Ancient Epics in the Television Age: Mass Media, Identity, and the Rise of Hindu Nationalism in India*

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Abstract

This study examines the long-term social and political impacts of mass media exposure to religious content in India. We study the impact of "Ramayan," the massively popular adaptation of the Hindu epic televised in 1987-88. To identify causal effects, we conduct difference-in-difference analyses and exploit variation in TV signal strength driven by location of TV transmitters and topographical features inhibiting electromagnetic TV signal propagation. We find that areas with higher exposure to Ramayan (higher TV signal strength when the show aired) experienced significant cultural and political changes. First, we document a strengthening of religious identity among Hindus: parents in these areas became more likely to give their newborn sons traditionally Hindu names, and households showed increased adherence to orthodox Hindu dietary practices. In the short term, this cultural shift led to an increase in Hindu-Muslim communal violence through 1992. Over the longer term, through 2000, the Hindu nationalist Bharatiya Janata Party (BJP) became more likely to win state assembly elections. Analyses of changes in local TV signal strength in India over decades indicate that these effects are not due to general access to TV but are due to exposure to the Ramayan TV show in 1987-1988. Our findings reveal that media portrayal of religious narratives can have lasting effects on cultural identity, intergroup violence, and electoral outcomes.

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1 Introduction

In 1987, India came to a standstill every Sunday morning. Streets emptied, shops closed, and families gathered around television sets, often sharing with neighbors. The cause of this nationwide pause was the broadcast of "Ramayan," a televised adaptation of the ancient Hindu epic (Rajagopal, 2001). With an estimated 80 million viewers tuning in weekly, it became the most-watched program in Indian television history (Mankekar, 1999). Viewers often treated the broadcast as a religious event, adorning their TV sets with flowers and performing rituals before each episode (Mitra, 1993). In many ways, Ramayan wasn't just a TV show; it was a cultural phenomenon that brought a centuries-old story to life for a modern audience, unifying viewers across a diverse nation through a shared narrative (Cusack, 2012).[1]

What happens when a television show becomes more than entertainment? Can exposure to religious narratives through mass media shape cultural identities and, in turn, influence political landscapes? Our paper explores these questions by examining the long-term social and political impacts of the Ramayan broadcast. Leveraging variations in TV signal strength across India, we investigate how exposure to this cultural touchstone affected cultural norms, communal relations, and voting behavior in the years that followed.

This study contributes to the literature on the political economy effects of mass media by focusing on a unique natural experiment. The Ramayan broadcast occurred at a pivotal moment in Indian media history when television signal reception was rapidly expanding but still limited. This setting allows us to exploit geographical and over-time variation in television signal strength to identify the causal effects of exposure to the Ramayan TV show.

Our identification strategy builds on prior work (e.g., Olken (2009) and Yanagizawa-Drott (2014)), which leverages variation TV signal propagation due to topography to generate plausibly exogenous differences in television signal quality, even when TV transmitter placement is strategic or endogenous. We advance this approach by combining it with panel data methods (used in studies such as DellaVigna and Kaplan (2007), Gentzkow (2006), Gentzkow and Shapiro (2008), Jensen and Oster (2009), La Ferrara, Chong and Duryea (2012), and Chong and La Ferrara (2009)). This allows us to make weaker assumptions for causal identification than are required in cross-sectional studies.

We take a difference-in-differences approach, utilizing substantial changes in local TV signal strength over time. We define a locality's "treatment intensity" as its TV signal strength at the start of 1987, just before Ramayan began airing. We then examine changes in outcome variables from before to after the Ramayan broadcast, controlling for location and time fixed effects. The key assumption is that the timing of changes in a locality's TV signal strength, driven by intervening topography relative to newly established transmitters, is plausibly random. During India's rapid TV expansion in the 1980s, whether a place received TV reception by 1987, rather than (say) 1984 or 1991, can be considered arbitrary. Causal identification re-

[1]The Ramayan TV show experienced a resurgence in popularity when it was rebroadcast during the COVID-19 lockdown in India, again breaking viewership records (Verma, 2020).

lies on the standard parallel trends assumption in difference-in-differences analyses: pre-1987 trends in outcome variables should not correlate with a locality's 1987 treatment intensity. We partially test this assumption by examining pre-1987 trends and their association with future (1987) signal strength, consistently finding no concerning pre-trends.

This approach allows us to control for time-invariant characteristics of localities by including locality fixed effects, requiring only that locations receiving TV reception by 1987 did not differentially experience other relevant changes (e.g., in policies, cultural forces, or other shocks) that could have affected our outcomes of interest.[2] In addition, we account for any time-varying factors common to all locations within the same Indian state by including state-year fixed effects in the regression. We also account for time-varying factors associated with a range of locality characteristics by including in the regression a vector of initial locality characteristics interacted with year fixed effects.

We have three key findings. First, we find that areas with higher Ramayan exposure (higher TV signal strength in 1987) experienced significant changes in cultural practices indicating a strengthening of religious identity. This manifests in two ways: Hindu parents became more likely to give their newborn sons common Hindu names, and lower-caste households showed increased adherence to orthodox Hindu dietary practices (a substantial increase in vegetarianism). Second, we find that higher exposure to Ramayan leads to a short-term increase in Hindu-Muslim communal violence through 1992. Finally, we document a long-term effect on electoral outcomes: through the year 2000, the Hindu nationalist Bharatiya Janata Party (BJP) sees increases in its probability of winning state assembly elections in areas that had higher Ramayan exposure.

We address a number of threats to causal identification and alternate interpretations of the results. One of the most basic interpretation issues is whether the effects are due to general TV access itself, rather than exposure to the Ramayan TV show in 1987. We can rule out this concern. We constructed measures of localities' TV signal strength in *all* years of our data, and test robustness of regression results to their inclusion as control variables. The coefficient on 1987 Ramayan exposure is unaffected by controlling for contemporaneous TV signal strength, indicating that the effects we highlight are the specific effects of Ramayan exposure (TV signal strength in 1987) and not general TV signal strength.

In addition, our results are robust to concerns about a variety of confounding factors involving changes over time that are differential across localities. Any state-specific time-varying effects are dealt with via inclusion of state-year fixed effects. Regression coefficients are robust to inclusion of baseline (or time-invariant) locality characteristics interacted with year fixed effects, which accounts for any time-varying effects that are associated with these locality characteristics.

[2]We therefore do not need to assume that TV signal strength in 1987 is uncorrelated with time-invariant characteristics of places. Locality fixed effects in the difference-in-difference regression equation absorb all such time-invariant characteristics.

We also address potential confounding with the Ram Janmabhoomi movement, a Hindu nationalist campaign that gained momentum in the late 1980s and culminated in the demolition of the Babri Masjid in 1992 (van der Veer, 1994). Our estimated effects of Ramayan exposure are robust to inclusion of a control variable measuring proximity to the traveling mobilization rallies known as the Ram Rath Yatra (held in 1990) in which national leaders of the Ram Janmabhoomi movement sought to raise local support. The estimated effects of exposure to Ramayan starting in 1987 do not appear to be confounded by exposure to the Ram Rath Yatra, the key event in advancing the Ram Janmabhoomi movement.

Our study contributes to several interconnected strands of literature in political economy, media studies, and cultural economics.

Our main contribution is to the literature on the economics of social identity and the rise of new political divisions (Shayo, 2009; Hooghe and Marks, 2018; Shayo, 2020; Besley and Persson, 2021; Bonomi, Gennaioli and Tabellini, 2021; Grossman and Helpman, 2021; Danieli et al., 2022; Tabellini, Manacorda and Tesei, 2024). Akerlof and Kranton (2000) highlight how identity profoundly influences individual behavior and choices, laying the groundwork for understanding the interplay between identity formation and socio-political dynamics. Shared narratives play a pivotal role in shaping collective identity and political landscapes, as emphasized by the concept of "imagined communities" (Anderson, 1983), which illustrates how shared cultural narratives foster a sense of national belonging. In the Indian context, religious and cultural events have been shown to influence political behavior, increase support for Hindu nationalist parties, and fuel communal tensions (Blakeslee, 2014; Baral, Nellis and Weaver, 2021). Atkin, Colson-Sihra and Shayo (2021) show an association between Hindu-Muslim conflict and adherence to religious dietary restrictions. Building on this literature, we provide novel evidence of how exposure to an epic tale rooted in ancient Indian traditions can actively reshape identity. The Ramayan broadcast served as a powerful tool in crafting a particular vision of Indian national identity rooted in Hindu traditions, influencing both cultural practices and long-term political divisions. Our findings highlight the transformative power of collective epics in crafting identity and shaping the political landscape.

Second, our work relates to the literature on the political effects of the mass media in triggering changes in social and political preferences (Strömberg (2004), Gentzkow (2006), Jensen and Oster (2009), La Ferrara, Chong and Duryea (2012), Adena et al. (2015), Voigtländer and Voth (2015), DellaVigna et al. (2014), Martin and Yurukoglu (2017), Blouin and Mukand (2019), Ang (2023), Esposito et al. (2023), Armand et al. (2024), Wang (2021)). In this sense, our work is closely related to that of Mello and Buccione (2023) and Grosfeld et al. (2024), who demonstrate that media exposure can significantly influence religious behavior. Building on these studies, we contribute to this literature by highlighting the effects of entertainment rooted in ancient epic narratives, as opposed to propaganda or partisan media, over both short and long time horizons.

Finally, our work connects to research on the political economy of ethnic and religious conflict. Scholars such as Mitra and Ray (2014) and Wilkinson (2006) have explored the complex relationships between political competition, ethnic violence, and electoral outcomes in India.

Iyer and Shrivastava (2018) found that riots occurring in the year preceding a state election resulted in greater electoral success for the BJP. Our findings on the increase in Hindu-Muslim violence following the Ramayan broadcast contribute to this literature by highlighting how media exposure can potentially exacerbate inter-group tensions. Understanding these dynamics in India is particularly crucial given the economic consequences of segregation on religious lines (Asher et al., 2024; Kalra, 2021).

By examining the long-term effects of the Ramayan broadcast on cultural, social, and political outcomes, our study bridges several interconnected strands of literature. We provide novel evidence on how mass media, through the dissemination of culturally significant narratives, can strengthen collective identity, influence intergroup dynamics, and shape political preferences over time. Our findings underscore the powerful role that epic storytelling can play in shaping societal outcomes in India, the world's most populous nation and largest democracy.

The paper proceeds as follows. Section 2 provides background on the Ramayan broadcast and the political context of India in the late 1980s and 1990s. Section 3 describes our data and empirical strategy. Section 4 presents our results on naming patterns, communal violence, and electoral outcomes. Section 5 discusses the mechanisms and broader implications of our findings, and Section 6 concludes.

2 Television in India

The history of television in India is characterized by rapid expansion and technological evolution, transforming from a state-controlled medium to a diverse, multi-channel industry. This section provides an overview of television's development in India, focusing on the period relevant to our study and extending to more recent developments. Table 1 provides summary statistics on the expansion of TV transmitters and TV signal across the population.

2.1 Early Years and Controlled Expansion (1959-1982)

Television broadcasting in India began on September 15, 1959, with experimental transmissions in Delhi (Kumar, 1998). The service, operated by All India Radio, was initially limited to educational programs. Regular television broadcasts commenced in 1965, still confined to the capital city.

The 1970s saw a gradual expansion of television services. In 1972, a second television station was established in Mumbai (then Bombay), followed by stations in Srinagar, Amritsar, and Calcutta (now Kolkata) (Singhal and Rogers, 1989). Television reached primarily urban populations during this decade (Johnson, 2000).

2.2 Rapid Expansion and the Ramayan Era (1982-1990)

The 1982 Asian Games in New Delhi marked a turning point in Indian television history. The government invested heavily in broadcasting infrastructure to televise the event nationwide (Kohli-Khandekar, 2010). This expansion brought television to many rural areas for the first

time. Following this initial push, the government launched an ambitious plan to increase television coverage across the country. The number of active transmitters increased from 18 in 1981, before the Asian Games, to 170 in 1985; the share of the population with "minimum coverage" TV signal increased from 21.0% to 54.1%. It was during this period of rapid expansion that Doordarshan, the national broadcaster, began airing popular entertainment programs.

Our data show that television coverage continued to increase during the 1980s, providing 63.2% of the population with minimum TV signal (186 transmitters) in 1987, and 76.1% (483 transmitters) by 1990 (Table 1). This period spans the airing of Ramayan (in 1987-1988) and forms the core of our study's focus.

2.3 Liberalization and the Rise of Cable and Satellite TV (1991-2000)

The economic liberalization of 1991 had a profound impact on Indian television. The government allowed private and foreign broadcasters to enter the market, ending Doordarshan's monopoly. STAR TV, owned by Rupert Murdoch's News Corporation, began broadcasting via satellite in 1991, quickly followed by Zee TV, India's first private Hindi-language channel (Thussu, 2007).

Cable television networks proliferated rapidly in urban areas. By 1995, there were an estimated 12 million cable TV households in India (Johnson, 2000). This period saw a dramatic increase in the number and variety of channels available to Indian viewers, although terrestrial Doordarshan broadcasts remained important, especially in rural areas.

2.4 Digital Revolution and Beyond (2000 onwards)

The post-2000 era has been characterized by further technological advancements and market expansion. Direct-to-Home (DTH) satellite television was introduced in 2003, offering digital-quality transmission and hundreds of channels (Mehta, 2008). By 2010, India had over 120 million TV households, with about 80 million accessing cable and satellite services (FICCI-KPMG, 2011).

The introduction of conditional access systems (CAS) in 2003 and the subsequent rollout of digital addressable systems (DAS) from 2012 onwards have further transformed the television landscape, improving signal quality and expanding channel offerings (Parthasarathi and Srinivas, 2013).

2.5 Relevance to Our Study

While our study focuses primarily on the period of 1980-2000, understanding the subsequent evolution of Indian television provides important context. The rapid expansion of TV access in the 1980s, coinciding with the broadcast of Ramayan, occurred in an environment of limited viewing options. This contrasts sharply with the multi-channel, multi-platform environment that developed in later years.

The transition from a state-controlled, single-channel system to a diverse, privatized market underscores the unique conditions under which Ramayan was broadcast. Our analysis

captures the effects of this culturally significant program during a period when television was a novel and powerful medium in many Indian households, potentially amplifying its impact on cultural identity and political preferences.

3 The Ramayan Television Series

"Ramayan," the televised adaptation of the eponymous Hindu epic, was a watershed moment in Indian television history (Rajagopal, 2001). Produced by Ramanand Sagar for the state-owned broadcaster Doordarshan, this 78-episode series aired from January 1987 to July 1988 and brought the ancient Hindu epic to life for a modern audience (Mankekar, 1999).

Ramayan narrates the life of Ram, an avatar of the Hindu god Vishnu, and is considered one of the most important religious texts in Hinduism. The TV adaptation closely followed the original narrative, depicting Ram's exile from his kingdom, the abduction of his wife Sita by the demon king Ravan, and the subsequent war to rescue her (Cusack, 2012). The series also portrayed ideal gender roles and family relationships based on traditional Hindu values (Mankekar, 1999). Ram was presented as the perfect son, brother, and king, while Sita embodied the ideal of wifely devotion. This faithfulness to the source material was crucial in lending the series its quasi-religious status among viewers.

The show's production values, while modest by today's standards, were groundbreaking for Indian television at the time. The use of special effects, elaborate costumes, and dramatic music created a compelling visual spectacle that captivated audiences (Mankekar, 1999). For many viewers who had previously only encountered these narratives through oral traditions or text, the televised visual representation was an entirely new medium through which they experienced Ramayan.

The show's broadcast timing was strategic, airing every Sunday morning at 9:30 AM, a time traditionally associated with religious activities in many Indian households (Mitra, 1993). This scheduling decision amplified the series' impact, effectively transforming the act of watching television into a communal religious experience. Many viewers would bathe before watching, dress in clean clothes, and even perform small pujas (worship rituals) in front of their TV sets (Rajagopal, 2001).

Ramayan's broadcast coincided with a period of rapid expansion in television ownership and coverage across India (Singhal and Rogers, 1989). Our data show that television coverage increased from approximately 20% of the population in 1980 to over 75% by 1990 (Table 1). This expansion meant that for many viewers, especially in rural areas, Ramayan was their first significant exposure to television content.

Prior to Ramayan's introduction in 1987, there had never been a broadcast TV show in India with a religious theme. The start of the series therefore represented a step-function in religious TV content. To document this quantitatively, we collected data on all 176 television serials broadcast on Indian public networks since 1980. Appendix Figure A2 presents these data, highlighting the absence of religious shows prior to 1987.

Ramayan's television viewership was unprecedented in India.[3] The show's popularity was staggering, with estimates suggesting that over 80 million people tuned in to watch each episode (Rajagopal, 2001). According to Ninan (1995), the series regularly achieved a viewership share of over 80% in urban areas, with even higher percentages reported in rural regions. At its peak, during the episode depicting Rama's coronation, it was estimated that over 100 million viewers were watching simultaneously (Mankekar, 1999). This level of engagement was particularly remarkable given that, at the time, there were only about 30 million television sets in India (Singhal and Rogers, 1989). The phenomenon of "community viewing" emerged, with people gathering in large groups around a single television set, often in public spaces or at the homes of neighbors who owned TVs. Mitra (1993) reported instances of entire villages assembling to watch the show, with some traveling considerable distances to access a television. The series' impact extended beyond mere viewership numbers; during its broadcast, streets in many cities would become deserted, and even train schedules were adjusted to accommodate the show's timing (Rajagopal, 2001).

Many have argued that the Ramayan series played a crucial role in standardizing and disseminating a particular version of Hindu mythology across a diverse nation (Rajagopal, 2001; Guha, 2007). In a country with numerous regional and linguistic variations of the epic, the TV series provided a unifying narrative that transcended local differences.[4] Datta et al. (1990) says, "For the first time, all Hindus across the country saw and at the same time listened to the same thing: the serial, in fact, introduced a congregational imperative into Hinduism."

It is important to note that the social and political impacts of Ramayan were likely unintentional on the part of the government. At the time of the broadcast, the national government was led by the Congress party and not the BJP (Rajagopal, 2001). The primary motivation for airing Ramayan was to increase advertising revenue for the state-owned television network Doordarshan (Mankekar, 1999).[5] Ramanand Sagar, the show's creator, faced initial skepticism from officials and had to lobby extensively before the series was finally approved for broadcast (Lutgendorf, 1990).

In what follows, we provide empirical evidence on the impacts of exposure to Ramayan on culture, inter-group violence, and political outcomes in India.

[3]Lutgendorf (1990) notes, "Never before had such a large percentage of South Asia's population been united in a single activity, never before had a single message instantaneously reached so enormous [an] audience."
[4]Guha (2007) notes, "The televised epic was introducing subtle changes in this pluralistic and decentralized religion."
[5]S.S. Gill, the Secretary of Information and Broadcasting at the time, recalled that Prime Minister Rajiv Gandhi initially hesitated to approve the show, fearing it might cater primarily to a Hindu audience. Gill, who described himself as "a strong leftist," reassured Gandhi that Ramayan is a national epic and part of the majority culture, emphasizing that there was nothing partisan about the project. The intention, he argued, was not to shift the political balance between majority and minority communities but to expand the reach of the new medium of communication and, in doing so, bolster the government's influence (Rajagopalan, 2020).

4 Data

Here we briefly describe the data we use to measure exposure to Ramayan (TV signal strength across locations and over time), as well as data on our outcome variables (newborn names, vegetarianism, Hindu-Muslim conflict, and electoral outcomes). We provide further details of all these data sources – and our data processing procedures – in the Data Appendix (Appendix Section B).

4.1 Television Data

Our measure of exposure to Ramayan is estimated TV signal strength at the beginning of 1987 (just before the show started airing). We also construct a time-varying measure of TV signal strength over the entire time period of our analyses to separately estimate the impact of access to television on the same outcome variables. The measure varies annually, as well as spatially at a very fine-grained level, across 1-kilometer grid cells for the entirety of India. We aggregate grid-cell-level signal strength measures to various locality levels.

We first collect data on the location and characteristics of government-sanctioned television transmitters from 1965 to 2000 from multiple archival records. Using these transmitter data, we apply an Irregular Terrain Model (ITM) of signal propagation, which models the strength of TV signals considering obstacles in irregular terrain (Hufford, 2002; Crabtree and Kern, 2018). The output from this model gives us the estimated actual TV signal strength for each 1-kilometer grid cell on the map of India. Given that Ramayan was first aired in January 1987, we use broadcast signal strength for January 1987 as our measure of "treatment" or exposure to the Ramayan broadcast.

4.1.1 Transmitters

We construct a comprehensive dataset of the entire universe of TV transmitters commissioned by Doordarshan, the national broadcaster, between 1965 and 2000. Our data sources involve a combination of archival records from the Doordarshan Audience Research Unit, Ministry of Information and Broadcasting (MIB) and Press Information Bureau (PIB), in addition to Right to Information (RTI) filings. In total we have 1,181 transmitters across 1,007 locations that were in operation at some point up to January 1, 2000. Our dataset includes the following characteristics for each transmitter: location, coordinates, type, power, height, band, channel, frequency range, commissioning dates, and decommissioning dates where relevant. We also record upgrades, given that transmitter characteristics change substantially after an upgrade.

This allows us to create a panel of transmitters dating from 1965, when regular transmissions began broadcasting in Delhi, until 2000. These transmitters cover the universe of transmitters relevant for determining Ramayan exposure because when the TV show aired in 1987 and 1988, only government transmitters were available, and there was only one government channel, Doordarshan. As the show aired before the introduction and massive expansion of TV to private companies and channels started in the 1990s, there is no competition in terms of viewership of the government TV channel in this context.

4.1.2 TV Signal Strength

To measure the exposure of the TV show, we use the Longley-Rice Irregular Terrain Model (ITM) (Longley, 1968). An ITM is a model of broadcast signal propagation that takes into account how natural barriers to signal in the form of terrain lead to variation in signal strength in the areas around a TV transmitter. Using data on the height, frequency, and power of transmitters, in addition to detailed digital elevation data at a 30m resolution, we calculate two key measures between any receiver-transmitter pair: freespace signal strength and actual signal strength.

Freespace signal strength captures the hypothetical signal strength assuming unobstructed transmission; this varies inversely with squared distance between transmitter and receiver. *Actual signal strength* incorporates real-world factors such as terrain, obstructions, and interference, and is therefore always weaker than freespace signal strength. While we use actual signal strength as our main exposure measure for the religious show, we control for free space signal strength in all specifications. This approach is crucial for identification: TV transmitter locations are typically endogenous, being placed in cities and district headquarters, making areas closer to transmitters systematically different from more distant ones. By controlling for freespace signal strength while using actual signal strength as our exposure measure, we isolate the variation in signal strength caused by topographical barriers, netting out confounding factors related to transmitter placement and area characteristics.

We overlay a 1-kilometer grid over India, totaling approximately 4.5 million grid cells. For each transmitter and grid cell pair (of which we have approximately 5.3 billion), we calculate using the ITM both the actual and freespace signal strength for a receiver 10m high at the centroid of the cell. To create a panel of actual signal strength for any given date, we identify for each grid cell the transmitter with the highest TV signal strength of all transmitters in operation at the start of each year. Figure 1 shows actual signal strength and transmitter locations in four-year intervals, throughout our period of analysis, from 1979 to 1999. This collection of figures across the six panels visually shows how actual signal strength has changed over our entire sample period. The figure makes clear that signal strength is higher for cells closest to transmitters, and that the pattern of signal loss along the broadcast lines is irregular, due to topography. Panel C in Figure 1 shows actual signal strength deriving from the 186 transmitters in operation at the start of 1987. It is this variation in 1987 that forms the basis of our "treatment" variable, exposure to Ramayan.

To aggregate from grid cells to any geographic unit of analysis, we use gridded data for the 1980 population which perfectly overlaps our 1-kilometer grid to calculate a population weighted average actual signal strength in the geographic unit. This weighting accounts for the fact that populations are not uniformly dispersed, and allows us to place a higher weight on the actual signal strength in areas that are more densely populated when taking the weighted average. In Table 1, we show statistics for our measures of actual signal strength at the assembly constituency level and for all of India from 1970 to 2000. Statistics under "Assembly Constituencies" are averages across assembly constituencies (which themselves are weighted

averages across grid cells within assembly constituencies). Statistics in the "India" columns are weighted averages across all grid cells in the country.

Under "Signal" (columns 3 and 6), we display the population-weighted average actual signal strength in dBm (decibel milliwatts). The minimum threshold for television reception recommended by the Advanced Television Systems Committee (ATSC) guidelines is -83 dBm, and so we display under "Minimum Coverage" (in columns 4 and 7) the share of the population with average signal above this threshold (ATSC, 2010). Under "Weak Coverage" (columns 5 and 8), we display the share of the population with average signal exceeding the ATSC -68 dBm threshold for weak coverage.

During the 1980s, television coverage expanded rapidly throughout India. In 1980, only 21.0% of the population had a television broadcast signal of at least the minimum coverage level, while this increased substantially to 63.2% by 1987, and eventually up to 80.3% by 2000 (column 7). In 1982, India hosted the Asian Games and commissioned 20 transmitters in order to broadcast the event over television to a larger audience, marking the introduction of television to the masses. The largest annual increase in television coverage occurred during 1984, when the government launched a massive TV expansion plan, launching a transmitter per day with the goal of increasing television coverage to 70% of the population by the end of the decade; from 1984 to 1985, minimum coverage in the population nearly doubled from 27.1% to 54.1%.

When included in regression equations, we normalize the TV signal variable by dividing it by its sample standard deviation. Coefficients on TV signal in general ($TVSignal_{it}$ and its lags) as well as of signal in 1987 ($Ramayan_i$) will be interpreted as impacts of one-standard-deviation changes in signal strength.

4.2 Names

The formation of a common identity begins with the establishment of shared symbols and cultural elements. Naming patterns hold significance as first names are widely regarded as important markers of cultural identity. Our focus is on parents' choice to give their child a name more closely associated with Hindu identity, specifically a name that is more prevalent among Hindu individuals. We examine whether exposure to Ramayan led to an increase in the popularity of traditionally Hindu names.

In our analysis of newborn names, the outcome of interest is the share of individuals residing in location i and born in year t who have a "common" Hindu name. We define a "common" Hindu name as a name among the top ten Hindu names in state s. Top names are identified for each state s as the ten most popular names among Hindu males residing in state s and born between 1900 and 1970 (the decade prior to our period of analysis), similar to Bazzi, Fiszbein and Gebresilasse (2020).[6] Since we are able to access very spatially disaggregated electoral roll data on names, we can conduct the names analysis at very granular locations, down to the pin-

[6]Our results are robust to other definitions of top names, such as top three and top five.

code (postal code) level. For consistency across outcome variables, we aggregate data to the level of 3,073 state assembly constituencies across 21 states.[7] In robustness checks, we conduct the names analyses at the more disaggregated pincode level and find similar results.

Our names data are collected from Sood and Dhingra (2023), which provides electoral roll data for different states with identifiers at the pincode level. We identify a person as Hindu if their father's full name is classified as Hindu. As the names of fathers are only available for males and unmarried females, we restrict our sample to males. We present the top 10 Hindu names for each Indian state in Appendix Table A1.

4.3 Vegetarianism

The consumption data come from the 1982 and 1999 waves of the Additional Rural Incomes Survey (ARIS)/Rural Economic & Demographic Survey (REDS). For 232 villages and 3,188 unique family units in these data, we observe the total annual consumption of meat, fish, and egg products, either home-produced or purchased. Our main outcome of interest is "vegetarianism": abstinence from meat, fish, and eggs. Vegetarianism is common among Brahmin (upper-caste) Hindus. We construct a binary variable that takes the value of 1 if the annual consumption shows no expenditure/valuation of non-vegetarian products. About 50% of the households consume any non-vegetarian food. Using the village coordinates provided by the REDS dataset, we predict exposure to the Ramayan TV show at the village level. The family IDs across the two waves enable us to use family fixed effects, enabling us to track families in the 17-year time span. For families that split into multiple households by 1999, we aggregate their consumption by summing across all split households to create a unified family unit. This gives us a balanced panel of 3,188 unique Hindu households across the years 1982 and 1999, thus a total of 6,376 observations.

4.4 Hindu-Muslim Conflict

For Hindu-Muslim conflict data, we rely on Varshney et al. (2006) and Mitra and Ray (2014). Varshney et al. (2006) provides data on the number of Hindu-Muslim conflicts up to 1995. We use Mitra and Ray (2014), which extends the dataset through 2000. For our analysis, we focus on the period from 1974 to 2000. The dataset includes references to the main source where the conflict is reported. Varshney et al. (2006) defines a communal riot as an event characterized by violence involving two or more groups identified along communal lines, such as religious or ethnic affiliations, engaging in direct confrontation with one another. It is important to note that events involving violence directed solely at the police or involving a single communal group do not qualify as communal riots. To geolocate the conflict events, we manually read all the source newspaper articles and extracted the most disaggregated neighborhood mentioned in each news report. We then geolocated all the conflicts at the neighborhood level using the Google Maps API and manually verified the geolocations.

[7]These states and union territories, using the pre-2000 boundaries, include Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Using these data, we define the following outcome variable to study the impact of Ramayan on Hindu-Muslim conflict: "any conflict", a binary indicator equal to 1 if a Hindu-Muslim conflict occurred in the locality (assembly constituency).

4.5 Election Data

We examine whether exposure to Ramayan influences political outcomes. State elections in India are contested and won by state-level parties that are often formed on linguistic- and caste-lines. Increasing salience of religious identity could mean that BJP is able to make inroads into state-level governments. The primary political outcome we examine is an indicator equal to one if the BJP wins the state assembly election in the constituency, and zero otherwise.

We also examine secondary outcomes. To examine whether the BJP fields a candidate in a constituency at all, we create in indicator variable equal to one if it does so (and zero otherwise). We also examine the BJP vote share in a constituency (BJP vote share is considered zero if the BJP does not field a candidate.) In secondary analyses we also examine impacts on BJP victory and BJP vote share in only constituencies in which the BJP fielded candidates (these analyses are labeled "conditional" in results tables).

We use data on legislative elections of Indian states. We use "LokDhaba: Indian Election Dataset" from the Trivedi Centre for Political Data (Agarwal et al., 2021). Our data spans 1979 to 2000. We have 4,044 constituencies in 27 states and union territories. We have data on the votes received by different political parties in each election. We focus on our analyses on outcomes of the Bhartiya Janata Party (BJP), but also include analyses for the Indian National Congress (INC) in the Appendix.

4.6 Control Variables

We include a range of control variables (interacted with time fixed effects) in regressions to account for potential differential time effects across locations. These controls include variables related to population, geography, climate, and agricultural productivity. The control variables are constructed from data from the Indian Census as well as a variety of international gridded datasets. For details, see Data Appendix Section B.3.

4.7 Summary Statistics

We present summary statistics for all our key variables in Table 2.

5 Empirical Approach

We seek to shed light on the impact of exposure to Ramayan on cultural outcomes, social conflict, and political outcomes. Our units of analysis for most of our analyses are Indian assembly constituencies observed annually from 1979 to 2000.[8] The Ramayan TV show aired

[8]For analysis of vegetarianism, our units of analysis are households surveyed in 1982 and 1999, with the TV exposure for these households calculated the village level.

from 1987-1988. We will measure a locality's "treatment intensity" (the intensity of its exposure to Ramayan) as its TV signal strength at the start of 1987, just as the show's first episode aired. Alongside variation across space in treatment intensity, our panel data also allows us to exploit variation over time, comparing the pre-Ramayan period (1986 and before) to the post-Ramayan period (1987 and after).

Our empirical analyses implement a difference-in-difference approach to take advantage of the spatial variation in Ramayan treatment intensity combined with variation over time (from before to after the program aired).

5.1 Regression Equation at the Locality Level

We estimate the following difference-in-difference regression equation to estimate the treatment effect of Ramayan for locality-level outcomes in panel data:

$$Y_{i,t} = \beta_0 + \beta_1 Ramayan_i \times Post_t + \sum_t \boldsymbol{\gamma}_t' \mathbf{X}_{i,\text{base}} + \delta_i + \theta_{st} + \epsilon_{i,t} \quad (1)$$

The unit of observation is a location i in year t. For our main empirical analyses, we primarily use state assembly constituencies as the unit of analysis.[9] (The exception is the analysis of vegetarianism, in which units of observation are households. We describe the household-level regression analysis for vegetarianism separately below.)

$Y_{i,t}$ is an outcome variable (e.g., the share of newborns given common Hindu names, or an indicator for the BJP winning an election). The variable $Ramayan_i \equiv TVSignal_{i,1987}$ is TV signal strength at the start of 1987 for location i. All measures of TV signal strength are normalized by dividing each measure by its sample standard deviation. The variable $Post_t$ is an indicator for years 1987 and after, capturing years during and after the Ramayan show's airing.

The regression includes location fixed effects, δ_i, which account for any time-invariant differences across locations. θ_{st} are state-year fixed effects, which account for any changes over time common to all units within the same Indian state.[10] ϵ_{dt} is a mean zero error term. For all coefficient estimates, we report Conley (1999) standard errors, accounting for spatial correlation (using a 100 km radius) as well as autocorrelation over time for each location.

$\mathbf{X}_{i,\text{base}}$ is a vector of location-specific baseline and time-invariant controls. This vector is interacted with a full set of binary year indicators (the coefficient vector γ_t is year-specific). Inclusion of this vector interacted with year indicators controls flexibly for differential time effects (more flexibly than linear trends) that are correlated with a location's baseline characteristics. The vector contains district-level controls from the 1981 census (total population,

[9]The names and conflict outcomes can be aggregated to different levels, since they are constructed from data that are geographically finer-grained than assembly constituencies. This is not the case for electoral outcomes, which are only available at the assembly constituency level. For consistency, we present results for all three sets of outcomes at the same unit of analysis. Our results for names and conflict outcomes are robust to conducting them at the pincode level.

[10]We use the term "states" to refer to states and union territories in India. There are 4,088 assembly constituencies in 27 Indian states and union territories in our analysis, although we only have names data for 21 of those states.

percentage of male population, percentage of rural population, percentage of literate population, percentage of scheduled tribes population, percentage of scheduled caste population and percentage of Hindustani speaking population. It also includes controls at the assembly constituency level: population (1980), geographic (area, average elevation, average slope, average temperature from 1971-1980, average precipitation from 1971-1980 and average maximum caloric yield for 1980) and 1980 TV signal (1980 TV signal strength and 1980 freespace TV signal strength).

Most importantly, the vector $\mathbf{X}_{i,\text{base}}$ includes $FreespaceSignal_{i,1987}$, the TV signal strength if there were no physical obstacles to TV signal propagation. This captures simple proximity to TV transmitters, conditional on the power of the transmitters. TV transmitter locations are endogenous: they are located in cities or district headquarters, and thus the areas closer to TV transmitters most likely vary along many characteristics from those in areas further away from TV transmitters. We therefore do not use mere physical proximity to TV transmitters (freespace TV signal strength) as our measure of exposure to Ramayan. Rather, we control for freespace signal strength while using actual signal strength as the measure of exposure to Ramayan. In this way, we use the variation in signal strength due to topographical barriers ($Ramayan_i$) while controlling for the unobservables associated with mere proximity to TV transmitters ($Freespace\ Signal_{i,1987}$). With $FreespaceSignal_{i,1987}$ included in the vector $\mathbf{X}_{i,\text{base}}$ (and thus interacted with year fixed effects), our identification of the effect of exposure to Ramayan exploits only variation in 1987 TV signal driven by irregular terrain between the locality and TV transmitters, and not mere physical (as-the-crow-flies) proximity to TV transmitters.

Coefficient of interest. β_1 on $Ramayan_i \times Post_t$ is the coefficient of interest. Due to normalization of $Ramayan_i$ by its standard deviation, β_1 is interpreted as the causal impact of a one-standard-deviation increase in actual signal strength on the outcome variable. It is identified from changes in the dependent variable for a locality over time (from before to after 1987) that are associated with the locality's actual TV signal strength at the start of 1987, net of flexible time effects associated with the vector of controls $\mathbf{X}_{i,\text{base}}$.

5.2 Regression Equation at the Household Level

We also estimate the following difference-in-difference regression equation to estimate the treatment effect of Ramayan on vegetarianism, a household-level outcome:

$$Y_{h,f,t} = \beta_0 + \beta_1 Ramayan_f \times Post_t + \sum_t \boldsymbol{\gamma}_t' \mathbf{X}_{f,\text{base}} + \delta_f + \theta_{st} + \epsilon_{h,t} \tag{2}$$

The unit of observation is a household h, belonging to a family f in year t. We have two time periods in this analysis, 1982 and 1999. Households and families are completely identical in 1982, and in that year there is exactly one of each household/family observation. Between 1982 and 1999, some 1982 households split into multiple households, which are then surveyed in 1999. A "family" is a set of households in 1999 that split from the same 1982 household. We combine the data for households that fall under the same family-unit, i.e., were the same households in 1982. We weight each family using 1982 survey weights.

$Y_{h,f,t}$ is an outcome variable. The variable $Ramayan_f$ is the 1987 TV signal strength for family f, calculated based on their village of residence in 1982. The variable $Post_t$ is an indicator for years 1987 and after (which in this case is an indicator for the year 1999).

The regression includes family fixed effects, δ_f, which account for any time-invariant differences across families. θ_{st} are state-year fixed effects, which account for any changes over time common to all households within the same Indian state. $\epsilon_{h,t}$ is a mean zero error term. We report Conley (1999) standard errors for all coefficient estimates. We account for spatial correlation using a 100 km radius, as well as autocorrelation over time for each family.

$\mathbf{X}_{f,\text{base}}$ is a vector of village-specific baseline and time-invariant controls based on the village of residence for family f in 1982. This vector is interacted with a full set of binary year indicators (the coefficient vector γ_t is year-specific). The vector $\mathbf{X}_{i,\text{base}}$ contains the same set of controls listed above for equation (1), but defined at the village level.[11]. Most importantly, the vector $\mathbf{X}_{f,\text{base}}$ also includes $FreespaceSignal_{f,1987}$ for reasons discussed earlier.

Coefficient of interest. β_1 on $Ramayan_f \times Post_t$ is the coefficient of interest, and is interpreted as the causal impact of a one-standard-deviation increase in signal strength on the outcome variable. It is identified from changes in the dependent variable for a household over time that are associated with its residential village's TV signal strength at the start of 1987, net of time trends associated with the vector of controls $\mathbf{X}_{f,\text{base}}$.

6 Primary Analyses

In this section we present regression analyses on how exposure to religious content through mass media can reshape cultural identity and, in turn, affect social and political outcomes. We first examine religious identity formation, by examining Ramayan's effects on naming of newborns and consumption of religiously tabooed foods. We then examine effects of Ramayan on broader social and political variables: Hindu-Muslim conflict and electoral outcomes.

The next section (Section 7) will then discuss additional analyses that refine and clarify the interpretation of the results.

6.1 Names

Our first analysis examines the impact of Ramayan on naming choices for newborns. With this analysis, we aim to shed light on the formation of in-groups, resulting from increasing the salience of religious identities.

We estimate regression equation (1) in which the dependent variable is the share of Hindu male newborns given one of the top ten names for their state. We present regression results in Table 3. In each column we show coefficient estimates on $Ramayan_i$ in regressions that include increasingly inclusive sets of right-hand-side control variables: column 1 includes only

[11] The exception is that $\mathbf{X}_{f,\text{base}}$ excludes geographic area because we only have coordinates data for villages, rather than village boundaries.

location fixed effects, state-year fixed effects, and 1987 freespace signal times year fixed effects; column 2 adds census controls year fixed effects; column 3 adds population controls times year fixed effects; column 4 adds geographic controls times year fixed effects; and column 5 adds 1980 TV signal times year fixed effects. (All results tables in this section will have this structure.)

Coefficient estimates reveal a positive and robust effect of Ramayan exposure on families' choices to give newborns common Hindu names. The coefficient on $Ramayan_i$ is positive and always statistically significantly different from zero at the 1% level. The coefficient tends to remain stable or increase in magnitude with the inclusion of more controls (from the first to the last column). In the last column of the table, with the most-inclusive set of controls, the coefficient on $Ramayan_i$ indicates that a one-standard-deviation increase in $Ramayan_i$ (TV signal strength in 1987) leads to 0.228 percentage points higher share of newborns given a top-ten Hindu name. This effect is roughly 5% of the dependent variable mean, and 7% of the dependent variable standard deviation.

It is also of interest to understand the dynamics of this effect. In Figure 2 we show an event study plot, estimating the impact of $Ramayan_i$ in different periods (two-year windows) pre- and post-Ramayan (with 1985-86 as the base period).[12] We estimate these event-study coefficients by replacing the $Ramayan_i \times Post_t$ interaction term in equation (1) with interaction terms between $Ramayan_i$ and indicators for each two-year time period (excluding 1985-1986, which serves as the reference period).

The first pattern of interest is that there is no evidence of any worrying pre-trend in the pre-Ramayan period. No coefficient is statistically significantly different from zero in the pre-period, and the pre-trend is flat.

The positive impact of Ramayan exposure on Hindu naming choices is immediately apparent in 1987-88, as soon as the show starts airing. The coefficients are statistically significantly different from zero at conventional levels in all post-treatment periods, and monotonically increase in magnitude as the years progress.

A question that arises is whether this increase in choice of common Hindu names reflects simply an increase in naming newborns after *characters or actors* in the Ramayan TV show. If so, this may not be reflective of stronger religious identity formation, but simply increased salience or popularity of Ramayan character or actor names. We test this by conducting a similar analysis, but where the outcome variable is the share of children named: 1) *Rama* and its variants (for the show's main character), 2) *Rama* plus names of other primary characters (and their variants), and 3) the names of the *actors* playing primary characters in the show.

We show corresponding coefficients for these other names outcomes in Appendix Table A3. The results here are strikingly different from the results in Table 3: there is *no* apparent ef-

[12] In this and subsequent event study graphs we maintain the presentation of effects in periods defined as two-year windows. Two-year windows will be particularly useful for event studies of state electoral outcomes, because in some years there are few or no states that have elections. Event study graphs that present year-by-year (annual) coefficients yield the same conclusions, but are noisier.

fect of Ramayan exposure on the frequency of naming newborns after Ramayan characters or actors in the show. In the most-inclusive regression (column 5), coefficient estimates are small in magnitude (compared to the coefficients in Table 3) and none are statistically significantly different from zero.[13] We conclude from this set of analyses that the change in Hindu newborn naming is more likely to reflect an increase in the strength of religious identity in Hindu families, rather than simply a (more mundane) affinity for the names of Ramayan show characters or actors.

6.2 Vegetarianism

Dietary choices serve as powerful markers of religious and cultural identity in India, with vegetarianism traditionally associated with orthodox Hindu practice. Complementing our findings on naming patterns, we examine whether Ramayan exposure influenced another fundamental expression of religious identity: adherence to traditional Hindu dietary restrictions.

We estimate equation 2 using a balanced panel of 3,188 Hindu families observed in 1982 and 1999. Our sample comes from the ARIS/REDS dataset, which tracks household splits over time. We treat all 1999 households stemming from the same 1982 household as a single family unit. A family's exposure to Ramayan is determined by their 1982 village's TV signal strength, which we calculate using the ITM model for 221 villages.

Results are in Table 4. Panel A shows the results for all Hindu households. While not statistically significant, there is suggestive evidence that households with higher exposure to the Ramayan show an increase in vegetarianism (Panel A, Column 5). When we limit the sample to lower-caste Hindu households, we find a positive (12 percentage point) and statistically significant increase in likelihood of vegetarianism in areas exposed to the show (Panel B, column 5). This effect is stable or increases in magnitude across columns as more controls are added. Panel C of the table shows there is no effect for upper-caste Hindu households.

Our findings of changes in eating habits on the part of lower-caste Hindus may be viewed as an example of "Sanskritization", a process in which castes or tribes lower in the caste hierarchy seek to emulate upper-caste practices (Srinivas, 1962). This effect is large in magnitude, amounting to a 30% increase in vegetarianism (from a base of 40.2%) among lower-caste Hindu households.

6.3 Hindu-Muslim Conflict

Violent conflict between Hindus and Muslims would be perhaps the most extreme manifestation of strengthened religious identities and magnified awareness of in-groups and out-groups. We now analyze whether a locality's exposure to Ramayan leads to increases in Hindu-Muslim conflict.

[13]There is smattering of statistically significant coefficients in other columns, but these are not robust to inclusion of controls. Some are in fact negative (the bottom panel, columns 1-3); negative coefficients would indicate that parents avoid naming newborns after the actors in the show.

We start with an event-study graph, Figure 3, that is analogous to Figure 2 above, but where the outcome is an indicator for the assembly constituency having had any Hindu-Muslim conflict. While coefficients in the pre-Ramayan period are slightly negative, none of them are statistically significant, and they show no clear trend. In the post-period, coefficients are positive in 1990-92, but small and close to zero in all other years. There appears to be a short-run increase in conflict in only the immediate post-Ramayan years.

We now show regression estimates of impacts on Hindu-Muslim violence from estimating assembly-constituency panel regressions following equation (1). Results are in Table 5. Because the effect of Ramayan on conflict in the event-study graph appears to be short-run (and not persistent, like the impact on names), we estimate regression equation (1) for not only the full analysis period (up to 2000) in Panel A, but also for data up to 1992 only (to estimate the statistical significance of the short-run effect separately) in Panel B.

Panel A – the effect over the entire post-Ramayan period (up to 2000) – indicates a small positive effect on conflict that is marginally statistically significantly different from zero when all controls are included. In Panel B, which estimates the impact of Ramayan exposure in the short run up to 1992, the coefficient is positive and statistically significantly different from zero at conventional levels in all regressions. Coefficient estimates are not highly sensitive to the set of control variables in either panel.

In sum, localities with higher exposure to Ramayan see increases in Hindu-Muslim conflict in the short run (in the five years after the show starts airing) that do not persist.

We now turn to examining impacts of Ramayan exposure on another set of important outcomes that could be affected by heightened religious distinctions between in-groups and out-groups: electoral performance of the Hindu nationalist Bharatiya Janata Party (BJP).

6.4 Electoral Results

In the previous subsection, we showed that localities more exposed to the Ramayan show saw increases in Hindu-Muslim violence in the short run, from three to five years after the start of the show. Does exposure to the Ramayan TV show also have effects on electoral preferences and political outcomes? And are any such impacts only short-run effects, or are they persistent over the longer term?

Having established Ramayan's influence on religious identity and practices and conflict across religious lines, it is natural to examine whether this heightened religious consciousness translated into electoral behavior, particularly in terms of voting along religious lines. For this, we study whether exposure to Ramayan influences electoral success of a major Hindu nationalist party, the Bharatiya Janata Party (BJP). We estimate regression equation (1) for a key BJP outcome: an indicator for the BJP winning in a state assembly election. Results are in Table 6.

We find that exposure to Ramayan has a large and positive impact on the probability the BJP wins state assembly elections. The coefficient increases in magnitude across columns as

controls are included and is statistically significantly different from zero in all specifications (at the 1% level when all controls are included).

We examine the dynamics of the Ramayan treatment effect on BJP electoral victory in Figure 4. There is no obvious indication of worrying pre-trends – coefficients in the pre-Ramayan years fluctuate and show no obvious upward or downward trend. In the post-Ramayan years, the impact on BJP victory probability becomes large and positive in 1991-92, with some fluctuations afterwards.

How might the impact of Ramayan on BJP victories have come about? We investigate further political outcomes in additional regressions in Appendix Table A5. Results in Panel A indicate positive, albeit modest, impacts on BJP vote share that are not statistically significantly different from zero at conventional levels. The coefficients are positive, however, consistent with the increase in BJP electoral wins.

In Panel B, we investigate whether exposure to Ramayan affects whether the BJP fields a candidate. This is relevant to investigate because increased support for the BJP could lead the party to either increase the share of seats it competes in, or lead it to be strategically more focused on a smaller number of seats. Coefficients are negative and statistically significantly different from zero at the 5% level in all columns. The negative coefficient may suggest strategic behavior on the part of the BJP in deciding where to field candidates, and may also be the result of formation of alliances with other parties to divide contested seats.

Regressions in Panels C and D limit the sample to assembly constituencies in which the BJP fields a candidate. In this selected subset of locations, exposure to Ramayan is associated with higher probability of BJP victory (Panel C) and higher BJP vote share (Panel D). Coefficients in all regressions for these outcomes are statistically significant at conventional levels.

In Panel E of the table we show impacts of Ramayan exposure on the probability of a victory by the Indian National Congress (INC, the Congress party). Results for this outcome are consistent with the findings that Ramayan causes more BJP victories: coefficients on Ramayan exposure are negative for INC victory (and statistically significant in the final two columns), reflective of greater success of the BJP.

7 Additional Analyses

In this section we provide discussion and additional analyses to clarify interpretation of the primary results presented above in Section 6. First, we confirm that the impacts we find are not driven by general TV signal strength, but by TV signal in 1987 specifically. We do this by including time-varying controls for contemporaneous TV signal strength. Second, we provide data on TV programming and print media coverage of TV shows to argue that Ramayan in particular should be driving the effects we estimate, and not something else on TV in 1987. Third, we provide additional analyses to argue that the effects we attribute to Ramayan exposure are not due to the Ram Janmabhoomi movement.

7.1 Are effects due to TV signal strength in general?

It is important to differentiate the effect of Ramayan exposure (for which TV signal strength in 1987 specifically is relevant) from the effect of variation in TV signal strength in general across all years in the analysis. We do this by including in equation (1) controls for contemporaneous TV signal in locality i and year t, $TVsignal_{it}$, as well as its first and second lags. We estimate the following modified difference-in-difference regression equation:

$$\begin{aligned} Y_{i,t} = \beta_0 + \beta_1 Ramayan_i \times Post_t \\ + \sum_{k=0}^{2} (\tau_k TVSignal_{i,t-k} + \phi_k FreespaceSignal_{i,t-k}) \\ + \sum_t \gamma_t' \mathbf{X}_{i,\text{base}} + \delta_i + \theta_{st} + \epsilon_{i,t} \end{aligned} \tag{3}$$

Compared to Equation (1), this equation adds controls for contemporaneous TV signal strength $TVSignal_{i,t}$ and two lags.

Results are in Table 7. Across all these key outcomes, the coefficient on $Ramayan_i$ changes very slightly or becomes even larger in magnitude, compared to corresponding coefficients in prior tables that do not include the controls for contemporaneous TV signal. The exception in the coefficient in the vegetarianism regression, but even this coefficient remains two-thirds of its original magnitude (although it becomes only marginally statistically significant; p-value 0.128).

The stability of the coefficient on Ramayan to inclusion of controls for contemporaneous TV signal suggests that the effects in prior tables are for the most part not due to general variation in TV signal strength (across years), but rather due to TV signal strength specifically in 1987, which determines exposure to the Ramayan TV show.

7.2 Was it Ramayan or Something Else on TV in 1987?

Above, we documented that the effects in prior tables reflect the impact of exposure to TV in 1987, and not general access to TV across the whole time period of analysis. A remaining question is whether the effects we find are due to the Ramayan TV show specifically, versus other concurrent TV programming in 1987-1988.

We provide data on TV programming and print media coverage of TV shows to argue that Ramayan in particular should be driving the effects we estimate, and not something else on TV in 1987.

We do two things to argue that effects of TV signal strength at the start of 1987 reflects the impact of exposure to the Ramayan TV show, and not other TV content at the time. First, We conduct a comprehensive content analysis of TV programming in 1987, demonstrating that Ramayan's introduction in 1987 was the first time a show with an explicitly religious theme was aired on Indian TV. Second, while we do not have viewership data, we use data on

mentions in India's most widespread newspaper, the *Times of India*, of a range of TV shows. We show that Ramayan had unprecedented media mentions compared to other programs.

7.2.1 Content Analysis

Prior to the introduction of Ramayan in 1987, religious content on Indian television was minimal to nonexistent. The launch of Ramayan in 1987 series marked a significant shift, as no shows with a religious theme had been broadcast before this. To show this quantitatively, we display in Appendix Figure A2 counts of the number of television serials being broadcast in different years from 1980 to 2000. In each year we show the number of non-religious shows (in light gray), and separately those with religious themes (in dark gray). Prior to 1987, there were no shows with religious themes at all. The single religious-themed show that appears in 1987 is Ramayan.

7.2.2 Mentions in *Times of India*

We assemble data here to show that Ramayan's popularity exceeded by far the popularity of any other show in India – not just in 1987, but in fact over the entire time period of analysis (1979-2000).

Precise historical viewership data, by show and over time, is not available. We therefore employ an alternative approach to gauge the popularity of television shows. We extract data from the *Times of India* (TOI), one of India's oldest and most widely circulated newspapers.

Using the universe of TOI articles from 1980 to 1999, we compute the number of mentions for various television shows as a measure of their popularity. The rationale is that shows capturing widespread public attention and becoming central to societal discourse would naturally be mentioned more frequently in a major media outlets like the TOI.[14]

Appendix Figure A3 presents the number of TOI mentions of the Ramayan show, compared to the average number of mentions of other television shows broadcast during the 1980s. The horizontal axis tracks time, with year zero marking the initial broadcast of each show, while the vertical axis represents the number of article mentions. The blue line indicates mentions of Ramayan, while the dotted line shows the average mentions of other shows, with confidence intervals displayed by the error bars.

The pattern displayed in Appendix Figure A3 suggests that Ramayan's cultural footprint, as measured by TOI mentions, surged dramatically following its release, peaking within two years of its initial broadcast. In stark contrast, mentions of other shows remained relatively stable in periods before and after their release.

The figure shows that TOI mentions of the Ramayan show following its release are substantially higher than the average of other shows. But it would also be useful to see whether

[14]We analyzed over 1.5 million articles published in the Times of India (TOI) using a keyword-based approach to identify articles related to specific TV shows. To minimize false positives, we focused on articles that mentioned the name of the show alongside keywords such as 'TV' or 'television.'

there are any other other shows with mentions similar in magnitude to Ramayan's, which might be concealed in the the average across of all other shows.

We therefore also show the raw data on number of TOI mentions for all shows over the entire time period (1980-2000) in Appendix Figure A4. The conclusion from Appendix Figure A4 is clear: no other show has nearly the same number of mentions as Ramayan. Ramayan has 286 TOI mentions. The closest other number in Figure A4 is the 156 mentions of Hum Log, a soap opera about a middle-class Indian family that aired in 1984-1985.

Ramayan's substantially higher media coverage is a reflection of the unprecedented cultural impact of Ramayan; it clearly captured the nation's attention and dominated public discourse. The high number of mentions in TOI suggests that Ramayan resonated with Indian society on a scale far beyond that of other shows.

We conclude that our observed effects in our analyses are most likely driven by exposure to Ramayan, rather than other TV content that aired starting in January 1987.

7.3 Was it Ramayan or the Ram Janmabhoomi movement?

We now argue that the effects we attribute to Ramayan exposure are not due to the Ram Janmabhoomi movement. While proximity to the Ram Janmabhoomi movement may have its own effects on the same outcomes, its geographic incidence appears orthogonal to Ramayan exposure.

The Ram Janmabhoomi movement was a Hindu nationalist campaign whose aim was to build a temple dedicated to the Hindu god Ram at a site in Ayodhya, Uttar Pradesh, where the Babri Masjid mosque stood. The movement claimed that the mosque was built on the exact birthplace (*janmabhoomi*) of Ram after destroying a pre-existing temple. The movement gained increasing prominence over the course of the 1980s. A key event in the movement was the Ram Rath Yatra, a traveling political and religious rally organized by L.K. Advani of the Bharatiya Janata Party (BJP) in September-October 1990. The procession traveled across northern India in a vehicle modeled after a mythological chariot, with the goal of gathering support in many locations for the construction of a Ram temple in Ayodhya at the disputed site of the Babri Masjid.[15]

The Ram Janmabhoomi movement culminated in the demolition of the Babri Masjid by Hindu activists on December 6, 1992, leading to widespread communal violence across India (van der Veer, 1994). The conflict has remained a contentious issue in Indian politics and society for decades, until a 2019 Supreme Court verdict allowed for the construction of a Ram temple at the site while allocating alternative land for a mosque (Rajagopal, 2019).

Given its prominence, it is important to address whether the Ram Janmabhoomi movement poses a potential threat to causal identification of the effect of Ramayan exposure in our study. There is partial temporal overlap between the two: the Ram Janmabhoomi movement

[15]Other papers have also studied the impact of the Ram Rath Yatra on Hindu-Muslim conflict, segregation (Kalra, 2021) and electoral support for BJP (Blakeslee, 2018).

gained momentum in the late 1980s and early 1990s, overlapping with the period of Ramayan broadcast and its aftermath. The Ram Janmabhoomi movement also may have affected many of the same outcomes we study – Hindu identity, Hindu-Muslim conflict, and BJP electoral success.

That said, the intensity of the Ram Janmabhoomi movement likely varied across different regions of India, and it is unclear whether its intensity correlates with Ramayan exposure. If the intensity of the Ram Janmabhoomi movement at the locality level is correlated with Ramayan exposure (TV signal strength in 1987), it could bias our estimates of the impact of Ramayan exposure.

We conduct additional empirical analyses that measure intensity of the Ram Janmabhoomi movement via proximity to the route of the Ram Rath Yatra. In that analysis we gauge the stability of the Ramayan effect estimate to inclusion of measures of proximity to the Ram Rath Yatra.

The intensity of the Ram Janmabhoomi movement at the locality level is likely to have been higher the closer a locality was to the route of the Ram Rath Yatra. The objective of the Ram Rath Yatra was precisely to gain support for the Ram Janmabhoomi movement by holding in-person rallies in a series of locations along the route. Appendix Figure A1 displays a map of the Ram Rath Yatra route.

For each location (state assembly constituency) in our analysis, we construct the variable *YatraDistance*, the logarithm of the distance from the location's centroid to the Ram Rath Yatra route. The Ram Rath Yatra occurred in 1990, so to capture the impact in 1990 and after we interact this term with an indicator variable for years 1990 and after.

In regressions presented in Table 8, we modify regression equation (1) by adding the term $YatraDistance \times Post_{1990}$. We show regressions for four main outcomes – top ten Hindu names, vegetarianism, Hindu-Muslim conflict (the short sample up to 1992), and BJP victory in state elections using specifications with the full set of controls times year fixed effects.

The key thing to observe is the stability of the coefficient on $Ramayan \times Post_{1987}$ when $YatraDistance \times Post_{1990}$ is added to the regression. The Ramayan effect estimate is remarkably stable following inclusion of the Yatra distance term; estimates are barely changed vis a vis corresponding regressions in prior tables where this term is not included. We conclude from this that our estimate of the Ramayan effect is not confounded or biased by an omitted variable in the form of proximity to the Ram Rath Yatra route.

Separately, the coefficient on $YatraDistance \times Post_{1990}$ itself does not show the same patterns as the Ramayan effect. It is positive in columns 1 and 2, indicating that greater distance from the Yatra route increases the propensity for Hindu male newborns to be given common Hindu names and for lower-caste households to practice vegetarianism. (It is unclear why this would be the case.) The negative and statistically significant coefficient in column 3 indicates that lower distance (higher proximity) to the Yatra route raises Hindu-Muslim violence. The coefficient is negative but imprecise (and not statistically significant) in column 4 for BJP victory.

All told, we conclude from this analysis that there is no evidence supporting concerns that the causal effect of Ramayan exposure on our outcomes of interest is due to a potential confounding factor: proximity to the Ram Rath Yatra, a key measure of exposure to the Ram Janmabhoomi movement.

8 Conclusion

This study provides evidence on the long-term cultural and political impacts of exposure to religious content through mass media. By exploiting variation in television signal strength during the broadcast of the Hindu epic Ramayan in 1987-88, we demonstrate how a single television series can have lasting effects on cultural identity, intergroup relations, and political outcomes.

Our findings reveal a cascade of effects following exposure to the Ramayan broadcast. First, exposure to the show leads to a significant increase in the likelihood of Hindu parents giving their newborn sons traditionally Hindu names, and in adoption of vegetarianism among lower-caste households. These cultural shifts suggest a strengthening of religious identity among viewers, indicating that media can play a powerful role in shaping cultural practices and identities. Second, we find a short-term increase in Hindu-Muslim communal violence through 1992 in areas with greater Ramayan exposure, highlighting the potential for unintended consequences when media strengthens in-group identities. Finally, we document a long-term effect on electoral outcomes, with areas of higher Ramayan exposure showing increased electoral success for the Hindu nationalist BJP in state assembly elections through 2000.

These results have important implications for our understanding of the relationship between media, culture, and politics. They suggest that the content of mass media can have far-reaching consequences beyond mere entertainment, potentially shaping the cultural and political landscape of a nation for years to come. In the case of India, the Ramayan broadcast appears to have contributed to a strengthening of Hindu identity and, inadvertently, to the rise of Hindu nationalism as a political force.

Our study also raises important questions about the responsibility of media in diverse societies. While the Ramayan broadcast was not intended to have political consequences, its effects on cultural identity and political preferences underscore the power of storytelling and shared narratives in shaping societal outcomes. As countries around the world grapple with issues of national identity and social cohesion, our findings highlight the need for careful consideration of the long-term impacts of media content, particularly when it touches on sensitive issues of religion and identity.

Looking forward, this research opens up several avenues for future inquiry. Further investigation into the mechanisms through which media exposure influences cultural identity and political preferences could yield valuable insights. For example, future work could analyze how specific features of media content — such as narrative structure, character portrayal, and symbolic imagery — activate particular social identities. Additionally, research could ex-

amine whether the mode of consumption matters: does viewing religious content as a communal experience versus individually affect its impact on beliefs and group identity? Such investigations could illuminate the mechanisms through which media exposure, particularly of cultural and religious content, shapes both personal identity and political alignments. Additionally, comparative studies examining the effects of different types of media content across various cultural contexts could help to generalize these findings beyond the specific case of India.

In conclusion, our study demonstrates the profound and lasting impact that mass media can have on society. As technology continues to evolve and new forms of media emerge, understanding these dynamics will be crucial for policymakers, media producers, and citizens alike. The story of the Ramayan broadcast serves as a powerful reminder of the responsibility that comes with the power to shape narratives and, by extension, the cultural and political future of a nation.

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9 Tables and Figures

Table 1
Summary Statistics of Television Expansion

		Assembly Constituencies			India		
Year	Active Transmitters	Signal	Minimum Coverage	Weak Coverage	Signal	Minimum Coverage	Weak Coverage
1970	1	-172.1	3.2	2.4	-167.5	2.6	1.8
1971	1	-172.1	3.2	2.4	-167.5	2.6	1.8
1972	1	-172.1	3.2	2.4	-167.5	2.6	1.8
1973	2	-154.1	4.2	3.3	-148.3	4.4	3.4
1974	5	-150.5	6.6	4.9	-146.0	6.1	4.6
1975	5	-150.5	6.6	4.9	-146.0	6.1	4.6
1976	9	-117.0	12.5	8.7	-113.3	13.2	9.2
1977	9	-117.0	12.5	8.7	-113.3	13.2	9.2
1978	14	-109.7	16.8	12.0	-105.6	17.9	12.9
1979	16	-107.6	18.0	12.5	-102.8	19.7	13.6
1980	18	-106.7	19.3	13.7	-101.9	21.0	15.0
1981	18	-106.7	19.3	13.7	-101.9	21.0	15.0
1982	19	-105.6	19.9	14.3	-100.9	21.5	15.3
1983	41	-96.5	26.4	17.5	-95.8	26.0	17.3
1984	43	-95.9	27.2	18.1	-95.0	27.1	18.2
1985	170	-81.3	50.7	31.0	-78.9	54.1	32.9
1986	178	-77.4	57.0	35.9	-74.9	61.0	38.4
1987	186	-76.0	59.2	38.0	-73.6	63.2	40.6
1988	229	-74.2	62.5	40.4	-72.3	66.0	42.5
1989	287	-72.6	65.6	42.4	-71.1	68.7	44.1
1990	483	-69.3	72.9	48.4	-68.0	76.1	50.1
1991	522	-68.5	74.2	50.1	-67.2	77.4	51.9
1992	531	-68.2	74.8	50.5	-66.8	78.3	52.5
1993	544	-67.7	75.7	51.6	-66.2	79.1	53.7
1994	559	-67.7	75.6	51.6	-66.3	79.1	53.8
1995	690	-67.4	76.3	52.4	-65.8	79.9	54.7
1996	748	-67.4	76.2	52.4	-65.8	79.8	54.8
1997	840	-67.1	76.8	53.0	-65.6	80.2	55.3
1998	947	-66.8	77.2	53.6	-65.4	80.6	55.8
1999	1,048	-66.9	77.0	53.5	-65.4	80.4	55.7
2000	1,082	-66.9	76.9	53.4	-65.5	80.3	55.6
Units			4,088			1	

Notes: For each year, we refer to the start of the year (1 January). Column 2 reports the number of active transmitters. The units of observation are 4,088 assembly constituencies in columns 2-4, and the entire country in columns 5-7. All statistics are averages at the unit of observation for the labeled year. Signal Strength (columns 2 and 5) measures the population-weighted average actual signal where population weights are based on 1980 gridded data. Minimum Coverage (columns 3 and 6) and Weak Coverage (columns 4 and 7) measures the percentage of the population with minimum and weak television coverage respectively. The thresholds for minimum and weak signal strength are -83 dBm and -68 dBm respectively as recommended by the Advanced Television Systems Committee guidelines.

Table 2
Summary Statistics of Key Variables

			Percentiles					
	Mean	Std. Dev.	10^{th}	25^{th}	50^{th}	75^{th}	90^{th}	Obs.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Ramayan TV Exposure								
1987 TV signal strength (dBm)	-76.0	24.0	-104.5	-94.8	-77.6	-59.3	-43.5	4,088
1987 TV freespace signal (dBm)	-48.3	10.7	-60.8	-55.7	-49.2	-42.3	-33.9	4,088
Panel B. Percentage of Hindu Male Newborns Given Certain Names								
Top 3 Hindu names	1.59	1.53	0.20	0.60	1.23	2.14	3.43	61,390
Top 5 Hindu names	2.44	1.97	0.45	1.08	2.04	3.34	4.92	61,390
Top 10 Hindu names	4.45	3.10	1.06	2.29	3.92	5.97	8.41	61,390
Rama name	0.48	0.82	0.00	0.01	0.22	0.55	1.15	61,390
Ramayan primary character names	0.71	0.93	0.00	0.10	0.44	0.95	1.70	61,390
Ramayan primary actor names	0.95	0.98	0.00	0.18	0.61	1.57	2.34	61,390
Panel C. Percentage of Vegetarians								
Hindu households	45.46	49.79	0.00	0.00	0.00	100.00	100.00	6,376
Hindu lower caste households	40.21	49.03	0.00	0.00	0.00	100.00	100.00	3,888
Hindu upper caste households	54.85	49.76	0.00	0.00	100.00	100.00	100.00	2,488
Panel D. Hindu-Muslim Conflict Outcomes								
Any conflict	0.56	7.44	0.00	0.00	0.00	0.00	0.00	89,936
Any deadly conflict	0.40	6.31	0.00	0.00	0.00	0.00	0.00	89,936
Any violent conflict	0.48	6.90	0.00	0.00	0.00	0.00	0.00	89,936
Panel E. State Assembly Electoral Outcomes								
Voter turnout	62.07	14.24	44.31	53.55	63.42	71.75	78.83	19,413
BJP unconditional victory	13.88	34.58	0.00	0.00	0.00	0.00	100.00	19,414
BJP conditional victory	23.55	42.43	0.00	0.00	0.00	0.00	100.00	11,446
BJP unconditional vote share	13.54	17.76	0.00	0.00	2.95	26.60	43.00	19,414
BJP conditional vote share	22.97	17.85	1.95	5.48	20.94	37.77	48.09	11,446
INC unconditional victory	36.80	48.23	0.00	0.00	0.00	100.00	100.00	19,414
Panel F. 1981 Census District Outcomes								
Total population (000s)	1,719	1,206	302	899	1,668	2,328	3,048	412
Percentage of males	49.05	11.67	49.30	50.53	51.37	52.89	53.96	412
Percentage of rural	76.35	23.50	53.68	72.70	83.92	90.63	93.80	412
Percentage of literates	32.28	14.71	18.50	23.07	30.52	41.51	50.15	412
Percentage of scheduled tribes	13.39	23.79	0.00	0.07	2.20	13.66	48.56	412
Percentage of scheduled caste	12.16	8.92	0.00	4.21	13.05	18.34	23.60	412
Percentage of Hindustani speakers	44.71	44.04	0.83	3.00	16.06	98.01	99.60	412
Panel G. Population Outcomes								
1980 population (000s)	167.4	108.5	29.2	102.8	162.5	215.9	279.6	4,088
Panel H. Geographic Outcomes								
Geographic area (km^2)	778.6	1596.4	70.3	267.1	538.9	1026.2	1577.4	4,088
Temperature (°C)	24.8	3.5	21.1	24.6	25.5	26.6	27.4	4,088
Precipitation (mm)	111.1	63.3	54.2	70.0	94.4	127.6	201.7	4,088
Elevation (m)	363.7	500.7	21.1	68.8	215.0	464.7	798.2	4,088
Slope (degrees)	3.7	5.9	0.6	0.7	1.3	3.3	10.3	4,088
Maximum caloric yield (000s)	18,908	8,004	8,267	12,096	18,826	24,923	30,783	4,088

Notes: This table includes summary statistics of key variables. The unit of analysis, number of units and sample period (where relevant) for each panel is as follows: A (4,088 assembly constituencies); B (3,073 assembly constituencies, 1979 to 1998); C (9,200 Hindu households across 3,453 families, 1982 and 1999); D (4,088 assembly constituencies, 1979 to 2000); E (4,044 assembly constituencies, 1979 to 2000); F (412 districts); G (4,088 assembly constituencies); and H (4,088 assembly constituencies). Summary statistics are unweighted, except for Panel C which uses survey weights. Temperature and precipitation data are monthly averages for the period 1971 to 1980. Maximum caloric yield uses data for 1980. All share variables have been scaled by 100 to be in percentage terms (from 0 to 100). This includes all variables in Panels B, C, D and E.

Table 3

Impacts of Ramayan on the Percentage of Hindu Male Newborns Given Top 10 Names

	Percentage of Hindu Male Newborns Given Top 10 Names				
	(1)	(2)	(3)	(4)	(5)
Ramayan × *Post*	0.183***	0.197***	0.197***	0.238***	0.228***
	(0.053)	(0.050)	(0.050)	(0.054)	(0.054)
Dep. var. mean	4.445	4.445	4.445	4.445	4.445
Dep. var. std. dev.	3.104	3.104	3.104	3.104	3.104
Units	3,073	3,073	3,073	3,073	3,073
Observations	61,390	61,390	61,390	61,390	61,390
Unit fixed effects	Yes	Yes	Yes	Yes	Yes
State-year fixed effects	Yes	Yes	Yes	Yes	Yes
Freespace controls	Yes	Yes	Yes	Yes	Yes
Census controls	No	Yes	Yes	Yes	Yes
Population controls	No	No	Yes	Yes	Yes
Geographic controls	No	No	No	Yes	Yes
1980 TV controls	No	No	No	No	Yes

Notes: This table includes coefficient estimates from differences-in-differences regressions at the assembly constituency level related to naming patterns of Hindu male newborns. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. An individual is determined to be Hindu if their father's full name is classified to be most likely a Hindu name. A top Hindu name is determined at the state level (to account for cultural differences across states) by ranking all first names of Hindu males born between 1900 and 1970, prior to our study period. All measures of TV signal strength are population-weighted averages and normalized by the standard deviation. *Ramayan* is the actual TV signal strength at the beginning of 1987. *Post* is a binary variable equal to 1 if the year is 1987 or later. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors in parentheses are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. 1%, 5% and 10% statistical significance are indicated with ***, **, and * respectively.

Table 4
Impacts of Ramayan on Vegetarianism

	Household Consumption Outcomes				
	(1)	(2)	(3)	(4)	(5)
Panel A. Vegetarian (Hindu Sample)					
Ramayan × Post	4.519	4.315	4.171	2.373	4.508
	(3.293)	(3.176)	(3.148)	(3.199)	(3.547)
Dep. var. mean	45.464	45.464	45.464	45.464	45.464
Dep. var. std. dev.	49.794	49.794	49.794	49.794	49.794
Units	3,188	3,188	3,188	3,188	3,188
Observations	6,376	6,376	6,376	6,376	6,376
Panel B. Vegetarian (Hindu Lower Caste Sample)					
Ramayan × Post	8.611**	7.892**	7.920**	8.358**	12.011**
	(3.687)	(3.710)	(3.755)	(4.179)	(4.717)
Dep. var. mean	40.207	40.207	40.207	40.207	40.207
Dep. var. std. dev.	49.032	49.032	49.032	49.032	49.032
Units	1,944	1,944	1,944	1,944	1,944
Observations	3,888	3,888	3,888	3,888	3,888
Panel C. Vegetarian (Hindu Upper Caste Sample)					
Ramayan × Post	0.851	3.760	2.527	-2.885	-2.763
	(5.724)	(4.446)	(4.783)	(3.774)	(4.132)
Dep. var. mean	54.846	54.846	54.846	54.846	54.846
Dep. var. std. dev.	49.765	49.765	49.765	49.765	49.765
Units	1,244	1,244	1,244	1,244	1,244
Observations	2,488	2,488	2,488	2,488	2,488
Unit fixed effects	Yes	Yes	Yes	Yes	Yes
State-year fixed effects	Yes	Yes	Yes	Yes	Yes
Freespace controls	Yes	Yes	Yes	Yes	Yes
Census controls	No	Yes	Yes	Yes	Yes
Population controls	No	No	Yes	Yes	Yes
Geographic controls	No	No	No	Yes	Yes
1980 TV controls	No	No	No	No	Yes

Notes: This table includes coefficient estimates from differences-in-differences regressions at the household level related to consumption outcomes. Regressions and summary statistics are weighted using survey weights. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. The outcome variable is a binary variable equal to 1 if the household had only consumed vegetarian food (no meat, fish, or eggs), based on total annual consumption of home produced or purchased goods. All measures of TV signal strength are population-weighted averages and normalized. *Ramayan* is the actual TV signal strength at the beginning of 1987. *Post* is a binary variable equal to 1 if the year is 1987 or later. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) average elevation; (ii) average slope; (iii) average temperature from 1971-1980; (iv) average precipitation from 1971-1980; and (v) average maximum caloric yield for 1980. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors in parentheses are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. 1%, 5% and 10% statistical significance are indicated with ***, **, and * respectively.

Table 5

Impacts of Ramayan on Hindu-Muslim Conflict

	Hindu-Muslim Conflict Outcomes				
	(1)	(2)	(3)	(4)	(5)
Panel A. Any Conflict (Full Sample from 1979 to 2000)					
Ramayan × *Post*	0.251**	0.209*	0.203	0.200	0.213
	(0.123)	(0.123)	(0.124)	(0.137)	(0.138)
Dep. var. mean	0.557	0.557	0.557	0.557	0.557
Dep. var. std. dev.	7.443	7.443	7.443	7.443	7.443
Units	4,088	4,088	4,088	4,088	4,088
Observations	89,936	89,936	89,936	89,936	89,936
Panel B. Any Conflict (Short Sample from 1979 to 1992)					
Ramayan × *Post*	0.755***	0.699***	0.679***	0.668***	0.663***
	(0.179)	(0.187)	(0.186)	(0.205)	(0.213)
Dep. var. mean	0.557	0.557	0.557	0.557	0.557
Dep. var. std. dev.	7.443	7.443	7.443	7.443	7.443
Units	4,088	4,088	4,088	4,088	4,088
Observations	57,232	57,232	57,232	57,232	57,232
Unit fixed effects	Yes	Yes	Yes	Yes	Yes
State-year fixed effects	Yes	Yes	Yes	Yes	Yes
Freespace controls	Yes	Yes	Yes	Yes	Yes
Census controls	No	Yes	Yes	Yes	Yes
Population controls	No	No	Yes	Yes	Yes
Geographic controls	No	No	No	Yes	Yes
1980 TV controls	No	No	No	No	Yes

Notes: This table includes coefficient estimates from differences-in-differences regressions at the assembly constituency level related to Hindu-Muslim conflict outcomes. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. *Any Conflict* is a binary variable equal to 1 if there was any Hindu-Muslim conflict and 0 otherwise. All measures of TV signal strength are population-weighted averages and normalized. *Ramayan* is the actual TV signal strength at the beginning of 1987. *Post* is a binary variable equal to 1 if the year is 1987 or later. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors in parentheses are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. 1%, 5% and 10% statistical significance are indicated with ***, **, and * respectively.

Table 6

Impacts of Ramayan on State Assembly BJP Victory

	BJP Victory				
	(1)	(2)	(3)	(4)	(5)
Ramayan × *Post*	2.407**	2.451**	2.707***	3.314***	3.283***
	(1.038)	(0.960)	(0.952)	(1.104)	(1.109)
Dep. var. mean	13.882	13.882	13.882	13.882	13.882
Dep. var. std. dev.	34.576	34.576	34.576	34.576	34.576
Units	4,040	4,040	4,040	4,040	4,040
Observations	19,414	19,414	19,414	19,414	19,414
Unit fixed effects	Yes	Yes	Yes	Yes	Yes
State-year fixed effects	Yes	Yes	Yes	Yes	Yes
Freespace controls	Yes	Yes	Yes	Yes	Yes
Census controls	No	Yes	Yes	Yes	Yes
Population controls	No	No	Yes	Yes	Yes
Geographic controls	No	No	No	Yes	Yes
1980 TV controls	No	No	No	No	Yes

Notes: This table includes coefficient estimates from differences-in-differences regressions at the assembly constituency level for state assembly electoral outcomes. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. *Victory* is a binary variable equal to 1 if the BJP party wins the election and 0 otherwise (assigned a value of 0 if the party did not field a candidate). All measures of TV signal strength are population-weighted averages and normalized. *Ramayan* is the actual TV signal strength at the beginning of 1987. *Post* is a binary variable equal to 1 if the year is 1987 or later. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors in parentheses are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. 1%, 5% and 10% statistical significance are indicated with ***, **, and * respectively.

Table 7

Impacts of Television Alongside Ramayan Exposure

	Percentage of Hindu Male Newborns Given Top 10 Names (1)	Vegetarianism (Hindu Lower Caste Sample) (2)	Any Hindu-Muslim Conflict (Short Sample) (3)	BJP State Assembly Unconditional Victory (4)
$Ramayan \times Post$	0.245***	8.196	0.581**	3.498***
	(0.061)	(5.383)	(0.282)	(1.309)
$TVSignal_t$	0.158***	32.203	-0.011	-0.511
	(0.054)	(21.098)	(0.188)	(1.330)
$TVSignal_{t-1}$	-0.032	-25.196	0.494*	-0.005
	(0.068)	(27.533)	(0.270)	(2.191)
$TVSignal_{t-2}$	-0.112*	1.273	-0.310	-1.490
	(0.063)	(21.000)	(0.255)	(1.953)
Dep. var. mean	4.445	40.207	0.557	13.882
Dep. var. std. dev.	3.104	49.032	7.443	34.576
Units	3,073	1,944	4,088	4,040
Observations	61,390	3,888	57,232	19,414
Unit fixed effects	Yes	Yes	Yes	Yes
State-year fixed effects	Yes	Yes	Yes	Yes
Freespace controls	Yes	Yes	Yes	Yes
Census controls	Yes	Yes	Yes	Yes
Population controls	Yes	Yes	Yes	Yes
Geographic controls	Yes	Yes	Yes	Yes
1980 TV controls	Yes	Yes	Yes	Yes

Notes: This table includes coefficient estimates from differences-in-differences regressions augmented with contemporaneous TV signal variables. Columns (1), (3) and (4) are at the assembly constituency level, while column (2) is at the household level. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. All measures of TV signal strength are population-weighted averages and normalized. *Ramayan* is the actual TV signal strength at the beginning of 1987. *Post* is a binary variable equal to 1 if the year is 1987 or later. We augment our main specification with contemporaneous, one-year lagged and two-year lagged actual TV signal strength at time t: $TVSignal_{i,t}$, $TVSignal_{i,t-1}$ and $TVSignal_{i,t} - 2$ respectively. We also include contemporaneous, one-year lagged and two-year lagged freespace TV signal strength. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. For vegetarianism outcomes, there is no data on geographic area. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors in parentheses are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. 1%, 5% and 10% statistical significance are indicated with ***, **, and * respectively.

Table 8

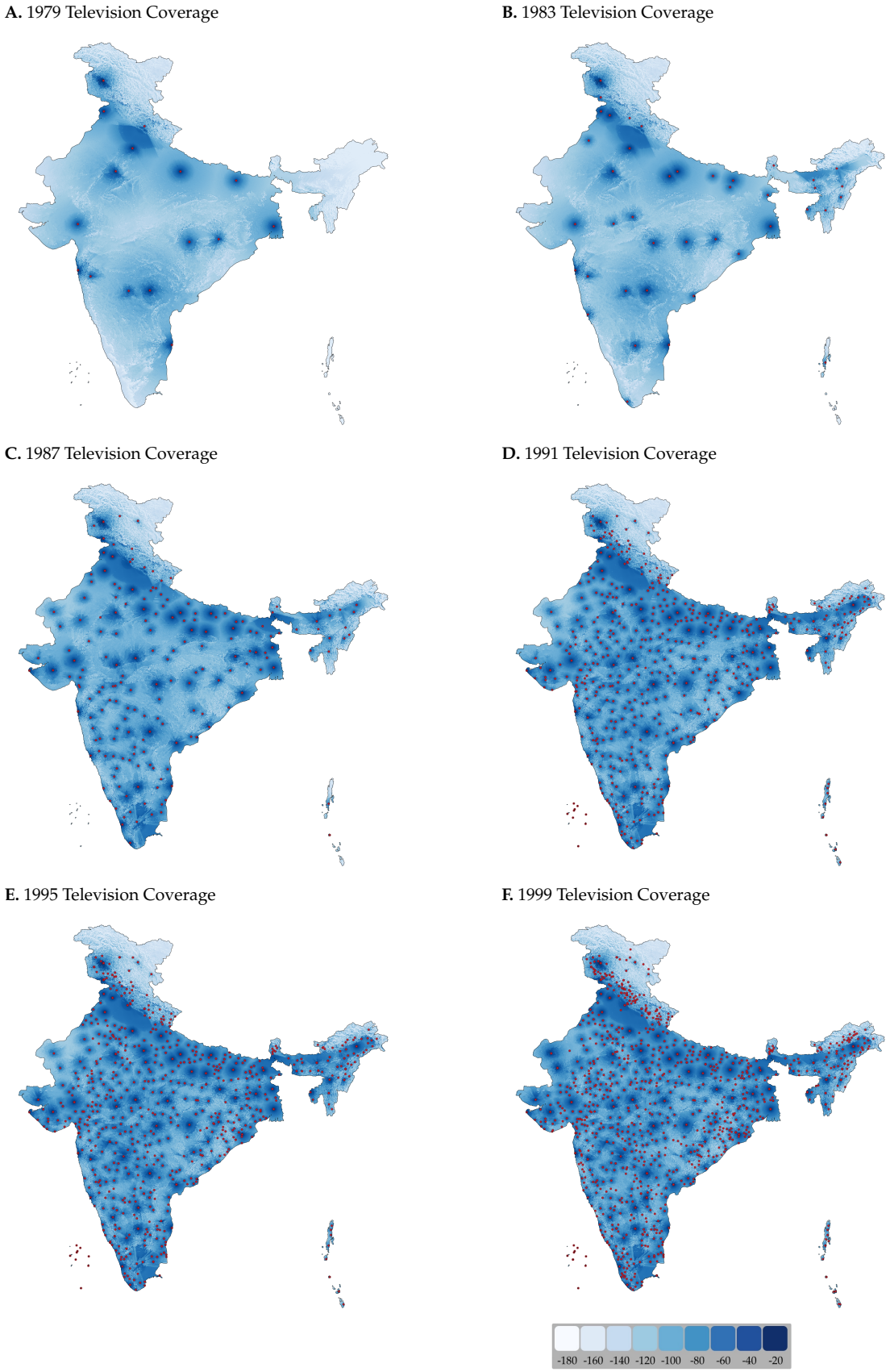
Impacts of Ramayan and the Ram Rath Yatra Route

	Percentage of Hindu Male Newborns Given Top 10 Names (1)	Vegetarianism (Hindu Lower Caste Sample) (2)	Any Hindu-Muslim Conflict (Short Sample) (3)	BJP State Assembly Unconditional Victory (4)
Ramayan × *Post*-1987	0.226***	13.407***	0.671***	3.339***
	(0.054)	(4.653)	(0.213)	(1.108)
YatraDistance × *Post*-1990	0.057*	11.773**	-0.342*	-1.145
	(0.030)	(4.624)	(0.195)	(0.762)
Dep. var. mean	4.445	40.207	0.557	13.882
Dep. var. std. dev.	3.104	49.032	7.443	34.576
Units	3,073	1,944	4,088	4,040
Observations	61,390	3,888	57,232	19,414
Unit fixed effects	Yes	Yes	Yes	Yes
State-year fixed effects	Yes	Yes	Yes	Yes
Freespace controls	Yes	Yes	Yes	Yes
Census controls	Yes	Yes	Yes	Yes
Population controls	Yes	Yes	Yes	Yes
Geographic controls	Yes	Yes	Yes	Yes
1980 TV controls	Yes	Yes	Yes	Yes

Notes: This table includes coefficient estimates from differences-in-differences regressions augmented with additional variables related to the Ram Rath Yatra route. Columns (1), (3) and (4) are at the assembly constituency level, while column (2) is at the household level. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. All measures of TV signal strength are population-weighted averages and normalized. *Ramayan* is the actual TV signal strength at the beginning of 1987. *YatraDistance* is the logarithmic distance from the unit centroid to the Ram Rath Yatra route, which occurred in 1990. *Post-1987* and *Post-1990* are binary variables equal to 1 if the year is 1987 or later and 1990 or later respectively. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. For vegetarianism outcomes, there is no data on geographic area. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors in parentheses are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. 1%, 5% and 10% statistical significance are indicated with ***, **, and * respectively.

Figure 1

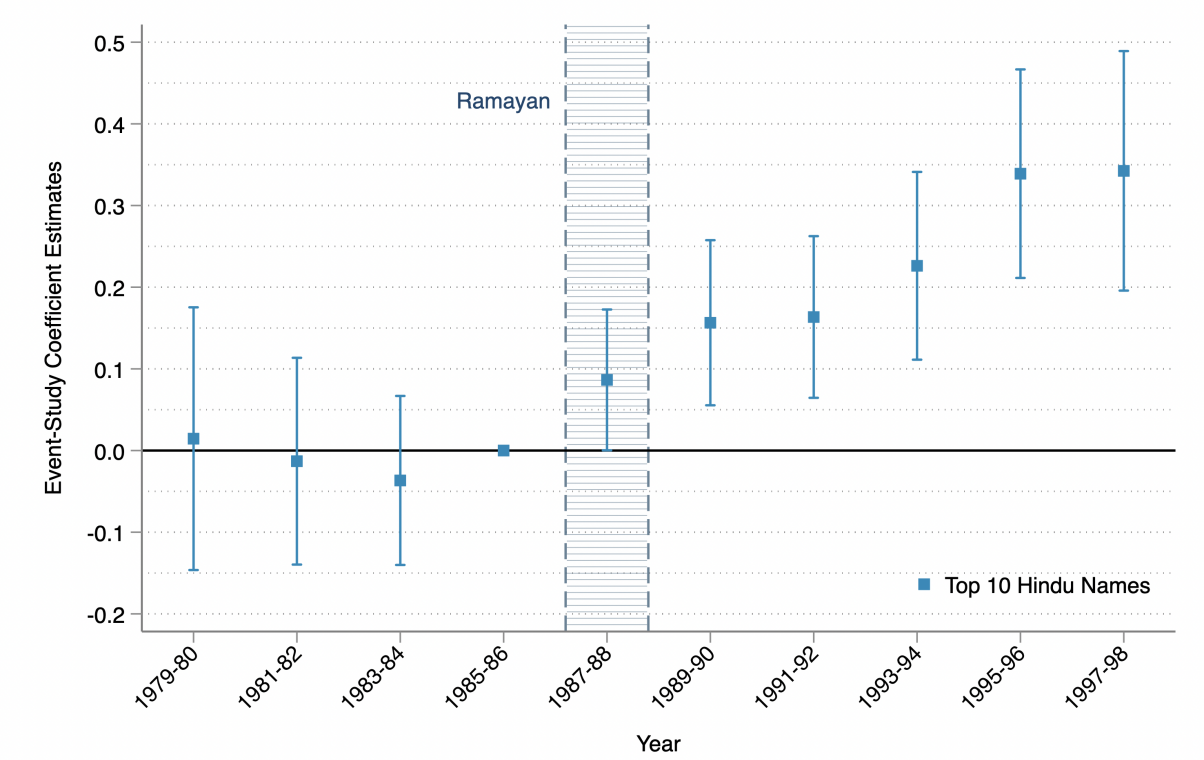
Television Coverage Expansion: Actual Television Signal Strength in Four-Year Intervals, 1979-1999



Notes: This figure displays actual television signal strength in dBm at the 1 by 1-kilometer grid for India for the start of 1979, 1983, 1987, 1991, 1995 and 1999 for each panel respectively. The actual television signal strength in dBm is estimated using an irregular terrain model. Darker shades of blue represent greater signal strength. Transmitter locations are depicted with red circles.

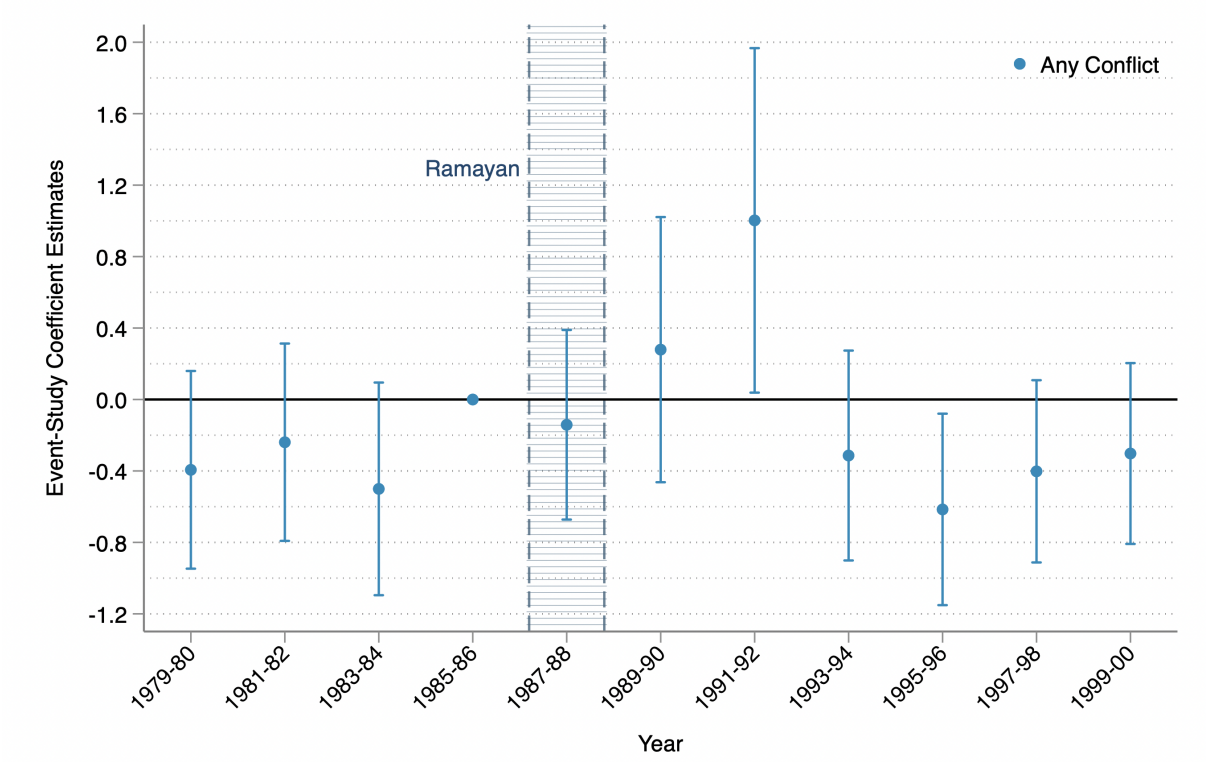
Figure 2

Impacts of Ramayan on the Percentage of Hindu Male Newborns Given Top 10 Names



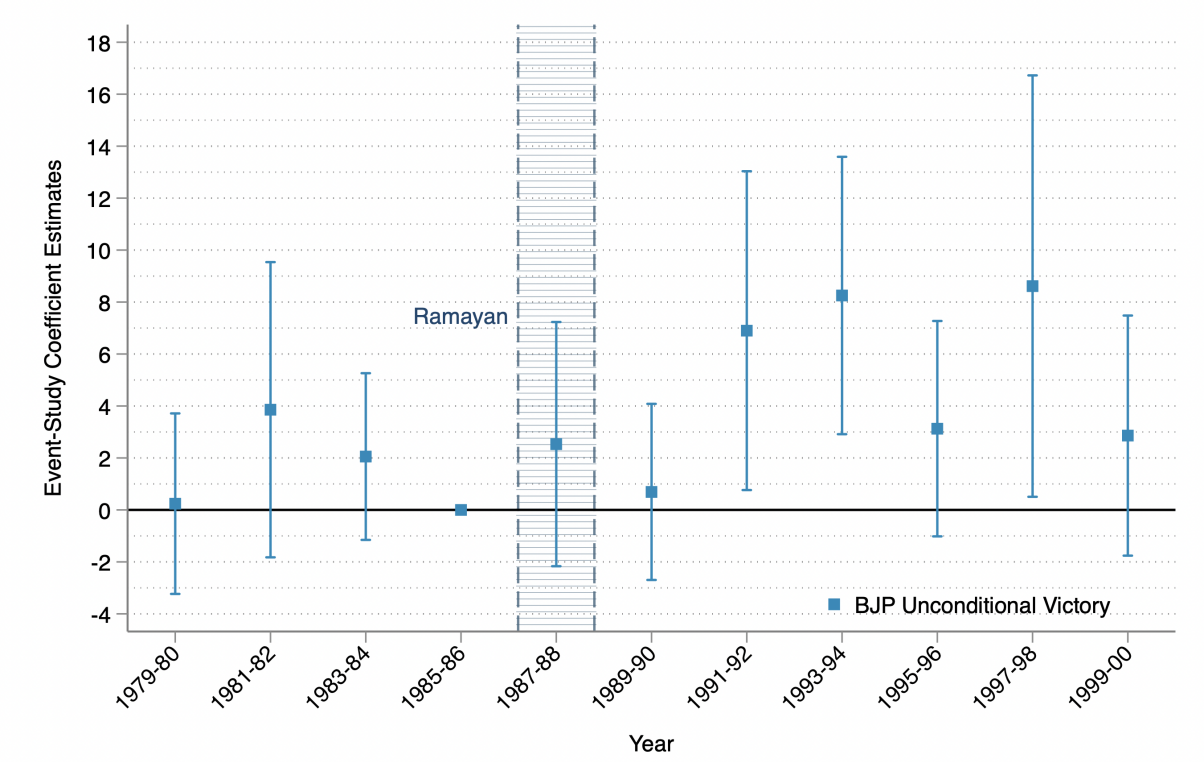
Notes: This figure plots the coefficients from an event-study regression at the assembly constituency level related to naming patterns of Hindu male newborns. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. An individual is determined to be Hindu if their father's full name is classified to be most likely a Hindu name. The dependent variable is the percentage of Hindu male newborns given *Top 10 Hindu Names*. A top Hindu name is determined at the state-level (to account for cultural differences across states) by ranking all first names of Hindu males born between 1900 and 1970, prior to our study period. All measures of TV signal strength are population-weighted averages and normalized. The treatment variable is *Ramayan*, actual TV signal strength at the beginning of 1987. The sample is annual but the event-study coefficient estimates interact the treatment variable with two-year windows, where the 1985-1986 period is omitted. Constituency and state-year fixed effects are included. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. Confidence intervals are presented at the 95% level.

Figure 3
Impacts of Ramayan on Hindu-Muslim Conflict



Notes: This figure plots the coefficients from an event-study regression at the assembly constituency level related to Hindu-Muslim conflict outcomes. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. The dependent variable is *Any Conflict*, a binary variable equal to 1 if there was any Hindu-Muslim conflict and 0 otherwise. All measures of TV signal strength are population-weighted averages and normalized. The treatment variable is *Ramayan*, the actual TV signal strength at the beginning of 1987. The sample is annual but the event-study coefficient estimates interact the treatment variable with two-year windows, where the 1985-1986 period is omitted. Constituency and state-year fixed effects are included. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. Confidence intervals are presented at the 95% level.

Figure 4
Impacts of Ramayan on BJP State Assembly Unconditional Victory



Notes: This figure plots the coefficients from an event-study regression at the assembly constituency level for state assembly electoral outcomes for the Bharatiya Janata Party (BJP) party. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. The dependent variable is *BJP Unconditional Victory*, a binary variable equal to 1 if the BJP wins the election and 0 otherwise. These measures are "unconditional" such that the BJP measures are assigned a value of 0 for election that the BJP did not field a candidate. All measures of TV signal strength are population-weighted averages and normalized. The treatment variable is *Ramayan*, the actual TV signal strength at the beginning of 1987. The sample is annual but the event-study coefficient estimates interact the treatment variable with two-year windows, where the 1985-1986 period is omitted. Constituency and state-year fixed effects are included. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. Confidence intervals are presented at the 95% level.

A Appendix Tables and Figures

Table A1
List of State-Level Top Ranked Names of Hindu Males

	Rank of Name				
	1 and 2 (1)	3 and 4 (2)	5 and 6 (3)	7 and 8 (4)	9 and 10 (5)
Andhra Pradesh	Venkata	Apparao	Satyanarayana	Nagaswararao	Enkateshwarlu
	Sathyanarayan	Subbarao	Chinna	Ramarao	Venkateshwararao
Arunachal Pradesh	Wangsu	Singh	Pansa	Kumar	Wangpan
	Bdr	Wangsa	Das	Tsering	Prasad
Assam	Aabdul	Prodeep	Onil	Babul	Khogen
	Gopal	Dileep	Aah	Xubhax	Xunil
Bihar	Raam	Suresh	Mahendra	Vijay	Krishna
	Rajendra	Shiv	Ashok	Surendra	Shankar
Goa	Prakash	Chandrakant	Ashok	Anand	Jose
	Suresh	Narayan	Krishna	Ramesh	Gurudas
Gujarat	Rameshbhai	Ramanbhai	Bhikhabhai	Kantibhai	Maganbhai
	Babubhai	Mohanbhai	Bharatbhai	Govindbhai	Somabhai
Haryana	Raam	Krishna	Ome	Rajendra	Jagdish
	Ramesh	Raaj	Jaya	Suresh	Subhash
Himachal Pradesh	Raam	Prem	Jagdish	Rotion	Dharm
	Ramesh	Amar	Prakaash	Ome	Krishna
Karnataka	Basappa	Siddappa	Yellappa	Basavaraja	Bhimappa
	Mallappa	Hanamanta	Lakshmana	Maruti	Shivappa
Madhya Pradesh	Raam	Jagdish	Ashok	Mangilal	Mohan
	Ramesh	Babulal	Suresh	Rajendra	Narayan
Maharashtra	Ashoke	Ramesh	Prakash	Shivaji	Pandurang
	Suresh	Lakshman	Shankar	Narayan	Sanjay
Manipur	Tomba	Kumar	Chaoba	Ibohal	Biren
	Ibomcha	Rajen	Haokip	Ibotombi	Yaima
Meghalaya	Ram	Dilip	Gopal	Francis	Philip
	John	Abdul	Krishna	Sunil	Suresh
Mizoram	Malsawma	Lalthlamuana	Lalhmingliana	Laltanpuia	Vanlalruata
	Lalrinawma	Lalhmangaiha	Lalhmachhuana	Lalhmingthanga	Lalnunmawia
Orissa	Bhagabana	Suresh	Gobinda	Sudarshan	Gopala
	Bijay	Ramchandra	Sharat	Narajna	Dujyoudhana
Punjab	Raam	Mahinder	Sukhdev	Joginder	Balveer
	Darshan	Baldev	Balwinder	Sarinder	Avtaar
Rajasthan	Raam	Mohan	Ramesh	Babulal	Kailash
	Jagdish	Shankar	Gopal	Omprakash	Bhanwar
Tamil Nadu	Aarumugam	Subramani	Murugan	Subramanian	Ramasamy
	Rajendran	Ganesan	Murugesan	Manii	Perumaal
Tripura	Narayan	Pradeep	Dileep	Suneel	Ravinder
	Swapan	Ranjit	Onil	Roton	Gopal
Uttar Pradesh	Raam	Suresh	Ashok	Jagdish	Surendra
	Rajendra	Ramesh	Shiv	Vijay	Moe
West Bengal	Swapan	Ashoke	Shankar	Dileep	Biswanath
	Topon	Gopal	Sukumar	Narayan	Subhash

Notes: This table includes the list of top-ranked names of Hindu males born from 1900 to 1970. An individual is determined to be Hindu if their father's full name is classified to be most likely a Hindu name. For each state, if names are not recorded with the Latin alphabet, all names are first transliterated into the Latin alphabet. Depending on the naming conventions of each state, we identify each individual's first name. We then rank all of the names in a state for the period of relevance. In total, approximately the names of 100 million Hindu males born between 1900 and 1970 were used to determine these top names.

Table A2

Impacts of Ramayan on the Percentage of Hindu Male Newborns Given Top 3 and 5 Names

	Percentage of Hindu Male Newborns Given Top Names				
	(1)	(2)	(3)	(4)	(5)
Panel A. Percentage of Newborns Given Top 3 Names					
Ramayan × *Post*	0.053*	0.068**	0.069**	0.099***	0.093***
	(0.030)	(0.029)	(0.029)	(0.032)	(0.031)
Dep. var. mean	1.593	1.593	1.593	1.593	1.593
Dep. var. std. dev.	1.528	1.528	1.528	1.528	1.528
Units	3,073	3,073	3,073	3,073	3,073
Observations	61,390	61,390	61,390	61,390	61,390
Panel B. Percentage of Newborns Given Top 5 Names					
Ramayan × *Post*	0.141***	0.136***	0.139***	0.192***	0.174***
	(0.037)	(0.035)	(0.036)	(0.039)	(0.038)
Dep. var. mean	2.442	2.442	2.442	2.442	2.442
Dep. var. std. dev.	1.974	1.974	1.974	1.974	1.974
Units	3,073	3,073	3,073	3,073	3,073
Observations	61,390	61,390	61,390	61,390	61,390
Unit fixed effects	Yes	Yes	Yes	Yes	Yes
State-year fixed effects	Yes	Yes	Yes	Yes	Yes
Freespace controls	Yes	Yes	Yes	Yes	Yes
Census controls	No	Yes	Yes	Yes	Yes
Population controls	No	No	Yes	Yes	Yes
Geographic controls	No	No	No	Yes	Yes
1980 TV controls	No	No	No	No	Yes

Notes: This table includes coefficient estimates from differences-in-differences regressions at the assembly constituency level related to naming patterns of Hindu male newborns. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. An individual is determined to be Hindu if their father's full name is classified to be most likely a Hindu name. A top Hindu name is determined at the state-level (to account for cultural differences across states) by ranking all first names of Hindu males born between 1900 and 1970, prior to our study period. All measures of TV signal strength are population-weighted averages and normalized. *Ramayan* is the actual TV signal strength at the beginning of 1987. *Post* is a binary variable equal to 1 if the year is 1987 or later. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors in parentheses are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. 1%, 5% and 10% statistical significance are indicated with ***, **, and * respectively.

Table A3

Impacts of Ramayan on the Percentage of Hindu Male Newborns Given Ramayan Names

	Percentage of Hindu Male Newborns Given Ramayan Names				
	(1)	(2)	(3)	(4)	(5)
Panel A. Percentage of Hindu Male Newborns Given the Name Rama					
Ramayan × *Post*	-0.022	-0.019	-0.016	0.010	-0.007
	(0.018)	(0.016)	(0.016)	(0.017)	(0.016)
Dep. var. mean	0.475	0.475	0.475	0.475	0.475
Dep. var. std. dev.	0.822	0.822	0.822	0.822	0.822
Units	3,073	3,073	3,073	3,073	3,073
Observations	61,390	61,390	61,390	61,390	61,390
Panel B. Percentage of Hindu Male Newborns Given Names of Primary Characters from Ramayan					
Ramayan × *Post*	0.005	0.003	0.005	0.033*	0.017
	(0.019)	(0.018)	(0.018)	(0.019)	(0.018)
Dep. var. mean	0.710	0.710	0.710	0.710	0.710
Dep. var. std. dev.	0.932	0.932	0.932	0.932	0.932
Units	3,073	3,073	3,073	3,073	3,073
Observations	61,390	61,390	61,390	61,390	61,390
Panel C. Percentage of Hindu Male Newborns Names of Primary Actors from Ramayan					
Ramayan × *Post*	-0.049***	-0.055***	-0.053***	-0.005	0.009
	(0.019)	(0.018)	(0.018)	(0.019)	(0.019)
Dep. var. mean	0.948	0.948	0.948	0.948	0.948
Dep. var. std. dev.	0.982	0.982	0.982	0.982	0.982
Units	3,073	3,073	3,073	3,073	3,073
Observations	61,390	61,390	61,390	61,390	61,390
Unit fixed effects	Yes	Yes	Yes	Yes	Yes
State-year fixed effects	Yes	Yes	Yes	Yes	Yes
Freespace controls	Yes	Yes	Yes	Yes	Yes
Census controls	No	Yes	Yes	Yes	Yes
Population controls	No	No	Yes	Yes	Yes
Geographic controls	No	No	No	Yes	Yes
1980 TV controls	No	No	No	No	Yes

Notes: This table includes coefficient estimates from differences-in-differences regressions at the assembly constituency level related to naming patterns of Hindu male newborns. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. An individual is determined to be Hindu if their father's full name is classified to be most likely a Hindu name. To account for spelling differences, the name *Rama* includes the following additional variants: *Ram*, *Raam* and *Raama*. The primary character names from Ramayan, with spelling variants, include: *Rama, Ram, Raam, Raama, Laxman, Lakshman, Lakshmana, Lakshmanna, Laxmana, Laxmanan, Sita, Sitham, Seetaa, Seetha, Hanuman* and *Maruti*. The primary actor names from Ramayan, with spelling variants, include *Arun, Arvind, Sunil, Suneel, Suneela* and *Dara*. All measures of TV signal strength are population-weighted averages and normalized. *Ramayan* is the actual TV signal strength at the beginning of 1987. *Post* is a binary variable equal to 1 if the year is 1987 or later. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors in parentheses are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. 1%, 5% and 10% statistical significance are indicated with ***, **, and * respectively.

Table A4

Impacts of Ramayan on Additional Hindu-Muslim Conflict Outcomes

	Hindu-Muslim Conflict Outcomes				
	(1)	(2)	(3)	(4)	(5)
Panel A. Any Deadly Conflict (Full Sample from 1979 to 2000)					
Ramayan × *Post*	0.231**	0.172	0.166	0.150	0.131
	(0.109)	(0.106)	(0.107)	(0.117)	(0.119)
Dep. var. mean	0.399	0.399	0.399	0.399	0.399
Dep. var. std. dev.	6.305	6.305	6.305	6.305	6.305
Units	4,088	4,088	4,088	4,088	4,088
Observations	89,936	89,936	89,936	89,936	89,936
Panel B. Any Violent Conflict (Full Sample from 1979 to 2000)					
Ramayan × *Post*	0.253**	0.185	0.177	0.166	0.174
	(0.118)	(0.118)	(0.119)	(0.131)	(0.131)
Dep. var. mean	0.478	0.478	0.478	0.478	0.478
Dep. var. std. dev.	6.898	6.898	6.898	6.898	6.898
Units	4,088	4,088	4,088	4,088	4,088
Observations	89,936	89,936	89,936	89,936	89,936
Panel C. Any Deadly Conflict (Short Sample from 1979 to 1992)					
Ramayan × *Post*	0.621***	0.551***	0.535***	0.503***	0.454**
	(0.162)	(0.166)	(0.165)	(0.179)	(0.185)
Dep. var. mean	0.399	0.399	0.399	0.399	0.399
Dep. var. std. dev.	6.305	6.305	6.305	6.305	6.305
Units	4,088	4,088	4,088	4,088	4,088
Observations	57,232	57,232	57,232	57,232	57,232
Panel D. Any Violent Conflict (Short Sample from 1979 to 1992)					
Ramayan × *Post*	0.704***	0.614***	0.593***	0.572***	0.549***
	(0.174)	(0.179)	(0.179)	(0.195)	(0.201)
Dep. var. mean	0.478	0.478	0.478	0.478	0.478
Dep. var. std. dev.	6.898	6.898	6.898	6.898	6.898
Units	4,088	4,088	4,088	4,088	4,088
Observations	57,232	57,232	57,232	57,232	57,232
Unit fixed effects	Yes	Yes	Yes	Yes	Yes
State-year fixed effects	Yes	Yes	Yes	Yes	Yes
Freespace controls	Yes	Yes	Yes	Yes	Yes
Census controls	No	Yes	Yes	Yes	Yes
Population controls	No	No	Yes	Yes	Yes
Geographic controls	No	No	No	Yes	Yes
1980 TV controls	No	No	No	No	Yes

Notes: This table includes coefficient estimates from differences-in-differences regressions at the assembly constituency level related to Hindu-Muslim conflict outcomes. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. *Any Violent Conflict* is a binary variable equal to 1 if there was any Hindu-Muslim conflict with at least one registered death or injury and 0 otherwise. *Any Deadly Conflict* is a binary variable equal to 1 if there was any Hindu-Muslim conflict with at least one registered death and 0 otherwise. All measures of TV signal strength are population-weighted averages and normalized. *Ramayan* is the actual TV signal strength at the beginning of 1987. *Post* is a binary variable equal to 1 if the year is 1987 or later. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors in parentheses are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. 1%, 5% and 10% statistical significance are indicated with ***, **, and * respectively.

Table A5

Impacts of Ramayan on Additional State Assembly Electoral Outcomes

	State Assembly Electoral Outcomes				
	(1)	(2)	(3)	(4)	(5)
Panel A. BJP Vote Share					
Ramayan × Post	0.218	0.536	0.603	0.690*	0.508
	(0.386)	(0.383)	(0.381)	(0.419)	(0.423)
Dep. var. mean	13.542	13.542	13.542	13.542	13.542
Dep. var. std. dev.	17.764	17.764	17.764	17.764	17.764
Units	4,040	4,040	4,040	4,040	4,040
Observations	19,414	19,414	19,414	19,414	19,414
Panel B. BJP Fields a Candidate					
Ramayan × Post	-2.805**	-2.861**	-2.772**	-3.328***	-3.143**
	(1.150)	(1.179)	(1.185)	(1.288)	(1.289)
Dep. var. mean	58.957	58.957	58.957	58.957	58.957
Dep. var. std. dev.	49.192	49.192	49.192	49.192	49.192
Units	4,040	4,040	4,040	4,040	4,040
Observations	19,414	19,414	19,414	19,414	19,414
Panel C. BJP Conditional Victory					
Ramayan × Post	7.140***	6.498***	6.744***	8.039***	7.458***
	(1.934)	(1.856)	(1.852)	(2.044)	(2.056)
Dep. var. mean	23.545	23.545	23.545	23.545	23.545
Dep. var. std. dev.	42.430	42.430	42.430	42.430	42.430
Units	3,601	3,601	3,601	3,601	3,601
Observations	11,446	11,446	11,446	11,446	11,446
Panel D. BJP Conditional Vote Share					
Ramayan × Post	1.512**	1.814***	1.838***	1.932***	1.260**
	(0.631)	(0.605)	(0.604)	(0.643)	(0.642)
Dep. var. mean	22.970	22.970	22.970	22.970	22.970
Dep. var. std. dev.	17.853	17.853	17.853	17.853	17.853
Units	3,601	3,601	3,601	3,601	3,601
Observations	11,446	11,446	11,446	11,446	11,446
Panel E. INC Victory					
Ramayan × Post	-2.289	-2.346	-2.291	-3.320**	-3.380**
	(1.448)	(1.485)	(1.481)	(1.639)	(1.647)
Dep. var. mean	36.798	36.798	36.798	36.798	36.798
Dep. var. std. dev.	48.227	48.227	48.227	48.227	48.227
Units	4,040	4,040	4,040	4,040	4,040
Observations	19,414	19,414	19,414	19,414	19,414
Unit fixed effects	Yes	Yes	Yes	Yes	Yes
State-year fixed effects	Yes	Yes	Yes	Yes	Yes
Freespace controls	Yes	Yes	Yes	Yes	Yes
Census controls	No	Yes	Yes	Yes	Yes
Population controls	No	No	Yes	Yes	Yes
Geographic controls	No	No	No	Yes	Yes
1980 TV controls	No	No	No	No	Yes

Notes: This table includes coefficient estimates from differences-in-differences regressions at the assembly constituency level for state assembly electoral outcomes. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. *Fields a Candidate* is a binary variable equal to 1 if the party fielded a candidate in the election and 0 otherwise. *Victory* is a binary variable equal to 1 if the party wins the election and 0 otherwise. *Vote Share* is the proportion of votes in the constituency that the party received, ranging from 0 to 1. Regressions for "conditional" outcomes exclude constituencies in which the party did not field a candidate. All measures of TV signal strength are population-weighted averages and normalized. *Ramayan* is the actual TV signal strength at the beginning of 1987. *Post* is a binary variable equal to 1 if the year is 1987 or later. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors in parentheses are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. 1%, 5% and 10% statistical significance are indicated with ***, **, and * respectively.

Table A6

Impacts of Ramayan on the Percentage of Hindu Male Newborns Given Top Names at the Pincode Level

	Percentage of Hindu Male Newborns Given Top Names				
	(1)	(2)	(3)	(4)	(5)
Panel A. Percentage of Newborns Given Top 3 Names					
Ramayan × *Post*	0.047**	0.047**	0.047**	0.067***	0.061***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Dep. var. mean	1.547	1.547	1.547	1.547	1.547
Dep. var. std. dev.	1.897	1.897	1.897	1.897	1.897
Units	13,754	13,754	13,754	13,754	13,754
Observations	273,593	273,593	273,593	273,593	273,593
Panel B. Percentage of Newborns Given Top 5 Names					
Ramayan × *Post*	0.153***	0.140***	0.140***	0.175***	0.160***
	(0.027)	(0.026)	(0.026)	(0.026)	(0.026)
Dep. var. mean	2.445	2.445	2.445	2.445	2.445
Dep. var. std. dev.	2.451	2.451	2.451	2.451	2.451
Units	13,754	13,754	13,754	13,754	13,754
Observations	273,593	273,593	273,593	273,593	273,593
Panel C. Percentage of Newborns Given Top 10 Names					
Ramayan × *Post*	0.173***	0.170***	0.169***	0.189***	0.171***
	(0.035)	(0.034)	(0.034)	(0.034)	(0.034)
Dep. var. mean	4.364	4.364	4.364	4.364	4.364
Dep. var. std. dev.	3.626	3.626	3.626	3.626	3.626
Units	13,754	13,754	13,754	13,754	13,754
Observations	273,593	273,593	273,593	273,593	273,593
Unit fixed effects	Yes	Yes	Yes	Yes	Yes
State-year fixed effects	Yes	Yes	Yes	Yes	Yes
Freespace controls	Yes	Yes	Yes	Yes	Yes
Census controls	No	Yes	Yes	Yes	Yes
Population controls	No	No	Yes	Yes	Yes
Geographic controls	No	No	No	Yes	Yes
1980 TV controls	No	No	No	No	Yes

Notes: This table includes coefficient estimates from differences-in-differences regressions at the pincode level related to naming patterns of Hindu male newborns. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. An individual is determined to be Hindu if their father's full name is classified to be most likely a Hindu name. A top Hindu name is determined at the state-level (to account for cultural differences across states) by ranking all first names of Hindu males born between 1900 and 1970, prior to our study period. All measures of TV signal strength are population-weighted averages and normalized. *Ramayan* is the actual TV signal strength at the beginning of 1987. *Post* is a binary variable equal to 1 if the year is 1987 or later. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors in parentheses are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. 1%, 5% and 10% statistical significance are indicated with ***, **, and * respectively.

Table A7

Impacts of Ramayan on Hindu-Muslim Conflict Outcomes at the Pincode Level

	Hindu-Muslim Conflict Outcomes				
	(1)	(2)	(3)	(4)	(5)
Panel A. Any Conflict (Full Sample from 1979 to 2000)					
Ramayan × *Post*	0.045*	0.016	0.013	0.018	0.021
	(0.026)	(0.026)	(0.025)	(0.026)	(0.026)
Dep. var. mean	0.133	0.133	0.133	0.133	0.133
Dep. var. std. dev.	3.643	3.643	3.643	3.643	3.643
Units	19,423	19,423	19,423	19,423	19,423
Observations	427,306	427,306	427,306	427,306	427,306
Panel B. Any Conflict (Short Sample from 1979 to 1992)					
Ramayan × *Post*	0.151***	0.110***	0.101***	0.102***	0.103***
	(0.039)	(0.039)	(0.038)	(0.039)	(0.040)
Dep. var. mean	0.133	0.133	0.133	0.133	0.133
Dep. var. std. dev.	3.643	3.643	3.643	3.643	3.643
Units	19,423	19,423	19,423	19,423	19,423
Observations	271,922	271,922	271,922	271,922	271,922
Unit fixed effects	Yes	Yes	Yes	Yes	Yes
State-year fixed effects	Yes	Yes	Yes	Yes	Yes
Freespace controls	Yes	Yes	Yes	Yes	Yes
Census controls	No	Yes	Yes	Yes	Yes
Population controls	No	No	Yes	Yes	Yes
Geographic controls	No	No	No	Yes	Yes
1980 TV controls	No	No	No	No	Yes

Notes: This table includes coefficient estimates from differences-in-differences regressions at the pincode level related to Hindu-Muslim conflict outcomes. All dependent variables have been scaled by 100, so coefficient estimates can be interpreted in percentage points. *Any Conflict* is a binary variable equal to 1 if there was any Hindu-Muslim conflict and 0 otherwise. All measures of TV signal strength are population-weighted averages and normalized. *Ramayan* is the actual TV signal strength at the beginning of 1987. *Post* is a binary variable equal to 1 if the year is 1987 or later. All controls are interacted with year fixed effects. *Freespace controls* include the unit-level freespace TV signal strength at the beginning of 1987. *Census controls* include district-level controls from the 1981 census for: (i) total population; (ii) percentage of male population; (iii) percentage of rural population; (iv) percentage of literate population; (v) percentage of scheduled tribes population; (vi) percentage of scheduled caste population; and (vii) percentage of Hindustani speaking population. *Population controls* include the unit-level population in 1980. *Geographic controls* include unit-level controls for: (i) geographic area; (ii) average elevation; (iii) average slope; (iv) average temperature from 1971-1980; (v) average precipitation from 1971-1980; and (vi) average maximum caloric yield for 1980. *1980 TV controls* include unit-level controls for: (i) actual TV signal strength at the beginning of 1980; and (ii) freespace TV signal strength at the beginning of 1980. Conley (1999) standard errors in parentheses are calculated using a 100 km radius and accounting for autocorrelation over time for each unit. 1%, 5% and 10% statistical significance are indicated with ***, **, and * respectively.

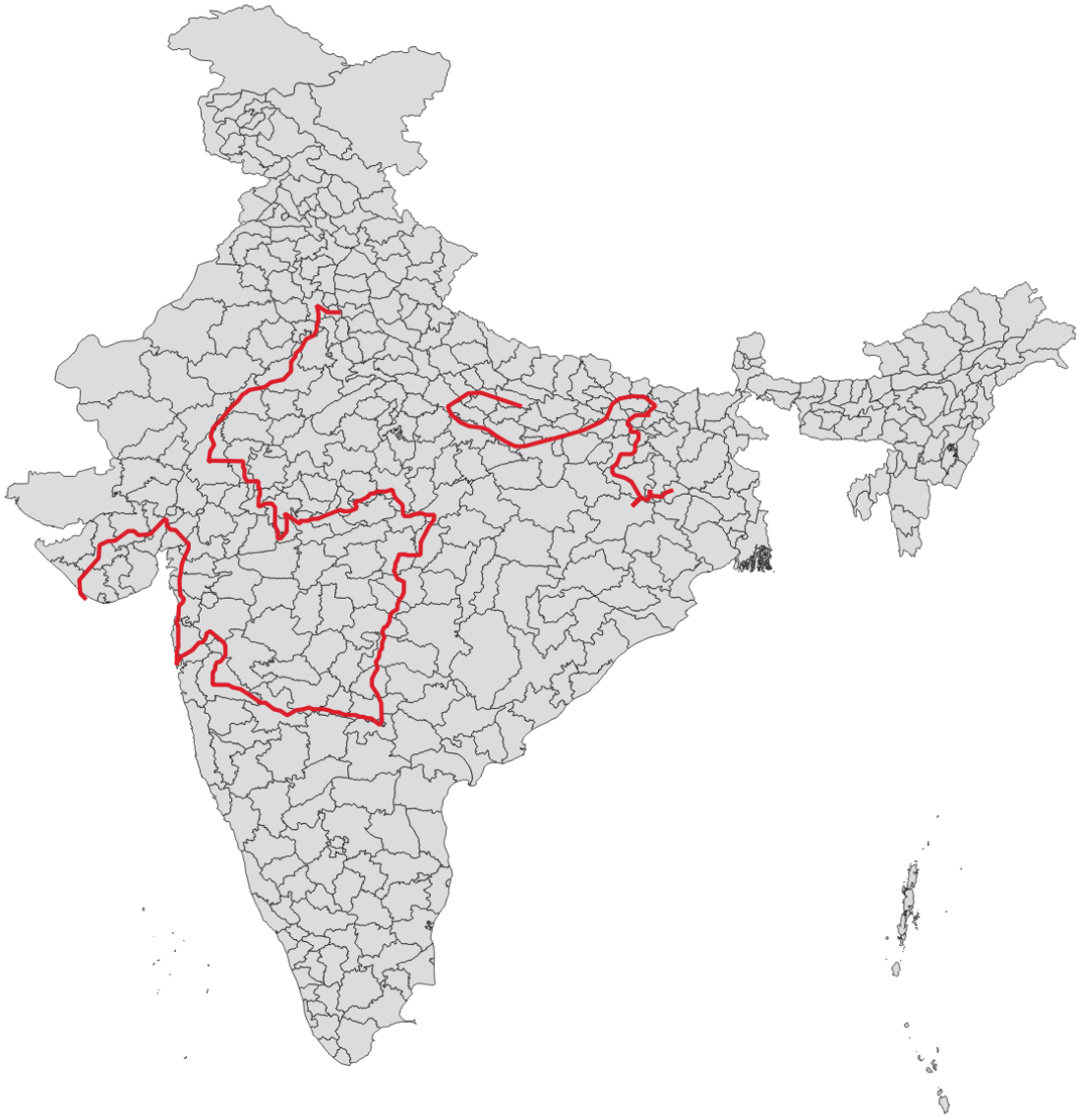
Table A8

Publication Years and Languages/Script in Names Dataset by States and Union Territories

State	Year(s)	Language(s)
Andaman & Nicobar Islands	2017	English
Andhra Pradesh	2017	Telugu, English
Arunachal Pradesh	2017	English
Assam	2018	Bengali
Bihar	2017	Hindi
Chandigarh	2018	Hindi
Dadra & Nagar Haveli	2017	Gujarati, English
Daman & Diu	2017	Gujarati, English
Goa	2018	English
Gujarat	2017	Gujarati
Haryana	2018	Hindi
Himachal Pradesh	2017	Hindi
Jammu & Kashmir	2018	Hindi, English, and Urdu
Jharkhand	2018	Hindi
Lakshadweep	2017	Malayalam
Karnataka	2018	Kannada
Kerala	2018	Malayalam, English
Madhya Pradesh	2017	Hindi
Maharashtra	2018	Marathi
Manipur	2018	Manipuri, English
Meghalaya	2018	English
Mizoram	2018	English
Nagaland	2018	English
NCT OF Delhi	2018	Hindi, English
Odisha	2018	Odia
Punjab	2018	Punjabi
Puducherry	2018	Tamil, English
Rajasthan	2014	Hindi
Sikkim	2018	English
Tamil Nadu	2018	Tamil
Telangana	2017	Telugu
Tripura	2018	Bengali
Uttar Pradesh	2018	Hindi
Uttarakhand	2017	Hindi
West Bengal	2018	Bengali

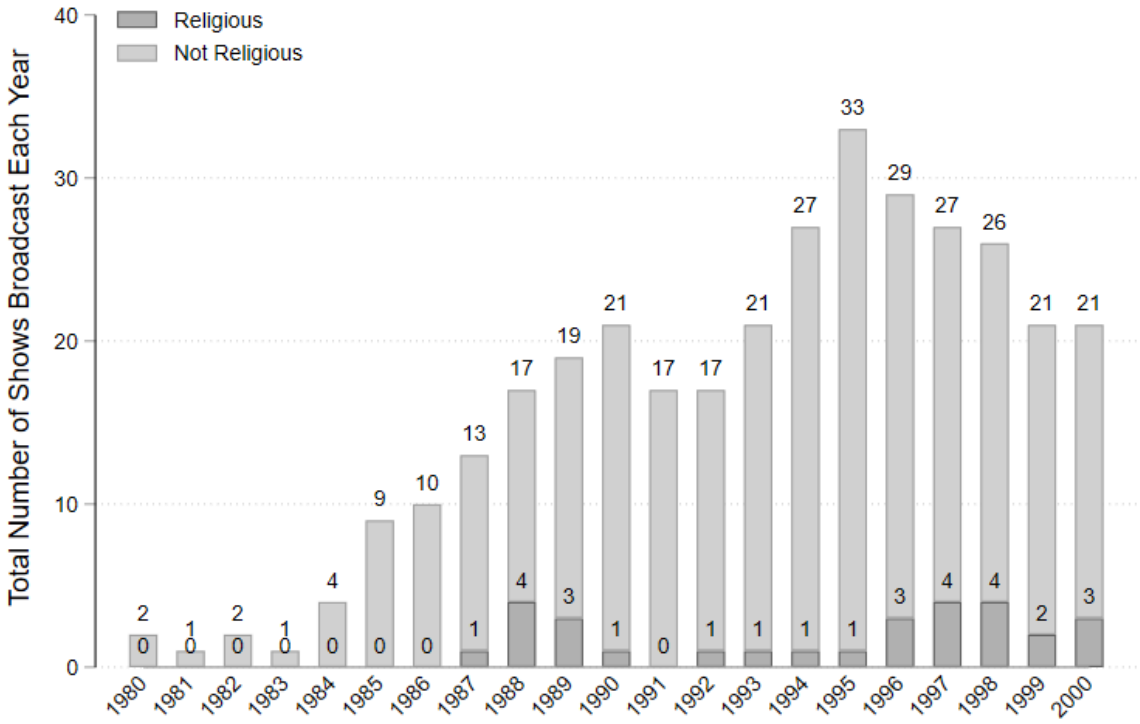
Notes: This table includes information on the years and languages for each state used in the names data.
Source: `https://github.com/in-rolls/electoral_rolls/blob/master/README.md`

Figure A1
The Route of the Ram Rath Yatra



Notes: This figure displays in red the planned route to be covered by the Ram Rath Yatra, a political and religious march that began on the 25th of September 1990, and lasted until the 30th of October 1990. The internal borders shown are districts from the 1981 census. The map is sourced from Kalra (2021).

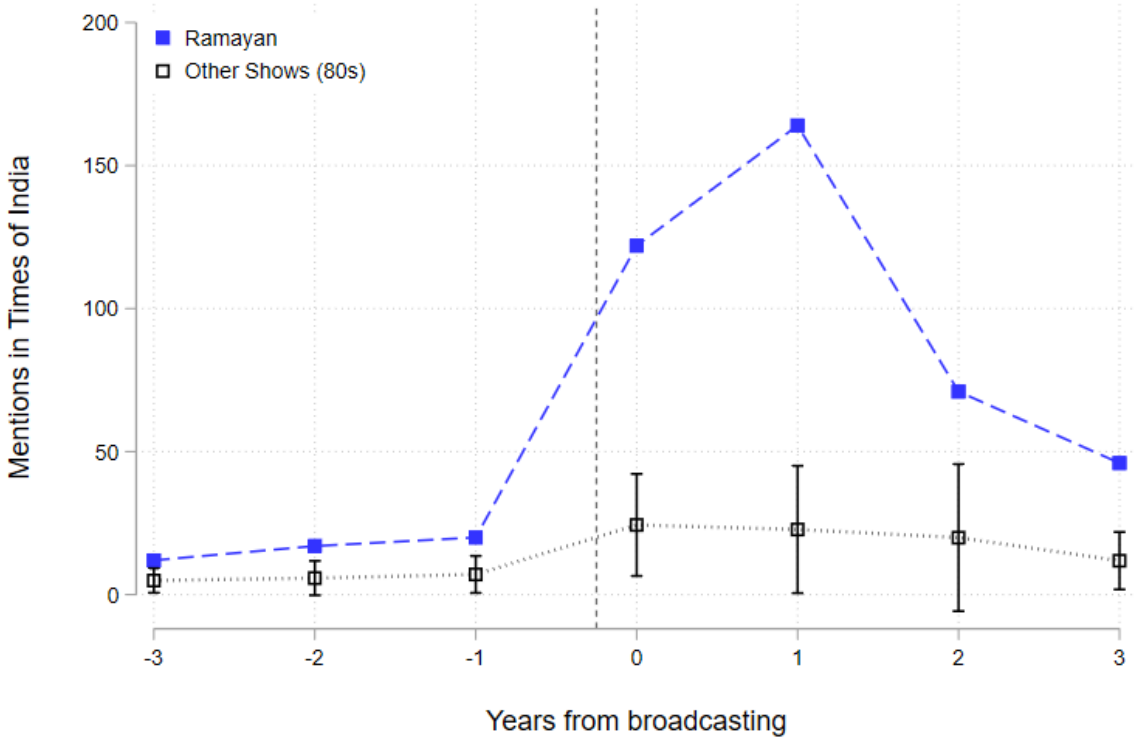
Figure A2
Television Serials Broadcast on Indian Networks Since the 1980s



Notes: This figure displays the evolution of television programming in India from 1980 to 2000, illustrating the total number of shows broadcast each year by the public television broadcaster Doordarshan. The underlying data has been retrieved from Wikipedia [1, 2 and 3]. The bars are divided into religious and non-religious categories.

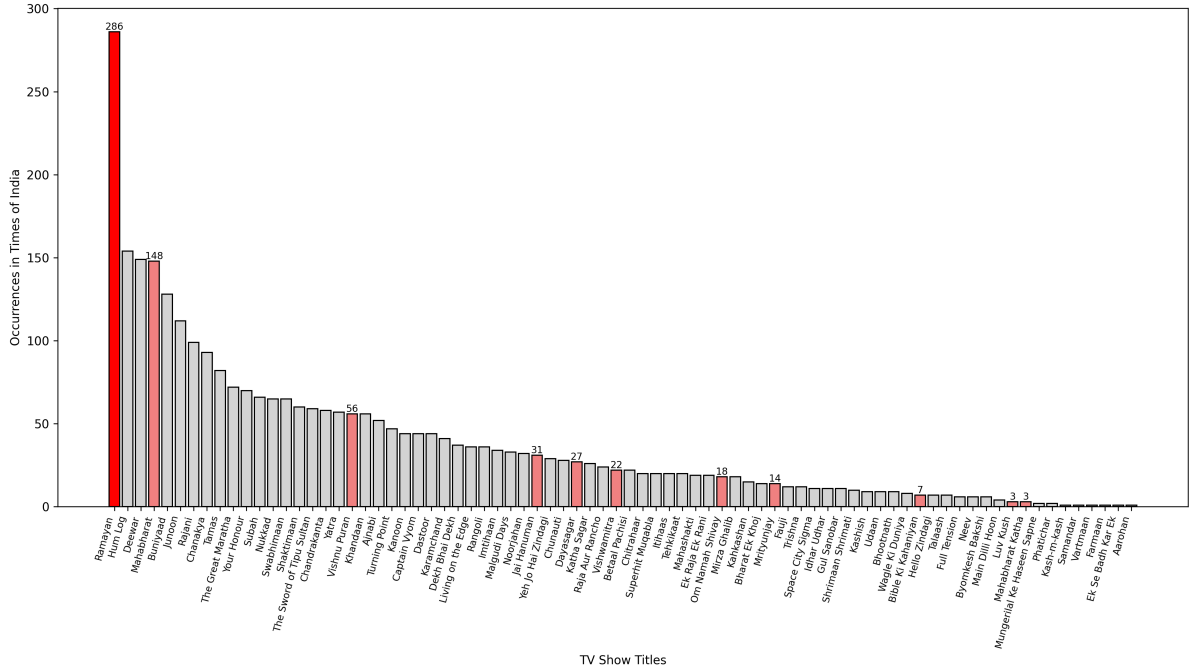
Figure A3

Mentions of Ramayan and Other 1980s Television Shows in the Times of India



Notes: This figure presents the number of mentions of Ramayan (blue line) in the Times of India (TOI) compared to the average mentions of other television shows broadcast during the 1980s (dotted line). The horizontal axis represents the number of years before and after the shows' initial broadcasts, with year zero marking their debut. The vertical axis shows the number of TOI article mentions. The error bars indicate the confidence intervals around the average mentions of other shows.

Figure A4
Mentions of Ramayan and All Television Shows in the Times of India



Notes: The figure shows the number of mentions for all television serials aired on Indian public networks between 1980 and 2000, focusing on the year of release and the subsequent year (further details are provided in Section 7.2.2). Only TV shows with at least one mention are included. Light-red bars indicate shows with a religious component.

B Data Appendix

B.1 Geographic Coordinates and Boundaries Data

We use geographic boundary data at four hierarchical levels in ascending size order: village, pincodes, assembly constituencies and districts. Spatial merges based on the centroid of each geographic boundary are used to aggregate from smaller boundaries to larger boundaries. For villages, only coordinates are included, while larger units are polygons.

- **Villages:** We use data on the coordinates of 221 villages from the Additional Rural Incomes Survey (ARIS)/Rural Economic & Demographic Survey (REDS) data.
- **Pincodes Shapefile:** This layer is derived from village boundaries using the postal-to-village mapping provided by the Department of Posts, Ministry of Communications, Government of India. The data is sourced from Postal GIS.[16] Introduced in 1972, pincodes are six-digit postal index numbers used by India Post, with each digit representing a specific geographic location. The dataset includes boundaries for a total of 19,423 pin codes.
- **Assembly Constituencies Shapefile:** We utilize the map provided by ML InfoMap (2013*c*), focusing on the pre-2008 delimitation to match our timeline. For states that underwent bifurcation after 2000, we align the current constituencies with their corresponding pre-2000 counterparts. This involves matching modern constituencies with their earlier versions in Chhattisgarh-Madhya Pradesh, Jharkhand-Bihar, and Uttarakhand-Uttar Pradesh. However, we could not establish matches for 48 constituencies in Uttarakhand with their former boundaries. Overall, we have shapefiles for 4,088 assembly constituencies.
- **Districts**: We use district boundaries that correspond to the 1981 Census of India (ML InfoMap, 2013*b*).

B.2 Outcomes Data

B.2.1 Names Data

The individual names data are obtained from Sood and Dhingra (2023). The dataset contains details on full names, gender, age and location (polling station information, pincode, constituency, district and state). For all males, father's name is included. For females, either the name of their father or husband is included, depending on their marital status. Birth year is calculated from age. These data were collected by scraping and parsing PDFs of electoral rolls. Appendix Table A8 lists Indian state and union territories included in the names dataset, with year and language of publication. In total, we have 780,359,060 names from this dataset. For Dadra and Nagar Haveli, Delhi, Kerala, Nagaland and Sikkim, data on either the pincodes or names of fathers are missing, so these states are excluded from the analysis. To maintain consistency with pre-2000 state boundaries, we combine modern-day Bihar and Jharkhand, Andhra Pradesh and Telangana, and Uttar Pradesh and Uttarakhand.

For all states where the names are not recorded in English, we transliterate all names into English using the IndicXlit package by AI4Bharat (Madhani et al., 2022). Using this package, we transliterate from Assamese, Bengali, Gujarati, Hindi, Marathi, Oriya, Punjabi, Tamil and Telugu to English.

To classify households by religion, we rely on father's name. As this is not collected for married women, we proceed using only the male sample. Using father's full name, we use the support vector machine (SVM) algorithm for single names with multi-religion classification by Chaturvedi and Chaturvedi (2024) to classify households as Hindu, Muslim, Sikh, Christian, Jain or Buddhist.

For each individual, their full name consists of potentially multiple names. Naming patterns differ across states, with three main variants: First-Middle-Last, Last-First-Other and First-Other-Last. To identify an individual's first name, we determine the most common naming patterns for each state through external sources, manual inspection and identifying the most common names for each ordered

[16] https://postalgis.nic.in/view/

name. After the naming pattern is identified, we are then able to select the name that is most likely to be an individual's first name.

We identify the popularity of a first name for males of each religion by restricting the sample to only individuals given the relevant group characteristics born between 1900 and 1970, prior to our study period. To account for cultural naming differences across states, we identify the rank of each name at the state level based on the number of individuals with that name. Therefore, for any integer n, we know the n^{th} ranked name for males with a certain religious classification. The list of top ten ranked state-level names for Hindu males is provided in Appendix Table A1. For individuals born during our study period, we are therefore able to assign a rank to their name.

Additionally, we record whether an individual has a name related to the *Ramayan* show. To account for spelling differences, the name *Rama* includes the following additional variants: *Ram*, *Raam* and *Raama*. The primary character names from Ramayan, with spelling variants, are: *Rama, Ram, Raam, Raama, Laxman, Lakshman, Lakshmana, Lakshmanna, Laxmana, Laxmanan, Sita, Sitham, Seetaa, Seetha, Hanuman* and *Maruti*. The primary actor names from Ramayan, with spelling variants, are: *Arun, Arvind, Sunil, Suneel, Suneela* and *Dara*.

At the individual level, for those born between 1979 and 1998, we have the following variables:

- **Birth Year:** The year of birth, calculated by subtracting age from the year that the electoral roll was published.
- **Religious Classification:** A variable that classifies each individual based on their father's full name as either Hindu, Muslim, Sikh, Christian, Jain or Buddhist.
- **First Name Rank**: The rank of an individual's first name based on the rank of names for individuals of the same sex, religious classification and state born between 1900 and 1970.
- **Name is *Rama*:** A binary variable equal to 1 if the name is *Rama*, accounting for spelling variants, and 0 otherwise.
- **Name is a Primary Character Name from *Ramayan*:** A binary variable equal to 1 if the name is one of the primary character names from Ramayan, accounting for spelling variants, and 0 otherwise.
- **Name is a Primary Actor Name from *Ramayan*:** A binary variable equal to 1 if the name is one of the primary actor names from Ramayan, accounting for spelling variants, and 0 otherwise.

The most consistent disaggregated unit for our names data is the pincode level. We aggregate our individual data to the pincode level for each birth cohort. Therefore, for each pincode and birth cohort, we have the number of Hindu males, and the number of Hindu males with a given naming pattern. We are then able to calculate the percentage of Hindu male newborns given a naming pattern for each pincode and year. From the pincode level, we aggregate in the same way to larger units such as the assembly constituency. We have data for 3,073 assembly constituencies and 13,754 pincodes as we do not have names data for all the states. We have the following aggregated variables for birth cohorts between 1979 and 1998, where n is any integer:

- **Percentage of Hindu Male Newborns Given Top *n* Names**
- **Percentage of Hindu Male Newborns Given the Name *Rama***
- **Percentage of Hindu Male Newborns Given Names of Primary Characters from *Ramayan***
- **Percentage of Hindu Male Newborns Given Names of Primary Actors from *Ramayan***

B.2.2 Consumption Data

Our consumption data come from the Additional Rural Incomes Survey (ARIS)/Rural Economic & Demographic Survey (REDS) waves of 1982 and 1999. While primarily meant to collect detailed data on agricultural households, REDS also has detailed data on household consumption in the previous year (types of foods, quantity, and amount), in addition to household demographics. We construct the following key variables for our analysis:

- **Vegetarian:** A binary variable equal to 1 if the household did not consume any meat, fish, or eggs in the year of the survey.
- **Hindu:** We subset our analysis to only include households that report their religion as being Hinduism in the year 1982. 87.07% of the households report being Hindu in the 1982 survey wave.
- **Hindu Lower Caste:** A binary variable equal to 1 if the household is reported as being Hindu and belonging to one of the following caste categories in the year 1982: "Scheduled caste", "Scheduled tribe", "Backward caste" or "Non-classified Hindu". The variable equals 0 if the household is reported as being Hindu and belonging to either "Brahmin" or "Other upper caste" caste categories.
- **Hindu Upper Caste:** A binary variable equal to 1 if the household is reported as being Hindu and belonging to one of the following caste categories in the year 1982: "Brahmin" or "Other upper caste". The variable equals 0 if the household is reported as being Hindu and belonging to either "Scheduled caste", "Scheduled tribe", "Backward caste" or "Non-classified Hindu" caste categories.

REDS follows a given household across the survey waves, but also adds new households in each wave. We consider our baseline sample as the households that were surveyed in 1982 (4,979 households), Of these, we are able to match 3,879 households to the 1999 wave. The attrition between waves is primarily due to households not being surveyed in the follow-up wave, though a small portion may be attributed to identification crosswalk inconsistencies between survey rounds. From these matched households, we exclude 288 households from 19 villages for which REDS lacks or has spatial data that put the village outside the Indian boundary, leaving 3,591 households. Finally, as our analysis focuses on Hindu households, we retain 3,188 unique households in our final estimation sample. This represents approximately 64% of the original 1982 sample.

We look at these 3,188 households again in 1999 for our post-Ramayan exposure outcomes. Households may have branched during this 17-year time span, as children grow up and form their own households. Our 3,188 original households split into a total of 4,939 households. 21% of the original households split into two households, 16% into 3 households, and 18% into more than 3 households. Given this, we consider a "family" to be all the households that share the same base household ID in 1982. We combine the data of households within the same family unit and assign this family unit the sample weight from the 1982. For example, if one household out of three households in a family unit has consumed any non-vegetarian food, the entire family unit is considered as not being vegetarian in 1999.[17]

The combined data at family-unit level gives us a total of 6,376 observations comprising of 3,188 unique Hindu households, which we further break-up to study 1,944 Hindu lower-caste households and 1,244 Hindu upper-caste households. Our fixed effects are at this household level.

To identify the exposure a household has to the Ramayan TV show, we calculate the predicted TV signal using the ITM model using the latitude and longitude of the village provided by the REDS dataset. To avoid possible bias due to endogenous household movement, we assign each household's TV signal exposure based on their village of residence in 1982, the wave prior to Ramayan. We have a total of 221 villages after accounting for the above mentioned household sample selection.

B.2.3 Hindu-Muslim Conflict Data

The Hindu-Muslim conflict data is from Varshney et al. (2006) and Mitra and Ray (2014). We use the data from 1979 until 2000. We improve on the existing dataset (Varshney et al., 2006) by manually geolocating events at the neighborhood level. The dataset is extended until 2000 by using 2 million articles in the *Times of India* and training an algorithm to detect articles related to the Hindu-Muslim conflict while cross-validating manually and then re-verifying the articles by reading them manually. A communal Hindu-Muslim riot is an event characterized by violence involving two or more groups

[17]We also run a version of Table 4 without combining the households (thus, with a total of 8,127 observations), and find almost identical results.

identified along communal lines, such as religious or ethnic affiliations, engaging in direct confrontation with one another. It is important to note that events involving violence directed solely at the police or involving a single communal group do not qualify as communal riots. Our analysis only includes riots that have been classified as having the highest reliability for being a communal Hindu-Muslim riot. For each riot, information on reported injuries and deaths is included.

Given that each conflict event is geo-coded with coordinates, we are able to spatially aggregate the data to all 19,423 pincodes and 4,088 assembly constituencies in our data. We have the following aggregated variables for each year between 1979 and 2000:

- **Any Conflict:** a binary variable equal to 1 if there was any Hindu-Muslim conflict and 0 otherwise.
- **Any Violent Conflict:** a binary variable equal to 1 if there was any Hindu-Muslim conflict with at least one registered death or injury and 0 otherwise.
- **Any Deadly Conflict:** a binary variable equal to 1 if there was any Hindu-Muslim conflict with at least one registered death and 0 otherwise.

B.2.4 Electoral Data

Electoral data are obtained from LokDhaba: Indian Election Dataset provided by the Trivedi Center for Political Data (Agarwal et al., 2021). Our data span 1979 to 2000. This dataset contains detailed electoral information for each contesting candidate across state-level legislative assembly elections and Lok Sabha elections.

The dataset is rich, providing information on candidate names, political affiliations, vote shares, and election outcomes. This allows us to conduct a granular analysis of electoral dynamics at the constituency and party levels. Due to the 48 assembly constituencies in Uttarakhand that we are unable to match, we only have data for 4,040 assembly constituences. The dataset includes the following key variables for the Bharatiya Janata Party (BJP) and Indian National Congress (INC) parties:

- **Victory:** a binary variable equal to 1 if the party wins the election and 0 otherwise. A value of 0 is assigned for elections in which the party did not field a candidate.
- **Vote Share:** the proportion of votes in the constituency that the party received, ranging from 0 to 1. A value of 0 is assigned for elections in which the party did not field a candidate.
- **Fields a Candidate:** a binary variable equal to 1 if the party fielded a candidate in the election and 0 otherwise.
- **Conditional Victory:** a binary variable equal to 1 if the party wins the election and 0 otherwise. Defined only for elections in which the party fielded a candidate (and is missing otherwise).
- **Conditional Vote Share:** the proportion of votes in the constituency that the party received, ranging from 0 to 1. Defined only for elections in which the party fielded a candidate (and is missing otherwise).

B.3 Controls Data

This subsection provides details on the various controls used in our analyses. A unit-level control variable is defined based on the unit of analysis (e.g., pincode or assembly constituency). The level of disaggregation and year (for time-varying outcomes) are listed in parentheses.

B.3.1 Census Data

We use district-level data from the 1981 Census of India, available as attributes corresponding to 1981 District boundaries (ML InfoMap, 2013*b*). This includes district-level aggregates for the total population and the percentages of the population that are male, rural, literate, or belong to Scheduled Tribes and Scheduled Castes. District-level percentages of the population that are Hindustani speaking (those that speak Hindi or Urdu) for 1981 are derived from Padmanabha (1987). Due to political and social unrest, Assam was not included in the 1981 Census. As a result, for Assam we instead use data values

from the 1971 Census of India (ML InfoMap, 2013*a*). The sole variable exception for Assam is the percentage of the population that speaks Hindustani, for which we use data from the 1991 Census of India (Vijayanunni, 1991). Therefore, we have the following census controls:

- **Total Population** (District-Level, 1981)
- **Percentage of Male Population** (District-Level, 1981)
- **Percentage of Rural Population** (District-Level, 1981)
- **Percentage of Literate Population** (District-Level, 1981)
- **Percentage of Scheduled Tribes Population** (District-Level, 1981)
- **Percentage of Scheduled Caste Population** (District-Level, 1981)
- **Percentage of Hindustani Speaking Population** (District-Level, 1981)

B.3.2 Geographic Area Data

For pincodes and assembly constituencies, the geographic area of each unit in square kilometers is calculated using standard geospatial methods with the EPSG:7760 projected coordinate system:

- **Geographic Area** (Unit-Level)

B.3.3 Population Data

To calculate population in 1980 at disaggregated levels, we use the Global Population Count Grid Time Series Estimates (Center For International Earth Science Information Network-CIESIN-Columbia University, 2016). The raster data has a spatial resolution of 30 arc-seconds, corresponding to approximately 1-kilometer grid cells at the equator. Each grid cell contains an estimate for the population count in 1980. We spatially aggregate this population data to villages, pincodes and assembly constituencies using standard geospatial summing methods to obtain the total population count:

- **Population** (Unit-Level, 1980)

B.3.4 Elevation and Slope Data

We use a digital elevation model (DEM) from the CGIAR Consortium for Spatial Information (CGIAR-CSI) which is available with a spatial resolution of approximately 30-meter grid cells at the equator (Jarvis et al., 2008). These raster data are derived from Shuttle Radar Topography Mission (SRTM) satellite images. Using elevation data in meters, we also calculate the slope for each grid cell in degrees. We spatially aggregate this elevation and slope data to villages, pincodes and assembly constituencies using standard geospatial averaging methods to obtain the average elevation and average slope:

- **Average Elevation** (Unit-Level)
- **Average Slope** (Unit-Level)

B.3.5 Temperature and Precipitation Data

Monthly average temperature and total precipitation raster data are from the Climate Research Unit Gridded Time Series (CRU TS) version 4.08 which is available with a spatial resolution of 30 arc-minutes, corresponding to approximately 56-kilometer grid cells at the equator (Harris et al., 2020). Temperature is measured in degrees Celcius while precipitation is measured in millimeters. We temporally average each grid cell for all months from January 1971 to December 1980 so that we have grid-level averages for temperature and monthly precipitation. We spatially aggregate this temperature and precipitation data to villages, pincodes and assembly constituencies using standard geospatial averaging methods to obtain the average monthly temperature and average monthly precipitation:

- **Average Monthly Temperature** (Unit-Level, 1971 to 1980)
- **Average Monthly Precipitation** (Unit-Level, 1971 to 1980)

B.3.6 Maximum Caloric Yield Data

The maximum caloric yield per pixel is constructed taking inspiration from Galor and Özak (2016), which estimates the potential yield under levels of inputs and rain-red agriculture for separate years. The raster data for potential yields are from the Global Agro-Ecological Zones (GAEZ) project of the Food and Agriculture Organization (FAO) and is available with a spatial resolution of approximately 5 arc-minutes, corresponding to approximately 9-kilometer grid cells at the equator. The yield per pixel measures estimate potential yield under low levels of inputs and rain-fed agriculture, reflecting the agricultural methods and techniques used in India prior to the Green Revolution. These potential yields are calculated for 31 crops and the maximum caloric yield is calculated by mapping the caloric content of these crops using SR28 reports from the U.S. Department of Agriculture. We calculate the maximum caloric yield using data from 1980. We spatially aggregate this caloric data to villages, pincodes and assembly constituencies using standard geospatial averaging methods to obtain the average maximum caloric yield:

- **Average Maximum Caloric Yield** (Unit-Level, 1980)

B.4 Television Data

We construct annual measures of television signal strength from 1965 to 2000 for India. Constructing our television data involves four steps. First, we collect extensive details for the universe of television transmitters belonging to Doordarshan, the national broadcaster. Second, we overlay 1-kilometer grid cells for the entirety of India and calculate the signal strength between each transmitter and each grid cell using an Irregular Terrain Model (ITM), a model of broadcast signal prorogation which takes topography into account. Third, for each year, we calculate the TV signal strength at each grid cell by identifying all transmitters in operation for the year, and selecting the maximum signal strength. Fourth, using the gridded TV signal data, we aggregate the signal using standard geospatial averaging methods where we weight using 1980 population to obtain a population-weighted measure of TV signal strength for each year. We provide further detail about each of these four steps below.

B.4.1 Transmitter Data

We construct a comprehensive dataset of the entire universe of TV transmitters commissioned by Doordarshan, the national broadcaster, between 1965 and 2000. Our dataset includes the following characteristics for each transmitter: location, coordinates, type, power, height, band, channel, frequency range, commissioning dates, and decommissioning dates where relevant. We record upgrades as new transmitters, given that transmitter characteristics change substantially after an upgrade. In total we have 1,181 transmitters across 1,007 locations that were in operation at some point up to January 1, 2000.

Our data sources involve a combination of archival records from the Doordarshan Audience Research Unit, Ministry of Information and Broadcasting (MIB) and Press Information Bureau (PIB), in addition to Right to Information (RTI) filings. Our data sources complement each other, as information is spread out across multiple sources. They also provide additional cross-checks to ensure the accuracy of our data. We also consulted current ministry officials and reviewed technical documents on their transmission systems to better understand key inputs for signal broadcasting, such as the frequency used to air the Doordarshan channel, the average height of transmission towers, and the polarization of TV waves.

We provide additional details for our sources:

- **Doordarshan Audience Research Unit Reports:** The Doordarshan Audience Research Unit released several reports to provide basic information to the public on television broadcasting in India. Published in 1987, the Doordarshan report *Television India* includes details on the location, precise commissioning date and power of all transmitters that were in existence as of March 1987 (Doordarshan Audience Research Unit, 1987). In the 1990s, additional reports were released, including a list of all existing transmitters. We use Doordarshan reports for 1993, 1994, 1995, 1996, 1999 and 2002.
- **Ministry of Information and Broadcasting (MIB) Annual Reports and Documents:** The MIB Annual Reports were released annually during the 1990s, but less frequently during the 1980s.

These reports include sections about achievements in the most recent fiscal year as well as plans for the upcoming year, both of which often provide specific information on transmitters. There is also a section specifically for Doordarshan, which is usually more detailed. We read through all of these sections and manually compiled any information related to transmitters. There are also occasionally appendix tables that either include information on the existing network of transmitters, commissioned transmitters in the past fiscal year, or planned transmitters. The extent of information on transmitters varies substantially across reports. We use MIB annual reports for the 1980-1981, 1983-1984, 1985-1986, 1987-1988, 1989-1990, 1990-1991, 1991-1992, 1992-1993, 1993-1994, 1994-1995, 1995-1996, 1996-1997, 1997-1998, 1998-1999 and 1999-2000. Additionally, the MIB Estimates Committee Report for 1988-1989 includes specific information for TV transmitters in border areas.

- **Press Information Bureau (PIB) Press Releases:** We search through the entire history of archival PIB press releases, publicaly available at `https://archive.pib.gov.in`, to identify hundreds of relevant press releases. Most of these press releases were issued in the 1980s, when television was still relatively new and the PIB would publish a press release for each commissioned transmitter, often with accompanying characteristics.
- **Right to Information (RTI) Documents:** Through RTI filings with Doordarshan, we received two documents. First, a document with details of all transmitters upgraded to higher power transmitters including the types of transmitters and specific upgrade dates. Second, a document with details on commissioning dates, height, power, channel and frequency ranges for 716 transmitters. This list mainly includes the most recent transmitter in each location, and so the majority of these transmitters were commissioned in the 1990s.

We provide additional details for each characteristic in our dataset:

- **Commissioning Dates:** We have exact commissioning dates for 874 transmitters, and impute dates for the remaining 307 transmitters. We have exact dates for all transmitters commissioned by March 1987 from the Doordarshan Audience Report *Television India* (Doordarshan Audience Research Unit, 1987). Therefore, for 1 January 1987, which we use as our measure of Ramayan exposure, we have complete coverage of exact commissioning dates. Afterwards, we impute commissioning dates for a subset of transmitters for which we are unable to find exact dates. The RTI documents provide exact dates for all transmitters involved in upgrades, and the majority of transmitters commissioned in the 1990s. PIB press releases also contain exact dates which we use to supplement our other data. We have many snapshots of existing transmitters, as well as records of newly commissioned and planned transmitters throughout our resources to narrow down the commissioning window to be as narrow as possible for the 307 transmitters. We impute the commissioning date to be the earliest date in the expected commissioning window.

  From 1993 onward, the Doordarshan Audience Research Unit released several reports and the MIB Annual Reports included appendix tables with lists of existing transmitters. This means that we can often narrow down imputed dates to fiscal year windows, and even specific months. Between 1988 and 1993 however, we have no Doordarshan reports, and the MIB Annual Reports for 1987-1988, 1989-1900, 1990-1991 and 1991-1992 do not include any relevant Appendix tables. The PIB archives are also missing press releases for only the year 1989. While the number of transmitters increased relatively modestly between 1990 and 1993, there was a large number of transmitters commissioned very quickly in 1988 and 1989 as part of an crash TV expansion program. To impute the correct years for these transmitters, we rely on the fact that in the 1993 Doordarshan Audience Research Unit report, existing transmitters are listed chronologically. We are able to therefore work backwards, and given that we have dates for a subset of those transmitters, we are significantly able to narrow down the commissioning window for imputation.
- **Upgrades and Decommissioning Dates:** The RTI document with upgrade information provides us with the most comprehensive source of information on upgrades and decommissioning dates. When a transmitter is upgraded, we record that it has been decommissioned, and that a new transmitter has been commissioned in the same location. Upgrades are relatively rare, but significantly change the characteristics of the transmitter which is why we record it as a new transmitter. On rare occasions, transmitters are decommissioned without being upgraded, and we record this as well. Usually this happens when a more powerful transmitter is commissioned nearby, rendering a transmitter redundant.

- **Locations and Coordinates:** Locations of transmitters are recorded at the city or town level. To obtain the precise latitude and longitude coordinates of the TV transmitters, we use a manual extensive search method to find these transmitters using satellite imagery from Google Maps and Google Earth. For each location, we iteratively search using four steps. First, we searched for the Doordarshan transmitter. Second, we searched for the Doordarshan headquarters in that area as this is where transmitters were often located. Third, we searched for the All India Radio (AIR) transmitter or office as it is likely that the TV transmitter would also be located there. Fourth, we use the centroids of the city/town when all other searches have failed. Across all 1,008 unique locations, we find the TV transmitter for 48 locations, the Doordarshan headquarters for 390 locations, the AIR transmitter or office for 123 locations, and rely on city/town centroids for the remaining 446 locations.
- **Type and Power:** There are five main types of transmitters during this period, which almost always correspond to their power: high powered transmitters (HPTs) with a power of 10 kW; medium powered transmitters (MPTs) with a power of 1 kW; low powered transmitters (LPTs) with a power of 0.1 kW; very low powered transmitters (VLPTs) with a power of 0.02 kW; and transposers (TRANs) with a power of 0.01 kW. We have data on transmitter type for virtually all of our transmitters, but only have exact power for 820 transmitters. Only for 88 of these 820 transmitters do we have a recorded power that is not equal to one of the five listed, with 83 of them being 0.3 and 0.5 kW. We therefore impute the transmitter's power based on its type accordingly for the remaining 361 transmitters. We also account for the fact that the term MPT was only introduced towards the end of our sample, as these transmitters would have previously been classified as an LPT in earlier documents.
- **Height:** The RTI list of transmitters is our primary source for transmitter heights. Occasionally PIB press releases also mention heights. We have heights data recorded for 579 transmitters, and with this data, we find that there is a clear correlation between height and transmitter type. We find that almost all of the transmitters with heights (524 out of the 579) are either 30m, 45m, 100m or 150m tall. Therefore, for the remaining 602 transmitters, we impute height according to the transmitter's type as follows: HPTs (150m), MPTs (100m), LPTs (45m), VLPTs (30m) and TRANs (30m).
- **Band, Channel and Frequency:** Transmitters are assigned a channel, which corresponds to a frequency range for their broadcasting. For example, channel 5 corresponds to a frequency range of 174-181 MHz. The RTI list of transmitters is our primary source for transmitter channels, and also provides us with a mapping from channels to frequency ranges. The PIB press releases provide us with substantial amounts of information on bands and channels for transmitters in the 1980s. We have data on channels for 712 of our transmitters. The vast majority of transmitters (85.7%) use Band III, which is considered to be the optimal band for TV broadcasting and consists of channels 5 to 12, although we have channels ranging from 2 to 34. The distribution of our transmitters across Band III is relatively uniform and unrelated to power. Therefore, we do not impute using transmitter characteristics. Rather, for the 469 transmitters without channel data, we uniformly impute with the lowest channel in Band III), corresponding to a frequency range of 174-181 MHz.

B.4.2 Transmitter Gridded Signal Data

For each transmitter, we create a raster covering India with a spatial resolution of 30 arc-seconds, corresponding to approximately 1-kilometer grid cells, resulting in a total of 4.5 million grid cells. For all 1,181 transmitters in our dataset, this results in approximately 5.3 billion transmitter and grid cell pairs. Consequently, we create a separate transmitter signal raster dataset for each transmitter. For each transmitter and grid cell pair, we construct three variables:

- **Distance from the Transmitter:** The shortest straight-line distance (as the crow flies) between the transmitter and the centroid of the grid in kilometers.
- **Freespace Signal Strength from the Transmitter:** The theoretical signal strength at the centroid of the grid cell from the transmitter, assuming propagation through unobstructed free space without interference. This is measured in decibels relative to one milliwatt (dBm).

- **TV Signal Strength from the Transmitter:** The actual signal strength at the centroid of the grid cell from the transmitter, incorporating real-world factors such as terrain, obstructions, and interference. This is measured in decibels relative to one milliwatt (dBm).

Using data on the transmitter's coordinates, distance is calculated using standard geospatial methods. For our measures of freespace and TV signal strength, we use the *itmlogic* package by Oughton et al. (2020), which implements a Longley-Rice Irregular Terrain Model (ITM) of signal propagation, which models the strength of TV signals considering obstacles in irregular terrain pioneered by Longley (1968). For each transmitter and grid cell pair, we use point-to-point prediction, which uses a sample of up to 600 points between the grid and the transmitter, accounting for terrain (Hufford, 1995). We model the terrain using a digital elevation model (DEM) from the CGIAR Consortium for Spatial Information (CGIAR-CSI) which is available with a spatial resolution of approximately 30-meter grid cells at the equator (Jarvis et al., 2008). We adapt the *itmlogic* code to improve efficiency, and make it more flexible for parallel computing.

Our parameters and assumptions for the ITM are as follows:

- **Operating Frequency:** We use the midpoint frequency of the transmitter's frequency range as the operating frequency. For example, a transmitter with channel 5 and a frequency range of 174-181 MHz will be assigned a frequency of 177.5 MHz.
- **Broadcasting Antenna Height:** We use the transmitter's height.
- **Receiving Antenna Height:** We assume that the receiving antenna is 10m high.
- **Confidence Levels for Predictions:** 50.
- **Reliability Levels for Predictions:** 50.
- **Polarization Selection:** Horizontal.
- **Terrain Relative Permittivity:** 15.
- **Climate Selection:** Continental subtropical.
- **Surface Refractivity:** 320

The outputs that our code produces are actually measures of freespace and TV signal loss, rather than signal strength. To calculate the signal strength in dBm, we first convert the power of the transmitter from kW to dBm using the following formula: $Power_{dBm} = 10 \times \log_{10}\left(Power_{kW} \times 10^6\right)$. This is the signal strength of the transmitter at its source. Therefore, to calculate the freespace and TV signal strengths, we subtract the freespace and TV signal loss from $Power_{dBm}$ respectively.

B.4.3 TV Gridded Signal Data

Using the gridded signal data from individual transmitters, we construct a raster dataset representing TV signal coverage for each year. For each year, we calculate the signal measures for 1 January by first identifying the set of transmitters operating on this date. For each grid cell, we compare all of the transmitters in operation and determine the best transmitter, the one with the highest TV signal strength. Additionally, we classify the TV signal strength for each grid into five TV coverage levels based on various thresholds for television reception recommended by the Advanced Television Systems Committee (ATSC) guidelines (ATSC, 2010). The coverage levels, with the lower bound threshold for TV signal strength in parentheses, are: minimum (-83 dBm), weak (-68 dBm), moderate (-53 dBm) and strong (-28 dBm). If the TV signal strength is below -83 dBm, then there is no coverage. Therefore, for each year and grid cell pair, we construct five variables:

- **Best Transmitter Identifier:** An identifier for the transmitter that provides the highest TV signal strength at the centroid of the grid when considering all transmitters in operation.
- **Distance from the Best Transmitter:** The shortest straight-line distance (as the crow flies) from the centroid of the grid to the best transmitter, measured in kilometers.
- **Freespace Signal Strength:** The theoretical signal strength at the centroid of the grid cell from the best transmitter, assuming unobstructed free space propagation without interference. This is measured in decibels relative to one milliwatt (dBm).

- **TV Signal Strength:** The actual signal strength at the centroid of the grid cell, accounting for real-world factors such as terrain, obstructions, and interference, by considering all transmitters in the operation. This is measured in decibels relative to one milliwatt (dBm).
- **TV Coverage Level:** A classification of whether the grid has no, minimum, weak, moderate or strong TV coverage, based on the TV signal strength at the centroid of the grid cell.

B.4.4 TV Aggregated Signal Data

In order to aggregate the gridded TV signal data to our units of analysis with boundaries (e.g., pincodes and assembly constituencies), we use gridded data on 1980 population counts to construct weighted averages within geographic boundaries. Our population data comes from the Global Population Count Grid Time Series Estimates (Center For International Earth Science Information Network-CIESIN-Columbia University, 2016) with a spatial resolution of 30 arc-seconds, corresponding to approximately 1-kilometer grid cells at the equator. This grid is identical to the 1-kilometer grid cells used in our TV signal calculations. Weighting accounts for the fact that populations are not uniformly dispersed within localities, and allows us to place a higher weight on TV signal strength in areas that are more densely populated when taking the weighted average.

We use standard geospatial averaging methods to obtain population-weighted averages of freespace and TV signal strengths. We also use standard geospatial summing methods to obtain the population-weighted share of grids with minimum, weak, moderate and strong TV coverage. Due to population weighting, these measures correspond to the share of the population with minimum, weak, moderate and strong TV coverage. When aggregating to units of analysis with only point coordinates (e.g., villages), we assign variables based on the grid cell that contains the point coordinates. Therefore, for each unit and year, we construct six variables:

- **Average Freespace Signal Strength:** The population-weighted average theoretical signal strength for the unit, assuming unobstructed free space propagation without interference. This is measured in decibels relative to one milliwatt (dBm).
- **Average TV Signal Strength:** The population-weighted average actual signal strength for the unit, accounting for real-world factors such as terrain, obstructions, and interference. This is measured in decibels relative to one milliwatt (dBm).
- **Minimum TV Coverage:** The share of the population in the unit with minimum TV coverage, defined by having a TV signal strength of at least -82 dBm.
- **Weak TV Coverage:** The share of the population in the unit with weak TV coverage, defined by having a TV signal strength of at least -68 dBm.
- **Moderate TV Coverage:** The share of the population in the unit with moderate TV coverage, defined by having a TV signal strength of at least -53 dBm.
- **Strong TV Coverage:** The share of the population in the unit with strong TV coverage, defined by having a TV signal strength of at least -28 dBm.

B.5 Data Processing

Calculations involving nearly a billion names and gridded data are computationally intensive. To handle this, we perform all calculations of Data Appendix Sections B.2.1 and B.4.2 to B.4.4 on the University of Michigan's Great Lakes High-Performance Computing (HPC) cluster. We optimize our code for parallel computing to fully leverage the 36 cores available per node. For name-related tasks, transliteration is the most computationally demanding, while religious classification is comparatively faster. For the transmitter gridded signal data, processing a single transmitter on a 36-core node takes approximately one hour from start to finish. In total, processing the names data requires around 10 computing days, while the transmitter data takes around 50 computing days to complete.