2] Because these processes are slow, fragile, and not amenable to cognitive learning, interventions often produce short-lived or even counterproductive effects (Paluck et al., 2021), making durable changes difficult to achieve and identify empirically.

We provide new evidence demonstrating how mass-media narratives that confront existing prejudices can produce lasting changes in social and political preferences and in civic engagement. An ideal setting is the post-Second World War United States, a period marked by rapid transformation in public discourse and media portrayals of race (see Section 2 for historical background). In the early twentieth century, most white Americans accepted racial exclusion, and racist portrayals were deeply embedded in popular culture. The war years, however, prompted a broad rethinking of these divisions and their implications for the nation's identity. As this reflection took hold, new stories promoting equality began to appear across film and radio.

Among these emerging narratives, one stands out for its foresight, broad reach, and deliberate intent to reshape social values: the 1946 transformation of *The Adventures of Superman*, a popular radio series for children and adolescents. In a groundbreaking experiment known as *Operation Intolerance*, the series deliberately replaced its usual fantasy plots with stories that confronted racism and prejudice. Superman was no longer battling mythical villains but fighting intolerance within everyday American life. Through emotionally charged storylines, clear moral dilemmas, and heroic figures for young listeners to identify with, these new narratives activated key mechanisms essential to enduring value formation. Millions of children tuned in daily, many hearing messages of equality for the first time. Contemporary reports and later accounts suggest that this experiment shaped the outlook of a generation (Wall, 2009) and helped

[1] A *narrative* is a representation of one or more events, real or fictional (Abbott, 2020).

[2] For a review of these processes, refer to Kohlberg (1976); Devine (1989); Haidt (2001); Aboud (2012). See Bordalo et al. (2016) for the theoretical foundations of stereotypes. Psychological research also emphasizes that cognitive learning alone has limited effects on stereotype suppression. Media can stimulate cognitive learning through instruction and repetition (Gentzkow and Shapiro, 2008; Kearney and Levine, 2015).

undermine the Ku Klux Klan (KKK; Bowers, 2012; Levitt and Dubner, 2014; Gavaler, 2017).

We investigate how exposure to *Operation Intolerance* during childhood and adolescence shaped racial attitudes and support for civil rights in adulthood. This analysis builds on the impressionable years hypothesis, which posits that values and preferences formed in youth are particularly persistent over the life cycle (Krosnick and Alwin, 1989). On average, children acquire the cognitive capacity to comprehend narratives with moral meaning from the early school years (Burris and Brown, 2014), while adolescence represents the most formative period for the internalization of moral and social values (Miller and Sears, 1986; Dahl et al., 2018; Dhar et al., 2022). Exposure to narratives contrasting prejudice during these years can, therefore, play a central role in shaping long-term attitudes toward social issues, while exposure during adulthood would have a limited impact.

To measure exposure, we digitized comprehensive data on all U.S. radio stations active in 1946, identifying those that broadcast *The Adventures of Superman*. We then used an engineering-based propagation model of Amplitude Modulation (AM) radio—the dominant broadcasting technology in the 1940s U.S.—to predict signal strength across space for each station. Overlaying this information yields fine-grained variation in how much of each county's population could receive the program's signal, capturing the probability of having been exposed to *Operation Intolerance*. We validate this measure of exposure using historical records of radio reception, showing that the predicted exposure to radio signals closely matches the reported ability to listen to them.

We highlight three important properties of our measure of exposure. First, we show that cross-sectional variation in exposure is plausibly random once we control for observable characteristics that influence signal propagation. This property is often observed in the literature studying other broadcasting technologies, such as FM radio and TV (see, e.g., Olken, 2009). Second, using historical listenership records, we show that higher (exogenous) exposure leads to significant increases in listenership, particularly during the program's time slot. In addition, following the narrative shift, audience shares of the program rose sharply relative to other programs, consistent with contemporary reports estimating that the series reached more than 4.5 million children and adolescents nationwide. Third, we present evidence against the possibility that higher exposure created spillovers to non-listeners of the show, such as adults, at the time of the broadcast. These results confirm that our measure captures meaningful variation in program reach among children and adolescents, and that the narrative shift was salient for its intended audience.

Our goal is to isolate the effect of a single narrative change from the overall impact of media exposure, the latter generally being the main focus of studies in the media literature. In other words, we aim to isolate the effect of being exposed to *Operation Intolerance* from the effect of being a listener of *The Adventures of Superman*. To do so, we use rich survey data covering a pivotal period for civil rights in the U.S. (1964–1980) and apply a multi-year cohort-based difference-in-differences (DiD) design. This approach compares, at multiple points in time,

the outcomes of individuals who were differentially exposed in 1946 to the signal of *Operation Intolerance*, leveraging the fact that the show specifically targeted children and adolescents (the *target cohorts*). All cohorts alive at the time who lived within range of the broadcasts could, in principle, receive the signal, but only the target cohorts were likely to have listened to and absorbed its content. Older cohorts were more likely to have encountered the show before its narrative shift, while younger children were too young to process its message. The key identifying assumption is that, absent exposure, attitudes would have evolved similarly across cohorts and locations. Extensive robustness checks confirm the validity of our design.

We find that exposure to *Operation Intolerance* during childhood and adolescence significantly increases racial tolerance in adulthood. Those aged 7–18 in 1946 who lived in stronger-signal areas later showed greater support for civil rights and more favorable views toward African Americans, while we find no significant impact among older or younger cohorts, consistent with the show's target audience. The estimated effects are comparable in magnitude to an entire generational difference in racial attitudes. In addition, results are not driven by urban cultural trends, station placement, or other radio content. Placebo tests using exposure to other programs that did not shift narrative confirm that the effect is specific to *Operation Intolerance*. Evidence from internal migrants further supports a mechanism of direct formative exposure.

These effects extend beyond race, translating into broader political alignment with progressive causes associated with the Civil Rights Movement. Individuals exposed to the show during childhood later expressed greater support for civil rights leaders and lower support for segregationist politicians and the Republican Party. They also endorsed the core values of the movement, including the legitimacy of protest, skepticism toward police authority, and opposition to the Vietnam War. These attitudinal changes are reflected in greater social openness, but do not translate into deeper forms of social integration, which often evolve more slowly under institutional constraints. Exposure to the broadcasts increased the likelihood of interracial friendships, but had no effect on interracial marriages, a deeper form of assimilation (Fryer Jr, 2007; Fouka, 2020).

These results show that during a pivotal moment for civil rights in the U.S., exposure during childhood to narratives that contrasted with prejudice in American society helped shift public opinion toward more progressive views. We examine whether these cohort-level effects also translated into broader social and political changes. Using local historical records from 1930 to 2020, we study voting behavior and civic mobilization around racial segregation with an event-study DiD design, comparing counties with varying broadcast exposure in 1946 over time. More exposed counties later showed significantly lower vote shares for segregationist politicians, consistent with the political impact of the target cohorts once they reached voting age. These areas also experienced declines in KKK presence, increases in the presence of civil rights organizations, and a greater salience of civil rights themes in newspapers.

Our findings extend the media and persuasion literature by showing that a narrative shift can durably shape social attitudes and civic engagement, contributing to the existing literature in

several fundamental ways.[3] First, we provide one of the first studies to explore how mass media can reduce prejudice in the long run. Existing studies show how cinema and radio reinforce prejudice and division, typically documenting short-run effects in which exposure produces immediate attitudinal or behavioral responses (DellaVigna et al., 2014; Yanagizawa-Drott, 2014; Adena et al., 2015; Wang, 2021; Ang, 2023; Esposito et al., 2023). In contrast, our study focuses on a program that cultivates new social values rather than activating preexisting ones. In line with the social psychology literature, the persistence of our effects across decades and behaviors confirms that the effect of counter-stereotypical narratives is not merely the reversal of the effect of stereotypical narratives.

Second, we uncover a novel channel through which media content contributes to preference formation beyond persuasion through information or narrative framing (see, e.g., DellaVigna and Gentzkow, 2010). Existing research has examined propaganda, which promotes cohesion or compliance through framing and selective information (Blouin and Mukand, 2019), and edutainment, which embeds didactic content in entertainment to shift beliefs and perceived norms (see, e.g., Kearney and Levine, 2019). Other forms of entertainment influence attitudes more subtly by normalizing certain behaviors, altering salience rather than underlying values (Chong and Ferrara, 2009; Jensen and Oster, 2009; La Ferrara et al., 2012; Durante et al., 2019). In contrast, the narrative form we study—fictional storytelling—operates through emotional transportation, the psychological process by which audiences become immersed in a story and internalize its moral lessons (Green and Brock, 2000). Rather than instructing or persuading, such narratives shape preferences through empathy and identity formation, offering a distinct and potentially longer-lasting channel for cultural change.[4]

Third, our work contributes methodologically. To the best of our knowledge, our paper is the first to exploit a narrative shift within an existing program for identification. Most evidence focuses on estimating the impact of entire media products, which combine the effects of narratives with the effects of the platforms broadcasting them. In addition, we construct the first nationwide engineering-based measure of historical AM radio exposure. Our framework builds on and extends previous approaches to model AM radio coverage (Strömberg, 2004; Gagliarducci et al., 2020) to produce high-resolution coverage maps that match historical listening data. This approach allows for the measurement of exposure to radio broadcasts in the first part of the twentieth century, radio's "Golden Age," and provides a general approach for studying early mass communication.

Beyond the media and persuasion literature, our results also connect to research on the historical and cultural roots of intolerance. Recent work links persistent prejudice to long-run cultural transmission (Voigtländer and Voth, 2012; Bazzi et al., 2023b) and to the mobilization of marginalized groups (Dippel and Heblich, 2021; Ang and Chinoy, 2024; Calderon et al.,

[3]For broader evidence on media effects on social and political outcomes, refer to DellaVigna and Gentzkow (2010); DellaVigna and La Ferrara (2015); Strömberg (2015); Campante et al. (2022).

[4]A related strand shows that traditional folktales can shape contemporary moral values (Michalopoulos and Xue, 2021), reinforcing the long reach of narrative transmission.

2023; Bazzi et al., 2023a). We add a new dimension to this literature by showing that the spread of intolerance can be influenced by storytelling. This result speaks to external validity, offering a large-scale, real-world example of a prejudice-reduction intervention through popular culture, whereas most existing attempts to reduce prejudice primarily rely on experiments that increase inter-group contact (Bertrand and Duflo, 2017). By tracing the influence on later civic and political mobilization, we document a channel of cultural change that operates through imagination and empathy rather than direct organization, connecting our findings to the broader literature on social movements (see, e.g., Madestam et al., 2013; Cantoni et al., 2024).

2 Historical background

In the early twentieth century, racist portrayals were pervasive and broadly condoned 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 (see, e.g., Calderon et al., 2023). Institutionalized racism persisted through Jim Crow laws in the South, enforcing segregation and restricting African American voting rights. Even in the North, where legal segregation was less prevalent, racial prejudice remained pervasive in daily life (Schuman, 1997).

WWII disrupted these discriminatory narratives across social and cultural domains. The unifying experience of the war heightened awareness of racial injustices at home, fueling national introspection. By the end of the war, explicit support for white supremacy began to lose public acceptability, especially in the North (Goldman, 1956). 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). The emergence of new radio and film productions exposing the "American Dilemma," i.e., the deep schism between these ideals and the reality of racial discrimination, reflected this transformation.[5]

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. Before WWII, civil rights had limited partisan salience; however, by the late 1940s, they had become central to national politics. The Democratic Party's growing commitment to civil rights became clear in the 1948 presidential election, when President Harry S. Truman won reelection despite a revolt by Southern Democrats, who broke away under Strom Thurmond's Dixiecrat movement to oppose the national party's agenda. A clear partisan divide on civil rights emerged only in the 1960s, when

[5]Notable examples include the radio series *Destination Freedom* (1948–1950); the independent movies *Home of the Brave* (1949) and *Lost Boundaries* (1949); and the Hollywood productions *Pinky* (1949), *Intruder in the Dust* (1949), and *No Way Out* (1950). These new films addressing racism from a white perspective were later labeled *post-war social problem* films (Benshoff and Griffin, 2021).

the Democrats passed major civil rights reforms, such as the Civil Rights Act of 1964 and the Voting Rights Act of 1965, and the Republicans began attracting conservative voters, partly in reaction to these reforms (Schickler, 2016)). Civil rights remained a prominent and contested issue in the public sphere well into the late twentieth century.[6]

It was in post-war 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 earlier social changes, mass activism for racial equality intensified in the mid-1950s and reached a peak with the legislative victories of the 1960s. Beyond racial equality, the movement tackled broader issues of justice and police brutality. In many Southern states, law enforcement agencies actively upheld segregation, and police brutality against peaceful protesters reinforced public perceptions of the police as opponents of civil rights (Wasow, 2020). While the military played a more complex role, sometimes enforcing desegregation and at other times suppressing civil unrest, opposition to the Vietnam War (1955–1975) also emerged as a significant dimension of the movement (Lucks, 2014). The government's deep involvement in the War faced mass public dissent, questioning the moral and political grounds of its engagement.

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

In the 1940s, radio was the dominant mass medium in the United States, unmatched in both reach and influence (Craig, 2004). The radio market rested on hundreds of local stations, often operating as independent businesses, and four major national networks that produced and syndicated programs: National Broadcasting Company (NBC), Columbia Broadcasting System (CBS), American Broadcasting Company (ABC), and Mutual Broadcasting System (MBS). Stations could self-produce content or sign contracts with one or more networks to broadcast their programs. Competition for affiliates was intense, leading to frequent switching between networks.[7] Appendix A.1 describes listenership across networks in 1945–1947.

One of the networks, MBS, became popular for its recorded transcription series, i.e., programs that were pre-recorded and distributed to radio stations on transcription disks (Ackerman, 1945). One of its most successful series was *The Adventures of Superman*, an adventure drama featuring the DC Comics character. The show began airing in 1940 on a few regional stations and, after early success, was acquired by MBS in 1942 and distributed nationally, gaining popularity and regularly drawing millions of listeners across the U.S. (De Haven, 2010). The radio serial moved to the competing ABC network in October 1949 and was discontinued in 1951 (Winona Republican-Herald, 1949).

The audience consisted of children and adolescents. The show aired as a 15-minute serial five times a week—a standard format for 1940s radio serials—during the after-school slot

[6]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.

[7]Advertising profits drove intense competition, while the Federal Communications Commission (FCC) limited the number of stations per network. Agreements between stations and networks lasted 1 to 5 years, set uniform time slots for programs, and established the remuneration.

(5–6pm), the one with the highest listenership among children and adolescents (Appendix A.1). During this slot, MBS productions were fully dedicated to this group. The probability that adults would listen to the show was therefore low.[8] In Appendix A.1, we show that other adults listening to the radio at 5–6pm were primarily non-working adult women, who were targeted by programs produced by different networks. In this time slot, soap operas had an average listenership share of roughly 40%, while programs targeting children and adolescents captured roughly half that share. Male adults listened to the radio primarily in the evening.

Story arcs ranged from 15 minutes to over three hours, spread across multiple episodes. Original scripts were written specifically for radio rather than as adaptations of the comics. Early narratives (1940–1946) depicted Superman as a moral defender of Earth, combining wartime patriotism with the triumph of good over evil (Freeman, 2015). During these years, he battled mad scientists, atomic weapons, and supernatural threats (Daniels, 1998).

In 1946, the series underwent a sudden and unprecedented narrative transformation, one of the most remarkable experiments in the history of radio broadcasting. Conceived in late 1945 amid renewed racial tensions after WWII, the producers of *The Adventures of Superman* reoriented the narrative of the show to promote a vision of a united American society that embraced all individuals, regardless of race, religion, or background, while still fulfilling the sponsor's commercial objectives. The renewed narrative would portray Superman as a champion against intolerance in ways accessible to children, as their superhero fights bigots within American society (Klein, 1946; Bowers, 2012).

The initiative, known as *Operation Intolerance*, was so unusual that both the producers and the sponsor described it as an experiment of interest to the entire radio industry.[9] Appendix C.5 further shows that this decision was not pre-announced in the months preceding its launch and was not widely advertised afterward, underscoring the experimental and unexpected nature.

Working closely with the Anti-Defamation League, then a leading human-rights organization, the producers began developing scripts in October 1945, and in just a few months, on April 15th, 1946, MBS-affiliated stations started broadcasting *Operation Intolerance*. The first story arc, *The Hate Mongers' Organization*, followed a white supremacist group's attempt to prevent the creation of *Unity House*, a community center "where children of every race, ethnic background, and spiritual belief can play and interact to learn that all people are the same" (*The Adventures of Superman*, episodes 1254–1278). After it's positive reception, the creators went on to produce a story arc directly confronting the KKK and its ideology (Levitt and Dubner, 2014). Over two weeks in June 1946, affiliated stations broadcast *The Clan of the Fiery Cross*, in which Superman battled the Clan (an implicit reference to the KKK), mocking its rituals, code words, and bigotry. Other notable story arcs include *George Latimer, Crooked Political*

[8] Media portrayals of Superman were adapted for adults only from the 1950s with the diffusion of TV.

[9] See Broadcasting (1946). In this article, W. B. Lewis, then radio director at Kenyon & Eckhardt (the advertising agency of the show), explained that "Operation Intolerance had its beginning at a board meeting last October [1945] ... We brought the matter to the attention of the Kellogg Co. [the exclusive sponsor of the series throughout the MBS period] and recommended that the experiment—for experiment it is—be tried. W. H. Vanderploeg, president of Kellogg, concurred heartily" (p. 75).

Boss (August–September 1946), in which Superman thwarts efforts to impose discriminatory hiring rules favoring white Protestants, and *Knights of the White Carnation* (February–March 1947), where he exposes a secret group plotting to expel foreign students from a school basketball team. Appendix B.2 provides detailed summaries.

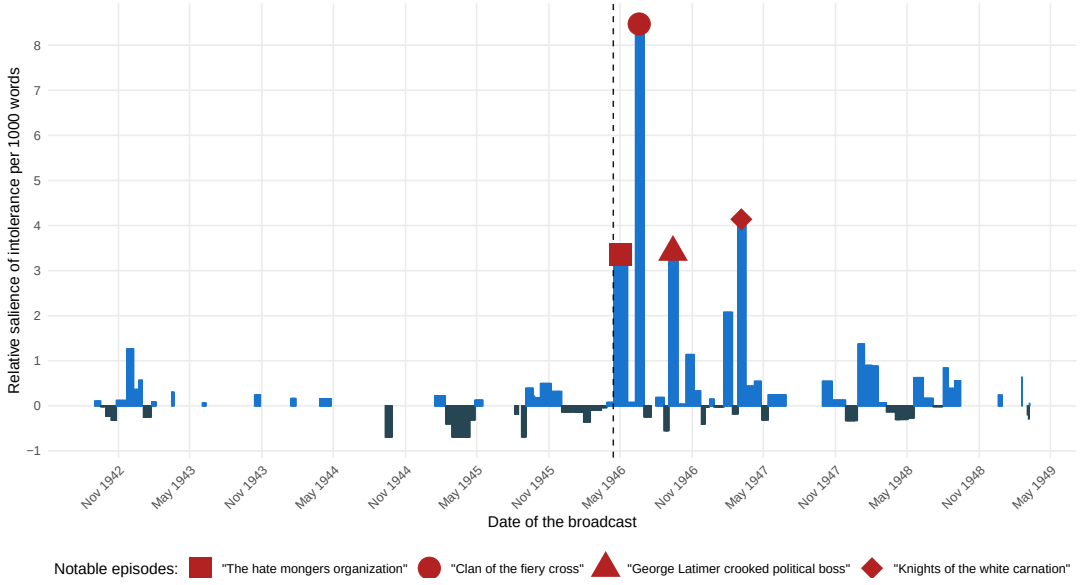
The narratives of *Operation Intolerance* were explicitly designed to shape children's social values by stimulating key psychological mechanisms underpinning lasting attitudinal change. First, it relied on moral reasoning, portraying advocates of justice and equality as heroes while depicting members of hate groups as villains, consistent with social learning through role models, a central component of identity formation (Bandura and Walters, 1977). Second, it humanized minority characters, depicting them as sympathetic and hardworking individuals. This approach is in line with the parasocial contact hypothesis of Schiappa et al. (2005), which states that positive representations of out-group members can reduce prejudice towards them in a manner similar to repeated positive interactions. By appealing to empathy, the program fostered emotional engagement, encouraging young listeners to internalize its moral lessons as part of their own value systems.

The content analysis of the show's story scripts during the period 1942–1949, summarized in Figure 1, illustrates the scale of the narrative change after April 1946. The proportion of words related to intolerance rose more than threefold in the 12 months after *Operation Intolerance* began.[10] For the four main story arcs, the increase reached nearly eightfold. While the keyword count may understate the extent of the change, these results confirm a deliberate reorientation of the show's narrative. Section 5.2 further discusses how this shift was unique to Superman and not part of a wider paradigm shift in youth radio programming. In Appendix A.1, we analyze all MBS content produced in 1946 and show that most programming was either neutral or conservative, while *The Adventures of Superman* was the only production advancing progressive views.

Operation Intolerance reached an estimated 4.5 million listeners in its target demographic, making the show the most popular youth program on air (Whiteside, 1947). In the year after it's launch, the series broadcast 65.25 hours of content, including 18 hours devoted to the four main story arcs. The combination of extensive coverage and a loyal audience makes the scale of the intervention exceptional among other efforts to reduce prejudice (Bertrand and Duflo, 2017). However, despite the unexpected shift in the program's narrative was an unprecedented departure from the dominant media themes of the time and influential figures, including U.S. President Harry S. Truman and former Vice President Henry A. Wallace, publicly endorsed the initiative (Appendix B.2), at that time, *Operation Intolerance* had limited coverage in other media outlets, such as newspapers, again reinforcing the idea of it being an experiment. We do not find sudden increases in the coverage of the show, nor in themes related to tolerance and intolerance following April 1946 (Appendix C.5), highlighting limited spillovers to groups

[10]The analysis uses a bag-of-words approach with 50 keywords on intolerance and tolerance, applied to 1,019 episode transcripts broadcast on MBS between 1942 and 1949. See Appendix B.3.

Figure 1: The change in narrative in *The Adventures of Superman*



Note. For each episode transcript, the figure illustrates the share of keywords (per 1,000 words) related to tolerance or intolerance, centered around the average share in the period preceding *Operation Intolerance*. We consider all available episodes produced by MBS from August 1942 to June 1949. Appendix B.3 provides further details about the methodology. Each bin represents a story arc, the broadcast of which may span multiple weeks. The bin's width represents the duration of the story arc. Appendix B.2 provides detailed summaries of main story arcs.

other than the target group of the show. Section 5.1 provides further evidence on listenership patterns and the show's cultural imprint.

3 Data

We combine a wide range of data sources, from surveys to historical and archival records, including the geographic processing of radio coverage. This section describes the main sources. Complementary data sources are described in Sections 5 and 6.

3.1 Exposure to *Operation Intolerance*

To measure individual exposure to *Operation Intolerance*, we calculate the geographic coverage of the radio broadcasts using a context-specific radio propagation model (i.e., one that estimates signal strength at a given point from each transmitter). In 1946, broadcasters operated with limited knowledge of their signal reach when deploying transmission infrastructure. The first ground conductivity map for the U.S. was published in 1954 (Appendix Figure B1), and accurate propagation models became feasible in 1958 (Bremmer, 1958).

Identification of radio stations. As described in Section 2.1, *The Adventures of Superman*, including the *Operation Intolerance* episodes, was produced by MBS but broadcast only by a subset of MBS-affiliates in 1946.

Using historical records, we identify the set of stations in three steps. First, we digitize data from Radio Daily (1946), a reference guide to the 1940s broadcasting industry that lists stations

along with their ownership and technical specifications. This yields a comprehensive database of all 998 U.S. radio stations operating in 1946, each with a unique antenna and frequency.[11] Second, we complement these data with information on programming and network affiliations from National Authority (1945) and Broadcasting (1947). These sources identify 217 stations that, at the start of 1946, were part of the advertising deal for *The Adventures of Superman* and therefore likely broadcast the show during 1946 and thereafter. Third, because affiliations or programming may have changed between the publication of these records and the launch of *Operation Intolerance*, we cross-verify information using station-specific radio schedules from local newspapers. Drawing on historical archives from `newspapers.com`, we identify 20 additional stations and exclude 16 stations from our original list. Appendix B provides further details on the methodology and the geographical distribution of radio stations in 1946.

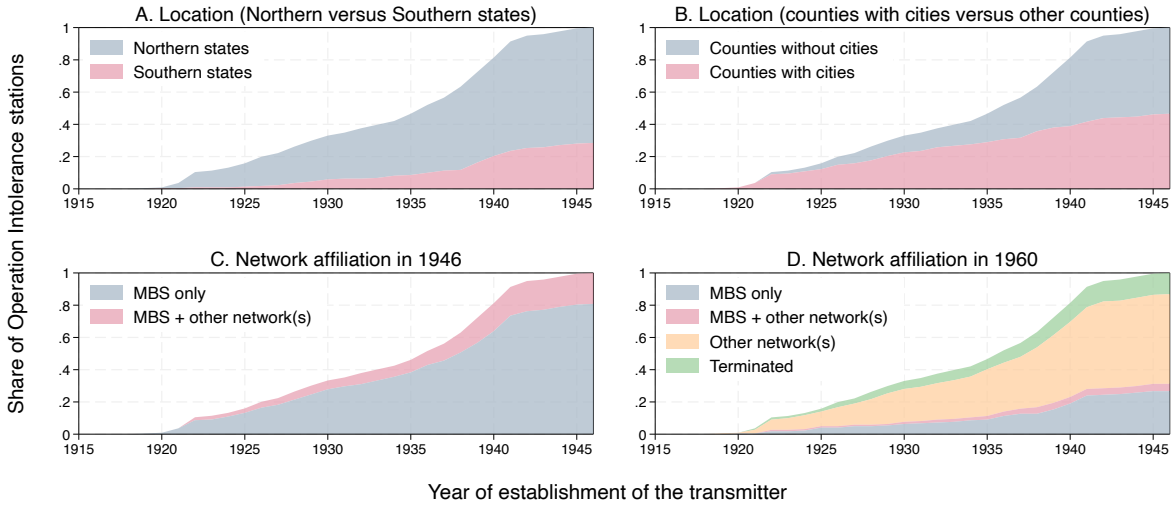
The final set includes 221 stations. Figure 2 reports descriptive statistics by year of establishment (horizontal axes). Establishment dates vary widely, reflecting the evolving nature of the network. Some stations date back to the 1920s, while others were established in the early 1940s. Regarding antenna location, 71% were in Northern states and 29% in Southern states (panel A), and about 47% were in counties containing a city (panel B). These figures suggest no systematic geographic targeting by the MBS network. In terms of network affiliation (panel C), 81% of the stations were exclusively affiliated with MBS in 1946, while the remainder also carried content from at least one other national network. Panel D repeats this analysis for 1960, based on digitized data from Broadcasting (1960). Consistent with the fluid nature of the radio market during this period, only 27% of the stations were still solely affiliated with MBS by 1960, 5% were jointly affiliated with MBS and at least another network, 56% had switched to another network, and 13% had ceased or relocated operations.

Computation of exposure. Having identified the stations broadcasting *Operation Intolerance*, we geo-locate the transmitters and use their technical specifications to compute the geographic coverage of radio signals. In 1946, nearly all broadcasting relied on AM technology, used by 99.6% of stations in 1940 and 74% in 1950 (US Bureau of the Census, 1975).[12] AM transmissions propagate through two components: a ground wave, predominant during the day, and a sky wave, predominant at night. Ground-wave propagation depends on topography and soil conductivity, which refers to the ability of the Earth's surface to conduct radio waves and is determined by moisture, soil composition, and mineral content. Sky-wave propagation depends mainly on ionospheric refraction, meaning the bending of radio waves in the ionosphere, which varies with solar radiation from day to day. Unlike FM signals, AM waves are less obstructed by terrain and can travel beyond the horizon, with their reach varying sharply between day and night (Reed and Sander, 1987). Consequently, radio coverage models focused solely on topog-

[11] 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. Frequency refers to the number of oscillations of a radio wave per second, measured in hertz (Hz), as assigned by the FCC. It defines the channel on which a station transmits, allowing listeners to tune in to specific broadcasts.

[12] AM was the dominant U.S. broadcasting technology from the 1920s to the 1970s. In 1960, 92% of all radio sets were AM-only, and FM listenership did not surpass AM until 1979 (Kleinfeld, 1979).

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). *Counties with cities* are defined according to the 1940 U.S. Census. *Southern states* include Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas. *Other network(s)* includes ABC, NBC, and CBS. Details about data sources are provided in Section 3.1.

raphy, such as the Longley-Rice Irregular Terrain Model, are not appropriate predictors of AM radio coverage (Crabtree and Kern, 2018; Gagliarducci et al., 2020).

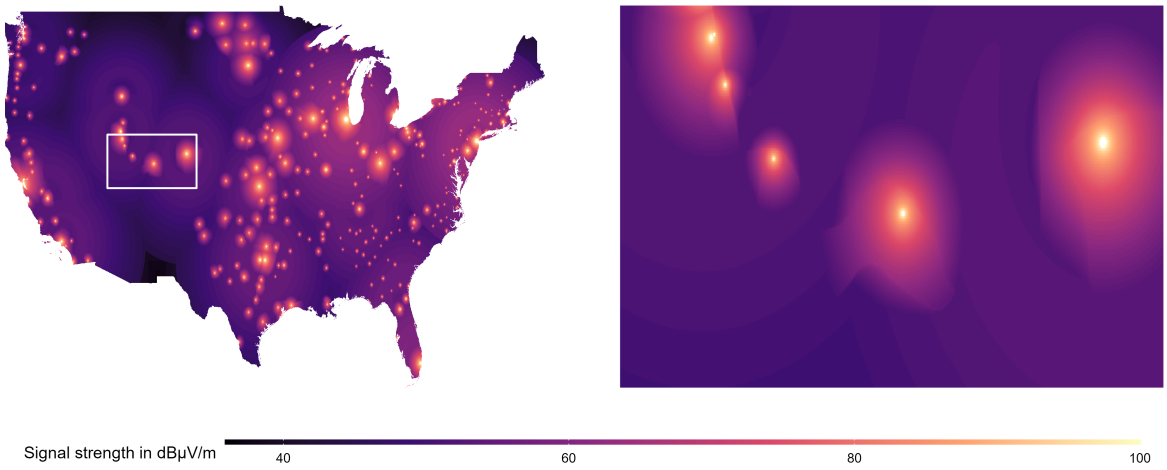
To estimate the radio coverage of each station that aired *Operation Intolerance* in 1946, we partnered with ATDI, a global leader in radio engineering. ATDI provided predictions of signal strength for each station, defined as the measurable quality of the received signal and determining a listener's ability to hear and understand a broadcast. Predictions are specific to AM transmissions and follow the methodological recommendations of the United Nations' International Telecommunication Union (ITU) for modeling the propagation of ground and sky waves (ITU, 1995, 2007). The prediction incorporates a comprehensive set of input parameters, including the technical characteristics of the transmitters (e.g., frequency, output power, antenna design), environmental factors such as terrain and soil conductivity, and temporal variables such as the relative prevalence of ground and sky waves and the level of solar radiation during the broadcast period.

The output consists of raster datasets representing the signal strength of each radio station across the continental U.S. at a 400-meter resolution. These rasters are overlaid, taking the strongest signal at each location to generate a composite map of *Operation Intolerance* coverage, which is shown in panel A of Figure 3. To link these spatial data to our outcome variables, which are primarily identified at the county level, we compute *exposure* as the share of each county's population covered by the signal in 1946, as displayed in panel B of Figure 3. In all estimations, exposure is standardized for ease of interpretation (mean = 0.13, standard deviation = 0.29). Appendix C.4 discusses alternative exposure measures.

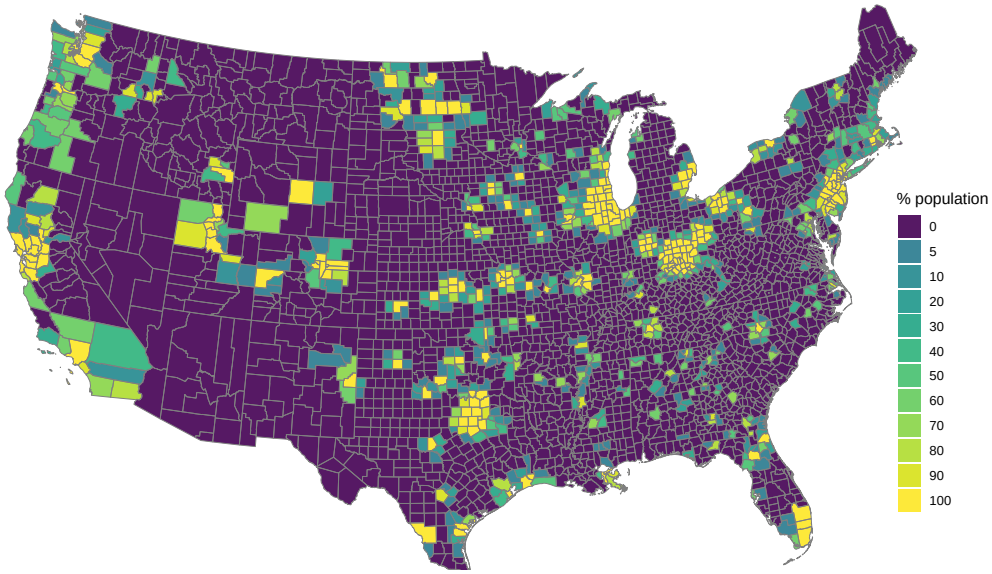
Validation of exposure. The ITU algorithm employed to predict signal strength is based on

Figure 3: Exposure to *Operation Intolerance*

A. Signal strength of *Operation Intolerance* radio stations



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 *Operation Intolerance* radio stations at a resolution of $400m^2$, reported in $dB\mu V/m$ (higher values indicate stronger signals). The right figure in panel A zooms into a specific portion of the map, indicated by the rectangle. Details about the computation of signal strength is provided in Section 3.1. Panel B displays the geographical distribution of the share of a county's population covered by the signal of *Operation Intolerance* radio stations 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 ≥ 66 $dB\mu V/m$ (a standard threshold for adequate signal strength to ensure intelligible reception; ETSI, 2021). For each grid cell, we then obtain population size in 1940 from the HYDE dataset (Klein Goldewijk et al., 2017), interpolated to obtain a resolution of $400m^2$. The share of population covered 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.

decades of empirical measurement campaigns and remains the international standard used by national regulators for AM broadcast coordination. These models have been validated in multiple studies and are routinely used in the operational planning of networks worldwide (ITU, 2013). Despite this, in Appendix A.2, we conduct an additional empirical validation of our predicted coverage using contemporaneous listenership data. The only available county- and station-level source on radio listenership for the 1940s is BMB (1949), which provides, for the year 1949, three years after the launch of *Operation Intolerance*, the share of each county's

population that listened to different radio stations. We digitize this source to build the first comprehensive county-by-station dataset of mid-century radio listening. Matching realized listening rates to our predicted signal strength reveals a tight correspondence between modeled coverage and the actual probability of having listeners. This close alignment provides strong external validation of our exposure measure, confirming that we are meaningfully capturing the spatial distribution of radio access relevant to *Operation Intolerance*. The exposure measure is further validated empirically using local newspaper data, as Superman was more salient in newspapers published in areas with higher predicted exposure (Appendix C.7).

3.2 Attitudes and behavior in the target population

We gather data on attitudes from the American National Election Studies (ANES, 2021), a biannual survey measuring public opinion among representative samples of the voting-age population. We use all waves collected between 1964 and 1980, corresponding to 18–34 years after the launch of *Operation Intolerance*. This period is marked by the high salience of civil rights in American politics and the public sphere (see Section 2). Accordingly, the 1964–1980 waves consistently include questions on racial tolerance and civil rights, whereas earlier and later periods do not offer the same wealth of information on these topics (see Appendix C.1 for details on question availability across waves).

We merge survey responses with exposure to *Operation Intolerance* using each respondent's county of residence as the county of exposure to the broadcast. To measure childhood exposure accurately, we restrict our analysis to individuals residing in the same state in which they grew up. Kearney and Levine (2019) provide empirical evidence supporting this approach to account for potential migration. We also find no evidence of selective migration in our sample, as the sample of internal migrants is similar in terms of demographic and socioeconomic characteristics.[13] Section 5.2 further discusses this restriction.

We focus on three sets of attitudes that could have been influenced by the narratives portrayed in the show. Appendix C.1 provides variable definitions and descriptive statistics. For comparability, all attitude questions in the tables are standardized into z-scores.

First, because *Operation Intolerance* directly promoted racial tolerance, we examine **racial attitudes and support for civil rights**. We identify eight questions across survey rounds that capture this dimension (see Appendix C.4 for partial correlations). The first six measures support for policies reinforcing civil rights. On average, respondents favor desegregation (mean score 2.23, where 1 indicates strict segregation and 3 indicates desegregation), integrated schools (45% in favor), and affirmative action (mean score 3.47, where 1 indicates no action and 7 indicates full government support). They are more divided on whether African Americans are adequately represented in society and politics (mean 1.98, where 1 indicates too much

[13]The 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 marital status (67.3% married versus 68.5%).

and 3 too little), on support for desegregation busing (mean 1.68, where 1 indicates opposition and 7 indicates full support), and on support for civil rights legislation (mean 1.55, where 1 indicates that legislation is moving too fast and 3 indicates too slow).[14] The remaining two questions capture broader feelings toward Black Americans and Southerners, a term then associated with opposition to the Civil Rights Movement, as most resistance to racial equality was concentrated in the South (Bartley and Graham, 2019). Favorable feelings toward these groups are measured using the *Feeling Thermometer*, which records attitudinal responses on a 0–100 scale, where 100 indicates very warm (favorable) feelings and 0 very cold (unfavorable) feelings. On average, respondents report favorable feelings toward both groups, with mean scores of 62.8 and 63.2, respectively.

Second, because the narratives promoted views later associated with progressive political positions in the 1960s and 1970s, we focus on **political preferences**. We assess political support for actors relevant to civil rights using the *Feeling Thermometer*. First, we measure favorable feelings toward civil rights leaders, indicating progressive attitudes and support for the Civil Rights Movement. Second, we examine favorable feelings toward George Wallace, an outspoken segregationist who became the political face of resistance to civil rights and ran for president in 1968 (see Section 6 for details). Finally, we examine favorable feelings toward Republicans, who held a more conservative stance on civil rights from 1964 to 1980. The average scores for these political actors are 44.7, 44.4, and 63.2, respectively.

We supplement these attitudes with values reflecting alignment with the Civil Rights Movement (see Section 2). The first question asks whether the respondent approves of participating in protests and demonstrations. On average, approval is low, with a mean score of 1.60, where 1 indicates approval and 3 indicates disapproval. The second question measures trust in the federal government, a key institution whose credibility was eroded among supporters of the Movement. Respondents are divided, with a mean of 2.52, where 1 indicates never trusting and 4 indicates always trusting. We also measure favorable feelings toward the police and military. On average, respondents express positive feelings towards both, with mean scores of 76.3 and 71.1, respectively. Finally, we assess **racial assimilation and social openness** using a self-reported measure of interracial friendships, capturing both actual behavior and attitudes toward racial integration. On average, 41% of respondents report having interracial friendships.

3.3 Interracial marriage

We collect individual-level data on interracial marriages from the 5% sample of the 1980 U.S. Census provided by Ruggles et al. (2024). The dataset lacks county identifiers for areas with fewer than 100,000 residents. Hence, we match observations with exposure to *Operation Intolerance* using the 1,148 Principal Statistical Units (PSUs), the most disaggregated geographic

[14] Desegregation busing involved transporting students to schools outside their neighborhoods to counteract *de facto* residential segregation (see, e.g., Billings et al., 2014). Busing faced strong opposition from white communities, often resulting in protests and violent resistance.

identifier available, which combines entire counties or portions of adjacent counties. We define a marriage as interracial when one spouse belongs to the white majority and the other to a different racial group. Because such marriages were extremely rare during our study period (see Figure 5), we restrict the analysis to areas with significant racial diversity, defined as PSUs with at least a 5% non-white population in 1940. As in previous analyses, we exclude individuals residing in a different state from their state of birth to accurately capture childhood exposure to the broadcast. The final sample includes 1,155,340 married individuals in 478 PSUs, with an average interracial marriage share of 1.02%.

4 Empirical approach

This paper estimates the causal effects of a sudden and unanticipated change in the narrative of a popular radio program. Unlike existing studies on media impacts, which estimate the overall effects of mass-media exposure, we isolate the impact of a narrative shift within an existing program.

We employ a multi-year cohort-based DiD design that constructs birth-year cohorts from repeated cross-sectional data to track age-specific exposure effects over time. Using observations of the same outcomes at multiple points in time between 1964 and 1980, we conduct within-age-cohort comparisons across areas with varying degrees of exposure to *Operation Intolerance* in 1946, during childhood or adolescence. Everyone alive in 1946 and living within range of the broadcasts could, in principle, have listened to at least one of the stations airing *The Adventures of Superman*, which is the type of exposure emphasized in prior work. However, only the target cohorts, who were the show's intended audience, are likely to have listened to the program, while individuals who were too old or too young at the time were unlikely to have been directly exposed to its progressive narratives (see Section 2.1). Those slightly older than the target cohorts may also have been exposed to the program in earlier years, when its narratives were different.

We exploit variation in the likelihood of listening to the show in 1946 to isolate the effect of the narrative shift from the broader impact of radio exposure. Based on qualitative evidence about the program, particularly its broadcast time slot, we define the *target cohorts* as individuals of school age (7–18 years old) in 1946 (see Section 2). This definition is consistent with evidence from developmental psychology identifying a dual threshold of cognitive maturity relevant to media influence: a comprehension threshold around age 7 and a socialization peak that shapes moral, social, and political attitudes during adolescence, approximately from age 13 to 18 (Krosnick and Alwin, 1989; Burris and Brown, 2014; Dahl et al., 2018). Evidence in Section 5 further supports this assumption.

Our approach is similar in spirit to identification strategies that exploit cohort variation, but with two key differences. First, we use multiple post-intervention survey waves, allowing us to trace cohort-specific outcomes over almost two decades. 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, enabling us to track the trajectory of treatment effects over the long run and capture gradual or delayed impacts, which is ideal for studying long-run attitudinal changes. This approach also differs from most studies on the effect of mass media, which exploit cross-sectional variation in media exposure, rather than cohort-based comparisons over time. Second, while we build on a cohort-based DiD approach, our study combines a longitudinal framework with plausibly random media exposure.

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

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

where D_τ is an indicator equal to 1 if individual i belongs to cohort $h = \tau$, with $h \in [\underline{h}, \bar{h}]$ based on age in 1946 and 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 (as defined in Section 3.1). The coefficients of interest, γ_τ, capture the effect of 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 those who actually tuned in. Section 5.1 discusses how R_c translates into listenership. As noted in Section 3.1, R_c is specific to 1946 and, while correlated with exposure in other years, is distinct from it.

The remaining terms in equation (1) include a set of fixed effects (FEs), interaction terms, and an idiosyncratic error. First, μ_c captures county FEs, accounting for time-invariant county characteristics. Second, μ_h captures cohort FEs, absorbing unobserved cohort-level factors that remain 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 include state-by-survey-year FEs, $\mu_{t\times state}$, to absorb any time-specific shocks affecting all cohorts equally within a state, such as shifts in public opinion, legal or institutional changes, or election cycles. This control is particularly relevant given the stark North–South divide in racial attitudes during this period. Fourth, we interact observable individual characteristics, $X_{ihc,t}$, with both cohort indicators (D_h) and survey year indicators (D_t), controlling flexibly for observable factors potentially correlated with broadcast exposure. Below, we describe the selection of the variables included in $X_{ihc,t}$ in detail. Finally, the error term $\epsilon_{ihc,t}$ is clustered at the county level.

For identification, the approach described in equation (1) relies on the standard parallel trends assumption: in the absence of *Operation Intolerance*, outcomes for cohorts exposed to the program would have evolved similarly to those of non-exposed cohorts over time. This assumption does not require exposure to be strictly random at the time of the broadcast. As

in studies of FM radio and TV, cross-sectional variation in exposure can be treated as plausibly exogenous once we condition on geographic and technical factors (often referred to as *propagation controls*), such as elevation or distance from the transmitter.

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 doing so reinforces the credibility of the parallel trends assumption. Table 1 presents the results, assessing whether exposure was plausibly random at the time of the broadcast (i.e., in the cross section) using a variety of pre-broadcast county-level characteristics from the 1940 Census and other indicators capturing racism and political preferences. Columns (1)–(2) report summary statistics, while columns (3)–(4) show correlation coefficients between characteristics and R_c, estimated using OLS regressions without controls. Following Yanagizawa-Drott (2014), columns (5) and (6) re-estimate these coefficients including propagation controls, interpreting non-significant coefficients as evidence of (conditional) randomness of exposure. We estimate the following cross-sectional regression:

$$L_{cs} = \beta \cdot \mathrm{R}_c + X'_{cs}\delta + \mu_s + \epsilon_{cs}, \tag{2}$$

where $L_{cs,pre}$ is a selected characteristic for county c in state s, R_c is defined as in equation (1), and X_{cs} includes a set of propagation and geographic controls capturing unobserved heterogeneity in exposure, particularly related to transmitter proximity and the targeting of specific markets. The remaining terms are state FEs, μ_s, and the error term, ϵ_{cs}, which is assumed to be clustered at the state level.

For propagation controls, we follow the FM radio and TV broadcast literature, adapting it to AM transmissions by including (i) a measure of radio coverage in the absence of transmission obstacles (assuming perfect ground conductivity), (ii) an indicator for the presence of an antenna in the county, and (iii) the minimum distance between the antenna and the county centroid.[15] Geographic controls include elevation, ruggedness, and ground conductivity measured at each county centroid.

Evidence in Table 1 supports the conditional randomness of exposure at the time of broadcast. Without controls, exposure is strongly correlated with most county characteristics, reflecting the placement of radio antennas near urban centers, which was typical for other contemporaneous radio networks (see, e.g., Wang, 2021). However, after adding controls, exposure is no longer significantly correlated with most pre-broadcast characteristics, except for a county being more urban and, as expected, having higher radio ownership.

Although evidence of conditional randomness of exposure supports the parallel trends assumption, note that the cohort-based specification in equation (1) includes county FEs, μ_c, which control not only for pre-1946 urbanization levels but also for all time-invariant charac-

[15] Appendix B.1 provides further details. Perfect conductivity coverage captures variation in antenna placement and the targeting of specific areas, analogous to *free field coverage* for FM radio and TV, i.e., the theoretical coverage in the absence of topographic obstacles (see, e.g., Olken, 2009).

Table 1: Conditional exogeneity of the exposure to *Operation Intolerance*

	Pre-broadcast characteristics		Cross-sectional correlation with exposure Unconditional			Conditional		
	mean	[std.dev.]	β	(s.e.)	R^2	β	(s.e.)	R^2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Census characteristics								
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
Violence and racism								
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
Electoral outcomes								
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
Access to radio network								
% 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 (Haines, 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)–(2) report means and standard deviations of the corresponding variables. Columns (3)–(5) present estimates, standard errors and R^2 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 estimated using equation (2). In columns (3)–(8), standard errors are clustered at the state level because we observe one observation per county.

teristics correlated with signal reception, including those not shown in Table 1. Nevertheless, we adopt a conservative approach and control for additional factors that might violate parallel trends beyond μ_c, μ_h, and $\mu_{t\times state}$. The variables included in $X_{ihc,t}$, and their interaction terms are selected with this objective in mind. First, we include individual characteristics, such as age at interview, sex, and race, to capture trends and cohort-specific effects along these dimensions.[16] Second, we include propagation controls to address the potential risk that exposure reflects trends related to antenna placement.[17] Finally, because in Table 1, the 1940 share of a county's population living in cities remains significantly correlated with exposure even after adding controls, we include this variable in $X_{ihc,t}$. We present additional checks on urbanization in Section 5. Overall, the interaction terms $(X_{ihc,t} \times D_h)$ and $(X_{ihc,t} \times D_t)$ capture

[16] Due to the limited within-county variation (i.e., many counties contain only white respondents) combined with the large set of FEs, we control for race using the county's share of white population in 1940. Appendix C.4 shows robustness to including an extended list of individual-level controls, including race, although this reduces the sample size due to missing observations.

[17] Appendix C.4 shows robustness to additionally including geographic controls.

any remaining concerns about non-parallel trends associated with the expansion of the radio network.

Appendix C.4 presents robustness checks for the main results using alternative sets of controls and FEs, and allowing for spatially correlated error terms. In addition, evidence discussed in Section 2 rules out potential threats from anticipation and spillover effects on older cohorts, which could lead to an underestimation of the effect. We provide further evidence against this possibility in Section 5.1.

5 Results

5.1 From exposure to listenership

Before presenting the results on the effect of *Operation Intolerance* using the approach detailed in Section 4, we discuss how exposure to the radio signal corresponds to listenership and how it could have influenced people living in areas with higher exposure at that time. This analysis, interpretable as an empirical first stage, is important because exposure captures the probability of listening rather than actual listenership.

We begin by quantifying how, in 1946, higher exposure to the radio signals of the stations that broadcast *Operation Intolerance* translates into higher listenership of their programs during the time slot of *The Adventures of Superman*. Because the listenership data discussed in Section 3.1 do not allow for the identification of specific time slots and refer to 1949, we digitized historical records produced by Crossley's Cooperative Analysis of Broadcasting (CAB; see Appendix A.1 for further details). In the 1940s, CAB specialized in publishing detailed radio listenership data for a representative sample of households living in areas with a population of 50,000 or more that had access to a telephone, a sub-sample compared to BMB (1949).

We gather data from the *City Report* (CAB, 1946a), which provides, on a bi-monthly basis, city-specific percentages of radio set users who were listening to a given station during 5 time slots (9am–12noon, 12–3pm, 3–6pm, 6–8pm, and 8–10:30pm). Using this information and matching stations to those that broadcast *Operation Intolerance*, we construct panel data on the listenership shares of these stations for each surveyed city, with a temporal frequency of 5 time slots every two months from July 1945 to February 1946.[18] We then match each observation to our exposure measure, R_c, using the county in which the city is located, and estimate a version of equation (2) with repeated observations over time, thereby controlling for time FEs. Under the conditional exogeneity of exposure (see Section 4), the parameter β of equation (2) captures the effect of higher exposure on listenership.

Columns (1)–(3) of Table 2 present the results. Column (1) covers all time slots, column (2) restricts the sample to the slot of *The Adventures of Superman* (3–6pm), and column (3) includes all other slots. On average, the listenership share was 9.6% and remained stable

[18] CAB ceased operations in mid-1946, and the latest available City Report was published in February 1946.

throughout the day. Note that the 3–6pm period likely underestimates actual listenership during the show itself, since before 5pm most children and adolescents were not yet tuned in (see Appendix A.1). The effect of exposure on listenership is consistent across sub-samples, with a one-standard-deviation increase in exposure raising the overall listenership share by 2.6 percentage points, which is a sizable 27% increase over the mean. In Appendix A.2, we repeat this exercise using data from BMB (1949), thus covering the full U.S. at the county level. We show that the estimates are comparable to those presented in Table 2, reinforcing the link between exposure and listenership.

Having established that exposure captures listenership in the pre-intervention period, we next examine whether the launch of *Operation Intolerance* further increased the listenership of *The Adventures of Superman*, highlighting that the new episodes were especially salient to the show's audience. Because data from the City Report are unavailable after February 1946, we digitized complementary information from the *Program Report* (CAB, 1946b), which summarizes the aggregate listenership of major national networks, rather than individual stations, during each 15-minute slot of the day. When programs were broadcast during the same slot on the same national network, such as *The Adventures of Superman*, this report allows for the recovery of the time series of listenership at a bi-weekly frequency.

Using all relevant 15-minute slots from 3pm to 6pm on weekdays (12 slots in total), we build a bi-weekly panel of slot-specific network listenership covering February 1945–July 1946. To estimate whether the show's audience increased after the narrative shift, we implement a DiD specification comparing the evolution of *The Adventures of Superman* to other programs and time slots before and after April 1946, controlling for time and slot FEs.

Results are presented in columns (4)–(5) of Table 2. Column (4) includes all 3–6pm slots, while column (5) focuses on the key 5–6pm period. Following the launch of *Operation Intolerance*, the series saw a 4.3–4.7 percentage point rise in listenership (an 18–19% increase over the sample mean). These results underscore the strong appeal of the new episodes among listeners. Appendix Figure A3 shows that, following the narrative shift, *The Adventures of Superman* became the most popular program for children and adolescents, without drawing listeners away from adult-oriented programs.

These results are consistent with historical accounts and reinforce the cultural imprint of the show among children and adolescents. To corroborate the extent of listenership of *Operation Intolerance*, we combine county-level census data on population (by age) and radio ownership from Haines (2010) with exposure and compute that approximately 10.89 million individuals aged 7–18 in 1946 could have listened to the show, about 45% of that age group nationwide. Considering the total listenership of 4.5 million reported in contemporary sources (see Section 2.1), the show reached roughly 0.4 of every potential listener in this demographic, highlighting the potential magnitude of the impact of the narrative shift.

Concerning the overall influence of the show on the general population, evidence highlights that children were the main recipients, while the adult population was primarily unaffected.

Table 2: Exposure to *Operation Intolerance* and listenership

	Share of radio set users listening to ...				
	Radio stations of *Operation Intolerance*			A specific network during a 15-minute slot	
Sub-sample:	9am–10.30pm	3–6pm	9am–10.30pm (excl. 3–6pm)	3–6pm	5–6pm
	(1)	(2)	(3)	(4)	(5)
Exposure	0.026***	0.026***	0.026***		
	(0.007)	(0.006)	(0.008)		
Superman × post				0.047***	0.043***
				(0.005)	(0.007)
Dependent variable mean	0.096	0.096	0.096	0.250	0.236
R^2	0.600	0.677	0.616	0.939	0.937
Observations	1,725	345	1,380	1,148	426
Level of observation	City	City	City	Network	Network

Note. Estimates in columns (1)–(3) are based on equation (2), but with repeated observations over time, thus controlling for time FEs. The dependent variable is the city-level share of radio set users that was listening to any of the radio stations that broadcast *Operation Intolerance* in 1946 during a specific time slot and period of reporting. *Exposure* measures the share of the county population covered by the radio signal of stations that broadcast *Operation Intolerance* in 1946. Estimates in columns (4)–(5) are based on a difference-in-differences specification comparing over time the listenership of specific networks during 15-minute slots, controlling for time and slot FEs. The dependent variable is the network-level share of radio set users listening to the radio during a specific 15-minute slot and period of reporting. *Superman* is an indicator variable equal to 1 if listenership refers to *The Adventures of Superman*, and 0 if it refers to other programs. *Post* is an indicator variable set to 1 for observations capturing listenership on or after the launch of *Operation Intolerance* in April 1946. Standard errors are reported in parentheses and are clustered at city level in columns (1)–(3) and at network-by-slot level (adjusting for the small number of clusters) in columns (4)–(5) (* $p < 0.1$, ** $p<0.05$, *** $p < 0.01$). In columns (1)–(3), observations cover the period July 1945–February 1946, while in columns (4)–(5), they cover February 1945–July 1946.

Section 2 highlights that the probability of adults listening to the show was low. If the program influenced adults indirectly in a relevant way, perhaps through discussions, we would expect changes in the broader media landscape and public discourse. We rule out spillovers through TV, as only about 8,000 households owned TV sets in 1946 (Anderson, 2005), and we focus on local newspapers, i.e., the main adult-oriented information medium at the time. From Section 2, we know that, given the experimental nature of *Operation Intolerance*, the change in the show's narratives was not advertised before or after its launch on media outlets targeted at adults. In Appendix C.5, we show that immediately after the narrative shift, areas with higher exposure did not experience increases in the coverage of Superman or its new themes in local newspapers. These findings suggest that the adult population was, in fact, unaffected by the show in the short run. Section 6 provides evidence on the long-term shifts in public discourse.

5.2 Racial attitudes and support for civil rights

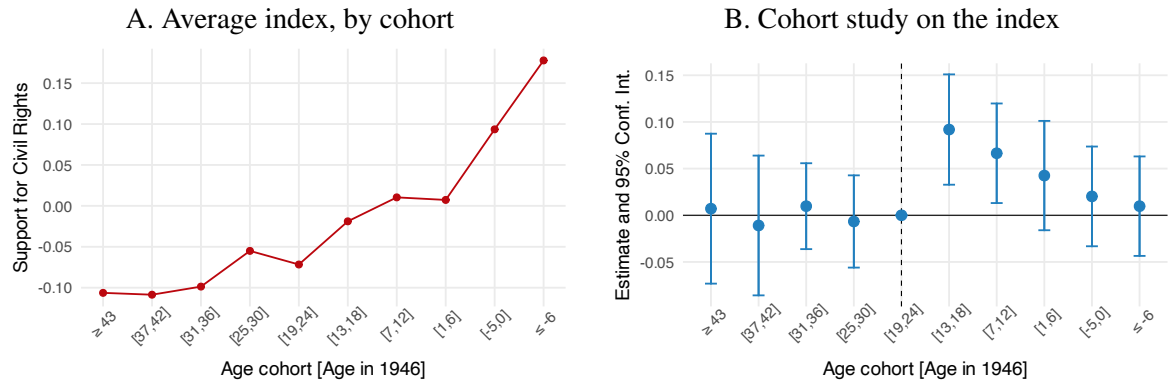
Having established a direct link between exposure and listenership, we investigate the effects on racial attitudes and support for civil rights using the multi-year cohort-based DiD described in Section 4. Since these outcomes are captured through several survey questions that may not be collected in every survey round, we first focus on a single indicator, which we label the *Support for Civil Rights Index*. Following Kling et al. (2007), the index combines responses related to racial attitudes and attitudes in support of civil rights (see Section 3.2) by standard-

izing individual indicators and averaging the z-scores across all available variables for each respondent. This approach facilitates a canonical interpretation of the estimation results and addresses potential issues related to multiple hypothesis testing. Appendix C.4 shows results using an alternative aggregation method that 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, in line with 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 led to a measurable increase in support among the cohorts that constituted the program's primary audience. For the age cohorts 7–12 and 13–18, a one-standard-deviation increase in exposure leads to gains in support 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 show before 1946, prior to the narrative shift. Since the estimate for this cohort is not statistically different from that of older generations, the results reinforce the importance of the narrative change in the series.

Figure 4: Support for civil rights



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 C.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 FEs 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 C.1.

To summarize the main effects in a single estimate, Table 3 provides 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 cohorts are presented in Appendix C.1. Panel A reports estimates using all available cohorts, while Panel B excludes younger cohorts who were either not yet born in 1946 or too young to plausibly understand the broadcasts. This distinction helps assess the nature of effects and potential spillovers. Younger cohorts should, in principle, serve as valid controls since they were not directly exposed to the program. However, indirect exposure through reruns, cultural diffusion, or family transmission could bias estimates toward zero by introducing partially treated individuals into the control group. If the estimated effect for the target cohorts rises when these younger cohorts are excluded, it would suggest such contamination. Conversely, the absence of effects among younger cohorts could reflect genuine cohort-specific exposure or generational convergence.

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 results in a comparable estimate of 0.08 standard deviations (panel B). This result reinforces the importance of being able to listen directly 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 11–13 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 C.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 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).

Table 4 presents a variety of sample exclusions and placebo checks that address potential threats to identification. We present only estimates using all cohorts; however, consistent with previous results, excluding younger cohorts leads to the same conclusions.

The first concern is urbanization and the risk that our estimates might capture attitudinal and

cultural changes 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. 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 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 estimate equation (1) after excluding counties that hosted the radio transmitters of the show, as well as counties located within 10 or 50 km of a transmitter. Using only variation in exposure farther from a transmitter leads to statistically significant estimates of 0.06–0.08 standard deviations, ruling out that our results are driven by the strategic placement of antennas.

The third threat relates to the possibility that our estimates reflect broader trends in radio content. In columns (5)–(7), we implement three alternative placebo checks, each estimating equation (1) controlling for the effect of exposure to alternative contemporaneous radio content, constructed using the same procedure described in Section 3.1. In line with our empirical approach, we also interact the respective propagation controls with cohort and survey year indicators. In column (5), we test whether the results are driven by a general shift in overall radio programming, augmenting the model with a measure of exposure to the signal of any commercial radio station that did not broadcast *Operation Intolerance* (Appendix Figure B3 shows the locations of these stations). In column (6), we examine whether our estimates reflect trends in youth radio series by controlling for exposure to *The Lone Ranger*, a program featuring a masked former Texas Ranger who fights outlaws in the Old West and one of the main competitors of *The Adventures of Superman* (Dunning, 1998). It aired from 1933 to 1954 and was produced by ABC during the 1940s, and, importantly, content analysis shows that it did not undergo a narrative shift in 1946 (Appendix B.3). In column (7), we test whether our results reflect a broader narrative change within the MBS network in the years following 1946 by 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 the alternative programs has no significant effect, underscoring the unique role of *Operation Intolerance*.

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 the sample of migrants (i.e., those who grew up in a different location compared to the location of the interview), which is excluded from our main analysis (see Section 3.2). Respondents in this sample 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 3: The effect on racial attitudes and support for civil rights

		Support for...						Favorable towards...	
	Support for Civil Rights Index	Desegregation	Integrated schools	Desegregation busing	Black representation	Affirmative action	Civil rights legislation	Black population	Southerners
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
A. All cohorts									
Target × Exposure	0.064***	0.070***	0.016	0.111**	0.095**	0.103***	0.056*	0.045*	-0.112***
	(0.016)	(0.027)	(0.030)	(0.052)	(0.037)	(0.033)	(0.030)	(0.027)	(0.032)
R^2	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. Exclude younger cohorts									
Target × Exposure	0.075***	0.084**	0.013	0.041	0.169***	0.137***	0.077**	0.059*	-0.087**
	(0.018)	(0.034)	(0.035)	(0.046)	(0.053)	(0.040)	(0.035)	(0.032)	(0.040)
R^2	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 C.1.

Table 4: 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 × Exposure	0.051***	0.062***	0.067***	0.078**	0.071***	0.068***	0.064***	0.015
	(0.019)	(0.018)	(0.015)	(0.030)	(0.015)	(0.016)	(0.017)	(0.024)
Target × Exposure to other content					0.005			
					(0.025)			
Target × Exposure to *Lone Ranger*						0.009		
						(0.023)		
Target × Exposure to MBS extension							0.015	
							(0.019)	
R^2	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 5.2). Column (1) excludes counties with more than 50% of the population residing in cities (based on information from the 1940 U.S. Census). 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 fifth threat is that our results capture a more general shift in attitudes rather than those promoted by narrative shift. In Appendix C.6, we show that the effects are specific to racial attitudes, as we find no significant changes in attitudes toward religious minorities, economic inequality, or feminist organizations.

5.3 Political preferences

Section 5.2 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 during these decades, we examine how exposure shaped political preferences in that same period. The results are presented in Table 5 following the same approach of Table 3. Appendices C.1 and C.3 provide estimates of equation (1) without cohort grouping.

In columns (1)–(3), we examine the 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 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 (panel B). In Section 6, we discuss whether these results translate into electoral effects during the 1968 presidential election, 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 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 excluded.

Outcome variables in columns (1)–(7) rely on self-reported attitudes. In column (8), we corroborate these findings by examining a behavioral outcome, the participation in the Vietnam

War, which provides an additional lens through which to assess individual commitment to civil rights ideals (see Section 2). Similar to Esposito et al. (2023), we gather information on participation using casualties as a proxy. 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 WWII (Davidson, 1988). Data on the date of the casualty and the hometown of U.S. military personnel during the Vietnam War are obtained from the *Defense Casualty Analysis System (DCAS)*. The geographical distribution of casualties spans the entire U.S. territory, while nearly all casualties come from cohorts born in the 1930s and 1940s (Appendix C.3).

Because we do not observe participation directly at the individual level, and because the probability of death varies 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, multiplied by 1,000 to refer to 1,000 deaths. We define cohorts using the exact birth date and age relative to the launch of *Operation Intolerance*. We drop from the estimation sample counties that did not experience any casualties during the conflict, and provide estimates for counties with a larger number of casualties in Appendix C.3.

Consistent with our earlier findings, 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 a decline of 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 an estimate in panel B. Appendix Figure C6 displays how estimates vary by cohort using equation (1), indicating no significant effect among younger individuals or those not yet born in 1946.

Table 5: The effect on political support and attitudes

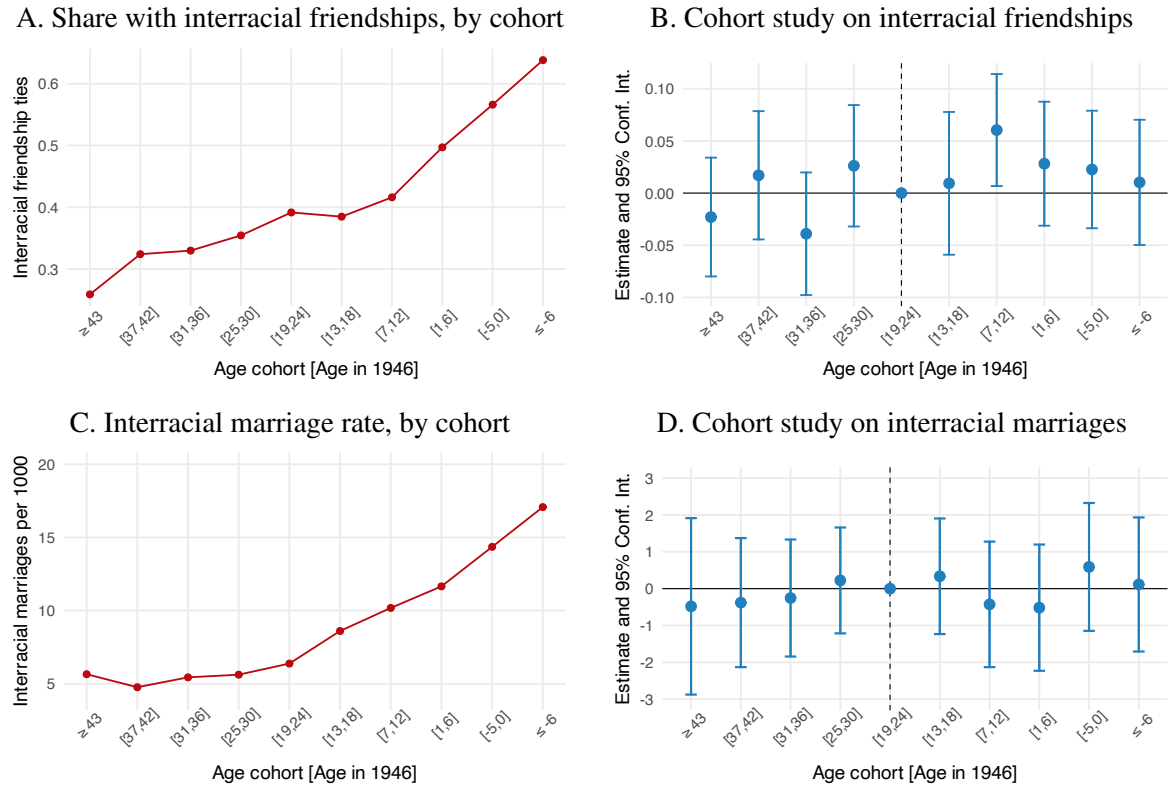
	Political support			Alignment with the Civil Rights Movement				
	Civil Rights leaders	George Wallace	Republicans	Approve of protest	Trust in the federal government	Pro-police sentiment	Pro-military sentiment	Vietnam War participation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. All cohorts								
Target × Exposure	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^2	0.248	0.240	0.161	0.226	0.192	0.161	0.192	0.756
B. Exclude younger cohorts								
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^2	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 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 stations that broadcast *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 C.1, and for column (8) in Appendix C.3.

5.4 Interracial assimilation

This section examines whether the attitudinal and political shifts discussed in Sections 5.2 and 5.3 also translated into greater interracial assimilation. We begin by focusing on 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 B.2). 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 20th 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%.

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



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 FEs 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*. Appendix C.1 provides additional details about the variables.

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 6 summarizes

Table 6: The effect on interracial assimilation

	Interracial friendships (1)	Interracial marriages (per 1,000 marriages) (2)
A. Cohort study – All cohorts		
Target × Exposure	0.027*	-0.103
	(0.016)	(0.553)
R^2	0.255	0.029
Observations	5661	1167075
B. Cohort study – Exclude younger cohorts		
Target × Exposure	0.037**	0.108
	(0.018)	(0.563)
R^2	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 stations that broadcast *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. Appendix C.1 provides additional details about the variables.

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 Figure 5, an increase in exposure by one standard deviation increases the probability of having friends of a different race among the target cohorts 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 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 that on attitudes (Section 5.2).

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, with only 17.5 per 1,000 marriages in the youngest cohort. In panel D, which plots cohort-level estimates, we find no statistically significant effects for any cohort. Column (2) of Table 6 summarizes the effects for the target cohorts, confirming the absence of any detectable impact. This result may reflect legal and institutional constraints, as only in 1967 the Supreme Court, in *Loving v. Virginia*, struck down anti-miscegenation laws as unconstitutional. Until then, interracial marriage remained illegal in several states. These findings suggest that *Operation Intolerance* did promote greater assimilation, though primarily at less intensive levels.

6 Political and civic mobilization

The results discussed in Sections 5.2–5.4 highlight the contribution of *Operation Intolerance* to the development of racial attitudes, political views, and racial assimilation in the 1960s and 1970s. In this section, our objective is to determine whether these effects translated into 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 narrative-specific effects from two other potential influences: the broader impact of listening to *The Adventures of Superman*, and the influence of other programs broadcast by the same radio stations in 1946. In contrast, the complementary event study approach captures the combined effect of all programming broadcast by these stations. In our context, it is unlikely that this identification strategy captures effects beyond those 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, and in 1946 its only production promoting progressive values was *The Adventures of Superman*, broader effects from other MBS content are unlikely. Consistent with this, Section 5 shows limited effects of alternative radio content broadcast in 1946. Finally, the 1950s marked the beginning of the rise of TV, which substantially reduced the centrality of radio as the dominant mass medium (Gentzkow, 2006).

The event study approach is based on the following specification:

$$Y_{c,t} = \sum_{\tau=0}^{\bar{T}} \gamma_\tau P_\tau \cdot R_c + \mu_c + \mu_{t \times state} + (X_c \times P_t) + \epsilon_{c,t} \tag{3}$$

where $Y_{c,t}$ is the outcome variable for county c at time t, P_τ is an indicator variable if the observation refers to the period $t = \tau$, with $t \in [0, \bar{T}]$. The FEs, μ_c (county FEs) and μ_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 (3), pooling all post-intervention periods, are presented in Table 7. For variables observed in more than two time periods, Figure 6 presents the full dynamic effects using equation (3).

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 stances on segregation. In most cases,

explicit positions are unavailable, especially for losing candidates, and such public stances may also shift over time. 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.[19] In the 1948 elections, Strom Thurmond ran as a candidate for the Dixiecrats (see Section 2) 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).

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 exploit the fact that in 1948 most of target cohorts were not eligible to vote, since the right to vote was generally granted to U.S. citizens aged 21 and older.[20] 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, and, therefore, 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 the 1968 presidential election, the votes of target cohorts constituted 29.5% of the total votes in these states (Appendix C.8).

Columns (1)–(2) in Table 7 present the results. From 1948 to 1968, an increase by one standard deviation in exposure 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 5.3 translated into tangible changes in electoral outcomes. In Appendix C.8, we calculate the persuasion rate consistent with these effects. Assuming that only the target cohorts were influenced by the show, consistent with our results in Sections 5.2–5.4, we estimate a persuasion rate ranging from 13.3% to 17.0%. Even 22 years after *Operation Intolerance*, the decision to vote for George Wallace by approximately 1.3–1.7 in 10 listeners was influenced by the narrative of the show. 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 it remains higher than the persuasion rates observed in more recent periods characterized by a

[19] Refer to Mieczkowski (2020) for an overview of these elections.

[20] 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.

fragmented media market (DellaVigna and Gentzkow, 2010).

Next, we examine whether the effects of voting against segregation also manifest in civic mobilization efforts that either support or oppose racial equality. We look at the county-level presence of the KKK and the NAACP—the most prominent civil rights organization in the U.S., which has promoted 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 obtain the location of chapters in 1932 and 1942 from Kneebone and Torres (2015), in 1965 from Committee on Un-American Activities (1967), a source also used in Mazumder (2018), and in 2000 and 2020 from 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 C.2 for further 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. 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 7 show the effects on the presence of KKK and NAACP. 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 at each data point. In line with the importance of target cohorts, the effects on both organizations appear in the 1960s (although estimates are significant at the 10% level) and remain persistent thereafter. 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, 2014), 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 during childhood or adolescence.

Although estimates suggest that the coverage of *Operation Intolerance* promoted mobilization in favor of civil rights, we aim to ascertain whether a 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 using the online archive at `newspapers.com`, mapping newspapers to counties based on the location of their headquarters.

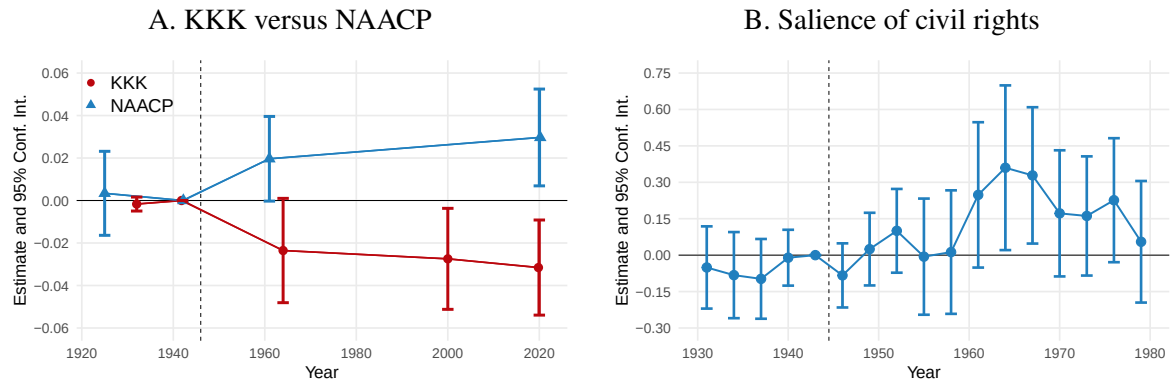
We use a bag-of-words approach, treating each page in a newspaper as an unstructured matrix of words and exploring the unconditional probability that a word appears on a specific page (see, e.g., Gentzkow and Shapiro, 2010). For each month t in the period 1930–1980, we calculate the total number of pages in newspapers published in a specific county c, which we label $all_pages_{c,t}$. The total number of pages for the entire U.S. for this period surpasses 51 million pages. For a pre-specified theme k, we compute the number of pages mentioning

Table 7: Event study effects on political and civic mobilization

	Political mobilization		Civic mobilization		
	Voting for segregation	Turnout	KKK	NAACP	Salience of civil rights
	(1)	(2)	(3)	(4)	(5)
Post-1948 × Exposure	-0.024***	-0.003			
	(0.007)	(0.004)			
Post-1946 × Exposure			-0.027**	0.023***	0.182**
			(0.011)	(0.008)	(0.082)
Dependent variable mean	0.328	0.417	0.176	0.169	0.007
R^2	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 (3), 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)–(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 C.7. Appendix C.1 provides additional details about the variables.

Figure 6: The effect on civic mobilization



Note. Estimates are based on equation (3). 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 C.7. Appendix C.1 provides additional details about the variables.

the word or combination of words indexing the theme, which we label $pages_{kc,t}$. To reduce noise, we aggregate monthly data into 36-month periods relative to the launch of *Operation Intolerance*, indexed by y, 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. Following Beach and Hanlon (2022), we define the salience of a theme k in county c during the period y

as the frequency of the theme:

$$salience_{kc,t} = \frac{pages_{kc,t}}{all_pages_{c,t}}. \tag{4}$$

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. Appendix C.7 provides more details on how themes were identified and descriptive statistics regarding the importance of each theme. We then aggregate the salience of individual themes into an index using regularized iterative principal component analysis (RPCA; Josse and Husson, 2012), which handles data structures with missing values.[21] We calculate the index using the first principal component, which captures 35.7% of the variation in our sample. Appendix C.7 shows the robustness of the results to alternative procedures for building the index and selecting themes.

Column (5) of Table 7 shows that in the post-1946 period, an increase by one standard deviation in exposure in 1946 leads to a significant increase in the salience of civil rights by 0.184 units. Panel B of Figure 6 plots event study estimates from equation (3). 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.

Overall, the findings presented in this section reinforce a mechanism in which greater exposure to the narratives portrayed in *Operation Intolerance* in 1946 led to political and civic mobilization for civil rights, especially during the peak years of the Civil Rights Movement.

7 Conclusion

Minoritized communities around the world face deeply entrenched forms of prejudice. This study shows that mass media can influence such social attitudes in measurable and lasting ways. By examining a remarkable experiment in which the popular children's radio program *The Adventures of Superman* deliberately changed its content to promote inclusion in the 1940s, we document how exposure to these narratives fostered a generation that was more supportive of civil rights and contributed to broader social and political change.

While our setting is historical, the findings provide broader insight into the potential of media-based interventions. They demonstrate that mass media can serve as a powerful tool for countering prejudice when it engages audiences through narrative immersion rather than

[21] Appendix Figure C10 highlights the counties with available data. 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 regressions, to avoid imputing a large share of data, we include only the counties where newspapers are available for at least 50% of observations, and we winsorize each series at the 1st and 99th percentiles to avoid over-weighting abnormally large values.

through direct persuasion. The narrative form we study, fictional storytelling, operates through emotional transportation, the psychological process by which audiences become absorbed in a story and internalize its moral lessons. Much like *Operation Intolerance*, which reached millions of young listeners, by fostering empathy and identification, such narratives can produce enduring changes in values and social attitudes, a mechanism that remains relevant in the age of digital media.

The evidence also underscores that formative exposure matters, as early engagement with inclusive narratives can shape the values and preferences of future generations. Moreover, by linking support for civil rights to increased dissent and mistrust of certain public institutions, our results show that shifts in social narratives can foster greater preferences for inclusion and reshape individual political preferences. These mechanisms remain relevant for understanding how contemporary societies respond to debates over policing, discrimination, and inclusion.

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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

A Radio in 1946 **1**

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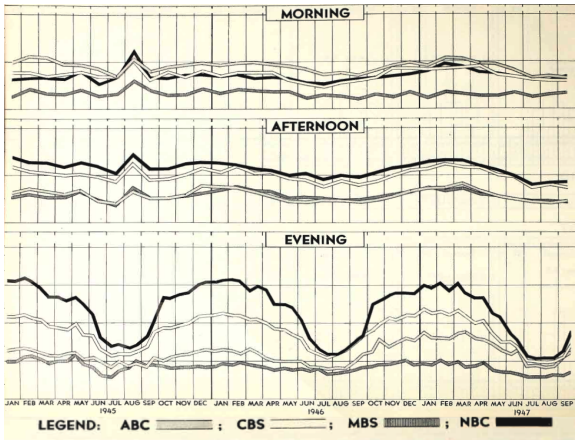
A Radio in 1946

A.1 Historical sources for listenership

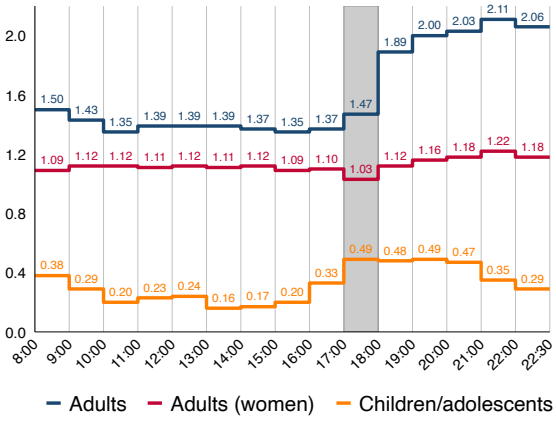
Hooper. Hooper Inc. published reports on the share of respondents who listen to a program at the time it airs, measured through telephone surveys collected from households in 33 cities geographically distributed throughout the nation. Reports provide listenership shares as aggregate statistics for the full sample. Panel A in Figure A1 summarizes the listenership shares of programs produced by major radio networks from 1945 to 1947. Panel B reports the number of listeners per listening set, distinguishing between adults and children/adolescents and highlighting in gray the slot of *The Adventures of Superman*.

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

A. Listenership share by network (1945–1947)



B. Number of listeners per listening set



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

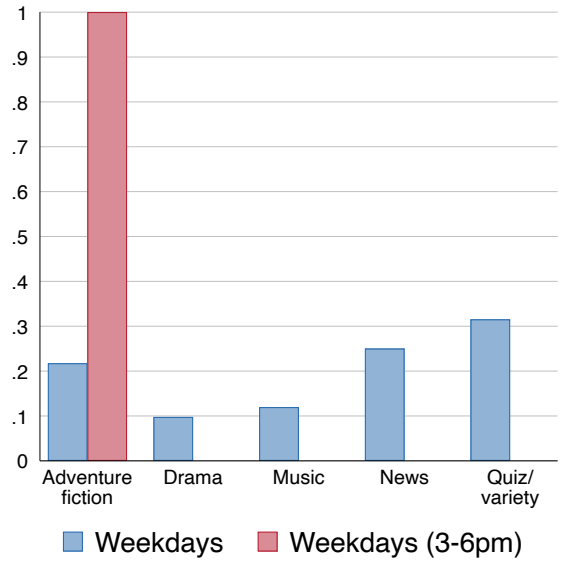
Reports also allow for gathering information about the radio programs with the highest commercial value produced by MBS. Panel A of Figure A2 shows the share of weekly (Monday–Friday) hours of broadcasting by program category, whiel panel B provides an example of a radio schedule for a radio station affiliated with MBS.[2] Adventure fiction (targeted at children) represented a significant share of the MBS productions, however, in the time slot with the highest share of children listening (5–6pm during the week), adventure fiction represented 100% of programming. Shows other than *The Adventures of Superman* in this time slot had elements of action and heroism, but they were not known to address issues of equality (Dunning, 1998).

The following table presents all programs produced by MBS and reported for the period November–December 1946. The audience of productions other than adventure fiction was primarily adults. 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 names of their commentators: *Arthur Hale*, *Henry*

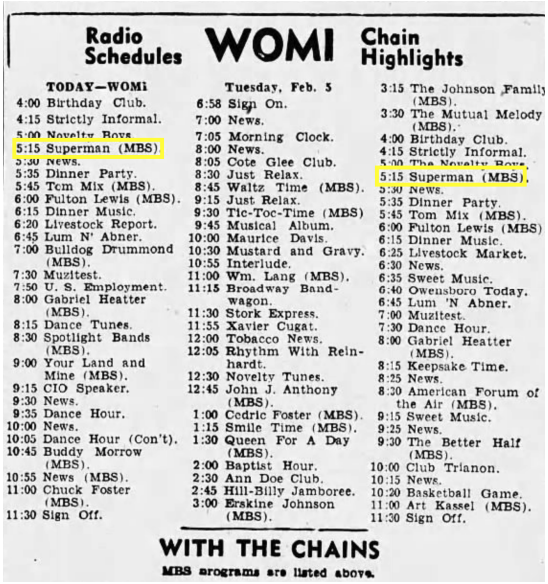
[2] Weekends targeted different audiences in this time slot due to school closures.

Figure A2: MBS productions in 1946

A. Share of MBS productions (1946)



B. Example of schedule of MBS-affiliated



Radio Schedules WOMI Chain Highlights

TODAY—WOMI

4:00 Birthday Club.
4:15 Strictly Informal.
5:00 Novelty Boys.
5:15 Superman (MBS).
5:30 News.
5:35 Dinner Party.
5:45 Tom Mix (MBS).
6:00 Fulton Lewis (MBS).
6:15 Dinner Music.
6:20 Livestock Report.
6:45 Lum N' Abner.
7:00 Bulldog Drummond (MBS).
7:30 Muzitest.
7:50 U. S. Employment.
8:00 Gabriel Heatter (MBS).
8:15 Dance Tunes.
8:30 Spotlight Bands (MBS).
9:00 Your Land and Mine (MBS).
9:15 CIO Speaker.
9:30 News.
9:35 Dance Hour.
10:00 News.
10:05 Dance Hour (Con't).
10:45 Buddy Morrow (MBS).
10:55 News (MBS).
11:00 Chuck Foster (MBS).
11:30 Sign Off.

Tuesday, Feb. 5

6:58 Sign On.
7:00 News.
7:05 Morning Clock.
8:00 News.
8:05 Cote Glee Club.
8:30 Just Relax.
8:45 Waltz Time (MBS).
9:15 Just Relax.
9:30 Tic-Toc-Time (MBS)
9:45 Musical Album.
10:00 Maurice Davis.
10:30 Mustard and Gravy.
10:55 Interlude.
11:00 Wm. Lang (MBS).
11:15 Broadway Bandwagon.
11:30 Stork Express.
11:55 Xavier Cugat.
12:00 Tobacco News.
12:05 Rhythm With Reinhardt.
12:30 Novelty Tunes.
12:45 John J. Anthony (MBS).
1:00 Cedric Foster (MBS).
1:15 Smile Time (MBS).
1:30 Queen For A Day (MBS).
2:00 Baptist Hour.
2:30 Ann Doe Club.
2:45 Hill-Billy Jamboree.
3:00 Erskine Johnson (MBS).

3:15 The Johnson Family (MBS).
3:30 The Mutual Melody (MBS).
4:00 Birthday Club.
4:15 Strictly Informal.
5:00 The Novelty Boys.
5:15 Superman (MBS).
5:30 News.
5:35 Dinner Party.
5:45 Tom Mix (MBS).
6:00 Fulton Lewis (MBS)
6:15 Dinner Music.
6:25 Livestock Market.
6:30 News.
6:35 Sweet Music.
6:40 Owensboro Today.
6:45 Lum 'N Abner.
7:00 Muzitest.
7:30 Dance Hour.
8:00 Gabriel Heatter (MBS).
8:15 Keepsake Time.
8:25 News.
8:30 American Forum of the Air (MBS).
9:15 Sweet Music.
9:25 News.
9:30 The Better Half (MBS).
10:00 Club Trianon.
10:15 News.
10:20 Basketball Game.
11:00 Art Kassel (MBS).
11:30 Sign Off.

WITH THE CHAINS

MBS programs are listed above.

Note. Panel A shows the share of hours of broadcasting during weekdays, and during weekdays in the afternoon slot. Data refer to the period November–December 1946 and are obtained from Hooper Inc. (1949). The genre *News* includes commentaries. The genre *drama* includes mistery drama. Panel B shows an 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).

J. Taylor, *Fulton Lewis*, *Gabriel Heatter*, and *Upton Close*. None of these commentators were openly progressive. In particular, Taylor, Lewis, and Close were conservative commentators, with the last two holding positions close to right-wing views, while Hale, Foster, and Heatter were less ideologically charged (Hilmes, 1997; Dunning, 1998).

Program	**Genre and short description**	**Time (DoW)**	**Minutes (min./ week)**	**Share**
The Shadow	DRAMA. Featuring mind-clouding vigilante.	17:00 (Su)	30 (30)	35.5
True Detective Mysteries	CRIME SHOW. Series on real crimes.	16:30 (Su)	30 (30)	27.2
Adventures of the Falcon	DRAMA. Drama featuring a detective.	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. Featuring F. Lewis.	19:00 (M–F)	15 (75)	23.0
Nick Carter, Master 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 Mystery	DRAMA. Featuring a scientist debunking phantoms.	16:00 (Su)	30 (30)	20.0
Those Websters	DRAMA. Sit-com featuring 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 (M–F)	30 (150)	18.6
Cedric Foster	NEWS. Featuring C. Foster.	14:00 (M–F)	15 (75)	17.9
Gabriel Heatter	NEWS. Featuring G. Heatter.	21:00 (M–F)	15 (75)	16.1
John J. Anthony	VARIETY. Talk show about marital relations.	13:45 (M–F)	15 (75)	16.0
The Adventures of Superman	ADVENTURE FICTION. Series featuring the superhero Superman.	17:15 (M–F)	15 (75)	15.4
Tom Mix	ADVENTURE FICTION. Western adventure series about a heroic cowboy.	17:45 (M–F)	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 with children.	13:30 (Su)	30 (30)	14.0
Arthur Hale	NEWS. Featuring A. Hale.	19:30 (TuThSa)	45 (45)	13.9

(continued on next page)

Program	Genre and short description	Time (DoW)	Minutes (min./ week)	Share
Warden Lawes' Crime Cases	CRIME SHOW. True-crime show discussing real cases.	13:00 (Su)	15 (15)	13.8
Crimes of Carelessness	DRAMA. Portrayal of 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 (M–F)	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. Show exploring the natural world.	21:00 (Su)	30 (30)	11.3
Coke Club	VARIETY. Show featuring artist Morton Downey.	12:15 (M–F)	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 (M–F)	15 (75)	9.4
Buck Rogers in the 25th Century	ADVENTURE FICTION. Show featuring the space adventures of Buck Rogers.	16:45 (M–F)	15 (75)	9.3
Henry J. Taylor	NEWS. Featuring H.J. Taylor.	19:30 (MF)	30 (30)	9.2
Victor H. Lindlar	VARIETY. Talk show featuring V.H. Lindlar.	11:45 (M–F)	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	NEWS. Show covering sport news.	19:45 (M–F)	15 (75)	7.2
A brighter tomorrow	NEWS. 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. Featuring U. Close.	22:15 (Tu)	15 (15)	6.4
Spotlight on America	VARIETY. Discussion of American culture.	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. "M–F" indicates that the show is daily during weekdays. 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. The genre *News* includes commentaries. The genre *drama* includes mistery drama.

Cooperative Analysis of Broadcasting (CAB). CAB collected listenership data using random telephone calls, asking whether the respondent was listening to the radio when the telephone rang, and if so, which program and on which radio station. Due to limitations related to telephone access in the 1940s, CAB focused only on radio set owners who had access to a telephone and lived in urban areas with a population of 50,000 or more. The sample is representative of this population. Contrary to Hooper, CAB also published information at a geographically-disaggregated level.

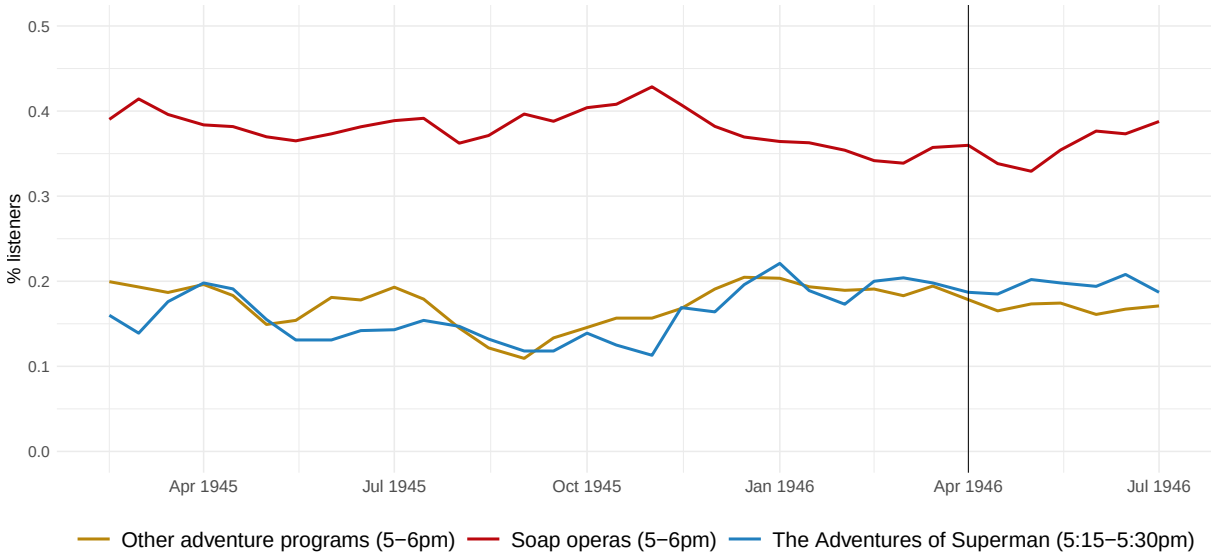
We digitized data from two reports published by CAB: the *City Report* and the *Program Report* (CAB, 1946a,b). The City Report summarizes listenership at the city level, highlighting the listenership share of the different radio stations available in the city for various time slots throughout the day. The City Report was published every two months, and we obtained copies for the period from July 1945 to February 1946. While CAB surveyed a total of 82 cities, not all cities are reported in each report. In our analysis, we linearly interpolate missing values when data for listenership are available for the same city in the preceding and subsequent periods.

The Program Report summarizes listenership at the program level, averaging listenership across the sample of cities. The Program Report was published twice a month, and we obtained

copies from July 1945 to February 1946. Prior to December 1945, the report provided data only for programs that would be consistently broadcast over time. Afterward, when slots are not assigned to popular programs, the report provides listenership data assigned to the slot independently from the program broadcast (labeled as "Time Period Rating"). Therefore, data do not constitute a balanced panel unless the sample is restricted to slots that broadcast the same program throughout the period.

Figure A3 shows the time series of listenership for various radio programs broadcast during 5–6pm. We compare the listenership of *The Adventures of Superman* with that of adventure serials, which targeted children and adolescents, and soap operas, which directly targeted adult female listeners, broadcast in the same time slot. Panel C in Figure B4 provides journalistic evidence of the post-April 1946 success. Panels A and B in Figure A4 provide examples of digitized data from CAB reports.

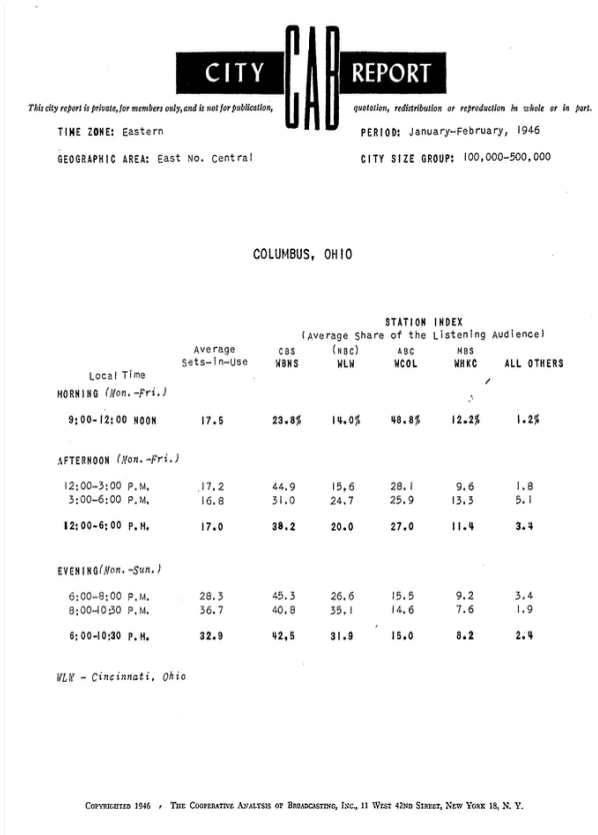
Figure A3: Listenership of *The Adventures of Superman*



Note. The figure shows the time series of the average listenership share of the series *The Adventures of Superman* and of other programs from the CAB Program reports (CAB, 1946b). *Other adventure programs* and *soap operas* are the average listenership share of programs in the corresponding category. *Other adventure programs* includes: *Captain Midnight* (ABC/MBS), an action serial centered on a pilot fighting wartime spies; *Dick Tracy* (ABC/CBS), a crime-drama serial featuring the famous detective; *Jack Armstrong* (ABC), a serial featuring the adventures of an all-American boy; *Tennessee Jed* (ABC), a serial chronicling the journeys of an ex-Confederate soldier; *Terry and The Pirates* (ABC), a serial following young Terry Lee and his mentor Pat Ryan as they battle villains in the Far East; *and Tom Mix* (MBS), a serial featuring a cowboy hero who upholds law and order across the American frontier. *Soap operas* includes: *Front Page Farrell* (NBC), a drama about a reporter and his wife, covering crime stories with the challenges of married life; *Just Plain Bill* (NBC), a serial featuring a barber living in a small town and interacting with his neighbors; *Portia Faces Life* (NBC), a drama about a female attorney fighting injustice and navigating personal struggles; *When a Girl Marries* (NBC), a serial exploring the lives of young couples facing marriage. Details about the data sources is provided in Appendix A.1. The vertical line indicated the launch of *Operation Intolerance*.

Figure A4: Examples from historical reports of radio listenership

A. City Report



CITY CAB REPORT

This city report is private, for members only, and is not for publication, quotation, redistribution or reproduction in whole or in part.

TIME ZONE: Eastern PERIOD: January–February, 1946

GEOGRAPHIC AREA: East No. Central CITY SIZE GROUP: 100,000–500,000

COLUMBUS, OHIO

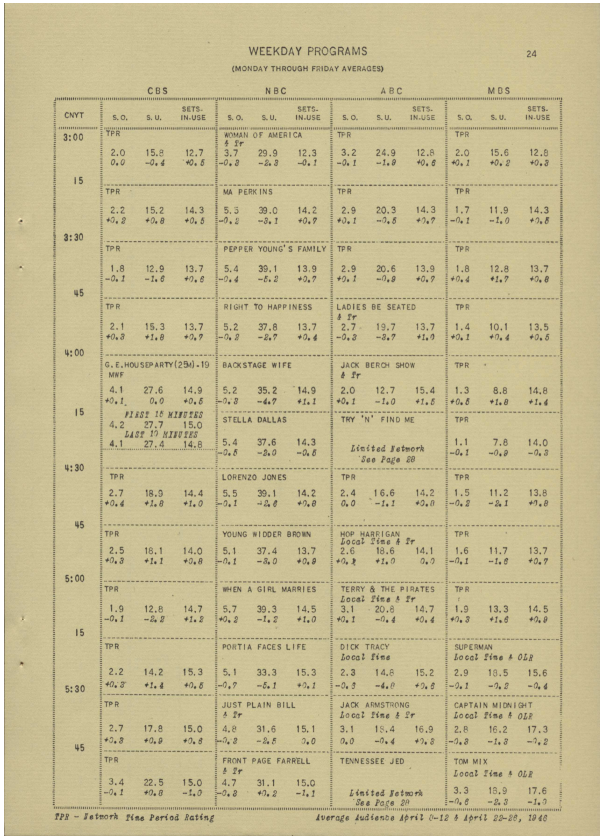
STATION INDEX
(Average Share of the Listening Audience)

Local Time	Average Sets-In-Use	CBS WBNS	(NBC) WLW	ABC WCOL	MBS WHKC	ALL OTHERS
MORNING (Mon.-Fri.)						
9:00-12:00 NOON	17.5	23.8%	14.0%	48.8%	12.2%	1.2%
AFTERNOON (Mon.-Fri.)						
12:00-3:00 P.M.	17.2	44.9	15.6	28.1	9.6	1.8
3:00-6:00 P.M.	16.8	31.0	24.7	25.9	13.3	5.1
12:00-6:00 P.M.	17.0	38.2	20.0	27.0	11.4	3.4
EVENING (Mon.-Sun.)						
6:00-8:00 P.M.	28.3	45.3	26.6	15.5	9.2	3.4
8:00-10:30 P.M.	36.7	40.8	35.1	14.6	7.6	1.9
6:00-10:30 P.M.	32.9	42.5	31.9	15.0	8.2	2.4

WLW - Cincinnati, Ohio

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B. Program Report



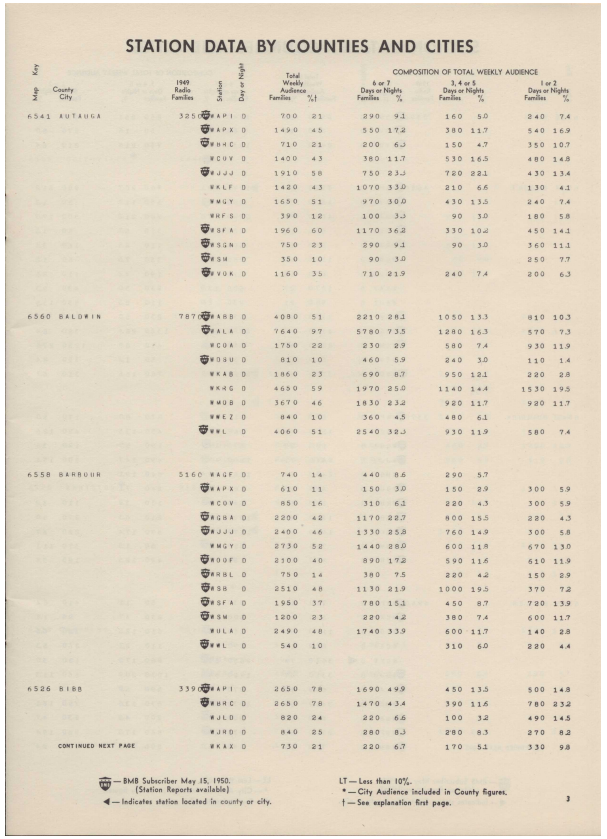
WEEKDAY PROGRAMS 24

(MONDAY THROUGH FRIDAY AVERAGES)

CNYT	CBS S.O.	CBS S.U.	CBS SETS-IN-USE	NBC S.O.	NBC S.U.	NBC SETS-IN-USE	ABC S.O.	ABC S.U.	ABC SETS-IN-USE	MBS S.O.	MBS S.U.	MBS SETS-IN-USE
3:00	TPR			WOMAN OF AMERICA & Tr			TPR			TPR		
	2.0	15.8	12.7	3.7	29.9	12.3	3.2	24.9	12.8	2.0	15.6	12.8
	0.0	-0.4	+0.8	-0.3	-2.3	-0.1	-0.1	-1.9	+0.6	+0.1	+0.2	+0.3
15	TPR			MA PERKINS			TPR			TPR		
	2.2	15.2	14.3	5.5	39.0	14.2	2.9	20.3	14.3	1.7	11.9	14.3
	+0.2	+0.8	+0.5	-0.2	-3.1	+0.9	+0.1	-0.5	+0.7	-0.1	-1.0	+0.5
3:30	TPR			PEPPER YOUNG'S FAMILY			TPR			TPR		
	1.8	12.9	13.7	5.4	39.1	13.9	2.9	20.6	13.9	1.8	12.8	13.7
	-0.1	-1.6	+0.6	-0.4	-5.2	+0.7	+0.1	-0.9	+0.7	+0.4	+1.7	+0.8
45	TPR			RIGHT TO HAPPINESS			LADIES BE SEATED & Tr			TPR		
	2.1	15.3	13.7	5.2	37.8	13.7	2.7	19.7	13.7	1.4	10.1	13.5
	+0.3	+1.8	+0.7	-0.2	-2.7	+0.4	-0.3	-3.7	+1.0	+0.1	+0.4	+0.5
4:00	G.E.HOUSEPARTY(25M)-19 MWF			BACKSTAGE WIFE			JACK BEROH SHOW & Tr			TPR		
	4.1	27.6	14.9	5.2	35.2	14.9	2.0	12.7	15.4	1.3	8.8	14.8
	+0.1	0.0	+0.6	-0.3	-4.7	+1.1	+0.1	-1.0	+1.5	+0.6	+1.8	+1.4
15	FIRST 15 MINUTES 4.2 27.7 15.0 LAST 15 MINUTES 4.1 27.4 14.8			STELLA DALLAS			TRY 'N' FIND ME			TPR		
				5.4	37.6	14.3	Limited Network See Page 20			1.1	7.8	14.0
				-0.5	-2.0	-0.6				-0.1	-0.9	-0.3
4:30	TPR			LORENZO JONES			TPR			TPR		
	2.7	18.0	14.4	5.5	39.1	14.2	2.4	16.6	14.2	1.5	11.2	13.8
	+0.4	+1.8	+1.0	-0.1	-2.6	+0.8	0.0	-1.1	+0.0	-0.2	-0.1	+0.8
45	TPR			YOUNG WIDDER BROWN			HOP HARRIGAN Local Time & Tr			TPR		
	2.5	18.1	14.0	5.1	37.4	13.7	2.6	18.6	14.1	1.6	11.7	13.7
	+0.3	+1.1	+0.6	-0.1	-3.0	+0.8	+0.2	+1.0	0.0	-0.1	-1.6	+0.7
5:00	TPR			WHEN A GIRL MARRIES			TERRY & THE PIRATES Local Time & Tr			TPR		
	1.9	12.8	14.7	5.7	39.3	14.5	3.1	20.8	14.7	1.9	13.3	14.5
	-0.1	-0.2	+1.2	+0.2	-1.2	+1.0	+0.1	-0.4	+0.4	+0.3	+1.6	+0.9
15	TPR			PORTIA FACES LIFE			DICK TRACY Local Time			SUPERMAN Local Time & OLR		
	2.2	14.2	15.3	5.1	33.3	15.3	2.3	14.8	15.2	2.9	18.5	15.6
	+0.3	+1.4	+0.6	-0.7	-5.1	+0.1	-0.3	-4.0	+0.3	-0.1	-0.2	-0.4
5:30	TPR			JUST PLAIN BILL & Tr			JACK ARMSTRONG Local Time & Tr			CAPTAIN MIDNIGHT Local Time & OLR		
	2.7	17.8	15.0	4.8	31.6	15.1	3.1	18.4	16.9	2.8	16.2	17.3
	+0.3	+0.9	+0.8	-0.2	-2.5	0.0	0.0	-0.4	+0.8	-0.8	-1.8	-0.2
45	TPR			FRONT PAGE FARRELL & Tr			TENNESSEE JED			TOM MIX Local Time & OLR		
	3.4	22.5	15.0	4.7	31.1	15.0				3.3	18.9	17.6
	-0.1	+0.8	-1.0	-0.3	+0.2	-1.1	Limited Network See Page 20			-0.6	-2.3	-1.0

TPR - Network Time Period Rating Average Audience April 8-12 & April 28-30, 1946

C. State Area Report



STATION DATA BY COUNTIES AND CITIES

Key Map	County City	1949 Radio Families	Station	Day or Night	Total Weekly Audience Families	%	COMPOSITION OF TOTAL WEEKLY AUDIENCE 6 or 7 Days or Nights Families	%	3, 4 or 5 Days or Nights Families	%	1 or 2 Days or Nights Families	%
6541	AUTAUGA	3250	WAPI	D	700	21	290	9.1	160	5.0	240	7.4
			WAPX	D	1490	45	550	17.2	380	11.7	540	16.9
			WBHC	D	710	21	200	6.3	150	4.7	350	10.7
			WCOV	D	1400	43	380	11.7	530	16.5	480	14.8
			WJJJ	D	1910	58	750	23.3	720	22.1	430	13.4
			WKLF	D	1420	43	1070	33.0	210	6.6	130	4.1
			WMGY	D	1650	51	970	30.0	430	13.5	240	7.4
			WRFS	D	390	12	100	3.3	90	3.0	180	5.8
			WSFA	D	1960	60	1170	36.2	330	10.4	450	14.1
			WSGN	D	750	23	290	9.1	90	3.0	360	11.1
			WSM	D	350	10	90	3.0			250	7.7
			WVOK	D	1160	35	710	21.9	240	7.4	200	6.3
6560	BALDWIN	7870	WABB	D	4080	51	2210	28.1	1050	13.3	810	10.3
			WALA	D	7640	97	5780	73.5	1280	16.3	570	7.3
			WCOA	D	1750	22	230	2.9	580	7.4	930	11.9
			WDSU	D	810	10	460	5.9	240	3.0	110	1.4
			WKAB	D	1860	23	690	8.7	950	12.1	220	2.8
			WKAG	D	4650	59	1970	25.0	1140	14.4	1530	19.5
			WMOB	D	3670	46	1830	23.2	920	11.7	920	11.7
			WWEZ	D	840	10	360	4.5	480	6.1		
			WWL	D	4060	51	2540	32.3	930	11.9	580	7.4
6558	BARBOUR	5160	WAGF	D	740	14	440	8.6	290	5.7		
			WAPX	D	610	11	150	3.0	150	2.9	300	5.9
			WCOV	D	850	16	310	6.1	220	4.3	300	5.9
			WGBA	D	2200	42	1170	22.7	800	15.5	230	4.3
			WJJJ	D	2400	46	1330	25.8	760	14.9	300	5.8
			WMGY	D	2730	52	1440	28.0	600	11.8	690	13.0
			WOOF	D	2100	40	890	17.2	590	11.6	610	11.9
			WRBL	D	750	14	380	7.5	220	4.2	150	2.9
			WSB	D	2510	48	1130	21.9	1000	19.3	370	7.2
			WSFA	D	1950	37	780	15.1	450	8.7	720	13.9
			WSM	D	1200	23	220	4.2	380	7.4	600	11.7
			WULA	D	2490	48	1740	33.9	600	11.7	140	2.8
			WWL	D	540	10			310	6.0	220	4.4
6526	BIBB	3390	WAPI	D	2650	78	1690	49.9	450	13.3	500	14.8
			WBHC	D	2650	78	1470	43.4	390	11.6	780	23.2
			WJLD	D	820	24	220	6.6	100	3.2	490	14.5
			WJRD	D	840	25	280	8.3	280	8.3	270	8.2
CONTINUED NEXT PAGE			WKAX	D	730	21	220	6.7	170	5.1	330	9.8

— BMB Subscriber May 15, 1950. (Station Reports available)
◀ — Indicates station located in county or city.
LT — Less than 10%.
* — City Audience included in County figures.
† — See explanation first page.

3

Note. Panel A and B provide two examples of information available from CAB (1946a,b). The sample covered by these reports includes the following cities, grouped by Census area: East North Central (Akron; Chicago; Cincinnati; Cleveland; Columbus; Dayton; Detroit; Evansville, Indiana; Grand Rapids; Indianapolis; Milwaukee; Racine; Rockford; South Bend; Springfield, Illinois; Springfield, Ohio; Toledo), East South Central (Birmingham; Jackson; Louisville; Memphis), Middle Atlantic (Altoona; Buffalo; Erie; Harrisburg; Johnstown; New York; Philadelphia; Pittsburgh; Reading; Rochester; Schenectady; Scranton; Syracuse; Trenton; Utica; Wilkes-Barre), Mountain (Denver; Salt Lake City), New England (Boston; Bridgeport; Hartford; Manchester; Portland; Providence; Springfield, Massachusetts; Waterbury; Worcester), Pacific (Fresno; Los Angeles; Portland; Sacramento; San Diego; San Francisco; Seattle; Spokane), South Atlantic (Atlanta; Baltimore; Columbia; Columbus; Jacksonville; Richmond; Washington, D.C.; Wilmington; Winston-Salem), West North Central (Des Moines; Duluth; Kansas City; Minneapolis and St. Paul; Omaha; Springfield, Missouri; St. Louis; Wichita), and West South Central (Dallas; Houston; Little Rock; New Orleans; Oklahoma City; San Antonio; Shreveport; Tulsa). Panel C provides an example of audience surveys from BMB (1949). The data include all stations with at least 10% of local households reporting they listen at least once per week, for all counties and, separately, cities with populations of 25,000 or more in metropolitan counties and 10,000 or more in non-metropolitan counties.

A.2 Validation of radio coverage estimates

We validate the local radio-signal estimates (see Section 3.1) against realized listening rates. To this end, we collect and digitize novel data from the Broadcast Measurement Bureau (BMB, 1949), a nonprofit cooperative founded in 1945 by various advertising and broadcasting associations with the goal of standardizing audience measurement across stations and networks. As discussed in Appendix A.1, most rating services active in the 1940s focused on urban subsamples of the radio market. We digitized *Study No. 2 (Spring 1949)*, a nationwide county-level survey of radio audiences based on a retrospective ballot method in which respondents recalled their past listening behavior and recorded their answers on printed ballot forms. As discussed in Section 5.1, data availability implies that county-level listenership can be observed only in 1949, three years after the launch of *Operation Intolerance*. During this period, some radio stations may have modified their transmission infrastructure, potentially altering signal reach relative to 1946.

We digitize the complete 1949 survey from the physical copies of published reports preserved in the Wisconsin Historical Society archives, providing the first comprehensive county-by-station dataset of mid-century radio listening for the entire U.S. The tabulated reports present listening data by station and locality (geographical units are counties and, separately, larger cities), reporting total weekly audiences along with their composition by frequency-of-listening breakdowns during daytime and nighttime (1–2, 3–5, and 6–7 times a week). Panel C of Figure A4 provides an example of the information contained in the reports. Reports include all stations for which at least 10% of households in a given locality report listening at least once per week. By survey construction, listenership rates are therefore truncated at 10%.

These locality level measures provide an external behavioral benchmark to test whether modeled coverage correlates with field measures of actual listening. We compile weekly station-level listenership data for the 220 stations that aired *Operation Intolerance* in 1946 (see Section 3.1), across 5,083 counties and larger cities.[3] To capture the extensive margin of availability, we create a binary indicator, labeled *actual reception*, equal to 1 if a station–county pair appears in the ratings (i.e., has a local audience of at least 10%), and 0 otherwise. We then link each locality to station-specific coverage from the radio propagation model described in Section 3.1.[4] The predicted indicator, labeled *predicted reception*, equals 1 if the predicted field strength at the locality centroid is greater than or equal to the same signal-strength threshold used in Section 3.1, and 0 otherwise.

Columns (1)–(2) of Table A2 provide simple OLS regressions of actual reception on predicted reception. The findings provide strong validation of the quality of the signal predictions. In counties where the model predicts reliable signal reception, about 94% of station–county pairs register at least a 10% weekly audience. In uncovered areas, this occurs in fewer than

[3] Weekly listenership is defined as the locality-level share of households with radio sets that report tuning in to a given station at least once during an average week.

[4] Cities are assigned coverage based on their counties.

0.5% of cases, likely reflecting measurement noise from changes in radio infrastructure between 1946 and 1949 or bottom truncation of audience data. This result is robust to controlling for station- and locality-specific FEs in column (2).

Table A2: Validation of signal predictions for the *Operation Intolerance* radio network

	Actual reception		Daily listenership share	
			Station with largest audience	Sum of all stations
	(1)	(2)	(3)	(4)
Predicted reception	0.941***	0.924***		
	(0.002)	(0.009)		
Constant	0.005***			
	(0.000)			
Exposure			0.022***	0.038***
			(0.003)	(0.004)
Observations	682,657	682,657	5,083	5,083
R^2	0.178	0.204	0.177	0.198
Locality + station FEs	–	Yes	–	–
Propagation controls + state FEs	–	–	Yes	Yes
Level of observation	Station-locality	Station-locality	Locality	Locality

Note. Columns (1)–(2) report OLS estimates. The dependent variable is *actual reception* is an indicator variable equal to 1 if a station–county pair appears in the ratings (i.e., has a local audience of at least 10%), and 0 otherwise. *Predicted reception* is an indicator variable equal to 1 if the predicted field strength at the locality centroid is greater than or equal to the same signal-strength threshold used in Section 3.1, and 0 otherwise. Columns (3)–(4) estimate equation (2). The dependent variable is the daily listenership share of the radio stations that broadcast *Operation Intolerance* in 1946, using two alternative procedures to aggregate listenership within a locality (see Appendix A.2 for detailed definitions). *Exposure* denotes the share of the population in the county covered by the radio signal of stations that were part of Operation Intolerance in 1946. Standard errors (in parentheses) are clustered at the locality level in columns (1)–(2) and at the state level in columns (3)–(4). $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

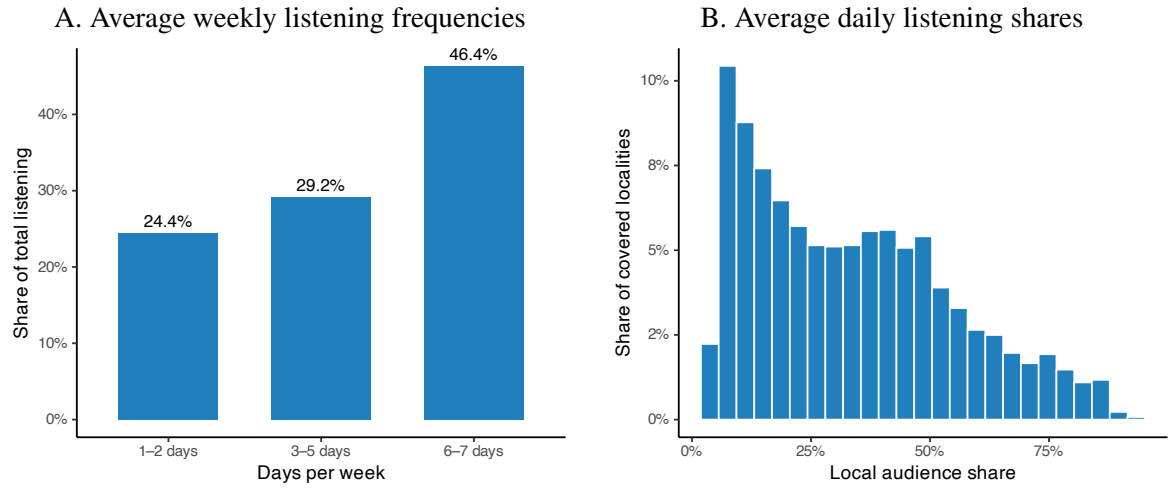
To complement the analysis presented in Section 5.1 on the link between exposure and listenership, we repeat the same exercise using the county-level data from BMB. Although the audience data are from 1949 and do not identify specific programs or time slots, their comprehensive coverage allows us to test the external validity of the results presented in Section 5.1 across the full universe of U.S. counties. Owing to the survey design, which captured the frequency of listenership during the week, for comparison with Section 5.1, we need to aggregate station-level data within each locality to obtain a locality level listenership share for *Operation Intolerance* stations at the daily level, rather than weekly. For each station-locality pair, we aggregate the share of households that listen to the station at different weekly frequencies into a single statistic capturing daily listenership. To this end, we use averaging through mid-point weighting. For each locality, we then aggregate these daily averages across all stations that aired *Operation Intolerance* and construct two measures of listenership. First, we consider the listenership share of the *Operation Intolerance* station with the largest audience in the locality. Second, we consider the sum of listenership shares among all *Operation Intolerance* stations in the locality, capped at 100% (assuming non-overlapping listening).[5] We then match each locality to our exposure measure R_c (see Section 3.1), and estimate equation 2. Figure A5 provides

[5]By survey construction, which allowed respondents to select multiple stations, it is possible that this approach leads to shares greater than 100%.

descriptive statistics for the average weekly listening frequencies of all *Operation Intolerance* stations, and the average daily listening shares of *Operation Intolerance* stations across the country.

Columns (3)–(4) show that exogenous exposure to the *Operation Intolerance* network leads to higher average daily listenership at the locality level. A one standard deviation increase in exposure corresponds to an increase in the listenership shares by 2.2 percentage points using the capped-sum measure and 3.8 percentage points using the max-station measure. Both estimates are highly significant at the 1% level.

Figure A5: Distribution of listenership of the *Operation Intolerance* network



Note. Panel A shows the weekly listening frequency for stations that aired *Operation Intolerance*, measured in 1949. For each station–location pair, we count listeners who report tuning in 1–2, 3–5, or 6–7 days per week; each bar gives the fraction of all counted listeners in that bucket, aggregated over all station–location pairs. Listeners may appear multiple times in the count if they listened to multiple stations. Panel B shows the distribution across places of daily audience share for *Operation Intolerance* stations. For each place, we take the maximum daily audience share (percent of radio households) among stations serving that place; the y-axis reports the share of places in each bin (places with daily audience share $\leq$ 10% are excluded). Data source is (BMB, 1949).

B Additional information about *Operation Intolerance*

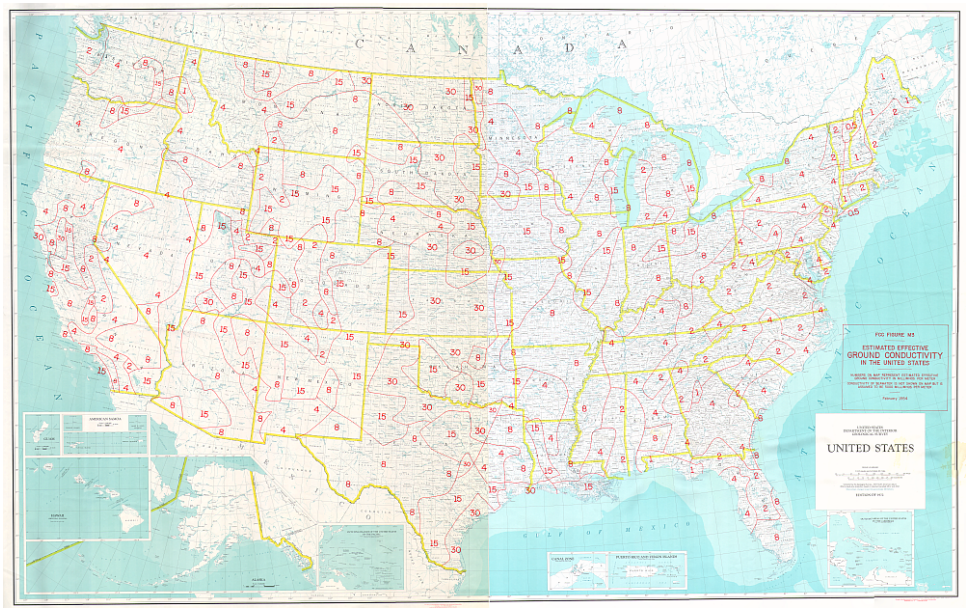
B.1 Historical sources for radio antennas and propagation

Figure B1 shows the first ground conductivity map for the U.S., published by FCC (1954) and used as an input parameter in the radio-propagation model described in Section 3.1. Ground conductivity varies significantly, ranging from 0.5 to 30 millimhos (or millisiemens) per meter. Figure B2 provides examples of information used to identify the radio stations that broadcast *Operation Intolerance*. We validated these data using radio schedules from historical newspaper archives from `newspapers.com` (see panel B in Figure A2 for an example).[6]

We gathered information on 998 radio stations, including 84 located in Canada that potentially cover areas within the U.S. Among these, 221 stations aired *Operation Intolerance*. We

[6]Search strings combined specific radio station identifiers obtained from previous steps with keywords such as "Superman" or "The Adventures of Superman". Searches were limited to the year 1946 and conducted state-by-state to ensure comprehensive geographic coverage.

Figure B1: Ground conductivity



Note. Ground conductivity map published by FCC (1954).

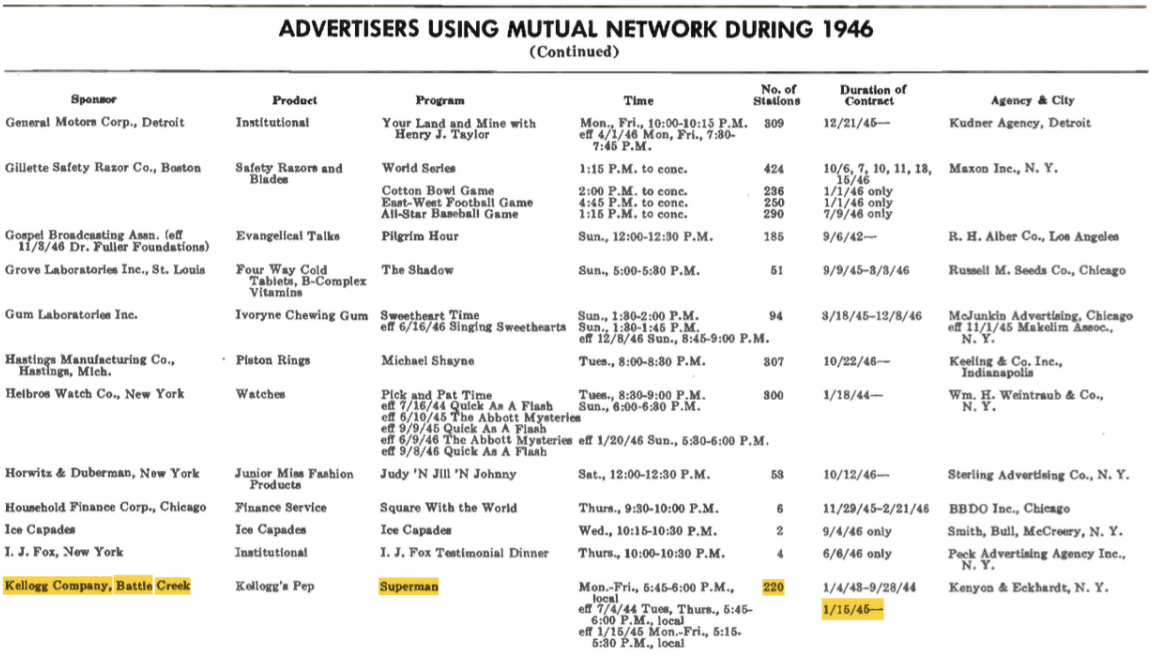
geo-reference the location of each station's transmitter based on the precise address reported in Radio Daily (1946).

Panel A in Figure B3 presents the geographical distribution of all radio antennas identified, distinguishing between those that aired *Operation Intolerance* and those that did not.

Panels B–D present the geographical distribution of three propagation controls. First, a binary indicator variable equal to 1 if a county has at least one radio antenna that aired *Operation Intolerance* within its boundaries, and 0 otherwise (panel B). Second, the natural logarithm of the distance (in km) between each county centroid and the nearest antenna that broadcast the program (panel C). Third, the theoretical radio coverage under the assumption of perfect ground conductivity (panel D). We compute this theoretical coverage assuming uniform ideal propagation conditions and assigning a conductivity value of 5 S/m—commonly used to model minimal-loss AM signal propagation (see Figure B1). The signal strength is calculated using the software *Field Strength Calculator One*, applying the algorithm used in Section 3.1.

Figure B2: Example of information digitized from historical publications

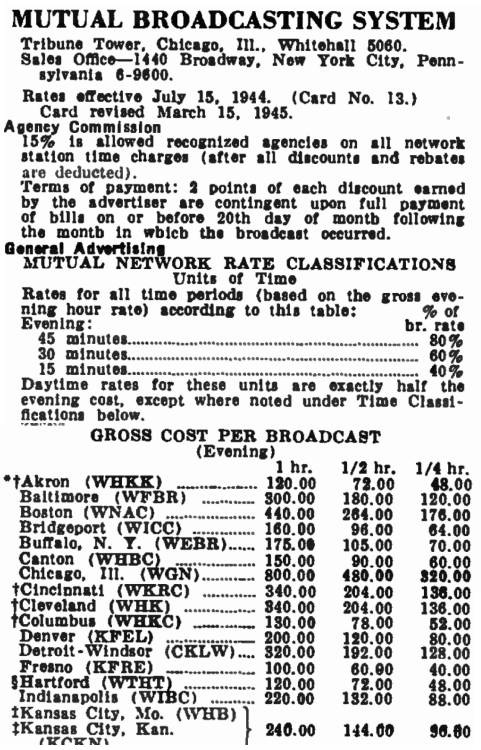
A. Broadcasting Yearbook



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	12/21/45—	Kudner Agency, Detroit
Gillette Safety Razor Co., Boston	Safety Razors and Blades	World Series	1:15 P.M. to conc.	424	10/6, 7, 10, 11, 13, 15/46	Maxon Inc., N. Y.
		Cotton Bowl Game	2:00 P.M. to conc.	236	1/1/46 only	
		East-West Football Game	4:45 P.M. to conc.	250	1/1/46 only	
		All-Star Baseball Game	1:15 P.M. to conc.	290	7/9/46 only	
Gospel Broadcasting Assn. (eff 11/3/46 Dr. Fuller Foundations)	Evangelical Talks	Pilgrim Hour	Sun., 12:00-12:30 P.M.	185	9/6/42—	R. H. Alber Co., Los Angeles
Grove Laboratories Inc., St. Louis	Four Way Cold Tablets, B-Complex Vitamins	The Shadow	Sun., 5:00-5:30 P.M.	51	9/9/45-3/3/46	Russell M. Seeds Co., Chicago
Gum Laboratories Inc.	Ivoryne Chewing Gum	Sweetheart Time	Sun., 1:30-2:00 P.M.	94	3/18/45-12/8/46	McJunkin Advertising, Chicago
		eff 6/16/46 Singing Sweethearts	Sun., 1:30-1:45 P.M. eff 12/8/46 Sun., 5:45-9:00 P.M.			eff 11/1/45 Makelim Assoc., N. Y.
Hastings Manufacturing Co., Hastings, Mich.	Piston Rings	Michael Shayne	Tues., 8:00-8:30 P.M.	307	10/22/46—	Keeling & Co. Inc., Indianapolis
Heibros Watch Co., New York	Watches	Pick and Pat Time	Tues., 8:30-9:00 P.M.	300	1/18/44—	Wm. H. Weintraub & Co., N. Y.
		eff 7/16/44 Quick As A Flash	Sun., 6:00-6:30 P.M.			
		eff 6/10/45 The Abbott Mysteries				
		eff 9/9/45 Quick As A Flash				
		eff 6/9/46 The Abbott Mysteries	eff 1/20/46 Sun., 5:30-6:00 P.M.			
		eff 9/8/46 Quick As A Flash				
Horwitz & Duberman, New York	Junior Miss Fashion Products	Judy 'N Jill 'N Johnny	Sat., 12:00-12:30 P.M.	53	10/12/46—	Sterling Advertising Co., N. Y.
Household Finance Corp., Chicago	Finance Service	Square With the World	Thurs., 9:30-10:00 P.M.	6	11/29/45-2/21/46	BBDO Inc., Chicago
Ice Capades	Ice Capades	Ice Capades	Wed., 10:15-10:30 P.M.	2	9/4/46 only	Smith, Bull, McCreery, N. Y.
I. J. Fox, New York	Institutional	I. J. Fox Testimonial Dinner	Thurs., 10:00-10:30 P.M.	4	6/6/46 only	Peck Advertising Agency Inc., N. Y.
Kellogg Company, Battle Creek	Kellogg's Pep	Superman	Mon.-Fri., 5:45-6:00 P.M., local	220	1/4/43-9/28/44	Kenyon & Eckhardt, N. Y.
			eff 7/4/44 Tues, Thurs., 5:45-6:00 P.M., local		1/15/45—	
			eff 1/15/45 Mon.-Fri., 5:15-5:30 P.M., local			

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:

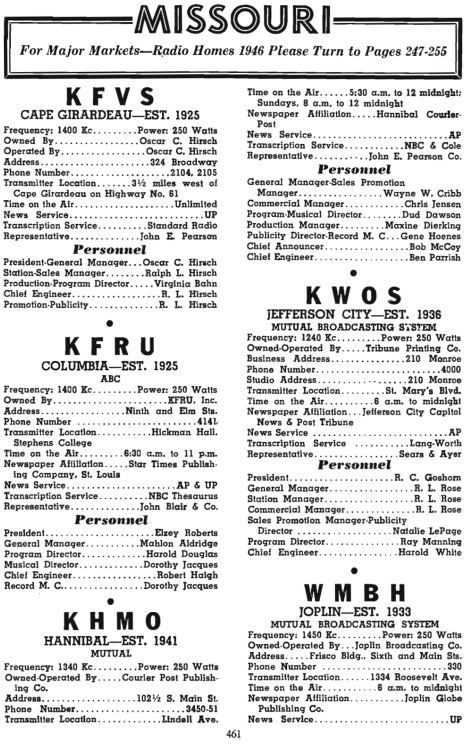
Evening:	% of br. rate
45 minutes	80%
30 minutes	60%
15 minutes	40%

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	136.00
†Cleveland (WHK)	340.00	204.00	136.00
†Columbus (WHKC)	130.00	78.00	52.00
Denver (KFEL)	200.00	120.00	80.00
Detroit-Windsor (CKLW)	320.00	192.00	128.00
Fresno (KFRE)	100.00	60.00	40.00
§Hartford (WTHT)	120.00	72.00	48.00
Indianapolis (WIBC)	220.00	132.00	88.00
‡Kansas City, Mo. (WHB) ‡Kansas City, Kan. (KCKN)	240.00	144.00	96.00

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.....324 Broadway
Phone Number.....2104, 2105
Transmitter Location.....3½ miles west of Cape Girardeau on Highway No. 61
Time on the Air.....Unlimited
News Service.....UP
Transcription Service.....Standard Radio
Representative.....John E. Pearson
Personnel
President-General Manager...Oscar C. Hirsch
Station-Sales Manager.....Ralph L. Hirsch
Production-Program Director.....Virginia Bahn
Chief Engineer.....R. L. Hirsch
Promotion-Publicity.....R. L. Hirsch

K F R U
COLUMBIA—EST. 1925
ABC
Frequency: 1400 Kc.....Power: 250 Watts
Owned By.....KFRU, Inc.
Address.....Ninth and Elm Sts.
Phone Number.....4141
Transmitter Location.....Hickman Hall, Stephens College
Time on the Air.....6:30 a.m. to 11 p.m.
Newspaper Affiliation.....Star Times Publishing Company, St. Louis
News Service.....AP & UP
Transcription Service.....NBC Thesaurus
Representative.....John Blair & Co.
Personnel
President.....Elzey Roberts
General Manager.....Mahlon Aldridge
Program Director.....Harold Douglas
Musical Director.....Dorothy Jacques
Chief Engineer.....Robert Haigh
Record M. C.....Dorothy Jacques

K H M O
HANNIBAL—EST. 1941
MUTUAL
Frequency: 1340 Kc.....Power: 250 Watts
Owned-Operated By.....Courier Post Publishing Co.
Address.....102½ S. Main St.
Phone Number.....3450-51
Transmitter Location.....Lindell Ave.
Time on the Air.....5:30 a.m. to 12 midnight: Sundays, 8 a.m. to 12 midnight
Newspaper Affiliation.....Hannibal Courier-Post
News Service.....AP
Transcription Service.....NBC & Cole
Representative.....John E. Pearson Co.
Personnel
General Manager-Sales Promotion Manager.....Wayne W. Cribb
Commercial Manager.....Chris Jensen
Program-Musical Director.....Dud Dawson
Production Manager.....Maxine Dierking
Publicity Director-Record M. C....Gene Hoenes
Chief Announcer.....Bob McCoy
Chief Engineer.....Ben Parrish

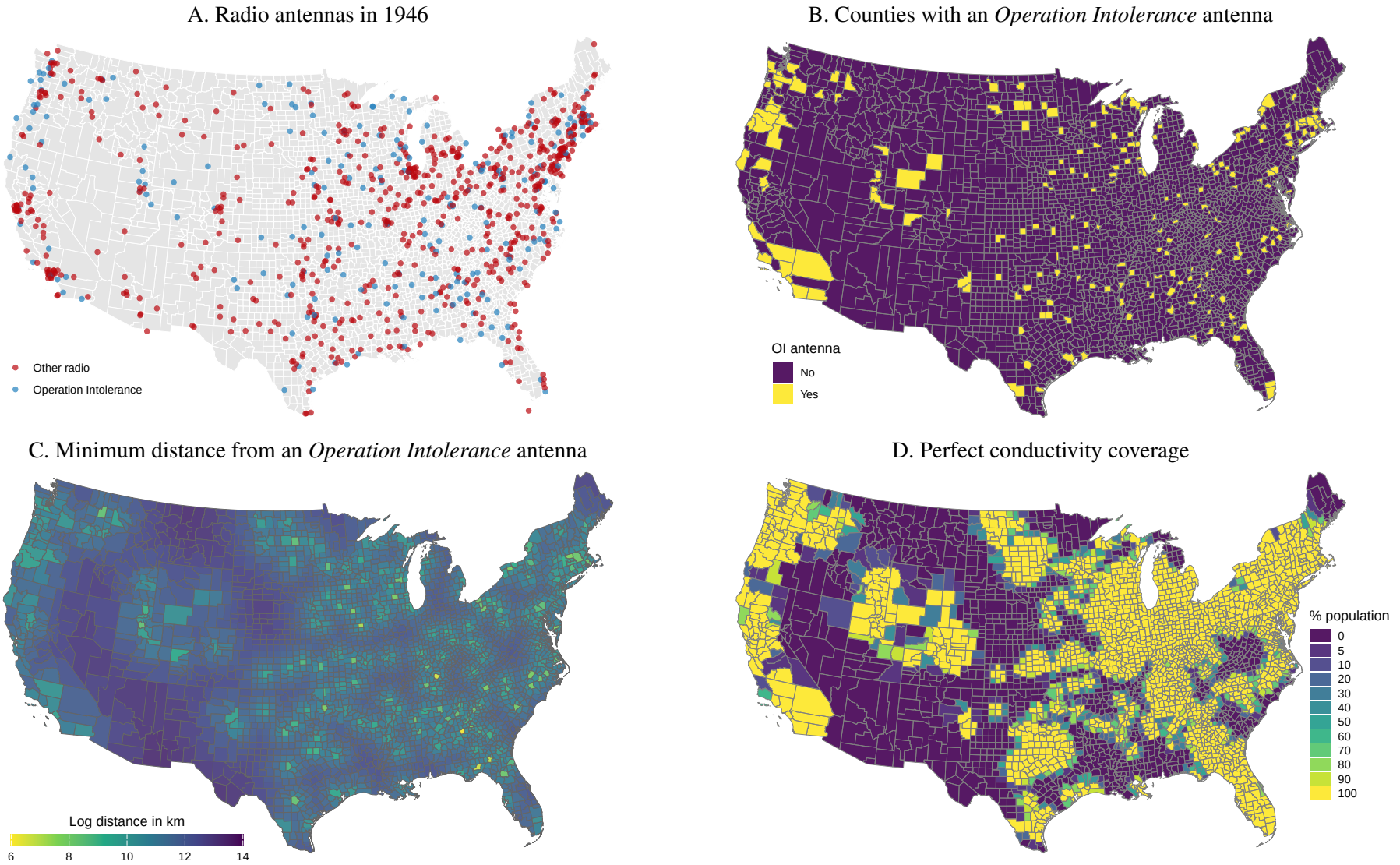
K W O S
JEFFERSON CITY—EST. 1936
MUTUAL BROADCASTING SYSTEM
Frequency: 1240 Kc.....Power: 250 Watts
Owned-Operated By.....Tribune Printing Co.
Business Address.....210 Monroe
Phone Number.....4000
Studio Address.....210 Monroe
Transmitter Location.....St. Mary's Blvd.
Time on the Air.....6 a.m. to midnight
Newspaper Affiliation...Jefferson City Capitol News & Post Tribune
News Service.....AP
Transcription Service.....Lang-Worth
Representative.....Sears & Ayer
Personnel
President.....R. C. Goshorn
General Manager.....R. L. Rose
Station Manager.....R. L. Rose
Commercial Manager.....R. L. Rose
Sales Promotion Manager-Publicity Director.....Natalie LePage
Program Director.....Ray Manning
Chief Engineer.....Harold White

W M B H
JOPLIN—EST. 1933
MUTUAL BROADCASTING SYSTEM
Frequency: 1450 Kc.....Power: 250 Watts
Owned-Operated By...Joplin Broadcasting Co.
Address.....Frisco Bldg., Sixth and Main Sts.
Phone Number.....930
Transmitter Location.....1334 Roosevelt Ave.
Time on the Air.....6 a.m. to midnight
Newspaper Affiliation.....Joplin Globe Publishing Co.
News Service.....UP

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Note. Panel A is extracted from Broadcasting (1947), identifying Kellogg Company as sponsor of *The Adventures of Superman* and the broadcasting schedule in 1946. Panel B is extracted from National Authority (1945), allowing to identify the precise composition of broadcasting network of *The Adventures of Superman* in 1946. Panel C is extracted from 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.

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.

B.2 Reception and exemplary story arcs of *Operation Intolerance*

Figure B4 provides examples of the coverage of *Operation Intolerance* in newspapers in 1946. The following summaries are exemplary story arcs from *Operation Intolerance*.

The Hate Mongers Organization (16/04/1946–20/05/1946). This arc addresses the rise of racial and religious intolerance in postwar America. It opens with the firebombing of a Jewish-owned drugstore in Metropolis and follows newsboy Danny O'Neil, who witnesses the crime and is later attacked for speaking out. As Clark Kent investigates, he uncovers a secret hate group using teenage gangs to sabotage Unity House, a community center promoting interfaith unity. Through Jimmy Olsen's undercover work and Superman's intervention, the story exposes how hate groups manipulate youth and exploit silence in the face of bigotry. Paralleling real KKK activities, it stands as a powerful indictment of intolerance.

The Clan of the Fiery Cross (10/06/1946–01/07/1946). This arc confronts racism and white supremacy. When Tommy Lee, a Chinese-American boy, replaces white teammate Chuck Riggs as pitcher for the Unity House baseball team, Chuck's resentment is fueled by his uncle, Matt Riggs, leader of the Clan of the Fiery Cross. The group spreads hate through violence and propaganda. Inspired by real Klan activity, the Lees face terror for being nonwhite Americans. Superman and the Daily Planet expose the Clan's lies and defend Tommy, while Chuck's eventual remorse underscores the possibility of moral growth and redemption.

George Latimer, Crooked Political Boss (03/09/1946–25/09/1946). This arc links political corruption and racism in postwar America. Returning veterans protesting discriminatory hiring are met with violence and deceit. After Joe Martin is shot during a peaceful march, his Jewish friend Sam Robbins is framed by political boss George Latimer, who exploits the crisis to incite racial hatred and equate whiteness with patriotism. Superman exposes Latimer's manipulation and defends democratic values, echoing real civil-rights struggles.

Knights of the White Carnation (26/02/1947–17/03/1947). This arc exposes a xenophobic society posing as patriotic. In Metropolis, a hate group led by businessman Vincent Kirby targets four minority basketball players, fabricating corruption charges and spreading propaganda to have them expelled from the team. As violence escalates, Superman reveals the conspiracy. The story shows how racism thrives through scapegoating and fear, and ends with the group's downfall, a clear condemnation of intolerance.

B.3 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.[7] The sample covers 64% of the 1592 episodes aired in the same period, while the remaining share is missing. When recordings of story arcs are only partially available, we extrapolate based on the observed con-

[7]The transcripts are collected from two YouTube channels specialized in the collection and distribution of historic radio programming (The Classic Archives Old Time Radio Channel and Nikola Tesla Wireless Radio), containing recordings of all available episodes.

Figure B4: 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 friendlily 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 intollerance," 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

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 WHKK daily at 5:15, Superman's adventures have been going something like this:

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

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

* * *

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

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

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

* * *

Note. Panel A is extracted from the edition of 14/04/1946 of The Pittsburgh Press (published in Pittsburgh, Pennsylvania). Panel B is extracted from the edition of 11/06/1946 of the Janesville Daily Gazette (published in Janesville, Wisconsin). Panel C is extracted from the edition of 22/05/1946 of The Akron Beacon Journal (published in Akron, Ohio). See Appendix A.1 for a description of the Hooper Ratings.

tent of the respective story arcs. 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 with 50 keywords returned by an AI prompt. 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." The returned keywords are: 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, and xenophobia. Figure B5 provides a graphical depiction of the frequency of these themes in *The Adventures of Superman*.

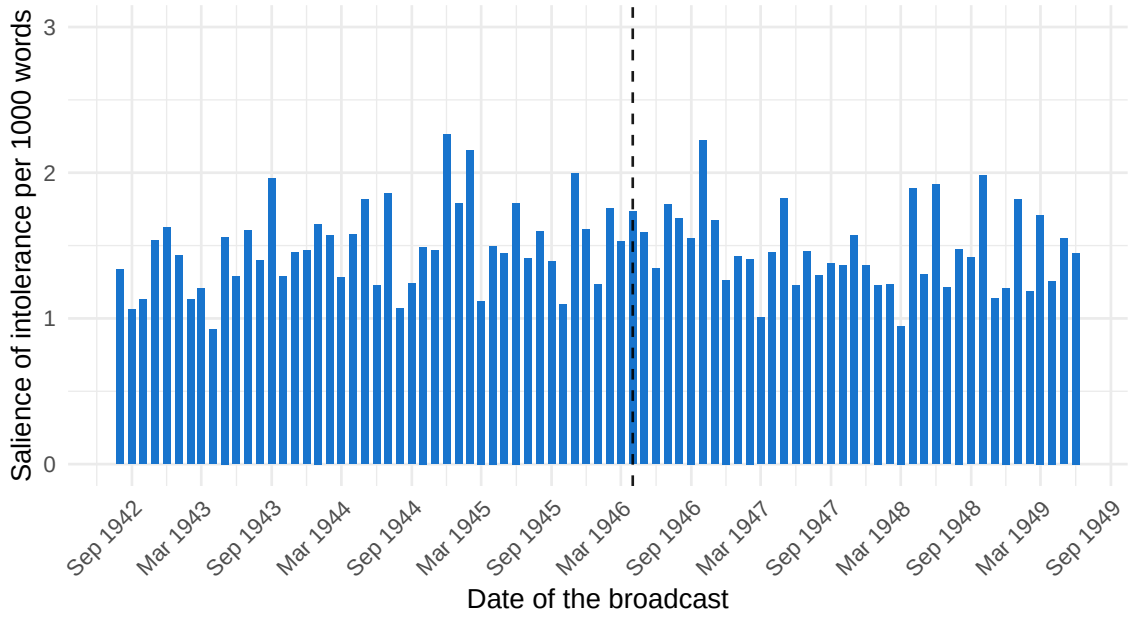
Figure B5: Frequency of keywords related to tolerance and intolerance



Note. Word cloud illustrating the frequency of terms related to tolerance and intolerance. Frequencies are computed as count of keyword occurrences over the total number of words, removing stop words and applying basic stemming. Larger and more central words reflect higher frequencies. To build the word cloud, we use a dictionary of 50 key terms (see Appendix B.3).

We also apply this methodology to *The Lone Ranger*, a radio series featuring a masked former Texas Ranger who fought outlaws in the American Old West. Figure B6 replicates Figure 1 in the main text, aggregating transcripts of 987 separate episodes into monthly indicators based on their broadcasting dates. We find no evidence of a paradigm shift, with the average salience of tolerance related keywords remaining consistently low and *decreasing* marginally by 1.34% (from 1.49 to 1.47 per 1000 words) after April 1946.

Figure B6: 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. 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.

C Additional analysis

C.1 ANES

The following table provides definitions of the variables used, including descriptive statistics. Figure C1 shows the availability of each question in different survey rounds (we consider the survey waves in which we observe at least half of the questions used to build the Support for Civil Rights Index in each wave). Figures C2 and C3 show descriptive statistics of the variables used in the main text by cohort and by year of surveying, respectively. For comparability, we standardize all variables. Figure C4 plots cohort study estimates using equation (1) for each individual outcome variable (excluding the index) presented in the main text in Tables 3 and 5. The plot for participation in the Vietnam War is presented in Appendix C.3.

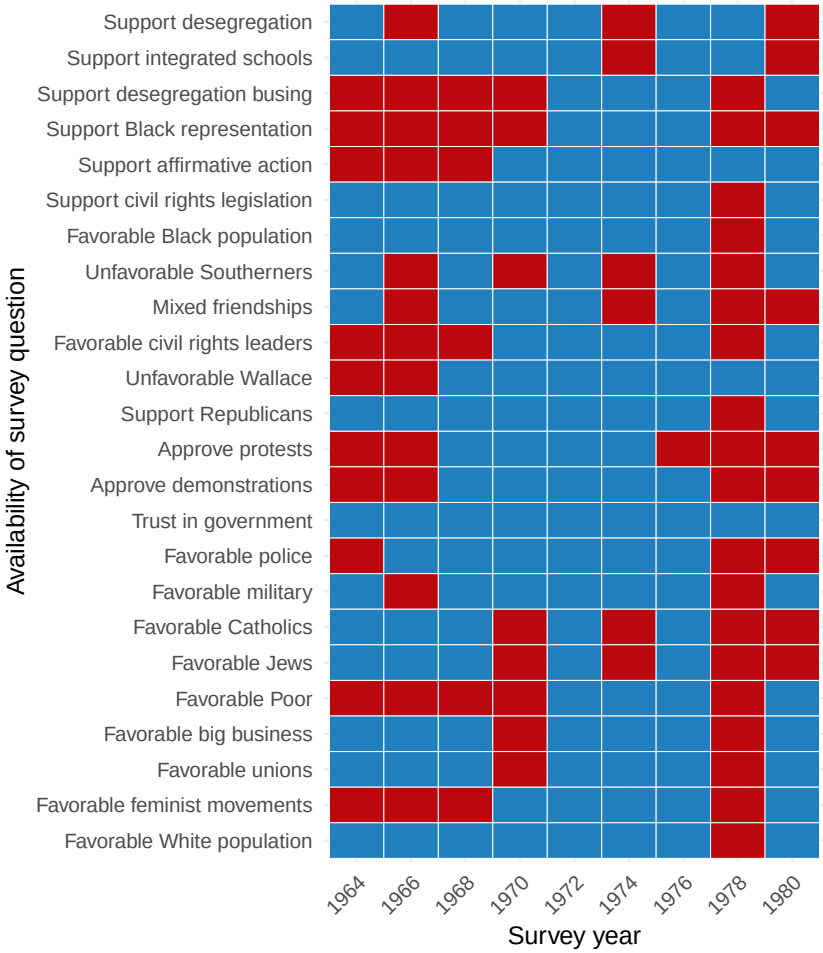
Variable	Description	Mean	SD	N	ID
Main text variables					
Approve of protests	Degree of approval of participation in protests and demonstrations. We average approval of "protest meetings or marches that are permitted by the local authorities", and approval of "attempts at stopping the government from 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). Measured using the *Feeling Thermometer*.	62.77	21.09	8145	0206

(continued on next page)

Variable	Description	Mean	SD	N	ID
civil rights leaders	Feelings towards civil rights leaders, ranging from 1 (unfavorable) to 100 (favorable). Measured using the *Feeling Thermometer*.	44.74	26.56	5304	0216
George Wallace	Feelings towards George Wallace, ranging from 1 (unfavorable) to 100 (favorable). Measured using the *Feeling Thermometer*.	44.4	28.53	7883	0439
pro-military sentiment	Feelings towards the military, ranging from 1 (unfavorable) to 100 (favorable). Measured using the *Feeling Thermometer*.	71.07	21.64	7333	0214
pro-police sentiment	Feelings towards the police, ranging from 1 (unfavorable) to 100 (favorable). Measured using the *Feeling Thermometer*.	76.26	18.43	6405	0214
Republicans	Feelings towards Republicans, ranging from 1 (unfavorable) to 100 (favorable). Measured using the *Feeling Thermometer*.	60.61	20.70	8087	0202
Southerners	Feelings towards Southerners, ranging from 1 (unfavorable) to 100 (favorable). Measured using the *Feeling Thermometer*.	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 federal 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
Appendix variables					
Feelings towards (the) ...					
big businesses	Feelings towards big businesses, ranging from 1 (unfavorable) to 100 (favorable). Measured using the *Feeling Thermometer*.	53.56	21.52	6976	0209
Catholics	Feelings towards people of Catholic religion, ranging from 1 (unfavorable) to 100 (favorable). Measured using the *Feeling Thermometer*.	65.22	21.47	5133	0204
Feminist movements	Feelings towards the feminist movement, ranging from 1 (unfavorable) to 100 (favorable). Measured using the *Feeling Thermometer*.	47.46	26.47	5286	0225
Jews	Feelings towards people of Jewish religion, ranging from 1 (unfavorable) to 100 (favorable). Measured using the *Feeling Thermometer*.	62.13	19.87	5075	0205
Poor	Feelings towards poor people, ranging from 1 (unfavorable) to 100 (favorable). Measured using the *Feeling Thermometer*.	73.49	17.32	4516	0223
Unions	Feelings towards labor unions, ranging from 1 (unfavorable) to 100 (favorable). Measured using the *Feeling Thermometer*.	54.54	23.33	7021	0210
White population	Feelings towards the white population, ranging from 1 (unfavorable) to 100 (favorable). Measured using the *Feeling Thermometer*.	78.81	17.72	8197	0207

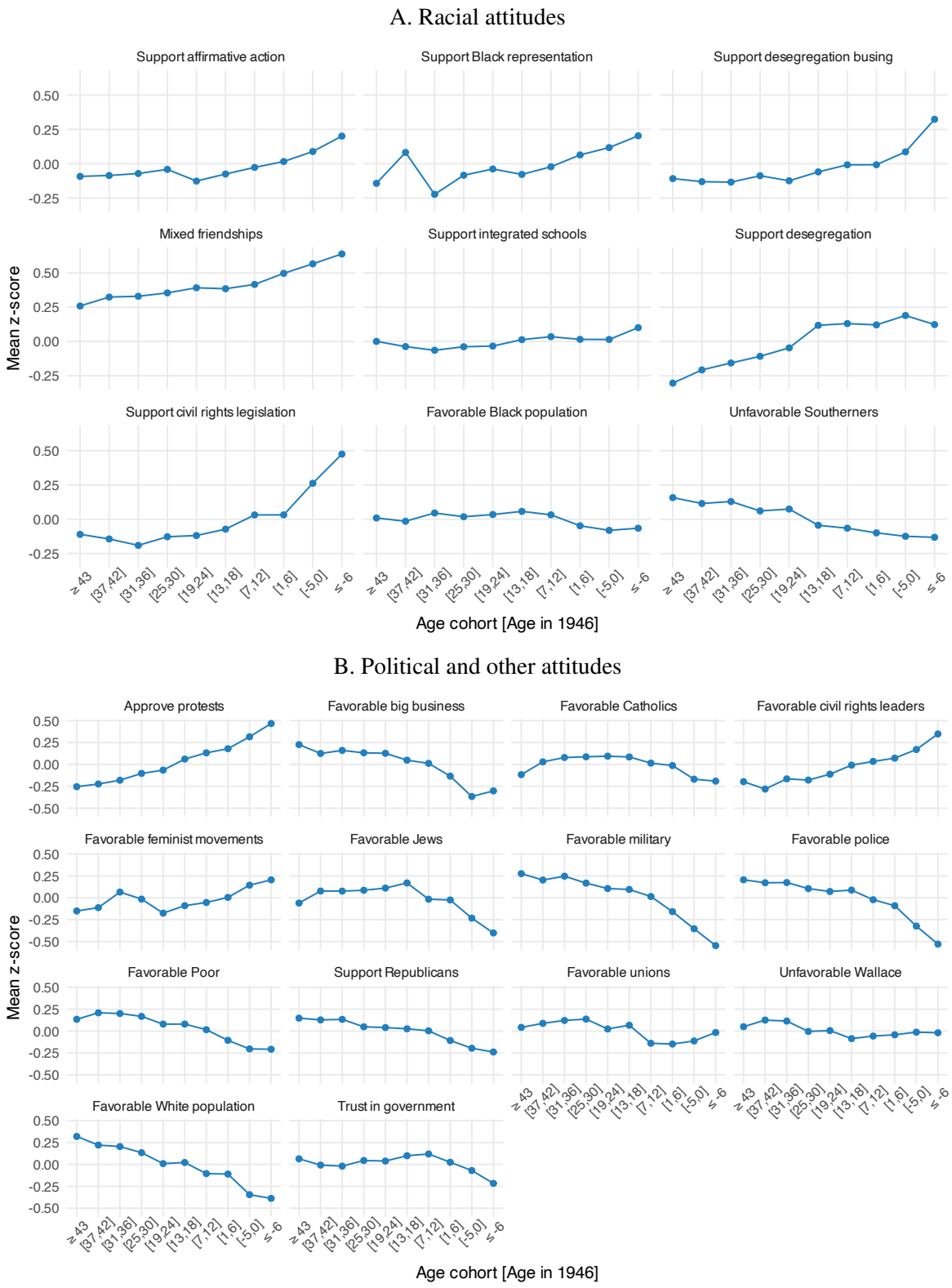
Note. ID is the ANES code of the question, starting with *VCF*. For a description of the *Feeling Thermometer* refer to Section 3.2. In ANES dataset, variables measured with the *Feeling Thermometer* are top-coded at 97.

Figure C1: Data availability by year and survey item



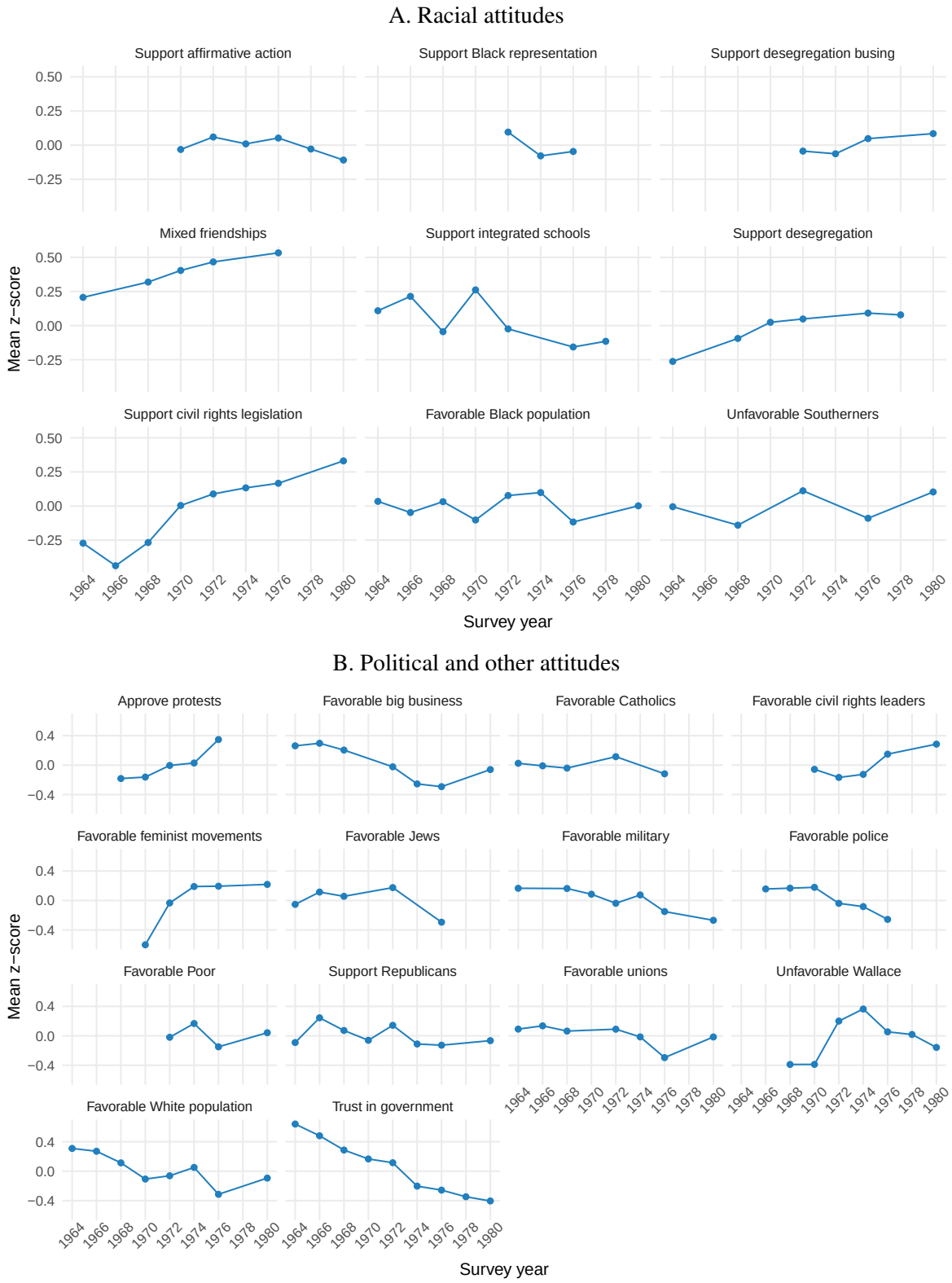
Note. The figure visualizes the availability of questions across the available set of survey waves in ANES. Blue indicates that the question was asked in the corresponding survey year.

Figure C2: Descriptive statistics on attitudes, by cohort



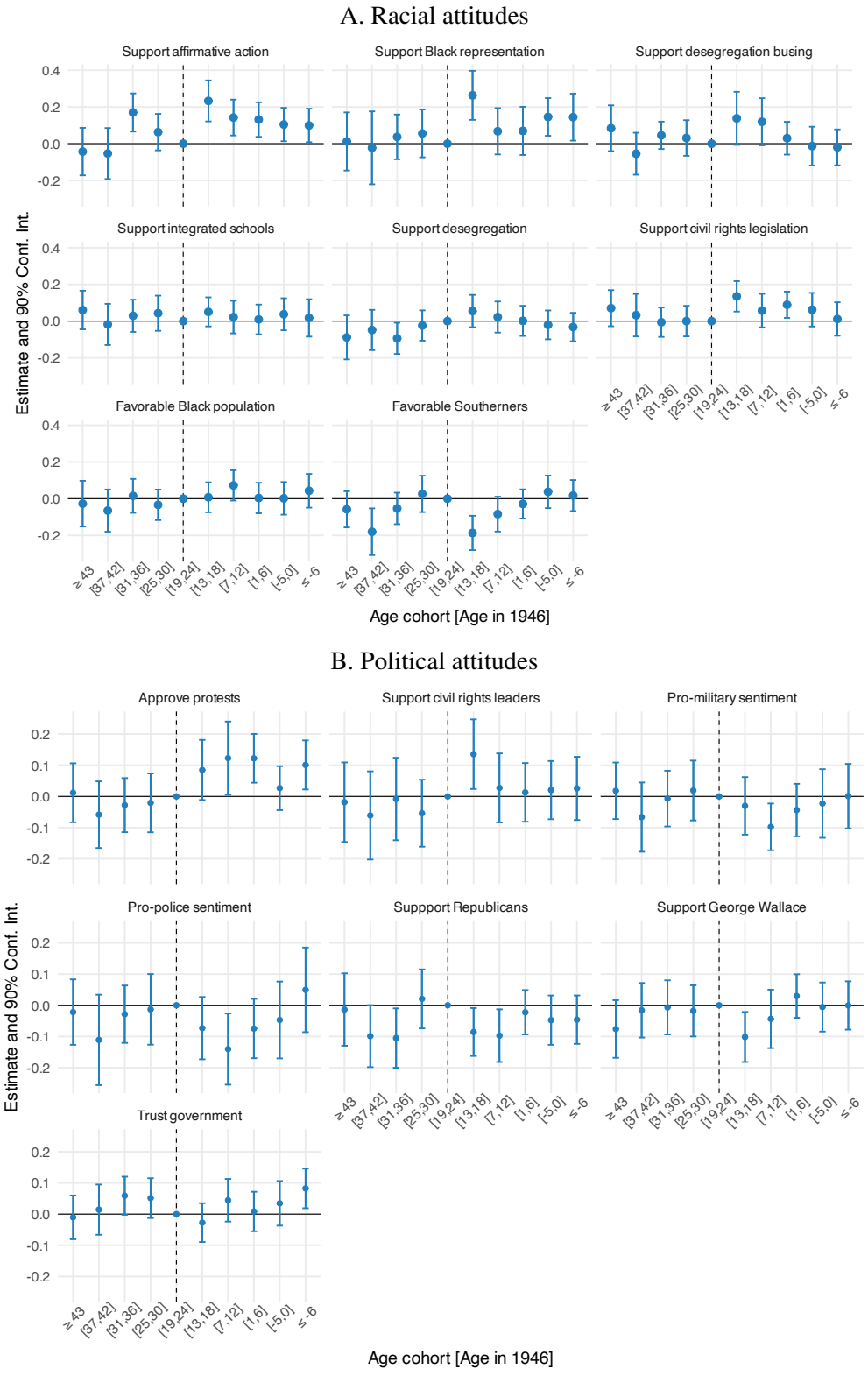
Note. The figures show the mean attitudes by age cohort for each of the respective survey items. Age cohorts comprise 5 years and are centered around the value noted on the x-axis. Outcomes are standardized and centered at 0. The definition of variables is reported in Appendix C.1. Data availability for each question is reported in Appendix Figure C1.

Figure C3: Descriptive statistics on attitudes, by year of surveying



Note. The figures show the mean attitudes by year of surveying for each of the respective survey items. Age cohorts comprise 5 years and are centered around the value noted on the x-axis. Outcomes are standardized and centered at 0. The definition of variables is reported in Appendix C.1. Data availability for each question is reported in Appendix Figure C1.

Figure C4: Cohort study estimates, by individual survey item

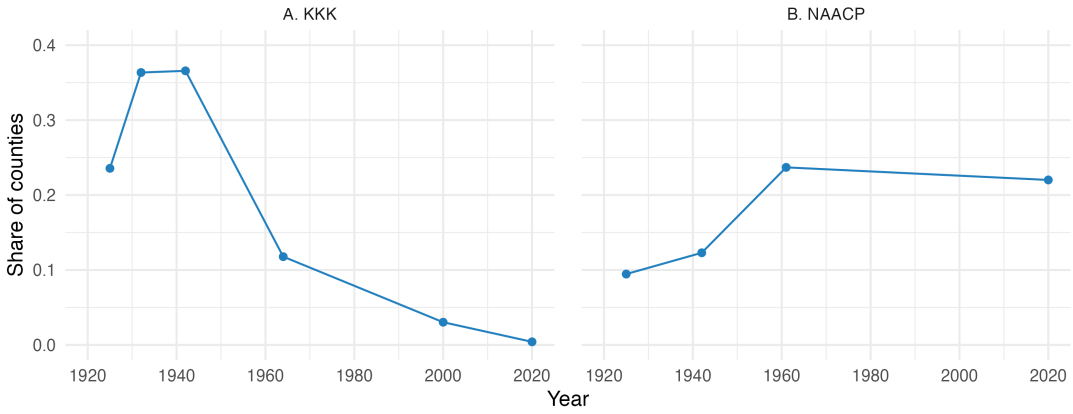


Note. The figure presents the cohort study plot of the effects of *Operation Intolerance* on the variables comprising the *Support for Civil Rights Index* (panel A), and on political attitudes (panel B). Each panel plots the coefficients from equation (1) of the interaction term between the age cohort 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 C.1.

C.2 Presence of KKK and NAACP

Figure C5 shows the share of counties with the presence of KKK and NAACP chapters.

Figure C5: 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. For KKK, data sources are described in Section 6. 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), and in 1964. We do not use information for 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.

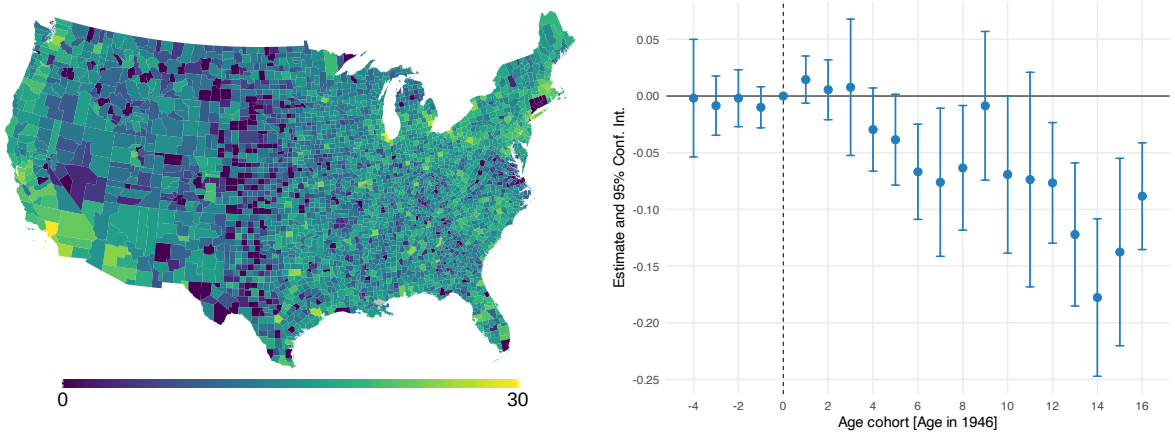
C.3 Casualties during the Vietnam War

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. DCAS does not provide information on whether the record refers to a draftee or a volunteer. Eligible men aged 17 or older had the option to volunteer. 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. After removing casualties assigned to a hometown address that corresponds to a military base and those caused by self-inflicted harm, we obtain a total of 56,779 casualties (out of 57,241), of which 87% are white soldiers and 13% are African American soldiers. Casualties are concentrated in the period 1965–1973, with an average age at death of 23. Panel A in Figure C6 shows the geographical distribution of the average value (across all cohorts) of our main outcome (i.e., 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, multiplied by 1,000). Panel B in Figure C6 plots cohort study estimates using equation (1) for participation in the Vietnam War. In the main text, in Table 5, we present results that include all counties with at least 1 casualty

during the conflict. Table C2 provides the same estimate using equation (1) pooling the target cohorts, but restricting the sample to counties with a larger number of casualties.

Figure C6: Share of casualties (per 1,000 deaths) during the Vietnam War

A. Geographic distribution B. Cohort study estimates



Note. Panel A shows the geographical distribution of the share of casualties per county (see Appendix C.3 for a definition). The data source is the DCAS dataset, described in Section 3. In panel B, estimates based on equation (1). The dependent variable is 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.

Table C2: The effect on the participation in the Vietnam War, robustness checks

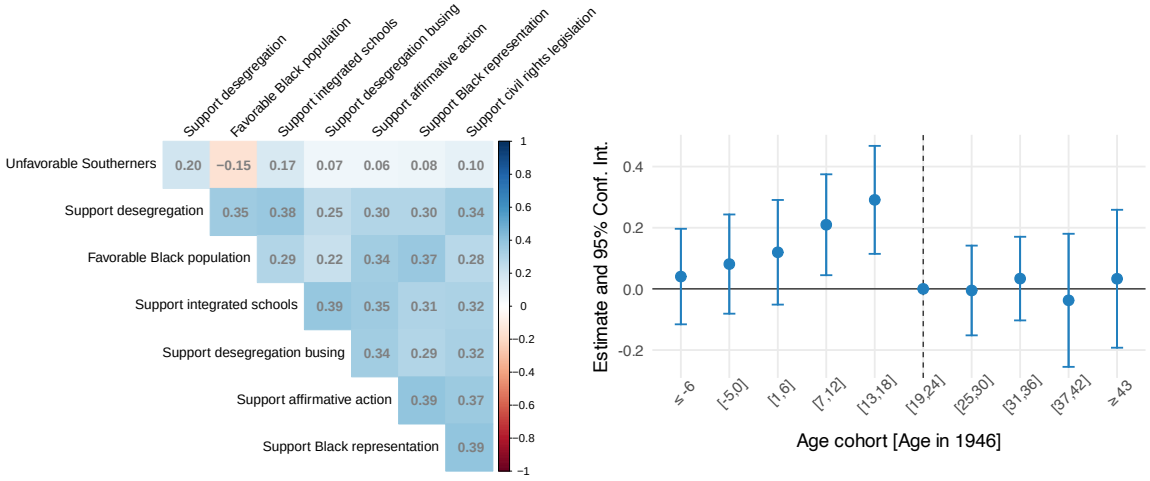
	Dependent variable: Vietnam War participation			
Counties selected:	$>$ 1 casualty	$>$ 5 casualties	$>$ 10 casualties	$>$ 25 casualties
	(1)	(2)	(3)	(4)
Expsoure $\times$ Target	-0.082***	-0.108***	-0.154***	-0.252***
	(0.022)	(0.029)	(0.041)	(0.073)
Dependent variable mean	1.62	1.62	1.62	1.62
R^2	0.756	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 stations that broadcast *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 C.3.

C.4 Additional robustness checks for the Support for Civil Rights index

Panel A of Figure C7 shows the partial correlation of each variable used to build the *Support for Civil Rights* index. To address the relatively high share of missing observations in our dataset, we complement the results presented in Figure 4 with an index built on a regularized iterative principal component analysis (RPCA; 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 C7: 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 (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 RPCA methodology described in Appendix C.4. 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*. Appendix C.1 provides additional details about the variables.

Table C3 presents estimates using equation (1), while varying the set of controls and FEs compared to the specification presented in the main text. Table C4 shows the robustness of the results using survey weights, alternative coverage measures, and assuming spatial correlation in error terms using the Conley (1999) correction.

Table C3: Alternative specifications for equation (1)

	Dependent variable: Support for Civil Rights Index						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Target × Exposure	0.067***	0.058***	0.057***	0.069***	0.064***	0.062***	0.053***
	(0.013)	(0.015)	(0.015)	(0.016)	(0.016)	(0.017)	(0.017)
R^2	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
Propagation controls		Yes	Yes	Yes	Yes	Yes	Yes
State × 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. All specifications include county, survey year and age cohort FEs. We include all available cohorts. Column (2) adds the set of propagation controls discussed in Section B.1. 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 for gender, age, and the share of the native white population (measured at the county level), interacted with cohort and survey year indicators. Column (6) adds geographic controls (i.e, elevation, terrain ruggedness, and ground conductivity measured at the county centroid). Column (7) adds interaction terms between year and cohort dummies and additional individual-level controls (race, employment status, income, marital status, and an indicator variable for whether the respondent grew up in a city). *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 C.1.

Table C4: Alternative robustness checks

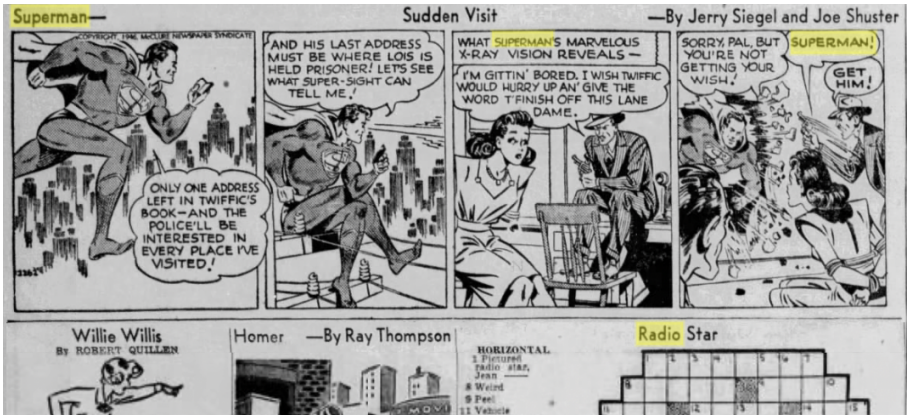
	Dependent variable: Support for Civil Rights Index							
		Alternative measures of coverage				Conley Hsiang		
	Survey weights	Pessimistic $\tau = 60$	Optimistic $\tau = 72$	Area coverage	Binary	50km	100km	400km
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Target × Exposure	0.061***	0.053**	0.050***	0.056***	0.155***	0.064***	0.064***	0.064***
	(0.015)	(0.021)	(0.013)	(0.014)	(0.041)	(0.013)	(0.014)	(0.010)
R^2	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).

C.5 Anticipation and spillover effects

We examine the share of newspaper pages that covered topics related to *Operation Intolerance* (refer to Section 6 and Appendix C.7 for details about the data source). We focus on three topics. *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, covering a wide range of references, including articles about Superman, radio schedules, and comic strips featuring Superman (Figure C8 provides an example). *Bigotry, intolerance, and prejudice* refer to pages where any of the words—*bigotry*, *intolerance*, *prejudice*, or their derivatives—appear at least once.

Figure C8: Example with the words "Superman" and "radio" in the same page

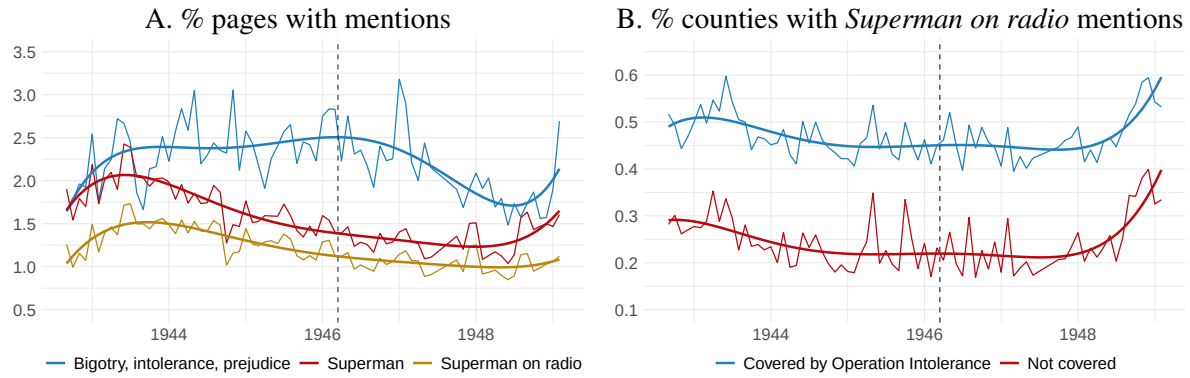


Note. The image is extracted from the edition of 04/04/1946 of the Sacramento Bee (published in Sacramento, California).

Panel A in Figure C9 shows the share of pages that mentioned these themes from August 1942 to September 1949. Focusing only on *Superman on radio*, panel B in Figure C9 shows the share of counties in which local newspapers made at least one reference to this theme, depending on whether a county was covered by the broadcast in 1946. Overall, we do not observe different patterns following April 1946. We test whether *Operation Intolerance* brought about a short-term change in the salience of these themes in local newspapers using equation (3) applied to the data presented in Figure C9, transformed into quarterly data to minimize missing values. Table C5 presents the results for the share of pages with mentions, in columns (1)–(3),

and on the probability of having at least one mention, in columns (4)–(6).

Figure C9: Newspaper coverage of Superman and topics related to *Operation Intolerance*



Note. Panel A 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 themes are descripbed in Appendix C.5. Panel B shows for each month the share of counties in which there is at least one reference to *Superman on 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.

Table C5: The short-run effect of *Operation Intolerance* on local newspapers

	Share of pages with mentions of ...			**Any mention of ...**		
	Superman	Superman on radio	Bigotry, intolerance, and prejudice	Superman	Superman on radio	Bigotry, intolerance, and prejudice
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure × post	-0.033	-0.022	-0.047	0.007	-0.002	-0.002
	(0.051)	(0.043)	(0.031)	(0.007)	(0.008)	(0.005)
Dependent variable mean	0.999	0.695	2.08	0.589	0.470	0.901
R^2	0.557	0.587	0.639	0.516	0.546	0.338
Number of counties	906	906	906	906	906	906
Observations	24,462	24,462	24,462	24,462	24,462	24,462

Note. Estimates based on equation (3) using quarterly data covering August 1942 to February 1949. Standard errors clustered at the county level are presented in parentheses (* $p < 0.1$, ** $p<0.05$, *** $p < 0.01$). *Post April 1946* is an indicator variable equal to 1 if the period of observation is posterior to the April 1946. *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)–(3) share of pages published in local newspapers that cover specific topics, with shares multiplied by 100; (4)–(6) indicator variable equal to 1 if there is at least one reference to the specific topic in the local newspapers. *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*. *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. Appendix C.1 provides additional details about the variables.

C.6 Effect on attitudes towards other groups

Table C6 provides cohort study estimates on the effect of *Operation Intolerance* on favorable feelings toward other groups. Columns (1)–(2) focus on attitudes towards the 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 population.

Table C6: Cohort study estimates of the effect on attitudes towards other groups

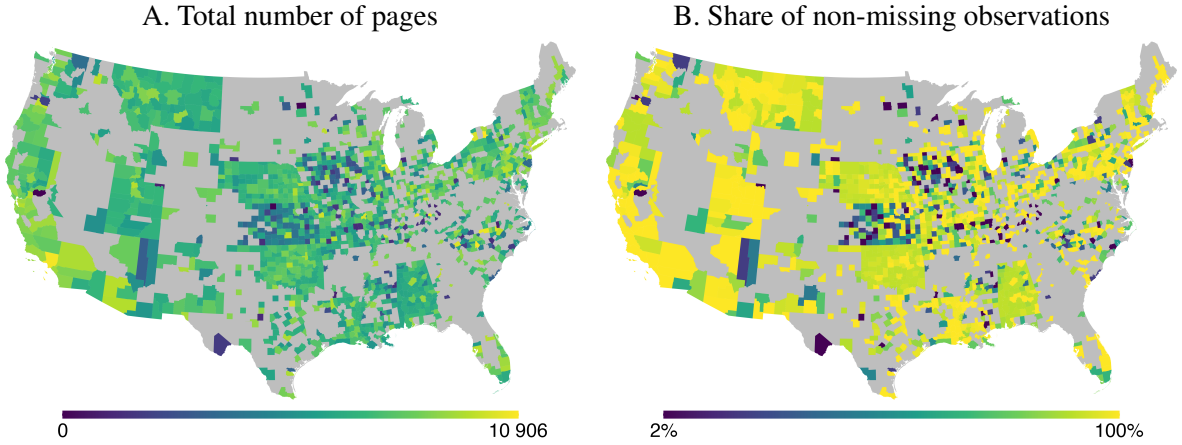
	Religious minorities		Inequality			Other	
Favorable towards...	Jews	Catholics	Poor	Big business	Unions	Feminist movements	Whites
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Target × Exposure	-0.009	-0.002	0.012	-0.027	0.016	-0.002	-0.030
	(0.034)	(0.032)	(0.043)	(0.029)	(0.030)	(0.041)	(0.028)
R^2	0.206	0.189	0.186	0.179	0.153	0.218	0.200
Observations	5,133	5,075	4,516	6,976	7,021	5,286	8,197

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. 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 C.1.

C.7 Additional evidence concerning newspapers

Figure C10 shows descriptive statistics for the data gathered from the archive `newspapers.com`, as described in Section 6. We use information from newspapers to build a measure of the salience of civil rights using the 25 themes presented in the following table.[8]

Figure C10: Descriptive statistics for local newspapers, 1930–1980



Note. 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. Gray areas are counties without any data in the archive.

N.	Theme	Search string(s)	N.	Theme	Search string(s)
1	Bigotry	bigot*	14	NAACP	naacp OR "advancement of colored"
2	Civil liberty	civil liberty	15	Negro	negro*
3	Civil rights	"civil rights"; civil rights	16	Prejudice	prejudic*
4	Civil disobedience	civil disobedience; nonviolent OR nonviolence	17	Race relations	"race relation"

(continued on next page)

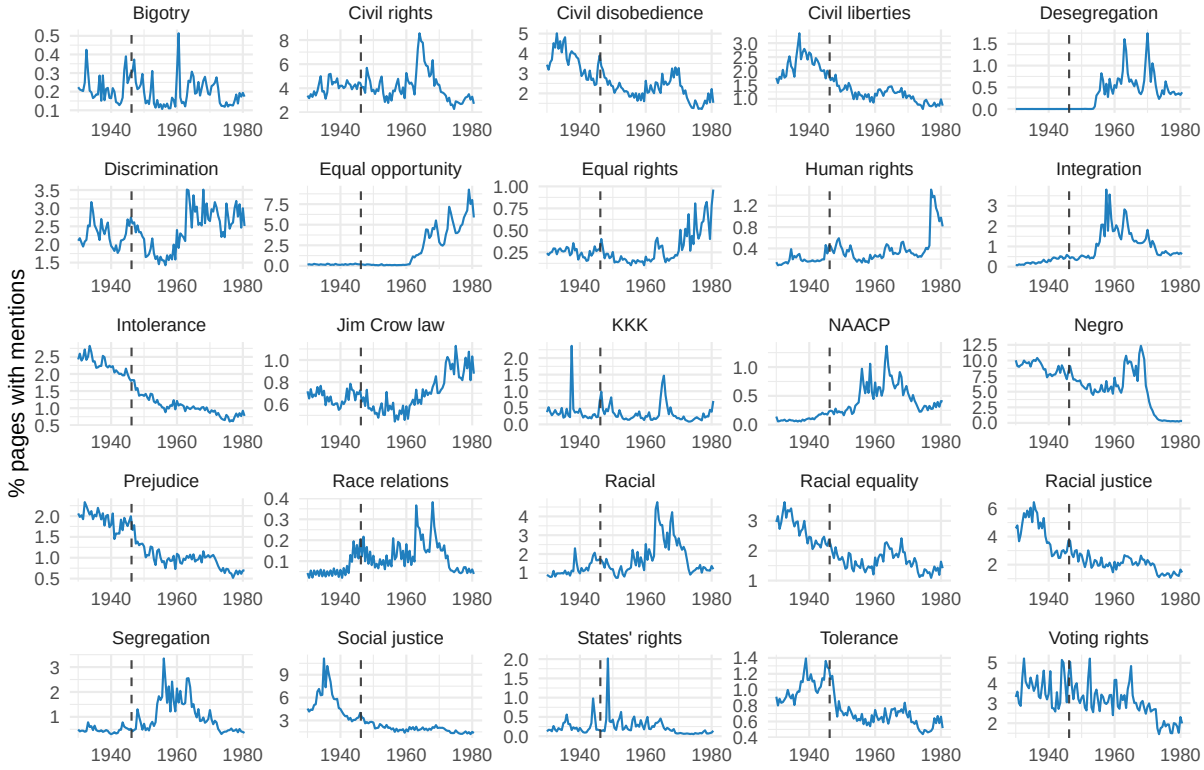
[8]The list is AI-generated by ChatGPT 3.5 using the following request: *I am an academic economist. I am analyzing a sequence of U.S. local newspapers published in the period 1930–1980. I am interested in finding articles promoting the narrative of the Civil Rights Movement and of racial tolerance, but I can only search for words or sequences 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.*

N.	Theme	Search string(s)	N.	Theme	Search string(s)
5	Discrimination	discriminat*	18	Racial	racial
6	Desegregation	desegregat*	19	Racial equality	(race OR racial) (equal* OR inequal*); race creed color
7	Equal opportunity	"equal opportunity"	20	Racial justice	(race OR racial) (justice OR injustice)
8	Equal rights	"equal right"	21	Segregation	segregat*
9	Human rights	"human right"	22	Social justice	social (justice OR injustice)
10	Integration	integration; integrat*	23	States' rights	"states' rights"
11	Intolerance	intoleran*; hate	24	Tolerance	toleran*
12	Jim Crow laws	"jim crow" OR "separate but equal" separate equal	25	Voting rights	voting right; "voting rights" OR "right to vote"
13	KKK	klan OR klux; lynching OR lynched			

Note. For certain themes, multiple searches were performed. The separator ";" indicates the different search strings. 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 C11 shows the share of total pages published in each year containing a specific theme included in our measure of the salience of civil rights in local newspapers (see Section 6). Table C8 instead provides event study estimates 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 (3) 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 due to the Montgomery bus boycott).

Figure C11: 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.

Table C8: The effect of *Operation Intolerance* on the salience of civil rights

	Salience of civil rights on local newspapers							
Method:	RPCA		RPCA		PCA		PCA	
Counties selected (obs. per county):	≥ 1		$\geq 75\%$		100%		100%	
Themes selected:	All		All		Top 75% of themes		Top 50% of themes	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post 1946 × Exposure	0.156**		0.168*		0.176*		0.193**	
	(0.076)		(0.089)		(0.092)		(0.085)	
Period 1946–55 × Exposure		0.049		0.035		0.005		0.051
		(0.067)		(0.066)		(0.077)		(0.072)
Post 1955 × Exposure		0.192**		0.212**		0.233**		0.240**
		(0.088)		(0.105)		(0.106)		(0.097)
Dependent variable mean	0.008	0.008	0.005	0.005	-0.008	-0.008	-0.008	-0.008
R^2	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 (3) and pooling all post-1946 observations. Standard errors clustered at the county level are presented in parentheses (* $p < 0.1$, ** $p<0.05$, *** $p < 0.01$). *Post 1946* is an indicator variable equal to 1 if the period of observation is posterior to the year 1946, *Period 1946–55* is an indicator variable equal to 1 if the period of observation is between the years 1946 and 1955, and *Post 1955* is an indicator variable equal to 1 if the period of observation is posterior to the year 1945. *Exposure* is the share of the population in the county that was covered by the radio signal of *Operation Intolerance* in 1946. Dependent variables are reported in the column's header and defined as follows: (1)–(2) index built using 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. Appendix C.1 provides additional details about the variables.

C.8 Persuasion rate during the 1968 presidential elections

To evaluate the magnitude of the effects on voting behavior discussed in Section 5.3, 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) following the Enikolopov et al. (2011) methodology. The following formula computes the persuasion rate, assuming that, in line with the results in Section 6, the broadcast had no effect on turnout:

$$f = \frac{1}{-v_0} \cdot \frac{1}{\frac{de}{ds}} \cdot \frac{dv}{ds} \tag{5}$$

where v is the vote share for Wallace during the 1968 presidential elections, v_0 is the same vote share in the absence of *Operation Intolerance*, e and s are the listenership of and the exposure to the program (see Section 4), respectively. The derivatives $\frac{de}{ds}$ and $\frac{dv}{ds}$ are the effects of exposure on listenership and vote share, respectively. In line with Section 5.3, we restrict the sample to counties in states where both Thurmond in 1948 and Wallace in 1968 ran for election.

First, we estimate v_0 using the estimates presented in column (1) of Table 7, assuming that s is equal to the minimum observed value in the sample and that the time period is 1968. We compute the total votes and the votes for Wallace in the selected states, yielding a v_0 of 37.7%.

Second, we obtain $\frac{de}{ds}$ by multiplying the estimate of the effect of exposure on listenership, presented in column (2) of Table 2, by the number θ of children and adolescents per listening set during the time slot of *The Adventures of Superman* in 1946, such that $\frac{de}{ds} = 0.026 \times \theta$. We use the estimate of θ from Hooper Inc. (1949), in which $\theta = 0.49$ (see Section A.1). Alternatively, because approximately 10.9 million children and adolescents could have listened to the show

(see Section 2), each household had approximately 1.5 members in this group (Haines, 2010), and approximately 4.5 million children and adolescents listened to the show, we also consider a value in line with these estimates, i.e., $\theta = 0.62$.

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 5, equal to -0.024, averages the effects across all voters. To this purpose, we compute the share of votes in the 1968 presidential election 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 (Bureau of Census, 1968a). Applying this proportion to the population in the selected states, corresponding to 49.7 million (Bureau of 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%.[9] 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.; Bureau of Census, 1968b), we apply the turnout rate in the selected states (46.2%; Bureau of Census, 1969b), and we 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, 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 $\frac{dv}{ds} = p\frac{dv^T}{ds^T} + (1-p)\frac{dv^O}{ds^O}$:

$$-0.024 = 0.295 \cdot \frac{dv^T}{ds^T} + 0.71 \cdot 0 \Rightarrow \frac{dv^T}{ds^T} = -0.081$$

Substituting estimates into equation (5), we obtain a persuasion rate of 13.3–17.0%.

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[9] We estimate this rate from Bureau of Census (1969b). First, we compute the overall turnout rate in the U.S. for the age group 29-44, combining the provided turnout rates for the age groups 18–24 and 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 that of selected states (46.5%), and decrease the turnout estimated for the age group 29-44 using the same rate.

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