

Female Leaders and Intrahousehold Dynamics: Evidence from State Elections in India[†]

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We study the impact of women's political representation on the well-being of their female constituents, specifically in the domain of health. Increasing women's political representation leads to greater public provision of reproductive health care services in rural areas. Consequently, rural women can exercise greater control over their reproductive choices through the adoption of modern contraception and increased birth spacing. However, these positive impacts are accompanied by an increase in intimate partner violence against women. The increase in spousal abuse is particularly pronounced among women whose husbands prefer to have additional sons, suggesting that the wife's greater contraceptive use triggers marital conflict. (JEL D13, D72, I18, J13, J16, O17, O18)

A growing literature has effectively demonstrated that increasing the share of women in leadership positions can promote gender equality in multiple domains. Female leaders not only tend to make policy decisions that are more likely to benefit women (Chattopadhyay and Duflo 2004; Taylor-Robinson and Heath 2003; Clots-Figueras 2011) and better reflect women's preferences (Chaturvedi, Das, and Mahajan 2023), they also serve as role models (Beaman, Duflo, Pande, and Topalova 2012) and influence gender dynamics within public institutions (Karpowitz, O'Connell, Preece, and Stoddard 2023). Greater political representation of women has been shown to lower maternal mortality (Bhalotra, Clarke, Gomes, and Venkataramani 2023) and selective abortion of girls (Kalsi 2017), and to improve women's education (O'Connell 2018), labor market outcomes (Mani

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and O’Connell 2019; Ghani, Kerr, and O’Connell 2014), and political participation (O’Connell 2020; Deininger, Jin, Nagarajan, and Xia 2015; Beaman et al. 2009).

However, strengthening female leadership can also trigger significant male backlash, not only towards female leaders (Gangadharan, Jain, Maitra, and Vecchi 2016; Gagliarducci and Paserman 2012) but also towards their female constituents if exposure to female leaders empowers women, especially in settings with conservative gender norms (Brulé 2020; Macmillan and Gartner 1999). This backlash can emanate as a penalty for women perceived to be in violation of or challenging gender norms, stereotypes, and status hierarchies (Heilman, Wallen, Fuchs, and Tamkins 2004; Ridgeway 2014), or could have “instrumental” motives as men seek to extract resources from newly empowered women or to maintain the status quo of male dominance (Rudman, Moss-Racusin, Phelan, and Nauts 2012; Wheaton 2020). Thus, the overall impact of female leaders on women’s well-being is *a priori* ambiguous.

We show that increasing the share of female leaders in state legislatures in India has a mixed effect on their female constituents’ health outcomes. On the one hand, we find that female leaders improve the provision of family planning and reproductive health services, which in turn increases modern contraceptive use and birth spacing among female constituents, in rural areas. On the other hand, exposure to female leaders negatively affects women in another dimension—namely, their experience of intimate partner violence (IPV). In fact, we show that the increased reporting of IPV experienced by women coincides with their increased use of modern contraception; and it is concentrated among women whose husbands desire additional sons. These findings highlight a novel channel through which female leaders can unintentionally worsen women’s outcomes.

Our analysis is based on nationwide village-level data from the 2012–14 District-Level Household and Facility Survey (DLHS) of India, individual-level data from the 2015–16 National Family Health Survey (NFHS) of India, and constituency-level data from the Election Commission of India. To identify the effect of the gender of the elected leader in a causal manner, we exploit a widely used instrumental variables strategy based on closely contested (“close”) elections between male and female politicians. Following Bhalotra and Clots-Figueras (2014) and Clots-Figueras (2011), we instrument the share of seats occupied by female candidates in a given district by the share of seats where women won against men in a close election. This identification strategy relies on the assumption that the identity of the winner in a close election is quasi-random.

Our analysis yields three key results. First, we find that having an additional female leader elected in a district increases access to public health facilities by 0.27 standard deviations (SD) and the implementation of programs that specifically target women’s and girls’ well-being by 0.14 SD in rural areas. Moreover, greater exposure to female leaders significantly enhances the availability of female doctors and village-level female health workers, who play a vital role in the delivery of family planning services and other government programs related to women’s health, by 0.22 SD. Second, having an additional female leader elected in a district increases modern contraceptive use by 8 to 10 percent and birth spacing by 0.27 years among rural female constituents. Third, exposure to female leaders increases the likelihood that female constituents report experiencing physical violence from their husbands. The estimates imply that

having an additional female leader elected in a district leads to a 0.07 SD increase in the likelihood of women in rural areas reporting physical spousal violence.

We further explain how these positive and negative effects of women's electoral success on their female constituents may be closely linked: Our results suggest that the reported increase in IPV could be driven by the increase in women's modern contraceptive use. This is because the higher take-up of contraceptive methods by wives can lead to spousal conflict among couples with discordant fertility preferences (Ashraf, Field, and Lee 2014; Anukriti 2020). In our sample 30 percent of husbands express that they want to have more sons than they currently have. Among such couples, wife's take-up of modern contraception can potentially lead to backlash from dissatisfied and aggrieved husbands. Our findings support this channel. Although the effect of female leaders on modern contraceptive use does not vary by the husband's desired number of sons, we find that the increase in IPV prevalence is driven by couples where the husband's ideal number of sons is higher than the number of sons that the couple currently has. We rule out several other mechanisms that could potentially explain the effect of female leaders on IPV, including changes in reporting behavior (Iyer, Mani, Mishra, and Topalova 2012), attitudes toward violence (Kuipers 2020), women's labor market outcomes, and partner characteristics.

Our paper is related to Iyer, Mani, Mishra, and Topalova (2012) who document that exposure to female leaders at the local level induces an increase in reporting of crimes against women, such as rape and kidnapping, to the police. However, our study differs from Iyer, Mani, Mishra, and Topalova (2012) in several ways. First, we focus on women's experience of violence based on survey data collected by female surveyors in a confidential setting, rather than data from police reports. Given the social norms and stigma surrounding IPV in our context, women are more likely to report IPV in a survey context than to the police. Second, we focus on physical, sexual, and psychological violence experienced by women that is perpetrated by intimate partners rather than crimes against women more generally.¹ IPV is not only more prevalent than other types of gender-based violence, the mechanisms underlying IPV are also likely to be different. Our study sheds light on several channels through which IPV against women may respond to increased exposure to female leaders.

Our study contributes to an extensive literature that documents the effects of female leaders on women. This is a large literature that has explored the effects of having elected female leaders on a range of outcomes, including public infrastructure (Chattopadhyay and Duflo 2004; Taylor-Robinson and Heath 2003; Clots-Figueras 2011), girls' aspirations (Beaman, Duflo, Pande, and Topalova 2012), maternal mortality (Bhalotra, Clarke, Gomes, and Venkataramani 2023), women's human capital (O'Connell 2018), gender bias (Beaman et al. 2009), and utilization of public health insurance (Dupas and Jain 2024). We contribute to this literature in several ways. First, we analyze a new set of outcomes, namely, public provision of family planning and reproductive health services, women's utilization

¹Iyer, Mani, Mishra, and Topalova (2012) focus on the impact of women's political representation on crimes perpetrated against women, including rape, kidnapping of women and girls, dowry deaths, sexual harassment, molestation, cruelty by husbands or relatives, importation of women and girls, prostitution, pornography, giving and receiving dowry, and widow burning.

of modern contraception, and birth spacing. Second, we present novel evidence on one potential unintended negative consequence of female leadership for their female constituents if the policies that they enact lead to intrahousehold conflict. In related work, Bochenkova, Buonanno, and Galletta (2023) find that female mayors elected in close elections in Brazilian municipalities *decrease* the homicide rate and violence against women. Although Bochenkova, Buonanno, and Galletta (2023) are unable to examine the mechanisms underlying their findings, we note that the Indian context is substantially different. Moreover, the channel that we propose, namely spousal conflict due to the husband's son preference, is likely not applicable in the Brazilian setting.²

Access to reproductive health services and modern contraceptive use are critical indicators of women's empowerment and control over their reproductive choices, directly influencing their autonomy over their bodies and the capacity to participate in education and the workforce (Canning and Schultz 2012). The effects of female leaders on these outcomes could be ambiguous for several reasons. Female leaders may experience considerable pushback from male-dominated institutions or "conservative" political forces, which may reduce their preference for supporting or implementing reproductive health programs. Even when they have personal preferences to expand reproductive health services, they may encounter political or bureaucratic constraints that restrict their ability to take action. Finally, the uptake of modern contraception or decisions around birth spacing may not necessarily change even if female leaders invest more in public provision of services due to social pressure, stigma, or personal beliefs. Hence, even if female leaders improve access to reproductive services, utilization of such services may remain weak or occur with a large lag due to biased gender norms or misinformation.³

We also contribute to a limited literature showing that women's improved access to family planning services may lead to intrahousehold conflict. Using an experiment in Zambia, Ashraf, Field, and Lee (2014) show that women who were given access to contraceptives alone—instead of with their husbands—were more likely to use concealable contraception, but they also experienced a significant reduction in happiness due to husband aggrievement in the presence of spousal discordance in decision-making about childbearing. Similarly, Anukriti (2020) finds that a permanent reduction in women's reproductive potential caused by female sterilization leads to an increase in spousal violence experienced by women in India. More generally, we contribute to an emerging literature that demonstrates how misaligned fertility preferences can prevent efficient information sharing between spouses and lead to suboptimal outcomes, especially for women (Ashraf, Field, Voena, and Ziparo 2020).

²Notably, one of the key differences between Brazil and India that is crucial for the mechanism that we propose is the prevalence for son preference. Families in India are widely known to exhibit a preference for having at least one son (Jayachandran 2017), which manifests as excess fertility or sex-selective abortion. In contrast, to the best of our knowledge, there is no evidence of a male-biased sex ratio at birth or son preference in Brazil. Moreover, modern contraceptive prevalence is much higher in Brazil relative to India, making it less "treatable" in terms of policies that improve access to family planning services. According to the 2013 National Health Survey, modern contraceptive prevalence among 15- to 49-year-old married women was 79 percent in Brazil (de Leon et al. 2019), which is substantially higher than the 46 percent prevalence in India according to the 2015–16 NFHS data.

³Recent studies show that constraints over women's reproductive choices, through for example restrictions on access to abortion, not only increase the risk of maternal mortality, but also worsen women's labor market outcomes and educational attainment, increase their risk of living in poverty, and raise the likelihood of child labor (Londoño-Vélez and Saravia 2024; Jones and Pineda-Torres 2024).

Finally, our paper relates to the extensive literature on the channels underlying the risk of experiencing IPV, including but not limited to the effects of conditional cash transfers (Bobonis, González-Brenes, and Castro 2013), compulsory education (Erten and Keskin 2018), gender wage gap (Aizer 2010), local unemployment shocks (Anderberg, Rainer, Wadsworth, and Wilson 2016), divorce and arrest laws (Stevenson and Wolfers 2006; Chin and Cunningham 2019), alcohol misuse and emotional cues (Card and Dahl 2011; Ivandić, Kirchmaier, Saeidi, and Torres Blas 2024), trade shocks (Erten and Keskin 2024), and interventions improving police responsiveness (Sukhtankar, Kruks-Wisner, and Mangla 2022). Our study contributes to this literature by examining the effects of increased political representation of women on the prevalence of IPV in a context with biased gender norms and low levels of female empowerment.

Our study is highly topical and relevant for policymakers both in India as well as other settings where female empowerment can elicit male backlash due to deeply entrenched social hierarchies based on gender. In September 2023 the Indian government enacted the landmark Women's Reservation Bill that will reserve a third of the seats in national and state parliaments for women in future elections.⁴ This policy reform is significant not only because it seeks to narrow gender gaps in political representation, but also due to its potential implications for gender equality more broadly. Our results suggest that although India's Women's Reservation Bill is likely to improve women's access to reproductive health services and their reproductive autonomy, additional policy interventions may be necessary to prevent any unintended negative effects on women who may face intrahousehold misalignment in fertility preferences. This is particularly important since IPV is the most common form of violence experienced by women in India and exacts an enormous toll in terms of mental and physical health and economic capability for victims of abuse (WHO 2013; Fearon and Hoeffler 2014). Such policy measures could include training health care providers to recognize victims of IPV and to inform abused women about available support services, for instance.

I. Context

In this section we provide background information on state elections in India and on women's representation in Indian politics. Additionally, we briefly describe the landscape of service provision in the context of family planning and reproductive health, trends in contraceptive use and fertility, and the prevalence of spousal violence against women.

Elections for state legislatures in India are held every five years for each state asynchronously. Candidates contest in first-past-the-post elections in electoral *constituencies* (or seats) across each state,⁵ and winners are appointed as Members of

⁴See, for example, the following: <https://www.unwomen.org/en/news-stories/feature-story/2023/10/india-passes-law-to-reserve-seats-for-women-legislators> (accessed June 13, 2026).

⁵Note that there can be multiple constituencies within a district, and there are multiple districts within a state. As described further in Section II, we are able to identify locations down only to the district level (and not the constituency level) in our outcome data. We, therefore, conduct all of our analysis using district-level variation in the main explanatory variable (share of female leaders in a district).

the Legislative Assembly (MLAs) in the state for a five-year term. Unlike village councils, no gender-based quotas have been in place for state assemblies until the recent enactment of Women's Reservation Bill in 2023. Therefore, it is not surprising that women in India occupy a small share of state assembly seats. In 2023, no state legislature had female representation exceeding 15 percent among its MLAs. Even in relatively gender progressive states, such as Karnataka, Tamil Nadu, and Kerala, this share was only 3.14 percent, 5.13 percent, and 7.86 percent, respectively, as of September 2023.

MLAs, particularly from the governing party or coalition, wield substantial power, allocate budgetary resources within their constituencies, and enact state-level legislation. MLAs are responsible for the distribution of publicly provided goods and services in their constituencies. In addition, each MLA can significantly influence the delivery of welfare programs and local public goods through the Member of Legislative Assembly Local Area Development Scheme (MLALADS). This scheme provides funds that MLAs can use at their discretion to implement any public program locally. Moreover, while evidence suggests that female leaders elected via quotas at the village government level may not possess actual decision-making power (Heinze, Brulé, and Chouchard 2025), no such quotas existed for female MLAs until September 2023, and, hence, they are far more likely to exercise genuine decision-making authority.

Crucially for the purposes of this paper, delivery of health care in India falls predominantly under the jurisdiction of state assemblies because public health, sanitation, hospitals, and dispensaries are on the State List of the Constitution of India. Family Planning is included in the Concurrent List, which means that both the state legislatures and the national parliament have the power to legislate on this subject. The public sector is the main provider of family planning and reproductive health services in India. Almost 70 percent of women in India who use modern contraceptive methods obtain them from a public sector provider or facility (IIPS 2017). Outreach services by the public sector for family planning are led by community health workers, such as Auxiliary Nurse Midwives (ANMs), Accredited Social Health Activists (ASHAs), and *Anganwadi* workers, who serve as a link between women and public health facilities. Over time, women's reproductive health in India has significantly improved likely due to higher incomes, a decrease in desired fertility rates, improvements in female education and health infrastructure, better access to contraceptive methods, and the implementation of various government programs. In 2019–21, the total fertility rate was 2 children per woman, and modern contraceptive prevalence was 56 percent. Programs such as the *Janani Suraksha Yojana*, which is one of the largest conditional cash transfer programs in the world, have been shown to increase the utilization of maternal health services, such as antenatal care and institutional delivery (Powell-Jackson, Mazumdar, and Mills 2015; Gupta et al. 2012; Lim et al. 2010; Carvalho and Rokicki 2019).⁶

Despite these improvements, gender gaps in health remain in several dimensions, especially in terms of the experience of IPV. Lifetime prevalence of violence against

⁶We provide a description of these public programs, including their implementation dates and primary objectives, in the Supplemental Appendix.

women aged 18–49 is 29 percent for physical violence and 6 percent for sexual violence (IIPS 2017). Spousal abuse by husbands is the most common type of domestic violence experienced by women, with respectively 92 percent and 96 percent of abused women reporting that the perpetrator of physical and sexual violence was their current or former husband. Overall, one in three ever-married women have ever experienced physical, sexual, or emotional violence by their current husband or their most recent husband, and 27 percent have experienced at least one of these forms of violence in the 12 months preceding the survey.

II. Data

We use cross-sectional village-level data from the 2012–14 round of the DLHS (i.e., DLHS-4) to examine whether female leaders influence rural health infrastructure (IIPS 2016). The DLHS-4 is a nationwide sample survey that was undertaken by the Ministry of Health and Family Welfare, Government of India, to generate data on maternal and child health, family planning, and other reproductive health indicators at the district level. The DLHS-4 included a village-level questionnaire that gathered information on health, education, and other facilities as well as the implementation of government programs in the rural primary sampling units (villages). The respondent for the village questionnaire was either the village head or any other knowledgeable person in the village, such as a teacher. The DLHS-4 data covers 8,555 villages across 22 states and Union Territories of India; however, it does not allow us to examine health infrastructure in urban areas.

We merge the DLHS-4 data with electoral data for statewide elections obtained from the Election Commission of India. Since the election data is at the constituency level—a smaller geographical unit than a district—we follow Bhalotra and Clots-Figueras (2014) and aggregate the election data to the district level.⁷ We then merge the last round of state election data with the DLHS-4 data by district. For the districts in our DLHS sample, the year of last state election ranges from 2008 to 2012, and the median district has seven constituencies.

Supplemental Appendix Table 1 presents summary statistics for the 265 districts included in our DLHS estimation sample using election and Census data, and describes the variables on public health infrastructure for the 8,383 villages in our DLHS estimation sample. On average, 6 percent of constituencies in a district had a female winner; 2 percent of constituencies had a close election between a male and a female candidate; and 1 percent of constituencies had both (i.e., a close election between a male and a female candidate and a female winner). The most common type of accessible health facility is a subcenter, followed by a primary health center. Nearly 88 percent of villages either have a subcenter available in the village or are connected to one by an all-weather road. Although 63 percent of the villages have access to an ANM, only 21 percent have access to a female doctor.

In addition, we use the 2015–16 round of India's Demographic Health Survey, also known as the NFHS-4, for examining the impacts of female leaders on woman-level

⁷Note that states in India are divided into districts, which are further divided into electoral constituencies for state elections. Villages are very small geographic units and are contained within constituencies.

outcomes, such as experience of IPV, modern contraceptive use, and birth spacing. The NFHS-4 is a nationwide household survey that interviewed both men and women. The Woman's Questionnaire was administered to all women aged 15–49 in selected households, and included a domestic violence module that was administered to one randomly selected eligible woman per household from a 15 percent subsample of these households (IIPS 2017).⁸ The NFHS is the only source of information on several dimensions of IPV experienced by women in India, including physical, sexual, and psychological violence by male partners. In addition, the NFHS-4 collected information on attitudes toward domestic violence, engagement with the labor market, childbearing, fertility preferences, contraceptive use, and other socioeconomic characteristics.⁹ The Man's Questionnaire was administered to men aged 15–54 in a subsample of households, and collected information on men's attitudes toward domestic violence, fertility preferences, and other characteristics. We exclude never-married men and women from our estimation sample because our outcomes of interest are primarily relevant for married individuals in the Indian context.

Our NFHS estimation sample consists of 62,036 ever-married women from 626 districts and 70,829 ever-married men from 628 districts.¹⁰ Supplemental Appendix Table 2 presents descriptive statistics for the female and male NFHS estimation samples for our variables of interest. An average woman in our sample is 33 years old and has completed six years of schooling. In comparison, an average husband in our male sample is older (38 years old) and more educated (eight years of schooling). The majority of individuals in our sample are Hindu, belong to a Scheduled Caste or Tribe (SC/ST) or an Other Backward Class (OBC), and reside in a rural area. For some of our analyses, we also use the couple's sample where both the husband and the wife were interviewed.

The NFHS data include binary variables on whether a woman reports having experienced various forms of violent acts from her husband. Following Anderson (2008) and Erten and Keskin (2018), we construct three indices to capture physical, sexual, and psychological violence by averaging the z -scores of the underlying IPV indicators over the past 12 months. For instance, the physical violence index is constructed by averaging the z -scores of indicator variables that equal one if the respondent reported experiencing one of the following violent acts from her husband in the last 12 months: slapping; twisting her arm or pulling her hair; pushing, shaking, or throwing an object at her; hitting with the partner's fist or in a way that hurts; kicking, dragging, or beating; choking or burning; attacking with a knife, gun, or other weapon. Other indices are similarly defined. The psychological violence index is constructed by averaging the z -scores of indicator variables that equal one if the respondent reported experiencing one of the following acts from her partner in the last 12 months: insult, humiliation, and threat to hurt or harm. The sexual violence

⁸The NFHS-4 followed the World Health Organization's guidelines on ethical collection of information on domestic violence, and the module was not implemented if privacy could not be obtained.

⁹While the 2005–06 round of the NFHS had also implemented a domestic violence module, that dataset lacks district identifiers. Although the 1998–99 round of the NFHS has district identifiers, it did not include a domestic violence module; it asked only three questions about whether the respondent has been beaten or physically mistreated by any person, who this person was, and how often the violent act(s) occurred in the last twelve months.

¹⁰The size of the ever-married female sample is smaller than the size of the ever-married male sample because the former only includes women who responded to the domestic violence module.

index is constructed by averaging the z -scores of indicator variables that equal one if the respondent reported experiencing one of the following acts from her partner in the last 12 months: forced into unwanted sex, forced into other unwanted sexual acts, and forced with threats to perform unwanted sexual acts.

Based on a respondent's state of residence at the time of the survey and the month and the year of survey, we first identify the last statewide election year for each respondent. We assume that the respondent lived in the same state at the time of the last state election. This is a reasonable assumption to make in our context.¹¹ The year of last state election ranges from 2010 through 2015 for respondents in the NFHS data. Next, we merge the NFHS data with electoral data for statewide elections aggregated to the district level using election year and respondent's district of residence. Districts in our NFHS data have between 1 and 40 electoral constituencies, and the median district has 5 constituencies. Supplemental Appendix Table 3 describes the characteristics of the districts covered by our NFHS estimation sample using election and Census data. On average, 9 percent of constituencies in a district had a female winner; 3 percent of constituencies had a close election between a male and a female candidate; and 1 percent of constituencies had both (i.e., a close election between a male and a female candidate and a female winner).

For analyzing effects on fertility and birth spacing, we reshape the cross-sectional woman-level NFHS dataset to construct a retrospective woman-year panel spanning the time period between the last state election and the year of survey, i.e., a woman enters the panel in the year of her last state election and exits in the year of survey. We have 234,554 observations in this woman-year panel.

The electoral data comprises candidate-level information within each state assembly constituency, including gender, number of votes, party affiliation, and other candidate characteristics. These data allow us to identify the gender of winners and runners-up, as well as victory margins. We construct a district-level aggregated variable that measures the fraction of constituencies in a district d in state s that were won by female politicians—both overall (F_{ds}) as well as in close elections against a male runner-up (FC_{ds})—in any given election year. We define an election to be close if the margin of victory in terms of vote share was less than 3 percentage points.¹²

There are a large number of parties that field candidates in Indian state assembly elections. For instance, during elections that took place during our analysis period, 2008–2015, the top two candidates were affiliated with more than 170

¹¹ Fulford (2013) shows that across-state migration by women is quite small (less than 1 percent in most cases). Among individuals aged 25 years or older surveyed in the 2008 National Sample Survey of India, 89 percent of women and 93 percent of men lived in the same state where they were born. This is also reflected in the fact that less than 5 percent of the population had moved across states in the last ten years according to the 2011 census data. Thanks for raising this important point. Another concern might be interdistrict migration by women within the same state (either because they moved upon marriage after the last state election or because married women migrated to a different district for other reasons during our study period). According to Kone et al. (2018), interdistrict (but intrastate) migration among women is 9.8 percent, with the majority of it being accounted by migration at the time of marriage. Therefore, one way we check the robustness of our findings is by restricting the analysis to the subsample of women who got married before the year of last election, and hence are less likely to have migrated to another district. Doing so does not alter any of our results. Additionally, exposure to female leaders has no overall effect on duration of residence in the NFHS data.

¹² Later, we show that our results are robust to alternative definitions of a close election.

parties, in addition to independent candidates who are not affiliated with any party¹³ In Supplemental Appendix Table 4, we examine the fraction of candidates that are female for some major parties or types of parties (these are overlapping categories). Column 1 of Supplemental Appendix Table 4 shows that the share of female candidates among the top two candidates is quite low for all parties and does not display any substantial party-level variation that could bias our results. The numbers are similar in column 2, which shows the share of female candidates for all parties for the full sample political candidates. Moreover, female winners are not disproportionately likely to belong to certain parties. For instance, among constituencies where a female won, 32 percent of the winning female candidates belonged to the UPA and 31 percent belonged to the NDA. These are the two biggest political alliances in India during recent decades.

Finally, we utilize the 2011 Census of India to obtain information on district characteristics as control variables in our regression specifications as described in Section III.

III. Empirical Strategy

The objective of this paper is to estimate the effect of female leaders on multiple aspects of women's well-being—specifically, the provision of public goods and family planning services that are especially relevant for women, the use of contraceptives, and finally, the prevalence of IPV experienced by women.

Both the DLHS (village-level) and the NFHS (individual-level) data only allow us to identify the associated district and not the electoral constituency.¹⁴ Therefore, we conduct our analysis at the district level by examining the causal relationship between our outcomes of interest and the fraction of constituencies in the district that were won by women. This is not a straightforward exercise, however, due to unobservable factors that may be correlated both with the likelihood of having a female winner and the gendered outcomes that we examine. For instance, less gender-biased districts may be more likely to elect female leaders and have a lower incidence of violence against women as well as a higher prevalence of modern contraception.

To identify the effects of exposure to female leaders, we employ an instrumental variable strategy based on the prevalence of close elections between male and female candidates in a given district. We define an election to be a close male-female election if the winner and the runner up are of opposite gender and the margin of victory is small, i.e., less than 3 percentage points in terms of the vote share. Assuming that the identity of the winner in a close election is quasi-random, we use the fraction of constituencies in a district won by a woman in a close election against a man as an instrument for the fraction of constituencies in a district won by a woman. This is a reasonable approach given that the probability of being elected

¹³The analysis period is the union of the election years considered for the village-level (DLHS data) and woman-level (NFHS data) outcomes and hence includes the years 2008 through 2015.

¹⁴Districts are larger than state electoral constituencies (or assembly constituencies, as they are called in India), and each district typically consists of multiple assembly constituencies.

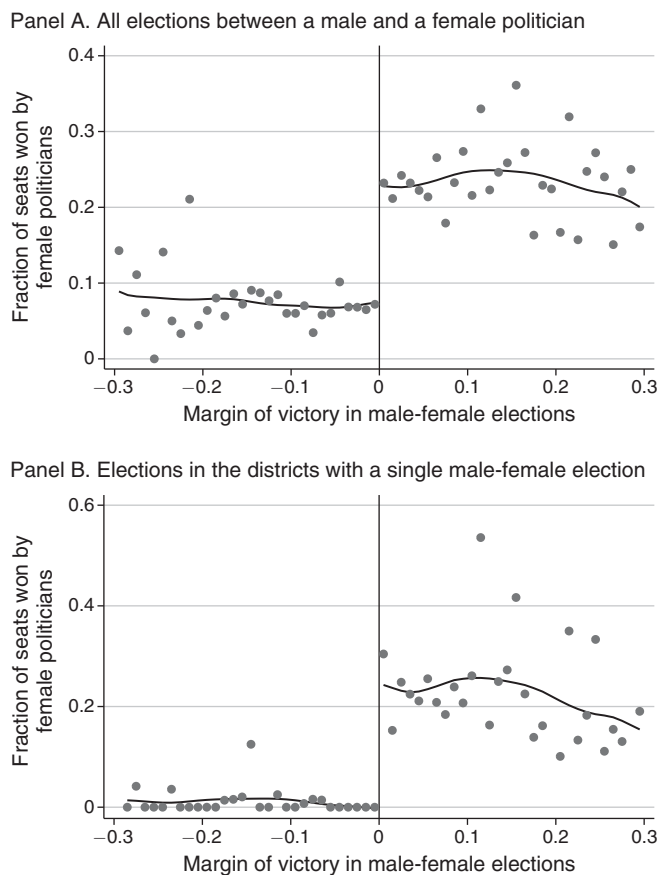


FIGURE 1. FIRST STAGE ILLUSTRATION

Notes: The figures plot the fraction of seats in a district won by female candidates against the margin of victory in elections between male and female politicians. Panel A uses all male-female elections in a district, whereas panel B only uses the elections in districts with a single male-female election. Data come from elections held during our analysis period, 2008–2015.

in a first-past-the-post electoral system is a function of the vote difference between the winner and the runner-up and this function has a discontinuity at zero.

Our identification strategy closely follows previous literature on this topic (Clots-Figueras 2012; Bhalotra and Clots-Figueras 2014) and is clearly illustrated in Figure 1, which plots the fraction of constituencies won by female politicians in a district against the margin of victory in male-female elections during our analysis period, 2008–2015. A positive margin denotes that a female politician won. Panel A of Figure 1 uses all elections where the top two candidates are a male and a female while panel B only uses districts that had a single male-female election. For Figure 1, we aggregate the data into one-percentage-point bins (Imbens and Lemieux 2008) and plot a lowess smoothing curve on each side of the discontinuity. In both panels there is a clear discontinuity: The fraction of seats in a district that are won by female candidates increases by 15–20 percentage points when a woman wins a close

election against a man in the district. This is not surprising since the average district has 5 to 6 constituencies.

Furthermore, in Supplemental Appendix Figure 1, we perform a McCrary test for manipulation around the cut-off by testing for any discontinuity in the frequency of observations in each margin-of-victory bin in elections between male and female candidates around the cutoff. We find no evidence of manipulation around the cutoff, and the figure demonstrates a sufficient density of male-female elections around the cutoff.

For outcomes observed at the village level, we estimate the following specifications, using the two-stage least squares (2SLS) approach outlined above:

$$\begin{aligned}
 (1) \quad Y_{vds} &= \beta_0 + \beta_1 F_{ds} + \beta_2 TC_{ds} + \sum_j \phi_{1j} I_{jds} G(M_{jds}) + \sum_j \phi_{2j} I_{jds} \\
 &\quad + Z'_{ds} \theta_2 + \delta_s + \epsilon_{vds} \\
 (2) \quad F_{ds} &= \gamma_0 + \gamma_1 FC_{ds} + \gamma_2 TC_{ds} + \sum_j \alpha_{1j} I_{jds} G(M_{jds}) + \sum_j \alpha_{2j} I_{jds} \\
 &\quad + Z'_{ds} \eta_2 + \delta_s + u_{ds},
 \end{aligned}$$

where Y_{vds} is an outcome for village v in district d in state s . The key explanatory variable of interest in the second stage (equation (1)) is F_{ds} , which denotes the fraction of constituencies in a district with female winners in the most recent state legislature election before the survey. We instrument for F_{ds} with the variable FC_{ds} , which denotes the fraction of constituencies in a district where a woman won in a close election against a man in the most recent state election before the survey. We control for the fraction of constituencies in the district that had a close male-female election, TC_{ds} , to take into account the possibility that the existence of close male-female elections may, for example, depend on the number of female candidates in the district and this, in turn, may be correlated with voter preferences. We also include a third-order polynomial, $G(M_{jds})$, in the victory margin, M_{jds} , between the winner and the runner-up for every (close or nonclose) male-female election, j , and interact these polynomials with I_{jds} , an indicator for whether there was a male-female election in the district. In addition we include a vector of district-level controls, Z_{ds} , comprising the shares of the district population that are female, urban, and lower caste, as well as the male and female literacy rates in the district. The state fixed effects, δ_s , control for all time-invariant state-level unobservable confounders, such as gender norms and voter preferences. We use robust standard errors clustered at the district level for inference.

For cross-sectional outcomes at the individual level from NFHS data, we estimate the following specifications using the same 2SLS approach:

$$\begin{aligned}
 (3) \quad Y_{ids} &= \beta_0 + \beta_1 F_{ds} + \beta_2 TC_{ds} + \sum_j \phi_{1j} I_{jds} G(M_{jds}) + \sum_j \phi_{2j} I_{jds} \\
 &\quad + X'_{ids} \theta_1 + Z'_{ds} \theta_2 + \delta_s + \epsilon_{ids} \\
 (4) \quad F_{ds} &= \gamma_0 + \gamma_1 FC_{ds} + \gamma_2 TC_{ds} + \sum_j \alpha_{1j} I_{jds} G(M_{jds}) + \sum_j \alpha_{2j} I_{jds} \\
 &\quad + X'_{ids} \eta_1 + Z'_{ds} \eta_2 + \delta_s + u_{ids},
 \end{aligned}$$

where Y_{ids} denotes the outcome of interest for woman i in district d in state s , such as a measure of IPV she reports to have experienced in the last 12 months. In addition to the right hand-side variables included in equations (1) and (2), equations (3) and (4) also include a vector of individual-level controls, X_{ids} , namely years of schooling and indicator variables for age, highest level of educational attainment, religion, caste, and residence in a rural area. Again, we use robust standard errors clustered at the district level.

Last, we estimate the following specification using our retrospective woman-year panel to examine the effects on fertility outcomes:¹⁵

$$(5) \quad Y_{idst} = \beta_0 + \beta_1 F_{ds} + \beta_2 TC_{ds} + \sum_j \phi_{1j} I_{jds} G(M_{jds}) + \sum_j \phi_{2j} I_{jds} \\ + K'_{idst} \theta_1 + Z'_{ds} \theta_2 + \delta_s + \tau_t + \mu_{idst}$$

$$(6) \quad F_{ds} = \gamma_0 + \gamma_1 FC_{ds} + \gamma_2 TC_{ds} + \sum_j \alpha_{1j} I_{jds} G(M_{jds}) + \sum_j \alpha_{2j} I_{jds} \\ + K'_{idst} \eta_1 + Z'_{ds} \eta_2 + \delta_s + \tau_t + u_{idst},$$

where Y_{idst} is the outcome for a woman i in district d in state s and year t . We include a vector of time-variant and time-invariant individual-level controls, K_{idst} , comprising the individual-level controls specified in equations (3) and (4). We also include year fixed effects, τ_t , in this specification to account for year-specific shocks at the national level, such as secular improvements in gender attitudes, female education, and access to sexual and reproductive health services, and any aggregate economic or political regime changes. Similar to the 2SLS estimation strategy described above, we instrument F_{ds} with FC_{ds} and include the same set of controls as equation (5) in the corresponding first stage, i.e., equation (6). Again, we cluster standard errors at the district level.

In Supplemental Appendix Tables 5 and 6, we provide supporting evidence for our identification strategy by examining whether the fraction of female leaders in the district is correlated with individual or district characteristics using NFHS and DLHS data, respectively. These tables indicate that women's characteristics (in Supplemental Appendix Table 5), including age, religion, caste, years of schooling, and residence in a rural area; district characteristics, including shares of the district population that are female, urban, or SC/ST; shares of district seats that are reserved for lower castes or won by specific parties; total number of seats; and the female and male literacy rates do not significantly predict the gender of the winner in close male-female elections either individually or jointly.¹⁶ Although Supplemental Appendix Table 5 does not include these variables, we also have balance in terms of husband's age and years of schooling, as well as indicators for whether the husband wants more sons than

¹⁵ Recall that for this analysis, we use a retrospective woman-year panel for the period between the last state election and the year of survey.

¹⁶ Prior literature (Beaman, Duflo, Pande, and Topalova 2012) has demonstrated that exposure to female leaders at the village level improves educational aspirations and attainment of adolescent girls; however, given our focus on older married women and a relatively short "exposure" period, this is unlikely to hold true in our case. In fact, Supplemental Appendix Tables 5 and 6 show that the fraction of female leaders elected in close elections in a district is uncorrelated with a married woman's years of schooling as well as the male and female literacy rates in a district. Additionally, in all our regression specifications we include these measures of educational attainment as controls.

the wife does and whether he desires additional sons. Furthermore, using the 2001 census data,¹⁷ Supplemental Appendix Figure 2 shows that assembly constituency characteristics (e.g., shares of SC/ST population, rural population, literacy rates, population size, nonfarm employment, night luminosity) are balanced around the cutoff point for victory margin of close female-male elections. These results support our assumption that as the difference in vote shares approaches the discontinuity, constituencies in which a woman wins by a small margin are similar to constituencies in which a man wins by a small margin (Lee 2008).

Our parameter of interest is β_1 , and our 2SLS approach estimates a Local Average Treatment Effect (LATE) that consistently estimates β_1 . The OLS estimates may be biased either upwards or downwards, depending on a number of factors. For example, it is plausible that more gender-progressive districts may both provide better health care services for women and elect more women, making this a potential source of upward bias in the OLS estimates. At the same time, there may similarly be other reasons for a downward bias in the OLS estimates. For instance, female politicians may be more likely to stand for elections (and eventually get elected) precisely in places where the treatment of women is worse, resulting in a positive correlation between regressive gender norms (a potential omitted variable) and having a larger fraction of female leaders in a district (the endogenous regressor). Additionally, if places where the treatment of women is worse are also places where provision of health care for women is worse, we will expect a negative correlation between outcomes such as health services and regressive gender norms (the omitted variable). Together, these correlations will make the OLS estimates downward biased, which is what our results indicate.¹⁸

As pointed out in Bhalotra and Clots-Figueras (2014), the differences between the OLS and the IV estimates may also be due to the differences between the average treatment effects (ATE) captured by the OLS and the LATE captured by the IV. For example, if it is the case that close elections are harder to win, then the LATE might be selecting on women that are more capable, or more motivated to improve the implementation of health services. However, we do not find that this is a likely explanation for three reasons. First, utilizing data on candidate characteristics from the Association for Democratic Reform for our analysis period (2008–2015), we compare women who win in close male-female elections to all other female winners. These results are presented in column 1 of Supplemental Appendix Table 9 and suggest that female candidates in close male-female elections versus all other elections are similar in terms of age, educational attainment, wealth status, criminality, party

¹⁷ Asher, Lunt, Matsuura, and Novosad (2019, 2021); Henderson, Storeygard, and Weil (2011); Office of the Registrar General and Census Commissioner, India (2011); Jensenius and Verniers (2017); Prakash, Rockmore, and Uppal (2019).

¹⁸ Ultimately, whether these hypothesized relationships are true and which ones dominate, is an empirical question. Supplemental Appendix Table 7 shows that the fraction of female leaders in a district is positively correlated with variables that capture more regressive gender norms in our NFHS data, including the ratio of male to female literacy rate, wife's ideal number of sons, and husband's ideal number of sons. Moreover, the fraction of female leaders in a district is negatively correlated with better norms for women, as captured by the share of females in the population. Supplemental Appendix Table 8 utilizes the DLHS data to explore the correlation between the availability of health workers relevant for women's health in a village and the variables in that dataset that capture regressive gender norms (the ratio of male to female literacy rate) and progressive gender norms (the share of females in the population), and finds correlations that are consistent with our intuition.

affiliation, and whether the seat has caste-based reservation. To further understand the LATE vs ATE comparison, in columns 2 and 3 of Supplemental Appendix Table 9, we compare female and male winners in close male-female elections, as well as across *all* elections, and note that any differences between male and female candidates are similar across both samples. Second, we find that female candidates who win in close elections against a male are also similar to male candidates who win in close elections against a female in terms of various election characteristics. Supplemental Appendix Table 10 shows the correlation between the characteristic of interest and an indicator for the winner being male in the sample of close male-female elections using all elections that took place during our period of analysis (2008–2015). None of the coefficients in this table are significantly different from zero. Finally, Supplemental Appendix Tables 5 and 6 that we described above also support this argument as they show that the set of *complier districts* are similar to other districts in the country. We also check whether districts that have any close elections between a male and a female as the top two candidates are different from the overall sample of districts. Supplemental Appendix Table 11 illustrates that districts with any close elections between a female and a male candidate, are also not different, on average, from the overall other districts. Taken together, these results suggest that it is unlikely that the differences between the OLS and the IV arise from any differences between the LATE and the ATE.

IV. Results

In this section we present our findings on the positive impacts that female leaders have on women-centric public health infrastructure and women's family planning outcomes in their constituencies, as well as the resulting unintended consequences in terms of IPV experienced by their female constituents.

A. Rural Public Health Infrastructure

Prior evidence suggests that female leaders are likely to differ from male leaders in their policy formulation and implementation preferences (Pande 2003; Chauvin and Tricaud 2024) and tend to invest more in infrastructure that is more directly relevant for women (Chattopadhyay and Duflo 2004). Importantly, recent work by Goyal (2023) shows that female politicians are particularly effective at mobilizing female grassroots workers and work extensively with existing women's groups to successfully elicit the preferences of women in the community.¹⁹

In this section we investigate the impacts of female leaders on the public provision of goods and services that are especially relevant for their female constituents. Specifically, we estimate the impacts on three domains of supply-side investments that are pertinent to women's health: (i) access to health facilities; (ii) access to women-centric health workers and services, and (iii) implementation of public

¹⁹Note, however, that the evidence on gender differences in policymaking from developed country contexts is more mixed. See, for example, Carozzi and Gago (2023); Casarico, Lattanzio and Profeta (2022); Bagues and Campa (2021); and Ferreira and Gyourko (2014).

TABLE 1—ACCESS TO HEALTH FACILITIES

	Health facility index (1)	Sub center (2)	Primary center (3)	Block center (4)	Govt. hospital (5)	Community center (6)	Govt. dispensary (7)
<i>Panel A. OLS</i>							
Fraction of female leaders	0.688 (0.265)	0.026 (0.077)	0.163 (0.081)	0.252 (0.110)	0.260 (0.106)	0.304 (0.116)	0.167 (0.103)
Observations	8,366	8,383	8,383	8,383	8,383	8,383	8,366
<i>Panel B. 2SLS second stage</i>							
Fraction of female leaders	2.964 (0.735)	0.182 (0.133)	0.661 (0.206)	1.141 (0.264)	1.013 (0.290)	1.158 (0.316)	0.705 (0.389)
Observations	8,366	8,383	8,383	8,383	8,383	8,383	8,366
Outcome mean	0.000	0.878	0.813	0.556	0.750	0.725	0.108
<i>Panel C. 2SLS first stage</i>							
Dep var: fraction of female leaders							
Fraction of female leaders in close elections	0.921 (0.110)	0.920 (0.110)	0.920 (0.110)	0.920 (0.110)	0.920 (0.110)	0.920 (0.110)	0.921 (0.110)
Observations	8,366	8,383	8,383	8,383	8,383	8,383	8,366
First stage <i>F</i> -stat	70.477	70.436	70.436	70.436	70.436	70.436	70.477

Notes: Data comes from the 2012–14 District-Level Household and Facility Survey (DLHS) of India. We present OLS estimates in panel A and 2SLS estimates specified in equations (2) and (1) in panels B and C, respectively. We define close elections as those in which victory margin is less than 3 percentage points. In columns 2–7, the dependent variables are indicators for village-level access to different types of health facilities, and the outcome in column 1 is an index based on the outcomes in columns 2–7. All regressions include district controls and state fixed effects. District-level controls include the share of female population, the share of urban population, and the share of SC-ST population in the district, and the female and male literacy rates. Robust standard errors are clustered at the district level.

programs that target the well-being of women. As previously mentioned, the DLHS data enables us to conduct this analysis only for rural areas.

In Table 1, we illustrate that female leaders improve female constituents' access to health facilities in rural areas. Panels A, B, and C of Table 1, respectively, present the Ordinary Least Squares (OLS) estimates, the second-stage Two-Stage Least Squares (2SLS) estimates corresponding to equation (2), and the first-stage estimates corresponding to equation (1). The outcome in column 1 of Table 1 is an index that captures a village's access to public health facilities, where *access* to a facility is an indicator that equals one when the facility either exists in the village or is connected to the village through an all-weather road. Columns 2 through 7 present the results separately for each component of the health facility index, namely, indicator variables for access to a subcenter, a primary health center, a block primary health center, a government hospital, a community health center, and a government dispensary. The index in column 1 is a *z*-score constructed by averaging the indicator variables in columns 2–7.

The OLS estimates in Table 1 show that the relationship between the fraction of seats held by women at the district level and rural constituents' access to health facilities is positive and significant in almost all columns. However, the OLS estimates are likely to underestimate the true effect due to unobservables that are positively correlated with the likelihood of electoral victory for women and negatively

correlated with the development of public health infrastructure. This could occur, for instance, if women are more likely to be elected in those districts where the provision of health services is worse. Indeed, the 2SLS estimates are not only positive and significant, but also larger in magnitude than the OLS estimates.

These results imply that access to health facilities is greater in villages that experience a higher share of female winners in the most recent state election. The coefficients in panel B imply that the election of an additional female politician in a district improves access to a community health center by 22 percent, a government hospital by 19 percent, a block primary health center by 29 percent, and a primary health center by 11 percent.²⁰ Given that 77 percent of contraceptive users in our rural NFHS sample report that the most recent source for their contraceptive method was a public provider, we expect this improved access to public health facilities to also translate into better access to family planning services.

Panel C of Table 1 reports estimates from the first stage of the 2SLS regressions. The *F*-statistics are large, implying that the instrument has predictive power. The coefficient estimate of 0.92 does not statistically differ from one, implying that the share of female winners across all elections in a district varies almost one-to-one with the share of women who win in close elections against male politicians in a district.²¹ However, the instrument is still useful to isolate the variation resulting from close elections against male politicians and excludes female electoral wins by a large margin against a man or close female wins against another woman.

Next, we show that female leaders also significantly improve the availability of female health workers and women's groups in rural areas. Columns 2, 3, and 4 of Table 2 show respectively that the availability of ANMs, female doctors, and private doctors in a village improves with the share of female leaders in the associated district. The outcome variable in column 1 is an index that captures the availability of these service providers and is a *z*-score constructed by averaging the indicator variables in columns 2–4. Like the previous table, the 2SLS estimates in Table 2 are positive, highly significant, and larger than the OLS coefficients. The election of an additional female politician in a district improves access to an ANM and a female doctor by 20 percent and 47 percent, respectively. These results are noteworthy from the perspective of reproductive health care provision because the delivery of public programs that target the health of women and girls, including family planning services, is led by community health workers, such as ANMs, in rural India. ANMs are village-level female health workers who typically serve as the first link between the community and the health system, and are thus crucial for the provision of safe and effective care in rural areas.

Consistent with the results in columns 1–4, column 5 of Table 2 shows that female leaders also significantly improve the presence of *Mahila Mandal*, i.e., women's

²⁰ In the DLHS sample, the median district consists of seven constituencies, and the median share of seats held by women is zero. Electing an additional female politician raises the median number of seats held by women from zero to one, increasing the district's share of female leaders from zero to 1/7, or 14 percentage points. To interpret the magnitudes of the coefficient estimates for individual components, we multiply the estimate by 0.14 and divide by the outcome mean. For instance, the election of an additional female politician in a district improves access to a community health center by 16 percentage points (1.158×0.14), corresponding to a 22 percent increase relative to the outcome mean ($0.16/(0.725 \times 100)$).

²¹ This relationship has also been observed in previous studies, such as Bhalotra and Clots-Figueras (2014).

TABLE 2—ACCESS TO WOMEN-CENTRIC SERVICES

	Health worker index (1)	Auxiliary nurse midwife (2)	Female doctor (3)	Private doctor (4)	Women's group (5)
<i>Panel A. OLS</i>					
Fraction of female leaders	0.528 (0.351)	0.159 (0.154)	0.297 (0.105)	0.013 (0.134)	0.163 (0.146)
Observations	8,371	8,376	8,375	8,375	8,374
<i>Panel B. 2SLS second-stage</i>					
Fraction of female leaders	2.470 (0.665)	0.891 (0.262)	0.719 (0.278)	0.753 (0.242)	0.480 (0.244)
Observations	8,371	8,376	8,375	8,375	8,374
Outcome mean	−0.000	0.633	0.213	0.317	0.551
<i>Panel C. 2SLS first-stage</i>					
Dep var: fraction of female leaders					
Fraction of female leaders in close elections	0.921 (0.110)	0.921 (0.110)	0.920 (0.110)	0.921 (0.110)	0.920 (0.110)
Observations	8,371	8,376	8,375	8,375	8,374
First stage <i>F</i> -stat	70.411	70.415	70.454	70.464	70.572

Notes: Data comes from the 2012–14 District-level Household and Facility Survey (DLHS) of India. We present OLS estimates in panel A and 2SLS estimates specified in equations (2) and (1) in panels B and C, respectively. We define close elections as those in which victory margin is less than 3 percentage points. In columns 2–4, the dependent variables are indicators for the presence of different types of health professionals in the village and the outcome in column 1 is an index based on the outcomes in columns 2–4. In column 5, the outcome is an indicator for the presence of a women's group in the village. All regressions include district controls, and state fixed effects. District-level controls include the share of female population, the share of urban population, and the share of SC-ST population in the district, and the female and male literacy rates. Robust standard errors are clustered at the district level.

clubs or groups, in rural areas of their constituencies.²² The election of an additional female politician in a district improves the likelihood that a village has a women's collective by 12 percent relative to the outcome mean of 55 percent.

Next, in Table 3, we explore the effects of female leaders on the implementation of public programs that specifically target women and girls (columns 2–4),²³ where the outcome in each column is an indicator for whether the program has been implemented in the village. Additionally, in column 5 we examine the effect on an indicator for whether the Sanitation Program has been implemented in the village. Although sanitation programs are not designed to only target women, access to safe and clean toilet facilities, especially in rural areas, is likely to disproportionately benefit women. The outcome in column 1 is an index based on the indicator variables in columns 2 to 5. The programs analyzed in Table 3 are some of India's

²² Mahila mandal are informal grassroots organizations of women that play a significant role in the socioeconomic empowerment of women (Díaz-Martin, Gopalan, Guarnieri, and Jayachandran 2022). While some of these groups serve primarily as savings and credit groups, often they also generate health awareness and serve as platforms for delivering health- and nutrition-oriented programs targeted towards women and children (Kumar et al. 2018).

²³ These include *Janani Suraksha Yojana* (column 2), *Kishori Shakti Yojana* (column 3), and *Balika Samridhi Yojana* (column 4). A description of these programs is provided in Supplemental Appendix.

TABLE 3—IMPLEMENTATION OF PUBLIC PROGRAMS

	Public program index (1)	Janani Suraksha Yojana (2)	Kishori Shakti Yojana (3)	Balika Samriddhi Yojana (4)	Sanitation program (5)
<i>Panel A. OLS</i>					
Fraction of female leaders	0.436 (0.295)	0.065 (0.069)	0.298 (0.157)	0.134 (0.165)	0.077 (0.145)
Observations	8,374	8,379	8,378	8,378	8,377
<i>Panel B. 2SLS second stage</i>					
Fraction of female leaders	1.535 (0.578)	0.160 (0.106)	0.543 (0.316)	0.523 (0.305)	0.678 (0.350)
Observations	8,374	8,379	8,378	8,378	8,377
Outcome mean	−0.000	0.925	0.488	0.416	0.556
<i>Panel C. 2SLS first stage</i>					
Dep var: fraction of female leaders					
Fraction of female leaders in close elections	0.920 (0.110)	0.920 (0.110)	0.920 (0.110)	0.920 (0.110)	0.920 (0.110)
Observations	8,374	8,379	8,378	8,378	8,377
First stage <i>F</i> -stat	70.484	70.471	70.446	70.453	70.444

Notes: Data comes from the 2012–14 District-level Household and Facility Survey (DLHS) of India. We present OLS estimates in panel A and 2SLS estimates specified in equations (2) and (1) in panels B and C, respectively. We define close elections as those in which victory margin is less than 3 percentage points. In columns 2–5, the dependent variables are indicators for whether each public program has been implemented in the village and the outcome in column 1 is an index based on the outcomes in columns 2–5. All regressions include district controls, and state fixed effects. District-level controls include the share of female population, the share of urban population, and the share of SC-ST population in the district, and the female and male literacy rates. Robust standard errors are clustered at the district level.

flagship schemes to increase the utilization of health services by women and adolescent girls. Our estimates imply that female leaders can play a significant role in the improved delivery of these programs in their rural constituencies.

In sum, the estimates presented in Tables 1–3 show that increasing the share of seats held by women at the district level by one standard deviation (SD) (i.e., a 0.09 increase in the share of seats held by female politicians in a district) improves (i) the access to health facilities by 0.27 SD, (ii) the implementation of women-centric services through the availability of health workers by 0.22 SD, and (iii) the implementation of public programs that target women by 0.14 SD. The reduced-form results reported in columns 1–3 of Supplemental Appendix Table 12 are consistent with the 2SLS estimates described above. Although the increase in the availability of ANMs and female physicians could be particularly important for reproductive health care provision given the comfort that women may feel when accessing care from female providers, we note that all aspects of public health investments, including health care facilities and public programs, could make a difference in improving access to reproductive health care, particularly in underserved rural areas. Female leaders' efforts in improving infrastructure, programs, and recruiting female providers collectively enable better access to contraception and family planning services.

While Bhalotra and Clots-Figueras (2014) have previously examined the outcomes discussed in Table 1, our analysis differs from theirs in several ways. First, the focus of our analysis is on women's family planning and reproductive health outcomes, whereas Bhalotra and Clots-Figueras (2014) examine child health and mortality. Second, we explore a wider range of outcomes that focus on women's access to health care, including access to women-centric services (in Table 2) and implementation of women-centric public programs (in Table 3).

B. Modern Contraceptive Use and Birth Spacing

The results above suggest that female leaders have a higher probability of investing in the provision of family planning and reproductive health services than male leaders, thereby increasing the supply of contraceptive services available to women.²⁴ Moreover, if a female leader has fewer children than an average woman in her constituency, she might also serve as a role model for her female constituents and alter their demand for additional children and their willingness to use family planning (Anukriti and Chakravarty 2019). These supply and demand side effects could in turn increase female constituents' take-up of modern contraception.

In Table 4 we examine the effects of exposure to female leaders on women's likelihood of using contraceptive methods and birth spacing for the full sample as well as for the smaller couple's subsample.²⁵ We find that increasing women's political representation significantly increases the use of modern contraceptive methods (columns 1 and 2), decreases the use of traditional methods (columns 3 and 4), and increases birth spacing (columns 5 and 6). Our estimates imply that electing one additional female politician in a district increases women's modern contraceptive use by 3.6 percentage points for our entire rural sample (column 1) and by 4.7 percentage points for the couples' sample (column 2).²⁶ These estimates correspond to a 7.9 percent increase relative to the outcome mean for the entire rural sample and a 9.6 percent increase relative to the outcome mean for the couples' sample. The coefficient estimates for the positive effect on modern contraceptive use are larger than the estimated negative effect on traditional method use, which suggests that not only does exposure to female leaders cause women to switch from traditional to modern methods, it also enables nonusers to start using modern contraception.²⁷ The reduced-form results reported in column 4 of Supplemental Appendix Table 12 are consistent with the 2SLS estimates described above.

²⁴ Although contraception is not a female issue per se, in the Indian context, the bulk of contraceptive users are female. In our NFHS sample, 86 percent of modern contraception users are female.

²⁵ We present results for the couple's subsample to provide estimates consistent with those presented in the next section.

²⁶ Since the median district has six constituencies and the median share of seats held by women is zero, the election of an additional female politician increases the median number of seats from zero to one, with the share increasing from zero to 1/6, or 0.17.

²⁷ While the role model effect could also potentially increase the demand for and the use of family planning among women exposed to female leaders, we do not have the data to directly test this mechanism. At the same time, we do not observe any effects on a woman's desired number of children, which is likely to be correlated with the demand for and use of family planning services.

TABLE 4—FAMILY PLANNING AND FERTILITY, RURAL SAMPLE

	Modern contraception		Traditional contraception		Birth spacing (in years)		No. of children	
	Full sample (1)	Couple sample (2)	Full sample (3)	Couple sample (4)	Full sample (5)	Couple sample (6)	Full sample (7)	Couple sample (8)
<i>Panel A. OLS</i>								
Fraction of female leaders	0.022 (0.038)	0.012 (0.040)	−0.004 (0.019)	−0.003 (0.023)	0.032 (0.215)	0.112 (0.232)	−0.039 (0.085)	−0.102 (0.087)
Observations	43,902	31,433	43,902	31,433	166,358	117,904	166,358	117,904
<i>Panel B. 2SLS second-stage</i>								
Fraction of female leaders	0.212 (0.113)	0.279 (0.118)	−0.071 (0.047)	−0.094 (0.054)	1.576 (0.666)	1.490 (0.612)	−0.132 (0.326)	−0.215 (0.309)
Observations	43,902	31,433	43,902	31,433	166,358	117,904	166,358	117,904
Outcome mean	0.457	0.493	0.062	0.072	6.712	6.332	2.507	2.544
<i>Panel C. 2SLS first-stage</i>								
Dep var: fraction of female leaders								
Fraction of female leaders in close elections	0.927 (0.098)	0.958 (0.102)	0.927 (0.098)	0.958 (0.102)	0.891 (0.101)	0.914 (0.108)	0.891 (0.101)	0.914 (0.108)
Observations	43,902	31,433	43,902	31,433	166,358	117,904	166,358	117,904
First stage <i>F</i> -stat	89.308	88.102	89.308	88.102	78.604	71.297	78.604	71.297

Notes: Data are from the 2015–16 National Family Health Survey (NFHS) of India. We present OLS estimates in panel A and 2SLS estimates in panels B and C, respectively, for the rural sample. Columns 1–4 are based on cross-sectional data and columns 5–8 use the retrospective woman-year panel data. Columns 1, 3, 5, and 7 show estimates for the full rural sample, while columns 2, 4, 6, and 8 restrict the rural sample to women from our couples' sample. We define close elections as those in which victory margin is less than 3 percentage points. The outcomes in the table are as follows: indicator for whether the woman is using a modern contraceptive method (columns 1–2), indicator for whether the woman is using a traditional contraceptive method (columns 3–4), the number of years since the woman's last birth (columns 5–6), and the woman's number of children (columns 7–8). All regressions include individual controls, district controls, and state fixed effects. Individual controls include years of schooling and indicator variables for age, religion, caste, residence in a rural area, and highest level of educational attainment. District-level controls include the share of female population, the share of urban population, the share of SC-ST population in the district, and the female and male literacy rates. The regressions in columns 5–8 also include year fixed effects. Robust standard errors are clustered at the district level.

Consistent with the contraception results, exposure to female leaders increases birth spacing in rural areas (columns 5 and 6 of Table 4). These estimates are based on the woman-year panel dataset²⁸ and imply that one additional seat held by a woman at the district level increases birth spacing among rural women by 0.27 years (or 4 percent) for the full rural sample and by 0.25 years (or 4 percent) for the couples' sample.²⁹

The effect on the number of children (columns 7 and 8) is, as expected, negative; however, the coefficients are insignificant at conventional levels of significance. It is plausible that it may take longer to observe the effects of contraceptive use on the number of children that a woman has and that we are underpowered to detect effects for this outcome. Moreover, even without any effect on completed fertility, contraceptive use can improve women's health and well-being by allowing them to

²⁸We use specification (3) as described in Section III.

²⁹These results are robust to controlling for the woman's number of children at the time of the last election in her constituency (available upon request).

plan and space their births better. This is because short intervals between pregnancies are associated with many adverse outcomes, such as maternal health complications (including preeclampsia, higher blood pressure, elevated risk of third trimester bleeding, premature rupture of the membranes) and maternal mortality (Norton 2005). Additionally, higher take-up of contraceptive methods can improve women's educational attainment, labor force participation, and lifetime earnings by providing them greater control over the timing of their births and greater certainty regarding the pregnancy consequences of sex (Miller and Babiarz 2016; Goldin and Katz 2002; Miller 2010; Canning and Schultz 2012; Bailey 2006; Becker and Lewis 1973; Willis 1973; Bailey, Hershbein, and Miller 2012; Joshi and Schultz 2007, 2013).³⁰

C. *Intimate Partner Violence*

We now explore the impact of exposure to female leaders on IPV experienced by their female constituents. The presence of female leaders might reduce IPV prevalence through changes in gendered attitudes, especially those related to violence against women (Beaman, Duflo, Pande, and Topalova 2012; Burnet 2011; Kuipers 2020; Delaporte and Pino 2022). On the other hand, greater access to family planning services could lead to intrahousehold conflict and trigger backlash effects from male partners. Indeed, Ashraf, Field, and Lee (2014) show that an increase in the supply of family planning services can make the influence of moral hazard more salient in couples with misaligned fertility preferences, leading to spousal conflict. Nearly 25 percent of women in our NFHS sample report ever experiencing physical IPV, and 22 percent report being physically abused by their husbands during the last 12 months. Since the increase in public health investments are based on village-level evidence from rural areas, we restrict our main analysis to the rural NFHS sample, presenting results for urban areas in the Supplemental Appendix.

Table 5 reports the OLS estimates in panel A, the 2SLS estimates corresponding to equation (3) in panel B, and the first-stage estimates corresponding to equation (4) in panel C for the rural sample. The OLS estimates show that the relationship between the fraction of seats held by women at the district level and the self-reported risk of physical IPV experienced by female constituents is positive but insignificant. However, the OLS estimates are likely to underestimate the true effect if, for instance, women are more likely to be elected in districts with a lower acceptability of violence against women. Indeed, we find that the 2SLS estimates are positive, significant, and larger in magnitude than the OLS estimates. The estimate in column 1 indicates that electing one additional female politician in a district increases a female constituent's

³⁰In contrast, we do not observe any impacts for the urban sample in Supplemental Appendix Table 13. To the extent that urban areas already have better infrastructure and access to skilled health professionals even in the absence of female leaders, this is a plausible explanation. It is estimated that nearly 75 percent of dispensaries, 60 percent of hospitals and beds, and 80 percent of doctors in India are located in urban areas, whereas 70 percent of the Indian population resides in rural areas (OXFAM India 2021; KPMG 2015). Unfortunately, the lack of appropriate data on urban health infrastructure prevents us from evaluating whether this is indeed the explanation for the null effects that we find for urban women.

TABLE 5—PHYSICAL IPV, RURAL SAMPLE

Dependent variable: Physical IPV index	Full sample (1)	Wife's age ≤ 30 (2)	Wife's age > 30 (3)	$Ideal_{sons}^H > Actual_{sons}$ (4)	$Ideal_{sons}^H \leq Actual_{sons}$ (5)
<i>Panel A. OLS</i>					
Fraction of female leaders	0.095 (0.058)	0.132 (0.083)	0.059 (0.066)	0.192 (0.102)	0.047 (0.070)
Observations	43,902	19,823	24,079	9,361	21,645
<i>Panel B. 2SLS second stage</i>					
Fraction of female leaders	0.423 (0.198)	0.583 (0.235)	0.279 (0.212)	0.546 (0.270)	0.125 (0.198)
Observations	43,902	19,823	24,079	9,361	21,645
Outcome mean	0.031	0.035	0.027	0.002	0.027
<i>Panel C. 2SLS first stage</i>					
Dep var: Fraction of female leaders					
Fraction of female leaders in close elections	0.927 (0.098)	0.922 (0.095)	0.938 (0.101)	0.961 (0.107)	0.961 (0.100)
Observations	43,902	19,823	24,079	9,361	21,645
First stage <i>F</i> -stat	89.308	94.087	87.102	80.923	92.964

Notes: Data are from the 2015–16 National Family Health Survey (NFHS) of India. We present OLS estimates in panel A and 2SLS estimates specified in equations (4) and (3) in panels B and C, respectively, for the rural sample. We define close elections as those in which victory margin is less than 3 percentage points. The outcome variable in all columns is the *z*-score for physical IPV experienced by the wife in the last 12 months. The sample is restricted to women who age was ≤ 30 and > 30 at the time of the survey in columns 2 and 3, respectively. In columns 4–5, we split the sample by whether the husband's ideal number of sons ($Ideal_{sons}^H$) is greater than or less than or equal to the actual number of sons ($Actual_{sons}$) that the couple has at the time of the survey. All regressions include individual controls, district controls, and state fixed effects. Individual controls include years of schooling and indicator variables for age, religion, caste, residence in a rural area, and highest level of educational attainment. District-level controls include the share of female population, the share of urban population, the share of SC-ST population in the district, and the female and male literacy rates. Robust standard errors are clustered at the district level.

experience of physical IPV during the last year by 0.07 SD.^{31,32} The reduced-form results reported in column 5 of Supplemental Appendix Table 12 are consistent with the 2SLS estimates in Table 5.³³

³¹ Recall that since the median district has six constituencies and the median share of seats held by women is zero, election of an additional female politician increases the median number of seats from zero to one, with the share increasing from zero to 1/6, or 0.17.

³² The magnitude of the estimated effect in column 1 is similar to the effect sizes estimated in studies that examine the impacts of other policy changes on IPV indices. For example, Erten and Keskin (2018) find that one additional year of schooling induced by exposure to a compulsory schooling reform in Turkey increased the reporting of psychological violence by women by 0.06 SD in rural areas. Erten and Keskin (2021) show that a one SD increase in the Syrian refugee share in a Turkish province resulted in a 0.05 SD decline in the experience of physical violence reported by Turkish women.

³³ The estimates reported in Supplemental Appendix Table 14 indicate no evidence of a statistically significant impact of exposure to female leaders on women's risk of experiencing psychological or sexual violence from their husbands. However, the magnitude of the effect on the risk of experiencing psychological IPV is still meaningful—having one additional elected female politician at the district level increases a female constituent's experience of psychological IPV during the last year by 0.04 SD. In contrast, the effect on sexual IPV is quite small and indistinguishable from zero. Moreover, consistent with our findings in Supplemental Appendix Table 13, columns 1, 4, and 7 of Supplemental Appendix Table 15 show no evidence of a significant impact on physical, psychological, and sexual IPV experienced by women living in urban areas as the coefficient estimates are indistinguishable from zero.

One may, however, be concerned about the potential disadvantages of self-reported data on IPV. If the political representation of women increases female constituents' sense of self-worth and aspirations, they might start recognizing violent acts of spouses as IPV and therefore be more likely to report IPV. While we cannot entirely rule out the presence of such reporting bias, as we show in Section V, we find no evidence of a significant change in women's or men's attitudes toward IPV in response to increased exposure to female leaders. While administrative data on IPV, such as police or hospital reports, represent more objective measures of violence that women experience from their partners, the restricted access of abused women in developing countries to police stations and hospitals also raises concerns about the reliability of such data. For instance, in our NFHS sample, we observe that only 0.6 percent of physically abused women led a police report and 0.1 percent of them visited a doctor or medical personnel. Public reporting, such as police or medical reports, can be an intimidating process for women in India, where fear of humiliation or retaliation is prevalent. On the other hand, confidential survey-based data collection offers a private space for women to disclose IPV more freely, reflecting the reality of their experiences without the social penalties of public reporting (Ellsberg and Heise 2005). Using a rich dataset with self-reported information on physical, sexual, and psychological violence, we are able to examine the impact of women's political representation on different dimensions of IPV that remain otherwise unobservable.

D. Robustness Checks

In Supplemental Appendix Tables 16 and 17, we test the robustness of our findings in a number of ways. In both tables, we test whether our findings are robust to using different degrees of polynomials for the vote margin as controls (columns 1–3), when the bandwidth for close elections is reduced to 2 or 2.5 percent or increased to 3.5 percent (columns 4–6), to restricting the sample to districts in which there was at least one election between a female and a male politician since our identifying variation comes from these observations (column 7), and to removing outlier districts, where the share of female leaders exceeds 50 percent (i.e., the ninety-ninth percentile), or to controlling for political party affiliations and the share of seats reserved for SC/ST populations (columns 9–10).

Supplemental Appendix Table 16 shows that our results for the health facilities index, the health worker index, and the public program index are robust to the checks described above—the coefficients remain positive and significant in 29 out of 30 cases.³⁴ Supplemental Appendix Table 17 shows that our results for the physical IPV index and modern contraceptive use for the rural sample based on these alternative specifications are also consistent with our main results.³⁵

³⁴ Only one coefficient in panel C is noisily estimated, with a p -value of 0.198, but its magnitude is qualitatively similar to the main results.

³⁵ All coefficients in panel A are positive, significant, and of a similar magnitude, except in column 6 where we lose significance at conventional levels (p -value = 0.199). Similarly, in panel B of Supplemental Appendix Table 17, all estimates are positive, and only columns 5, 6, and 8 have estimates that are imprecisely estimated with p -values of 0.124, 0.187, and 0.141, respectively.

Our specifications control for a wide range of district characteristics, but do not allow for the inclusion of district fixed effects, thereby preventing us from adequately controlling for all time-invariant district characteristics. To address this, we append three rounds of the village level public infrastructure data (DLHS) to create a district-level panel for the health facility outcomes reported in Table 1, which allows us to incorporate district fixed effects.³⁶ For each round, we identify the most recent state election before the year of the survey and use the election variables for that particular election as our controls. Additionally, we include survey round fixed effects and their interaction with district-level controls from the 2001 Census. Supplemental Appendix Table 18 shows that the effects of women's political representation on rural public health infrastructure continue to hold in this specification, implying that our results are not merely driven by unobserved district characteristics.³⁷

Additionally, we conduct a falsification test using earlier rounds of the DLHS and matching them with future state elections to check whether a female politician winning in a future election “affects” past rural health care infrastructure and service provision.³⁸ Supplemental Appendix Table 19 presents results for the full sample in panel A and for a restricted sample in panel B, which excludes districts where a female candidate recently won a close election to avoid potential treatment contamination. Out of 10 coefficient estimates, nine are insignificant, with the exception of one coefficient that is marginally significant and in the opposite direction.

Furthermore, we aggregate all our outcome variables to the district level to address potential concerns about the outcomes being reported at different levels (e.g., health facilities reported at the village level, fertility and partner violence reported at the individual level). Supplemental Appendix Tables 20–24 show that all our results are robust to aggregating these outcomes to the district level and weighting the regressions by the cell size, which corresponds to the number of villages (DLHS data) or to the number of women (NFHS data), in each district.³⁹

Finally, similar to Figure 1, we provide regression discontinuity figures for our main outcomes reported in Tables 1–5. Specifically, we plot the average outcomes at the district level against the margin of victory in male-female elections.⁴⁰ We note that this analysis should be taken as suggestive and is for illustrative purposes since we do not observe these outcomes at the constituency level. Using all elections where the top two candidates are a male and a female politician, Supplemental Appendix Figure 3 shows an improvement in indicators for rural health care infrastructure

³⁶Specifically, we use data from three DLHS rounds (DLHS-2, DLHS-3, and DLHS-4) that were conducted during 2002–2004, 2007–2008, and 2012–2014, respectively.

³⁷Note that DLHS-2 does not contain information on the outcomes reported in Tables 2 and 3. Moreover, the data on program implementation in DLHS-3 is not comparable to the same data in DLHS-4. However, we can combine data from DLHS-3 and DLHS-4 to analyze the outcomes in Table 2 and reassuringly find similar results that are available upon request.

³⁸Specifically, we use data from the 2002–2004 DLHS-2 (IIPS 2006) and 2007–2009 DLHS-3 (IIPS 2010), matching them to the second (next-to-next) round of elections after the survey was conducted.

³⁹For woman-level outcomes, we net out individual-level controls, state fixed effects, $\sum_j \phi_{1j} I_{jds} G(M_{jds})$, and $\sum_j \phi_{2j} I_{jds}$, by residualizing these outcomes before computing the averages at the district level. This ensures that individual-level covariates do not bias district-level averages within a state.

⁴⁰Similar to district-level tables (Supplemental Appendix Tables 20 to 24), we residualize outcomes to account for individual- and district-level covariates.

(panel A); an increase in modern contraceptive use, a decline in traditional contraceptive use, an increase in birth spacing (panel B); and an increase in the likelihood of exposure to physical IPV, driven by reproductive age women younger than 30 years old (panel C) when a female politician marginally wins against a male politician. These findings are consistent with our main results.

V. Mechanisms

In the previous section, we have argued that exposure to female leaders increases women's modern contraceptive use in rural areas because female leaders are more likely than male leaders to improve the provision of public goods related to family planning and reproductive health. However, an unintended consequence of greater political representation of women is an increase in physical IPV experienced by female constituents. In this section we examine potential mechanisms that could explain why female political representation increases female constituents' risk of experiencing IPV. We show that our results are likely driven by the misalignment between a husband's desired and actual number of sons such that his wife's greater contraceptive use (due to an increase in exposure to female leaders), leads to marital conflict. We also evaluate and rule out the following alternate channels: (i) a worsening of attitudes toward violence against women due to, say, male backlash against female leaders, (ii) an improvement in women's relative income prompting violence from male partners in response, and (iii) potential changes in the type of partners women are matched with on the marriage market, due to an increase in exposure to female leaders.

A. Husband's Son Preference

Previous research indicates that household decision-making about childbearing and contraceptive use may be characterized by inefficiency and non-cooperative behavior (Ashraf, Field, and Lee 2014; Anukriti 2020; Ashraf, Field, Voena, and Ziparo 2020). As women's contraceptive use may not be perfectly observable to the male partner, moral hazard can arise due to hidden action and asymmetric information. Ashraf, Field, and Lee (2014) show that an increase in the supply of family planning services can amplify moral hazard in couples with misaligned fertility preferences, leading to spousal conflict. Spousal discordance in fertility preferences is quite prevalent in our sample, particularly regarding the desired number of sons. Indian households exhibit substantial "son preference" (Das Gupta et al. 2003; Das Gupta 2010; Jain 2014; Jayachandran 2017), significantly influencing fertility and family planning outcomes.⁴¹ In our sample 44 percent of couples disagree on their ideal number of sons, and in 23 percent of couples, the husband's ideal number of sons exceeds the wife's ideal number of sons. Greater contraceptive use by the wife in such cases may lead to spousal conflict, including IPV, if the husband opposes contraception due to a preference for more sons than what the couple has.

⁴¹ Clark (2000); Bhalotra and Van Soest (2008); Filmer, Friedman, and Schady (2009); Jensen (2012); Rosenblum (2013); Anukriti (2018); Anukriti, Kwon, and Prakash (2022).

We test this mechanism by analyzing heterogeneity in IPV impacts based on whether the husband's ideal number of sons exceeds the couple's actual number of sons.⁴² Column 4 of panel B in Table 5 shows that the increase in physical IPV is driven by couples where the husband desires more sons than they currently have. We find no evidence of a significant effect on IPV in couples where the husband's desired number of sons matches or is lower than the actual number (column 5).⁴³ The estimate in column 4 implies that one additional elected female politician in a district leads to a 0.09 SD increase in physical IPV against rural women whose husbands desire additional sons.⁴⁴ Moreover, while the overall effect on psychological IPV is insignificant, columns 2 and 3 of Supplemental Appendix Table 14 show that exposure to female leaders increases psychological violence against wives in couples where the husband's desired number of sons exceeds the actual number. For sexual IPV the expected signs appear in columns 5 and 6, but the estimates are imprecise, likely due to its lower prevalence relative to physical and psychological IPV.

If our argument is correct, the increase in IPV should also be more pronounced among couples where the wife is still in active childbearing years, as the husband's concern over achieving his desired number of sons remains relevant. Indeed, Table 5 (columns 2 and 3) shows that the effect on physical IPV is larger and only significant for women aged 30 or younger. Given that most Indian women complete childbearing by 30, these results support our hypothesis.⁴⁵

Overall, our findings suggest that increased contraceptive use by women may trigger IPV from husbands with relatively strong son preference. In rural districts where female leaders are marginally elected, public health infrastructure improves, leading to higher female contraceptive use. Our results indicate that this increased contraceptive use may fuel husband's grievances, escalating intrahousehold conflict and IPV, particularly when the husband opposes contraception due to his desire for additional sons.

B. Alternate Channels

Female Leader Ability or Effort in Implementing All Public Programs.—It is plausible that female politicians have greater ability or put in greater effort overall in the implementation of *any* public programs, and not just programs that specifically target women's well-being. To explore this, we examine the effect of female

⁴² Columns 3 and 4 of Supplemental Appendix Table 25 show that exposure to female leaders does not affect the husband's desired number of sons or the likelihood that his desired number exceeds the actual number.

⁴³ We find a similar pattern of results if we examine heterogeneity in our IPV results by the discordance between the husband's and the wife's preferred number of sons.

⁴⁴ The reduced-form estimates in Supplemental Appendix Table 12 confirm that these effects differ significantly between the two subsamples.

⁴⁵ Moreover, the heterogeneity in IPV effects by husband's son preference is only visible in rural areas where women experience a significant increase in their access to family planning, with no evidence of a significant impact in urban areas (Supplemental Appendix Table 15). Interestingly, the impact of female leaders on contraceptive take-up does not vary by the gap between the husband's desired and actual number of sons. The second stage coefficients in columns 1 and 2 of Supplemental Appendix Table 25 are positive, significant, and similar in magnitude. Rather, it is only for women whose husbands desire additional sons that wife's contraceptive use leads to IPV, implying that, on average, husbands with a strong son preference resort to violence when their expectations are not met.

TABLE 6—ALTERNATE CHANNELS, RURAL SAMPLE

	Wife's IPV attitudes (1)	Husband's IPV attitudes (2)	Wife worked last week (3)	Wife worked last year (4)	Husband's schooling (5)	Spousal education gap (6)	Spousal age gap (7)	Husband worked last week (8)
<i>Panel A. OLS</i>								
Fraction of female leaders	0.046 (0.073)	−0.033 (0.084)	−0.026 (0.031)	−0.003 (0.036)	−0.089 (0.257)	−0.037 (0.228)	0.008 (0.216)	0.008 (0.027)
Observations	43,859	47,088	43,902	43,902	31,433	43,769	31,433	47,147
<i>Panel B 2SLS second stage</i>								
Fraction of female leaders	0.269 (0.242)	−0.417 (0.297)	−0.053 (0.116)	−0.085 (0.103)	−0.532 (0.668)	−0.522 (0.557)	−0.373 (0.573)	0.005 (0.078)
Observations	43,859	47,088	43,902	43,902	31,433	43,769	31,433	47,147
Outcome mean	−0.049	0.003	0.275	0.366	6.851	1.815	4.588	0.893
<i>Panel C. 2SLS first stage</i>								
Dep var: Fraction of female leaders								
Fraction of female leaders in close elections	0.927 (0.098)	0.943 (0.098)	0.927 (0.098)	0.927 (0.098)	0.958 (0.102)	0.927 (0.098)	0.958 (0.102)	0.943 (0.098)
Observations	43,859	47,088	43,902	43,902	31,433	43,769	31,433	47,147
First stage <i>F</i> -stat	89.012	92.580	89.308	89.308	88.102	89.328	88.102	92.531

Notes: Data are from the 2015–16 National Family Health Survey (NFHS) of India. We present OLS estimates in panel A and 2SLS estimates specified in equations (4) and (3) in panels B and C, respectively, for the rural sample. We define close elections as those in which victory margin is less than 3 percentage points. The outcomes in the table are as follows: an index of wife's attitudes towards IPV (column 1), an indicator for whether the wife worked last week (column 2), an indicator for whether the wife worked last year (column 3), husband's years of schooling (column 4), the difference in years of schooling between husband and wife (column 5), the differences in ages between husband and wife (column 6), an index of husband's attitudes towards IPV (column 7), and an indicator for whether the husband worked last week (column 8). All regressions include individual controls, district controls, and state fixed effects. Individual controls include years of schooling and indicator variables for age, religion, caste, residence in a rural area, and highest level of educational attainment. District-level controls include the share of female population, the share of urban population, the share of SC-ST population in the district, and the female and male literacy rates. Robust standard errors are clustered at the district level.

leaders on the provision of other village-level services or public goods unrelated to gender, and for which we have data available in the DLHS. The results are presented in Supplemental Appendix Table 26. We find no significant effects on whether the village gets more than six hours of electricity in a day (column 1), the presence of a middle school (column 2) and a secondary school (column 3) in the village, and whether the village has a credit cooperative society (column 4), an agricultural cooperative society (column 5), a milk cooperative society (column 6), a bank (column 7), and a post office (column 8). While these outcomes do not capture the full range of public good provision that female leaders could influence, the evidence presented in Supplemental Appendix Table 26 suggests that our results are unlikely to be driven by a more general higher ability or effort levels of female leaders for all public programs.

Attitudes toward Violence.—Having women in key political leadership positions could shape both women's and men's beliefs about what women can achieve and why they should be treated with respect. Studies exploiting village-level random assignment of female leaders in India have shown that girls' aspirations and

educational attainment significantly improve in villages that are assigned to a female leader (Beaman, Duflo, Pande, and Topalova 2012). Similarly, exposure to local female leaders may lower women's acceptance of IPV, as shown by Kuipers (2020) in Indonesia. At the same time, while men's attitudes toward violence may also improve due to the same role model effect, it is also possible that men might feel threatened by the authority of female leaders, and may express more support for attitudes that justify violence against women. Table 6 examines the effects of exposure to female leaders on IPV attitudes of women in column 1 and of men in column 2. The outcomes are standardized indices composed of attitudes towards violence against women in various situations, and they are defined in the List of Variables section of the Supplemental Appendix. In both cases there is no evidence of a significant change in the acceptance of IPV in rural areas. We conclude that our IPV results are unlikely to be driven by changes in attitudes towards domestic violence.

Labor Market Outcomes.—Another channel through which female leaders may increase women's risk of experiencing IPV is by influencing local labor markets in a way that increases women's employment and income relative to their husbands. Deininger, Nagarajan, and Singh (2020) find that women's participation in public work programs and private employment increases in villages with a randomly assigned female leader in India, albeit after the reservation period has ended. Similarly, Ghani, Kerr, and O'Connell (2014) explore how political reservations for women in India affect female entrepreneurship and labor force participation in the manufacturing sector. Consequently, IPV may increase due to male backlash when traditional gender roles are breached and if violence is used as an instrument of financial and psychological control by male partners (Eswaran and Malhotra 2011; Bobonis, González-Brenes, and Castro 2013). On the other hand, by improving women's outside option and reducing their exposure to husbands, increased female employment could also decrease the risk of experiencing IPV (Aizer 2010). However, the results reported in Table 6 show no evidence of a significant impact on women's probability of having worked in the last week (column 3) or having worked in the last 12 months (column 4) in rural areas. These results suggest that our IPV results cannot be explained by changes in women's labor market outcomes.

Marriage Market Outcomes.—Increasing women's political representation at the local level may also affect marriage market outcomes and partner characteristics if changes in the bargaining power of women or perception of their status affect the matching process between potential partners. Even though it is relatively unlikely that women's marriage market outcomes might be impacted within the period of our study, we nevertheless explore this. Table 6 indicates no evidence of a significant impact of women's political representation on their male partners' years of schooling (column 5), the schooling difference between partners (column 6), the age difference between partners (column 7), or whether the husband worked last week (column 8). We therefore conclude that the marriage market channel does not explain our main results.

VI. Conclusion

We study the impact of female leaders in India on women's well-being and find that while female leaders improve publicly provided goods and services for women, there may also be a harmful effect along another important dimension of a woman's well-being, i.e., an increase in IPV. We use data on village health infrastructure to first explore impacts of female leaders on a range of outcomes that measure access to health care and family planning services for women and find significant improvements. Using individual-level surveys, we further find that women exposed to female leaders also increase the use of modern contraceptive methods and we have suggestive evidence that birth spacing increases. At the same time, there is a significant increase in IPV experienced by the woman. A key channel driving our results is the husband's son preference—women whose husbands prefer more sons than they have, experience greater IPV when exposed to female leaders. Thus, increased contraceptive use by women (through greater access to reproductive health care) may trigger IPV from male partners who have a relatively strong son preference.

IPV exacts an enormous toll in terms of mental and physical health, economic capability, and child well-being (WHO 2013).⁴⁶ Consequently, societal rewards from accounting carefully for this dimension of women's well-being may be immense. Our results suggest that increased access to contraceptive methods and other types of health care is likely to benefit women in terms of gaining more control over their reproductive capacity and increasing birth spacing, but that it may also impose significant costs on them by increasing their probability of experiencing physical violence from their husbands, particularly whose ideal number of sons might be higher. Overall, these findings present a mixed view of the impacts of increasing women's political representation in a context with significant spousal discordance in fertility preferences.

The gains from identifying policy interventions that could reduce and prevent IPV in these contexts are potentially substantial. As our paper demonstrates, female leaders are already committed to enhancing health infrastructure. An effective policy measure, therefore, would involve equipping health care professionals with the necessary training to recognize victims of IPV and to provide them with information on available local resources, including shelters, hotlines, counseling services, and legal assistance specifically tailored to IPV. Moreover, fostering stronger partnerships between health care providers and law enforcement could play a critical role in empowering women by informing them of their legal rights and motivating them to take decisive steps to prevent further abuse. This integrated approach may not only address immediate health concerns, but also contribute to a safer, more supportive environment for women affected by IPV.

REFERENCES

- Aizer, Anna. 2010. "The Gender Wage Gap and Domestic Violence." *American Economic Review* 100 (4): 1847–59.
- Anderberg, Dan, Helmut Rainer, Jonathan Wadsworth, and Tanya Wilson. 2016. "Unemployment and Domestic Violence: Theory and Evidence." *Economic Journal* 126 (597): 1947–79.

⁴⁶The total global cost of IPV is estimated to be \$4.4 trillion, or 5.2 percent of global GDP, which is significantly higher than the combined costs of civil wars, terrorism, and homicides (Fearon and Hoeffler 2014).

- Anderson, Michael L.** 2008. "Multiple Inference and Gender Differences in the Effects of Early Intervention: A Reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects." *Journal of the American Statistical Association* 103 (484): 1481–95.
- Anukriti, S.** 2018. "Financial Incentives and the Fertility-Sex Ratio Trade-Off." *American Economic Journal: Applied Economics* 10 (2): 27–57.
- Anukriti, S.** 2020. "Female Sterilization and Women's Well-Being in India." Unpublished.
- Anukriti, S., and Abhishek Chakravarty.** 2019. "Democracy and Demography: Societal Effects of Fertility Limits On Local Leaders." *Journal of Human Resources* 54 (1): 79–121.
- Anukriti, S., Bilge Erten, and Priya Mukherjee.** 2025. *Reproducibility Package for Female Leaders and Intrahousehold Dynamics: Evidence From State Elections In India*. World Bank. <https://doi.org/10.60572/QQDH-K505>.
- Anukriti, S., Sungoh Kwon, and Nishith Prakash.** 2022. "Saving for Dowry: Evidence from Rural India." *Journal of Development Economics* 154: 102750.
- Asher, Sam, Tobias Lunt, Ryu Matsuura, and Paul Novosad.** 2019. "The Socioeconomic High-Resolution Rural-Urban Geographic Dataset on India (SHRUG)." Unpublished.
- Asher, Sam, Tobias Lunt, Ryu Matsuura, and Paul Novosad.** 2021. "Development Research at High Geographic Resolution: An Analysis of Night Lights, Firms, and Poverty in India using the SHRUG Open Data Platform." *World Bank Economic Review* 35 (4): 845–71.
- Ashraf, Nava, Erica Field, and Jean Lee.** 2014. "Household Bargaining and Excess Fertility: An Experimental Study in Zambia." *American Economic Review* 104 (7): 2210–37.
- Ashraf, Nava, Erica M. Field, Alessandra Voena, and Roberta Ziparo.** 2020. "Maternal Mortality Risk and Spousal Differences in the Demand for Children." NBER Working Paper 28220.
- Bagues, Manuel, and Pamela Campa.** 2021. "Can Gender Quotas in Candidate Lists Empower Women? Evidence from A Regression Discontinuity Design." *Journal of Public Economics* 194: 104315.
- Bailey, Martha J.** 2006. "More Power To the Pill: The Impact of Contraceptive Freedom on Women's Life Cycle Labor Supply." *Quarterly Journal of Economics* 121 (1): 289–320.
- Bailey, Martha J., Brad Hershehn, and Amalia R. Miller.** 2012. "The Opt-In Revolution? Contraception and the Gender Gap in Wages." *American Economic Journal: Applied Economics* 4 (3): 225–54.
- Beaman, Lori, Raghavendra Chattopadhyay, Esther Duflo, Rohini Pande, and Petia Topalova.** 2009. "Powerful Women: Does Exposure Reduce Bias?" *Quarterly Journal of Economics* 124 (4): 1497–540.
- Beaman, Lori, Esther Duflo, Rohini Pande, and Petia Topalova.** 2012. "Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India." *Science* 335 (6068): 582–86.
- Becker, Gary S., and H. Gregg Lewis.** 1973. "On the Interaction between the Quantity and Quality of Children." *Journal of Political Economy* 81 (2): S279–S288.
- Bhalotra, Sonia, and Arthur van Soest.** 2008. "Birth-Spacing, Fertility and Neonatal Mortality in India: Dynamics, Frailty, and Fecundity." *Journal of Econometrics* 143 (2): 274–90.
- Bhalotra, Sonia, Damian Clarke, Joseph Flavian Gomes, and Atheendar Venkataramani.** 2023. "Maternal Mortality and Women's Political Power." *Journal of the European Economic Association* 21 (5): 2172–208.
- Bhalotra, Sonia, and Irma Clots-Figueras.** 2014. "Health and the Political Agency of Women." *American Economic Journal: Economic Policy* 6 (2): 164–97.
- Bobonis, Gustavo J., Melissa González-Brenes, and Roberto Castro.** 2013. "Public Transfers and Domestic Violence: The Roles of Private Information and Spousal Control." *American Economic Journal: Economic Policy* 5 (1): 179–205.
- Bochenkova, Alena, Paolo Buonanno, and Sergio Galletta.** 2023. "Fighting Violence against Women: The Role of Female Political Representation." *Journal of Development Economics* 164: 103140.
- Brulé, Rachel E.** 2020. "Reform, Representation, and Resistance: The Politics of Property Rights' Enforcement." *Journal of Politics* 82 (4): 1390–405.
- Burnet, Jennie E.** 2011. "Women Have Found Respect: Gender Quotas, Symbolic Representation, and Female Empowerment in Rwanda." *Politics & Gender* 7 (3): 303–34.
- Canning, David, and T. Paul Schultz.** 2012. "The Economic Consequences of Reproductive Health and Family Planning." *Lancet* 380 (9837): 165–71.
- Card, David, and Gordon B. Dahl.** 2011. "Family Violence and Football: The Effect of Unexpected Emotional Cues On Violent Behavior." *Quarterly Journal of Economics* 126 (1): 103–43.
- Carozzi, Felipe, and Andrés Gago.** 2023. "Who Promotes Gender-Sensitive Policies?" *Journal of Economic Behavior & Organization* 206: 371–405.

- Carvalho, Natalie, and Slawa Rokicki.** 2019. "The Impact of India's Janani Suraksha Yojana Conditional Cash Transfer Programme: A Replication Study." *Journal of Development Studies* 55 (5): 989–1006.
- Casarico, Alessandra, Salvatore Lattanzio, and Paola Profeta.** 2022. "Women and Local Public Finance." *European Journal of Political Economy* 72: 102096.
- Chattopadhyay, Raghendra, and Esther Duflo.** 2004. "Women as Policy Makers: Evidence from a Randomized Policy Experiment in India." *Econometrica* 72 (5): 1409–43.
- Chaturvedi, Sugat, Sabyasachi Das, and Kanika Mahajan.** 2023. "When Do Gender Quotas Change Policy? Evidence from Household Toilet Provision in India." Indian Statistical Institute, Delhi Discussion Paper 21-02.
- Chauvin, Juan Pablo, and Clemence Tricaud.** 2024. "Gender and Electoral Incentives: Evidence from Crisis Response." NBER Working Paper 32410.
- Chin, Yoo-Mi, and Scott Cunningham.** 2019. "Revisiting the Effect of Warrantless Domestic Violence Arrest Laws On Intimate Partner Homicides." *Journal of Public Economics* 179: 104072.
- Clark, Shelley.** 2000. "Son Preference and Sex Composition of Children: Evidence from India." *Demography* 37 (1): 95–108.
- Clots-Figueras, Irma.** 2011. "Women in Politics: Evidence from the Indian States." *Journal of Public Economics* 95 (7-8): 664–90.
- Clots-Figueras, Irma.** 2012. "Are Female Leaders Good for Education? Evidence from India." *American Economic Journal: Applied Economics* 4 (1): 212–44.
- Das Gupta, Monica.** 2010. "Family Systems, Political Systems and Asia's 'Missing Girls': The Construction of Son Preference and Its Unravelling." *Asian Population Studies* 6 (2): 123–52.
- Das Gupta, Monica, Jiang Zhenghua, Li Bohua, Xie Zhenming, Woojin Chung, and Bae Hwa-Ok.** 2003. "Why Is Son Preference So Persistent in East and South Asia? A Cross-Country Study of China, India and the Republic of Korea." *Journal of Development Studies* 40 (2): 153–87.
- Deininger, Klaus, Songqing Jin, Hari K. Nagarajan, and Fang Xia.** 2015. "Does Female Reservation Affect Long-Term Political Outcomes? Evidence from Rural India." *Journal of Development Studies* 51 (1): 32–49.
- Deininger, Klaus, Hari K. Nagarajan, and Sudhir K. Singh.** 2020. "Women's Political Leadership and Economic Empowerment: Evidence from Public Works in India." *Journal of Comparative Economics* 48 (2): 277–91.
- De Leon, Rodolfo Gomez Ponce, Fernanda Ewerling, Suzanne Jacob Serruya, Mariangela F. Silveira, Antonio Sanhueza, Ali Moazzam, Francisco Becerra-Posada, et al.** 2019. "Contraceptive Use in Latin America and the Caribbean with a Focus on Long-Acting Reversible Contraceptives: Prevalence and Inequalities in 23 Countries." *Lancet Global Health* 7 (2): E227–E235.
- Delaporte, Magdalena, and Francisco Pino.** 2022. "Female Political Representation and Violence Against Women: Evidence from Brazil." Unpublished.
- Díaz-Martin, Lucía, Akshara Gopalan, Eleonora Guarnieri, and Seema Jayachandran.** 2022. "Greater than the Sum of the Parts? Evidence on Mechanisms Operating in Women's Groups." *World Bank Research Observer* 38 (1): 1–35.
- Dupas, Pascaline, and Radhika Jain.** 2024. "Women Left Behind: Gender Disparities in Utilization of Government Health Insurance in India." *American Economic Review* 114 (10): 3345–83.
- Ellsberg, Mary, and Lori Heise.** 2005. *Researching Violence Against Women: A Practical Guide for Researchers and Activists*. World Health Organization, PATH.
- Erten, Bilge, and Pinar Keskin.** 2018. "For Better or for Worse?: Education and the Prevalence of Domestic Violence in Turkey." *American Economic Journal: Applied Economics* 10 (1): 64–105.
- Erten, Bilge, and Pinar Keskin.** 2021. "Female Employment and Intimate Partner Violence: Evidence from Syrian Refugee Inflows to Turkey." *Journal of Development Economics* 150: 102607.
- Erten, Bilge, and Pinar Keskin.** 2024. "Trade-Offs? The Impact of WTO Accession on Intimate Partner Violence in Cambodia." *Review of Economics and Statistics* 106 (2): 322–33.
- Eswaran, Mukesh, and Nisha Malhotra.** 2011. "Domestic Violence and Women's Autonomy in Developing Countries: Theory and Evidence." *Canadian Journal of Economics/Revue Canadienne D'Économique* 44 (4): 1222–63.
- Fearon, James, and Anke Hoeffler.** 2014. "Benefits and Costs of the Conflict and Violence Targets for the Post-2015 Development Agenda." Conflict and Violence Assessment Paper, Copenhagen Consensus Center 1–65.
- Ferreira, Fernando, and Joseph Gyourko.** 2014. "Does Gender Matter for Political Leadership? The Case of US Mayors." *Journal of Public Economics* 112: 24–39.

- Filter, Deon, Jed Friedman, and Norbert Schady.** 2009. "Development, Modernization, and Child-bearing: The Role of Family Sex Composition." *World Bank Economic Review* 23 (3): 371–98.
- Fulford, Scott.** 2013. "The Puzzle of Marriage Migration in India." Unpublished.
- Gagliarducci, Stefano, and M. Daniele Paserman.** 2012. "Gender Interactions within Hierarchies: Evidence from the Political Arena." *Review of Economic Studies* 79 (3): 1021–52.
- Gangadharan, Lata, Tarun Jain, Pushkar Maitra, and Joseph Vecchi.** 2016. "Social Identity and Governance: The Behavioral Response to Female Leaders." *European Economic Review* 90: 302–25.
- Ghani, Ejaz, William R. Kerr, and Stephen D. O'Connell.** 2014. "Political Reservations and Women's Entrepreneurship in India." *Journal of Development Economics* 108: 138–53.
- Goldin, Claudia, and Lawrence F. Katz.** 2002. "The Power of the Pill: Oral Contraceptives and Women's Career and Marriage Decisions." *Journal of Political Economy* 110 (4): 730–70.
- Goyal, Tanushree.** 2023. "Representation from Below: How Women's Grassroots Party Activism Promotes Equal Political Participation." *American Political Science Review* 118 (3): 1415–30.
- Gupta, Sanjeev K., Dinesh K. Pal, Rajesh Tiwari, Rajesh Garg, Ashish K. Shrivastava, Radha Sarawagi, Rajkumar Patil, Lokesh Agarwal, Prashant Gupta, and Chandrakant Lahariya.** 2012. "Impact of Janani Suraksha Yojana on Institutional Delivery Rate and Maternal Morbidity and Mortality: An Observational Study in India." *Journal of Health, Population, and Nutrition* 30 (4): 464–71.
- Heilman, Madeline E., Aaron S. Wallen, Daniella Fuchs, and Melinda M. Tamkins.** 2004. "Penalties for Success: Reactions to Women Who Succeed at Male Gender-Typed Tasks." *Journal of Applied Psychology* 89 (3): 416–27.
- Heinze, Alyssa R., Rachel E. Brulé, and Simon Chouchard.** 2025. "Who Actually Governs? Inequalities and Political Representation in Rural India." *Journal of Politics* 87 (2): 818–22.
- Henderson, J. Vernon, Adam Storeygard, and David N. Weil.** 2011. "A Bright Idea for Measuring Economic Growth." *American Economic Review* 101 (3): 194–99.
- Imbens, Guido W., and Thomas Lemieux.** 2008. "Regression Discontinuity Designs: A Guide To Practice." *Journal of Econometrics* 142 (2): 615–35.
- International Institute for Population Sciences (IIPS).** 2006. *District Level Household and Facility Survey (DLHS-2), 2002-04: India*. Mumbai: IIPS.
- International Institute for Population Sciences (IIPS).** 2010. *District Level Household and Facility Survey (DLHS-3), 2007-08: India*. Mumbai: IIPS.
- International Institute for Population Sciences (IIPS).** 2016. *District Level Household and Facility Survey (DLHS-4), 2012-14: India*. Mumbai: IIPS.
- International Institute for Population Sciences (IIPS).** 2017. *National Family Health Survey (NFHS-4), 2015-16*. Government of India Ministry of Health and Family Welfare.
- Ivandić, Ria, Tom Kirchmaier, Yasaman Saeidi, and Neus Torres Blas.** 2024. "Football, Alcohol, and Domestic Abuse." *Journal of Public Economics* 230: 105031.
- Iyer, Lakshmi, Anandi Mani, Prachi Mishra, and Petia Topalova.** 2012. "The Power of Political Voice: Women's Political Representation and Crime in India." *American Economic Journal: Applied Economics* 4 (4): 165–93.
- Jain, Tarun.** 2014. "Where There Is a Will: Fertility Behavior and Sex Bias in Large Families." *Journal of Human Resources* 49 (2): 393–423.
- Jayachandran, Seema.** 2017. "Fertility Decline and Missing Women." *American Economic Journal: Applied Economics* 9 (1): 118–39.
- Jensen, Robert.** 2012. "Another Mouth to Feed? The Effects of (In)Fertility on Malnutrition." *CESifo Economic Studies* 58 (2): 322–47.
- Jensenius, Francesca R., and Gilles Verniers.** 2017. "Studying Indian Politics with Large-Scale Data: Indian Election Data 1961–Today." *Studies in Indian Politics* 5 (2): 269–75.
- Jones, Kelly M., and Mayra Pineda-Torres.** 2024. "TRAP'd Teens: Impacts of Abortion Provider Regulations on Fertility & Education." *Journal of Public Economics* 234: 105112.
- Joshi, Shareen, and T. Paul Schultz.** 2007. "Family Planning as an Investment in Development: Evaluation of a Program's Consequences in Matlab, Bangladesh." Yale University Economic Growth Center Discussion Paper 951.
- Joshi, Shareen, and T. Paul Schultz.** 2013. "Family Planning and Women's and Children's Health: Long-Term Consequences of an Outreach Program in Matlab, Bangladesh." *Demography* 50 (1): 149–80.
- Kalsi, Priti.** 2017. "Seeing Is Believing - Can Increasing the Number of Female Leaders Reduce Sex Selection in Rural India?" *Journal of Development Economics* 126: 1–18.

- Karpowitz, Christopher, Stephen D. O'Connell, Jessica Preece, and Olga Stoddard. 2023. "Strength in Numbers? Gender Composition, Leadership, and Women's influence in Teams." Unpublished.
- Kone, Zovanga L., Maggie Y. Liu, Aaditya Mattoo, Çağlar Özden, and Siddharth Sharma. 2018. "Internal Borders and Migration in India." *Journal of Economic Geography* 18 (4): 729–59.
- KPMG. 2015. *Healthcare in India: Current State and Key Imperatives*.
- Kuipers, Nicholas. 2020. "The Effect of Electing Female Candidates on Attitudes Toward Intimate Partner Violence." *Journal of Politics* 82 (4): 1590–95.
- Kumar, Neha, Samuel Scott, Purnima Menon, Samyuktha Kannan, Kenda Cunningham, Parul Tyagi, Gargi Wable, Kalyani Raghunathan, and Agnes Quisumbing. 2018. "Pathways from Women's Group-Based Programs To Nutrition Change in South Asia: A Conceptual Framework and Literature Review." *Global Food Security* 17: 172–85.
- Lee, David S. 2008. "Randomized Experiments from Non-Random Selection in US House Elections." *Journal of Econometrics* 142 (2): 675–97.
- Lim, Stephen S., Lalit Dandona, Joseph A. Hoisington, Spencer L. James, Margaret C. Hogan, and Emmanuela Gakidou. 2010. "India's Janani Suraksha Yojana, a Conditional Cash Transfer Programme to increase Births in Health Facilities: An Impact Evaluation." *Lancet* 375 (9730): 2009–23.
- Londoño-Vélez, Juliana, and Estefania Saravia. 2024. "The Impact of Denying a Wanted Abortion on Women and Children." Unpublished.
- Macmillan, Ross, and Rosemary Gartner. 1999. "When She Brings Home the Bacon: Labor-Force Participation and the Risk of Spousal Violence against Women." *Journal of Marriage and the Family* 61 (4): 947–58.
- Mani, Anandi, and Stephen O'Connell. 2019. "Can Political Empowerment Increase Economic Participation? Reservations, Public Works, and Female Labor Force Participation in India." Unpublished.
- Miller, Grant. 2010. "Contraception as Development? New Evidence from Family Planning in Colombia." *Economic Journal* 120 (545): 709–36.
- Miller, Grant, and Kimberly Singer Babiarz. 2016. "Family Planning Program Effects: Evidence from Microdata." *Population and Development Review* 42 (1): 7–26.
- Norton, Maureen. 2005. "New Evidence on Birth Spacing: Promising Findings for Improving Newborn, Infant, Child, and Maternal Health." Unpublished.
- O'Connell, Stephen D. 2018. "Political Inclusion and Educational Investment: Estimates from a National Policy Experiment in India." *Journal of Development Economics* 135: 478–87.
- O'Connell, Stephen D. 2020. "Can Quotas Increase the Supply of Candidates for Higher-Level Positions? Evidence from Local Government in India." *Review of Economics and Statistics* 102 (1): 65–78.
- Office of the Registrar General and Census Commissioner, India. 2011. "Census of India." Accessed via SHRUG, https://www.devdatalab.org/shrug_download/,v2.1.pakora.
- OXFAM India. 2021. *Inequality Report 2021: India's Unequal Healthcare Story*. OXFAM
- Pande, Rohini. 2003. "Can Mandated Political Representation Increase Policy Influence for Disadvantaged Minorities? Theory and Evidence from India." *American Economic Review* 93 (4): 1132–51.
- Powell-Jackson, Timothy, Sumit Mazumdar, and Anne Mills. 2015. "Financial Incentives in Health: New Evidence from India's Janani Suraksha Yojana." *Journal of Health Economics* 43: 154–69.
- Prakash, Nishith, Marc Rockmore, and Yogesh Uppal. 2019. "Do Criminally Accused Politicians Affect Economic Outcomes? Evidence from India." *Journal of Development Economics* 141: 102370.
- Ridgeway, Cecilia L. 2014. "Why Status Matters for Inequality." *American Sociological Review* 79 (1): 1–16.
- Rosenblum, Daniel. 2013. "The Effect of Fertility Decisions on Excess Female Mortality in India." *Journal of Population Economics* 26 (1): 147–80.
- Rudman, Laurie A., Corinne A. Moss-Racusin, Julie E. Phelan, and Sanne Nauts. 2012. "Status Incongruity and Backlash Effects: Defending the Gender Hierarchy Motivates Prejudice against Female Leaders." *Journal of Experimental Social Psychology* 48 (1): 165–79.
- Stevenson, Betsey, and Justin Wolfers. 2006. "Bargaining in the Shadow of the Law: Divorce Laws and Family Distress." *Quarterly Journal of Economics* 121 (1): 267–88.
- Sukhtankar, Sandip, Gabrielle Kruks-Wisner, and Akshay Mangla. 2022. "Policing in Patriarchy: An Experimental Evaluation of Reforms to Improve Police Responsiveness to Women in India." *Science* 377 (6602): 191–98.
- Taylor-Robinson, Michelle M., and Roseanna Michelle Heath. 2003. "Do Women Legislators Have Different Policy Priorities Than Their Male Colleagues? A Critical Case Test." *Women & Politics* 24 (4): 77–101.

- Wheaton, Brian.** 2020. "Laws, Beliefs, and Backlash." Unpublished.
- Willis, Robert J.** 1973. "A New Approach to the Economic Theory of Fertility Behavior." *Journal of Political Economy* 81 (2): S14–S64.
- World Health Organization (WHO).** 2013. *Global and Regional Estimates of Violence Against Women: Prevalence and Health Effects of Intimate Partner Violence and Non-Partner Sexual Violence*. WHO.