Do Local Gender Quotas Improve the Electability of Women at Higher Tiers?

Evidence from a Survey Experiment in North India

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Abstract

Do local gender quotas have "spillover effects" for women's electability at higher tiers? Using a conjoint survey experiment in the North Indian state of Bihar, we assess how exposure to village-level female leaders elected through a gender quota affects voter support for state-level female candidates. Although we find no evidence of spillover effects in the overall sample, we show that exposure to local gender quotas generates a backlash amongst male respondents from relatively gender-empowered households. While these "partially progressive" men display a preference for state-level female candidates in the absence of a local female leader, exposure to local gender quotas eliminates this preference. This "multi-level representation backlash" may limit the utility of local quotas in promoting gender parity at higher levels. By contrast, there is no statistically significant evidence of a quota effect amongst female or conservative male respondents, whose views may be less susceptible to change.

Acknowledgements

1. Introduction

A key argument for decentralization reforms is that local government may allow for greater participation of historically marginalized groups in the political sphere.[1] In particular, local government is often argued to be an important channel for increasing the representation of women in public office (e.g., Beaman et al., 2009; Bhavnani, 2009; De Paola et al., 2010; Deininger et al., 2015; O'Brien and Rickne, 2016; O'Connell, 2018; Goyal, 2020; Maitra and Rosenblum, 2021). Previous research suggests not only that local government could provide an important entry point for women into politics but also that the expansion of women's local-level representation could have "spillover effects" for women's representation at higher tiers (e.g., O'Connell, 2018; Goyal, 2020; Maitra and Rosenblum, 2021; Karekurve-Ramachandra 2023). But when and why do these spillover effects occur? Our research seeks to address this question by homing in on one potential pathway that could produce such spillovers – a change in voters' attitudes.

In this article, we explore whether and how voters' experiences with local gender quotas shape their preferences for female candidates in higher-level elections.[2] Previous work suggests compelling reasons to believe that increases in women's local-level representation can spur increases at higher tiers. Specifically, researchers have found that local gender quotas in India not only boost the number of female candidates contesting state and national elections but also contribute to their electoral success (O'Connell, 2018; Maitra and Rosenblum, 2021). O'Connell (2018) attributes these positive outcomes both to the direct effect of the experience gained by women in local government, which makes them more likely to seek office at the state or national level, and to the indirect effect of quotas making "certain areas more conducive to continued female candidacy" (p. 66). Highlighting a different potential mechanism, Goyal (2020a) finds evidence that gender quotas in the Delhi municipal body increase the likelihood of a female candidate receiving a major party's nomination in a state election. She attributes this effect to grassroots party-building efforts led by women who secure municipal-level representation.

Our research contributes to this growing body of work by exploring an alternative, though complementary, pathway through which women's local representation could potentially shape women's representation at higher levels of government – one that works through voter preferences. Research on the success of women in politics has often been divided into supply- and demand-side

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[1] Data replication files are available from the authors upon request.
[2] Conversely, it is also possible there are no spillover effects from local- to higher-level elections, due to voters' perceptions that positions at different tiers of government require different qualifications.

explanations (see Krook and Schwindt-Bayer, 2014). Previous scholars have concentrated their attention on the *supply side* of the equation, showing that local women's representation, often driven by quotas, generates a pipeline of qualified female candidates at higher tiers and motivates parties to nominate them. Meanwhile, our research provides a rare opportunity to examine – using direct survey evidence – the potential contribution of *demand-side factors* to these spillover effects. Specifically, we are the first to our knowledge to use a conjoint survey experiment to examine how exposure to local gender quotas shapes voter preferences for women running for office at higher tiers. More than that, we provide the first systematic evidence based on a conjoint survey experiment that such quotas pose a potential backlash risk amongst certain groups in the electorate when it comes to preferences for female candidates at higher levels of government.

Why and how might voters' exposure to local female leaders elected through gender quotas affect their support for female candidates at higher tiers? Building on previous literature, we theorize two alternative mechanisms. According to the *multi-level learning* mechanism, local gender quotas *increase* support for female candidates at higher levels of government. Such exposure helps voters learn about female leader effectiveness (e.g., Beaman et al., 2009; Bhavnani, 2009), which in turn may counteract any pre-existing negative stereotypes about female leaders at all levels of government. If this mechanism holds, we should expect that exposure to a local gender quota, and a local female leader more broadly, increases voter support for a female candidate at the state level, especially when local female representatives are perceived to be effective leaders.

According to a second mechanism, however, exposure to local gender quotas *decreases* support for female candidates at higher levels of government because they produce a backlash against women in office (e.g., Bhalotra et al., 2016; Brulé, 2020). This *multi-level backlash* mechanism suggests representation by a local female leader may produce a desire to defend existing gender hierarchies – a desire that may be more prevalent among male voters (e.g., Rudman et al., 2012; Krook, 2015a; Krook, 2015b). In particular, male voters who are exposed to a local female leader may shun the prospect of also having a female representative at an additional (higher) level of government. This backlash may be especially strong among male voters represented by women elected under quotas, whom they may perceive as lacking legitimacy. Thus, this logic suggests exposure to local gender quotas should reduce support for a female candidate at the state level amongst male respondents overall.

A more nuanced version of the logic suggests the existence of a "tipping point," whereby multi-level backlash is specifically observed among those male voters who are receptive to "tokenism" – that is, modest increases in women's representation in a male-dominated arena (e.g., Yoder, 1991;

Krook, 2015). In our context, the "tipping point" logic suggests that, while certain male voters may be in favor of electing female leaders when they perceive women to be under-represented in politics overall, local gender quotas may create a perception amongst these men that women have achieved adequate representation in politics. Thus, local gender quotas may produce a backlash by undermining or negating these men's support for female representatives at higher levels of government.

We explore these arguments in the Indian context by examining the effects of village-level gender quotas and local women's representation on the willingness of citizens to vote for women at the state level. This issue has special significance in India due to the country's experience with gender quotas at different levels of government. Specifically, while India's constitution has mandated village-level gender quotas since 1993, such quotas have been much more politically sensitive at the state and national levels and a law was only just passed to bring these into effect a full three decades later. Indeed, it is a common pattern across the world for local gender and ethnic quotas to be less politically fraught and easier to implement than quotas at state or national levels. From a policy perspective, it is, therefore, critical to better understand how mandating women's representation at the local level shapes support for female candidates at higher tiers.

Within India, we focus on the effects of local gender quotas in Bihar, a large northern state that has witnessed dismally low levels of women's representation in its state assembly. This occurred despite Bihar's robust local gender quota – reserving half the village council seats and half of all directly elected village council head positions for women, an increase over the nationally mandated rate of one-third. Against this backdrop, we ask when and whether having a woman as a village council head (*Mukhiya*[3]) who is elected through a gender quota, affects citizens' support for female candidates in state-level elections. Importantly, while we acknowledge that past exposure to local gender quotas could have long-term effects, our results focus on the short-term *contemporaneous* effects of exposure to local gender quotas on attitudes toward female candidates in higher-level elections.

To address our question, we provide traction on an otherwise tricky causal inference problem by investigating the impact of local gender quotas that are plausibly assigned "as-if-randomly". We examine how these quotas shape voters' gender preferences using a conjoint survey experiment with close to 2000 respondents across eight assembly constituencies in Bihar. Our use of a conjoint survey experiment of voters embedded within the natural experiment of 'as-if-randomly' assigned local

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[3] We primarily use the term *Mukhiya* to refer to the head of the village council or *Gram Panchayat*. Terms used in other states and contexts include *Pradhan* and *Sarpanch*. In Bihar, there is both a *Mukhiya* and *Sarpanch* – the *Mukhiya* is the head of the elected village (legislative) council and has financial powers. Meanwhile, the *Sarpanch* is the elected head of the *Gram Katchahry* which is a body with some judicial powers.

gender quotas provides a novel opportunity to isolate and capture how voters' attitudes to state-level female candidates change – or do not change – as a result of exposure to local gender quotas. To help contextualize our quantitative findings, we draw on 64 qualitative semi-structured interviews with citizens in four districts of Bihar.

While our key question pertains to the effects of local gender quotas, we also briefly explore how support for state-level female candidates co-varies with the presence of women *Mukhiyas* not elected under a gender quota. However, empirically, this occurs quite rarely in our sample, and the effect of such representation cannot be causally identified. We also consider briefly how the impact of local gender quotas on support for state-level female candidates varies based on whether the local gender quota coexists with a local caste quota.

To preview our results, the evidence does not support the presence of a *multi-level learning* mechanism. We find that exposure to a local gender quota does not lead, in the overall sample, to a preference or distaste for a female candidate in state-level elections. Having a female *Mukhiya* elected outside a gender quota also yielded no effects on gender preferences for state-level candidates. We also find no evidence to support the argument that exposure to a local gender quota significantly increased support for a female state-level candidate amongst respondents who perceive their local female leader as effective. While there is some indication women from less progressive households are more likely to support state-level women candidates when they live in a gender-reserved *village council*, this result fails to attain statistical significance. Thus, there is little support for the hypothesis that spillover effects of local gender quotas occur due to voters learning about the effectiveness of their local women leaders.

Does the *multi-level backlash* mechanism find support in our data? The answer is yes, but with the interesting twist of the above-mentioned tipping point. We do not find evidence that local gender quotas reduce male respondents' support for state-level female candidates overall. However, we do find evidence of significant multi-level backlash amongst a sub-group of male respondents – those we term "partially progressive" men – who are favorably predisposed to increases in women's representation at the state level but only up to a certain "tipping point." Specifically, using our preferred measure, we find that male respondents from households where women enjoy relatively greater autonomy have a systematic preference for state-level female candidates when they are not locally represented by a female *Mukhiya*. However, we find large and significant multi-level backlash effects of local gender quotas amongst these "partially progressive" male respondents such that they

no longer prefer a female candidate at the state level when they are exposed to a local gender quota.[4] We show that these backlash effects are not prevalent either amongst "conservative" men (with lower levels of female household decision-making autonomy) or their "fully progressive" counterparts (with higher levels of female household decision-making autonomy).

We interpret these results as consistent with the existence of a "tipping point," where receptivity to initial increases in women's representation in male-dominated arenas gives way to resistance and backlash when women's representation increases beyond a certain point (Krook, 2015). In our context, it is the prospect of having a female representative at the state level *in addition to* having a female representative at the local level that seems to trigger this backlash amongst "partially progressive" male respondents. Thus, we uncover novel evidence of the applicability of the "tipping point" logic in explaining how exposure to women's representation at local levels shapes voters' support for female candidates at higher tiers.

In our context, we expect the "tipping point" dynamic to be prevalent amongst "partially progressive" men but not amongst either "conservative" or "fully progressive" men. Given the exceedingly low levels of female representation at the state level in our context, we would expect "fully progressive" male respondents whose households enjoy more gender parity in decisions should have a systematic preference for a state-level female candidate, regardless of the presence of local gender quotas. Meanwhile, "conservative" male respondents should not have a preference for a state-level female candidate to begin with, and exposure to a local gender quota should not change that dynamic. While "fully progressive" male respondents are virtually absent in our sample, our results for "conservative" male respondents are consistent with these expectations.

Our findings contribute to the growing body of research evaluating the impacts of gender quotas. For example, scholars have found local gender quotas increase women's influence over the legislative process (Clayton, 2021), make spending priorities in local government more woman-friendly (Chattopadhyay and Duflo, 2004), increase the reporting of crimes (Iyer et al., 2012), improve the quality of local politicians (Baltrunaite et al., 2014), and shape the extent to which women benefit from gender-equalizing inheritance reforms (Brulé, 2020).

Moreover, while women's local-level representation invariably increases with the implementation of local gender quotas, a growing body of research shows local gender quotas increase women's representation, even in constituencies not covered by quotas (e.g., Bhavnani, 2009; De Paola,

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[4] A similar effect occurs when these respondents are exposed to female *Mukhiyas* elected outside a reserved seat.

2010; Deininger et al., 2015). Quotas also seem to improve citizen attitudes toward local female leaders and help break down gender stereotypes (Deininger et al., 2015; Beaman et al., 2009; De Paola, 2010). In a similar vein, O'Brien and Rickne (2015) show local gender quotas have a positive effect on the selection of women for leadership roles; Shin (2014) demonstrates that, in South Korea, the effects of gender quotas for proportionally allocated legislative seats spill over into single-member-district seats.

We build on this work by shedding light on whether local gender quotas could impact women's representation by way of a spillover effect to higher tiers – one shaped by changes in voter attitudes. This subject has received considerably less attention, and the extant results are based on electoral returns rather than survey data. For example, Kaur and Philips (2023) leverage the staggered and incomplete transition introduction of local gender quotas in the Indian states to evaluate their impact on the success of women candidates at the state level. The authors present more optimistic findings than ours, showing a small but statistically significant bump in the support of women. Another study with a similar approach, Karekurve-Ramachandra (2023), also finds a positive effect but attributes women's increased success more to supply-side factors, such as the dynastic politics prevalent in India. By contrast, a third paper, Bharadwaj (2022), is more pessimistic, concluding that quotas have had little success in improving the fortunes of women in the electorate and may even have generated a backlash.

Future research will be needed to parse these results, but for the moment, it is important to emphasize that the above-mentioned articles' findings are based on electoral data across states, rather than a randomized survey experiment of voters in a single state. The former approach can help us understand the real-world effects of policy change but may also present inferential challenges. Specifically, data on vote shares may not accurately capture voters' underlying attitudes and preferences and it is possible that any change in the vote share obtained by women candidatesis driven by factors other than the changing attitudes of voters. Meanwhile, our study contributes to the literature by using a conjoint survey experiment to provide the first – to our knowledge - direct evidence of how local gender quotas shape underlying voter preferences for state-level female candidates.

Another key paper that sheds light on how local gender quotas shape voters' attitudes is Beaman et al. (2009), which uses a survey – in part based on voter attitudes toward hypothetical candidates, to examine whether exposure to local female incumbents shapes preferences for female leaders. However, while they investigate how local (i.e., village-level) gender quotas shape attitudes toward female leaders *at the village level,* our interest is in examining how local gender quotas shape

attitudes toward female candidates competing *for higher office*. Moreover, our results contrast with Beaman et al. (2009), who show exposure to past or current women's representation through quotas reduces male respondents' bias against local women leaders; however, such exposure does not affect female respondents' attitudes toward local women leaders. By contrast, our findings, focusing on spillover effects, show that local gender quotas produce significant negative backlash amongst sub-groups of male respondents. The difference is likely due to the "tipping point" logic, which suggests the "spillover effect" backlash is due to the prospect of an *additional woman* in a higher-level office. This prospect is irrelevant when simply examining how exposure to a woman leader shapes attitudes toward a woman office-holder at *the same level* of government, which may explain why backlash is not uncovered in this context.

In the final analysis, we find that, while local gender quotas may have positive supply-side effects on women's representation at higher tiers, demand-side effects of these quotas are less sanguine. In shedding light on the possibility that such quotas may undermine certain male voters' preferences for female representatives at higher tiers, our results point to the folly of relying on local quotas alone to drive representation at state and national levels.

2. Background and Context

India represents an ideal context in which to explore how local gender quotas impact the support for female candidates running for higher office. While India's first constitution introduced elected government at the national and state levels in 1950, the 73rd Constitutional Amendment – which came about in 1993 largely as a result of elite-level pressures (e.g., Bohlken, 2016) – provided for a three-tier structure of local government at the village, block, and district levels. It also mandated direct elections to these bodies to be held every five years. Gender quotas in village councils, or *gram panchayats* (GPs), were introduced throughout India as a result of the same amendment, requiring that at least one-third of the seats on these local bodies be reserved for women and also provided quotas for Scheduled Castes (SCs) and Scheduled Tribes (STs) in proportion to their population. The amendment further mandated that at least one-third of the *panchayat* chairpersons at each level – including the *Mukhiya* at the GP level – be reserved for women. Although the amendment failed to engender the devolution of significant financial or administrative autonomy to GPs in most states, these bodies have come to play an essential role in implementing central and state government welfare programs at the local level (e.g., Bohlken, 2016; Dunning and Nilekani, 2013).

Initially, Bihar was somewhat of a laggard in instituting and maintaining elected village *panchayats* in the wake of the 73rd amendment. It held its first post-amendment *panchayat* elections only in 2001, a full eight years after the introduction of the amendment, and it did not implement the constitutionally mandated reservations for women, SCs, and STs until even later. This status quo underwent a radical change in 2006 when the Bihar state government under Chief Minister Nitish Kumar became the first to go beyond the 73rd Amendment and mandate that nearly half – rather than one-third – of village council seats and *Mukhiya* positions in the state should be reserved for women (Kumar, 2018).

The case of Bihar represents an important puzzle since, despite Bihar's far-reaching mandate to increase women's representation at the lowest tiers of government, the presence of women at higher tiers has remained stubbornly low. Indeed, women occupy fewer than 10% of seats in Bihar's state legislative assembly and only three of Bihar's 40 seats in the lower house of the national parliament. Bihar's major parties have fielded only a small number of female state-level or MLA[5] candidates, despite turnout amongst women surpassing that of men in the most recent state assembly elections (Ramachandran, 2020). We seek to explore this puzzle by using a conjoint survey experiment of voters to examine whether voter attitudes can provide an explanation for why women's representation in Bihar has remained so low despite the prevalence of gender quotas at the local level.

Additionally, Bihar suffers from several maladies associated with gender discrimination, including low levels of literacy and large gender disparities in the economic and social spheres. According to the most recent Indian census, Bihar ranks the lowest amongst India's 29 states for its literacy rate, only 51.5% for women, and its sex ratio is skewed at 918 women for every 1000 men (States Census, 2011). In this context, our study explores whether local gender quotas serve to mitigate or reinforce patterns of gender discrimination found in Bihar outside the political sphere.

3. Theory and Hypotheses

Do local gender quotas shape voter attitudes towards women seeking electoral office at higher tiers? We highlight two key mechanisms through which exposure to a female leader[6] elected through a local gender quota could change voter preferences for female candidates at the state or national levels: *multi-level learning* and *multi-level backlash*. We note here that, although we did register a pre-analysis plan to

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[5] MLA is the acronym used to refer to a member of a state legislative assembly.
[6] We focus on *Mukhiya*, even though regular council membership is also subject to a quota. We believe the executive position is more likely to be prominent enough to produce the effects we hypothesize.

test certain hypotheses related to the effect of local female representation on attitudes to state-level female candidates, all the hypotheses below are exploratory.[7] We believe that such exploration is warranted since our study offers a rare opportunity to assess - using direct evidence from a conjoint survey experiment – how local gender quotas shape voter attitudes to female candidates in higher-level elections. Our investigations of the specific conditions under which such spillovers exist could pave the way for further – more confirmatory – research on the mechanisms through which local gender quotas shape voter attitudes toward women candidates at higher levels. We present the results of our pre-registered hypotheses in Appendix F and describe in further detail how they differ and relate to the main hypotheses we discuss below.[8]

Multi-level Learning: Exposure to a local gender quota could make citizens more comfortable with women in leadership positions and alter citizens' stereotypes about women in leadership roles (Beaman et al., 2009), thereby leading to greater support – all else equal – for female candidates running for office at the state or national level. According to one female respondent, "In these rural areas, men, even if they are literate, don't give those spaces or respect to women wherein they would listen to them. But if she holds a position, and is saying the right thing, they will listen to her."[9] Thus, even in contexts with patriarchal gender norms, women obtaining positions of power could help them gain respect and authority amongst men.

However, merely observing a woman in a leadership role in local government may not be enough to produce a change in support for female candidates at higher levels of government. For example, a male interviewee conveyed his skepticism toward female *Mukhiyas*:

"Even if there are elected women representatives at the *panchayat* level, their husbands do the work. There is a term 'MP' which stands for *Mukhiya Pati* [husband of the *mukhiya*], who does all the work. Seldom does one get to see the *Mukhiya*. She will sit at home and cook food; all

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[7] Our registration of the project through EGAP ("Electing Women in Ethnically Divided Societies," Registration ID: 20210223AB, available at: https://osf.io/sp3mj) followed our data collection but preceded the creation of our dataset and, of course, the completion of all our analysis.

[8] Broadly, our hypotheses analyzed in this paper differ from our pre-registered hypotheses in two main ways. First, our hypotheses related to multi-level learning were in the pre-analysis plan (PAPi, though we anticipated at the time we would only be able to study the effect of having a woman *Mukhiya* and not the (highly correlated but distinct) effect of living in a reserved *panchayat*. We later discovered existing data from the Bihar Government would make both analyses possible. Second, and by contrast, the backlash hypotheses were not contained in the PAP and are thus exploratory. We developed these arguments after filing the PAP; they are based on our qualitative interviews and on initial data visualizations of the data that showed interesting differences across male and female respondents in their reactions to local gender quotas.

[9] Interview, Female respondent, Jamui District, April 2022.

work will be looked after by the husband; she is just meant to sign wherever her signature is required…"[10]

Thus, voters' propensity to update their beliefs about women leaders and favor female candidates at higher levels of government may be based on the degree to which they perceive women to be effective local-level representatives. Some of our qualitative interviews seem to bear out this logic. For instance, when asked whether voters would be more likely to support a woman candidate as MLA if they had been exposed to a woman *Mukhiya* at the *panchayat* level, one male respondent in the Gaya district responded that if voters in his area "have seen any woman perform previously they would definitely support."[11] While effectiveness could be conceptualized in a number of ways, previous research in the context of developing democracies has indicated a key aspect of politicians' success depends on their ability to solve individual voters' problems (e.g., Bussell, 2019). This aspect of politicians' performance may be particularly salient for local-level incumbents.

This discussion leads to our **first hypothesis**: *Exposure to a local gender quota increases support for state-level female candidates, especially amongst respondents who perceive their local female leader to effectively solve their problems (H1).* However, there is another possibility to be considered: women's empowerment itself could constitute a threat to those who support traditional gender hierarchies or, in other words, multi-level backlash.

Multi-Level Backlash: A growing body of research has found women's entry into the halls of power often provokes backlash amongst those who feel threatened by women's empowerment (e.g., Krook, 2015; Bhalotra et al., 2016; Brulé, 2020). This phenomenon may be exacerbated when it comes to so-called "quota women," who may have lower legitimacy. For example, a male resident of Madhubani district whom we interviewed answered the following in response to whether he had experienced a woman in a political leadership position and whether he would support a woman in the future: "Yes. I have seen women leaders. Nowadays, their husbands work instead of women. Women leaders are only for namesake, and that is why I do not listen to their thoughts and ideologies."[12] In this context, as in the above quote, the respondent is referring to a phenomenon widely believed to occur in Bihar (among other Indian states) called *Mukhiyapati,*[13] where a woman is elected in a reserved seat, but the de facto power supposedly lies with her husband or a male relative. However, backlash may also occur when powerful women are seen as incongruent with women's ascribed status in society

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[10] Interview, Male respondent #3, Jamui District, April 2022
[11] Interview, Male respondent, Gaya district, May 2022
[12] Interview, Male Respondent #1, Madhubani District, May 2022
[13] For instance, see more here. https://blogs.lse.ac.uk/southasia/2014/01/13/affirmative-action/

(Rudman et al., 2012). Such backlash may be especially common amongst men with a material or symbolic interest in defending existing gender hierarchies.

Whether men are threatened by women's leadership may also depend on their predispositions, as well as on existing levels of women's empowerment. In contexts where women's representation is low overall, many citizens may welcome "token" increases in women's representation in previously male-dominated arenas (Yoder, 1991). One male respondent we interviewed noted: "Women must be in politics; only then can we develop."[14] In response to a question about whether voters in his area would support a woman candidate running for MLA, another male respondent remarked: "Yes, and it is important to give a chance to woman candidates also. Having a woman in such a position would positively impact the other women in general in the society, and the awareness about several things among them will also improve."[15]

Yet, similar to the dynamics highlighted amongst racial or ethnic groups in previous studies where numerical surges of historically underrepresented minority groups invited resistance from dominant groups (e.g., Blalock, 1967), women's increased representation could also provoke a backlash, especially amongst men (Yoder, 1991). Building on previous studies, we argue that this "tipping point" dynamic (Krook, 2015) could give rise to local gender quotas having *negative* spillover effects across different levels of government. In environments with few women leaders, citizens – including men – may support increasing women's representation by a modest amount. Thus, even in contexts where patriarchal norms are prevalent, male citizens may support having a woman representative at the state level if a woman does not otherwise represent them. However, consistent with a "tipping point effect," local representation by a woman elected through a local gender quota may result in these same men perceiving *an additional woman* at the state level as a threat to existing hierarchies. Such a perceived threat could, in turn, trigger a negative response amongst these male citizens toward female candidates at the state level (e.g., Krook, 2015).

While we did not uncover overt resistance to women's representation in our qualitative interviews, certain interviewees' responses did seem to imply that *additional* women's representation beyond the already reserved local-level seats would be unnecessary or undesirable. When asked if voters in his area would be more likely to support a woman candidate running to be MLA if they have been exposed to a woman *Mukhiya* at the panchayat level, one male respondent from Gaya district

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[14] Interview, Male Respondent #2, Jamui District April 2022
[15] Interview, Male Respondent #2, Madhubani District, May 2022

remarked, "For voters to support women, there are seats reserved for female candidates."[16] Similarly, a response to the same question from another male respondent from Madhubani district also hinted at resistance to local gender quotas: "I vote for candidates who will work for the people. 50% reservations for women. Maximum among all other states. But only 10% are able to know their rights, [the] rest rely on their family members towards decision making."[17]

We examine the observable implications of two versions of the multi-level backlash logic. In the first and simple version, the logic suggests that *exposure to a local gender quota should reduce support for state-level female candidates amongst male respondents overall, regardless of their initial receptivity to women's leadership* (**H2**). However, a second and more nuanced version of the multi-level backlash logic emphasizes the "tipping point" phenomenon (Krook, 2015, p. 186). This logic suggests local gender quota exposure should produce a backlash in support of state-level female candidates, particularly amongst certain types of men whom we term "partially progressive." "Partially progressive" men are those who systematically favor increasing women's representation at the state level as long as they perceive overall women's representation in their political system to be low. However, when local gender quotas are present, partially progressive men should eschew the prospect of being *additionally* represented by a woman at the state level. Thus, according to this logic, local gender quotas should reduce – and may even negate – the preference of partially progressive men for state-level female candidates.

"Partially progressive" men should be different from their relatively "conservative" counterparts who are unlikely to favor increases in women's state-level representation even when overall levels of women's representation are low. Thus, local gender quotas should have no additional negative effect on "conservative" men's candidate gender preferences at higher tiers. At the other end of the spectrum, "fully progressive" men should – in a male-dominated environment – be willing to support women at higher tiers even when a local gender quota is present and will be unlikely to experience a backlash. Thus, we would not expect to see a "tipping point" in the preferences of relatively "conservative" or "fully progressive" men. With this logic in mind, we develop our third hypothesis: *exposure to a local gender quota should reduce support for state-level female candidates amongst "partially progressive" male respondents* (**H3**). As described below, we operationalize "partially progressive" male respondents as those who belong to households with relatively higher female decision-making autonomy. However, we also explore age and education as alternative measures.

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[16] Interview, Male Respondent, Gaya District, May 2022
[17] Interview, Male Respondent #4, Madhubani District, May 2022

4. Research Design

4.1 Conjoint Survey Experiment

To investigate how local gender quotas shape voter support for state-level female candidates (also called Members of Legislative Assembly or MLAs), we conducted a conjoint survey experiment with close to 2000 respondents in December 2020. Conjoint experiments, aided by randomization, are effective at tackling causation and isolating independent variables and have been used to explore similar research questions (see Mutz, 2011; Auerbach and Thachil, 2018; Hainmueller et al., 2015). A sample of actual voters increases the external validity of the results.

We conducted the surveys in four districts in Bihar: Gaya and Jamui in the South and Madhubani and Supaul in the North. In each of these districts, we selected two state legislative constituencies, one represented by a female MLA and one randomly selected adjacent constituency represented by a male MLA. We interviewed approximately 250 respondents from each constituency in building our sampling frame, randomly selected from the publicly available voter roll. This randomization was done at the precinct level (polling booth). In total, our respondents were spread across 82 village councils or *gram panchayats* (GPs). Appendix B provides further details on our interview protocols and sampling strategy.

The respondents were asked to choose their preferred candidate across four pairs of hypothetical politicians running for state legislative assembly (MLA). Each candidate possessed four randomized traits: gender (male or female), ethnicity (Upper-Caste, Backward-Caste, Dalit, or Muslim), campaign appeal (public goods v. security), and party affiliation (BJP v. RJD). Gender was revealed by the salutation and ethnicity by a clearly distinguishing surname. Campaign appeal emphasizes either economic development or protection from violence.

We randomized the first two pairs of candidates by the first three traits and added party affiliation only in the final two pairs. Additionally, our enumerators showed standardized illustrations of the hypothetical candidate pairs while reading the candidate traits aloud. The drawings revealed candidate gender, but other characteristics beyond clothing colour were standardized. After presenting the candidate pairs and recording the choices, the enumerators took note of the respondents' demographic details and asked them a series of questions about their experiences with and perceptions of their *Mukhiya.*

We also asked respondents questions to capture the extent of female decision-making autonomy in a respondent's household. It is these responses we use here to capture the underlying characteristics of male respondents that could lead them to have relatively more or less progressive

views on women's representation. Specifically, we create a variable, "FemaleDecisionIndex," based on the answers to each of the eight parts of Question 35 in our survey questionnaire (see Appendix Section A for more details). We assign one point to each response reporting a woman in the household is a decision-maker for the relevant household decision (see Appendix F for further information on variable coding). Based on this index, we then code a binary variable, "FemaleHouseholdAutonomy," if "FemaleDecisionIndex" is more than or equal to 1 and 0 otherwise. Thus, a code of 1 for the "FemaleHouseholdAutonomy" variable reflects that a respondent's household accords women at least a limited degree of decision-making autonomy, while a code of 0 reflects an absence of women's decision-making autonomy on any of the eight key household decisions.

After conducting the conjoint survey experiment, we matched each respondent to a particular village council or *Gram Panchayat* (GP) based on information about the polling station and GP, all collected by our team of enumerators.[18] We then obtained data from Bihar's state election commission on the GP's reservation status and gender of the winning *Mukhiya* candidate in the 2016 *panchayat* elections for each GP represented in our sample. We use this to analyze how respondents' exposure to local gender quotas shapes their preferences for state-level female candidates in the conjoint survey experiment.[19] To further contextualize our findings, we rely on 64 semi-structured interviews with citizens across four districts in Bihar (See Appendix C).

4.2 "As-if-Randomly Assigned" Local Gender Quotas

Our research design rests on the plausibility that gender quotas for *Mukhiya* positions are as-if-randomly assigned across village councils. If this condition were not met, it would be difficult to identify the effect of local gender quotas on respondent voting preferences. Fortunately, while some Indian states assign gender quotas non-randomly, Bihar's assignment of local gender quotas can be considered "as-if-random" (Brulé, 2020). GPs in a given block are selected to have the *Mukhiya* position reserved for a member of a Scheduled Caste (SC) or Scheduled Tribe (ST) based on the relative prevalence of the caste population in the given GP relative to other village *panchayats* in the

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[18] While our original sample consisted of 1,999 respondents, one group of 30 respondents fell within the area of a *Nagar Panchayat* or town council administered under a separate urban governance structure. Since our focus is on village councils, we omitted these respondents from our analyses.

[19] It is worth pointing out that, due to the quota rotation after each voting cycle, virtually all our respondents will have lived in a GP with a gender quota at some point in the previous ten years. We believe, however, the effects of local quotas on state voting are likely to be immediate and short-term, with respondents thinking about their current *Mukhiya* much more than past *Mukhiyas* when making their choice. Moreover, if anything, the quota rotation would tend to depress our results rather than generate false positives, so we believe exploring current quotas is the appropriate approach to testing our theory.

bloc. Then, the remaining village councils are arranged in descending order of their total population and village councils are selected to be reserved for a *Mukhiya* from a Backward Caste (OBC) group. Within each caste reservation category, GPs are arranged in descending order by population size; up to 50% of village councils in each category are reserved for a female *Mukhiya*. Only female candidates can run for *Mukhiya* seats reserved for women. The list of village councils reserved for a woman *Mukhiya* rotates after two consecutive *panchayat* general elections.[20] Thus, the first rotation in Bihar took place in the 2016 *panchayat* election.

While the above discussion pertains to the rules that exist on paper, Dunning and Nilekani (2013) were able to use data on SC and ST populations in Bihar to show the rules were followed in practice. Our own inspection of the data from the 2016 *panchayat* elections on reservations within blocks represented in our sample also suggests the procedure was followed.[21] Lastly, we also conducted balance tests (see Appendix Table 4A) showing the GPs in our sample districts with and without a local gender quota in the 2016 *panchayat* election are not significantly different across a range of demographic and socio-economic characteristics once we include block-fixed effects. Our results corroborate Dunning and Nilekani (2013) and Brulé (2020), who provided evidence showing village councils that reserved based on caste and gender, respectively, were similar to unreserved village councils.

Bihar has a robust local governance system, having held post-amendment elections in 2001, 2006, 2010, and 2016 and has 8,058 elected village councils currently operating at its lowest tier (Bihar Panchayati Raj Department, n.d.). The *Mukhiya* position is directly elected, and although village *panchayat* elections are not officially held on party lines, most candidates are informally linked with a political party (see Dunning and Nilekani, 2013). The most recent *panchayat* elections before our survey occurred in 2016, which, in most cases, means the village *Mukhiya* at the time of our survey would have been in office for at least four years.

5. Methodology

As is standard when analyzing conjoint survey experiments, we adopt the candidate profile as our unit of analysis, and our dependent variable measures whether a respondent selected a particular profile (e.g., Hainmueller et al., 2014). We display our initial results using marginal means plots (e.g., Leeper

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[20] See 2009 Amendment to 2006 Panchayat Election Rules. See also Table 5.2 in Brulé (2020).
[21] When we sorted *panchayats* within blocks by caste reservation status, we confirmed approximately half of the village councils in each caste reservation category in each subdistrict were reserved for a woman *Mukhiya*.

et al., 2020), sub-setted by respondents according to gender and whether their village council was led by a female *Mukhiya* elected in a reserved position. This approach is robust and easy to interpret, as it shows the probability of a particular category of respondents choosing a candidate with specific characteristics, within a 95% confidence interval. If there is no preference, then the probability will be 50%.

Additionally, as our primary interest is in examining how exposure to local gender quotas modifies preferences for state-level female candidates, we use simple linear regression with interaction effects, where the dependent variable is a binary indicator for whether the respondent chooses the given candidate profile. Although our dependent variable is binary, the methods literature points to the utility of OLS as a reliable and easily interpretable estimator (see Hainmueller et al., 2013; Gomila, 2020). Our primary control variables are a series of dummies for the candidate characteristics (with Scheduled Caste as the ethnic variable reference category) and controls for respondents' age, gender, and education. Our main specifications also include constituency-fixed effects and use robust standard errors clustered by respondent. However, since the covariate balance for our village councils with and without local gender quotas only holds within blocks, we also examine the robustness of our main results to include block-fixed effects.

To test our hypotheses, we interact the gender of the relevant candidate profile to which a respondent is exposed with an indicator for whether the *Mukhiya* in the respondent's GP was reserved for a woman in the 2016 *panchayat* election. We present marginal means plots to show how the preference for state-level female candidates varies with exposure to local gender quotas and other respondent characteristics. However, it is also necessary to compute marginal effects based on the above-mentioned regression analyses to discern whether the preferences of respondents who are exposed to local gender quotas are systematically different from those of respondents who are not exposed to such quotas. Thus, our quantity of interest is the marginal effect of a respondent's exposure to a local gender quota (i.e., a respondent residing in a GP reserved for a woman *Mukhiya)* across different subsets of respondents, as suggested by our hypotheses. To examine our hypotheses about *multi-level learning*, we subset our sample according to measures of the *Mukhiya*'s perceived effectiveness at addressing respondents' individual problems, as well as challenges faced in the respondents' villages. To examine our hypotheses about *multi-level backlash*, we isolate three different characteristics that could produce differences across male respondents in our sample in terms of the degree to which they are supportive of women's representation. Our preferred measure is one that captures whether men belong to households in which women enjoy some autonomy in decision-making. However, we also

explore measures capturing the age and education of respondents which also may give rise to "partially progressive" attitudes toward women's representation. We avoid direct measures of the degree to which respondents have progressive views of women's representation since these would likely be subject to social desirability bias,

6. Descriptive Findings

Local gender quotas constitute a key pathway through which women attain village-level positions of power. Female *Mukhiyas* represent around 45% of the 82 GPs represented in our sample. Just over 86% of these female *mukhiyas* were elected in reserved seats. Our data show village *Mukhiyas* in Bihar play a salient role in the lives of rural citizens. Around 60% of respondents in our sample reported having approached their village *Mukhiya* for help in the last year and, of those who did, close to 40% considered their *Mukhiya* to have been "Always" or "Often" effective in dealing with their issues. It is also noteworthy that our survey data show just over 94% of respondents correctly identified the gender of their current *Mukhiya*.

When assessing how local gender quotas shape local leaders' performance, we find no systematic differences in perceived effectiveness between female *Mukhiyas* elected in seats reserved for women and other *Mukhiyas* (see Figure 1). As Figure 1 shows, male respondents were much more likely than their female counterparts to report having approached their *Mukhiya* for help in the past year. However, whether they did so does not depend on whether the *Mukhiya* was a woman elected in a reserved seat. Moreover, there are no systematic differences between male and female respondents' perceptions of *Mukhiya*s' effectiveness.[22] It is also worth noting that, in the aggregate, female respondents prefer female MLA candidates, while male respondents have no statistically significant gender preference (see Hankla et. al. 2023). With these patterns in mind, we move on to testing our key hypotheses about how exposure to local gender quotas shapes preferences for state-level female candidates.

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[22] Difference in means tests showed yielded p-values well below conventional levels of statistical significance.

Figure 1: Reported Perceptions of Village *Mukhiya* by Reservation Status and Respondent Gender
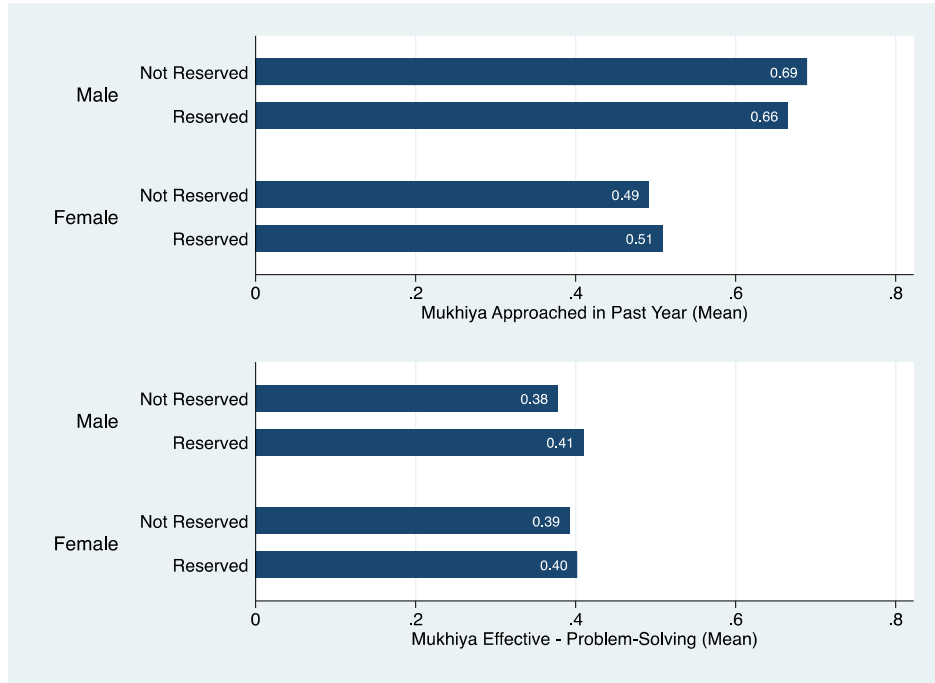
7. Results

In this section, we focus primarily on the results from our hypothesis tests. However, to provide some background, Figure 2 presents marginal means for all candidate attributes. While we explore the effects of parties and intersectionality in other work (Hankla et al., 2023; Thomas et al., 2023), here we focus on how respondents' preferences for state-level female candidates vary based on their exposure to a local gender quota. Importantly, as the figure shows, overall differences in support for state-level female candidates amongst respondents exposed to a local gender quota and those who are not is small and additional analyses confirm that the difference is not statistically significant at conventional levels (see Appendix Table 5A).

Figure 2: Marginal Means – State-Level Candidate Preference by if Respondent's Village Council has a Local Gender Quota
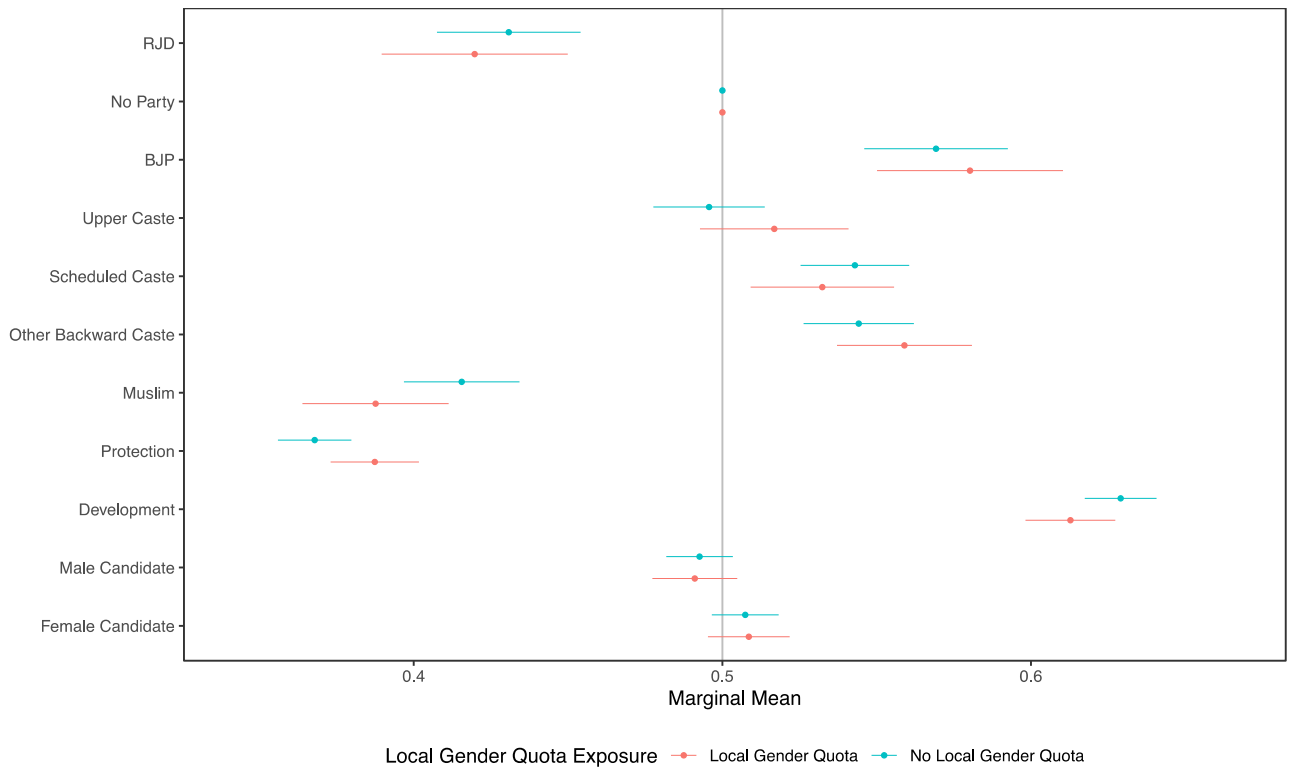
Note: Local gender quota refers to a gender quota at the local (GP) level in the 2016 *panchayat* election. "Male Candidate" and "Female Candidate" refer to state-level election candidates.

Turning to the test of the *multi-level learning* logic (H1), Figure 3 focuses on candidate gender and examines the relative favorability of state-level female candidate profiles based on respondents' perceptions of their female *Mukhiya's* effectiveness at addressing their problems. The figure shows that, even when female *Mukhiyas* were perceived as effective problem-solvers, exposure to a local gender quota did not translate to a systematic preference for state-level female candidates. Moreover, additional analyses confirm that the marginal effect of local gender quotas is not statistically significant, regardless of whether the *Mukhiya* was approached or perceived as an effective problem-solver (see Appendix Table 11A). Figure 1A in the Appendix shows similar patterns hold when considering the *Mukhiya's* perceived effectiveness in addressing challenges faced by the village (see also Appendix Table 11A).

Figure 3: Marginal Means: State-Level Candidate Gender Preference by Perceived Effectiveness of *Mukhiya*
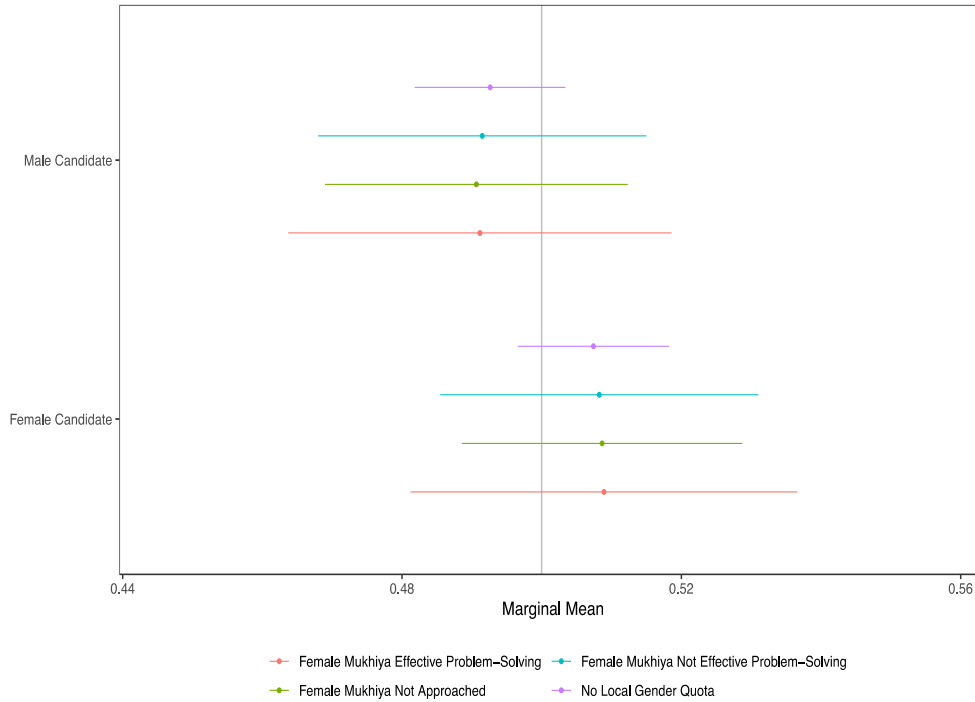
Note: Local gender quota refers to whether a respondent resides in a GP reserved for a female *Mukhiya* in the 2016 *panchayat* election. "Male Candidate" and "Female Candidate" refer to state-level election candidates. *Mukhiya* refers to the GP executive.

Turning to the test of the simple version of the *multi-level backlash* logic (H2), Figure 4 shows no systematic candidate gender preference amongst male respondents, regardless of their exposure to a local gender quota. Moreover, Table 7A in the Appendix confirms the difference between male respondents exposed to a local gender quota and those who are not – the marginal effect of local gender quotas – is not significant for male respondents overall. Thus, in the aggregate, there is no evidence to support the simple version of the multi-level backlash logic reflected in H2, which would suggest male respondents exposed to a local gender quota should have significantly lower support for female state-level candidates than male respondents who are not exposed to such a quota. Interestingly, although Figure 4 shows female respondents exposed to a local gender quota systematically prefer female state-level candidates, female respondents do not systematically differ in their preference for state-level female candidates if they are exposed to a local gender quota (i.e. the marginal effect of local gender quota exposure is not statistically significant at conventional levels - see Appendix Table 7A).

Figure 4: Marginal Means: State-Level Candidate Gender Preference by Local Gender Quota Exposure and Respondent Gender
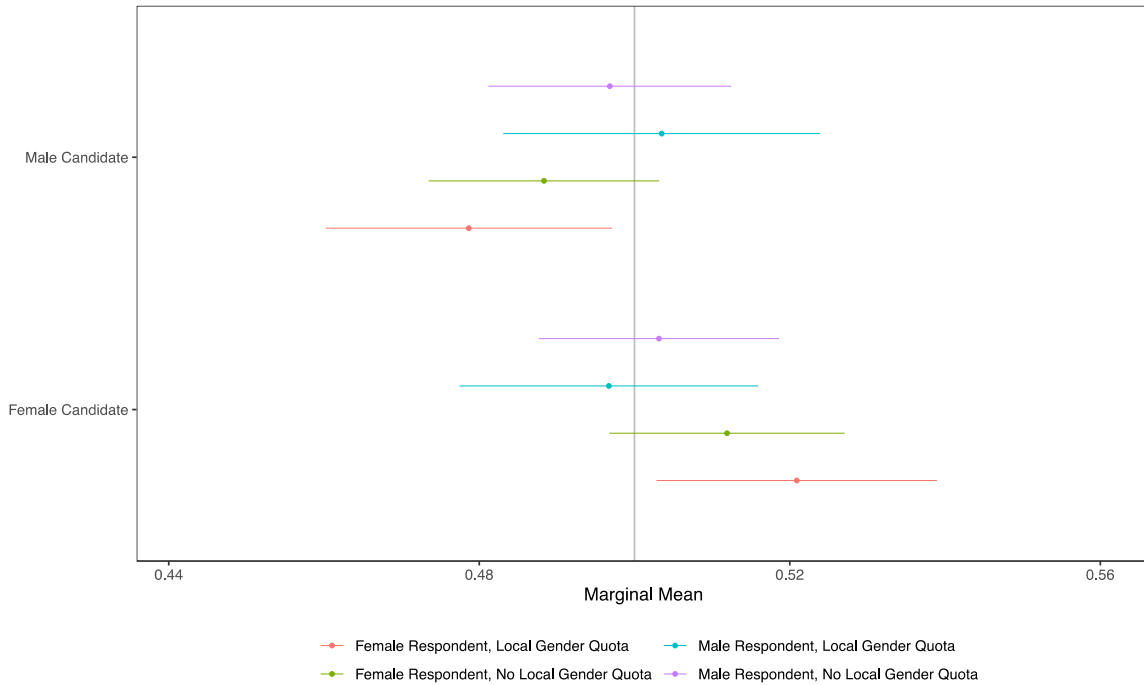
Note: Local gender quota refers to a gender quota at the local (GP) level in the 2016 *panchayat* election. "Male Candidate" and "Female Candidate" refer to state-level election candidates.

We next turn to the more nuanced version of the multi-level backlash logic, as reflected in H3, which suggests the existence of a "tipping point." In this scenario, we should expect a negative backlash to a local gender quota among male respondents who show some initial support for women's representation in the absence of this quota – the "partially progressive" men. Thus, we probe whether multi-level backlash is prevalent amongst men with a relatively higher degree of female decision-making autonomy in their households as well as younger men and men who have completed secondary school.

Strikingly, and consistent with the "tipping point" argument, Figure 5 – which focuses on marginal means for male respondents – shows male respondents from households where women enjoy some decision-making autonomy ("partially progressive" male respondents) have a systematic preference for state-level female candidates when the male respondents do not have a female *Mukhiya*. However, when these "partially progressive" respondents are exposed to a local gender quota or when they are represented by a female *Mukhiya*, this preference is eliminated on average. Thus, exposure to a local gender quota erases the difference between "partially progressive" men and their more

conservative counterparts concerning their support for state-level female candidates. Unfortunately, we are unable to test the effect of quotas on "fully progressive" men, as our data included very few households where women have control over more than one major decision.

Figure 5: Marginal Means – State-Level Candidate Gender Preference by Local Gender Quota Exposure for <u>Male Respondents</u> Based on Female Household Autonomy
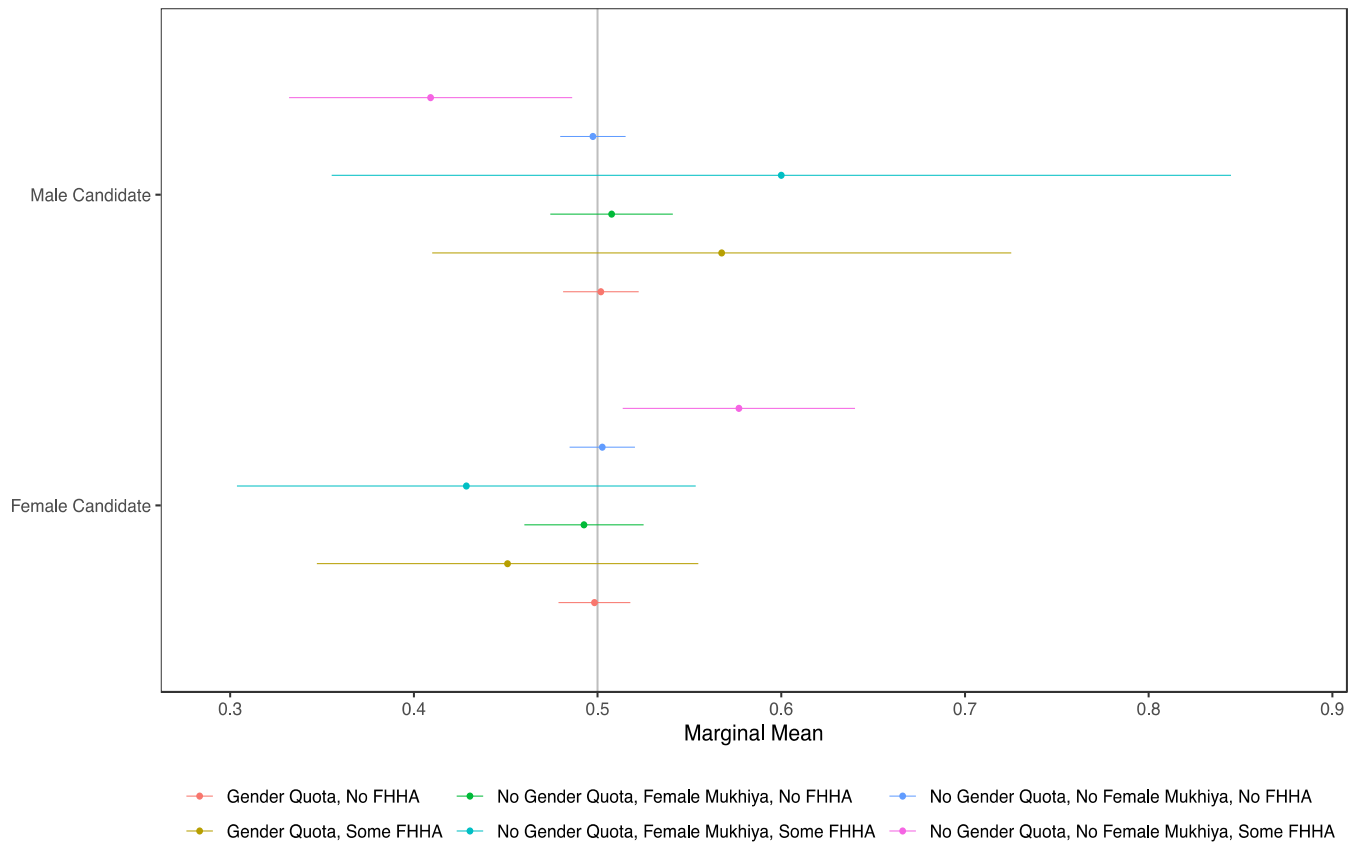
Note: Gender quota refers to a local gender quota whereby a respondent resides in a GP reserved for a female *Mukhiya* in the 2016 *panchayat* election. "FHHA" refers to "Female Household Autonomy," as defined by the binary variable described in Section 4. "Male Candidate" and "Female Candidate" refer to state-level election candidates.

While the marginal means plots show how preferences for state-level female candidates vary by male respondents' local gender quota exposure and female household autonomy, Figure 6 demonstrates the marginal effect of quota exposure, conditional on the level of female decision-making autonomy in the respondents' households. These marginal effects are computed based on the linear regression analysis presented in Table 1. Figure 6 Panel A shows that, amongst male respondents in relatively women-empowered households, exposure to a local gender quota has a negative and

statistically significant effect on their support for female state-level candidates. The effect is substantively large as well. Amongst male respondents in relatively women-empowered households, exposure to a local gender quota makes them 11.2 percentage points less likely to support a female candidate in state-level elections. This effect is particularly striking since respondents were not primed in any way to think about their *Mukhiya* or their *Mukhiya's* gender before participating in the conjoint survey experiment. The results, therefore, suggest local gender quotas are salient in the minds of citizens – and in the minds of male respondents in relatively women-empowered households in particular. Table 12A in the Appendix shows this result remains statistically significant even when we include block-fixed effects instead of constituency-fixed effects, which is important for causal identification as covariate balance across village councils is achieved only once we control for bloc-fixed effects (see Appendix Table 1A).

Meanwhile, as shown in Figure 5, male respondents from less women-empowered households (i.e., "conservative" men) do not systematically support state-level female candidates, even when they are not exposed to a local gender quota. Thus, as shown in Figure 6, Panel A, exposure to a local gender quota does not change this lack of support (i.e., the marginal effect of exposure to local gender quotas is insignificant for this sub-group of male respondents).

Interestingly, while the above results utilize our survey measure of female decision-making autonomy within households to separate "conservative" from "partially progressive" male respondents, a similar backlash effect occurs when using age to distinguish men with partially progressive gender attitudes from their conservative counterparts. Specifically, men aged in the bottom 75 percent of our sample – 53 years old or less – also present a systematic preference for women in the absence of local quotas and a significant decrease in this preference when exposed to quotas (See Figure 7, Panel A). Meanwhile, we find no evidence of such a backlash amongst older males (See Tables 14A in the Appendix). Our results using education as a proxy for gender attitudes, however, yield no significant effects (see Appendix Table 15A), perhaps because conservative gender norms are often reinforced in the segregated primary and secondary classrooms of rural Bihar.

Figure 6: Marginal Effect of Local Gender Quotas by Household Female Decision-Making Autonomy (See Table 1 for Regression Results)
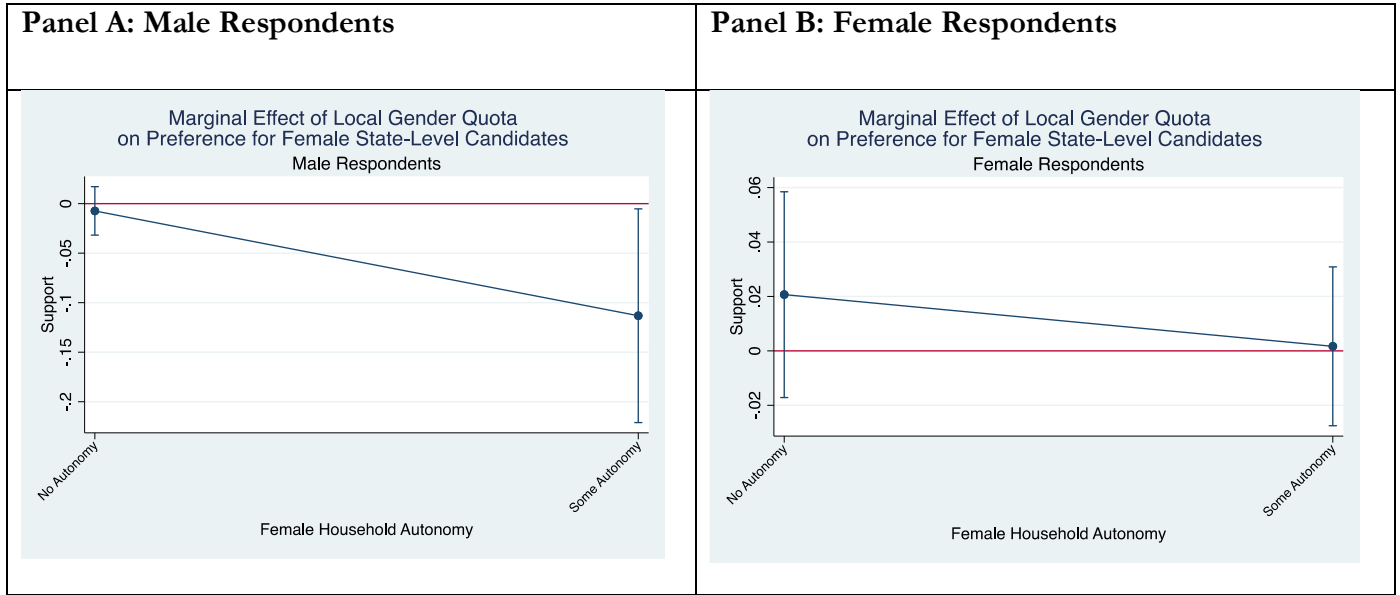
Panel A: Male Respondents	Panel B: Female Respondents

Note: Local gender quota refers to whether a respondent resides in a GP reserved for a female *Mukhiya* in the 2016 *panchayat* election. "Female Household Autonomy" is defined according to the binary variable described in Section 4.

Table 1: Effect of Local Gender Quotas on Preference for a State-Level Female Candidate (Based on Respondent Gender and Female Household Autonomy)

Dependent Variable: Preferred Candidate Profile (with Constituency Fixed Effects)

	(1) Male Respondents	(2) Female Respondents
Female Candidate	0.00	0.03
	(0.02)	(0.02)
Female HHA	-0.05	-0.00
	(0.03)	(0.02)
Female Candidate*Female HHA	0.09	-0.00
	(0.06)	(0.03)
Local Gender Quota	0.00	-0.02
	(0.01)	(0.02)
Female Candidate*Local Gender Quota	-0.01	0.05
	(0.02)	(0.04)
Female HHA*Local Gender Quota	0.12*	0.04
	(0.07)	(0.02)
Female Candidate*Female HHA *Local Gender Quota	-0.23*	-0.06
	(0.12)	(0.05)
Protection Appeal	-0.29***	-0.20***
	(0.01)	(0.01)
Upper-Caste Candidate	-0.03**	-0.04**
	(0.02)	(0.02)
OBC Candidate	0.01	0.00
	(0.02)	(0.02)
Muslim Candidate	-0.13***	-0.14***
	(0.02)	(0.02)
Age	-0.00	-0.00
	(0.00)	(0.00)
Education	-0.00**	-0.00

	(0.00)	(0.00)
Constituency Fixed Effects	Yes	Yes
Observations	7,948	7,772
R-squared	0.10	0.05

Note: Robust standard errors clustered by respondent in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Female HHA is a binary measure of female decision-making autonomy in the respondent's household. See Appendix Table 2A for a description.

Notably, we find no statistically significant evidence of multi-level backlash or a "tipping point" amongst female respondents (see Figure 6, Panel B). Figure 8 shows female respondents from households with an absence of women's decision-making autonomy have a systematic preference for state-level female candidates only when they are locally represented by a woman. Meanwhile, female respondents from households with some female decision-making autonomy do not have a systematic preference for state-level candidates, regardless of their exposure to a local gender quota. Thus, female respondents appear motivated to support state-level candidates as a corrective to the lack of women's empowerment in their households, but only once they are exposed to a woman in a local leadership position. Despite these suggestive findings, the marginal effect of exposure to a local gender quota on the preference for a state-level female candidate is not statistically significant at conventional levels for female respondents regardless of their level of household female decision-making autonomy (see Figure 6, Panel B).

Figure 7: Marginal Effect of Local Gender Quotas by Age of Respondent (See Appendix Table 14A for the Regression Results)
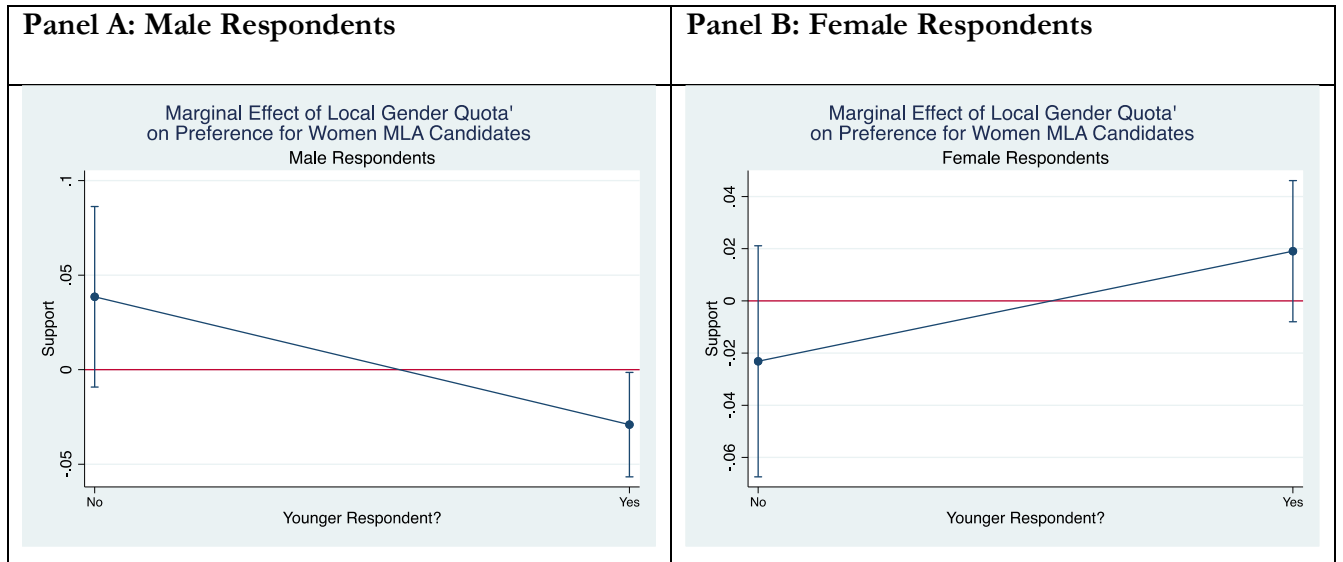
Panel A: Male Respondents	Panel B: Female Respondents

Note: Local gender quota refers to whether a respondent resides in a GP reserved for a female *Mukhiya* in the 2016 *panchayat* election. "Younger" refers to respondents below the 75th percentile in our sample (53 years old).

Figure 8: Marginal Means: State-Level Candidate Gender Preference by Local Gender Quota Exposure for <u>Female Respondents</u> based on Household Female Decision-Making Autonomy
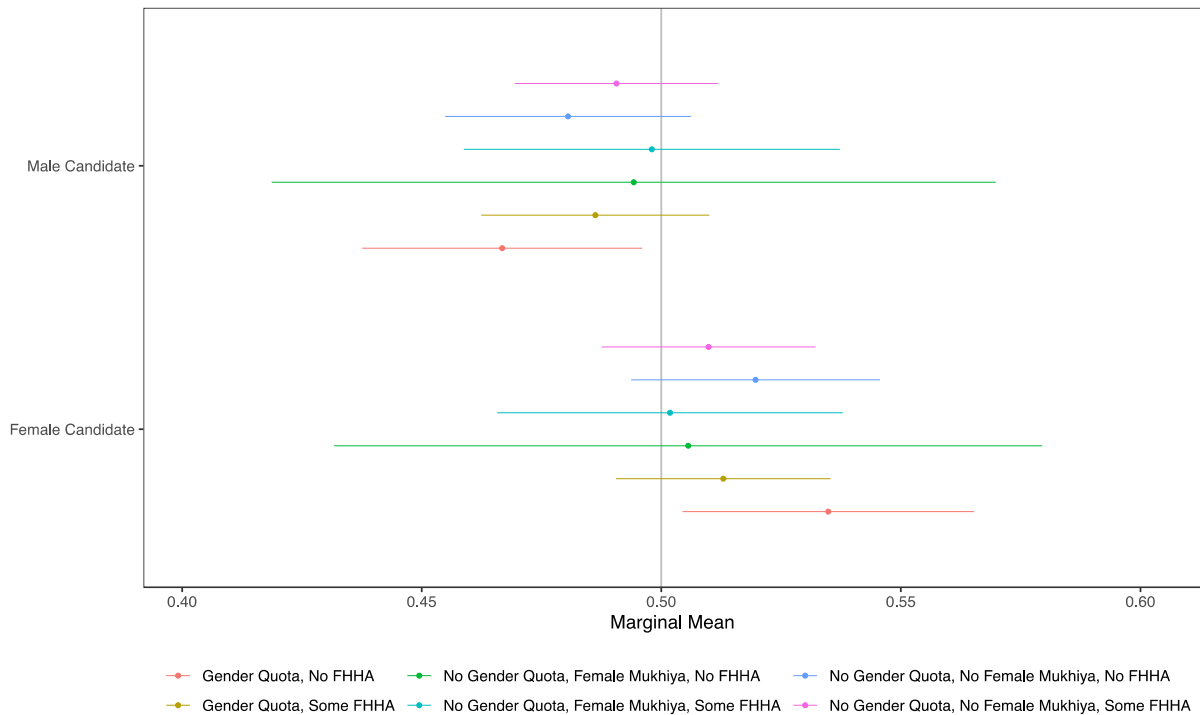
Note: Gender quota refers to a respondents' exposure to a gender quota at the local (GP) level in the 2016 *panchayat* election. "FHHA" refers to "Female Household Autonomy" as defined according to the binary variable described in Section 4. "Male Candidate" and "Female Candidate" refer to state-level election candidates.

While our research question and discussion thus far have focused on the consequences of local gender quotas for women's electability at higher tiers, it is interesting to ask whether male respondents react similarly to female *Mukhiya* elected in unreserved seats. As shown in Table 13A in the Appendix, the estimated marginal effect of overall exposure to a female *Mukhiya* is similar in significance and magnitude to the estimated marginal effect of exposure to a female *Mukhiya* elected to a reserved seat. These results suggest female *Mukhiyas* may produce a backlash amongst "partially progressive" male respondents, regardless of whether they are elected because of a gender quota. Of course, we must be cautious in interpreting these patterns as the assignment of unreserved female *Mukhiyas* across village councils is likely to be confounded by several factors. Moreover, due to the relatively small proportion of respondents in our sample represented by an unreserved female *Mukhiya*, we do not have sufficient statistical power to detect whether the extent of backlash is significantly different based on whether a female *Mukhiya* is elected through a local gender quota.

Finally, we explore whether the multi-level backlash to local gender quotas we observed amongst "partially progressive" male respondents is stronger or weaker when the position of *Mukhiya* at the GP level is also reserved for a member of a lower-caste group. Table 2 shows the multi-level backlash to local gender quotas amongst "partially progressive" male respondents is erased in village councils with co-existing caste quotas. Meanwhile, such backlash continues to be evident in village councils where local caste quotas are absent. These results suggest that backlash to local gender quotas amongst "partially progressive" men may be mitigated when the women elected also belong to historically marginalized caste groups. While a detailed consideration of caste is beyond the scope of this paper, these findings are consistent with Brulé and Toth (2022), who also find two-dimensional quotas in the Indian context – along caste and gender lines – can erase the backlash caused by one-dimensional quotas.

Table 2: Marginal Effect for Male Respondents, Based on Female HHA and Local Caste Quota

Marginal Effect of Local Gender Quota on Preference for a State-Level Female Candidate					
Subgroup of Respondents	Main Results in Table:	Contrast	Standard Error	95% Confidence Interval	
Male, Some FHHA, Local Caste Quota	10A	0.048	0.117	-0.182	0.278
Male, Some FHHA, No Caste Quota	10A	-0.135	0.053	-0.238	-0.031
Male, No FHHA, Caste Quota	10A	-0.025	0.022	-0.067	0.017
Male, No FHHA, No Caste Quota	10A	0.002	0.015	-0.028	0.032

8. Conclusion

Our research has explored whether local gender quotas make it easier for women to achieve electoral victory at higher tiers. This question has significant policy relevance as (1) imposing quotas can be politically easier at the local level, and (2) it may also be easier for members of historically marginalized groups – such as women – to gain a foothold at the local level than at higher tiers. Thus, local gender quotas – and local women's representation more broadly – provide a potentially important pathway through which women can achieve greater representation in the upper echelons of the political sphere.

Previous research has pointed to the potentially positive *supply-side* effects of local quotas in expanding the pipeline of potential women candidates for higher office (e.g., O'Connell, 2018; Goyal, 2020; Maitra and Rosenblum, 2021; Karekurve-Ramachandra, 2023). However, few scholars have systematically theorized and tested the potential role of *demand-side* factors on such spillovers, a lacuna that we correct here.

Overall, our research suggests grounds for pessimism regarding whether local gender quotas could ease this pathway by changing voter attitudes. Focusing on the role of local gender quotas in shaping voters' preferences for female candidates at higher tiers, we find no statistically significant evidence that exposure to local female leaders elected through a quota systematically increases voters' preferences for female candidates at the state level. Indeed, contrary to our *multi-level learning logic*, whereby voters learn women can be effective leaders by observing their local-level performance, we find little indication that perceptions of local female leaders' effectiveness translate into support for female candidates at higher levels.

Perhaps more discouragingly, we find local gender quotas may – under certain conditions – *reduce* some voters' support for female candidates at higher levels of government. Specifically, we find that, while men in our sample from households where women enjoy relatively greater autonomy tend to favor female candidates for state-level elections in the absence of a local gender quota, contemporaneous exposure to such a quota eliminates this preference. We interpret this finding as consistent with a "tipping point" logic, whereby some citizens support small increases in marginalized group representation when existing levels of such representation are low, but then oppose increases beyond a certain point. We do not find, however, that state-level female candidates face such a "multi-level backlash" amongst women or conservative men in our sample, likely indicating their preferences are less subject to influence.

Our findings suggest important lessons for policymakers considering the introduction of local-level gender quotas. In particular, while local gender quotas may increase the supply of women candidates at higher levels of government as previous studies suggest, we show that they negate the support for women precisely amongst those male voters who might otherwise prefer women leaders at higher levels. Thus, our findings sound a cautionary note that local gender quotas should not be used as a substitute for serious efforts to increase women's representation at higher levels of government. Instead, policymakers must anticipate the possibility of the kind of voter backlash that we uncovered in our study and find ways to address these potentially negative consequences from the outset. As our findings suggest, failure to do so may counteract the documented beneficial effects of

local gender quotas in increasing women's representation at higher levels (O'Connell, 2020; Goyal, 2020; Karekurve-Ramachandra, 2023).

While our findings are based on a single state – Bihar – in India, we believe they we believe they provide a compelling answer to the puzzle of why existing levels of women's representation at higher levels of government may be low even in contexts where local gender quotas are prevalent or where women achieve high levels of representation at the local level. Indeed, by illuminating the multi-level backlash amongst "partially progressive" men, our findings pave the way for new research to further understand why and when this phenomenon occurs. Does "multi-level backlash" persist even once local gender quotas are no longer in effect? Does it occur even in contexts within or outside India where existing gender disparities in socio-economic spheres are low? And is it possible that more positive spillover effects exist among women living in more gender-traditional households? In giving rise to these questions, our research lays the foundation for a deeper understanding of how local gender quotas shape voter support for women politicians competing for higher office.

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Appendix A: Survey Questionnaire

<u>Background Survey Component – Part 1</u>

I am going to begin by asking you a series of questions about your background and experiences.

Enumerator: Take note of the village name and location.

1. What is your gender? a. Male b. Female
2. Are you married? a. Married b. Never Married c. Divorced d. Widowed e. Separated
3. How many children do you have? a. None b. 1-2 c. 3-5 d. 6 or more
4. What is your caste? 1. SC 2. ST 3. OBC 4. General
5. What is your jati/sub-caste?

        1a. Bauri/Bhogta/Bhuiyan

        1b. Ravidas/Ram/Mochi

        1c. Dhobi/Rajak

        1d. Dom/Dhangar/Bansphor

        1e. Dussadh/Dhari

        1f. Ghasi/Hari/Mehtar

        1g. Musahar/Nat

        1h. Pasi/Paswan

        1i. Rajwar/Turi

        1j. Other SC

        2a. Santhal

        2b. Ho

        2c. Oraon

        2d. Munda/Patar

        2e. Paharia/Mal Paharia

        2f. Banjara/Bedia

        2g. Kharia

        2h. Asur/Agadia

        2i. Birhor

        2j. Chik Baraik

2k. Lohra

2l. Gond

2m. Karmali

2n. Other ST

3a. Ahir/Yadav/Gope

3b. Kurmi

3c. Koeri/Kushwaha/Maurya

3d. Kumhar/Prajapati

3e. Kewat/Mallah

3f. Gadaria/Pal

3g. Mali/Saini

3h. Bania/Teli

3i. Badhai/Darzi/Nai/Lohar/Sunar

3j. Tanti

3k. Lodh

3l. Mandal

3m. Yogi/Nath

3n. Other OBC

4a. Brahmin

4b. Thakur/Rajput

4c. Bhumihar

4d. Kayastha

4e. Vaishya/Bania/Mahajan

6. What is your religion?

a. Hindu b. Muslim c. Sikh d. Jain e. Christian f. Other or None

7. What kind of work do you do?

a. Agricultural wage laborer

b. Non-agricultural wage laborer

c. Cultivator / small landowner

d. Large landowner

e. Artisan / independent worker

f. Small business owner

g. Owner of business with more than 4 employees

h. Household worker

i. Professional

j. Salaried employee

k. Unemployed

l. Disabled

8. What is your age?

    a. 18-20

    b. 21-29

    c. 30-39

    d. 40-49

    e. 50-59

    f. 60-69

    g. 70 and above

9. What is your education level?

    Not literate Class 1-4 Class 5-7 Class 8-9 Class 10-11 12th pass ITI/Diploma Graduate Post graduate Professional Course

Survey Experiment Component

Now we are going to ask you to imagine the elections for Bihar's State Legislative Assembly are being held today. We are going to give you four pairs of possible candidates for MLA and ask you to choose your favorite candidate from each pair.

Enumerator presents generic drawing of a female candidate.

Enumerator says the following:

This is Shrimati (Shri) _____, who is a candidate for MLA. She (He) makes the following appeal to voters:

Policy Appeal [Protection] People like you too often have to live in fear of persecution and even violence from other groups. If elected, I will ensure that you and people like you can feel safe in your communities again.

Policy Appeal [Development] People like you too often have to suffer from a lack of basic amenities within your communities. If elected, I will ensure that you and your community experience more development.

The gender of the candidate was conveyed by the honorific – Shrimati or Shri.

The ethnic identity was conveyed by the last name of the candidate as follows.
Ansari – Muslim
Pandey – Upper Caste
Sahu – Other Backward Caste
Paswan – Scheduled Caste

[Note: For the first two pairs, enumerators will use the app to randomize a pair of hypothetical candidates from among the 16 possibilities [2 X Gender, 4 X Jati, and 2 X Appeal]. For the third pair, enumerators will use the app to randomly select a pair of candidates from the 16 possibilities. This time, however, the first candidate in this pair will be representing the BJP and the second candidate will be representing the RJD. For the fourth pair, enumerators will use the app to randomly select a pair of candidates from the 16 possibilities. This time, however, the first candidate in this pair will be representing the RJD and the second candidate will be representing the BJP.]

After each pair is presented, enumerators will ask respondents to choose their preferred candidate of the two possible and weigh the strength of their preference on a 5-point scale.]

1. If these two candidates were running against each other for MLA, and the election were held today, which would you vote for?
2. Please indicate how strongly you prefer this candidate over his or her competitor on a five-point scale, with 5 meaning "strongly prefer" and 1 meaning "slightly prefer."

Example Candidate Drawings

Upper Caste Female Candidate	OBC Man Candidate

Post-Survey Experiment Evaluation:

[After the survey is complete, the enumerator will ask the respondent the following questions about the last pair presented.]

Thinking about the last pair of candidates you were presented:

1. Please describe the reason for your choice?

2. What was Candidate 1's main promise?

3. What was Candidate 2's gender?

4. What was Candidate 1's jati?

Background Survey Component – Part 2

[Questions irrelevant for this paper have been removed]

12. How many times in the last year have you approached your current village Pradhan for help?

      a. Never

      b. Once

c. 2-4 times

d. More than 4 times

13. How often was your current village Pradhan able to deal effectively with your issues?

a. All the time

b. Most of the time

c. Some of the time

d. Never

e. I have never brought issues before the Pradhan

14. Overall, how effective is your current village Pradhan at dealing with the challenges faced in your village?

a. Very Effective

b. Somewhat Effective

c. Somewhat Ineffective

d. Very Ineffective

e. Don't Know/Can't Say

15. Does your village currently have a women Pradhan?

a. Yes

b.No

16. Has your village ever had a women Pradhan?

a. Yes

b. No

17. If yes, how often was the past or current woman Pradhan able to deal effectively with your issues?

a. All the time b. Most of the time c. Some of the time d. Never e. I have never brought issues before the Pradhan

28. Have politicians or party workers ever assisted you in opposing discrimination based on jati, religion, or gender?

a. Yes

b. No

29. If yes, please tell us who assisted you? (Check all that apply)

a. My current MP. Was this person a woman? Yes/No

b. My current MLA. Was this person a woman? Yes/No

c. My current village Pradhan. Was this person a woman? Yes/No

d. A previous MP. Was this person a woman? Yes/No

e. A previous MLA. Was this person a woman? Yes/No

f. A previous village Pradhan. Was this person a woman? Yes/No

g. Another politician (not MP, MLA, Pradhan). Was this person a woman? Yes/No

h. A party worker. Was this person a woman? Yes/No

i. No one assisted me

30. Have politicians or party workers ever assisted you in opposing violence based on jati, religion, or gender?

a. Yes

b. No

31. If yes, please tell us who assisted you? (Check all that apply)

a. My current MP. Was this person a woman? Yes/No

b. My current MLA. Was this person a woman? Yes/No

c. My current village Pradhan. Was this person a woman? Yes/No

d. A previous MP. Was this person a woman? Yes/No

e. A previous MLA. Was this person a woman? Yes/No

f. A previous village Pradhan. Was this person a woman? Yes/No

g. Another politician (not MP, MLA, Pradhan). Was this person a woman? Yes/No

h. A party worker. Was this person a woman? Yes/No

i. No one assisted me.

Intra-Household Gender Dynamics Component[23]

(Adapted from IHDS survey https://www.ihds.umd.edu/sites/ihds.umd.edu/files/ihds2ehq.pdf and Prillaman https://www.soledadprillaman.com/research)

34. How would you best describe your position in your household?

a. Head of household

b. Wife of head of household

c. Daughter of head of household

d. Mother of head of household

e. Sister of head of household

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[23] The survey questions in this section are a modified version of the questions used in the Indian Human Development Survey women's questionnaire (see Desai et al., 2005).

f. Other

35. Please tell me who in your family decides the following things?[24]

    a.   How much money to spend on food or clothing in the household?

    b.   Whether to buy an expensive item such as a refrigerator or TV?

    c.   What to do if you fall sick?

    d.   Whether to buy land or property?

    e.   Until what level your children should be educated?

    f.   At what age your daughter(s) should be married?

    g.   Whom to vote for in an election?

    h.   Whether to attend a village assembly meeting?

---

[24] Respondents were allowed to mention multiple decision-makers and the enumerators coded their responses accordingly. In practice, respondents offered the following responses: Self, Father, Elder male members of the household, Mother, Other Elder female members of the household, Respondents parents, Husband, Collective decision, Son, Not applicable. Other categories like wife and daughter were not mentioned by any respondent in our sample.

Appendix B: Sampling Strategy and Interview Protocols

The sampling and enumeration were coordinated and conducted by enumerators from Policy Development and Advisory Group based in North India. We selected four districts for our sampling frame. We chose two districts with high levels of violence and two with low to test additional hypotheses (explored in another paper) about how support for female candidates is shaped by violence. The districts we chose are located in the northern and southern parts of Bihar. Within each of the four districts, we examined two MLA constituencies. To ensure our results were not driven by exposure to female or male MLA incumbents, we selected one constituency in each district represented by a female MLA and then randomly selected the other from among the male represented constituencies adjacent to it. Within each of these constituencies, we surveyed approximately 250 respondents. We selected these respondents by randomly identifying individuals from the electoral voting rolls for each polling district within the constituency

If the enumerators were unable to find the person randomly selected, or if that person refused to participate, they asked another adult in the same household. If that strategy failed, they sought another respondent with similar demographic characteristics living as close to the original respondent as possible. As some respondents had limited access to telephones or computers and others were illiterate, the enumerators proceeded door-to-door. The entire data collection was done through a digital data collection platform on Android hand-held devices with necessary data audit and geo-location features to ensure error free data collection.

Detailed Covid-19 protocols were followed, including mandatory temperature screenings, hand-washing, and mask-wearing. More information is available upon request.

Appendix C: Qualitative Interviews

To provide further context for our survey experiment results, enumerators from Policy Development and Advisory Group (PDAG) conducted 65 qualitative semi-structured interviews with citizens in four districts of Bihar – Gaya, Jamui, Madhubani, and Supaul – in April and May of 2022. We attempted to incorporate roughly equal proportions of men and women and to sample across major ethnic categories – SC/ST, Muslim, OBC, and General. The interviews were largely conducted in Hindi and translated into English by the enumerators.

The respondents were asked a range of questions about state effectiveness (for another project) and then about their attitudes towards female candidates. For the purposes of this paper, we drew on respondents' answers for the following questions: (1) *Do you think female MLAs or Mukhiyas can address problems better? Or Male MLAs and Mukhiyas handle it better?* (2) *Do you think voters in your area would be more likely to support a woman candidate running to be MLA if they have been exposed to a woman Mukhiya at the panchayat level? Why or why not?*

Appendix D: Ethical Considerations

The human subjects research on which this manuscript is based was reviewed by the Institutional Review Board (IRB) of Georgia State University and was determined to be exempt under Category 2. Moreover, this research – which includes the survey and qualitative interviews described in Sections C and D above, respectively – was carried out in accordance with the APSA Council's Principle and Guidance for Human Subjects Research. First, informed consent was obtained prior to each survey and participants were assured their participation in the research was voluntary and could be withdrawn at any time. Participants were not paid. Consent was obtained verbally to accommodate respondents with low literacy levels. As shown in the next section, our survey respondent pool was gender balanced. It also included substantial representation of marginalized groups including lower castes (~29%) and Muslims (~15%). Our qualitative interview responses were also drawn from a roughly equal number of men and women in each district and drew from respondents from each major caste category as well as Muslim respondents.

Efforts were taken to preserve the confidentiality of responses by recording them digitally on a password protected device. During the survey experiment component, respondents were asked to "imagine that the Bihar's State Legislative Assembly are being held today." Thus, there was no deception involved in terms of leading respondents to believe that the candidate profiles presented to them were those of actual candidates. Finally, the questions posed to respondents mainly concerned demographic characteristics, political preferences, attitudes, and behaviors that were very unlikely in this context to result in any harm or trauma.

Appendix E: Variable Descriptions

Table 1A: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Respondent Level Variables					
Female	1969	.49	.5	0	1
Age	1968	43.03	15.33	18	99
Education	1969	1.87	2.06	0	6
Female HH Decision Index	1969	1.61	2.75	0	8
Female HH Decision Binary	1969	.33	.47	0	1
Female Mukhiya	1969	.47	.5	0	1
Exposure to Local Gender Quota (GP)	1969	.4	.49	0	1
Exposure to Local Caste Quota (GP)	1969	.34	.48	0	1
Approached Mukhiya	1954	.59	.49	0	1
Mukhiya Effective Problem-Solving (if Approached)	1169	.39	.49	0	1
Mukhiya Effective - Village	1969	.45	.5	0	1
GP Level Variables					
Local Gender Quota (GP)	82	.39	.49	0	1
Female Mukhiya	82	.45	.5	0	1
Local Caste Quota (GP)	82	.38	.49	0	1
Candidate Profile Level Variables					
Preferred Candidate	15728	.5	.5	0	1
Female Candidate	15752	.5	.5	0	1
Partisan-Affiliated Candidate	15752	.5	.5	0	1
BJP Candidate	15752	.25	.43	0	1
RJD Candidate	15752	.25	.43	0	1
Muslim Candidate	15752	.25	.43	0	1
Upper-Caste Candidate	15752	.25	.43	0	1
OBC Candidate	15752	.25	.43	0	1
SC Candidate	15752	.25	.44	0	1
Protection Appeal	15752	.5	.5	0	1

Table 2A: Variable Descriptions

Variable	Description	Source
Preferred Candidate	Binary variable coded 1 if the candidate profile was chosen in response to the question ""If these two candidates were running against each other for MLA, and the election were held today, which would you vote for?", and 0 otherwise.	Survey Data
Female Candidate	Binary variable coded 1 if the hypothetical candidate is presented as a woman, and 0 otherwise.	Survey Data
Party-Affiliated Candidate	Binary variable coded 1 if the hypothetical candidate is presented as affiliated with a party - the Bharatiya Janata Party (BJP) or Rashtriya Janata Dal (RJD) - and 0 otherwise.	Survey Data
BJP Candidate	Binary variable coded 1 if the hypothetical candidate is presented as belonging to the BJP, and 0 otherwise.	Survey Data
Upper-Caste Candidate	Binary variable coded 1 if the hypothetical candidate is presented as belonging to a forward caste based on the last name, and 0 otherwise.	Survey Data
OBC Candidate	Binary variable coded 1 if the hypothetical candidate is presented as belonging to an Other Backward Caste (OBC) based on the last name, and 0 otherwise.	Survey Data
Muslim Candidate	Binary variable coded 1 if the hypothetical candidate is presented as being Muslim based on the last name, and 0 otherwise.	Survey Data
Protection Appeal	Binary variable coded 1 if the hypothetical candidate is presented as offering a campaign message emphasizing protection, and 0 otherwise.	Survey Data
Respondent Age	Age of respondent in years	Survey Data
Respondent Education	Education level of respondent (0 to 10) based on Survey Question 9	Survey Data
Female Respondent	Gender of responded based on Survey Question 1	Survey Data
Female HH Decision Index	An additive index that takes on a value between 0 and 8 based on the answers to each of the 8 parts of Question 35 in the survey questionnaire. The respondent could list multiple decision-makers for each decision. We assign one point to each response where respondents report that a woman – that is, the respondent if she is a woman or her mother or another elder female members in the household – is one of the individuals who makes the relevant household decision. We do not assign a point if a respondent referes to a decision as "collective" or made by her or his "parents" unless a woman is also listed separately as a decision-maker.	Survey Data
Female HH Decision Binary	A binary indicator that takes on a value of 1 if the variable "Female HH Decision Index" takes on a value of 1 or more, and 0 otherwise.	Survey Data
(Exposure to) Local Gender Quota	A binary indicator that takes on a value of 1 if the given respondent resides in a GP with the position of "Mukhiya" reserved for a woman in 2016 panchayat elections, and 0 otherwise	Survey Data and Data from the Bihar State Election Commission website
(Exposure to) Local Caste Quota	A binary indicator that takes on a value of 1 if the given respondent resides in a GP with the position of "Mukhiya" reserved for a member of a Scheduled Caste, Scheduled Tribe or Backward Caste in 2016 panchayat elections, and 0 otherwise	Survey Data and Data from the Bihar State Election Commission website
Female Mukhiya	A binary indicator that takes on a value of 1 if the given respondent resides in a GP whose head ("Mukhiya") is a woman.	Survey Data and Data from the Bihar State Election Commission website

Appendix F: Pre-Registration

In this section, we present the results of our pre-registered analyses[25] that formed the basis of the exploratory hypotheses presented in the main paper. Our pre-analysis plan was centered around three sets of questions, the first two of which we explore in other work (Hankla et. al., 2023; Thomas et. al., 2023). The third set of questions is as follows: *Does exposure to women incumbents at different levels of government – local and state- affect the willingness of voters to elect a woman at the higher, state level? How does the performance of these women incumbents modify voter attitudes to woman candidates in state-level elections?* The current paper seeks to address these questions with a focus on exposure to women incumbents at the local level and how such exposure affects the willingness of voters to elect a woman at the higher, state level. In particular, it relates most closely to the following pre-registered hypotheses:

H3a: Voters are more likely to support women candidates in MLA elections if they live in a village that is or has been led by a woman *pradhan*[26] *(mukhiya)*.

H3a.1: Voters are more likely to support women candidates in MLA elections if they live – or have previously lived - in a village led by a woman *pradhan (mukhiya)* who they perceive as having successfully helped them or people like them.

According to the pre-analysis plan, "this variable will be coded on the basis of the responses to Question 17 where a response of a, b or c will be treated as a case of the respondent being successfully helped by a woman *pradhan*."

H3a.2: Voters are more likely to support women candidates in MLA elections if they live – or have previously lived – in a village led by a woman *pradhan (mukhiya)* who they perceive as having helped them oppose violence or discrimination on the basis of jati, religion or gender.

According to the pre-analysis plan, "The relevant interactive variable will be coded on the basis of responses to Questions 30 and 31 c and 31 f on the survey questionnaire."

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[25] Our preregistered analyses are described in our pre-analysis plan entitled "Electing Women in Ethnically Divided Societies" registered with EGAP (Registration ID: 20210223AB), available at: https://osf.io/sp3mj.

[26] Note that the words "*pradhan*" and "*mukhiya*" are used interchangeably to refer to the position as the head of the village council.

Table 1A presents the results of these pre-registered hypotheses analyzed using the procedures described in the pre-analysis plan. Specifically, Column 1 shows results pertaining to H3a, Column 2 examines H3a.1, and Column 3 examines H3a.2. Further calculation shows the marginal effect of past or current exposure to a woman *mukhiya* is negative but not significant at conventional levels (Effect size=-0.01, Confidence Interval =[-0.029 0.008]), thus yielding no support for **H3a.** The marginal effect of having a woman *mukhiya* perceived to be effective is also small and statistically insignificant (Effect size=-0.005, Confidence Interval=[-0.021 0.011]). Finally, the marginal effect of having a woman *mukhiya* who helped the respondent oppose violence or discrimination is also not significant at conventional levels (Effect size=-0.022, Confidence Interval=[-0.104 0.059]). Thus, **H3a. 1** and **H3a.2** also find no support in our data.

Our analyses in our current paper are exploratory and depart from the hypotheses and analyses described in the pre-analysis plan in two main ways. First, while the pre-registered hypotheses examine the effect of current or previous exposure to a woman *pradhan* or *mukhiya,* the current paper primarily focuses only on current exposure to a woman *pradhan* or *mukhiya* elected through a local gender quota. The reason mainly has to do with causal identification. Due to the as-if-random assignment of local gender quotas that we document in this paper, we can more cleanly identify the impact of current exposure to a local gender quota than the impact of current or previous exposure to a local woman *mukhiya*. The reason for this deviation is that, at the time of writing the pre-analysis plan, we were not confident of our ability to obtain data on exposure to local gender quotas from the Bihar state election commission. Subsequently, however, we were able to obtain detailed data on reservations at the *gram panchayat* level for the 2016 *panchayat* elections.

Second, while hypothesis H1 in the current paper is similar to the pre-registered hypothesis H3a.1 (aside from its focus on exposure to current local gender quotas instead of exposure to current or prior local women's representation), the current paper also examines additional exploratory hypotheses (H2 and H3) that focus on backlash to quotas. The focus on backlash first emerged based on insights from the qualitative interviews conducted after the pre-analysis plan was filed. These initial insights prompted us to further delve into the literature on quotas to formulate additional exploratory hypotheses about the effect of quota exposure on male respondents and sub-groups of male respondents to test implications of the "tipping point" argument. We proceeded inductively to identify sub-groups of male respondents who may be pre-disposed to favor modest increases in women's representation. The key variables we used to identify these sub-groups of male respondents were age, education, and female household decision-making autonomy.

Table 3A: Results of Pre-Registered Hypotheses

Dependent Variable: Preferred Candidate Profile			
	(1)	(2)	(3)
VARIABLES			
Female MLA Candidate	0.03*	0.02*	0.03*
	(0.02)	(0.01)	(0.02)
Female *Mukhiya* (Past or Present)	0.01		0.01
	(0.01)		(0.01)
Female MLA Candidate * Female *Mukhiya* (Past or Present)	-0.02		-0.02
	(0.02)		(0.02)
Female *Mukhiya* Effective (Past or Present)		0.00	
		(0.01)	
Female MLA Candidate * Female *Mukhiya* Effective		-0.01	
		(0.02)	
Mukhiya Help Descrimination			0.10***
			(0.02)
Female MLA Candidate * *Mukhiya* Help Discrim.			-0.10***
			(0.04)
Female *Mukhiya* (Past or Present)* *Mukhiya* Help Discrim.			-0.10**
			(0.04)
Female MLA Cand. * Female *Mukhiya* * *Mukhiya* Help Discrim.			0.09
			(0.08)
Protection Appeal	-0.24***	-0.24***	-0.24***
	(0.01)	(0.01)	(0.01)
Upper-Caste Candidate	-0.04***	-0.04***	-0.04***
	(0.01)	(0.01)	(0.01)
OBC Candidate	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)
Muslim Candidate	-0.13***	-0.13***	-0.13***
	(0.01)	(0.01)	(0.01)
Age	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Education	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Observations	15,960	15,960	15,960
R-squared	0.07	0.07	0.07

Note: Robust standard errors clustered by respondent in parentheses *** p<0.01, ** p<0.05, * p<0.1

Appendix G: Supplementary Results

Figure 1A: Marginal Means – State-Level Candidate Gender Preference by Perception of Reserved Female *Mukhiya* (Village Level Effectiveness), All Respondents
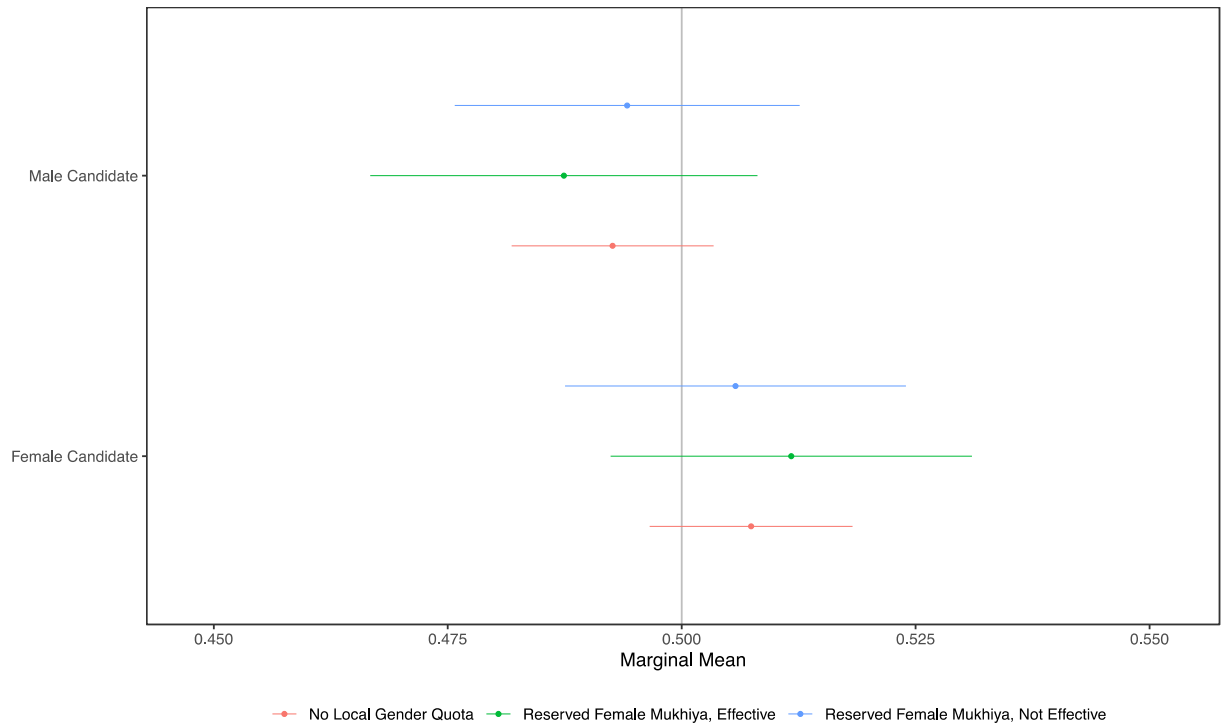
Note: Local gender quota refers to a gender quota at the local (GP) level in the 2016 *panchayat* election. "Reserved Female *Mukhiya*" refers to a situation when the head of the GP is a woman elected through a gender quota. "Male Candidate" and "Female Candidate" refer to state-level election candidates.

Table 4A: Balance Tests

Covariate	Coefficient[#]	P-Value	Observations
Total Population	-527.317	0.602	479
Proportion Female Population	0.0004	0.642	468
Proportion Scheduled Caste	0.002	0.770	468
Proportion Scheduled Tribe	-0.010	0.120	468
Proportion Female Scheduled Caste	0.001	0.831	468
Proportion Female Scheduled Tribe	-0.005	0.118	468
Total Geographical Area	-200.289	0.088	479
Government Primary School (Binary)	-0.060	0.007	468
Any Primary School (Binary)	-0.046	0.120	468
All Weather Road (Binary)	-0.074	0.121	468
Domestic Power Supply (Binary)	-0.013	0.765	468
Per Capita Community Health (Binary)	9.88e-07	0.233	468
Community Toilet & Bath (Binary)	-0.021	0.192	468
Local Caste Quota	-0.010	0.836	479

Note: The sample consists of all village councils in our four sample districts. The coefficient is the result of a regression of the given covariate on a binary indicator for whether the village council has a gender quota for the position of village *mukhiya*. Each regression contains administrative bloc-fixed effects and robust standard errors. The data for the covariates are obtained from village-level data from the 2011 census. The village-level data were aggregated up to the GP level and the GP-level census data was matched with the data from the Bihar State Election Commission website regarding the 2016 GP elections to identify which GPs had a local gender quota and a local caste quota.

Table 5A: Effect of Local Gender Quota on Preference for a State-Level Female Candidate

Dependent Variable: Preferred Candidate Profile

	(1) All Respondents	(2) Mukhiya Perceived Effective Problem-Solver	(3) Mukhiya Perceived Not Effective Problem-Solver
Female Candidate	0.02	-0.01	0.02*
	(0.01)	(0.02)	(0.01)
Local Gender Quota	0.00	-0.02	0.01
	(0.01)	(0.02)	(0.01)
Female Candidate*Local Gender Quota	-0.00	0.03	-0.01
	(0.02)	(0.04)	(0.02)
Protection Appeal	-0.25***	-0.24***	-0.25***
	(0.01)	(0.02)	(0.01)
Upper-Caste Candidate	-0.04***	-0.02	-0.04***
	(0.01)	(0.02)	(0.01)
OBC Candidate	0.01	0.03	0.00
	(0.01)	(0.02)	(0.01)
Muslim Candidate	-0.13***	-0.11***	-0.14***
	(0.01)	(0.02)	(0.01)
Female	-0.00*	-0.00	-0.00*
	(0.00)	(0.00)	(0.00)
Age	-0.00	-0.00*	0.00
	(0.00)	(0.00)	(0.00)
Education	-0.00*	-0.00*	-0.00
	(0.00)	(0.00)	(0.00)
Constituency Fixed Effects	Yes	Yes	Yes
Observations	15,720	3,666	12,054
R-squared	0.07	0.07	0.07

Note: Robust standard errors clustered by respondent in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6A: Effect of Local Gender Quota on Preference for a State-Level Female Candidate

Dependent Variable: Preferred Candidate Profile

	(1) Mukhiya Perceived Effective - Overall Village	(2) Mukhiya Perceived Not Effective – Overall Village
Female Candidate	0.02	0.01
	(0.02)	(0.01)
Local Gender Quota	0.00	0.00
	(0.01)	(0.01)
Female Candidate*Local Gender Quota	0.01	-0.01
	(0.03)	(0.02)
Protection Appeal	-0.25***	-0.24***
	(0.01)	(0.01)
Upper-Caste Candidate	-0.03	-0.04***
	(0.02)	(0.02)
OBC Candidate	0.01	0.01
	(0.02)	(0.01)
Muslim Candidate	-0.14***	-0.13***
	(0.02)	(0.02)
Female	-0.01	-0.00
	(0.00)	(0.00)
Age	-0.00	0.00
	(0.00)	(0.00)
Education	-0.00	-0.00
	(0.00)	(0.00)
Constituency Fixed Effects	Yes	Yes
Observations	7,016	8,704
R-squared	0.08	0.07

Note: Robust standard errors clustered by respondent in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 7A: Effect of Local Gender Quota on Preference for a State-Level Female Candidate

Dependent Variable: Preferred Candidate Profile

	(1)	(2)
	Male Respondents	Female Respondents
Female Candidate	0.01	0.03*
	(0.02)	(0.01)
Local Gender Quota	0.01	-0.00
	(0.01)	(0.01)
Female Candidate*Local Gender Quota	-0.02	0.01
	(0.02)	(0.02)
Protection Appeal	-0.29***	-0.20***
	(0.01)	(0.01)
Upper-Caste Candidate	-0.03**	-0.04**
	(0.02)	(0.02)
OBC Candidate	0.01	0.00
	(0.02)	(0.02)
Muslim Candidate	-0.13***	-0.13***
	(0.02)	(0.02)
Age	-0.00	-0.00
	(0.00)	(0.00)
Education	-0.00**	-0.00
	(0.00)	(0.00)
Constituency Fixed Effects	Yes	Yes
Observations	7,948	7,772
R-squared	0.10	0.05

Note: Robust standard errors clustered by respondent in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 8A: Effect of Local Gender Quota on Preference for a State-Level Female Candidate (Based on Respondent Gender and Female Household Autonomy)

Dependent Variable: Preferred Candidate Profile

(with Block Fixed Effects)

	(1) Male Respondents	(2) Female Respondents
Female Candidate	0.00	0.03
	(0.02)	(0.02)
Female Autonomy	-0.05	-0.00
	(0.03)	(0.02)
Female Candidate*Female HHA	0.09	-0.01
	(0.06)	(0.03)
Local Gender Quota	0.00	-0.02
	(0.01)	(0.02)
Female Candidate*Local Gender Quota	-0.01	0.05
	(0.02)	(0.04)
Female HHA*Local Gender Quota	0.12*	0.04
	(0.07)	(0.03)
Female Candidate*Female HHA *Local Gender Quota	-0.22*	-0.05
	(0.12)	(0.05)
Protection Appeal	-0.29***	-0.20***
	(0.01)	(0.01)
Upper-Caste Candidate	-0.03**	-0.04**
	(0.02)	(0.02)
OBC Candidate	0.01	0.00
	(0.02)	(0.02)
Muslim Candidate	-0.13***	-0.14***
	(0.02)	(0.02)
Age	-0.00	-0.00
	(0.00)	(0.00)

Education	-0.00*	-0.00
	(0.00)	(0.00)
Block Fixed Effects	Yes	Yes
Observations	7,948	7,772
R-squared	0.10	0.05

Note: Robust standard errors clustered by respondent in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Female HHA is a binary measure for female decision-making autonomy in the respondent's household. See Appendix Table 2A for a description.

Table 9A: Effect of <u>Local Female *Mukhiya*</u> on Preference for a State-Level Female Candidate (based on Respondent Gender and Female Household Autonomy)

Dependent Variable: Preferred Candidate Profile

	(1) Male Respondents	(2) Female Respondents
Female Candidate	0.01	0.03
	(0.02)	(0.03)
Female HH Autonomy	-0.07**	-0.00
	(0.03)	(0.02)
Female Candidate*Female HHA	0.12*	-0.00
	(0.07)	(0.03)
Local Woman Mukhiya	0.01	-0.02
	(0.01)	(0.02)
Female Cand.*Local Female *Mukhiya*	-0.02	0.04
	(0.02)	(0.04)
Female HHA *Local Female *Mukhiya*	0.13**	0.04
	(0.06)	(0.02)
Female Cand.*Female HHA*Local Female *Mukhiya*	-0.23**	-0.06
	(0.11)	(0.05)
Protection Appeal	-0.29***	-0.20***
	(0.01)	(0.01)
Upper-Caste Candidate	-0.03**	-0.04**
	(0.02)	(0.02)
OBC Candidate	0.01	0.00
	(0.02)	(0.02)
Muslim Candidate	-0.13***	-0.14***
	(0.02)	(0.02)
Age	-0.00	-0.00
	(0.00)	(0.00)
Education	-0.00**	-0.00

	(0.00)	(0.00)
Constituency Fixed Effects	Yes	Yes
Observations	7,948	7,772
R-squared	0.10	0.05

Note: Robust standard errors clustered by respondent in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Female HHA is a binary measure for female decision-making autonomy in the respondent's household. See Appendix Table 2A for a description.

Table 10A: Effect of Local Gender Quota on Preference for a State-Level Female Candidate (Male Respondents, Based on Caste Quota Present)

	(1) Male, Local Caste Quota Present	(2) Male, Local Caste Quota Absent
Female Candidate	-0.00	0.01
	(0.02)	(0.02)
Local Gender Quota	0.01	0.00
	(0.02)	(0.02)
Female Candidate*Local Gender Quota	-0.03	0.00
	(0.04)	(0.03)
Female HHA	-0.09*	-0.02
	(0.05)	(0.04)
Female Candidate*Female HHA	0.17	0.03
	(0.11)	(0.07)
Local Gender Quota*Female HHA	-0.04	0.17**
	(0.06)	(0.08)
Female Candidate*Local Gender Quota*Female HHA	0.11	-0.31**
	(0.17)	(0.13)
Protection Appeal	-0.27***	-0.30***
	(0.02)	(0.02)
Upper-Caste Candidate	-0.01	-0.04**
	(0.03)	(0.02)
OBC Candidate	0.03	0.00
	(0.03)	(0.02)
Muslim Candidate	-0.11***	-0.15***
	(0.03)	(0.02)
Age	-0.00	-0.00
	(0.00)	(0.00)
Education	-0.00**	-0.00

	(0.00)	(0.00)
Constituency Fixed Effects	Yes	Yes
Observations	2,823	5,125
R-squared	0.09	0.10

Note: Robust standard errors clustered by respondent in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Female HHA is a binary measure for female decision-making autonomy in the respondent's household. See Appendix Table 2A for a description.

Table 11A: Marginal Effect of Local Gender Quota Conditional on Perceived *Mukhiya* Effectiveness

Marginal Effect of Local Gender Quota on Preference for a State-Level Female Candidate				
Subgroup of Respondents	Main Results in:	Contrast	Standard Error	95% Confidence Interval
All	Table 5A	-0.001	0.008	-0.017 0.016
Perceived Effective (Problem-Solving)	Table 5A	0.014	0.018	-0.022 0.049
Perceived Not Effective (Problem-Solving)	Table 5A	-0.005	0.010	-0.024 0.014
Mukhiya Not Approached	Table 5A	0.001	0.013	-0.025 0.026
Perceived Effective (Overall Village Challenges)	Table 6A	0.006	0.013	-0.019 0.031
Perceived Not Effective (Overall Village Challenges)	Table 6A	-0.007	0.012	-0.029 0.016

Table 12A: Marginal Effects Based on Female Household Autonomy

Marginal Effect of Local Gender Quota on Preference for a State-Level Female Candidate						
Subgroup of Respondents	Main Results in Table	Fixed Effects	Contrast	Standard Error	95% Confidence Interval	
Males	7A	Constituency	-0.011	0.012	-0.035	0.013
Females	7A	Constituency	0.009	0.012	-0.014	0.032
Males, No FHHA*	8A	Constituency	-0.007	0.012	-0.032	0.017
Males, Some FHHA*	8A	Constituency	-0.113	0.055	-0.221	-0.005
Females, No FHHA*	8A	Constituency	0.021	0.019	-0.017	0.058
Females, Some FHHA*	8A	Constituency	0.002	0.015	-0.027	0.031
Males, No FHHA*	9A	Block	-0.007	0.013	-0.024	0.029
Males, Some FHHA*	9A	Block	-0.109	0.055	-0.216	-0.002
Females, No FHHA*	9A	Block	0.021	0.019	-0.017	0.058
Females, Some FHHA*	9A	Block	0.002	0.015	-0.028	0.031

*FHHA refers to the binary variable measuring female autonomy in the respondent's household (see Appendix Table 2A)

Table 13A: Marginal Effect of Exposure to Female *Mukhiya*

Marginal Effect of Female *Mukhiya* on Preference for a State-Level Female Candidate					
Subgroup of Respondents	Main Results in Table:	Contrast	Standard Error	95% Confidence Interval	
Males, No Female HHA	9A	-0.016	0.012	-0.040	0.008
Males, Some Female HHA	9A	-0.114	0.052	-0.215	-0.012
Females, No Female HHA	9A	0.016	0.019	-0.021	0.054
Females, Some Female HHA	9A	-0.004	0.015	-0.033	0.025

Table 14A: Effect of Local Gender Quota on Preference for a State-Level Female Candidate (Based on Respondent Gender and Age)

DV: Preferred Candidate Profile

	(1) Male Respondents	(2) Female Respondents
Female Candidate	-0.03	0.04
	(0.03)	(0.03)
Younger	-0.01	0.01
	(0.02)	(0.02)
Female Candidate*Younger	0.04	-0.01
	(0.04)	(0.03)
Local Gender Quota	-0.03	0.04
	(0.02)	(0.02)
Female Candidate*Local Gender Quota	0.07	-0.06
	(0.05)	(0.05)
Younger*Local Gender Quota	0.06*	-0.06**
	(0.03)	(0.03)
Female Candidate*Younger*Local Gender Quota	-0.12**	0.10*
	(0.05)	(0.05)
Protection Appeal	-0.29***	-0.20***
	(0.01)	(0.01)
Upper-Caste Candidate	-0.03**	-0.04**
	(0.02)	(0.02)
OBC Candidate	0.01	0.00
	(0.02)	(0.02)
Muslim Candidate	-0.13***	-0.13***
	(0.02)	(0.02)
Education	-0.00**	-0.00
	(0.00)	(0.00)

Constituency Fixed Effects	Yes	Yes
Observations	7,948	7,772
R-squared	0.10	0.05

Note: Robust standard errors clustered by respondent in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 15A: Effect of Local Gender Quota on Preference for a State-Level Female Candidate (Based on Respondent Gender and School Completion)

DV: Preferred Candidate Profile

VARIABLES	(1) Male Respondents	(2) Female Respondents
Female Candidate	0.01	0.02
	(0.02)	(0.02)
School Completed	0.02	-0.01
	(0.02)	(0.06)
Female Candidate*School Completed	-0.06	0.03
	(0.04)	(0.10)
Local Gender Quota	0.01	-0.00
	(0.01)	(0.01)
Female Candidate*Local Gender Quota	-0.03	0.01
	(0.03)	(0.02)
School Completed*Local Gender Quota	-0.06	-0.02
	(0.04)	(0.07)
Female Candidate*School Completed*Local Gender Quota	0.09	0.08
	(0.08)	(0.12)
Protection Appeal	-0.29***	-0.20***
	(0.01)	(0.01)
Upper-Caste Candidate	-0.03**	-0.04**
	(0.02)	(0.02)
OBC Candidate	0.01	0.00
	(0.02)	(0.02)
Muslim Candidate	-0.13***	-0.14***
	(0.02)	(0.02)
Age	-0.00	0.00

	(0.00)	(0.00)
Constituency Fixed Effects	Yes	Yes
Observations	7,948	7,772
R-squared	0.10	0.05

Note: Robust standard errors clustered by respondent in parentheses. *** p<0.01, ** p<0.05, * p<0.1.