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ABSTRACT

Women's Political Representation and Intimate Partner Violence*

We estimate the impact of female leaders on intimate partner violence experienced by women in districts from which they are elected. Exposure to female leaders in state legislatures in India increases the likelihood that female constituents in rural areas report experiencing physical violence from their husbands. This effect can be explained by an increase in women's modern contraceptive use—resulting from improvements in public provision of health services in exposed districts—which leads to marital conflict, especially when the husband has a stronger preference for sons relative to the wife.

JEL Classification: D72, J16, J13

Keywords: intimate partner violence, female leaders, elections, India, contraception, representation

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1 Introduction

Intimate partner violence (IPV) is the most common form of violence experienced by women. The global lifetime prevalence of IPV among ever-partnered women is 27 percent (Sardinha et al. 2022). In developing countries, IPV prevalence is even higher. For instance, approximately 35 percent of ever-partnered women in South Asia report experiencing physical or sexual abuse by their partners. IPV exacts an enormous toll in terms of mental and physical health, economic capability, and child well-being (WHO 2013). The total global cost of IPV is estimated to be USD 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). Consequently, societal rewards from understanding the determinants of spousal violence and identifying policy interventions that can reduce and prevent IPV are potentially substantial.

We investigate whether exposure to female leaders influences IPV experienced by women. Recent studies demonstrate that female leaders can improve gender-specific outcomes along multiple dimensions through better provision of public goods and legislative changes that benefit women.[1] In a similar manner, female leaders could potentially reduce IPV prevalence, for instance, by enacting or strengthening laws governing violence against women (Burnet 2011), by lowering acceptance of IPV (Kuipers 2020), and by strengthening women's intra-household bargaining power through better access to education (Beaman et al. 2012) and employment opportunities (Deininger et al. 2020). On the other hand, if exposure to female leaders empowers women or improves female autonomy, it could heighten intrahousehold conflict and trigger backlash effects from male partners (Eswaran and Malhotra 2011; Bobonis et al. 2013; Ashraf et al. 2014). Thus, the overall impact of exposure to female leaders on the prevalence of IPV against women is *a priori* ambiguous.

In this paper, we examine the impact of female leaders elected to state legislatures in India on the risk of domestic violence experienced by women in districts from which these leaders are elected. To address potential endogeneity in the gender of the elected leader, we exploit a widely used instrumental variables strategy based on 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

[1] These studies include Chattopadhyay and Duflo (2004); Beaman et al. (2009); Bardhan et al. (2010); Clots-Figueras (2011); Ford and Pande (2011); Iyer et al. (2012); Beaman et al. (2012); Bhalotra and Clots-Figueras (2014).

in a given district by the share of seats where women won against men in a close election. Our analysis is based on data from the 2015-16 National Family Health Survey (NFHS) of India, the 2012-13 District-level Household and Facility Survey (DLHS) of India, and the Election Commission of India.

We find that exposure to female leaders increases the likelihood that female constituents report experiencing physical violence from their husbands. The estimates imply that a one standard deviation (s.d.) increase in the fraction of seats held by women in a district leads to a 0.07 s.d. increase in the likelihood of women in rural areas reporting physical spousal violence, with no evidence of a significant impact in urban areas. We also explore the mechanisms underlying the IPV results, and find no evidence that they are driven by the usual channels, including changes in attitudes toward violence, women's labor market outcomes, or partner characteristics.

Instead, the reported increase in IPV in rural areas can be potentially explained by an increase in female constituents' modern contraceptive use that results from greater exposure to female leaders. Districts with a higher share of seats held by female politicians experience improvements in their village-level public health infrastructure, and in particular, the provision of family planning and reproductive health services. The increase in the local availability of such services, in turn, increases women's use of modern contraception and birth spacing in rural areas. Although the higher take-up of contraceptive methods can potentially benefit women in various ways (Joshi and Schultz 2013; Miller and Babiarz 2016), as Ashraf et al. (2014) show, it can also lead to spousal conflict among couples with discordant fertility preferences. In the Indian context, married couples exhibit significant misalignment in their self-reported ideal number of sons.[2] In such couples, when the husband desires more sons than the wife, wife's take-up of modern contraception can potentially lead to backlash from dissatisfied and aggrieved husbands. Indeed, consistent with Ashraf et al. (2014), we find that our IPV results are driven by couples where the husband's ideal number of sons is higher than (a) the wife's ideal number of sons and (b) the number of sons that the couple currently has.

We note upfront that using self-reported data on IPV has potential disadvantages. 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

[2]In our sample, 44 percent of couples differ in their ideal number of sons and, among 23 percent of couples, husbands have a higher ideal number of sons than their wives. Moreover, 30 percent of husbands express that they want to have more sons than they currently have.

therefore be more likely to report IPV. While we cannot entirely rule out the presence of such reporting bias, we find no evidence of a significant change in women's attitudes toward IPV in response to increased exposure to female leaders. In addition, we do not observe any significant impacts on arguably more subjective evaluations of IPV, including women's likelihood of reporting being subjected to psychological violence (i.e., being humiliated, threatened, or insulted).[3]

Our study contributes to a growing literature that documents the effects of female leaders on a range of health and economic outcomes, including infant mortality and health-seeking behaviors (Bhalotra and Clots-Figueras 2014), local public goods and female-oriented policies (Chattopadhyay and Duflo 2004; Clots-Figueras 2011; Bardhan et al. 2010), attitudes toward female leaders (Beaman et al. 2009), and aspirations of girls and education (Beaman et al. 2012; Clots-Figueras 2011).[4] We complement this literature by showing that female leaders improve village-level public health infrastructure, especially for services that benefit women directly. However, unlike prior studies, we also find that female leaders can have unintended negative consequences for their female constituents if the policies that they enact lead to intrahousehold conflict.

Our work also relates to a small set of studies documenting that female leaders induce an increase in reporting of crimes against women, such as rape and kidnapping, to the police (Iyer et al. 2012) and a decrease in women's acceptance of spousal violence (Kuipers 2020). Although our findings complement these studies, our work differs from them 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.[5] IPV is not only

[3]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, we observe that only 0.6 percent of physically abused women filed a police report and 0.1 percent of them visited a doctor or medical personnel. Using a rich dataset with self-reported information on physical, sexual, and psychological violence, such as ours, we are able to examine the impact of women's political representation on different dimensions of IPV that remain otherwise unobservable.

[4]A broader literature explores the role of increased political representation for minority groups on the provision of publicly provided goods and services. For instance, greater representation of Scheduled Castes in India has been shown to increase public goods provision for these castes (Pande 2003).

[5]Iyer et al. (2012) focus on the impact of women's political representation on crimes perpetrated

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.

Moreover, by highlighting the role of increased female contraceptive use as a mechanism underlying our IPV results, our work contributes to a limited literature showing that women's improved access to family planning services may lead to intrahousehold conflict and IPV. Using an experiment in Zambia, Ashraf et al. (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 sub-optimal outcomes, especially for women (Ashraf et al. 2020).

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 et al. 2013), compulsory education (Erten and Keskin 2018), gender wage gap (Aizer 2010), local unemployment shocks (Anderberg et al. 2016), and changes in divorce laws (Stevenson and Wolfers 2006). Our study contributes to this literature by examining the effects of increased political representation of women on the prevalence of IPV.

2 Data

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 individual-level outcomes. 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 subsample (15 percent) of

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.

the households (IIPS 2017).[6] 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 and fertility preferences, contraceptive use, and other socioeconomic characteristics.[7] 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.

Our NFHS estimation sample consists of 65,292 ever-married women and 70,923 men from 628 districts covering 30 state election constituencies. Appendix Table A.1 presents descriptive statistics for the female and male NFHS samples for our variables of interest. An average woman in our sample is 33 years old and has completed 6 years of schooling. In comparison, an average husband in our male sample is older (38 years old) and more educated (8 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.

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, physical violence index is constructed by averaging the z-scores of indicator variables that take a value of 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.[8]

[6]The 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.

[7]While the 2005-06 round of the NFHS had implemented a domestic violence module, the dataset lacks district identifiers. The 1998-99 round of the NFHS has district identifiers, but it did not include a domestic violence module; it included only three questions about whether the respondent has been beaten or physically mistreated by any person, who this person was, and how often this occurred in last twelve months.

[8]Other indices are similarly defined. Sexual violence index is constructed by averaging the z-scores of indicator variables that take a value of 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. Psychological violence index is constructed by averaging the z-scores of indicator variables that take a value of one if the respondent

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.[9] The year of last state election ranges from 2010 through 2016 for respondents in the NFHS data. Next, we merge the NFHS data with electoral data for statewide elections obtained from the Election Commission of India. Since the election data that we use is at the constituency level—a smaller geographical unit than a district—we follow (Bhalotra and Clots-Figueras 2014) and aggregate election data to the district level before merging it with the NFHS data using election year and respondent's district of residence. Districts in our data have between 1 and 40 electoral constituencies and the median district has 6 constituencies.

The electoral data comprises candidate-level information within each state assembly constituency, including gender, number of votes, party affiliation, and other candidate characteristics. This data allows 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 percent.[10] Given the cross-sectional nature of our NFHS data, we have one election per district (last statewide election) in our analysis.

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 235,036 observations in this woman-year panel.

Moreover, we use the 2012-13 DLHS to examine whether female leaders influence village-level health infrastructure. The DLHS is merged with the election data using the

reported experiencing one of the following acts from her partner in the last 12 months: insulting, humiliating, and threatening to hurt or harm.

[9]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. Fulford et al. (2013) shows that across-state migration by females 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 4 percent of the population had moved across states in the last ten years according to the 2001 Census data.

[10]In Section 4.1, we show that our results are robust to alternative close bandwidth selections.

last round of state elections and district information.[11] Finally, we utilize the SHRUG data (Asher et al. 2021) to obtain information on district characteristics, as per the 2011 Census of India, that are used as control variables in our regression specifications (described in Section 3).

Table A.2 describes the characteristics of 628 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). Table A.3 presents summary statistics for the 245 districts included in our DLHS sample, and also describes the DLHS data on public health infrastructure in 7,726 villages.

3 Empirical Strategy

The objective of this paper is to estimate the effect of female leaders on the prevalence of IPV experienced by women in their constituencies. However, the NFHS data does not allow us to identify the constituency in which a respondent resides. Therefore, we conduct our analysis at the district level by examining the causal relationship between a woman's self-reported experience of IPV and the fraction of constituencies in her 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 prevalence of violence against women. For instance, less gender-biased districts may be more likely to elect female leaders and have a lower incidence of violence against women.

To identify the causal effects of exposure to female leaders, we employ an instrumental variable strategy based on the existence of close elections between male and female candidates in a given district. 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.

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

[11] For the districts in DLHS data, the year of last state election ranges from 2008 to 2012.

the margin of victory in male-female elections. 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. 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, Appendix Figure A.1, shows no evidence of manipulation around the cutoff and demonstrates a sufficient density of male-female elections around the cutoff.

We estimate the following specifications using two-stage least squares (2SLS):

$$Y_{ids} = \beta_0 + \beta_1 F_{ds} + \beta_2 TC_{ds} + \sum_j \phi_{1j} I_{jds} G(M_{jds}) + \sum_j \phi_{2j} I_{jds} + X'_{ids}\theta_1 + Z'_{ds}\theta_2 + \delta_s + \epsilon_{ids} \quad (1)$$

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

where Y_{ids} denotes the outcome of interest for woman i in district d in state s, such as a measure of IPV experienced by her in the last 12 months. The key explanatory variable of interest in the second stage 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}, and 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 non-close) male-female election, j. We also 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 low caste, as well as male and female literacy rates in the district, and a vector of individual-level controls, X_{ids}, including age, years of schooling, and indicator variables for religion, caste, and

residence in a rural area. We use robust standard errors clustered at the district level for inference.

Lastly, we estimate the following specification using our retrospective woman-year panel to examine the effects on fertility behavior:[12]

$$Y_{idst} = \beta_0 + \beta_1 F_{ds} + \beta_2 TC_{ds} + \sum_j \phi_{1j} I_{jds} G(M_{jds}) + \sum_j \phi_{2j} I_{jds} + K'_{ids}\theta_1 + Z'_{ds}\theta_2 + \delta_s + \tau_t + \mu_{idst} \quad (3)$$

where Y_{idst} is the outcome for a woman i in district d in state s and year t. We include a vector of individual-level controls, K_{ids}, comprising the number of children that the woman had at the time of the last election and the individual-level controls specified in equations (1) and (2). We also include year fixed effects, τ_t, in this specification to account for year-specific shocks at the national level. We cluster standard errors at the district level. Similar to the 2SLS estimation strategy described in equations (1) and (2), we instrument F_{ds} with FC_{ds} and include the same set of controls as equation (3) in the corresponding first-stage.

In Appendix Table A.4, we provide supporting evidence for our identification strategy. Using the same instrumental variable approach described above, we examine whether the fraction of female leaders in the district predicts individual or district characteristics. The estimates in Panel A indicate that women's characteristics, including age, residence in a rural area, religion, caste, and years of schooling, are not predicted by the proportion of female politicians in a district who won in a close election against a male politician. Similarly, the estimates in Panel B indicate that district characteristics, including shares of the district population that are female, urban, or SC/ST, and the female and male literacy rates, do not significantly vary with respect to the gender of the winner in close elections.

4 Results

Nearly 25 percent of women in our sample report experiencing physical IPV at some point during their marriage and 22 percent report being physically abused by their husbands during the last 12 months. In this section, we first present the estimates for

[12]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.

the impact of exposure to female leaders on female constituents' self-reported risk of experiencing IPV. Thereafter, we delve into the mechanisms underlying these effects.

4.1 Intimate Partner Violence

Table 1 reports estimates from equations (1) and (2). Columns 1-3 present OLS estimates and columns 4-6 present 2SLS estimates for the full sample. Columns 7 and 8 present 2SLS estimates for rural and urban samples, respectively. In columns 4-8, Panel A displays the coefficient estimates from the second-stage, while Panel B presents the first-stage estimates. The estimates in columns 3 and 6–8 are from our most rigorous and preferred specifications.

The OLS estimates for the full sample show that the relationship between the fraction of seats held by women at the district level and the 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 for the full sample are positive, significant, and larger in magnitude than the OLS estimates. Column 6 indicates that increasing the share of seats held by women at the district level by one s.d. (i.e., by 0.13) increases a female constituent's experience of physical IPV during the last year by 0.05 s.d.[13] This also implies that electing one additional female politician in a district increases a female constituent's experience of physical IPV by 0.07 s.d.[14] The reduced-form results reported in Appendix Table A.5 are consistent with the 2SLS estimates in Table 1.

Comparing the estimates for rural and urban women in columns 7 and 8 of Table 1, we observe that the results for the full sample are entirely driven by rural women. The magnitude of the estimate in column 7 implies that a one s.d. increase in the fraction of seats held by women in a district leads to a 0.07 s.d. increase in physical IPV against

[13]The magnitude of the estimated effect 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 s.d. in rural areas. Erten and Keskin (2021) show that a one s.d. increase in the Syrian refugee share in a Turkish province resulted in a 0.05 s.d. decline in the experience of physical violence reported by Turkish women.

[14]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. Taking these values to calculate the effect size, an increase in the share of female politicians by 0.17 percentage points corresponds to a 0.07 s.d. increase in physical IPV reported by the woman.

rural female constituents.[15] For urban women, we find no evidence of a significant impact as the coefficient estimate in column 8 is indistinguishable from zero.[16]

Panel B of Table 1 reports estimates from the first stage of the 2SLS regressions. The F-statistics are quite large, implying that the instrument has predictive power. The coefficient estimate of 0.90 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.[17] 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.

In Panel A of Appendix Table A.7, we examine the robustness of our physical IPV results for rural women using alternate specifications. The estimates in columns 1-3 show that our findings are robust to using different degrees of polynomials for the vote margin as controls. Columns 4-6 indicate that the coefficient estimates remain significant and positive when the bandwidth for close elections is reduced to 2 or 2.5 percent, or when it is increased to 3.5 percent; if anything, the estimates become larger and more precise as we narrow the bandwidth. In column 7, we restrict 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. This coefficient estimate is very similar to our main result reported in column 7 of Table 1. The estimates in columns 8-10 show that the results are consistent with our main estimates when we add fixed effects for a woman's age, or remove outlier districts where the share of female leaders exceeds 50 percent (i.e., the 99$^{\text{th}}$ percentile), or control for political party affiliations and the share of seats reserved for SC/ST populations.

4.2 Mechanisms

In this section, we examine potential mechanisms that could explain why female political representation increases female constituents' risk of experiencing IPV. In particular, we test whether our results are driven by (a) a worsening of attitudes toward violence

[15] This implies that the election of an additional female politician corresponds to a 0.09 s.d. increase in physical IPV experienced by women in rural areas of the district.

[16] In addition, the estimates reported in Appendix Table A.6 indicate no evidence of a statistically significant impact of women's political representation on women's risk of experiencing psychological or sexual violence from their husbands, although the coefficients are positive.

[17] This relationship has also been observed in previous studies (Bhalotra and Clots-Figueras 2014).

against women due to, say, male backlash against female leaders, (b) improvements in women's relative income prompting violence from male partners in response, and (c) potential changes in the type of partners women are matched with on the marriage market, due to an increase in exposure to female leaders. However, as we later show in this section, our IPV results are unlikely to be explained by these channels.

Instead, the reported increase in IPV appears to be induced by an increase in rural female constituents' modern contraceptive use, resulting from improvements in village public health infrastructure in districts with female leaders. More specifically, the IPV results are driven by an increase in the use of modern contraception by women whose partners may have been opposed to family planning due to a discordance in the spouses' fertility preferences over the number of sons.

4.2.1 Women's Contraceptive Use

Prior evidence suggests that female leaders are likely to differ from male leaders in their policy formulation and implementation preferences (Pande 2003) and tend to invest more in infrastructure that is more directly relevant for women (Chattopadhyay and Duflo 2004). This suggests that female leaders may have a higher probability of investing in family planning and reproductive health services than male leaders, thereby increasing the supply of contraceptive services available to women.[18] 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.

Public health infrastructure. Bhalotra and Clots-Figueras (2014) have shown that female leaders improve public provision of antenatal and childhood health services in the districts from which they are elected. We examine whether similar improvements in village-level public health infrastructure, and specifically, the provision of family planning and reproductive health services, occur in our sample. We adopt a 2SLS estimation approach, similar to the one previously outlined, for outcomes observed at the village level:

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

$$Y_{vds} = \beta_0 + \beta_1 F_{ds} + \beta_2 TC_{ds} + \sum_j \phi_{1j} I_{jds} G(M_{jds}) + \sum_j \phi_{2j} I_{jds} + Z'_{ds}\theta_2 + \delta_s + \epsilon_{vds} \quad (4)$$

$$F_{ds} = \gamma_0 + \gamma_1 FC_{ds} + \gamma_2 TC_{ds} + \sum_j \alpha_{1j} I_{jds} G(M_{jds}) + \sum_j \alpha_{2j} I_{jds} + Z'_{ds}\eta_2 + \delta_s + u_{ds} \quad (5)$$

Here, Y_{vds} is an outcome for village v in district d in state s. The other variables in these specifications have the same definitions as in our main specifications described in Section 3. Standard errors are once again clustered at the district level.

Our results suggest that female leaders improve female constituents' access to family planning and reproductive health services. The outcomes in columns 1 and 2 of Table 2 are indices that capture, respectively, the presence of public health facilities in a village and a village's connection to public health facilities through an all-weather road.[19] The disaggregated results for each component of the two indices are shown in Panels A and B of Appendix Table A.8. We find that both the presence of health facilities as well as *connection* to health facilities are greater in places with a female leader in office.[20] Given that 77 percent of contraceptive users in our rural sample report that the most recent source for their contraceptive method was a public provider, this improved access to public health facilities is likely to translate into better access to family planning services.

Furthermore, we find that female leaders improve the implementation of programs, such as *Janani Suraksha Yojana* and *Kishori Shakti Yojana*, that target maternal and adolescent girls' health, among other services. This result is presented in column 3 of

[19]The index in column 1 is constructed by averaging indicator variables that take a value of one if the following health facilities are present in the village: a sub-center, a primary health center, a block primary health center, a community health center, a government hospital, and a government dispensary. The index in column 2 is constructed by averaging indicator variables that take a value of one if the village is connected to the following health facilities through an all-weather road: a sub-center, a primary health center, a block primary health center, a community health center, and a government hospital.

[20]Note that the set of outcomes examined in Panel A of Appendix Table A.8 are the same as those analyzed in Bhalotra and Clots-Figueras (2014); however, the remaining outcomes in Table 2 explore a new set of outcomes.

Table 2 where the outcome is an index constructed from variables that indicate whether public programs that target women's health and well-being have been implemented in the village.[21] Our estimates show that increasing the share of seats held by women at the district level by one s.d. (0.13) improves the availability of health facilities by 0.22 s.d., connection to health facilities by 0.28 s.d., and implementation of programs that target women's and girls' health by 0.13 s.d.

Finally, we also find significant and positive effects of having a female leader in the state legislature on the availability of female health workers, such as female doctors and Auxiliary Nurse Midwives (ANMs), in the village. These health workers, especially ANMs, are crucial for the delivery of programs that target the health of women and girls, including family planning services.

Modern contraceptive use and birth spacing. Next we test whether these improvements in the supply of family planning services in rural areas of districts with female leaders also affect women's contraceptive use and the type of contraceptive method that they use.[22] Table 3 shows that increasing women's political representation significantly increases modern contraceptive use and decreases the use of traditional methods. Similar to our previous findings, these results are driven by rural women and there is no evidence of a significant impact on urban women. We also find that rural women's likelihood of using any contraceptive method increases significantly, which suggests that not only does exposure to female leaders cause women to switch from traditional to modern methods, it also enables non-users to start using contraception. Our estimates imply that increasing the share of seats held by women at the district level by one s.d. (0.13) results in an increase in modern contraceptive use among rural women by 4 percentage points, corresponding to an 8 percent increase relative to the outcome mean in rural areas.[23]

Consistent with the contraception results, exposure to female leaders increases birth spacing in rural areas (Panel D of Table 3). These estimates are based on the woman-

[21] The index captures the implementation of four programs, namely, *Janani Suraksha Yojana*, *Janani Shishu Suraksha Yojana*, *Kishori Shakti Yojana*, and *Balika Samriddhi Yojana*. The estimated effects on each component of the index are available in Appendix Table A.8.

[22] 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 data to explicitly test this mechanism.

[23] Panel B of Appendix Table A.7 shows that our results for modern contraceptive use in rural areas are robust to alternative specifications. The estimates based on specifications that use alternative degrees of polynomials as controls and bandwidths, and add other controls are consistent with our primary results. All estimates are positive, and only two (in columns 5 and 6) are imprecisely estimated with p-values of 0.10 and 0.21.

year panel dataset[24] and imply that increasing the share of seats held by women at the district level by one s.d. (0.13) increases birth spacing among rural women by 0.15 years, relative to the outcome mean (6.711 years).

Intra-household misalignment in fertility preferences. Previous research has shown that household decision-making about childbearing and contraceptive use may be characterized by inefficiency and non-cooperative behavior (Ashraf et al. 2014; Anukriti 2020; Ashraf et al. 2020). As women's use of contraceptives may not be perfectly observable to the male partner, moral hazard can arise due to hidden action and asymmetric information. Ashraf et al. (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 preferences over the number of children, and lead to spousal conflict.

Spousal discordance in fertility preferences is quite prevalent in our sample. This is especially true for the desired number of sons. Indian households are characterized by substantial "son preference" (Das Gupta et al. 2003; Das Gupta 2010; Jain 2014; Jayachandran 2017), which significantly influences fertility and family planning outcomes in India.[25] 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. In such a setting, greater use of contraception by the wife can lead to spousal conflict, including IPV, if the husband is opposed to contraceptive use because he desires more sons than what the couple has. We test whether this mechanism can explain our previous findings by examining heterogeneity in the impact of exposure to female leaders on IPV by whether the husband's ideal number of sons differs from (a) the couple's actual number of sons and (b) his wife's ideal number of sons.

Panel A of Table 4 shows that the increase in physical IPV is driven by couples where the husband desires more sons than the couple currently has. There is no effect on IPV among couples where the husband is less likely to oppose wife's contraceptive use because his preferred number of sons is equal to or lower than the actual number of sons. Moreover, this pattern of heterogeneity is only visible in rural areas where women experience a significant increase in their access to family planning.[26] The magnitude of

[24] We use specification (3) as described in Section 3.

[25] Clark (2000); Bhalotra and Van Soest (2008); Filmer et al. (2009); Jensen (2012); Rosenblum (2013); Anukriti (2018); Anukriti et al. (2022).

[26] Our data does not allow us to examine the impact of female leaders on the provision of family planning and reproductive health services in urban areas. However, it is reasonable to assume that access to health services in general, and family planning services in particular, is better in urban areas

the estimate in column 3 of Panel A implies that a one s.d. increase in the fraction of seats held by women in a district leads to a 0.08 s.d. increase in physical IPV against rural female constituents whose husbands desire more sons than what the couple has. Panel B of Table 4 reveals the same pattern when we compare husband's ideal number of sons with his wife's ideal number of sons.[27] Interestingly, Table A.11 shows that the coefficient estimate for the impact of female leaders on contraceptive take-up among discordant couples is not lower than the impact on non-discordant couples in rural areas. However, it is only among discordant couples that wife's contraceptive use leads to IPV, implying that only husbands with a stronger son preference relative to their wives resort to physical violence when their expectations are not met.

Altogether, Tables 1-4 provide a consistent set of results on how increased contraceptive use by women may trigger IPV from male partners with relatively stronger son preference. More specifically, we show that rural areas in districts that randomly get exposed to a female leader in close elections experience an improvement in their public health infrastructure, including the provision of family planning services. As a result, female constituents in rural areas are more likely to use modern contraception, and our results suggest that this may be a channel leading to the aggrievement of the husband and intrahousehold conflict that manifests as IPV against women, especially among couples where the husband is potentially opposed to wife's contraceptive use.

4.2.2 Alternate channels

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 improves in villages that are assigned to a female leader (Beaman et al. 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. Appendix Table A.12

even in the absence of female leaders—this is potentially why we do not find any significant impacts on contraceptive use in urban areas.

[27] Table A.10 confirms that exposure to female leaders does not affect the husband's or the wife's desired number of sons.

examines the effects of exposure to female leaders on IPV attitudes of women in Panel A and of men in Panel B. In both cases, there is no evidence of a significant change in the acceptance of IPV in the full, rural, and urban samples. 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.[28] 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 et al. 2013).[29] However, the results reported in Appendix Table A.13 show no evidence of a significant impact on women's probability of having worked in the last week (Panel A), having worked in the last 12 months (Panel B), having worked in agriculture in the last week (Panel C), or having worked in non-agricultural sectors in the last week (Panel D). These results also hold for the full, rural, and urban samples, suggesting 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. However, Appendix Table A.14 indicates no evidence of a significant impact of women's political representation on their male partners' years of schooling (Panel A), the schooling difference between partners (Panel B), the age difference between partners (Panel C), or whether the husband worked last week (Panel D). We conclude that the marriage market channel does not explain our main results.

[28] Deininger et al. (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 et al. (2014) explore how political reservations for women in India affect female entrepreneurship and labor force participation in the manufacturing sector.

[29] By improving women's outside option and reducing their exposure to husbands, increased female employment could also decrease the risk of experiencing IPV.

5 Conclusion

We study the effects of female leaders on the prevalence of IPV against women in their constituencies by exploiting close elections between male and female politicians at the state level in India. Our findings indicate that a one s.d. increase in the fraction of seats held by women in a district corresponds to a 0.07 s.d. increase in physical spousal violence against women in rural areas.

Exploring potential channels, we document that female leaders invest more in the provision of family planning and reproductive health services at the village level. The increase in the local availability of such services, in turn, leads to greater use of modern contraceptive methods by women, and as an unintended consequence, greater IPV against women whose husbands desire more sons. Hence, while the increased access to contraceptive methods is likely to benefit women in terms of gaining more control over their reproductive capacity and increasing birth spacing, it may also impose significant costs on them by increasing their probability of experiencing physical violence from their husbands 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.

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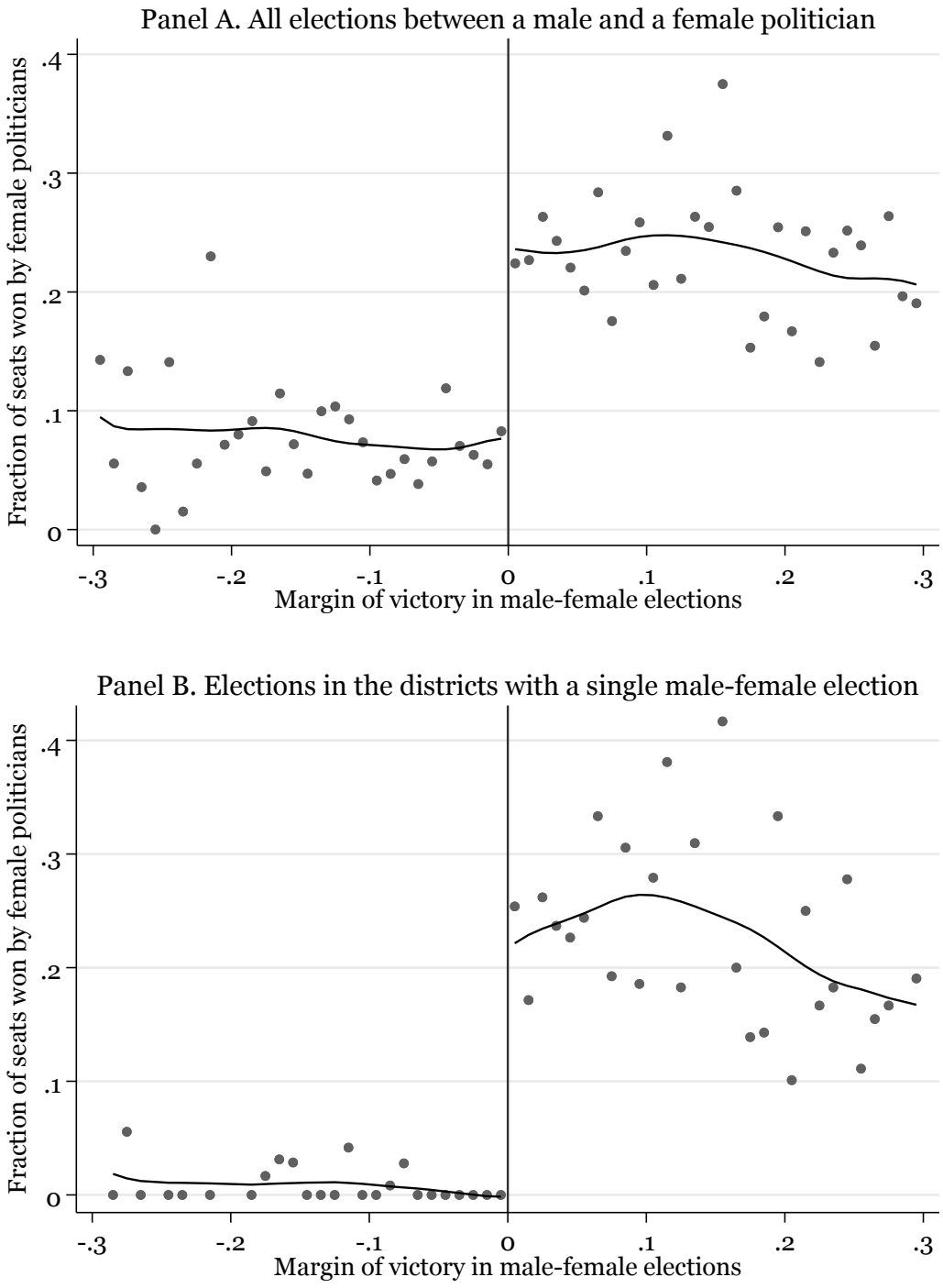
Figures and Tables

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.

Table 1: Intimate Partner Violence

	Full Sample						Rural	Urban
	OLS			2SLS			2SLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Physical violence index								
Fraction of female leaders	0.064	0.054	0.075	0.348*	0.358*	0.398**	0.547**	-0.018
	(0.056)	(0.054)	(0.054)	(0.190)	(0.187)	(0.190)	(0.230)	(0.211)
Observations	65,292	65,292	62,122	65,292	65,292	62,122	43,981	18,141
Outcome mean	0.000	0.000	0.006	0.000	0.000	0.006	0.031	-0.052
Panel B: First-stage regressions								
Dependent variable: Fraction of female leaders								
Fraction of female leaders				0.908***	0.902***	0.900***	0.885***	1.018***
in close elections				(0.096)	(0.099)	(0.098)	(0.098)	(0.094)
Observations				65,292	65,292	62,122	43,981	18,141
Outcome mean				0.087	0.087	0.089	0.089	0.089
First stage F-stat				89.238	83.740	83.818	81.159	116.175
State fixed effects	x	x	x	x	x	x	x	x
District characteristics		x	x		x	x	x	x
Individual characteristics			x			x	x	x

Notes: Data are from the 2015-16 National Family Health Survey (NFHS) of India. Columns (1)–(6) show estimates for the full sample of women, while columns (7) and (8) restrict the sample to those living in rural and urban areas, respectively. Columns (1)–(3) present OLS estimates and columns (4)–(8) present 2SLS estimates as specified in equations 1 and 2. We define close elections as those in which the victory margin is less that 3 percent of votes. All regressions include state fixed effects and control for the share of seats in the district that had close elections between women and men. Individual controls include age, years of schooling, and indicator variables for living in a rural area, religion, and caste. 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table 2: Village-Level Public Health Infrastructure

	Health facility index (1)	Connection index (2)	Public program index (3)	Auxiliary Nurse Midwife (4)	Female doctor (5)
Fraction of female leaders	1.730*	2.138***	0.973**	0.980***	0.837***
	(0.919)	(0.528)	(0.455)	(0.246)	(0.263)
Observations	7,696	7,700	7,722	7,723	7,722
Outcome mean	0.000	0.000	0.000	0.646	0.219
State fixed effects	x	x	x	x	x
District characteristics	x	x	x	x	x

Notes: Data comes from the 2012-13 District-level Household and Facility Survey (DLHS) of India. The columns present 2SLS estimates specified in equations 4 and 5. We define close elections as those in which victory margin is less that 3 percent of votes. The outcomes are as follows: an index for the presence of health facilities in a village (column 1), an index for connection to health facilities with an all-weather road (column 2), an index for public program implementation in a village (column 3), an indicator for the presence of Auxiliary Nurse Midwives in a village (column 4), and an indicator for the presence of a female doctor in a village (column 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table 3: Contraceptive Use and Birth Spacing

	Full Sample (1)	Rural (2)	Urban (3)
Panel A: Using any contraceptive method			
Fraction of female leaders	0.102	0.207*	-0.189
	(0.112)	(0.123)	(0.174)
Observations	62,122	43,981	18,141
Outcome mean	0.526	0.519	0.544
Panel B: Using modern contraception			
Fraction of female leaders	0.184*	0.295**	-0.104
	(0.108)	(0.124)	(0.132)
Observations	62,122	43,981	18,141
Outcome mean	0.463	0.457	0.478
Panel C: Using traditional contraception			
Fraction of female leaders	-0.082*	-0.088*	-0.084
	(0.047)	(0.047)	(0.094)
Observations	62,122	43,981	18,141
Outcome mean	0.063	0.062	0.066
Panel D: Birth spacing			
Fraction of female leaders	0.647	1.178*	-0.440
	(0.678)	(0.696)	(1.075)
Observations	235,036	166,801	68,235
Outcome mean	6.962	6.711	7.575
State fixed effects	x	x	x
District characteristics	x	x	x
Individual characteristics	x	x	x

Notes: Data are from the 2015-16 National Family Health Survey (NFHS) of India. Panels A–C present 2SLS estimates as specified by equations 1 and 2 and using cross-sectional data. Panel D presents 2SLS estimates as specified by equation 3 using the retrospective woman-year panel data. Column (1) shows estimates for the full sample, while columns (2) and (3) restrict the samples to those living in rural and urban areas, respectively. We define close elections as those in which the gap in votes between the winner and the runner up is less that 3 percent of votes. The outcomes in the table are as follows: indicator for whether the woman is using any contraceptive method (Panel A), indicator for whether the woman is using a modern contraceptive method (Panel B), indicator for whether the woman is using a traditional contraceptive method (Panel C), and the number of months since the last birth (Panel D). All regressions include individual controls, district controls, and state fixed effects. Individual controls include age, years of schooling, and indicator variables for living in a rural area, religion, and caste. 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. The regressions in Panel D also include year fixed effects and control for the number of children at the time of the previous election. Robust standard errors are clustered at the district level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table 4: Intimate Partner Violence by Spousal Discordance in Fertility Preferences

Panel A: Heterogeneity by husband's desire to have more sons

	Full Sample		Rural		Urban	
	Husband's ideal number of sons:		Husband's ideal number of sons:		Husband's ideal number of sons:	
	> actual number	≤ actual number	> actual number	≤ actual number	> actual number	≤ actual number
	(1)	(2)	(3)	(4)	(5)	(6)
Physical violence index						
Fraction of female leaders	0.537**	0.063	0.627**	0.213	0.223	-0.242
	(0.267)	(0.189)	(0.301)	(0.231)	(0.425)	(0.254)
Observations	13,111	31,011	9,371	21,681	3,740	9,330
Outcome mean	-0.019	-0.001	0.002	0.028	-0.069	-0.070

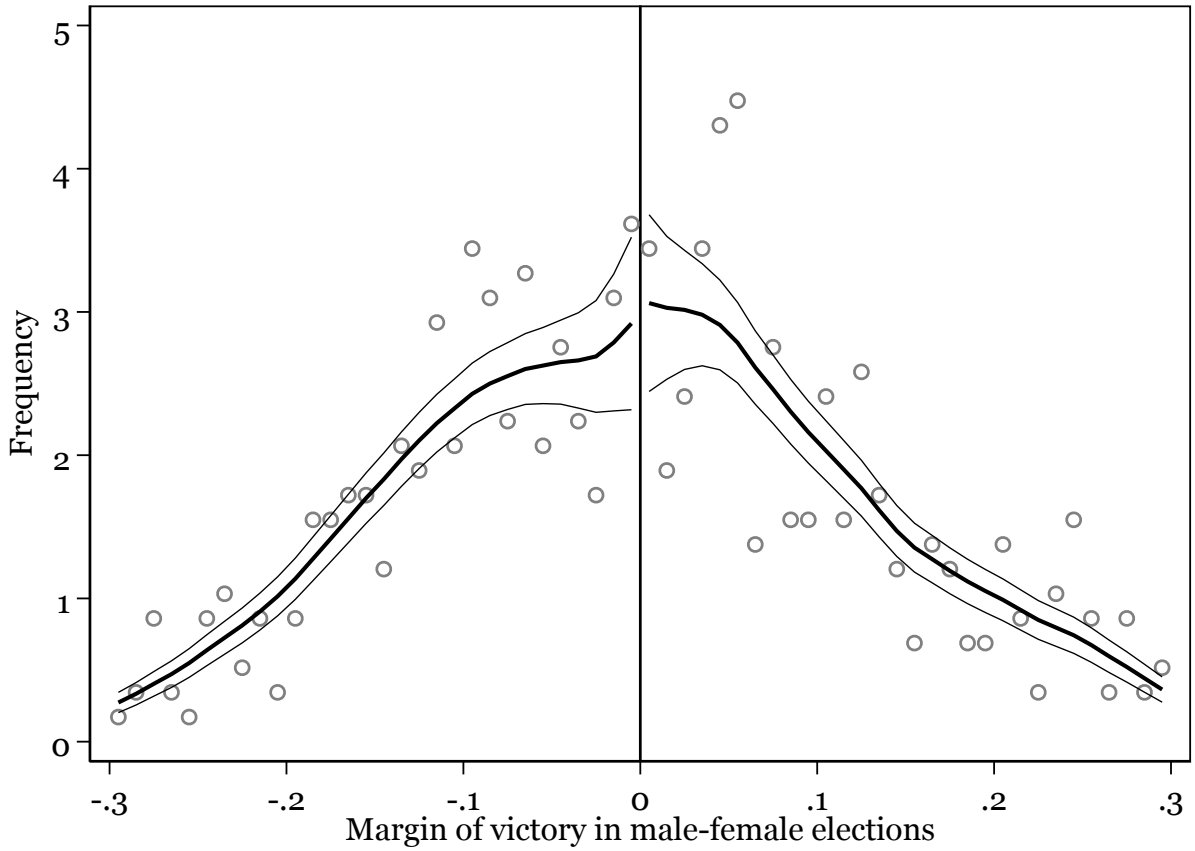
Panel B: Heterogeneity by difference in husband's and wife's ideal number of sons

	Full Sample		Rural		Urban	
	Husband's ideal number of sons:		Husband's ideal number of sons:		Husband's ideal number of sons:	
	> wife's ideal	≤ wife's ideal	> wife's ideal	≤ wife's ideal	> wife's ideal	≤ wife's ideal
	(1)	(2)	(3)	(4)	(5)	(6)
Physical violence index						
Fraction of female leaders	0.470	0.136	0.810*	0.204	-0.459	-0.044
	(0.342)	(0.198)	(0.434)	(0.235)	(0.456)	(0.267)
Observations	9,887	34,005	6,864	24,013	3,023	9,992
Outcome mean	0.018	-0.013	0.046	0.013	-0.048	-0.075
State fixed effects	x	x	x	x	x	x
District characteristics	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x

Notes: Data are from the 2015-16 National Family Health Survey (NFHS) of India. All columns present 2SLS estimates as specified by equations 1 and 2. We define close elections as those in which the victory margin is less that 3 percent of votes. The dependent variable is the physical violence index. Panel A shows heterogeneity by husband's desire to have more sons than what the couple currently has. Panel B examines heterogeneity by the discordance in husband's and wife's desired number of sons. All regressions include state fixed effects and control for the share of seats in the district that had close elections between women and men. Individual controls include age, years of schooling, and indicator variables for living in a rural area, religion, and caste. 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Appendix Figures and Tables

Figure A.1: McCrary test



Notes: The figure shows the frequency in each margin-of-victory bin in elections between male and female candidates. The sample includes all male-female elections within 3 percent margin of victory. Gray lines show 95 percent confidence intervals around the quadratic local polynomial. The p-value for the McCrary test is 0.89.

Table A.1: Individual Characteristics, NFHS

	N	Mean	S.D.
Panel A: NFHS ever-married sample, women			
Physical violence index	65,292	0.00	1.00
Psychological violence index	65,292	0.00	1.00
Sexual violence index	65,292	0.00	1.00
Attitudes index	65,221	-0.02	1.01
Worked last week	65,292	0.25	0.43
Worked last 12 months	65,292	0.33	0.47
Worked in agriculture last week	64,727	0.12	0.33
Worked in non-agriculture last week	64,727	0.12	0.32
Using any contraception	65,292	0.53	0.50
Using modern contraception	65,292	0.46	0.50
Using traditional contraception	65,292	0.07	0.25
Husband's ideal number of sons greater than actual number	46,355	0.30	0.46
Husband's ideal number of sons greater than wife's ideal	46,116	0.23	0.42
Age	65,292	33.02	8.11
Rural	65,292	0.71	0.45
Hindu	65,292	0.75	0.43
Muslim	65,292	0.13	0.34
Christian	65,292	0.07	0.25
Sikh	65,292	0.02	0.14
SC/ST	62,122	0.38	0.49
OBC	62,122	0.41	0.49
Years of schooling	65,292	5.93	5.20
Panel B: NFHS retrospective panel, woman-year			
Years since the last birth	235,036	6.96	6.57
Gave birth	235,036	0.09	0.29
Number of children	235,036	2.39	1.61
Panel C: NFHS ever-married sample, men			
Attitudes index	70,829	0.03	0.97
Worked last week	70,922	0.91	0.29
Age	70,923	37.58	8.81
Rural	70,923	0.70	0.46
Hindu	70,923	0.76	0.43
Muslim	70,923	0.13	0.34
Christian	70,923	0.07	0.25
Sikh	70,923	0.02	0.14
SC/ST	67,152	0.38	0.49
OBC	67,152	0.41	0.49
Years of schooling	70,923	7.56	4.94

Notes: The table presents the number of observations, the means, and standard deviations (S.D.) for demographics, intimate partner violence outcomes, attitudes outcomes, labor market outcomes, contraceptive use, fertility preferences and behavior, and husband's characteristics. The samples in Panels A and B include ever-married women in the domestic violence module from the 2015-16 National Family Health Survey (NFHS), with Panel A presenting the summary statistics for the cross-sectional data and Panel B presenting them for the retrospective woman-year panel. The sample in Panel C includes ever-married men from the 2015-16 NFHS.

Table A.2: Election and District Characteristics

	N	Mean	S.D.
Panel A: Election data			
Share of constituencies won by women in a district (F)	628	0.09	0.13
Share of male-female close elections won by women in a district (FC)	628	0.01	0.05
Share of close male-female elections in a district	628	0.03	0.08
Whether the district had at least one seat won by a woman	628	0.40	0.49
Whether the district had at least one male-female election	628	0.57	0.49
Whether the district had at least one male-female close election	628	0.13	0.34
Whether the district had at least one male-female close election won by a woman	628	0.07	0.25
Panel B: Census data			
Fraction of female population	628	0.49	0.02
Fraction of urban population	628	0.26	0.20
Fraction of SC/ST population	628	0.33	0.22
Female literacy rate	628	0.55	0.12
Male literacy rate	628	0.69	0.09

Notes: The table presents the number of observations, the means, and standard deviations (S.D.) for district-level characteristics of the election data and the Census data. Panel A presents these summary statistics for the electoral data from the Election Commission of India, which was obtained at the constituency level and aggregated to the district level. Panel B presents them for the district characteristics obtained from the SHRUG dataset as per the 2011 Census of India (Asher et al. 2021).

Table A.3: Election and District Characteristics (DLHS samples)

	N	Mean	S.D.
Panel A: Election data			
Share of constituencies won by women in a district (F)	245	0.05	0.09
Share of male-female close elections won by women in a district (FC)	245	0.01	0.04
Share of close male-female elections in a district	245	0.02	0.06
Whether the district had at least one seat won by a woman	245	0.33	0.47
Whether the district had at least one male-female election	245	0.56	0.50
Whether the district had at least one male-female close election	245	0.16	0.36
Whether the district had at least one male-female close election won by a woman	245	0.07	0.25
Panel B: Census data			
Fraction of female population	245	0.49	0.02
Fraction of urban population	245	0.33	0.21
Fraction of SC/ST population	245	0.34	0.25
Female literacy rate	245	0.63	0.11
Male literacy rate	245	0.74	0.08
Panel C: Village data (DLHS)			
Any sub-center	7,721	0.55	0.50
Any primary health center	7,721	0.23	0.42
Any block primary health center	7,722	0.06	0.24
Any community health center	7,718	0.07	0.25
Any government hospital	7,722	0.06	0.23
Any government dispensary	7,713	0.11	0.32
Connected to a sub-center	7,726	0.86	0.34
Connected to a primary health center	7,726	0.81	0.39
Connected to a block primary health center	7,702	0.55	0.50
Connected to a community health center	7,725	0.72	0.45
Connected to a government hospital	7,725	0.75	0.43
Any accessible auxiliary nurse midwife	7,723	0.65	0.48
Any accessible female doctor	7,722	0.22	0.41
Janani Suraksha Yojana implemented	7,726	0.92	0.27
Janani Shishu Suraksha implemented	7,726	0.63	0.48
Kishori Shakti Yojana implemented	7,725	0.50	0.50
Balika Samriddhi Yojana implemented	7,725	0.42	0.49

Notes: Data comes from the 2012-13 District-level Household and Facility Survey (DLHS) of India. The table presents the number of observations, the means, and standard deviations (S.D.) for district-level characteristics of the election data and Census data matched to DLHS data in Panels A and B, and village-level public health infrastructure data from DLHS data in Panel C.

Table A.4: Balanced Covariates

Panel A: Women's Characteristics									
	Age	Rural	Hindu	Muslim	Christian	Sikh	SC/ST	OBC	Schooling
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Fraction of female leaders	0.530	-0.247	0.027	-0.119	0.143	-0.028	0.197	-0.037	-0.303
	(1.057)	(0.184)	(0.209)	(0.095)	(0.156)	(0.055)	(0.153)	(0.120)	(1.407)
Observations	62,122	62,122	62,122	62,122	62,122	62,122	62,122	62,122	62,122
Outcome mean	33.012	0.708	0.776	0.102	0.072	0.021	0.378	0.409	5.957
State fixed effects	x	x	x	x	x	x	x	x	x

Panel B: District Characteristics					
	Share of female population	Share of urban population	Share of SC/ST population	Female literacy rate	Male literacy rate
	(1)	(2)	(3)	(4)	(5)
Fraction of female leaders	-0.020	0.202	0.072	-0.103	-0.068
	(0.014)	(0.126)	(0.137)	(0.074)	(0.071)
Observations	627	627	627	627	627
Outcome mean	0.486	0.258	0.327	0.550	0.691
State fixed effects	x	x	x	x	x

Notes: Data are from the 2015-16 National Family Health Survey (NFHS) of India in Panel A and from the 2011 Census of India (obtained from SHRUG) in Panel B. The table presents 2SLS estimates using the fraction of female leaders in a district in close elections as an instrument. We define close elections as those in which the victory margin is less that 3 percent of votes. All regressions include state fixed effects and control for the share of seats in the district that had close elections between women and men. The dependent variables in Panel A include woman's age, years of schooling, and indicator variables for living in a rural area, religion, and caste. The dependent variables in Panel B 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A.5: Physical Intimate Partner Violence: Reduced-form Estimates

	Full Sample			Rural	Urban
	(1)	(2)	(3)	(4)	(5)
Fraction of female leaders in close elections	0.316**	0.323**	0.358**	0.484***	-0.018
	(0.161)	(0.155)	(0.157)	(0.185)	(0.216)
Observations	65,292	65,292	62,122	43,981	18,141
Outcome mean	0.000	0.000	0.006	0.031	-0.052
State fixed effects	x	x	x	x	x
District characteristics		x	x	x	x
Individual characteristics			x	x	x

Notes: Data are from the 2015-16 National Family Health Survey (NFHS) of India. The table presents the reduced-form regression results. Columns (1)-(3) include all women in the regressions, while columns (4) and (5) restrict the samples to those living in rural and urban areas, respectively. We define close elections as those in which the victory margin is less that 3 percent of votes. All regressions include state fixed effects and control for the share of seats in the district that had close elections between women and men. Individual controls include age, years of schooling, and indicator variables for living in a rural area, religion, and caste. 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A.6: Psychological and sexual violence

	Full sample (1)	Rural (2)	Urban (3)
Panel A: Psychological violence index			
Fraction of female leaders	0.138	0.270	-0.092
	(0.164)	(0.189)	(0.229)
Observations	62,122	43,981	18,141
Outcome mean	0.002	0.011	-0.019
Panel B: Sexual violence index			
Fraction of female leaders	0.014	0.098	-0.028
	(0.182)	(0.208)	(0.262)
Observations	62,122	43,981	18,141
Outcome mean	0.003	0.019	-0.037
State fixed effects	x	x	x
District characteristics	x	x	x
Individual characteristics	x	x	x

Notes: Data are from the 2015-16 National Family Health Survey (NFHS) of India. The table presents 2SLS estimates using the fraction of female leaders in a district in close elections as an instrument. The dependent variables are psychological violence index in Panel A and sexual violence index in Panel B. Column (1) presents estimates for the full sample of women, while columns (2) and (3) restrict the samples to those living in rural and urban areas, respectively. We define close elections as those in which the victory margin is less that 3 percent of votes. All regressions include state fixed effects and control for the share of seats in the district that had close elections between women and men. Individual controls include age, years of schooling, and indicator variables for living in a rural area, religion, and caste. 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A.7: Robustness Checks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Physical violence index										
Fraction of female leaders	0.420**	0.470**	0.541**	0.607***	0.584**	0.291*	0.506**	0.536**	0.602**	0.563**
	(0.188)	(0.223)	(0.225)	(0.229)	(0.262)	(0.176)	(0.237)	(0.231)	(0.246)	(0.231)
Observations	43,981	43,981	43,981	43,981	43,981	43,981	24,783	43,981	42,711	43,981
Outcome mean	0.031	0.031	0.031	0.031	0.031	0.031	0.060	0.031	0.031	0.031
Panel B: Using modern contraception										
Fraction of female leaders	0.226**	0.267**	0.292**	0.279**	0.203	0.149	0.341***	0.270**	0.238*	0.301**
	(0.110)	(0.119)	(0.123)	(0.127)	(0.124)	(0.117)	(0.130)	(0.120)	(0.139)	(0.121)
Observations	43,981	43,981	43,981	43,981	43,981	43,981	24,783	43,981	42,711	43,981
Outcome mean	0.457	0.457	0.457	0.457	0.457	0.457	0.466	0.457	0.457	0.457
Robustness check	No polynomial	1st order polynomial	2nd order polynomial	BW=2%	BW=2.5%	BW=3.5%	At least one male-female election	Women's age fixed effects	Removing outliers	Political party controls
State fixed effects	x	x	x	x	x	x	x	x	x	x
District characteristics	x	x	x	x	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x	x	x	x	x

Notes: Data are from the 2015-16 National Family Health Survey (NFHS) of India. The sample is restricted to women living in rural areas. The table presents 2SLS estimates using the fraction of female leaders in a district in close elections as an instrument. The dependent variables are physical violence index in Panel A and an indicator for using a modern contraception method in Panel B. Columns (1)-(3) use alternative functional forms for the victory margin, and columns (4)-(6) change the bandwidth for the definition of close elections. In column (7), we restrict the sample to districts with at least one male-female election. In column (8), we control for women's age fixed effects instead of controlling for women's age linearly. In column (9), we exclude districts whose share of female leaders is equal to or above 50% (99th percentile). In column (10), we add political party controls (the shares of winners from each of the seven political party groups) and the share of reservation seats for SC/ST population. All regressions include state fixed effects and control for the share of seats in the district that had close elections between women and men. Individual controls include age, years of schooling, and indicator variables for living in a rural area, religion, and caste. 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A.8: Components of Village-level Public Health Infrastructure

Panel A: Presence of health facilities						
	Sub center	Primary health center	Block primary health center	Community health center	Government hospital	Government dispensary
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction of female leaders	0.398	0.004	0.405***	0.161	0.200	0.731**
	(0.372)	(0.175)	(0.133)	(0.106)	(0.124)	(0.368)
Observations	7,721	7,721	7,722	7,718	7,722	7,713
Outcome mean	0.550	0.233	0.061	0.069	0.057	0.114
Panel B: Connection to health facilities						
	Sub centers	Primary health centers	Block primary health centers	Community health centers	Government hospitals	
	(1)	(2)	(3)	(4)	(5)	
Fraction of female leaders	0.207	0.633***	1.044***	1.189***	1.101***	
	(0.154)	(0.206)	(0.232)	(0.293)	(0.288)	
Observations	7,726	7,726	7,702	7,725	7,725	
Outcome mean	0.865	0.814	0.553	0.724	0.752	
Panel C: Health workers and public programs						
	Janani Suraksha Yojana	Janani Shishu Suraksha	Kishori Shakti Yojana	Balika Samriddhi Yojana		
	(1)	(2)	(3)	(4)		
Fraction of female leaders	0.183*	0.121	0.542*	0.387		
	(0.101)	(0.265)	(0.295)	(0.274)		
Observations	7,726	7,726	7,725	7,725		
Outcome mean	0.923	0.631	0.495	0.420		
State fixed effects	x	x	x	x	x	x
District characteristics	x	x	x	x	x	x

Notes: Data comes from the 2012-13 District-level Household and Facility Survey (DLHS) of India. The columns present 2SLS estimates specified in equations 4 and 5. We define close elections as those in which victory margin is less that 3 percent of votes. In Panel A, the dependent variables are indicators for the presence of each health facility. In Panel B, the dependent variables are indicators for whether a village is connected to each health facility with all-weather roads. In Panel C, the dependent variables are indicators for whether each public program has been implemented 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A.9: Child Birth and Number of Children

	Full sample (1)	Rural (2)	Urban (3)
Panel A: Gave birth			
Fraction of female leaders	-0.021	-0.017	-0.036
	(0.016)	(0.018)	(0.028)
Observations	235,036	166,801	68,235
Outcome mean	0.092	0.099	0.076
Panel B: Number of children			
Fraction of female leaders	-0.054	-0.033	-0.113
	(0.038)	(0.039)	(0.075)
Observations	235,036	166,801	68,235
Outcome mean	2.394	2.505	2.124
State fixed effects	x	x	x
District characteristics	x	x	x
Individual characteristics	x	x	x

Notes: Data are from the retrospective woman-year panel data based on the 2015-16 National Family Health Survey (NFHS) of India. The table presents 2SLS estimates using the fraction of female leaders in a district in close elections as an instrument. The dependent variables are an indicator for giving birth in a given year in Panel A and the number of children born up to a given year in Panel B. Column (1) presents estimates for the full sample of women, while columns (2) and (3) restrict the samples to those living in rural and urban areas, respectively. We define close elections as those in which the victory margin is less that 3 percent of votes. All regressions include state fixed effects and year fixed effects, and control for the share of seats in the district that had close elections between women and men and the number of children at the time of the previous election. Individual controls include age, years of schooling, and indicator variables for living in a rural area, religion, and caste. 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A.10: Husband's and Wife's Fertility Preferences

	Full sample (1)	Rural (2)	Urban (3)
Panel A: Husband's ideal number of sons			
Fraction of female leaders	-0.021	0.026	-0.269
	(0.156)	(0.180)	(0.203)
Observations	44,130	31,059	13,071
Outcome mean	1.209	1.253	1.105
Panel B: Wife's ideal number of sons			
Fraction of female leaders	0.184	0.162	0.158
	(0.120)	(0.131)	(0.170)
Observations	61,735	43,676	18,059
Outcome mean	1.187	1.243	1.053
State fixed effects	x	x	x
District characteristics	x	x	x
Individual characteristics	x	x	x

Notes: Data are from the 2015-16 National Family Health Survey (NFHS) of India. The table presents 2SLS estimates using the fraction of female leaders in a district in close elections as an instrument. The dependent variables are husband's ideal number of sons in Panel A and wife's ideal number of sons in Panel B. Column (1) presents estimates for the full sample, while columns (2) and (3) restrict the samples to those living in rural and urban areas, respectively. We define close elections as those in which the victory margin is less that 3 percent of votes. All regressions include state fixed effects and control for the share of seats in the district that had close elections between women and men. Individual controls include age, years of schooling, and indicator variables for living in a rural area, religion, and caste. 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A.11: Modern Contraceptive Use by Spousal Discordance in Fertility Preferences

Panel A: Heterogeneity by husband's desire to have more sons

	Full Sample		Rural		Urban	
	Husband's ideal number of sons:		Husband's ideal number of sons:		Husband's ideal number of sons:	
	> actual number	≤ actual number	> actual number	≤ actual number	> actual number	≤ actual number
	(1)	(2)	(3)	(4)	(5)	(6)
Using modern contraception						
Fraction of female leaders	0.159	0.252*	0.354***	0.375**	-0.490*	-0.033
	(0.117)	(0.137)	(0.134)	(0.161)	(0.277)	(0.180)
Observations	13,111	31,011	9,371	21,681	3,740	9,330
Outcome mean	0.299	0.582	0.286	0.585	0.333	0.573

Panel B: Heterogeneity by difference in husband's and wife's ideal number of sons

	Full Sample		Rural		Urban	
	Husband's ideal number of sons:		Husband's ideal number of sons:		Husband's ideal number of sons:	
	> wife's ideal	≤ wife's ideal	> wife's ideal	≤ wife's ideal	> wife's ideal	≤ wife's ideal
	(1)	(2)	(3)	(4)	(5)	(6)
Using modern contraception						
Fraction of female leaders	0.305	0.198*	0.482**	0.335**	-0.206	-0.132
	(0.187)	(0.110)	(0.210)	(0.133)	(0.269)	(0.174)
Observations	9,887	34,005	6,864	24,013	3,023	9,992
Outcome mean	0.486	0.502	0.483	0.499	0.492	0.509
State fixed effects	x	x	x	x	x	x
District characteristics	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x

Notes: Data are from the 2015-16 National Family Health Survey (NFHS) of India. All columns present 2SLS estimates as specified by equations 2 and 1. We define close elections as those in which the victory margin is less that 3 percent of votes. The dependent variable is an indicator for whether the woman is using modern contraception. Panel A shows heterogeneity by husband's desire to have more sons than what the couple currently has. Panel B examines heterogeneity by the discordance in husband's and wife's desired number of sons. All regressions include state fixed effects and control for the share of seats in the district that had close elections between women and men. Individual controls include age, years of schooling, and indicator variables for living in a rural area, religion, and caste. 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A.12: Attitudes toward Violence

	Full sample (1)	Rural (2)	Urban (3)
Panel A: Women's attitudes index			
Fraction of female leaders	0.281	0.169	0.552
	(0.257)	(0.282)	(0.350)
Observations	62,060	43,936	18,124
Outcome mean	-0.006	-0.049	0.098
Panel B: Men's attitudes index			
Fraction of female leaders	-0.290	-0.353	-0.100
	(0.288)	(0.331)	(0.347)
Observations	67,065	47,088	19,977
Outcome mean	0.036	0.003	0.115
State fixed effects	x	x	x
District characteristics	x	x	x
Individual characteristics	x	x	x

Notes: Data are from the 2015-16 National Family Health Survey (NFHS) of India. The table presents 2SLS estimates using the fraction of female leaders in a district in close elections as an instrument. The dependent variables are an index of women's attitudes towards IPV in Panel A and an index of men's attitudes towards IPV in Panel B. Column (1) presents estimates for the full sample, while columns (2) and (3) restrict the samples to those living in rural and urban areas, respectively. We define close elections as those in which the victory margin is less that 3 percent of votes. All regressions include state fixed effects and control for the share of seats in the district that had close elections between women and men. Individual controls include age, years of schooling, and indicator variables for living in a rural area, religion, and caste. 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A.13: Women's employment outcomes

	Full Sample (1)	Rural (2)	Urban (3)
Panel A: Worked last week			
Fraction of female leaders	-0.023	-0.073	0.120
	(0.105)	(0.121)	(0.122)
Observations	62,122	43,981	18,141
Outcome mean	0.250	0.267	0.209
Panel B: Worked last 12 months			
Fraction of female leaders	-0.032	-0.080	0.038
	(0.096)	(0.106)	(0.150)
Observations	62,122	43,981	18,141
Outcome mean	0.334	0.365	0.259
Panel C: Worked in agriculture last week			
Fraction of female leaders	0.014	0.008	0.024
	(0.085)	(0.107)	(0.051)
Observations	61,573	43,650	17,923
Outcome mean	0.126	0.166	0.031
Panel D: Worked in non-agriculture last week			
Fraction of female leaders	-0.046	-0.083	0.074
	(0.051)	(0.054)	(0.100)
Observations	61,573	43,650	17,923
Outcome mean	0.117	0.096	0.168
State fixed effects	x	x	x
District characteristics	x	x	x
Individual characteristics	x	x	x

Notes: Data are from the 2015-16 National Family Health Survey (NFHS) of India. The table presents 2SLS estimates using the fraction of female leaders in a district in close elections as an instrument. The dependent variables are indicator variables for whether the woman worked last week (Panel A), whether she worked last 12 months (Panel B), whether she worked in agriculture last week (Panel C), and whether she worked in non-agricultural sector last week (Panel D). The column (1) presents estimates for the full sample, while the columns (2) and (3) restrict the samples to those living in rural and urban areas, respectively. We define close elections as those in which the victory margin is less that 3 percent of votes. All regressions include state fixed effects and control for the share of seats in the district that had close elections between women and men. Individual controls include age, years of schooling, and indicator variables for living in a rural area, religion, and caste. 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A.14: Marriage market outcomes and partner characteristics

	Full Sample (1)	Rural (2)	Urban (3)
Panel A: Husband's years of schooling			
Fraction of female leaders	-0.174	-0.698	1.585
	(0.570)	(0.624)	(1.211)
Observations	44,714	31,479	13,235
Outcome mean	7.548	6.851	9.204
Panel B: Schooling difference between husband and wife			
Fraction of female leaders	-0.774	-0.784	-0.259
	(0.575)	(0.591)	(0.987)
Observations	61,937	43,848	18,089
Outcome mean	1.588	1.812	1.044
Panel C: Age difference between husband and wife			
Fraction of female leaders	-0.624	-0.622	-0.419
	(0.576)	(0.664)	(0.835)
Observations	44,714	31,479	13,235
Outcome mean	4.684	4.592	4.904
Panel D: Husband worked last week			
Fraction of female leaders	0.056	0.059	0.088
	(0.078)	(0.097)	(0.084)
Observations	44,713	31,478	13,235
Outcome mean	0.915	0.902	0.947
State fixed effects	x	x	x
District characteristics	x	x	x
Individual characteristics	x	x	x

Notes: Data are from the 2015-16 National Family Health Survey (NFHS) of India. The table presents 2SLS estimates using the fraction of female leaders in a district in close elections as an instrument. The dependent variables are husband's years of schooling (Panel A), the difference in years of schooling between husband and wife (Panel B), the age difference between husband and wife (Panel C), and an indicator for whether a husband worked last week (Panel D). Column (1) presents estimates for the full sample, while columns (2) and (3) restrict the samples to those living in rural and urban areas, respectively. We define close elections as those in which the victory margin is less that 3 percent of votes. All regressions include state fixed effects and control for the share of seats in the district that had close elections between women and men. Individual controls include age, years of schooling, and indicator variables for living in a rural area, religion, and caste. 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. ***, **, and * denote significance at the 1, 5, and 10 percent levels.