Can Gender Quotas Improve Public Service Provision? Evidence from Indian Local Government

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Abstract

What effect do gender quotas have on the quality of public service provision? We examine the effect of randomly imposed electoral quotas for women in Mumbai's city council, using a wide variety of objective and subjective measures of constituency-level public service quality. The perceived quality of local public goods is higher in constituencies with quota members, and citizen complaints are processed faster in areas with more quota members. One mechanism for this effect is differences in the focus of legislator effort. In their legislative participation, quota members focus on public goods distribution, while non-quota members focus on individual goods, member perks, and identity issues. We suggest that men's more extensive engagement with informal forms of political action, often criminal and clientelistic, has led to men and women cultivating different styles of political representation.

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1 Introduction

In virtually all democracies, fewer women are elected to political office than men. One of the most commonly proposed solutions to rectify this imbalance is the imposition of quotas for the election or nomination of women (Htun, 2004; Krook and O'Brien, 2010). These quotas increase the descriptive representation and political participation of women (Bhavnani, 2009; Tripp and Kang, 2008; Goyal, 2020*a*), and may indirectly improve social attitudes towards them too (Beaman et al., 2009). Equally importantly, elected women are widely thought to be more likely to substantively represent women, emphasizing issue areas that women find important, and allocate money and attention to these areas (Thomas, 1991; Swers, 2002; Reingold, 2003; Chattopadhyay and Duflo, 2004; Schwindt-Bayer, 2006; Franceschet and Piscopo, 2008; Clots-Figueras, 2011; Iyer et al., 2012; Brulé, 2020).

While quota members are more likely to invest time and effort on issues valued by women, what is their overall effect on public services, particularly on the provision of public goods where there is no such gender gap in preferences? To the extent that this issue has been examined, existing work leads us to expect no overall difference in the overall level of provision in most poor democracies. Quotas might even plausibly lead to lower levels of service, due to the relative social and political marginalization of women. Quota candidates are less experienced and less educated than other candidates (Ban and Rao, 2008; Afridi, Iversen and Sharan, 2017; Chattopadhyay and Duflo, 2004; Karekurve-Ramachandra and Lee, 2019), possibly leading to lower levels of political "skill." Female legislators elected via quotas may also be excluded from positions of power and having their public interventions judged differently than men, limiting their effectiveness (De Wit, 2016).

This paper suggests that these beliefs are not correct, and that quotas can be associated with an overall improvement in public service provision. This improvement stems *from* the obstacles faced by female legislators in poor democracies. Because men have access to opportunities for clientelistic distribution and rhetorical self-promotion that are usually denied to women, men often pursue strategies for personal and career advancement that have little effect on public goods provision. Denied these opportunities, quota candidates seek to advance their political careers through formal processes of constituency service, creating a "gendered division of political work" (Daby, 2020).

This paper examines the effects of gender quotas on legislators' performance in Indian local government with a focus on the municipal corporation of Greater Mumbai. One major advantage of focusing on Mumbai

is that the implementation of quotas is randomized at the constituency level, thereby eliminating the selection problem in quota imposition.[1] The powerful, professionalized, and fiercely partisan council of Mumbai also bears a close resemblance to the state and national Indian legislatures to which the extension of quotas is currently being proposed through a constitutional amendment.

We focus on the ability of members to improve the quality of life of their constituents, using two different families of measures. A first set of subjective measures, taken from an annual survey of each electoral ward in Mumbai captures citizen perceptions of local conditions across 14 policy areas. A second set of measures capture the time that each administrative ward takes to respond to citizen complaints. Since we are seeking to estimate the *overall* effect of quotas, for each of these families. We estimate the average treatment effect across issue areas. We supplement these measures of government outputs with measures of legislator inputs, including 1) their attendance at both city-wide council and local ward meetings, 2) the issue distribution of questions asked in these meetings, and 3) the proportion of constituency development funds disbursed.

Overall, people perceive local public goods to be of higher quality in constituencies with gender quotas. Ward committees with a higher proportion of quota members also process citizen complaints more quickly. While we do find some evidence that quota members are especially good at advocating issues traditionally thought to be associated with women, the results extend across a wide variety of areas. We find no evidence that this stems from differences in political "skill" or efficiency (if anything, quota members are less formally qualified), and only limited evidence for differences in member incentives, though the positive effect of quotas on perceived performance is attenuated in years with state and national elections, which men are more likely to run in.

We trace these effects to different allocation of member effort. Quota women, are more likely than other members to expend effort on constituency service, attending local ward meetings and asking legislative questions related to public goods. Non-quota candidates, by contrast pursue activities likely to either bring them to the attention of party higher ups or build up a personal following: Attending council meetings and asking questions related to identity politics, individual goods distribution and the corporation's internal operations.

We suggest that these differences in effort stem from the fact that women are excluded from certain types of political activity. Due to strong norms of gendered activities and gendered spaces, quota women are less likely to be a part of the existing informal networks where many political decisions are made in Mumbai,

[1] Note that since women can run in non-quota constituencies, we are estimating the effect of gender quotas rather than gender.

and less likely to have their public presence valorized. However, this strategy does not necessarily mean that quota women perform worse from their constituent's point of view: On the contrary, the strategies that men pursue to get ahead in Indian politics appear to not be associated with improvements in quality of life for citizens. Often, these "normal" political strategies are illegal: non-quota members are also eight times more likely to face criminal charges than quota women. Quota women, by contrast, appear more focused on providing services through formal channels, either because of social norms that encourage this type of effort, or simply the fact that they are spending less time on rhetoric and patronage. These results echo qualitative observations about the different representative styles of male and female members (Bedi, 2016), with male members focused personal ambition and operating within closed and gendered local networks based on "money and muscle" (Vaishnav, 2017).

The results serve as a corrective to simplistic narratives that women elected through quotas will be "ineffective timeservers."[2] Despite operating in a political system that offers them little in the way of career incentives, quota women appear to provide greater improvement in quality of life to their constituents when compared to other candidates, and to cultivate a distinct – and possibly lastingly beneficial – style of representation.

2 Gender Quotas and Representation

2.1 Gender Quotas and Distribution

The underrepresentation of women in public office is a widespread phenomenon in all types of democracies, whose cause is widely debated (see the recent review in Lawless (2015)). To rectify this imbalance, as of March 2019 more than 80 countries have some form of quota system that guarantees women either the exclusive right to run in a specific set of constituencies or specific positions on a party list.[3] These quotas mechanically increase the descriptive representation of women in quota seats, which may increase descriptive representation in subsequent elections (Bhavnani, 2009; Goyal, 2020*b*), partisan contact and activism (Goyal, 2020*a*) and descriptive representation at the leadership level (O'Brien and Rickne, 2016). While descriptive representation may have positive impacts in its own right (Beaman et al., 2009), many schol-

[2]Various versions of this statement were mentioned during author interviews with elected representatives during fieldwork in India in 2017. Name and affiliation withheld to preserve anonymity.

[3]The Gender Quotas Database (https://tinyurl.com/GQuota-Db) provides easily accessible information on the various types of quotas in existence today.

ars have focused on issues involving *substantive* representation: whether women elected through quotas advocate for positions important to women. On balance, studies have found positive substantive representation effects (Swers, 2002; Reingold, 2003; Chattopadhyay and Duflo, 2004; Franceschet and Piscopo, 2008; Clots-Figueras, 2011; Brulé, 2020; Iyer et al., 2012), though these effects are not necessarily large relative to the effects of other forms of female activism (Weldon, 2002), and are conditional on the structure of the party system (Walsh, 2012).[4]

The theoretical logic behind such *distributional* effects of changes in descriptive representative is straightforward, and extends to other types of ascriptive identities such as race, ethnicity and religion (Minta and Sinclair-Chapman, 2013; Kramon and Posner, 2016; Ejdemyr, Kramon and Robinson, 2017; Lee, 2018). Individuals from a particular group often share the preferences of other people in that group, and thus are more likely to spend time promoting policies or providing services that align with group preferences. In Chattopadhyay and Duflo's (2004) canonical example, women in rural India are disproportionately involved in collecting drinking water, and female representatives focus more on providing drinking water. Alternatively, candidates from a group might have information about the group's needs or preferences that is not available to other candidates, might gain some cognitive benefit from helping members of their own group, or might be more easily socially sanctioned for non-performance by group members.

2.2 Gender Quotas and Overall Provision

If quotas lead to improvements in representative performance in promoting issues that are important to women, do they also affect representative performance on issues that are important to men, or issues that are important to all?

Politicians provide benefits to their constituents, both directly through advocacy with the bureaucracy, or indirectly through vote and debating legislation, and are motivated to maximize their own flow of rents, either through reelection, advancement to higher office, or corruption. Three factors might influence the overall production of constituent benefits. First, members might have different levels of *electoral incentives* based on the electoral conditions. A politician certain to win reelection, or certain to lose reelection would have little reason to expend effort on service provision (Keefer and Khemani, 2009), and the same logic would apply to politicians with a greater or lesser chance of promotion to higher office. Second, there may be differences in the *skills* that enable politicians to translate effort into success in constituency service or policy

[4] Clayton (2015) finds no effects on self-reported engagement of female legislators.

advocacy: Some politicians may have better interpersonal skills, better connections, greater knowledge of bureaucratic rules, etc. Third, politicians may receive different returns from their *alternative strategies* to constituency service. They may attempt to become politically popular through means other than issue advocacy or local public good provision, such as clientelistic distribution or rhetorical activity that does not improve constituent well being.

How might these abilities and motivations be affected by gender quotas? If women were identical to men other than having different preferences, we would have no reason to expect quotas to affect performance, and the only substantive effects would be distributional (though these might be important in their own right). However, female politicians may differ from men in their personal attributes and their relationship to the political system, not least because of long traditions of social discrimination against women and prejudice against women in politics. Most existing arguments would lead us to believe that in poor democracies where such discrimination is strong, gender quotas should reduce overall political performance, or leave it unchanged.

One such argument stems from differences in skill. Besley et al. (2017), Weeks and Baldez (2015) and Baltrunaite et al. (2014) find that in Europe women elected through quotas are better educated than the men they replace, simply because they are not drawn from the existing pool of "mediocre men" recruited through processes based on personal ties rather than skill.However, in most developing democracies we should expect quotas to have the opposite effect. For instance, in India the male literacy rate is 82.1% whereas for women it is 65.5%. If earnings and education are thought to be correlated with politician quality, forcing parties and voters to choose from a "lower quality" segment of society might potentially lower the "quality" of the candidate pool. Chattopadhyay and Duflo (2004) and Ban and Rao (2008) find that in Indian village councils quota candidates are less educated than others, as well as being younger, poorer and having less political knowledge. These qualities might plausibly be related to lowered success as a representative: A representative with weaker political knowledge, for instance, might be less able to manipulate the bureaucracy to bring services to their constituents.[5] Quota women might also be denied the resources or opportunities to rise to more powerful positions where they can help their constituency. If they

[5]Some authors have found that female legislators in the United States have a more consensus-oriented, and possibly more effective, political style (Volden, Wiseman and Wittmer, 2013). However, this finding has been contested and does not necessarily extend to the effects of gender quotas. It is also possible that women have higher levels of unobserved skill than men at a given level of qualification, due to "Jackie Robinson effects"(Anzia and Berry, 2011; Ferreira and Gyourko, 2014), but this argument is not applicable to women elected through quotas, who do not have to compete with men.

are able to keep all the key resources in their own hands, non-quota members will tend to perform better than quota ones.

A related claim is that female quota candidates might be more susceptible to capture by elites. The set of empirical findings on this issue, mostly drawn from Indian village council elections, is mixed. on the one hand, Bardhan, Mookherjee and Torrado (2010) find that quotas improve the targeting of some programs while worsening others, but – consistent with an elite capture story – any improvements are lower in villages with higher land inequality. Where as Afridi, Iversen and Sharan (2017) find that while leakage in a large antipoverty program is initially worse under female leaders, these difference disappear over time. Further, Ban and Rao (2008) find that quotas have no effect on targeting, though experienced women perform better than men.

Women may also have weaker electoral incentives than equally ambitious men due to discrimination in parts of the political career path not covered by quotas. Norris and Inglehart (2001, 126) find that while one in seven parliamentarians internationally is a woman, only one in ten cabinet ministers and one in 20 heads of government are women. While women are guaranteed representation within quota constituencies in Indian local government, their rates of election afterwards are quite low – Bhavnani (2009) finds that women have a 8.6% chance of election after the withdrawal of quotas. Additionally, their chances in pursuing higher office, where there are no reservations, are often relatively small, and almost always smaller than their chances in quota seats—in India about 10.6% of members of the national parliament (which does not have quotas) were women in 2009 (Jensenius, 2016), even with a 50% quota for women in local government. If quota members are going to be kicked out of office at the end of their term no matter how they perform, and have no possibility of rising to higher office, this might reduce their incentive to expend effort to advance the interests of their constituents. This was the critique of quotas most commonly voiced by (male) Indian politicians during our fieldwork: They claimed that women would never devote the same attention to "nursing" a constituency as man committed to rising to higher office.

2.3 Why Gender Quotas Might Improve Provision

However, despite the fact that skill and incentive arguments might lead us to expect that gender quotas should worsen politician performance in developing democracies, there are reasons to expect that the opposite is the case. These stem from the different opportunities available to women and men — specifically, the returns that each obtains from activities other than legislative advocacy and constituency service. If women are

less effective at these outside activities, or are excluded from them entirely, they might devote themselves to constituency service for want of alternative avenues for career enhancement. Discrimination, in this account, should lead to a greater focus on the delivery of concrete public services.

There are many styles of effective representation of constituent interests. It is possible to be a highly effective legislator without ever participating in the chamber, perhaps only attending party or committee meetings, while others participate to advocate for positions that are important to them or their constituents. However, there are certain types of chamber participation that have little conceivable relationship to the material well being of their constituencies. Members might advocate for purely symbolic ends, such as new holidays or street renaming, or for legislation that is the responsibility of some other level of government. Alternatively, they might use the legislature as a forum to attack personal or partisan rivals, or members of other racial, ethnic or religious groups.

Women legislators are less likely to participate in such symbolic activities because they are less likely to be rewarded for *any* type of speech act. As Karpowitz and Mendelberg (2014) have shown, women are less likely to participate in debate and deliberation in a wide range of settings, and are be judged negatively by others if they do. The negative consequences of women speaking up are likely to be even more severe in settings with more traditional gender norms: Ban and Rao (2009) find large differences in participation across genders in Indian village councils. Participation of women in such settings might be perceived as inappropriate or "pushy" and be socially or electorally sanctioned.

The other major alternative strategy is clientelism. In some polities, male politicians gain advancement through the conditional, and often illicit distribution of state resources. These resources may be retained by the politician himself, might be transferred to a party leader in return for career advancement, or be conditionally transferred to citizens in return for future electoral support—clientelism proper. Such activities are time consuming, and will tend to distract from the licit distribution of state resources to citizens through public goods and programmatic distribution. They are also only accessible to members of specific types of networks, which are often inaccessible to women. Daby (2020), focusing on brokers in Argentina, finds that women have more difficulties in operating in clientelistic environment "due to their participation in different problem-solving networks," and their inability to effectively sanction disloyalty. Below, we will present evidence that the "gender gap in political clientelism" extends to urban India as well.

An ambitious women must thus tend to focus on activities where she faces no such comparative disadvantage, most importantly the provision of public services through formal channels. Since such provision is

tied to the politician's official position, success is less dependent on access to established, gendered, political networks. Formal constituency service, which requires little public aggressiveness, may also be more consistent with traditional gender norms, and perhaps even valorized as "maternal." In contexts where informal networks and the public sphere are highly gendered, success as a local representative may be one of the few avenues for women to rise to higher office, and a relatively more important path than for men Goyal (2020*b*, 19-20).

3 Gender Quotas in India

3.1 Local Government in Mumbai

The empirical tests will focus on the performance of local legislators in India's commercial hub, Mumbai. The "corporation" that governs Mumbai is responsible for a wide variety of services including essential services like housing, land use planning, recreation, schooling, public health, trash removal, etc. Mumbai has a single local body with 227 corporators/councilors. Local corporators are elected every five years from single member districts using a plurality system. The corporation is dominated by a single right-wing party, the Marathi nationalist Shiva Sena, but they face vigorous competition a variety of opposition parties. The Mumbai corporation is regarded as being corrupt, a point to which we will return below.

Budgetary and policy decisions are made by the corporators and implemented by professional staff, similar to the American municipal council-manager system. Mumbai has been divided into 24 administrative wards, governed by ward committees made up of the corporators elected from each ward. The ward governments are regarded as less important than the main corporation mainly due to their limited budgetary authority and lack of jurisdiction over some issues where the the possibilities for corruption are most extensive. That said, they responsible for resolving a number of common public problems, including water, drainage and garbage.

Like the state and national legislatures, local bodies in India tend to be weak institutionally, due to limited committee systems and laws that drastically limit the ability of members to vote against the interest of party leaders (Lee, 2019). It is thus unrealistic to expect corporators to "legislate" or to influence programatic policymaking—to the extent broad policy decisions are made, they are made by state-level party leaders who do not hold corporation seats. However, corporators are kept very busy doing constituent service, both administering their own discretionary funds for constituency improvements and mediating between citizens

and the bureaucracy (Bedi, 2016; De Wit, 2016). Local people thus have strong expectations that their corporator will improve their well-being (De Wit, 2016).

It is worth pointing out some differences between these elections and the village elections on which the literature on gender quotas in India has previously focused. First, while village elections are officially non-partisan, urban body elections are virulently partisan, with nominations being determined centrally by party leaders. Second, constituencies are much larger: In 2011, each corporator represented approximately 55,000 people in Mumbai, while gram panchayats in North India average between 900 and 1500 persons (Chattopadhyay and Duflo, 2004). Third, the financial stakes are much higher in absolute terms: In 2018, the Mumbai corporation's budget was equivalent to 3.86 billion US dollars, whereas in 2004 the average Madhya Pradesh panchayat had a budget of 12,200 US dollars. All of these factors tend to ensure that city corporators are professional, career-oriented politicians and behave accordingly. Relative to village elections, these elections are more similar to state and national elections and to the elections in the developed world on which existing studies have focused.

3.2 The Implementation of Gender Quotas

With the implementation of the 73rd constitutional amendment in 1993, all Indian local bodies are mandated to have at least one-third of seats "reserved" for women. The percentage of reserved seats has been increased to 50% in almost all the states since 2006. Reservation is carried out at the constituency level: In each cycle, in a pre-announced set of constituencies only women are allowed to contest for office.[6] Both men and women can run in the remaining constituencies, though in practice the election of women in unreserved constituencies is rare: Only 3% of Mumbai corporators were women before the policy's implementation, and only 10% of unreserved seats are held by women. Overlaying the reservations for women are reservations for members of specific historically marginalized categories of caste (the Scheduled Castes, Scheduled Tribes and Other Backward Classes in Mumbai). Unlike reservations for women, these caste reservations are allotted based on the local populations of these categories.

Gender reservation is done randomly in Mumbai. The reservation is a true lottery, with numbers drawn from a drum in public. Both the lottery and the numbering of constituencies are conducted by the independent State Election Commission of Maharashtra. The implementation of electoral reservations in India

[6]Local government constituencies in India are called "wards." However, in Mumbai "ward" also refers to separate, larger administrative divisions. To avoid confusion, throughout we use the term "constituency" to describe electoral wards.

are widely believed to be truly random and unrelated to constituency-level traits (Chattopadhyay and Duflo, 2004; Ban and Rao, 2008; Clots-Figueras, 2011; Iyer et al., 2012; Afridi, Iversen and Sharan, 2017; Goyal, 2020*a*,*b*; Karekurve-Ramachandra and Lee, 2019). Bhavnani (2009) provides specific and extensive discussion of the random incidence of reservations in Mumbai, including specific examples of high-level leaders who have been unseated by the policy. Table A.4 on page A-4 in the appendix provides evidence that the assignment of gender quotas is balanced with respect to observable attributes of wards.

3.3 Gender Quotas in Mumbai Politics: Alternative Strategies

Politicians in Mumbai can, and often do, provide services to their constituency, and expect that this will make them more popular. However, there are other ways in which members can advance their careers and enrich themselves. Much of the political game in India, and in particular in Mumbai, is thought to focus on the illegal diversion of state resources, or the use of the state's authority to sanction private lawbreaking—the 'crime-politics' nexus (Vaishnav, 2017). This may involve politicians in criminal acts including physical violence, and many face criminal charges. More ambiguously, clientelistic distribution is important in India's "patronage democracy": politicians and "brokers" provide jobs, housing, access to subsided food and other particularistic goods to voters conditional on their support. These activities are intended not only to win support from voters but also from the party elites who control nomination decisions – as De Wit (2016) shows. Members are expected to make contributions, in cash, to party leaders, over and above the expenses of funding their own campaigns.

Importantly for our purposes, this behavior is heavily gendered, with direct behavior in lawbreaking behavior or transactional politics considered "unladylike". In a society where ordinary transactional politics is considered "dirty" and immoral and women are expected to conform to higher moral standards than men, women's participation in such activities faces strong social disapproval—female politicians are expected to "keep up the posture as housewife to preserve the family honor" (Quoted in Holzner and de Wit (2003, 18)). Many Indian men express attitudes on these issues that ascribe superior morality to women but peripheralize them for that very reason. One male Mumbai corporator told De Wit (2016, 169) that "Women can never do this dirty work" while one commentator actually explained women's low participation in politics through the rise of clientelism, stating that "Since these power-brokers came to be despised and mistrusted by all self-respecting, decent politically active people, it is not surprising that most women turned away from

politics. A woman would be seriously jeopardizing her reputation by being associated with the likes of [corrupt politicians]" (Kishwar, 1996).

In fact, even entering the physical spaces where this type of political exchange occurs, or drinking the alcohol that often accompanies it, may be difficult for women. De Wit (2016, 169) reports that "Women are much more restricted than men in frequenting important (informal) meetings: in a bar, in a car, in the evening, or even go and meet people on her own." These concerns are not merely reputational – in one 1998 case a female Navi Mumbai corporator was doused with kerosene and burned to death during an argument over the location of a water pump (Raval, Sheela, 1998) – and have tangible consequences for member behavior. Van Dijk (2007) in her study of Mumbai corporators, found that men are more likely than women to interact with other politicians, ethnic associations, and clientelist organizations within their constituencies.

As a result of this exclusion, female politicians are thus perceived, at times incorrectly, as being "above corruption" (Bedi, 2016, 91). There is some empirical support for this claim. Table 1 shows that women who won office in quota seats are less likely than others to be facing criminal charges when elected—4% of women vs. 30% of men. While many of these women have male relatives who face charges, there are undoubtedly differences in the directness of women's involvement in criminal activities.

These findings echo Bedi's (2016) ethnographic study of female corporators in Mumbai, Bedi (153) finds that "Women in political parties in India (particularly those who function at the local levels) are therefore still seen within their communities as committed to social justice rather than simply to political ambition." This reflects the different roles they inhabit (and are assigned) within political parties. Women are rewarded for participation in *samajkaaran* [social work, community service] while men are seen as more focused on *rajkaaran* [politics, political work]. This distinction was emphasized by Bedi's informants, who saw office as a way of performing this type of community service rather than an end in itself: "We need to do 80% samajkaran and 20% rajkaran. I have not played the game of rajkaran" (Bedi, 2016, p.89).Further, Ghosh and Lama-Rewal (2005, 118) note that "The [corrupt] nexus between officials, contractors and councillors was the object of recurring complaints by women MCs against their male counterparts, especially in Mumbai and Delhi."

This division is reinforced by the hard rule within Mumbai's ruling Shiv Sena party that only men are allowed to ask for and handle money (Bedi, 2016, p.90). While this rule was intended to keep men in control of the party, it means that men focus on the financial side of the party's activities, and are viewed

as less approachable since they are more likely to demand money in return for any favors done. As Bedi (2016, p.91) remarks, "Local residents simply assumed that male Siv Sainiks associated with money and fundraising would generally also use some of that money for personal profit. However, Shiv Sena women were generally seen as above corruptibility...[and] more trustworthy than their male counterparts. Therefore, they were the ones who emerge as local protectors of the neighborhood". This division extends to formal institutions as well, with women being excluded from the corporation committees with financial power, and instead tracked towards the education and public health committees, a "gender segregation in public affairs [that] neatly reflects the traditional division of responsibility within households" (Holzner and de Wit, 2003, 21).

Though they sometimes chafed at these restrictions, women saw some benefits from this division of gender roles. While the role of a powerful, ambitious woman might be viewed by both male colleagues and voters as threatening, the role of "social worker" is one that is compatible with traditional female gender roles, is valued within the broader community and does not encroach on the central position of men in the party system. While women who attempt to challenge male politicians are subtly sanctioned, those who focus on working within formal institutions to provide public services are can make contributions that go beyond those of most male politicians Bedi (2016, 85-6). Holzner and de Wit (2003, 21-22) similarly find that female corporators focus on "health, education and income" and that the issues most important to them are "water supply, street traffic problems, pollution, solid waste management, [and] liquor shops". The private issues they dealt with are related to school admissions and violence against women rather than jobs or real estate.

In some cases, this gendered division of labor occurred within the household, with a female corporator's husband or male relatives handling the financial or clientelist side of the job (De Wit, 2016, 220). Note, however, that this implies that effort spent on formal public service would rise relative to the man attempting to handle both aspects of the job himself. One Bangalore corporator's husband even bragged of this feature of reservation, saying that his wife's constituents "get two for the price of one" (John, 2007, 3989).

The bias against women operating in male gendered spaces extends to women's attempts to intervene in corporation debates, as it does in other public contexts in India (Brulé, 2015). Female corporators report instances of "ridiculing, interrupting, threatening with sexual violence" (Holzner and de Wit, 2003, 20). One female corporator boasted to Bedi (2016, 68-9) about being the only woman "who had the courage to stand

up and address the mayor." Adopting a "chamber-centered" strategy of rhetorical positioning is thus less beneficial for women than for men.

3.4 Gender Quotas in Mumbai Politics: Skill and Incentives

Several aspects of Indian local politics influence the possible effect of quotas on the incentives of members to provide services to their constituents. One is that the chances of reelection for both men and women are very low, and that there is little difference in these chances across genders. While reelection rates are quite low in India even in elections without reservation (Lee, 2019), much of the low rate of reelection is associated with the structure of the quotas themselves, which act as a set of randomized term limits. Since quotas are reassigned after every election, members are guaranteed to have at least a 50% chance of being placed in a different reservation category, to say nothing of the chances that a redistribution of seats will place them in a seat with a good deal of new territory or a different caste reservation status. Overall, in Mumbai only 13.2% of members were reelected in 2012 (11.6% of quota members and 14.4% of non-quota members).

If reelection only weakly incentivizes members, partisanship provides some compensating motivation. Corporators are often nominated by their party to run for the state assembly, a more prestigious and desirable office: In the 2014 Maharashtra elections, 14 current or former Mumbai corporators were nominated, and even more sought nomination.[7] Even those who do not run are expected to drum up votes for the party candidates, and are judged on their performance in doing so. More generally, for most corporators their time in office is but one part of a career as a party worker or political broker, which may also include nominated posts, paid employment for the party office, or more informal money making opportunities linked to their political connections (Bedi, 2016). For these reasons, corporators have strong incentives to win the approval of party leaders. Men, who are more likely to be viewed as suitable for higher office, are thus more likely to feel this pressure – in 2014, only 6.4% of state legislators were women. Goyal (2020*b*, 19-20) finds that male local councilors in Delhi are substantially more likely than female councilors to be nominated for state-level elections.

In Mumbai we find some evidence that quota women have lower levels of observable variables thought to be correlated with "skill," though these patterns are not as strong as those seen in village elections. Table 1 shows that quota members have levels of university education and household wealth that are very similar

[7] https://tinyurl.com/Councillor-Bags-Tickets (Accessed 10/29/19).

Table 1: Summary Statistics - Observable Characteristics

	Non Gender Quota Seats		Gender Quota Seats		Difference	
	Mean	S.D.	Mean	S.D.	coeff.	t
Pancard Holder	0.977	0.151	0.895	0.307	0.082***	(5.660)
Attended University	0.390	0.488	0.437	0.496	-0.047	(-1.601)
Criminal Record	0.303	0.460	0.037	0.190	0.266***	(12.616)
Age	47.596	9.107	44.465	9.527	3.131***	(5.617)
No. of Criminal Cases	0.783	1.890	0.073	0.418	0.710***	(8.653)
N	557		561		1118	

Table compares means across a variety of candidate characteristics in gender quota vs. non-gender quota seats in Mumbai. Our estimation strategy relies on comparing outcomes for gender quota and non-gender quota seats across time (2012-2018).

to other candidates. Quota candidates are less likely to possess a Permanent Account Number (PAN)—a number given to all Indian taxpayers to indicate participation in the formal economy, and which Karekurve-Ramachandra and Lee (2019) use as a negative indicator of "proxy candidates" put forward by male relatives. They are also less likely to have completed high school and are younger. If these factors are correlated with politician performance, gender quotas should have a negative effect on constituency services.

4 Data and Estimation

To measure constituency service and legislator effort, we use a large new dataset collected by a non-partisan, voluntary Indian nonprofit organization, Praja Foundation. Praja aims to "undertake extensive research and highlight civic issues to build the awareness of, and mobilize action by the government and elected representatives". The data used for this paper come from Praja's "Municipal Councillor Report Card" project, which aims to assign grades to the performance of each local legislator every year. To assign the grades, Praja collected a wide range of numerical data, a bulk of it via "Right to Information" requests with the local municipal corporation of Mumbai. Praja began collecting data in Mumbai in 2011, and did not collect data in election years (Panel B in Table A.1 on page A-1 summarizes the data collection efforts by Praja). Consequently, we have six years of data spread across three election cycles for each constituency in Mumbai (2011, 2013, 2014, 2015, 2016 and 2018).

4.1 Measuring Performance Outcomes

Since constituency service is a "predominant activity" of elected representatives in India (Bussell, 2019), we focus on member performance in bringing public services to their constituency. We measure the quality of local public services along two categories: Citizen perception of constituency service and handling of citizen complaints.

Citizen Perception of Constituency Service:

To measure member effectiveness in enhancing civic and public utility service activities, Praja surveyed each constituency in every non-election year to access local opinion of the elected corporator.[8] Due to privacy concerns, we were unable to obtain the original individual responses to the survey. However, we were able to obtain constituency-level means for answers to a wide variety of questions. Since some questions were added to the survey after the first wave by Praja, we cannot use constituency fixed effects in all models.[9]

The questions in the survey are about resident perceptions of conditions in policy areas relevant to the corporation, and overall perceptions of the member. Each of these questions is thus the percentage of individuals with a favorable impression of various local public services or problems, or of the members performance on other issues of day-to-day relevance. These perception measures are captured via fourteen outcomes[10] and each of these outcomes are positively correlated. Consistent with the idea that the corporators have some influence over these outcomes and following standard political economy models of election cycles, impressions are slightly more favorable in years immediately before elections relative to other years.

Our use of perception-based measures might raise concerns about residents misjudging the performance of members systematically. For instance, a popular corporator may give favorable impression of their performance, irrespective of their actual influence on service delivery. This concern could be exacerbated because the subjective assessments of residents might be correlated with corporator gender. To examine whether

[8]The survey sampled an average anywhere between 100 to 107 respondents across all the 227 constituencies (a total of 22,700 to 24,500 respondents) in every non-election year starting from 2011. Overall, the survey sample included both men and women split, matched, and compared to the population values of Mumbai sample in the Indian Readership Survey – another flagship survey of the survey organization that has an annual sample size of more than 200,000 per year across India. The demographic deviations, if any, for the Praja survey were corrected using the Indian Readership Survey as the baseline (Foundation, 2011, p. 157). The full survey research design and weighting criteria can be accessed from the annual councilor report cards on the Praja website (https://www.praja.org/report-card).

[9]These models would have no within-unit variation for some measures.

[10]The fourteen different outcomes are quality and/or condition of roads, traffic and congestion in the city, public gardens, public transport, hospitals and other medical facilities, schools and colleges, water supply, and water logging during rainy season and perception of cleanliness and sanitation, the corporator's accessibility, the corporator's (lack of) corruption, overall corporator approval, recall for corporator's name and perceived improvements in lifestyle. These components are positively correlated with Cronbach's alpha score of 0.87. We have excluded "Recall Party Name" from these indices as this measure is theoretically separate from citizen perception about the elected councilor.

our perception measures are tracking policy changes, we use four questions of individual opinion on power supply, instances of crime, law & order situation, and pollution problems as falsification tests. Since these policy areas either represent systemic problems that are beyond the capability of the individual corporator to resolve completely, or are the responsibility of the state government, rather than the corporation, we believe that they are less likely to be influenced by corporators than the other categories.

Handling of Citizen Complaints: As a more "objective" measure of corporator performance we use the handling of citizen complaints. We view the quick resolution of complaints as unambiguously desirable, especially given that the complaints that we are analyzing are overwhelmingly focused on local quality of life issues. Mumbai residents can submit complaints in-person or electronically to the office of their local administrative ward. The corporators elected from that ward make up the governing committee with broad discretion over their internal operations. Our key independent variable in this analysis is thus the *proportion* of women on the administrative ward committee. Several binary measures of the presence of critical numbers of women in ward committees, designed to measure non-linear group dynamics, produce similar results (available on request).

To analyze the effect of gender quotas on complaint resolution, we gathered data on civic complaints lodged by citizens to the Mumbai council. Our data had more than 470,000 individual complaints. We analyzed those complaints that were resolved and marked as "closed" by the local corporation.[11] This left us with more than 370,000 complaints, along with the amount of time taken to resolve them. The local council collected these self-reported individual complaints across 215 types that we matched to the 14 categories that are provided in the complaints portal of the Mumbai local council.[12]

The unit of observation for complaints data is the administrative ward-year, rather than the constituency-year (our unit of treatment) since the complaints are collected at the administrative ward-level.[13] For each complaint type we calculated the average number of days taken to resolve the issue at the administrative-ward level and then reshaped the data from complaint-year level to administrative-ward-year level. This

[11] The distribution of the count of the complaint by year is shown in A.6 on page A-5. We found no evidence of gender quotas having an effect on the proportion of complaints that went unresolved in wards and we report these findings in figure A.4 on page A-12.

[12] While there are 18 different categories, we dropped 4 categories of complaints (Estate, Schools, Colony, and Miscellaneous). The first three categories had negligible/no observations for multiple years, whereas "Miscellaneous" was an umbrella term used to record issues with no clear indication of the precise type of the complaint.

[13] Each administrative ward is composed of 2-15 electoral wards (constituencies, the treatment unit). Table A.2 provides the latest mapping between zones, administrative-wards, and constituencies. The civic complaints system — introduced in year 2000 allows citizens to lodge complaints to a central complaints registration system via phone, in-person, or online — aggregates the complaints received at the administrative ward level. Therefore, the unit of analysis for the complaint data is the administrative ward-year level. Table A.2 on page A-2 provides a mapping between zones, electoral and administrative wards in Mumbai.

resulted in a panel of 24 administrative wards covering six years and three election cycles. Table A.7 on page A-5 summarizes this classification.

4.2 Measuring Legislator Effort

While our main outcome variables measure the performance of the elected representatives, to supplement this we also analyze several measures of legislator effort — the amount of time and energy they appear to invest in doing specific activities. We are particularly interested in measuring legislative effort on public services, effort in the chamber, and effort expended on the politician's own personal interests, such as pay and perks.

Our most important measure of the distribution of effort is the distribution of questions asked by legislators in the chamber. As in many parliamentary systems, questions are used both to bring a specific issue to public attention, or to force the executive to act on (or at least respond to) a grievance. By categorizing questions asked and comparing them to the total number, we can also get a rough sense of what types of representational activities members consider worth their time. We divide questions into four types.[14] *Corporation-related* questions concern the internal operations and privileges of the corporation itself. *Public goods* questions concern the provision of broadly beneficial, non-excludable goods.[15] *Clientelistic* goods benefit only an individual, and are often given conditionally, in return for political support.[16] Finally *symbolic* goods concern cultural and identity issues rather than material benefits.[17] Given the importance of identity issues in shaping partisanship in Mumbai, symbolic questions are quite common—in 2018, 12% of questions concerned renaming streets alone. In the analysis, we categorize the proportion of public goods questions as constituency service, and symbolic questions as effort in the chamber.

Two additional measures capture behavior in the legislative chamber, and effort put towards attention seeking through legislative activity. The most obvious of these are attendance at corporation meetings, calculated as a proportion of total meetings. There is considerable variation in attendance: Average yearly attendance in Mumbai was 77% at corporation meetings and 76% at ward meetings, and only a third of members had attendance rates above 90%. To capture whether members actually participate in a valuable

[14] Praja categorized questions into near 100 highly specific categories, which we have consolidated to 17, and then grouped into four.

[15] Education, health, infrastructure, pollution and garbage, recreation and community centers, transport and water and toilets.

[16] Food distribution, housing, government jobs, and licensing.

[17] Street renaming, crime and corruption and "culture." Note that crime questions are only symbolic because the corporation does not control the police.

manner when they are attending, we use the total number of questions asked annually (the denominator for the measures discussed above).

As an additional measure of effort expended on constituency service, we use attendance at ward meetings, where narrowly local matters are discussed, and which are thought to be unimportant to members relative to the main chamber, particularly to members interested in visibility outside their own ward (De Wit, 2016). Further, each corporator receives a set amount of money each year, which they can distribute to public projects at their discretion and our data set also has information on proportion of constituency development funds expended by each councilor during their term in office. As Keefer and Khemani (2009) note in their study of similar funds at the national level, the disbursement of these funds requires a good deal of work by the legislator, since the disbursal of the funds and implementation of the resulting projects are multi-step bureaucratic processes that may not result in observable outputs before reelection.

4.3 Estimation

Estimating the effect of quotas on outcomes is straightforward as quotas are assigned randomly. Randomization solves the problem of selection bias – the possibility that quotas are imposed in constituencies with a proclivity for female representatives – and ensures that the difference in means between treated and control constituencies is equivalent to the causal effect of quota imposition. It must be emphasized that we are estimating the effect of gender quotas, rather than the effect of gender, since some women do contest in unreserved seats.[18] Note also that we are estimating the effects of gender quotas at the constituency level in the context of a system where quotas are being imposed, and do not observe outcomes in the counterfactual world where there are no gender quotas.

4.4 Impact of Gender Quotas on Citizen perception and Complaint Processing Time

We are interested in estimating the overall effect of quotas across all policy areas—by design, we have no predictions about which areas will have particularly strong effects. Therefore, we estimate the average treatment effect across all measures within a family of outcomes. As described in section 4, the data we employ allows us do exactly this. Our two families are citizen perception of constituency service delivered by the corporator and complaint processing time while handling citizen complaints to the Mumbai local council.

[18] Approximately ten percent of winners in unreserved seats in Mumbai in our sample were women.

Citizen perception of Constituency Service: Since the perception measure is captured via fourteen different outcomes separately testing for every outcome could result in multiple inference problems.[19]

To overcome these issues we follow the summary index approach outlined by Anderson (2008) where we calculate a weighted mean of standardized outcomes by weighting the outcomes with the inverse of the covariance matrix. This inverse covariance weighting "maximizes the amount of information captured in the index" (Anderson, 2008; Samii, 2016).[20] This approach allow us to test for the overall effect of gender quotas and is robust to overtesting. We do report the full set of results for all outcomes individually in the appendix with term clustered standard errors. Consequently, we estimate the regression equation 1 to measure the effects of gender quota on citizen perception of elected councilors, focusing on the causal effect of the gender quota dummy on the summary index.

$$ConstOpinion_{cy} = \lambda_y + \gamma_c + \delta D_{cy} + \varepsilon_{cy}, \tag{1}$$

where $ConstOpinion_{cy}$ is the constituency-year level citizen perception measures that are aggregated into a summary index as described earlier. The components of the summary outcome variable for citizen perception of delivery of constituency service are tabulated in panel B of table A.3 . λ_y refers to a vector of year fixed effects, γ_c refers to the vector of constituency fixed effects, D_{yc} is the dummy that is 1 in constituency years when gender quotas are imposed and 0 otherwise; δ is the coefficient of interest that captures the effect of gender quotas and ε_{cy} is the error term.

Complaint Processing time: To estimate the effect of gender quotas on time taken to resolve civic complaints, we again follow the summary index approach. The components of the complaints index come from

[19]The following simple illustration describes the multiple inference problem. Suppose the researcher chosen significance level is $\alpha = 0.05$ and the number of hypotheses is 17. Now,

$$\begin{aligned} Pr(\text{at least one significant result}) &= 1 - Pr(\text{no significant results}) \\ &= 1 - (1 - 0.05)^{12} \\ &\approx 45.9\% \end{aligned}$$

Therefore, this leads to a 46% chance of observing significance on one of the hypothesis tests purely by chance.

[20] We use the stepdown adjusted p-values procedure proposed by Romano and Wolf (2005), which fixes family wise error rate and reduces the propensity to commit type I errors. As described by Clarke, Mühlrad et al. (2016) this procedure " (...) penalises p-values to account for multiple hypothesis testing, and does so in an efficient way which allows for arbitrary correlations between outcome variables." Appendix B in Clarke, Mühlrad et al. (2016) provides a technical summary of the Romano and Wolf (2005) step-down technique, whereas Romano and Wolf (2016) provides the full details. The Romano-Wolf correction is more powerful than other multiple hypothesis testing procedures such as Bonferroni and Holm corrections (Clarke, Romano and Wolf, 2019). The actual process of p-value correction was done using the procedure via the algorithm described in Romano and Wolf (2016). While we report conventional p-values, statistical sigificance in all our results in table 4 are based on corrected Romano-Wolf p-values obtained after 5000 bootstrap replications.

the complaint types described in table A.11 on page A-9. Therefore, we estimate equation 2 to measure the effect of gender quotas on complaint resolution.

$$ComplaintTime_{wy} = \lambda_y + \gamma_w + \delta P_{wy} + \varepsilon_{wy}, \tag{2}$$

where $ComplaintTime_{wy}$ is the index of complaints at the administrative ward-year level, λ_y refers to a vector of year fixed effects, γ_w refers to a vector of admin-ward fixed effects, δ is the coefficient of interest that captures the effect of gender quotas and ε_{wy} is the error term. This equation differs from equation 1 with respect to the independent variable P_{wy}. This variable captures the proportion of quota seats in administrative ward w in year y. This is necessitated by the ward structure and nature of complaint collection by the local council, the independent variable for complaint models is the proportion of constituencies in the ward that have quotas.

While legislator performance outcomes, citizen perception, and complaint resolution time in days are measured annually, quota assignment (treatment variable) and politician attributes are uniform within terms.[21] To account for this, all standard errors in our models are clustered at the constituency-term level (or administrative-ward level for complaint models) – which corresponds to the identifying source of variation. Further, all models include year fixed effects, to account for the changing quotas in Mumbai and ward fixed effects to account for unobserved heterogeneity at the ward level. Constituency fixed effects are included in the perception models wherever data collection was complete for all years. These models discard observations after the boundary changes of 2017.

5 Results

5.1 Differences in Citizen Perceptions

One of the best indicators of politician success in improving public services in their constituency is what their constituents think. As we have have described, we utilize the constituency opinion survey administered by Praja to measure these perceptions. Panel A in Table 2 estimates the mean effect of gender quotas across our 14 perception measures.

The positive mean effect of 0.04 standard deviation units is statistically significant at the 90% confidence level, and indicates that gender quotas have a positive effect on citizen perception of service delivery and

[21] The small number of constituencies with by-elections were dropped in years after the death or unseating of the original member.

Table 2: Effect of Gender Quotas

Panel A	Dependent Variable: Constituency Service Index	
	(1)	(2)
Gender Quota	0.0413*	0.0620**
	(0.0241)	(0.0275)
Gender Quota × State Election		-0.0609
		(0.0453)
Constant	-0.122***	-0.132***
	(0.0286)	(0.0291)
Observations	1,362	1,362
R-squared	0.045	0.046 5
Year FE	✓	✓
Panel B	Dependent Variable: Complaints Resolution Index	
	(1)	(2)
Gender Quota	-0.695*	-0.756*
	(0.394)	(0.442)
Gender Quota × State Election		0.479
		(0.504)
Constant	-0.0967	-0.0657
	(0.208)	(0.232)
Observations	144	144
R-squared	0.353	0.354
Year and Ward FE	✓	✓

Cluster-robust standard errors in parantheses
*** p<0.01, ** p<0.05, * p<0.1

Note: **Panel A:** All the models include a summary index of constituency service as the dependent variable. The constituents of the summary index are: Quality and/or condition of roads, traffic and congestion in the city, public gardens, public transport, hospitals and other medical facilities, schools and colleges, water supply, water logging during rainy season, perception of cleanliness and sanitation, corporator's accessibility, corporator's (lack of) corruption, overall corporator approval, recall for corporator's name and improvements in lifestyle. Year fixed effects are included. Standard errors are clustered at the constituency-term level, which corresponds to the identifying source of variation.
Panel B: All the models include a summary index of complaint processing as the dependent variable. The constituents of the complaints summary index are shown in A.11 on page A-9. Year and administrative ward fixed effects are included to absorb unobserved time invariant year and administrative ward-specific shocks respectively that could be correlated with complaint processing. Standard errors are clustered at the administrative ward-term level, which corresponds to the identifying source of variation.

accessibility of the councilor of about four percentage points on average. The effects are stronger in years that are not before and after the state election, which is consistent with the idea that the overall effect is attenuated by superior career opportunities for men during these years. However, even in state election years, non-quota members do not perform better than quota members. These findings suggest that the gender quotas have an overall effect on constituency service spanning all areas, rather than just a single area. In the first wave of their study Praja did not collect information on corporator accessibility, satisfaction with the corporator and general improvement in lifestyle, therefore the models below only include year fixed effects. Table A.8 on page A-6 in the appendix reports the results with an index where we exclude these variables from summary index.

Figure A.1 on page A-6 shows the coefficient plot for individual outcomes of the index. Our use of the summary index approach outlined by Anderson (2008) allows us to make the causal claim that the effect of gender quota seats perform better on average than non-gender quota seats. We note that, consistent with previous studies, the positive effect of gender quotas is stronger for policy areas sometimes thought to be important to Indian women, especially schools, water provision and hospitals. However, the effects extend much more broadly, and are positive for 11 of the 14 measures.

Recall that certain public services are not directly within the ambit of the local government—these are power supply, instances of crime, law and order situation and pollution problems. We use these measures as falsification exercises to examine whether the citizen perception measures are actually tracking policy changes rather than less rational preferences for particular types of corporator. As expected, the results for the falsification test shown in table A.9 on page A-7 are not statistically significant. Finally, we separately test for perceived corruption levels of the councilors and find that (Table A.10 on page A-8) there is no systematic difference in perceived corruption levels between quota and non-quota members.

5.2 Differences in Complaint Processing

As described in section 4.3, the Mumbai local council has a centralized complaint redressal system. While a bureaucratic machinery handles the day-to-day operations, the councilors wield considerable powers that allow them to sanction and/or initiate disciplinary measures against erring officials and direct them to prioritize particular types of activities.[22] We calculated the proportion of gender quota members in each administrative ward-year to assess the effects of gender-quotas on complaint resolution time. Given that longer complaint

[22] Kumar (2019) details the bureaucratic setup and the complaint resolution process in detail.

resolution times are worse for citizens, a negative coefficient in these models indicate a faster processing of the complaints. Panel B of table 2 shows that gender quotas have a beneficial impact on complaint processing times. A move from a ward with no quota corporators to on entirely made up of quota corporators would be associated with a predicated reduction in processing time of 0.69 standard deviation units, and this effect is statistically significant at the 90% level.[23] Although, the causal effect of quotas is captured by the summary index plots in figure A.3 on page A-10 show individual linear models)

The constituent perception models and the complaint resolution models taken together show us that gender quota candidates improve broad-based public services, and dispel the notion that gender quota policies could result in 'weaker' candidates who may not prioritize constituency service that we encountered in our fieldwork. This pattern holds despite the fact that male candidates have stronger career incentives, and perform relatively better in years when those incentives are salient. Below, we will focus on where these differences in performance come from.

5.3 Mechanism: Differences in Member Effort

Legislators can exert effort in several ways, including public service provision, clientelism, rhetorical and chamber performance, and on maximizing their own perks. We utilize multiple measures to capture these families of outcomes, including questions asked by the councilors, proportion of constituency development funds deployed and effort expended towards legislative activity. In our initial analysis we focus on question content, creating separate summary indices for our four types of questions: rhetorical, public goods, clientelistic (individual), and symbolic.

Table 3 shows the results of the question content analysis. Gender quota candidates are less involved (mean negative effect of 0.14 standard deviation units at 95% confidence level) in asking questions that are rhetorical or symbolic nature or pertaining to identity politics, such as the renaming of streets or landmarks. Gender quota candidates are less involved in asking questions related to goods that benefit individuals (usually in exchange for political favors) as opposed to the community at large. Panel C shows that quotas have mean negative effect of 0.09 standard deviation units on the proportional importance of these questions Fi-

[23] Recall that this analysis is restricted to those complaints that were resolved and marked as "closed" and we did have about 100,000 complaints that were unresolved for various reasons. However, our models did not show any significant differences between genderquota and non-genderquota seats with respect to resolution (irrespective of time it took) of complaints. (Figure A.4 on page A-12 shows the coefficient plot of proportion of unresolved complaints by complaint category.

nally, we find that gender quota candidates are 0.2 standard units (at 95% confidence level) less likely to ask questions related to the city corporation itself, our best metric of individual privilege seeking.

In stark contrast, we find no statistically significant difference between gender quota candidates and non-gender quota candidates when it comes to raising questions related to public goods. While Figure A.5 shows that quotas have a positive and significant effect on specific types of public good questions that in previous studies have been found to be of importance to Indian women, including health, toilets and water, and education, the average overall effect on asking questions related to public services is close to zero.

As Table 9 shows, quotas members are overall less likely to exert effort in the legislative chamber and more likely to exert effort in their constituencies. Panel A shows that members are more likely to spend time on constituency development activities. Our two main measures of this are attendance at administrative ward meetings and deployment of constituency development funds. We find an overall positive average significant effect, which is entirely driven by the increase in ward attendance.[24] While quota members are more engaged at the ward level, they are less engaged in the corporation chamber, being no more likely to attend corporation meetings and less likely to ask questions while there (Table 9, Panel B).

Note that the higher level of ward committee attendance by quota members provides a very intuitive explanation for why ward committees with a large number of quota members process complaints faster. A member who does not bother to attend ward meetings will have relatively little opportunity to pressure the ward bureaucracy to process complaints rapidly.

[24]There is no systematic difference in terms of constituency development funds, perhaps an indication of the challenges in *actually* deploying these funds as noted in Keefer and Khemani (2009).

Table 3: Gender Quotas and Questions Raised

Dep. Var: Index of Questions Raised in the Chamber			
	(1)	(2)	(3)
Gender Quota	-0.024***	-0.018*	-0.026***
	(0.009)	(0.010)	(0.009)
Gender Quota × State Election			0.005
			(0.016)
Constant	0.008	0.096***	0.009
	(0.009)	(0.025)	(0.009)
Observations	1,362	1,135	1,362
R-squared	0.016	0.280	0.016
Year FE	✓	✓	✓
Const. FE	✗	✓	✗

Cluster-Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: All the models include a summary index of questions raised in the chamber by the councilors as the dependent variable. The constituents of the complaints summary index are shown in panel D of table A.3 on page A-3. Year and administrative ward fixed effects are included to absorb unobserved time invariant year and administrative ward-specific shocks respectively that could be correlated with complaint processing. Constituency fixed effect model in (2) excludes years after 2017 as the constituency maps were redrawn making them uncomparable with previous years. Model (3) does not include constituency fixed effects to avoid multi-collinearity. Standard errors are clustered at the administrative ward-term level, which corresponds to the identifying source of variation.

Table 4: Gender Quotas and Questions Raised in the Chamber

Panel A Rhetorical Questions			**Panel B** Public Goods Questions		
	(1)	(2)		(3)	(4)
Gender Quota	-0.147***	-0.177***	Gender Quota	-0.020	0.013
	(0.037)	(0.051)		(0.025)	(0.030)
	[0.0002]	[0.006]		[0.415]	[0.668]
	{0.0004}	{0.0064}		{0.682}	{0.705}
Constant	-0.030	0.142	Constant	-0.008	0.113
	(0.040)	(0.091)		(0.023)	(0.140)
	[0.445]	[0.118]		[0.746]	[0.418]
Observations	1,362	1,135	Observations	1,362	1,135
R-squared	0.019	0.240	R-squared	0.007	0.209
Year FE	✓	✓	Year FE	✓	✓
Const. FE	✗	✓	Const. FE	✗	✓
Panel C Individual Goods Questions			**Panel D** Corporation Related		
	(5)	(6)		(7)	(8)
Gender Quota	-0.085**	-0.054	Gender Quota	-0.185***	-0.236***
	(0.035)	(0.029)		(0.059)	(0.068)
	[0.014]	[0.061]		[0.0005]	[0.0006]
	{.0356}	{0.105}		{0.0006}	{0.0042}
Constant	0.108**	0.621***	Constant	-0.018	0.030
	(0.045)	(0.040)		(0.081)	(0.096)
	[0.018]	[0.000]		[0.827]	[0.759]
Observations	1,362	1,135	Observations	1,272	1,063
R-squared	0.027	0.269	R-squared	0.022	0.267
Year FE	✓	✓	Year FE	✓	✓
Const. FE	✗	✓	Const. FE	✗	✓

Note: Cluster-robust standard errors are included in round brackets. To account for Family Wise Error Rates from multiple hypothesis testing we use Romano and Wolf (2005) p-values that are calculated using Clarke, Romano and Wolf (2019)'s stata package $rwolf$. Romano-Wolf p-values are presented in curly brackets, and uncorrected p-values are presented in square brackets. *** p<0.01, ** p<0.05, and * p<0.1 are based on Romano-Wolf p-values. Year and constituency fixed effects are included to absorb unobserved time invariant year-specific and constituency-specific shoucks that could be correlated with the outcomes. Constituency fixed effects models exclude years after 2017 as the constituency maps were redrawn making them uncomparable with previous years. **Panel A:** Components of Rhetorical Questions Index are: Questions regarding renaming of streets/landmarks, crime and corruption in the city, and cultural issues. **Panel B:** Components of Public Goods Questions Index are: Questions regarding education, health, physical infrastrucrure, pollution, recreational and community facilities, transportation, and water supply and toilets. **Panel C:** Components of individual Goods Questions Index are: Questions regarding distribution, housing, human resources and licensing. **Panel D:** Contains linear models with questions related to corporation asked by councilors as the dependent variable.

Table 9: Additional Effort Measures

Panel A			
	Ward Attendance	Ward Attendance	Prop. of Funds Disbursed
Gender Quota	0.256***	0.267***	-0.023
	(0.071)	(0.077)	(0.040)
	[0.0003]	[0.001]	[0.570]
	{0.0006}	{0.0006}	{0.0036}
Constant	0.223***	-0.199	0.118***
	(0.061)	(0.142)	(0.042)
	[0.000]	[0.163]	[0.005]
Observations	1,342	1,120	1,118
R-squared	0.062	0.546	0.411
Year FE	✓	✓	✓
Const. FE	✗	✓	✗
Panel B			
	Corp meetings Attended	Corp meetings Attended	Total No. of Questions Asked
Gender Quota	-0.018	0.004	-0.180**
	(0.079)	(0.078)	(0.084)
	[0.816]	[0.959]	[0.033]
	{0.823}	{0.967}	{0.062}
Constant	0.313***	-0.212	0.032
	(0.060)	(0.278)	(0.081)
	[0.000]	[0.446]	[0.694]
Observations	1,342	1,120	1,342
R-squared	0.063	0.619	0.019
Year FE	✓	✓	✓
Const. FE	✗	✓	✗

Note: Cluster-robust standard errors are included in round brackets. To account for Family Wise Error Rates from multiple hypothesis testing we use Romano and Wolf (2005) p-values that are calculated using Clarke, Romano and Wolf (2019)'s stata package $rwolf$. Romano-Wolf p-values are presented in curly brackets, and uncorrected p-values are presented in square brackets. *** p<0.01, ** p<0.05, and * p<0.1 are based on Romano-Wolf p-values. Year and constituency fixed effects are included to absorb unobserved time invariant year-specific and constituency-specific shocks that could be correlated with the outcomes. Constituency fixed effects models exclude years after 2017 as the constituency maps were redrawn making them uncomparable with previous years.

6 Discussion and Conclusion

Our results show that the imposition of gender quotas is associated with improvements in the quality of local public services. Citizen complaints are processed faster in areas with quotas, and citizens are slightly more likely to positively assess the quality of service provision in their constituencies. While these positive effects are strongest in categories that might plausibly be of special importance to Indian women, they also

can be seen for types of goods that benefit men and women, and in overall averages. Gender quotas are public goods enhancing, not simply redistributive.

These effects are traceable to differences in behavior between male and female representatives, and where they exert effort. Quota women attend more ward meetings, while non-quotas members ask more questions in the corporation, and focus those questions on individual goods, symbolic issues, and the corporation itself. Quota members adopt political strategies focused on local service provision, while other predominately male members focus on public visibility and brokerage. While non-quota members are not "mediocre" (at least on the small set of observables we measure), they appear to pursue political strategies that are less likely to have positive spillovers for their constituents.

We have less direct evidence of why quota candidates allocate effort in this way. However, we find some evidence that this is due to differences in ability to pursue clientelist and rhetorical strategies. Qualitative accounts suggest that women are excluded from the male-gendered world of money, crime and jobs that make up much of the political game in Indian cities, a claim backed by their low levels of criminal charges. Female participation in the bombastic, performative, politics of legislative chambers is also devalorized—a finding that echoes research in developed democracies. Quota women, determined to make their mark, turn to the "official" channels of constituency service and advocacy.

These estimates may be a lower bound for the effect of quotas. For one thing, quota women are performing well despite very weak formal incentives. All members are constrained by the relatively low chance of reelection (due, in part, to quotas), and the limited power of individual members in the corporation. Women have even lower level of incentives than men due to their smaller chances of winning election at the state and national levels. In addition, estimating the effect of quota women on complaint processing is complicated by the multi-gender composition of ward committees. Finally, it is possible that some women may be "proxy" candidates, manipulated by spouses or male relatives. However, despite these all these problems, quota members appear to perform better than their non-quota peers, rather than worse.

In policy terms, however, the results are guardedly hopeful. While gender quotas do not appear to have jolted the local politics of Mumbai to higher levels of performance, they also have not led to the efficiency losses and elite capture as predicted by some observers. Changes in descriptive representation do not need to be "bought" with poorer performance—quite the opposite.

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Online Appendix

Table A.1: Electoral and Data Summary : Mumbai

	Panel A: Electoral Context
Number of Corporators	227
Major Parties	Bharatiya Janata Party, Congress Party, Shiva Sena
Groups with Caste Reservation	Scheduled Castes, Scheduled Tribes and Other Backward Classes
Gender Quota Percentage	50% since 2011
Quota Assignment	Random Lottery
	Panel B: Data Availability
2007	*Election Year*
2011	✓
2012	*Election Year*
2013	✓
2014	✓
2015	✓
2016	✓
2017	[Redistricting]
	Election Year
2018	✓

Table A.2: Zones, Administrative Wards and Constituencies in Mumbai

Zone	Administrative Ward	Constituency No.
Zone 1	Ward A	225—226—227— 223
	Ward B	223—224
	Ward C	220—221—222—214—215—216
	Ward D	217—218—219
	Ward E	207—208—209—210—211—212—213
Zone 2	Ward F North	172—173—174—175—176—177—178—179—180—181
	Ward F South	200—201—202—203—204—205—206
	Ward G North	182—183—184—185—186—187—188—189—190—191—192
	Ward G South	193—194—195—196—197—198—199
Zone 3	Ward H East	87—88—89—90—91—92—93—94—95—96
	Ward H West	97—98—99—100—101—102
	Ward K East	72—73—74—75—76—77—78—79—80—81—82—83—84—85—86
	Ward K West	59—60—61—62—63—64—65—66—67—68—69—70—71
Zone4	Ward P North	32—33—34—35—36—37—38—39— 40—41—42—43—44—45—46—47—48—49
	Ward P South	50—51—52—53—54—55—56—57—58
	Ward R Central	9—10—11—12—13—14—15—16—17—18
	Ward R North	1—2—3—4—5—6—7—8
	Ward R South	19—20—21—22—23—24—25—26—27—28—29—30—31
Zone 5	Ward L	156—157—158—159—160—161—162—163—164—165—166—167—168—169—170—171
	Ward M East	134—135—136—137—138—139—140—141—142—143—144—145—146—147—148
	Ward M West	149—150—151—152—153—154—155
Zone 6	Ward N	123—124—125—126—127—128—129—130—131—132—133
	Ward S	109—110—111—112—113—114—115—116—117—118—119—120—121—122
	Ward T	105—106—107—108

Source: Municipal Corporation of Greater Mumbai (https://portal.mcgm.gov.in) and Gaurang Damani's e-governance website initiative: https://tinyurl.com/Gaurang-Damani

Table A.3: Summary Statistics

	Panel A - Observable Characteristics					
	Non-Gender Quota Seats		Gender Quota Seats		Difference	
	mean	sd	mean	sd	b	t
Pan Card	0.98	0.15	0.89	0.31	0.08***	(5.66)
Attended University	0.39	0.49	0.44	0.50	-0.05	(-1.60)
Criminal Record	0.30	0.46	0.04	0.19	0.27***	(12.62)
age	47.60	9.11	44.47	9.53	3.13***	(5.62)
No. of Criminal Cases	0.78	1.89	0.07	0.42	0.71***	(8.65)
N	557		561		1118	
	Panel B - Constituency Service: Citizen Perception					
	Non-Gender Quota Seats		Gender Quota Seats		Difference	
	mean	sd	mean	sd	b	t
Condition of Roads	66.11	9.93	65.93	10.60	0.18	(0.32)
Public Gardens	60.44	12.53	59.62	13.44	0.82	(1.16)
Traffic jams & road congestion	60.134	10.635	59.709	11.370	0.425	(0.710)
Publlic Trasnport	70.02	9.20	70.61	9.61	-0.59	(-1.15)
Hospitals	70.33	8.25	71.27	8.27	-0.94*	(-2.10)
Schools & Colleges	71.37	8.24	72.93	8.29	-1.56***	(-3.48)
Water Supply	72.52	9.50	74.23	9.59	-1.71***	(-3.31)
Water Logging	59.68	10.17	59.47	10.89	0.21	(0.37)
Sanitation	63.41	9.45	63.84	10.12	-0.43	(-0.81)
Councillor Accesibility	62.32	10.51	62.61	10.42	-0.28	(-0.46)
Satisfaction with Councillor	67.07	12.38	66.91	12.58	0.16	(0.21)
Lack of Corporator's Corruption	30.52	13.31	30.57	12.71	-0.05	(-0.07)
Improvment in Lifestyle	68.56	8.37	68.25	8.65	0.32	(0.62)
N	715		646		1361	
	Panel C - Placebo Test					
	Non-Gender Quota Seats		Gender Quota Seats		Difference	
	mean	sd	mean	sd	b	t
Power Supply	75.937	9.717	77.556	9.978	-1.619**	(-3.026)
Instances of Crime	62.113	9.414	62.018	9.995	0.095	(0.180)
Law & Order situation	66.397	8.493	66.918	8.735	-0.521	(-1.113)
Pollution problems	59.653	10.039	59.308	10.399	0.345	(0.621)
N	715		646		1361	
	Panel D - Questions Asked in the Chamber					
	Non-Gender Quota Seats		Gender Quota Seats		Difference	
Question Topic	mean	sd	mean	sd	b	t
Education	0.04	0.11	0.05	0.13	-0.01	(-1.43)
Health	0.04	0.11	0.08	0.16	-0.03***	(-4.10)
Other Infrastructure	0.01	0.05	0.00	0.02	0.00*	(2.24)
Pollution	0.09	0.15	0.10	0.16	-0.01	(-1.06)
Recreation & Community	0.02	0.06	0.02	0.07	0.00	(0.23)
Transport	0.15	0.19	0.13	0.18	0.01	(1.26)
Water & Toilets	0.05	0.09	0.07	0.14	-0.02**	(-2.87)
Corporation	0.05	0.09	0.03	0.08	0.01**	(3.12)
Distribution	0.04	0.10	0.05	0.11	-0.01	(-1.59)
Housing	0.21	0.20	0.18	0.20	0.03**	(2.84)
Human Resources	0.02	0.06	0.01	0.05	0.01*	(2.51)
License	0.04	0.09	0.04	0.09	0.00	(0.01)
Renaming of Streets etc.	0.17	0.24	0.18	0.27	-0.02	(-1.08)
Crime & Corruption	0.02	0.05	0.01	0.03	0.01***	(3.78)
Culture	0.02	0.05	0.01	0.07	0.01	(1.50)
N	683		589		1272	

Note: Our estimation strategy relies on comparing outcomes for gender quota and non-gender quota seats across time (2012-2018) and the Difference column compares the means in the two types of seats. Panel A describes the differences in observarble characteristics of councilors, Panel B summarizes the survey – fielded by Praja Foundation – results regarding public goods provisioning in the wards, and panel C summarizes the type of questions asked by councilors in ward/corporation meetings.

Table A.4: Covariate Balance Test

	(1)	(2)	(3)	(4)	(5)
Slum **(L)**	0.142				
	(0.150)				
	0.344				
Margin of Victory **(L)**		0.001**			
		(0.000)			
		0.034			
Winning Party **(L)**			0.010		
			(0.010)		
			0.324		
Runner-up Party **(L)**				-0.005	
				(0.009)	
				0.615	
Administrative Ward **(L)**					-0.002
					(0.005)
					0.669
Constant	0.427***	0.377***	0.428***	0.539***	0.534***
	(0.086)	(0.067)	(0.080)	(0.081)	(0.082)
Observations	227	227	224	227	227
R-squared	0.004	0.020	0.004	0.001	0.001

Standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Note: **(L)** indicates a lagged variable.

Models (1) -(7) are linear models for 2012 and 2007 electoral term with lagged variables. Redistricting for 2017 term does not allow us to conduct this exercise as the ward maps changed making them uncomparable.

Table A.5: Citizen Perception of Constituency Service

Dep. Var:	Constituency Service Index	
	(1)	(2)
Gender Quota	0.0413*	0.0620**
	(0.0241)	(0.0275)
Gender Quota × State Election		-0.0609
		(0.0453)
Constant	-0.122***	-0.132***
	(0.0286)	(0.0291)
Observations	1,362	1,362
R-squared	0.045	0.046
Year FE	✓	✓

Cluster-robust standard errors in parantheses

*** p<0.01, ** p<0.05, * p<0.1

Note: All the models include a summary index of constituency service as the dependent variable. The constituents of the summary index are as follows: Quality and/or condition of roads, traffic and congestion in the city, public gardens, public transport, hospitals and other medical facilities, schools and colleges, water supply, water logging during rainy season. Perception of cleanliness and sanitation, corporator's accessibility, corporator's (lack of) corruption, overall corporator approval, recall for corporator's name and improvements in lifestyle. Year fixed effects are included to absorb unobserved time invariant year-specific shocks respectively that could be correlated with constituency service provisioning. Standard errors are clustered at the constituency-term level, which corresponds to the identifying source of variation.

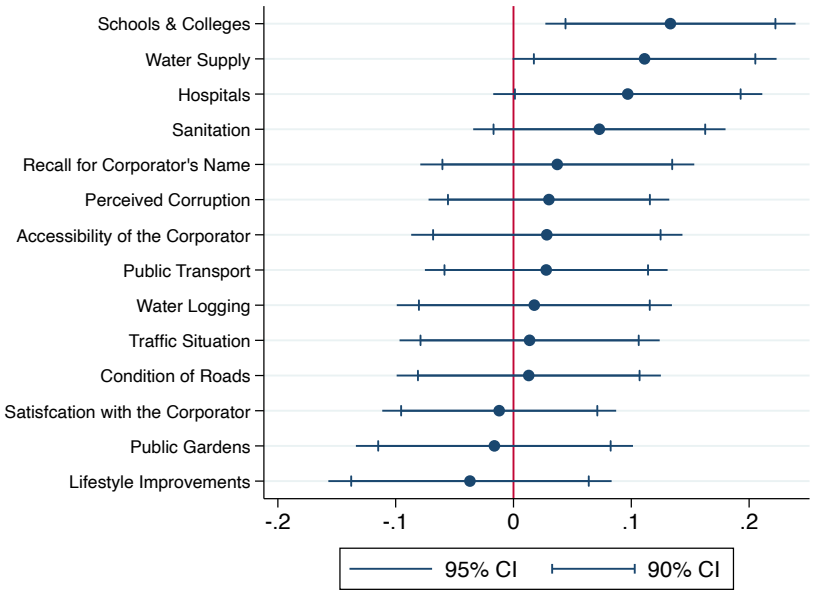
Table A.6: Total Complaints by year

Year	Count	Cum %
2013	80,526	21.4
2014	53,595	14.2
2015	22,012	5.8
2016	47,549	12.6
2017	76,943	20.4
2018	96,526	25.6
Total	377,151	100.0

Table A.7: Complaints: Family, Category, and Type

Complaint Category	**Examples of Complaint Types**
Roads	Digging of Roads, Repairs of Roads, Speed Breakers
Water Supply	Burst water lines, contaminated water, shortage of water
Storm Water	Flooding during monsoon, removal of silt, replacing manhole covers
Drainage	Odor from drains, blockage of drains, repairs to sewers
Solid Waste Management	Removal of debris, garbage collection, dustbins in public spaces
Garden	Trimming of trees, fallen tree on the road
Pest Control	Fogging, mosquito nuisance
Health	Issuance of death/birth certificates, unauthorized food sellers
Buildings	Change of categorisation of buildings, unauthorised alterations to buildings
Encroachment	Nuisance due to vagrants, hawkers
Municipal	Maintenance/Repair of municipal property
Shops	Shops operating without license, shops open beyond permissible hours
License	Trade License, Unauthorized advertisements/banners
Factories	Unauthorised factories/workshops

Figure A.1: Effect of Gender Quotas on Constituency Service



Note: Plot shows coefficients of linear models with individual outcomes on y-axis as the dependent variable, and gender quota dummy as the independent variable. All models include year fixed effects to absorb unobserved time invariant year-specific shocks that could be correlated with constituency service provisioning. Standard errors are clustered at the constituency-term level, which corresponds to the identifying source of variation.

Table A.8: Constituency Service Index - Truncated Index

Panel A *Dep. Var:* Constituency Service Index	(1)	(2)
Gender Quota	0.0641	0.0978**
	(0.0435)	(0.0469)
Gender Quotas × State Election		-0.131*
		(0.0680)
Constant	0.0209	-0.0132
	(0.132)	(0.131)
Observations	1,135	1,135
R-squared	0.310	0.313
Year and Const. FE	✓	✓

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All the models include a summary index of constituency service as the dependent variable. The constituents of the summary index are: Quality and/or condition of roads, traffic and congestion in the city, public gardens, public transport, hospitals and other medical facilities, schools and colleges, water supply, water logging during rainy season, perception of cleanliness and sanitation, corporator's (lack of) corruption, recall for corporator's name. Corporator's accessibility, overall corporator approval (satisfaction), and improvements in lifestyle are exluded from teh index to allow for constituency fixed-effects. All models include year fixed effects to absorb unobserved time invariant year-specific shocks that could be correlated with constituency service provisioning. Standard errors are clustered at the constituency-term level, which corresponds to the identifying source of variation.

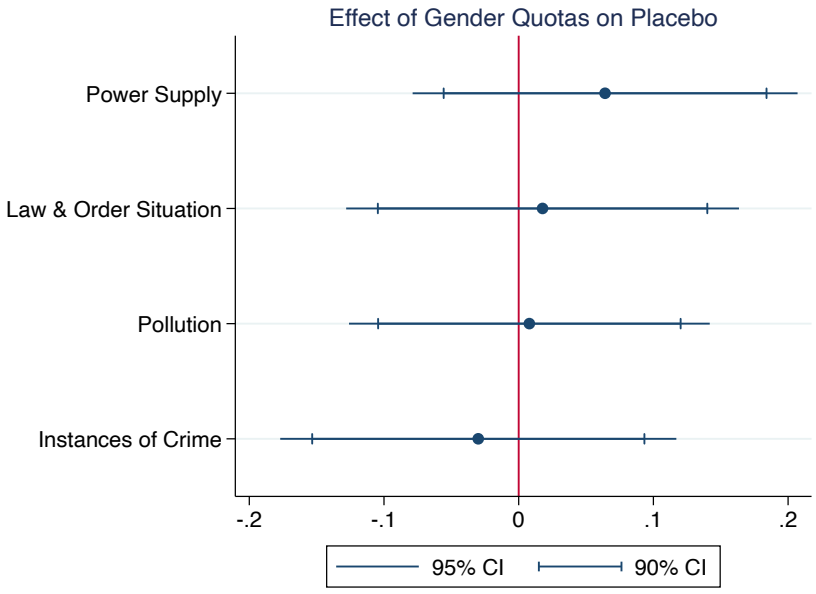
Table A.9: Placebo Test

	Dep Varecall: Placebo index	
	(1)	(2)
Gender Quota	0.0305	0.0750
	(0.0615)	(0.0676)
Gender Quota × State Election		-0.172*
		(0.104)
Constant	0.258	0.213
	(0.189)	(0.187)
Observations	1,135	1,135
R-squared	0.343	0.346
Year & Const FE	✓	✓

Cluster-robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All the models include a summary index of placebos as the dependent variable. The constituents of the summary index are as follows: Power supply, instances of crime, law and order situation, and pollution problems. Constituency and year fixed effects are included to absorb unobserved time invariant constituency-specific and year-specific shocks respectively that could be correlated with these placebo components. Standard errors are clustered at the constituency-term level, which corresponds to the identifying source of variation.

Figure A.2: Placebo Test - Coefficient Plot



Note: Plot shows coefficients of linear models with individual outcomes on y-axis as the dependent variable, and gender quota dummy as the independent variable. All models include constituency and year fixed effects to absorb unobserved time invariant constituency-specific and year-specific shocks respectively that could be correlated with placebo test outcomes. Standard errors are clustered at the constituency-term level, which corresponds to the identifying source of variation.

Table A.10: Perceived Corruption

	Dep Var: Perceived Councilor Corruption		
	(1)	(2)	(3)
Gender Quota	0.0480	0.400	0.287
	(0.694)	(0.692)	(1.075)
Constant	30.52***	27.15***	24.75***
	(0.483)	(1.085)	(2.370)
Observations	1,361	1,361	1,134
R-squared	0.000	0.146	0.359
Year Fixed Effects	✗	✓	✓
Const. Fixed Effects	✗	✗	✓

Cluster-robust standard errors in parentheses

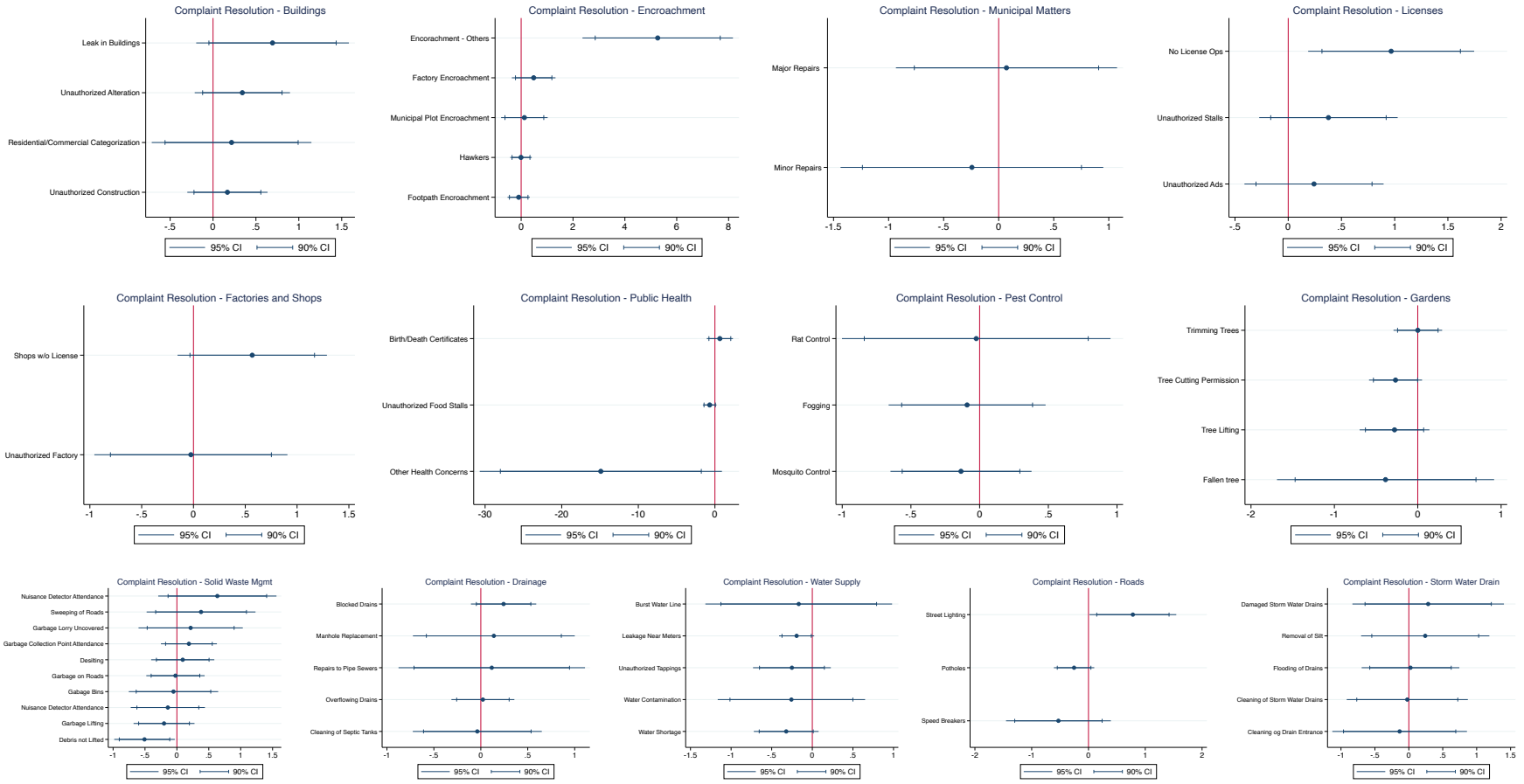
*** p<0.01, ** p<0.05, * p<0.1

Note: Table shows linear models with perceived corruption as the dependent variable, and gender quota dummy as the independent variable. Constituency and year fixed effects are included to absorb unobserved time invariant constituency-specific and year-specific shocks respectively that could be correlated with placebo test outcomes. Constituency fixed effect models exclude years after 2017 as the constituency maps were redrawn making them uncomparable with previous years. Standard errors are clustered at the constituency-term level, which corresponds to the identifying source of variation.

Table A.11: Complaint Types and Processing Time - Summary Statistics

Complaint Type	Mean	Std Dev	Complaint Type	Mean	Std Dev
bld_change_user_res_comm	49.180	45.625	strm_cleaning_removal_of_silt	43.369	44.720
bld_heavy_leakage_from_ceiling	52.660	38.725	strm_flooding_during_monsoon	52.948	59.797
bld_unauth_alteration_bldg	67.963	64.683	strm_repair_damaged_open_swd	44.317	42.491
bld_unauth_constr_development	240.106	891.885	drain_cleaning_of_septic_tank	42.638	48.915
encr_hawkers	80.302	178.956	drain_drainage_choke_blockage	101.013	238.677
encr_municipal_land_foot_swd	95.487	152.749	drain_overflowing_drn_manhole	79.684	148.214
encr_municipal_plot	52.904	58.641	drain_repairs_to_pipe_sewers	35.805	36.675
encr_others_ecnr	26.800	26.385	drain_replacement_manhole	32.910	34.549
encr_private_land_bldg_fact	48.177	41.703	swm_collection_pt_not_attend	33.832	40.672
mun_major_repairs_to_mun_prop	46.249	48.834	swm_gbg_lorry_not_report_cove	22.555	23.605
mun_minor_repairs_to_mun_prop	42.127	44.889	swm_gbg_not_lifted_gully	32.996	44.342
shp_running_without_license	34.701	30.967	swm_gbg_not_lifted_from_road	32.794	43.516
lic_trade_without_license	46.081	39.975	swm_no_attend_public_toilets	25.405	30.505
lic_unauth_banners_advt_road	32.150	26.535	swm_non_attend_nuis_detect	33.972	40.583
lic_unauth_stalls_road_foot	57.042	55.161	swm_dustbins	30.558	29.785
col_unauth_constr_in_slum	71.677	64.540	swm_removal_of_debris	34.785	40.904
col_unauth_ext_constr	68.158	69.849	swm_silt_lifted_from_road	31.221	37.142
fac_unauth_factory_workshop	49.197	36.741	swm_sweeping_of_roads	26.374	27.275
rd_bad_patch_potholes	45.344	71.620	gdn_fallen_tree_on_road	49.277	56.907
rd_speed_breakers	50.656	51.107	gdn_lifting_of_tree_cutting	40.313	62.863
rd_street_lighting	52.624	53.048	gdn_perm_for_tree_cutting	48.047	91.255
ws_burst_water_main_lines	29.590	30.564	gdn_trimming_of_branches	61.327	92.430
ws_contaminated_water_supply	33.641	33.042	pst_fogging	39.009	45.528
ws_leaks_in_water_lines_meter	41.313	89.623	pst_mosquito_nuisance	40.632	50.819
ws_shortage_of_water_supply	56.522	153.025	pst_rat_nuisance	36.891	35.359
ws_unauth_tapping_water_conn	41.241	58.068	heal_birth_deat_cert_issue	37.773	39.043
strm_cleaning_of_open_swd	44.229	46.960	heal_others_moh	51.216	58.029
strm_cleaning_water_entrance	42.329	47.010	heal_unauth_food_sell	51.104	46.913
Observations	144		Observations	144	

Figure A.3: Individual Complaint Resolution



Note: Plots show linear models for individual complaints types with ward and year fixed effects to absorb unobserved administrative ward and year specific heterogeneity.

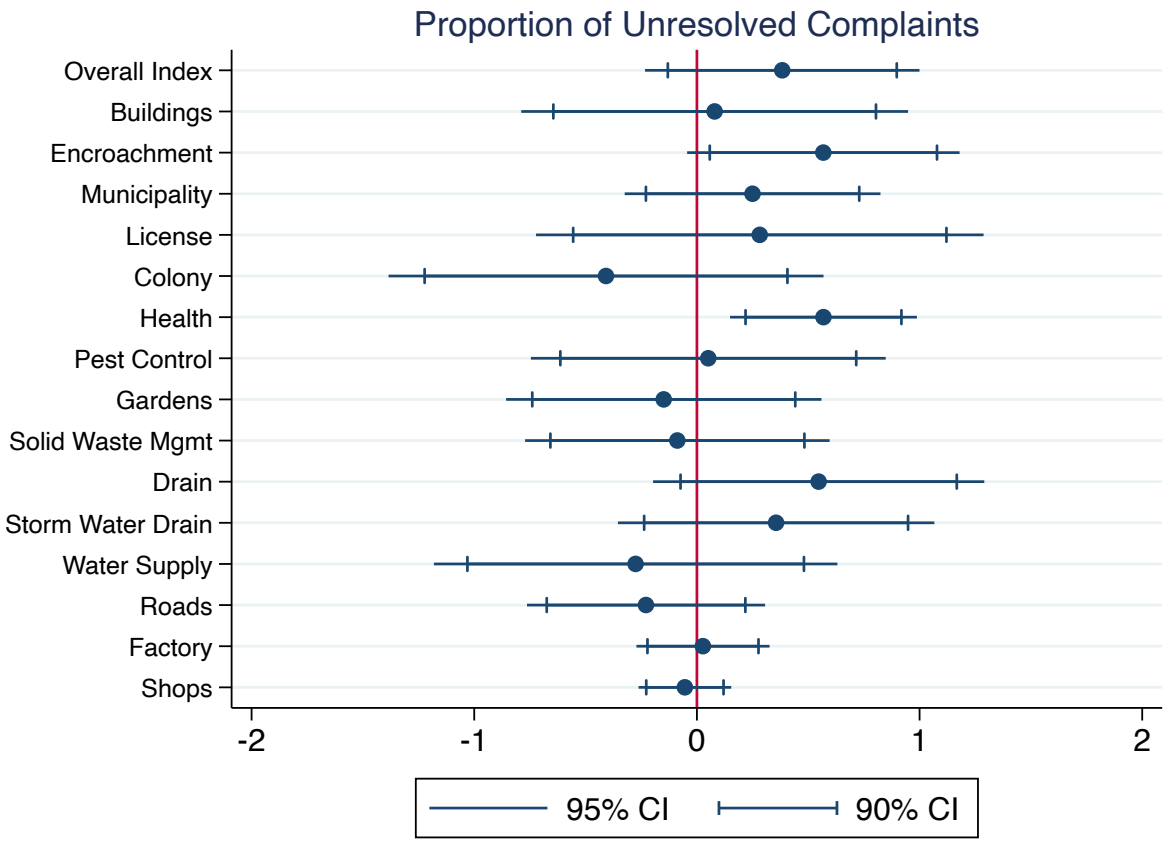
Table A.12: Effect of Gender Quotas on Complaint Processing

Dep. Var:	Complaints Index	
	(1)	(2)
Gender Quota	-0.695*	-0.756*
	(0.394)	(0.442)
Gender Quota × State Election		0.479
		(0.504)
Constant	-0.0967	-0.0657
	(0.208)	(0.232)
Observations	144	144
R-squared	0.353	0.354
Year and Ward FE	✓	✓

Cluster-robust standard errors in parantheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All the models include a summary index of complaint processing as the dependent variable. The constituents of the complaints summary index are shown in A.11 on page A-9. Year and administrative ward fixed effects are included to absorb unobserved time invariant year and administrative ward-specific shocks respectively that could be correlated with complaint processing. Standard errors are clustered at the administrative ward-term level, which corresponds to the identifying source of variation.

Figure A.4: Proportion of Unresolved Complaints - Coefficient Plot



Note: Plot shows coefficients of linear models with the summary index of proportion of unresolved complaints by categories on y-axis as the dependent variable, and gender quota dummy as the independent variable. All models include constituency and year fixed effects to absorb unobserved time invariant constituency-specific and year-specific shocks respectively that could be correlated with complaints resolution. Standard errors are clustered at the adminward-term level, which corresponds to the identifying source of variation.

Table A.13: Councilor Name and Party Recall- Index

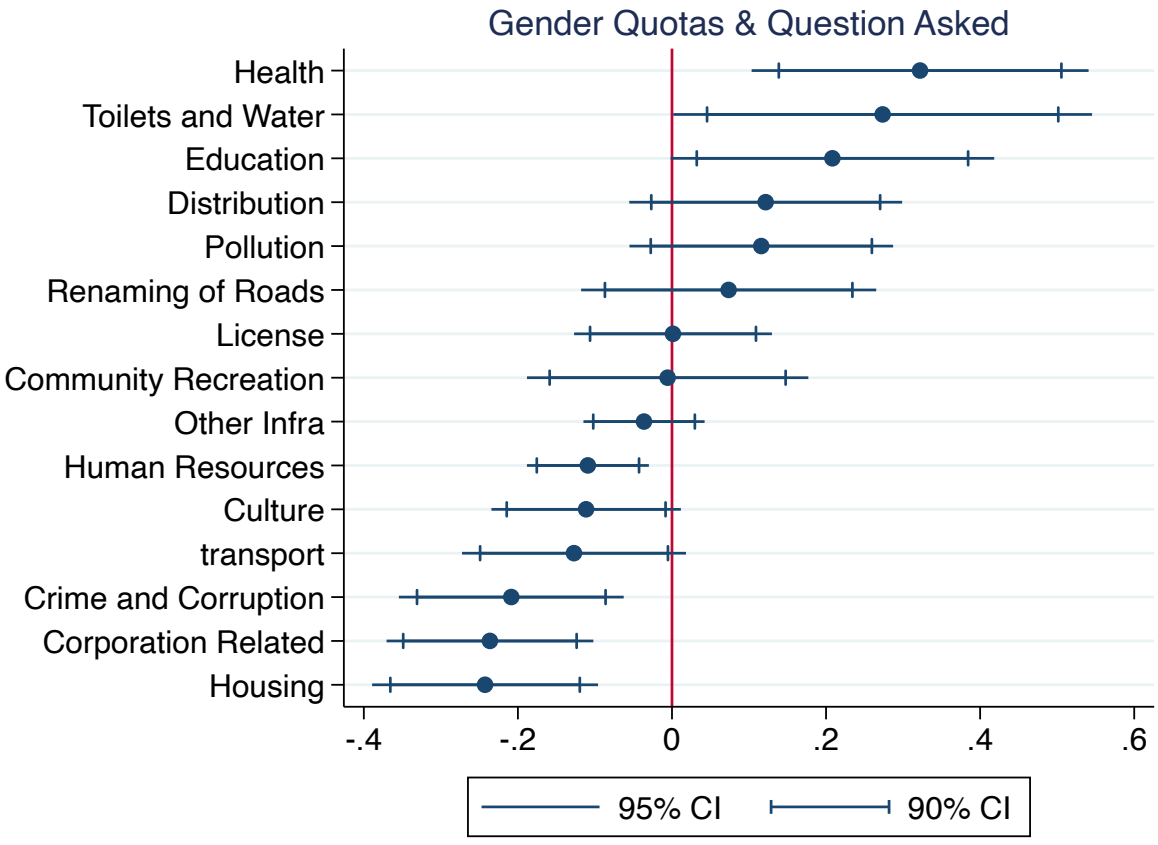
	Dep Var: Recall index	
	(1)	(2)
Gender Quota	0.0271	0.0139
	(0.0581)	(0.0794)
Before/After State Election		0.0330
		(0.105)
Constant	0.612***	0.618***
	(0.0819)	(0.0859)
Observations	1,134	1,134
R-squared	0.134	0.135

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: All the models include a summary index of councilor and party recall as the dependent variable. Year fixed effects are included to absorb unobserved time invariant shocks that could be correlated with councillor name and party recall.

Figure A.5: Questions Raised in the Chamber - Coefficient Plot



Note: Plot shows coefficients of linear models with the topic of questions asked on y-axis as the dependent variable, and gender quota dummy as the independent variable. All models include constituency and year fixed effects to absorb unobserved time invariant constituency-specific and year-specific shocks respectively that could be correlated with questions being raised in the chamber. Standard errors are clustered at the constituency-term level, which corresponds to the identifying source of variation.

Table A.14: Gender Quotas and Questions Raised in the Chamber

Panel A *Dep. Var:* Rhetorical Questions in the Chamber			
	(1)	(2)	(3)
Gender Quota	-0.147***	-0.177***	-0.155***
	(0.037)	(0.051)	(0.041)
	[0.0002]	[0.001]	[0.002]
	{0.0004}	{}	{0.0004}
Gender Quota × State Election			0.022
			(0.076)
			[0.771]
			{0.769}
Constant	-0.030	0.142	-0.027
	(0.040)	(0.091)	(0.042)
	[0.445]	[0.118]	[0.529]
Observations	1,362	1,135	1,362
R-squared	0.019	0.240	0.019
Year FE	✓	✓	✓
Const. FE	✗	✓	✗

Panel B *Dep. Var:* Questions related to Public Goods Index			
	(5)	(6)	(7)
Gender Quota	-0.020	0.013	-0.014
	(0.025)	(0.030)	(0.031)
	[0.415]	[0.668]	[0.663]
	{0.682}	{}	{0.682}
Gender Quota × State Election			-0.019
			(0.050)
			[0.708]
			{0.7165}
Constant	-0.008	0.113	-0.011
	(0.023)	(0.140)	(0.026)
	[0.746]	[0.418]	[0.676]
Observations	1,362	1,135	1,362
R-squared	0.007	0.209	0.007
Year FE	✓	✓	✓
Const. FE	✗	✓	✗

Panel C *Dep. Var:* Questions related to Individual Goods Index			
	(8)	(9)	(10)
Gender Quota	-0.085**	-0.054*	-0.069**
	(0.035)	(0.029)	(0.033)
	[0.014]	[0.061]	[0.036]
	{.0356}	{}	{.0356}
Before/After State Election			-0.049
			(0.076)
			[0.519]
			{0.542}
Constant	0.108**	0.621***	0.099**
	(0.045)	(0.040)	(0.044)
	[0.018]	[0.000]	[0.025]
Observations	1,362	1,135	1,362
R-squared	0.027	0.269	0.027
Year FE	✓	✓	✓
Const. FE	✗	✓	✗

Panel C *Dep. Var:* Questions related to Corporation			
	(11)	(12)	(13)
Gender Quota	-0.185***	-0.236***	-0.229***
	(0.059)	(0.068)	(0.065)
	[0.0005]	[0.001]	[0.0005]
	{0.0006}	{}	{0.0006}
Constant	-0.018	0.030	0.004
	(0.081)	(0.096)	(0.081)
	[0.827]	[0.759]	[0.962]
Observations	1,272	1,063	1,272
R-squared	0.022	0.267	0.023
Year FE	✓	✓	✓
Const. FE	✗	✓	✗

Note: Cluster-robust standard errors are included in round brackets. To account for Family Wise Error Rates from multiple hypothesis testing we use Romano and Wolf (2005) p-values that are calculated using Clarke, Romano and Wolf (2019)'s stata package $rwolf$. Romano-Wolf p-values are presented in curly brackets, and uncorrected p-values are presented in square brackets. *** p<0.01, ** p<0.05, and * p<0.1 are based on Romano-Wolf p-values. Year and constituency fixed effects are included to absorb unobserved time invariant year-specific and constituency-specific shoucks that could be correlated with the outcomes. Constituency fixed effects models exclude years after 2017 as the constituency maps were redrawn making them uncomparable with previous years.

Panel A: Components of Rhetorical Questions Index are: Questions regarding renaming of streets/landmarks, crime and corruption in the city, and cultural issues. **Panel B:** Components of Public Goods Questions Index are: Questions regarding education, health, physical infrastrucrure, pollution, recreational and community facilities, transportation, and water supply and toilets. **Panel C:** Components of individual Goods Questions Index are: Questions regarding distribution, housing, human resources and licensing. **Panel D:** Contains linear models with questions related to corporation asked by councilors as the dependent variable.