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Deliberative Inequality

A *Text-As-Data* Study of Tamil Nadu's Village Assemblies

Ramya Parthasarathy
Vijayendra Rao
Nethra Palaniswamy

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Poverty and Inequality Team
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Abstract

The resurgence of deliberative institutions in the developing world has prompted a renewed interest in the dynamics of citizen engagement. Using *text-as-data* methods on an original corpus of village assembly transcripts from rural Tamil Nadu, India, this paper opens the "black box" of deliberation to examine the gendered and status-based patterns of influence. Drawing on normative theories of deliberation, this analysis identifies a set of clear empirical standards for "good" deliberation, based on an individual's ability both to speak and be heard, and uses natural language processing methods to generate these measures. The study first shows that these assemblies are not mere "talking shop" for state officials to bluster and read banal announcements, but rather, provide opportunities for citizens to challenge their elected officials, demand transparency, and provide information about authentic local development needs. Second, the study finds that across multiple measures of deliberative influence, women are at a disadvantage relative to men; women are less likely to speak, set the agenda, and receive a relevant response from state officials. Finally, the paper shows that although quotas for women on village councils have little impact on the likelihood that they speak, they do improve the likelihood that female citizens are heard.

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Ramya Parthasarathy†

Vijayendra Rao‡

Nethra Palaniswamy§

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†Dept. of Political Science, Stanford University. ramyap1@stanford.edu

‡Development Research Group, World Bank. vrao@worldbank.org

§Poverty Global Practice, World Bank. npalaniswamy@worldbank.org

1 Introduction

In the face of concerns that aid programs have not beem serving those who need them most, community-led development has moved to center stage in the aid industry (Mansuri and Rao, 2012). Participatory development programs draw on theories of deliberative democracy, which emphasize the role of citizens in coming to reasoned compromises with one another over matters of public interest. By moving decision-making power from government office to the village itself, these programs have been viewed as a way to wrest power from elite capture and improve the equity of allocations across local communities. Whether in village meetings or neighborhood associations (Auerbach, 2017), citizen engagement of this sort is thought to result in more efficiently implemented and inclusively distributed development outcomes. These instrumental aims, however, are only part of the reason that international organizations and national governments have embraced community-led development; the other key reason is that we increasingly think that citizen's voice has inherent normative value (Elster, 1998; Dryzek, 1994; Guttman and Thompson, 2004). As such, this shift towards deliberation has accompanied a shift in our understanding of development itself — from narrow economic transformation to a more holistic view that includes human capabilities, social development, and justice (Sen, 2001).

Despite their promise, however, there are strong reasons to think that deliberative institutions may be ill-equipped to deliver on their instrumental or normative goals (Heller and Rao, 2015). Of particular concern are the ways in which inequalities — across gender, class, caste, and position — may be reinforced or even exacerbated in deliberative fora. First, deliberative forums may perpetuate existing inequalities among citizens. Unlike aggregative forms of democracy, where standing among voters is leveled by the equal weighting of ballots, and institutional safeguards like the secret ballot protect against coercion, deliberation requires public, often costly, exercise of voice. It takes place in highly localized settings, where social norms shape the actions of individuals within the group. These issues may be particularly acute for women, who tend to be perceived as less influential than men, who are less likely to set the agenda, and who are less likely to impact outcomes (Karpowitz and Mendelberg, 2014).

Second, inequality between voters and state officials can undermine the promise of deliberative institutions. When participation is induced by the state, as in decentralization efforts or community-driven development programs, agents of the state often are stuck in the ironic situation of having to act against their self-interest by promoting institutions whose purpose is to undermine their power (Mansuri and Rao, 2012). Therefore, local bureaucrats and politicians may try to undermine these institutions by canceling them (Besley et al., 2005), crowding out meaningful deliberation with bureaucratic announcements, and ignoring voters' claims and evading their requests (Bhattacharjee and Chattopadhyay, 2011).

Whether and to what extent these forms of dominance — of men over women, of the elite over the poor, of state officials over citizens — affect deliberative institutions in practice is an empirical question, but one that has been challenging to study systematically on a large scale, particularly in real-world, citizen-centered deliberative forums. In this paper, we overcome these challenges by applying Natural Language Processing (NLP, or *text-as-data*) methods to an original corpus of village assembly transcripts from rural India to systematically examine variation in the quality of deliberation. In particular, we examine the relationship between deliberative influence and the gender or position (citizen versus official) of a speaker. By using NLP methods, we are able to quantitatively examine not only the relative floor time enjoyed by different types of speakers, but also their ability to influence the topic of conversation (agenda-setting power) and to make claims on state officials (responsiveness of the state).

We find that, despite women's high rates of attendance in Tamil Nadu's village assemblies, they are indeed the "silent sex." Women make up 58 percent of attendees on average, but are responsible for one-third of the available floor time. Moreover, when women do speak on a particular topic, they are significantly *less* likely than men to elicit a topical or relevant response from state officials — suggesting a meaningful inequality in deliberative influence across the sexes. Importantly, these results hold even if we control for the particular topic that is being raised; that is, for any given topic, a man is more likely to get a response from an official than a woman.

In contrast to our findings on gender inequality, we do not find evidence that assemblies are

dominated by elected officials. A majority of floor time is taken up by citizens, who are more likely than officials to set the agenda. Moreover, while officials often read a set of announcements at the beginning of meetings, these statements are generally in *response* to issues raised by citizens, not efforts to direct conversation. This is consistent with previous work (Ban et al., 2012), which finds that India's *gram sabhas* are more than mere "talking shops," and that conversation within the *sabhas* actually reflects median household preferences within the village.

Our work also speaks to the literature on the impact of descriptive representation on social norms. In particular, we explore whether and how gender quotas for the village council presidents affect deliberative equality. Advocates of quotas have long argued that this policy not only improves representation of women and minorities via the election of policy makers who may share their preferences, but also creates a precedent for women voicing their own preferences (Mansbridge, 1999). We find that the presence of a female president has a meaningful and significant impact on the ability of women to be heard and responded to. We show that women are not only more likely to drive conversation under female presidents, but that female presidents themselves are significantly more responsive to women constituents, consistent with the argument that "descriptive representation facilitates vertical communication between representatives and constituents" (Mansbridge, 1999, p. 641) in conditions where women have been historically marginalized. However, the mere presence of female incumbents has no effect on the frequency or volume of women's speech — suggesting that reservations are not a panacea for gendered inequality in these deliberative forums.

This paper contributes to the growing empirical literature on deliberation, which began with rich and careful ethnographies of deliberation in Western settings,[1] and has since expanded to study developing country contexts as well. While the bulk of this literature has been limited to "successful" examples of deliberative resource allocation, such as participatory budgeting in Brazil (Baiocchi et al., 2011) and the People's Campaign in Kerala (Heller et al., 2007), scholars

[1]See Mansbridge's (1980) study of town meetings in New England; Fung's (2004) study of neighborhood governance in Chicago's South Side; Polletta's (2004) and Polletta and Lee's (2006) analyses of a variety of deliberative spaces in the US.

are now turning to deliberation in more challenging contexts. Through detailed qualitative and ethnographic work, scholars have shown how deliberative forums can be used as a space to make dignity claims for underprivileged groups (Rao and Sanyal, 2010), and even as a tool to solve social problems such as female genital mutilation (Mackie, 2015). Other work has expanded the scope of deliberation to include everyday communication outside the context of formal forums (Swidler and Watkins, 2015). Our work builds upon this scholarship by examining deliberative outcomes in a challenging rural context, but departs methodologically from this earlier literature by *quantifying* inequalities in participation.

Beyond these observational studies, there is a growing literature that tests hypotheses derived from deliberative theory in the context of lab experiments (Fishkin and Luskin, 2005; List et al., 2013; Goeree and Yariv, 2011; Karpowitz et al., 2012; Karpowitz and Mendelberg, 2014). While such work has helped inform our understanding of how institutional contexts (e.g. decision rules, moderators, etc.) affect deliberative quality, studying systematic variation in the real world has been much more challenging. A notable exception has been the study of parliamentary debates, where the availability of data has enabled scholars to leverage temporal variation to study patterns in deliberative quality (Clayton et al., 2016); unfortunately, this strand of work has often been limited in its ability to test the effects of *institutional* variation due to the focus on any single deliberative body. By contrast, our study provides a new source of transcript data from numerous local deliberative bodies — enabling us to correlate deliberative outcomes with local institutional variation, including the gender of the local politicians moderating discussion. Moreover, the focus on *local*, rather than national-level institutions, allows us to examine citizen voice rather than official debate; in doing so, we are able to address normative questions about whether and how citizens are able to participate in their own governance.

This paper also provides an important bridge between empirical work and normative theories of deliberation by generating a clear set of metrics that can be coded using automated methods. Given the considerable debate within the normative literature both about deliberative standards as well as the more basic question of what constitutes deliberation, there has been meaningful

disagreement within the empirical literature as to how to systematically assess deliberative quality (Myers and Mendelberg, 2013). Here, we build upon the minimalist approach to deliberation outlined by Mansbridge (2015), and focus on a set of context-relevant standards that relate to the political and ethical functions of deliberation. In doing so, we outline qualities of good deliberation that are both applicable to development contexts and that can be operationalized by future scholars.

Furthermore, this paper contributes methodologically to the study of deliberation. We show that the use of unsupervised but validated measures can enable scholars to evaluate large bodies of transcript data, even among ordinary citizens in developing country contexts. While this approach has been used in more literate contexts — be they elite speakers in parliaments or citizens from rich countries — the bulk of scholarship in contexts similar to ours has engaged in time-intensive manual coding of data, often to capture nuanced aspects of debate and argumentation; this can be prohibitively costly, limiting the volume of scholarship in this area. By contrast, our approach uses *text as data* methods to analyze a large body of transcripts and generate consistent measures for speakers' floor time, agenda-setting power, and ability to generate a response from the state. By validating these measures against survey data, we hope to encourage scholars that textual analysis for the study of deliberation is not prohibitively costly.

The remainder of the paper is organized as follows: In Section 2, we provide the institutional context behind the Indian *gram sabha*, or village assembly, in which we study deliberative inequality. In Section 3, we identify the standards of good deliberation relevant to this and other developing country contexts. In Section 4, we describe data and measures we use to evaluate the quality of deliberation. Here, we also describe the topic modeling methodology used to evaluate speech content. In Section 5, we descriptively document patterns of deliberative quality and examine how design of the *gram sabha*, specifically the use of gender quotas, may alter those patterns. Finally, we discuss the implications of these results and conclude in Section 6.

2 Institutional Context: *Panchayati Raj*

The institutional setting in which we examine deliberation is the *gram sabha*, or village assembly. *Gram sabha* were created in 1993 as part of a transfer of responsibility for the delivery of local public goods and services to a three-tier local government, with the village *panchayat* (VP) at the bottom level. Under the constitutional mandate, all Indian villages are to be governed by an elected council, composed of ward members (representing roughly 500 people each), and a president. In recognition of historical disadvantage for women and low castes, the amendment also mandated that 33 percent of seats in village councils would be reserved for women, and a number proportionate to their population in the village reserved for disadvantaged castes. Relevant for this study, the process for assigning gender quotas is *as-if-random*, allowing us to interpret any observed differences between male and female incumbents as causal.[2] In doing so, we follow a significant body of literature that leverages this assignment process to study the effect of female incumbents on Indian local government (Chattopadhyay and Duflo, 2004; Bhavnani, 2009; Ban and Rao, 2008b; Besley et al., 2005). Lastly, in addition to this executive council, the legislature of the village would be the *gram sabha*, to which every citizen of the village would be a member, with *gram sabha* meetings held at least two times a year.

While these mandates represented the minimal requirements for the village *panchayat* system, every Indian state was given a wide degree of leeway in how the VPs would function — leading to considerable variation in the VPs' budgets, functions, and implementation of the *gram sabha* (Besley et al., 2005). In Tamil Nadu, where this study is located, the specific functions and requirements of the VPs were defined by the *Tamil Nadu Panchayats Act* (1994). Formally, the functions devolved to the VP have been to identify target populations for federal and state poverty alleviation programs; the construction and maintenance of basic public goods (village roads, streetlights, drinking water, drains); and the provision of sanitation services.

[2]The specific process for assigning women's reservations is described in the Tamil Nadu Panchayats Rules of 1995, Section 7.3, Rule 7, which mandates the creation of a "list of Wards or Panchayats arranged in descending order of the percentage of…Women," and then details the rotation of reservations every 10 years by proceeding down the list. Since the percentage of women in the population is roughly the same across the state's Panchayats, assignment is *as-if-random*.

Today, these assemblies constitute the most widely used deliberative institution in human history, affecting over 840 million people living in approximately one million villages in rural India. Deliberative democracy has deep historical roots in India where, for centuries, deliberative bodies were central to systems of local governance, and religious discourse and dialogue (Parthasarathy and Rao, 2017). In the period of colonial rule in the 19th century the interplay of ideas between Western liberal philosophers and Indian intellectuals led to India becoming a fertile ground for experiments in governance. The idea of self-sustaining village democracy, in particular, appealed greatly to Mohandas Gandhi, who made it a central tenet of his philosophy. In 1993, 45 years after independence, the Gandhian push for deliberative village democracy was given constitutional sanction with the passing of the 73rd amendment to the Indian constitution.

In general, Tamil Nadu has not been a front-runner in devolving much power to VPs, nor have recent improvements significantly improved policy devolution.[3] Though Tamil Nadu VPs are not sufficiently well-financed to actually deliver public goods and services on their own, they do play a vital role in (a) implementing the last mile of various functions and programs, and (b) relaying information about local needs to the higher block tier of government, which has final authority on the provision of key services. For example, the VPs identify areas that need more drinking water; keep track of repair and construction needs; collect census data on household toilet access; provide information on local infrastructure needs (such as roads and drainage); and identify beneficiaries from the target population for several other federal and state anti-poverty programs. The VP also provides information to higher levels of government on public service problems that range from the functioning of the public food distribution systems to glitches in the new electronic payments system for public works. Lastly, the VP is fully responsible for the full implementation (including payment of salaries) of the federal rural employment scheme (NREGA), which guarantees 100 days of work on public works for any individual who wants this work.[4]

[3] http://www.iipa.org.in/upload/panchayat_devolution_index_report_2012-13.pdf

[4] Recently, payment of salaries has begun transitioning to an electronic system; as such, it is not directly controlled by the VP.

Much of this information is collected via the village-wide assembly, or *gram sabha*, which serves a key venue for citizens to engage with local officials to discuss the administration of government programs. In 1998, in response to the widely acknowledged problem of infrequent *gram sabhas*, the State Government of Tamil Nadu mandated that all VPs hold a minimum of four *gram sabhas* each year: January 26th (Republic Day), May 1 (May Day), August 15th (Independence day) and October 2nd (the birthday of Mahatma Gandhi). Since passage, this mandate has had near universal compliance; today, *panchayat* elections and the quarterly ritual of the *gram sabha* have become ingrained into the political culture of rural Tamil Nadu.

3 What Counts as (Good) Deliberation?

Deliberation is a process of "mutual communication that involves weighing and reflecting on preferences, values and interests regarding matters of common concern," (Mansbridge, 2015, 27). In contrast to forms of democracy that emphasize aggregate preferences via the ballot, for example, deliberation ideally fosters agreement by persuading people of a different way of thinking (e.g. by providing new information or changing their preferences), or by a process of reasoned compromise. When it is effective, deliberation can be transformative; it can empower poor communities, enhance the capacity for collective action, and harness the capacity of communities to manage their own affairs (Heller and Rao, 2015).

Definitions of deliberation, and the normative standards underlying them, have evolved considerably over the last decade, partly as a consequence of empirical work from field and lab settings. While more traditional definitions of deliberation (Habermas, 1990; Elster, 1998; Dryzek, 1994; Guttman and Thompson, 2004; Goodin, 2005) often presume equality among actors and limit what counts as deliberation to claims rooted in rationality and impartiality, these standards have been challenged by the rapid revival of deliberative institutions in the developing world. In this section, we define the metrics by which we evaluate deliberative quality in such a setting — that is, one in which inequality and illiteracy may shape patterns of discussion and debate.

We begin with Mansbridge's (2015) minimalist definition, which explicitly acknowledges that deliberation, particularly among the less educated, may depart from purely "rational" speech; rather, deliberation may involve story-telling and emotional claims that are meant to build empathy, trigger a sense of injustice, and establish credibility. Indeed prior studies show that low literacy may contribute to limited "oratory competency" (Sanyal et al., 2015), where speech may engage in identity claims and declarations rather than rational reflection focused on communicating, and weighing between, competing interests (Rao and Sanyal, 2010). Though such speech would be excluded by a more traditional definition of deliberation, it still constitutes "mutual communication regarding matters of common concern." Moreover, even this type of speech can still provide functional benefits, such as improving the transmission of information, coordinating collective action, and bolstering the legitimacy of decisions (Fearon, 1998).

In using this more minimalist standard for deliberation, we also depart from previous attempts to measure deliberative quality, including, for example, Bächtiger et al.'s (2005) Discourse Quality Index (DQI), which derives largely from a Habermasian vision and include measures for the "level" and "content" of justifications used in arguments — components which value "rational" arguments over persuasive story telling or identity claims. Instead, we focus on measures that relate explicitly to the political and ethical functions of deliberation (Mansbridge, 2015).[5] That is, we conceive of good deliberation as that which (1) gives all participants an equal opportunity to influence the outcome by promoting "an inclusive and egalitarian political process,"[6]; (2) embodies the ideal of mutual respect, whereby citizens listen attentively to one another, and (3) allows citizens to be agents who participate in the governance of their society (Mansbridge, 2015, p. 43). We address each of these in turn.

[5]Deliberation also includes an epistemic function — to "generate opinions, preferences, and decisions that are appropriately informed by facts and logic and derive from substantive and meaningful consideration of relevant reasons" (Mansbridge, 2015, p. 42). Since we do not collect information on the subsequent outcomes from these assemblies, or the welfare consequences of the decisions made, we do not include measures of the epistemic quality of deliberation in this paper.

[6]Mansbridge (2015) describes such a process as one that includes "multiple and plural voices, interests, concerns, and claims on the basis of feasible equality" (p. 43).

3.1 Equality of Participation

First, good deliberation must give participants equal opportunity to influence the outcome — at its most basic, this can be captured with a measure of floor time. While the frequency or volume of speech alone may not be a measure of equality, the ability or willingness to speak does reflect one's authority or standing in the community. By viewing speech as a *social act*, we follow Karpowitz and Mendelberg (2014), who define speech is "a form of symbolic political or civic participation that may reflect and contribute to the sense of political efficacy and authority — in short, as a political act that creates civic standing" (Karpowitz and Mendelberg, 2014, 5-6). Understood as a political act, then, speakers' relative amount of floor time can be a useful indicator of social equality.

Equality, of course, may be defined across multiple axes of difference, including class, race, caste, and gender. While each of these merits consideration, in this study, we focus on gender for three reasons: first, there is a significant body of scholarship that suggests that differences in communication styles may limit women's ability to be heard, to exercise authority, and to shape outcomes in deliberative settings (Karpowitz and Mendelberg, 2014). In other words, deliberation as a method of collective decision-making may have a gendered component — and it is of normative importance to understand the extent of such differences, and how they can be overcome. Second, concerns of gender equality are perhaps more acute in contexts like rural Tamil Nadu, where this study is located. In such settings, women are often deeply disadvantaged across key welfare metrics — from health outcomes to education and labor force participation. For example, female signature literacy in Tamil Nadu is at a mere 64.5 percent in rural areas according to the 2011 census, with male literacy at 82.4 percent.[7] Gaps in labor force participation are even more acute, with rural women employed half as often as rural men (31.8 percent versus 59.3 percent).[8] Given that women enter deliberative fora at a disadvantage, then, it is important to understand the ways in which gender — as a description of a person's social identity, as a dimension of style

[7] "Signature" literacy is defined as the ability to sign one's own name — another minimalist standard.

[8] Directorate of Census Operations, Government of Tamil Nadu, http://www.tn.gov.in/dear/Employment.pdf

of interaction, as a characteristic of the setting — affects patterns and content of speech. Third, from a practical perspective, gender is a relatively easy marker of social identity to observe and code in deliberative settings; in contrast to class or caste, which may be hard to identify visually, gender differences are immediately perceptible, allowing data collection on whether men or women are speaking at any given moment.

3.2 Agenda-Setting Power

Second, good deliberation is characterized by citizens "listening attentively" to one another out of mutual respect (Mansbridge, 2015, p. 43). That is, participants should acknowledge what is said by others — not merely push their own agenda forward. To capture this concept, we examine whether a given citizen is as likely as another to have his issue addressed by the speakers that follow. Consider the following example from Neganur village, in which citizens are complaining about various public goods and infrastructure needs.

> *Female 1*: There are many wells in our village, but **the wells are without a pulley wheel**. Moreover, since the water is not used for any purpose, it gets wasted. So if you can **de-silt the wells**, we can not only use the water for drinking purposes but for other purposes also…
>
> *Male 1*: The kitchen has been constructed in the *balwadi* [pre-school] in our village. It is not used. Please arrange for the **construction of a toilet for women**. We also need a play ground for games. The canals are muddy. **We have to de-silt the canals. We need a library.** All our children are going to school with a dream of becoming IAS and IPS officers. But to get general knowledge, they need books in the library. Our President has not say 'no' for any of our requests. With the hope that he will definitely do whatever we have asked, I take leave.
>
> *Male (Official)*: We have a library in our *panchayat*. We have arranged for 5 magazines — an English paper, *The Hindu* and 4 Tamil magazines. All the elderly persons and children are reading. I am also asking the officers **to improve the library and have passed resolution** in this regard. We have already **de-silted the canal** and cleaned it under Mahatma Gandhi Rural Employment guarantee scheme.
>
> Viluppuram District
>
> Vallam Block
>
> Neganur Panchayat

Here, a woman raises a particular issue about well water, but before she is able to get a resolution, a man interrupts to raise a separate set of issues, which then generate a response and resolution from the village official. That a speaker is so obviously ignored by other participants represents a marked departure from good deliberation.

More generally, by examining patterns in the topic of discussion across whole assemblies, we can identify the speakers who are most likely to drive conversation. As the example above highlights, we ought to be particularly concerned about the way in which gender my influence agenda setting power — a disparity that has been well documented in other contexts (Karpowitz and Mendelberg, 2014), and that may be present here as well.

3.3 Responsiveness of the State

Finally, good deliberation enables citizens to be active participants in their own governance. This is particularly relevant given the setting studied here, which was explicitly designed so that citizens could play a greater in local development. As described above, the rural Indian *gram sabha* was formalized to give communities greater voice in the development process and to improve governmental transparency and accountability. Indeed, most *gram sabhas* begin with an explicit call for citizen participation; for example, the opening remarks from the village secretary in Ma. Kolukkudi begin as follows:

> *Male (Official)*: This *gram sabha* meeting takes place on the occasion of the 65th Republic Day. This is a special *gram sabha*. I greet the *panchayat* president, women's self help group members and higher officials who have come to participate in this [*sabha*], and I extend a warm welcome. In this *gram sabha* many action plans are adopted. **If you, the people, find merit and demerit, you can discuss frankly and settle [the issue]... You can ask any question; we are duty bound to reply to them.** You can find out mistakes; you can make us feel what is wrong; you can say this is wrong. We are ready to correct our mistakes. If you do not ask [anything], you will not get [anything]...
>
> Cuddalore District
>
> Komaratchi Block
>
> Ma. Kolakkudi Panchayat

While most assemblies begin with such a call, the extent to which officials actually respond to citizen requests varies tremendously. In Mullangudi, for example, the village president actively engages with a citizen who requests the construction of new infrastructure — not only exchanging information about potential sources of land for the requested projects, but also identifying the affected parties and determining who needs to approve of the proposed solution before making a final decision.

> *Male 1*: My name is Veerapandiayan… A **marriage hall is needed for our village**, crematorium is needed. Drainage is needed near the tank. Also, pathway is needed for crematorium. Cement road is needed for both streets…. we place these demands before you [the president]. Importantly, **community hall is necessary. President, you have to respond.**
>
> *Male (President)*: You said that **community hall is needed for the village**. After selecting the place for this, you should ask the village administrative officer. If you give a memorandum to him he will consider the place needed for that and give consent for the place where it can be built. I will get it built without any hesitation… **You have also asked for a marriage hall**. There is a plot for it. But there is no *poramboke* [government] land. There is a *poramboke* [government] land near the temple. In that place there is a public toilet. We do not need that. **All the public are ready to give in writing that [the public toilet] is not needed? Can you get it built there?**
>
> *Male 1*: That is women's sanitary complex. So I cannot do as you say… **The women's self help groups should say that it is not needed…**
>
> *Male 2*: **We will get consent from the women's association.** A toilet facility will come in the marriage hall. Let them use that. There is no problem. That sanitary complex is only lying waste.
>
> *Male (President)*: Your demand is, of course, correct. **But to a build marriage hall, that place is not sufficient**…
>
> Cuddalore District
> Komaratchi Block
> Mullangudi Panchayat

Here, the president acknowledges the male citizen's request for a community hall and a marriage hall, offers a potential solution, and solicits feedback from the community about whether that solution is feasible. In many ways, this back-and-forth reflects the ideal form of deliberation, in

which participants are communicating to reach a mutually agreeable decision, and where citizens are able to actively participate in their governance.

By contrast, the citizens of Veeranam receive no response to their concerns about corruption within their local government. Not only does the president fail to respond to citizen's specific accusation, but the *panchayat* secretary swiftly punts the issue to the end of the meeting, and redirects the conversation to another issue. Perhaps not surprisingly, the meeting ends before the corruption charge has been addressed.

> *Male 1*: So far, **no work has been without bribing anybody**.
>
> *(Crowd murmurs.)*
>
> *Male 2*: Wait. You answer his question.
>
> *Male 1*: So far, has our President done any work without getting a bribe?
>
> *Male 3 (Secretary)*: The answer for this question will be given at the end of the meeting. **Discussion before *gram sabha* now regards unused open bore wells** in public lands and individual lands…
>
> Tiruvannamalai District, Thandarampet Block, Veeranam Panchayat

These starkly different excerpts suggest the meaningful variation in *responsiveness by the state*. As such, our last measure of deliberative quality examines how likely citizens are to receive a relevant response from officials, and how that varies by the gender of the speaker, the content of the speech, or the characteristics of the officials who are present.

4 Data & Measures

To evaluate the quality of deliberation in Tamil Nadu's *gram sahbas*, we recorded, transcribed, and translated the proceedings of assemblies conducted on Republic Day 2014, one of the four mandated days for all villages in the state to hold a *gram sabha*. The full sample, which consisted of 100 such assemblies, was collected as part of a broader impact evaluation of the Pudhu Vaazhvu

Project, a woman-centered poverty alleviation program funded by the World Bank.[9] For this paper, we focus only on villages in the control group to describe what deliberation looks like, absent any additional policy interventions. These 50 villages are spread across 9 districts, chosen to ensure geographic representation.[10]

From these 50 villages, we collected two forms of data: (1) full audio recordings of the *gram sabha*, and (2) a standardized questionnaire to collect information on the attendance of citizens and local officials, on the nature of issues raised by citizens, and demographic data on who raised these issues (gender and caste). This survey data also included a roster of state and local government officials in attendance, how information on the timing of the *gram sabha* was communicated, the physical location of the assembly, and attendance at regular intervals.

In order to implement both the assembly recording and collection of surveys, two field enumerators were assigned to each village — one from outside the village to record data on the issues raised, and another, who was local, to collect attendance data and help identify the speaker.[11] Given that the average attendance across our *gram sabhas* was nearly 120 people, the introduction of a single enumerator from a neighboring village was unlikely to affect local citizens' behavior. The local enumerator, who was necessary to correctly provide information on the participants' positions, only recorded attendance data and assisted the outside enumerator with information on the identities of speakers. Official attendance data in such meetings are typically recorded

[9]Village selection for the impact evaluation leveraged our knowledge of program implementation to reconstruct the selection process, thereby creating a matched sample of comparable treatment and control villages. More specifically, within the set of eligible districts (chosen for geograhpic representativeness, blocks were selected for assignment based on two sets of criterion: (1) a population criterion that equally weighted the SC and the ST population proportions and the number of below poverty line (BPL) households from census data; (2) a set of block level infrastructural variables that measure the quality of infrastructure, public services and industrial backwardness. We generate our matched sample by matching project and non-project blocks within 9 active project districts on these two factors. This process allowed us to nearly replicate the original assignment process for PVP.

[10]Districts include: Cuddalore, Kancheepuram, Nagapa inam, Namakkal, urvallur, Tirunelveli, Tiruppur, Tiruvannamalai, and Vuluppuram.

[11]Since all data had to be collected on a single day, this required a team of at least 200 enumerators — a number larger than any survey firm could provide. Moreover, familiarity with the *gram sabha* meetings was essential to our being able to collect this data accurately and in real time. In order to address both these constraints, we hired and trained local women as our field enumerators. Using these enumerators was advantageous in being able to record the *gram sabha* proceedings without the disruption having an "outside" observer. To maintain independence of the data collection process, however, we ensured that field enumerators who recorded the proceedings of the meeting were assigned collect data from a village in her neighboring, rather than home, district. Enumerators who helped identify the speakers were local residents, as local knowledge is essential in order to do this accurately.

only at the beginning of the meeting, if at all. Where available, our data on attendance at the time the meeting began were cross-validated with this official data by the external enumerator.

The audio recordings of meetings were transcribed and translated into a corpus of textual data by an independent survey firm. Transcripts included verbatim transcriptions and translations of the assemblies, as well identifiers on the gender and position of each speaker.[12] These transcripts form the backbone of the following analysis. Each "document" in the corpus consists of an uninterrupted speech by a administrator, elected official, or citizen. From the 50 village assemblies, we have 1,736 such documents, each of which is identified by the position and gender. Table 1 presents descriptive information about the number and character of documents within each village. Assemblies have relatively good attendance (with 123 people attending on average), and consist of roughly 34 speeches, of which one-third are made by women. Citizens deliver just over half (54 percent) of speeches, with the remainder distributed between administrators (29 percent) and politicians (16 percent).

Table 1: Village-Level Summary Statistics

	Mean	Std. Dev.	Median	Min	Max.
Total Attendance	123.51	83.77	103.00	25.00	462.00
Number of Speeches	34.72	22.27	29.50	4.00	97.00
Speech Length	109.92	158.22	71.68	25.60	1090.75
Percent Female	0.32	0.21	0.30	0.00	0.92
Percent Citizen	0.53	0.14	0.53	0.20	0.88
Percent Admin	0.31	0.17	0.28	0.00	0.75
Percent Politician	0.16	0.16	0.14	0.00	0.50

4.1 A *Text-As-Data* Approach to Deliberation

While these descriptive statistics allow us to examine *who* speaks within the *gram sabha*, to understand the agenda-setting power of speakers and the state's responsiveness to citizen issues, we

[12]The original data contain rich information on the position of each speaker, from school headmasters and ration shop owners, to elected officials and administrators. For the purpose of our analysis, we code the speaker into three types: (1) administrators, who include all persons employed by the state or local government (e.g. *panchayat* secretary, block development officer, school headmaster, village administrative officer, etc.); (2) elected officials, who include all persons who are in elected office (e.g. president, vice president, ward member); and (3) citizens, all people who neither hold a formal government job or elected office. These may include members of social groups (e.g. SHGs) and other organizations, but are not direct employees of the state.

also examine *what* is said. More specifically, we draw on natural language processing methods that use *text as data* to better understand the content and character of speech. By treating our transcripts as textual data, we can estimate an unsupervised topic model, which is a computational tool to "discover" a set of a salient topics within a document collection.

While the complexity of language will never be fully captured by an automated method such as ours, this sort of analysis can help to overcome meaningful challenges in hand-coded analyses of deliberation — including biases due to the researcher's priors and inconsistencies in coding across various settings. Hand-coding begins with a pre-determined set of categories into which documents are classified — based on their content, tone, etc. By contrast, the unsupervised approach allows us to learn the underlying features of the text without imposing our own assumptions. Though this is necessarily imperfect and requires ex-post validation, it can be useful for identifying previously understudied or theoretically new aspects of speech in these settings, as well as scaling up large volumes of textual data.

Prior to estimating the topic model, we pre-process the set of 1,736 documents such that infrequent words (those with fewer than 5 occurrences in the corpus) and certain proper nouns, as well as overly common "stopwords" are removed.[13] Infrequent and proper nouns are often names of beneficiaries, townships, or neighborhoods that are mentioned in meetings, but are not in common usage. The remaining terms are then "stemmed" such that various forms of the same word are counted together.[14] We also exclude numbers. From the original set of citizen speeches, 1,700 documents remain after processing.

Using this processed corpus, we adopt the approach of Roberts et al. (2016) to estimate a *Structural Topic Model* (STM), which allows us to inductively discover topics, or clusters of words that commonly co-occur within the data. The model outputs (1) a set of topics, which are defined as mixtures of words, where each word has a probability of belonging to each topic, and (2) for each document analyzed, the proportion of the document associated with each topic. As such,

[13] Stopwords are overly common words which are filtered out before the use of natural language processing methods to improve the estimation process. They often include functional words, including articles, prepositions, basic verbs such as "is," and pronouns.

[14] For example "repair," "repairs," "repairing" and "repaired" all stem to "repair."

each document is characterized by a vector of proportions, representing the share of the document associated with each topics. Using STM, we identify a set of 15 topics[15] discussed within the *gram sabhas*, and explore how these topics vary with the identifiable characteristics of speakers and villages — including the gender of the speaker, the position of the speaker, and the reservation status of the village council president (female and/or Scheduled Caste). The generated topics are presented in Table 2, which lists the highest probability words in each topic, as well as the FREX words, which are both frequent and exclusive, thereby identifying the words that distinguish topics.[16] Figure 1 presents the distribution of these topics across the full corpus.

Table 2: Top Word Stems by Topic

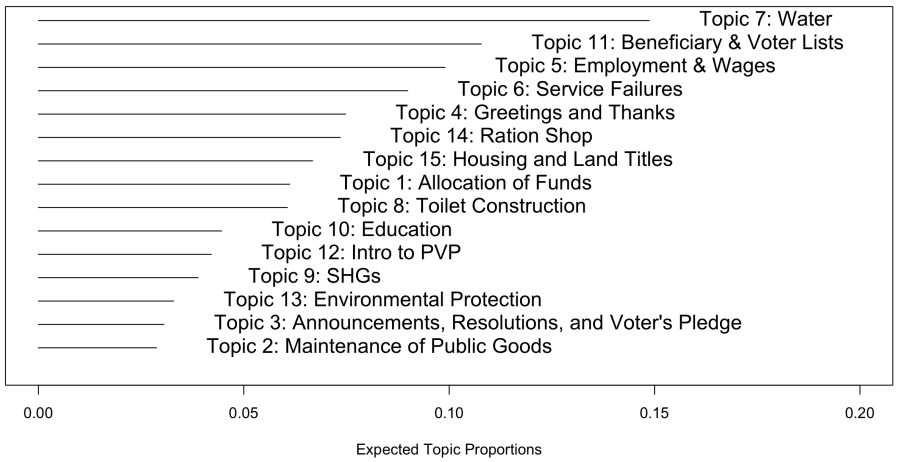
Topic	Top Word Stems
Water	Highest Prob: water, road, tank, street, get, facil, arrang FREX: road, water, fix, tank, pipe, street, drink
Beneficiary & Voter Lists	Highest Prob: get, give, given, card, name, person, list FREX: give, get, card, name, given, poverti, receiv
Employment & Wages	Highest Prob: ask, peopl, work, one, told, talk, know FREX: talk, told, ask, whatev, know, one, mistak
Service Failures	Highest Prob: come, tell, want, say, money, done, commot FREX: say, tell, commot, money, want, come, bus
Greetings and Thanks	Highest Prob: presid, take, meet, panchayat, request, offic, member FREX: request, thank, hospit, particip, presid, conduct, meet
Ration Shop	Highest Prob: day, need, time, proper, shop, ration, petit FREX: day, need, time, proper, petit, ration, shop
Housing and Land Titles	Highest Prob: hous, place, construct, month, patta, make, everi FREX: patta, said, construct, hous, gave, remain, make
Allocation of Funds	Highest Prob: rupe, scheme, govern, panchayat, fund, amount, provid FREX: rupe, amount, allot, govern, fund, thai, scheme
Toilet Construction	Highest Prob: build, toilet, land, built, govern, pay, use FREX: build, built, toilet, pay, land, hall, maintain
Education	Highest Prob: school, villag, children, women, panchayat, complex, pass FREX: school, children, complex, sanitari, pass, educ, villag
Intro to PVP	Highest Prob: group, loan, plf, regard, bank, vprc, inform FREX: loan, plf, bank, vprc, regard, certif, appoint
SHGs	Highest Prob: women, group, peopl, panchayat, help, list, self FREX: self, award, poor, status, help, women, survey
Environmental Protection	Highest Prob: scheme, hous, work, employ, subject, canal, select FREX: canal, gandhi, subject, employ, guarante, propos, set
Announcements, Resolutions, and Voter's Pledge	Highest Prob: sabha, gram, approv, panchayat, inform, place, report FREX: sabha, gram, approv, audit, read, report, pledg
Maintenance of Public Goods	Highest Prob: panchayat, expens, discuss, use, regard, plastic, mainten FREX: plastic, mainten, expens, releas, avoid, discuss, instal

A key challenge in the *text as data* literature, particularly with unsupervised methods, lies

[15]Since this method assumes a fixed, user-specified number of topics, we first assess the relative performance of models under a range of values ($K \in 5, 50$), and choose $K = 15$ for the preferred specification. This specification performs relatively well on a number of empirical tests (residuals fit, held-out likelihood, semantic coherence, and exclusivity of topics), and yields topic clusters consistent with our substantive understanding of village assembly discussions. For robustness, we also show full results for K=20 and K=30 models in Appendix B.

[16]See Roberts et al. (2016) for a fuller explanation of FREX.

Figure 1: Distribution of Topics Across Corpus



in how to interpret the topics that are produced. Here, we use highest probability and FREX words, as well as example documents associated with each topic, to generate a substantive label for each topic. Consider the top documents most associated with the two most frequent topics in the corpus:

Topic: Water

"I request you to repair the road in Mukkarumbur East colony. Drinking water, drinking water, drinking water, drinking water, water problem of colony has to be set right."

"If the tap is in regular use, water will be in good condition. You are not using the tap regularly so water is not in good condition."

"Please repair the pump in the junction of 3 roads. There is no water. Or, the motor has to be repaired. we have to go around for water."

Topic: Beneficiary and Voter Lists

"Checking the voters' list, and adding names in voters list for 2014: Those who have completed 18 years recently may apply now for addition of their name. The corrected list after addition and deletion of names, up to October 31st has been received... If anyone has come from outside to the village, they could also add their name in that special camp. Application was given to the eligible persons. Now we will readout the names, please listen..."

"As per the scheme, priority should be given to differently-abled persons. 2 or 3 persons have given a list in our Panchayat. It is not known who all have given their

names. NREGS cards have been given to 9 villages. NREGS cards should definitely be given to differently-abled persons. They should be paid salary even when they simply stay at the site. This mission is mainly to identify the differently-abled persons. All should participate in the peoples status survey. Then only we will be able to differentiate the poor and the differently abled persons."

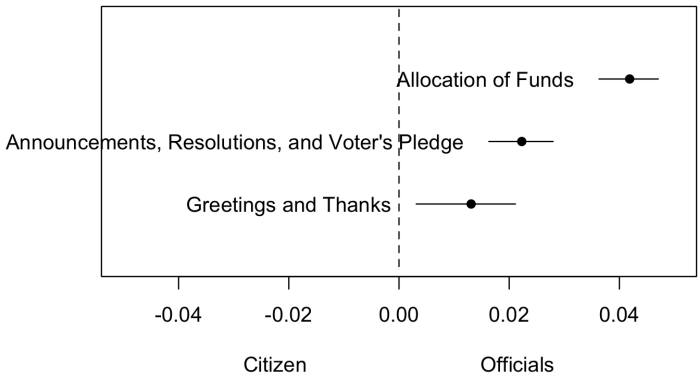
"I now read the newly included voters name at No.14, Seliambedu village. Amsaveni daughter of Ramakrishnan. Suganya daughter of Gnaprakasam. Gayathri wife of Kamalakannan. Kanimozhi wife of Devaraj. Aruldass. Babu son of Gnanaprakasam. Sridhar son of Ragupathi. Kalaiselvan son of Madasami. Arul son of Panneer Selvam. Thangamuthu son of Arumugam. The voters ID cards are with me. If anybody's name is omitted, you get the form from me and fill up the form."

4.1.1 Topic Validation

While the topics identified by this method are largely consistent with what we would expect in a *gram sabha* meeting, we further validate the topics generated in two ways. First, as a test of predictive validity, we examine whether the topics that capture proforma features of the assembly are indeed more likely to be discussed by officials, rather than citizens. More specifically, the topic model identifies a set of standard remarks — such as the reading of resolutions, the formal greetings and votes of thanks, and discussion of government funding allocation — as distinct topics. If these topics capture the rote features of assemblies as they are conducted, these should be primarily spoken by officials, who are responsible for convening and adjourning the meeting, as well as sharing information about recent public expenditures. Figure 2 plots the difference between the expected proportion of these proforma topics between citizens and officials (both elected and administrative) for the documents in the corpus. As expected, these proforma speeches are all *significantly* more likely to be raised by officials, suggesting that the topics reflect our substantive interpretation of their content.

Second, we also validate the topics against the survey data collected by enumerators sent to each village. More specifically, as part of the data collection process, enumerators were asked to record information on the types of issues raised during the assemblies. Given this data, we can coarsely examine whether the type and frequency of issues counted in the survey-collected data correspond to their counterparts in transcript data. This comparison, while helpful, is necessarily

Figure 2: Topical Prevalence of Proforma Topics, by Position of Speaker



Note: The figure above plots the expected topic proportion and 95% confidence interval for each proforma topic, by the speaker's position. Coefficients greater than zero indicate topics that are more frequently raised by officials, while those less than zero indicate topics that are more frequently raised by citizens.

imperfect for two reasons: First, while the survey-collected data merely count *whether* an issue was raised within a village assembly, the transcript data shares are calculated based on the *proportion of documents* associated with that topic. As such, the transcript data will overweight topics that are discussed at length or by many speakers, relative to those that are briefly mentioned. Second, while many topics have clear analogues across the datasets, others are coded differently across the two sources. For example, whereas the survey data identify a single topic for environment and sanitation issues, in the transcript data, the inductive process of topic modeling distinguishes between environmental protection and the maintenance of public goods, including sanitation and recycling issues. Given these discrepancies, we find the closest possible analogues, or aggregate where necessary. There are also a handful of topics for which clear analogues are not available. For example, while the unsupervised topic model identifies "Voter and Beneficiary Selection" this does not come up in the survey data as an explicit issue — likely because the process of identifying the target poor is a regular procedure at most *gram sabhas*, and therefore was not picked by enumerators as an explicit issue.

Despite these differences in measurement, however, we can still evaluate whether the relative

Table 3: Validation of Topical Prevalence Using Survey Data

	Transcript Data	Survey Data
Water	0.1487	0.1743
Wages and Employment	0.0990	0.0647
Housing	0.0668	0.0540
Ration Shop	0.0735	0.0625
Toilets	0.0606	0.0625
Environment and Sanitation	0.0617	0.0511
Education	0.0446	0.0945
Funding	0.0612	0.0260
Women's Issues	0.0810	0.1261

Note: This table presents the relative frequency of topics across both our survey and transcript data. Categories collected in the survey data were post-coded by issue area. For transcript data, documents were coded as a mixture of topics. As such, we take the share of all documents associated with that topic. Direct comparisons across the dataset was not possible for all topics, as there were only a limited set of clear analogues.

frequency of specific topics (water, housing, etc.) are roughly similar across the two datasets (Table 3). The similar proportions (both in levels and rank) for topics with ready analogues suggests that our unsupervised methods reflect substantively what hand-coded results would yield.

4.2 Measures of Deliberative Equality

Having validated the output of the topic model, we can generate a set of quantitative measures to capture deliberative quality across our sample of villages. Deliberative quality here is assessed based on the three metrics identified above — namely, the equality of participation, agenda-setting power, and responsiveness by the state.

To evaluate the equality of participation, we look at both the frequency and volume of speech by gender and position. That is, we can examine counts for the *number of speakers* with each demographic category of interest (men versus women, citizens versus officials). We also examine the *length* of speech as a proxy for the amount of floor time that speakers occupy.

To better understand who drives the topic of conversation, we examine the sequence of speech topics to estimate the likelihood that a given speech is followed a speech that addresses the same topic. Since any given speech is modeled as a mixture across multiple documents, we focus on the

primary and secondary topics that are associated with each topic. More specifically, we generate three measures for agenda setting power: (1) an indicator if either the the primary or secondary topic of speech i is the same as the primary or secondary topic of speech $i + 1$ (*nextSame*); (2) the share of the next five speeches that address either the primary or secondary topic of speech i (*prop5same*); and (3) the length of speeches for which the primary or secondary topic of speech i is continues to be addressed (*lengthTopic*). Given the frequency of topic changes, we only measure this for a maximum of 5 subsequent speeches. Based on these measures, we can then examine whether features of the speaker or assembly are associated with greater agenda-setting power within the *gram sabha*.

Lastly, since a key objective of the *gram sabha* is to provide citizens with the opportunity to speak directly to the state — to ask questions, to demand accountability, to voice complaints — one measure of deliberative influence is whether state officials directly address citizen concerns. To measure this, we generate a series of indicator variables to capture (a) whether a citizen's speech is followed by an official, either elected or administrative, and (b) whether that response addresses the topics raised by the citizen. The latter consideration ensures that officials are not merely co-opting the conversation by switching topics, but actually engaging with the concerns raised by citizens.

5 Patterns of Deliberative Quality

Using these measures — for equality of participation, agenda-setting power, and ability to address the state — we can now examine patterns of deliberative quality within Tamil Nadu's *gram sabhas*.

5.1 Equality of Participation

The most basic measure of equality relates to whether everyone has relatively equitable access to the floor. To examine this, we first look at the share of speeches within each *sabha* that are made by citizens versus officials, as well as for men versus women. Given that a key aim of

the assembly is to give citizens a chance to voice needs to officials, *and* for officials to respond, we would expect a healthy *sabha* to have roughly equal shares of speeches from both groups. Indeed, we find that on average, citizens deliver 55.41 percent of speeches, while officials deliver the remaining 44.59 percent. These raw speech shares support the notion that the *gram sabha* is not merely a state-dominated space, in which officials disseminate info or overtake the space; rather, citizens are able to speak up and engage others in a deliberative fashion.

In terms of gender equity, however, we focus on speeches made by citizens and find that differences in speaking frequency are quite stark — a full 65 percent of speeches are made by men, while women speak only 35 percent of the time (Row 1, Table 4). Of course, such a disparity may simply reflect the shares of men and women in attendance; as such Table 4 also presents differences in speaking frequency normalized by percent of men / women in attendance (Row 2), and normalized by percent of men / women among voters (Row 3). For these measures, a value of 1 indicates that women (or men) are speaking as frequently as their population share would suggest, while values greater than 1 indicate they women (or men) are speaking more frequently than their population share would warrant. Even with these normalizations, however, we see that the gender gap remains wide and significant. In part, this is because the attendance gap between men and women is not pronounced in Tamil Nadu, with women often attending the *sabha* in greater numbers than men.

Table 4: Frequency of Citizen Speeches, by Gender

	Mean, Male Speeches	Mean, Female Speeches	t-statistic	p value
Raw Differences	0.6623	0.3377	7.1362	0.0000
Normalized by Attendance Share	2.5208	0.5979	3.7940	0.0004
Normlized by Population Share	1.3202	0.6801	6.8730	0.0000

To understand what might be driving the relative infrequency of female speech, we perform a series of multivariate regressions, which allow us to correlate village-level factors with the likelihood of female speech. Here, we look not just at citizens, but also at administrators and politicians to examine what role formal status may have in improving the women's voice. In particular, we examine three factors that theoretically should improve the frequency of women's speech: the

presence of a female president, the level of female attendance, and village-level female literacy. Though female attendance and literacy are likely endogenous, we can intepret the coefficient on the female incumbent causally. In doing so, we follow a significant body of literature that leverages the *as-if-random* assignment of gender quotas in Indian local government (Chattopadhyay and Duflo, 2004; Bhavnani, 2009; Ban and Rao, 2008b; Besley et al., 2005) to determine the effect of the incumbent's gender on local governance outcomes. The specific process for assigning women's reservations is described in the Tamil Nadu Panchayats Rules of 1995, Section 7.3, Rule 7, which mandates the creation of a "list of Wards or Panchayats arranged in descending order of the percentage of...Women," and then details the rotation of reservations every 10 years by proceeding down the list. Since the percentage of women in the population is roughly the same across the state's Panchayats, assignment is *as-if-random*.

Results are presented in Table 5. Models 1, 3, and 5 present the basic results: While female citizens speak slightly more often when women attend the *gram sabha* in greater numbers, they are not more vocal in the presence of a female president or in more educated villages. Among politicians and administrators, the presence of a female president does positively correlate with female politician speech, likely due to the actions of the president herself. These results hold even when we control for the overall "backwardness" of the district, using an indexed score that includes demographic and infrastructural variables (Models 2, 4, and 6).[17]

In addition to looking at the frequency of speech, we can also examine whether the total floor time occupied by men and women is roughly equal. Given that women speak significantly less often than men, they would have to speak *longer per speech* to equalize floor time — but perhaps consistent with our expectations, they do not. Women on average speak a mere 55 words per speech, where as men average roughly 77 words per speech (Table 6). In other words, these *per speech* disparities only exascerbate the overall gender gap in floor time within each village. If

[17]Variables used for the indexed score include: the number of villages in the block, average distance of the village to the nearest town, total population,the population shares of the Scheduled Caste and Scheduled Tribe communities, the number of households below the poverty line, the percentage of villages in the block which had primary and middle schools, commercial banks, cooperatives, agricultural and non-agricultural societies, medical facilities and drinking water facilities.

Table 5: Frequency of Female Speech

	Dependent variable:					
	Female Speech					
	Citizens	Citizens	Admin.	Admin.	Politicians	Politicians
	(1)	(2)	(3)	(4)	(5)	(6)
Female President	0.10	0.11	0.21***	0.19***	0.90***	0.88***
	(0.08)	(0.09)	(0.09)	(0.08)	(0.07)	(0.08)
Female Attendance	0.001**	0.001**	0.0003	0.0000	−0.0002	−0.0002
	(0.0005)	(0.001)	(0.001)	(0.001)	(0.0004)	(0.0004)
Female Literacy	0.34	0.42	0.06	−0.14	−0.11	−0.34
	(0.40)	(0.41)	(0.66)	(0.81)	(0.43)	(0.46)
District FE	✓	✓	✓	✓	✓	✓
Backwardness Score Control		✓		✓		✓
Observations	913	913	473	473	322	322

Note: *p<0.1; **p<0.05; ***p<0.01. Robust Standard Errors, clustered at the district, in parenthesis. The Backwarndess Score is an measure of village level development, calculating using demographic and infrastructal variables, including the share of population belonging to the Scheduled Castes and Tribes, as well as indicators for the presence of a primary or secondary school, hospital or medical clinic, and bank.

we compare average male to female floor time (measured by total number of words spoken by men versus women within a village), we see that men almost always occupy significantly more floor time than women (Table 7). The one exception is female politicians, who still speak less on average than male politicians, though the differences are not statistically significant. That female *politicians* are able to approach parity with men in terms of floor time suggests that providing women with a formal role or position may be important to closing the gender gap in deliberation.

Table 6: Length of Speeches, by Gender

	Mean, Male Speeches	Mean, Female Speeches	t-statistic	p value
All Speakers	77.3307	55.0601	2.7035	0.0069
Citizens Only	34.1925	32.0133	0.6526	0.5142
Administrators Only	152.8220	184.6585	-0.9009	0.3690
Politicians Only	70.1786	41.0845	2.2511	0.0251

Table 7: Assembly Floortime, by Gender

	Mean, Male Floortime	Mean, Female Floortime	t-statistic	p value
All Speakers	1758.5000	659.6200	6.1285	0.0000
Citizens Only	399.4600	233.0698	3.1440	0.0023
Administrators Only	1204.3778	590.5172	3.4689	0.0009
Politicians Only	529.0385	343.1765	1.1740	0.2478

5.2 Agenda-Setting Power

While the mere amount of speech — in terms of frequency or volume — can be a useful indicator of deliberative equality, neither provides a full picture of a speakers' ability to *influence* discussion. After all, a long-winded speech may be ignored just as easily as a short one. To that end, we examine the patterns in agenda-setting power. Here, we are specifically concerned with whether there is a disparity between men and women in their ability to re-direct conversation toward their own ends. For this, we examine three measures of agenda setting power — whether a speech is followed by one on the same topic (*nextSame*), the share of the following five speeches that are on that same topic (*prop5same*), and the number of uninterrupted speeches that continue to discuss that topic (*lengthTopic*).

Table 8: Agenda Power by Position (All Speeches)

	Mean, Officials	Mean, Citizens	t-statistic	p value
Next Topic Same	0.5309	0.6006	-2.8386	0.0046
Perc. Same (Next 5 speeches)	0.4473	0.5152	-4.3642	0.0000
Length Topic	1.1620	1.3709	-2.6726	0.0076

Table 9: Agenda Power by Position (New Topics Only)

	Mean, Officials	Mean, Citizens	t-statistic	p value
Next Topic Same	0.4698	0.5287	-1.5152	0.1303
Perc. Same (Next 5 speeches)	0.3870	0.4773	-3.8086	0.0002
Length Topic	0.9457	1.1205	-1.5720	0.1165

Tables 8 through 10 present an initial look at the results. Strikingly, across all measures of agenda setting power, citizens seem to have a much greater influence on the direction of conversation than do officials (Table 8). When a citizen raises a topic, the probability that the following speech will continue that topic is nearly 7 percent higher than when officials raise a topic; similarly, citizen speeches are likely to generate conversation for a greater share of the following speeches and for longer uninterrupted stretches. Of course, this may simply be a function of officials' resolution power, or ability to definitely end a subject on a particular matter, thus providing an open avenue for a new subject to be raised. To address this concern, we do two things: first, we include topic fixed effects to make sure that it is not the specific content that is driving the re-

sults (Table 11), and second, limit our sample to only those speeches in which a speaker is raising a new topic, and even then, the patterns generally hold (Table 9).[18] This suggests that the *gram sabha* is not merely a state-dominated space, in which officials disseminate info or overtake the space. Rather, citizens are able to raise coherent issues and have others engage in a deliberative fashion.

Table 10: Agenda Power by Gender (Citizen Speeches)

	Mean, Male Speakers	Mean, Female Speakers	t-statistic	p value
Next Topic Same	0.6150	0.5785	1.1011	0.2712
Perc. Same (Next 5 speeches)	0.5234	0.5025	1.0094	0.3132
Length Topic	1.4444	1.2592	1.7064	0.0883

With respect to gender, Table 10 initially suggests that differences across the sexes are not striking — this, despite the fact that women speak significantly less often than men. However, when we break down the results by position to see if these patterns in agenda-setting power holds across both citizens and officials, the patterns suggest important gendered differences. In Table 11, we regress our measures of agenda setting power on the interaction between an indicator for female speakers, and an indicator for a citizen speaker. Here, we find that male citizens are the *most* likely to set the agenda; they are 10 percentage points more likely than the male politicians (the omitted category) to have the speech following theirs stay on the same topic; given that only 56 percent of male politician speeches drive the conversation, this is an 18 percent increase in the agenda setting power of male citizens — suggesting that the common man is incredibly powerful within the *gram sabha*. Notably, the dominance of male citizens persists to the inclusion of topic fixed effects, suggesting it is not that men are merely raising particular issues that others care about.

The dynamic for women, however, is markedly different. Though village citizenship confers a relative advantage on men, it tends to disadvantage women. While male citizens are more likely to drive the agenda than male politicians, the same does not hold true for female citizens relative to female politicians. To better understand the ways in which one's position may condition the effect

[18]Here, a new topic is defined simply as a deviation from the previous speech; the issue may have been raised at a much earlier point within the assembly.

Table 11: Agenda Setting Power, by Gender and Position

	Dependent variable:					
	Next Same		% Next 5 Same		Length Topic	
	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.07	0.06	0.02	0.02	0.13	0.10
	(0.05)	(0.04)	(0.04)	(0.03)	(0.17)	(0.14)
Citizen	0.11***	0.08***	0.08***	0.06***	0.32***	0.24***
	(0.03)	(0.03)	(0.02)	(0.02)	(0.07)	(0.08)
Female x Citizen	−0.11*	−0.10*	−0.05	−0.04	−0.33	−0.31
	(0.06)	(0.05)	(0.05)	(0.04)	(0.23)	(0.20)
District FE	✓	✓	✓	✓	✓	✓
Backwardness Score Control	✓	✓	✓	✓	✓	✓
Topic FE		✓		✓		✓
Female President Control	✓	✓	✓	✓	✓	✓
Observations	1,651	1,651	1,456	1,456	1,605	1,605

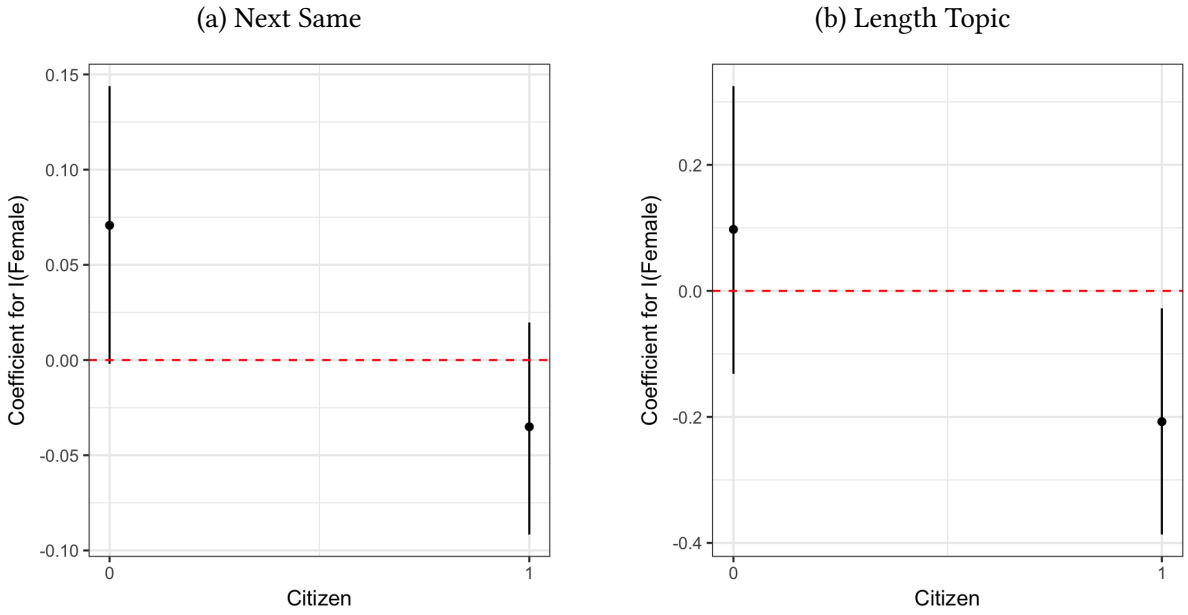
Note: *p<0.1; **p<0.05; ***p<0.01. Robust Standard Errors, clustered at the district, in parenthesis. The Backwarndess Score is an measure of village level development, calculated using demographic and infrastructal variables, including the share of population belonging to the Scheduled Castes and Tribes, as well as indicators for the presence of a primary or secondary school, hospital or medical clinic, and bank.

of gender, we plot the interaction between gender and position in Figure 3. Among politicians, women are slightly more likely to shape the agenda than men (Figure 3a); by contrast, among citizens, women are consistently *less* likely than men to drive the agenda, and for the length of the topic discussed, these differences are statistically significant at the 0.05 level (Figure 3b).

Finally, to ensure that these results are robust to alternative specifications of the topic model itself, we re-run the analysis with varying number of topics ($K =\in \{20, 30\}$) and find largely consistent results (presented in Appendix 2B).

To be fair, disparities in agenda-setting power may be inconsequential from a development perspective if men and women tend to discuss the same issues; however, if there are issues that are disproportionately addressed by women, who are also more likely to get ignored, then we may be particularly worried about development outcomes. To examine whether men and women do in fact overlap or differ in the issues they discuss, we plot the expected difference in topic proportions between male and female citizens, along with the 95 percent confidence interval, for all non-proforma topics (Figure 4). While we see no significant differences between men and women for the bulk of issues (sanitation, employment, service failures, housing, etc.), we do see stark differences on particularly *gendered* issues, including self-help groups (women) and the

Figure 3: Agenda-Setting Power by Gender and Position



Note: The figures above plot the interaction between gender and position on agenda setting power within the *gram sabha*. The x-axis charts the whether speakers are citizens, and the y-axis graphs the coefficient for the effect of being a woman and the 95 percent confidence interval. The model specification includes controls for village level demographics and infrastructure, district fixed effects, and topic fixed effects.

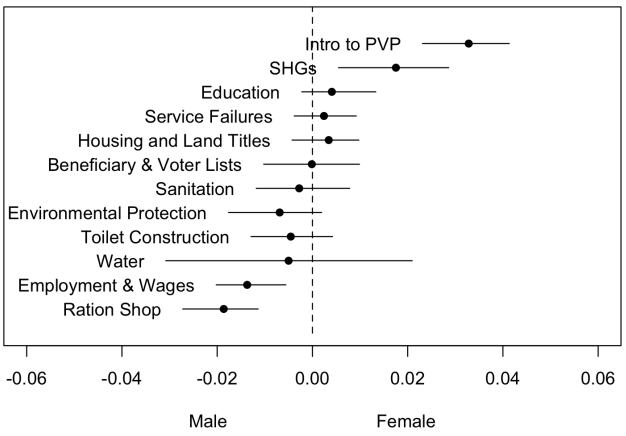
introduction of PVP (which is a women-centered poverty alleviation project). To the extent that female citizens are more likely to be ignored in the *gram sabha*, then, we ought to be concerned that issues that uniquely impact women will be the least likely to be resolved.

5.3 Responsiveness of the State

While the ability to drive conversation is a meaningful indicator of one's influence in a deliberative setting, perhaps of even more relevance for the *gram sabha* is whether citizens are able to elicit a meaningful response from state actors. That is, when citizens raise an issue to administrators or politicians, how likely are they to get an on-topic response, and does this responsiveness vary by gender?

To examine state responsiveness, we generate an indicator variable which takes on a value of 1 if a citizen's speech is followed by an administrator or politician *and* addresses either the primary or secondary topic of that speech. Table 12 examines citizen speeches and presents basic

Figure 4: Topical Prevalence of Issues, by Gender (Citizens Only)



Note: The figure above plots the expected topic proportion and 95% confidence interval for each issue area, by the speaker's gender. Data include only citizens speeches. Coefficients greater than zero indicate topics that are more frequently raised by women, while those less than zero indicate topics that are more frequently raised by men.

differences in means across the genders both on whether an official responded, and whether that response was on topic. Results are further broken down by the official's position: administrator or politician. While men and women are equally likely to get a response from officials, men are significantly more likely to get an *on-topic* response. Interestingly, this difference is driven primarily by politicians; while politicians respond in a relevant manner to male speakers 70 percent of the time, they only respond to women 49 percent of the time. By contrast, administrators respond to all citizens on topic about 60 percent of the time.

Table 12: Likelihood of Official Response, by Gender

	Mean, Male Citizens	Mean, Female Citizens	t-statistic	p value
Any Official Response	0.5657	0.5541	0.3503	0.7262
On Topic Official Response (All)	0.6316	0.5415	2.0461	0.0414
On Topic Politician Response	0.7034	0.4860	3.5253	0.0005
On Topic Administrator Response	0.5730	0.6020	-0.4674	0.6408

To be fair, these differences may be driven simply by whether the topic raised is new to the discussion — that is, if women are bringing up issues that few other people care about, politicians may be less likely to respond than if the issue were more popular. To address this, we not only control for whether a topic is "new" to the discussion (Table 13, Model 1), but also include topic

fixed effects (Table 13, Model 3); unsurprisingly, new topics are 20 percentage points less likely to elicit a response from politicians; however, even when we control for this, women are 18 percentage points less likely than men to receive a response from their elected official.

Table 13: Official Responsiveness, by Gender

	Dependent variable:					
	On Topic Politician Response			On Topic Admin. Response		
	(1)	(2)	(3)	(4)	(5)	(6)
Female	−0.18***	−0.27***	−0.28***	−0.003	−0.17***	−0.20***
	(0.05)	(0.03)	(0.04)	(0.06)	(0.05)	(0.04)
Female President		−0.10	−0.12		−0.11	−0.08
		(0.07)	(0.08)		(0.10)	(0.10)
New Topic	−0.20***	−0.20***	−0.20***	−0.12	−0.12	−0.09
	(0.04)	(0.04)	(0.04)	(0.09)	(0.10)	(0.08)
Female x Female President		0.18***	0.20***		0.43***	0.42***
		(0.08)	(0.09)		(0.07)	(0.08)
District FE	✓	✓	✓	✓	✓	✓
Backwardness Score Control	✓	✓	✓	✓	✓	✓
Topic FE			✓			✓
Observations	251	251	251	259	259	259

Note: *p<0.1; **p<0.05; ***p<0.01. Robust Standard Errors, clustered at the district, in parenthesis. The Backwarndess Score is an measure of village level development, calculating using demographic and infrastructal variables, including the share of population belonging to the Scheduled Castes and Tribes, as well as indicators for the presence of a primary or secondary school, hospital or medical clinic, and bank.

5.4 Effect of Mandated Representation on Deliberative Equality

These patterns suggest that women, and women citizens in particular, are at a considerable disadvantage in the *gram sabha*. They speak less, are less likely to drive conversation, and are less likely to get a response from government officials. And these disadvantages hold even in *sabhas* when we control for the issues that are raised. Indeed, it was in recognition of these deeply gendered inequalities that the Government of India pro-actively designed the *gram sabha* with quotas for women to serve on the village council and as village president. Here, we examine whether the presence of a female incumbent — to lead the discussion, to respond to citizens, and to act as a role model for female villagers — has an impact on the measures of deliberative equality explored above. Importantly, the assignment process for women's reservations, established by the *Tamil Nadu Panchayats Act* (1994), is as-if-random — allowing us to interpret these effects in a causal

manner (Ban and Rao, 2008b).

First, we find that the presence of a female president has no discernible impact on the likelihood that female citizens participate within the *gram sabha* (Table 4, Models 1 and 2). That is, the mere presence of a female president does not seem to encourage more women to attend or speak within the *gram sabha*, suggesting that the "role model" effects of such incumbents may not be sufficient to affect deliberative participation in the short term. Though these results might seem surprising given the optimism around female quotas, they are quite consistent with evidence from Bengal in Chattopadhyay and Duflo (2004) and South India in Ban and Rao (2008a), which find no effect of female reservation on the political behavior of ordinary women.

By contrast, we find that the presence of a female president does have a meaningful and significant impact on the ability of women to be heard and responded to. Focusing only on citizen speakers, Table 14 regresses our measures of agenda-setting power on indicators for gender of the speaker and the gender of the village council president. As expected, women speakers are at a considerable disadvantage relative to male speakers (roughly 14 percentage points less likely to drive the next issue discussed), but this disadvantage is essentially reversed under female presidents. For clarity, we visualize the interactions in Figure 5, which plots the coefficient estimates for the effect of being a female speaker under male and female presidents respectively. While under male presidents, women are significantly less likely than men to set the agenda, under female presidents, differences between the genders are not only smaller in magnitude, but statistically insignificant.

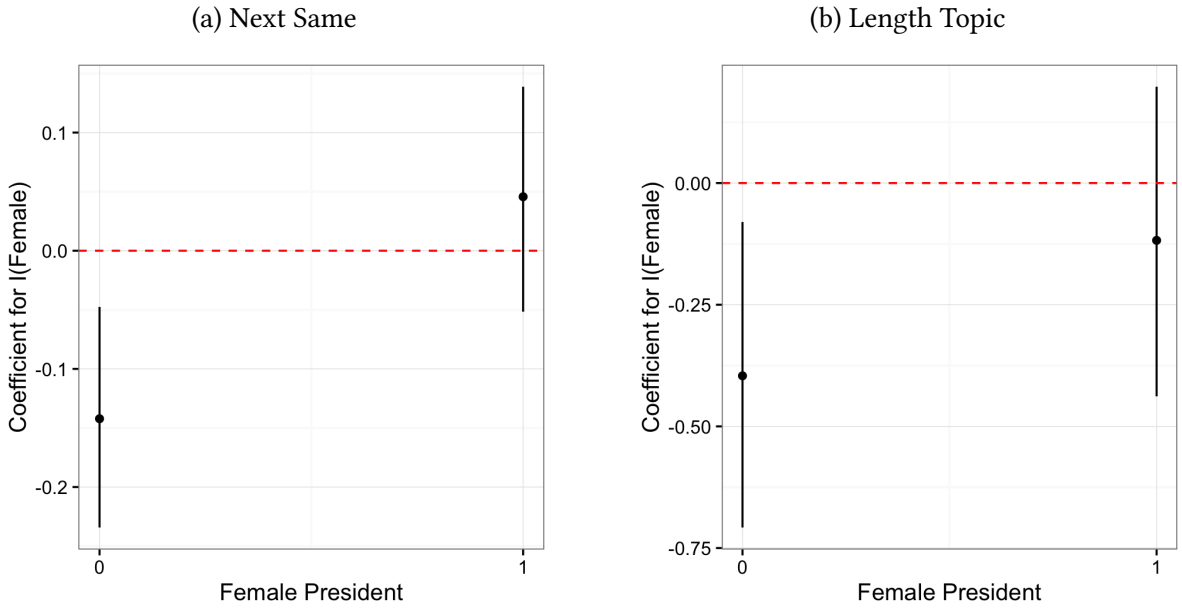
To better understand whether and how female presidents themselves might be elevating the voices of other women, we also look at whether women citizens are more likely to generate a relevant response from state officials. Table 13 presents the results for both politician responsiveness (Models 1 - 3) and administrator responsiveness (Models 4 - 6). The data are striking: overall, women are 18 percentage points less likely than men to receive a relevant response from elected officials – a meaningful decline given that men receive topical responses 70 percent of the time. Importantly, however, the presence of a *female* president can ameliorate the neglect that female

Table 14: Agenda Setting Power, by Gender of Speaker and Gender of President

	Dependent variable:					
	Next Same		% Next 5 Same		Length Topic	
	(1)	(2)	(3)	(4)	(5)	(6)
Female	−0.14***	−0.14***	−0.05	−0.05	−0.37***	−0.40***
	(0.03)	(0.03)	(0.04)	(0.04)	(0.11)	(0.12)
Fem. Pres.	−0.09*	−0.09*	−0.07	−0.08*	−0.33	−0.33*
	(0.05)	(0.05)	(0.05)	(0.05)	(0.20)	(0.19)
Female x Fem. Pres.	0.20***	0.19***	0.02	0.02	0.30***	0.28***
	(0.05)	(0.06)	(0.05)	(0.04)	(0.13)	(0.10)
District FE	✓	✓	✓	✓	✓	✓
Backwardness Score Control	✓	✓	✓	✓	✓	✓
Topic FE		✓		✓		✓
Observations	924	924	818	818	895	895

Note: *p<0.1; **p<0.05; ***p<0.01. Sample include only speeches delivered by citizens (all administrator and politician speech is excluded). Robust Standard Errors, clustered at the district, in parenthesis. The Backwarndess Score is an measure of village level development, calculated using demographic and infrastructal variables, including the share of population belonging to the Scheduled Castes and Tribes, as well as indicators for the presence of a primary or secondary school, hospital or medical clinic, and bank.

Figure 5: Agenda-Setting Power by Gender of Speaker and Gender of President



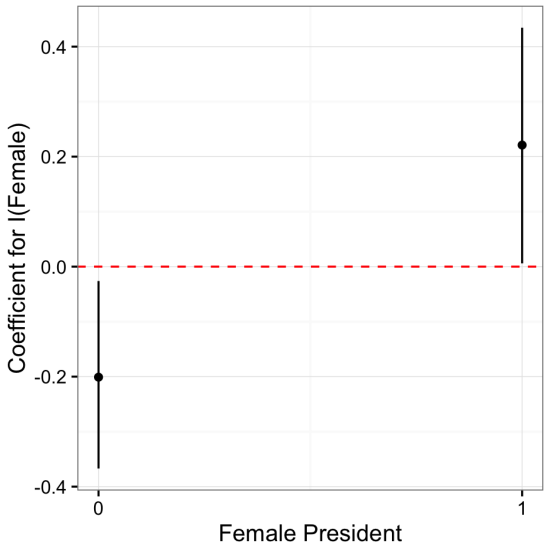
Note: The figures above plot the interaction between speaker's gender and president's gender on agenda setting power within the *gram sabha*. The x-axis charts the whether the president is a woman, and the y-axis graphs the coefficient for the effect of being a woman and the 95 percent confidence interval. The model specification includes controls for village level demographics and infrastructure, district fixed effects, and topic fixed effects.

citizens face. Basic results are reported in Models 2 and 4 of Table 13, while Models 3 and 5 also include fixed effects for the topic discussion. For clarity, we plot the interaction between an indi-

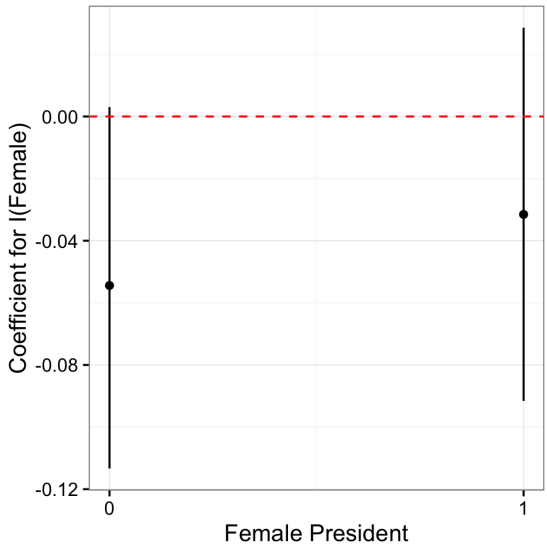
cator for female speakers and an indicator of a female president in Figure 6, which shows that the female incumbents significantly reduce the differential treatment that men and women receive from the state. In fact, Figure 6a shows that women are slightly *more* likely than men to receive a topical response from elected officials when a female president presides over the *gram sabha*. Interestingly, among (largely male) administrators, the gender differentials under male and female presidents follow the same general pattern. Even though differences are not statistically significant (Figure 6b), this still suggests that administrators follow the lead of female presidents.

Figure 6: State Responsiveness by Gender of Speaker and Gender of President

(a) On Topic Response from Politicians



(b) On Topic Response from Administrators



Note: The figures above plot the interaction between speaker's gender and president's gender on responsiveness by the state. The x-axis charts the whether the president is a woman, and the y-axis graphs the coefficient for the effect of being a woman and the 95 percent confidence interval. The model specification includes controls for village level demographics and infrastructure, district fixed effects, and topic fixed effects.

6 Discussion

Taken together, these patterns suggest that we need to pay more attention to the ways in which inequalities among citizens may affect the ability of deliberative democratic institutions to deliver on their promise — to engage citizens in the development process and produce more inclusive development outcomes. Of course, scholarship on Indian local government has examined these

inequalities in development outcomes, including those along gender lines, but very little research has been able to open the "black box" of the *deliberative* bodies that are at the core of India's decentralization effort. In this paper, we do just that. By using *text-as-data* methods on an original corpus of village assembly transcripts from rural Tamil Nadu, we show that these assemblies are not merely empty spaces where state officials bluster and read banal announcements; rather, they provide meaningful forums for citizens to challenge their elected officials, demand transparency, and provide information about very real local development needs — from water and sanitation issues, to wage payments and government service failures.

We also show, however, that *among citizens*, inequalities in power and status meaningfully impact the citizens' ability to be heard. More specifically, we show that across multiple measures of deliberative influence, women are at a considerable disadvantage. They are less likely to be heard, less likely to drive the agenda, and less likely to receive a relevant response from state officials. Indeed, even when we account for the particular issues raised, women still remain at a disadvantage — often ignored while their male peers receive a direct response. In the excerpt below, for example, a woman raises a genuine concern about the lack of ration shop facility in the village, to which the official does not respond; a man then raises the *exact same issue* after her, and receives an immediate response from the elected official, who promises to speak to higher-ups about what can be done to address the issue:

> *Female 1:* In Pattupalli village, so far, **there is no fair price shop.** They are keeping it in the Women's Health Building. Women are quarrelling. The village people want it built new. There is fight in the panchayat. So people are going to the neighboring village. But the patta [titled] land owners are preventing them from using their land for going to the next village, so resolution should be passed for construction of a ration shop here.
>
> *Male 1:* For so many years, **there is no ration shop here**. Only rental shops are here. So long, it was in rented place and now it is kept in Women's Health Association. Now, women ask for the building and want a fair price shop built. So there is a lot of problem. Please establish for us a ration shop.
>
> *Male (President):* **Regarding this ration shop, we should talk with MLA** [Member of the Legislative Assembly] and BDO [Block Development Officer]. The request will be made…

Thiruvallur District
Minjur Block
Sengayam Panchayat

To be fair, one might think the above excerpt is not problematic insofar as the male politician eventually responded to her substantive concern about the ration shop. However, from the perspective of deliberative equality, for women to influence conversation as democratic equals, they should not have to wait for a man to elevate their concern before an official responds. These patterns of gendered discourse are perhaps unsurprising, but they do reiterate a need to better design deliberative institutions to elevate the voices of women. In fact, our evidence suggests that women's voices are more likely to be amplified with female presidents — under whom women are more likely to be heard and more likely to receive a state response. In the excerpt below, for example, we see a female president specifically calling out women's needs and using that as justification for a proposed resolution around liquor shop and ration shop concerns.

> *Female 1*: **We need a ration shop for our village**. We find it difficult to go up to Devireddikuppam. We have to walk for 7 days in a month. We canfit walk such a long distance keeping the rice bag in hands. You have to find a solution for this problem and, at least, arrange a part time ration shop in our village. **You take action for removing the liquor shop.** We canfit use the road after 7 oficlock. Drunken people are giving much trouble and using vulgar words.
>
> *Female (President)*: **Women are talking much about the ration shop and liquor shop.** We will include these subjects in the resolution…
>
> Tiruvanamalai District
> Thandarampet Block
> Kolamanjanur Panchayat

That the president explicitly elevates the requests of the women who are talking in her village underscores the notion that descriptive representation can improve the vertical communication between citizen and politician. However, our evidence suggests that this is no panacea for the deeper problem of women's general silence. While women in Tamil Nadu are more likely to attend the *gram sabhas* than their male peers, they are significantly less likely to speak — even when

a female president sits in power. This lack of participation has been documented in a variety of settings, both in the developed and developing world, and is undoubtedly driven by a combination of factors, from information and resource constraints to cultural biases against women. But it also underscores a deeper challenge in deliberation — namely, that using one's voice can be a costly exercise, and one that differentially burdens those who are already least-advantaged. Whether and how the common woman can be encouraged to overcome that cost is a deeply important question facing development practitioners, and one that will undoubtedly impact the ability of local government to address women's needs.

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Appendices

A Topic Model Validation Using Survey Data

In addition to the predictive validation exercises, we also validate the output of our topic model by comparing the distribution of topics generated against topics coded by survey enumerators who recorded the proceedings of each *gram sabha*. Though this comparison is useful, it is necessarily imperfect because clear analogues do not always exist across the topic model output and the enumerators pre-determined categories. As such, where possible, we aggregate topics for comparison. Table A.1 presents the topics from the topic model, along side the survey data topic used for comparison. Certain categories across both data sources had no clear comparison, and were thus excluded from the validation exercise.

Table A.1: Topic Comparisons for Validation

Transcript Topics	**Survey Data Topics**
Allocation of Funds	*Panchayat* Expenses
	Taxes
Maintenance of Public Goods	Sanitation and Environment
Environmental Protection	
Employment & Wages	Employment
Water	Water
Toilet Construction	Toilets
Education	Education
	Childcare
Ration Shop	Ration Shop
Housing and Land Titles	Housing
Analogues not available	
Resolution Announcements	
Greetings and Thanks	
Beneficiary and Voter List	
Intro to PVP	
SHGs	
Service Failures	
	Health
	Roads
	Women's Issues
	Elderly Care
	Animal Care
	Electricity
	Voter ID Cards
	Village Organizations

B Results Under Alternative Topic Model Specifications

To ensure that the main results for agenda setting power and state responsiveness are not sensitive to a particular topic model specification, we re-run our topic model with $K = 20$ and $K = 30$ topics, generate new measures of deliberative influence, and present results below.

B.1 Agenda Setting Power

We first re-examine how agenda-setting power varies with the gender and status of the speaker. Consistent with the main results presented (for $K = 15$ topics), we see that even under these alternative model specifications, male citizens are more likely to drive the agenda than male politicians, and female citizens are less likely to drive the agenda than female politicians. Point estimates all follow the patterns presented in the main results (Table 11), but lose statistical significance for $K = 30$.

Table B.1: Agenda Setting Power, by Gender and Position ($K = 20$)

	Dependent variable:					
	Next Same		% Next 5 Same		Length Topic	
	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.13***	0.11***	0.09***	0.07***	0.29*	0.24
	(0.05)	(0.05)	(0.03)	(0.03)	(0.17)	(0.16)
Citizen	0.11***	0.10**	0.11***	0.09***	0.26***	0.25***
	(0.05)	(0.05)	(0.03)	(0.02)	(0.11)	(0.09)
Female x Citizen	−0.13*	−0.13*	−0.13***	−0.11***	−0.29	−0.27
	(0.07)	(0.07)	(0.05)	(0.04)	(0.21)	(0.19)
District FE	✓	✓	✓	✓	✓	✓
Backwardness Score Control	✓	✓	✓	✓	✓	✓
Topic FE		✓		✓		✓
Female President Control	✓	✓	✓	✓	✓	✓
Observations	1,651	1,651	1,456	1,456	1,607	1,607

Note: *p<0.1; **p<0.05; ***p<0.01. Robust Standard Errors, clustered at the district, in parenthesis. The Backwarndess Score is an measure of village level development, calculated using demographic and infrastructal variables, including the share of population belonging to the Scheduled Castes and Tribes, as well as indicators for the presence of a primary or secondary school, hospital or medical clinic, and bank.

Table B.2: Agenda Setting Power, by Gender and Position ($K = 30$)

	Dependent variable:					
	Next Same		% Next 5 Same			Length Topic
	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.07*	0.05	0.05*	0.02	0.21***	0.13
	(0.03)	(0.04)	(0.03)	(0.03)	(0.09)	(0.09)
Citizen	0.10***	0.07*	0.07***	0.04***	0.24***	0.18***
	(0.04)	(0.04)	(0.02)	(0.02)	(0.08)	(0.08)
Female x Citizen	−0.04	−0.03	−0.04	−0.03	−0.21	−0.19
	(0.07)	(0.08)	(0.05)	(0.05)	(0.18)	(0.19)
District FE	✓	✓	✓	✓	✓	✓
Backwardness Score Control	✓	✓	✓	✓	✓	✓
Topic FE		✓		✓		✓
Female President Control	✓	✓	✓	✓	✓	✓
Observations	1,651	1,651	1,456	1,456	1,624	1,624

Note: *p<0.1; **p<0.05; ***p<0.01. Robust Standard Errors, clustered at the district, in parenthesis. The Backwarndess Score is an measure of village level development, calculated using demographic and infrastructal variables, including the share of population belonging to the Scheduled Castes and Tribes, as well as indicators for the presence of a primary or secondary school, hospital or medical clinic, and bank.

B.2 State Responsiveness

Next, we examine whether women are less likely to receive a relevant response from state officials, as they do in the main results. Once again, point estimates are consistent with two broad patterns: first, female citizens are significantly less likely to receive a topical response from elected male politicians; and second, they are significantly more likely to receive a relevant response from female incumbents. While evidence of women's relative neglect is consistent and statistically significant across both topic model specifications, the coefficient on female president responsiveness to female citizens loses statistical significance in the $K = 30$ specification.

Table B.3: Official Responsiveness, by Gender ($K = 20$)

	Dependent variable:					
	On Topic Politician Response			On Topic Admin. Response		
	(1)	(2)	(3)	(4)	(5)	(6)
Female	−0.09	−0.17*	−0.20***	−0.06***	−0.10	−0.16***
	(0.09)	(0.10)	(0.08)	(0.03)	(0.06)	(0.07)
Female President		0.01	0.02		0.13*	0.13
		(0.10)	(0.11)		(0.07)	(0.08)
New Topic	−0.19***	−0.18***	−0.19***	−0.09	−0.09	−0.06
	(0.05)	(0.05)	(0.06)	(0.07)	(0.07)	(0.07)
Female x Female President		0.23	0.21		0.12	0.16
		(0.17)	(0.17)		(0.14)	(0.15)
District FE	✓	✓	✓	✓	✓	✓
Backwardness Score Control	✓	✓	✓	✓	✓	✓
Topic FE			✓			✓
Observations	233	233	233	262	262	262

Note: *p<0.1; **p<0.05; ***p<0.01. Robust Standard Errors, clustered at the district, in parenthesis. The Backwarndess Score is an measure of village level development, calculated using demographic and infrastructal variables, including the share of population belonging to the Scheduled Castes and Tribes, as well as indicators for the presence of a primary or secondary school, hospital or medical clinic, and bank.

Table B.4: Official Responsiveness, by Gender ($K = 30$)

	Dependent variable:					
	On Topic Politician Response			On Topic Admin. Response		
	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.03	-0.12^{***}	-0.15^{**}	0.06	-0.01	-0.003
	(0.07)	(0.04)	(0.07)	(0.08)	(0.07)	(0.06)
Female President		-0.16^{*}	-0.15^{*}		0.13^{*}	0.09^{**}
		(0.08)	(0.09)		(0.07)	(0.04)
New Topic	-0.08	-0.09	-0.02	-0.06	-0.06	-0.03
	(0.06)	(0.07)	(0.08)	(0.07)	(0.07)	(0.07)
Female x Female President		0.35^{***}	0.33^{***}		0.18	0.18
		(0.10)	(0.13)		(0.14)	(0.12)
District FE	✓	✓	✓	✓	✓	✓
Backwardness Score Control	✓	✓	✓	✓	✓	✓
Topic FE			✓			✓
Observations	233	233	233	262	262	262

Note: *p<0.1; **p<0.05; ***p<0.01. Robust Standard Errors, clustered at the district, in parenthesis. The Backwarndess Score is an measure of village level development, calculated using demographic and infrastructal variables, including the share of population belonging to the Scheduled Castes and Tribes, as well as indicators for the presence of a primary or secondary school, hospital or medical clinic, and bank.