Politicians' Complaint Response: E-Governance and Personal Relationships

William O'Brochta* Published at *Governance*

When do politicians respond to individuals' public service complaints? Technological solutions — termed e-governance — have been shown to help increase responsiveness in some developing nations where they serve to connect individuals, politicians, and bureaucrats for the first time. I argue that in country-contexts like India, where personal connections to bureaucrats and politicians are common, politicians are less responsive to complaints registered with egovernance systems than to complaints delivered via personal connections. Using data from public complaints, complaint responses, and field interviews in Delhi, I show that politicians are not responsive when complaints submitted to e-governance systems increase, but that they are responsive to complaints submitted to them through personal connections. This result suggests that the introduction of an e-governance system does not necessarily increase government performance. Politicians are incentivized to be more responsive to complaints registered directly with them because those complaints are more likely to generate electoral benefits.

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*School of History and Social Science, Louisiana Tech University, 1308 West Railroad Avenue, Ruston, Louisiana 71272, 318-257-2890, obrochta@latech.edu.

Public service delivery is one of the most fundamental functions of local government, but the provision of such services in developing nations is often sporadic and inconsistent. Politicians and bureaucrats face an enormous need for services in political systems frequently experiencing extreme resource constraints (e.g., Osah and Pade-Khene 2020). Within such systems, how do politicians respond to public service requests, complaints, and grievances?

An emerging body of research suggests that technological solutions called e-governance provide a way for individuals to record their public service complaints, enabling politicians to learn about critical issues in their constituencies and to respond quickly and effectively. Many governments — often with the help of non-governmental organizations and academic researchers — have set-up centralized systems where complaints are recorded and handled. What I call centralized complaint tracking systems (CCTS) are essentially databases with user interfaces wherein individuals can submit public service complaints, bureaucrats can address these complaints, and politicians can monitor the complaint resolution process, getting involved as needed. While complaint management has long existed in public administration (Tiwari 1975), new technology has facilitated integrated systems that allow users to track the status of a complaint more easily than in the past (Garg 2017; Sjoberg, Mellon and Peixoto 2017). Individuals typically access the CCTS via phone, using a mobile app or website, or in person at a government office and provide basic information about the complaint in order for it to be recorded (Callen et al. 2016; Lu and Johnson 2016). All manner of complaints about government services are centralized into a single, Internet-based system: individuals can request services ranging from getting a new street light, to reporting nuisance properties, to complaining about missed trash collection.

On the face of it, Internet-enabled complaint tracking systems are a major advance in politicians' ability to respond to public complaints (Sheryazdanova and Butterfield 2017). Yet, scholars focused on their implementation mostly in the African context tend to find that these programs are not successful long-term (Buntaine, Hunnicutt and Komakech 2020; Buntaine, Nielson and Skaggs 2019). One reason for this could be that, prior to the implementation of such systems, constituents had no way to field complaints to politicians (Grossman, Humphreys and Sacramone-Lutz 2014). Initial access using these systems improves short-term outcomes (Grossman, Platas and Rodden 2018), but is not sustainable (Grossman, Humphreys and Sacramone-Lutz 2020). Grossman, Humphreys and Sacramone-Lutz (2020, 3) conclude that the introduction of information and communication technology into the complaint management process "does not make nonresponsive politicians responsive" to public concerns (see also Dutil et al. 2008). These systems are an example of induced political participation, wherein governments promote participation in e-governance systems even though their commitment to improving government services is at best unclear and members of the public are often not convinced that such systems will be consistently utilized (Mansuri and Rao 2012; Wong and Welch 2004).

I look to India to explore another potential factor complicating CCTS implementation: existing relationships between individuals, bureaucrats, and politicians before the introduction of an e-governance system. Many developing nations have had existing state-society relationships long before such systems are implemented. Indeed, the correlation between engaged public participation in government and GDP per capita is 0.40, indicating that plenty of low-income

countries have high levels of public engagement.¹ In India, relationships between politicians and their constituents have been established and refined over many decades, and they are an example of a constituent-led — or bottom-up — form of government accountability (Berenschot 2010; Mansuri and Rao 2012). These relationships have developed organically, wherein the public creates systems to improve government functions, and often include the involvement of friends, acquaintances, and/or political brokers to help constituents reach politicians and bureaucrats (e.g., Auerbach 2020). As such, studying complaint response in India allows me to consider the impact of a CCTS where its introduction is not tied to the public and politicians establishing relationships for the first time.

In such a system, Indians have options when they have a complaint that they want to get resolved. They can choose to rely on their connections and take their complaint to a politician or bureaucrat whom they know either directly or indirectly and/or they can submit the complaint to the CCTS.² While using political or bureaucratic connections is efficient, a CCTS is more equitable for those without such connections. Politicians are similarly torn. They want to be responsive to individuals who contact them directly because these individuals (and perhaps others who know about the contact) will likely tie their decision to vote for the politician to their

¹ The correlation is between engaged society and GDP per capita using version 12 of the Varieties of Democracy project (V-Dem). Engaged society measures public input into policy changes and is the closest V-Dem measure to participation in grievance redressal.

² See Kruks-Wisner (2020) for an excellent, different approach to this topic focused on public perceptions of police grievance hearings and Bhattacharjee and Mysoor (2016) on education grievances.

complaint response. However, amid an overwhelming demand for services, many politicians also want to find some way to fairly distribute resources and that goal may be more likely to be achieved through a CCTS.

I argue that, in contexts like India with relatively strong existing public-politician relationships, these relationships are likely to continue after the introduction of a CCTS. The volume of complaints that individuals make with politicians and bureaucrats outside of the CCTS means that politicians choose to respond to those contacts because they are more likely to provide electoral benefits instead of responding to complaints registered with the CCTS. The CCTS is, therefore, largely sidelined, despite both individuals and politicians supporting its use. To test this Hypothesis, I gather new, geolocated data from Delhi's CCTS where I match public complaints to politician responsiveness measured by questions politicians raise to bureaucrats about public service issues. I do not find evidence that politicians respond to the total number of CCTS complaints by increasing question asking. I then use government meeting minutes and qualitative interviews to show that politicians are responsive to complaints delivered to them personally, implying that politicians prioritize responding to these complaints over those submitted to the CCTS. The results suggest that e-governance technology may not be a solution to increase politician responsiveness if individuals continue to complain to politicians and bureaucrats outside of the e-governance system. These findings may also help to explain why CCTS' lack long-term stability in Africa (e.g., WorldBank 2016). A CCTS facilitates an initial relationship between constituents and politicians, but both actors quickly realize that they are more likely to benefit by establishing personal connections with one another outside of the CCTS.

The Role of E-Governance

I consider politician responsiveness to individuals' complaints in developing nations where a CCTS is introduced into an environment with pre-existing relationships between individuals, bureaucrats, and politicians. In this context, resources are scarce, so politicians are not able to respond to all complaints. I first briefly describe how members of the public decide how to submit a complaint. I then use this as the basis for arguing that politicians are more likely to respond to complaints submitted via personal connections than to complaints submitted via the CCTS.

When people face a problem with public service delivery, their goal is to express their complaint in a way that will maximize the chances that the complaint is addressed. There are two primary complaint mechanisms: submitting a complaint to a bureaucrat or a politician using a personal connection or submitting a complaint via the CCTS. People with personal connections will use them to submit complaints. Personal connections include directly or indirectly knowing a politician or bureaucrat or operating through a brokered connection (Auerbach and Kruks-Wisner 2020; Auerbach and Thachil 2018; Kruks-Wisner 2020; Min 2015). There is nothing stopping a person who submits a complaint using a personal connection from submitting the same complaint using the CCTS, but personal connections create investment on the part of the politician or bureaucrat to respond (e.g., Jansson and Erlingsson 2014). People know that politicians want to be responsive to personal connections to claim credit for resolving the complaint in a way that hopefully encourages the complainant to support the politician. Those individuals without personal connections are left with the choice of submitting their complaint

using the CCTS or not submitting the complaint at all. The supplemental information (SI.3) describes more about how constituents select a complaint submission option.

Given these options for submitting complaints, how will politicians respond? Politicians respond to constituents' complaints because they hope that doing so will help their re-election chances (Banerjee et al. 2018; Bohlken 2019; De and Nag 2016). If a complainant is wealthy, then politicians have incentives to get their complaint addressed quickly in exchange for monetary or political support (Cavallo, Lynch and Scull 2014). Socially or economically disadvantaged individuals rely on politicians to facilitate public service delivery, so politicians can expect that doing so will help them politically (Anand 2012; Baud and Nainan 2008; Das 2009; de Wit 2009; Edelman and Mitra 2007; van Teeffelen and Baud 2011). Indeed, many politicians are interested in providing development funding and projects to disadvantaged areas under the promise from political brokers that residents of these areas will support them in the future. Politicians may reach out to neighborhood leaders of key areas where they want to increase electoral support and offer help directly.

These incentives suggest that politicians — absent any resource constraints — want to be responsive to all forms of public complaints, including those recorded on a CCTS (Bussell 2010, 2012). Indeed, Hanssen (2007) argues that politicians are *more* interested in becoming involved in the complaint resolution process when complaints are recorded on a CCTS. Accessing these systems provides politicians with information about the overall variety and the status of complaints that they can then use to make informed decisions (Haque 2002). Additionally, politicians can more easily take on a watchdog role by monitoring the bureaucracy and exposing issues when using a CCTS (Ahn and Bretschneider 2011; Raffler 2022).

In most developing contexts, resource constraints mean that the number of complaints far exceeds politician capacity (Dasgupta and Kapur 2020) such that politicians are forced to selectively respond to complaints. As a result, politicians must prioritize responding to complaints that will provide them with the most benefit at the least cost. I argue that benefit is measured primarily by the chance that responding to a complaint will garner the politician political support. Politicians are re-election seeking and so want to prioritize responding to complaints that will help their re-election chances or the chances of their political party (Bussell 2019, see also Crisp and Simoneau 2018; Papp 2020). In other words, politicians want to respond to complaints that facilitate credit claiming (Jackson 2008). Credit claiming in responding to complaints delivered via personal connections is unambiguous (e.g., Grossman and Slough 2022; Gulzar and Pasquale 2017). Since there is no way for a complaint delivered via a personal connection to be resolved without politician involvement, complainats know that the politician took action to resolve the complaint if it did indeed get addressed.

Claiming credit for resolving a complaint submitted to the CCTS is more difficult. Bureaucrats may resolve CCTS complaints on their own, without politician involvement. Because of this, if a politician helps to resolve the complaint, the complainant is unsure whether the politician deserves credit or whether bureaucrats were singularly responsible. Further, the CCTS is an impersonal system that does not allow politicians to engage directly with constituents. Taken together, these factors mean that constituents are less likely to provide politicians with an electoral benefit when a complaint submitted to the CCTS is resolved compared to when a complaint is submitted directly via personal connections.

Politicians receive so many complaints that the time that they have to spend on any one complaint is limited (Bussell 2019). As such, complaints that are received in an easy-to-

understand way and that can be addressed quickly are easier for politicians to respond to than are other types of complaints. While the CCTS provides complaints in a standard format, politicians must log-in to an account with the CCTS, find complaints for their constituency, read them, and then follow the proper protocol of raising applicable complaints to bureaucrats. This process is more technically complex and may take more time than maintaining a list of complaints brought directly to the politician through personal connections. Such a list is easy to create and simple to send over to a bureaucrat with some regularity. Thus, while the CCTS does have some organizational advantages to creating a list of complaints delivered by personal connections, the cost of responding to complaints is not necessarily lower when using the CCTS.

The benefit of prioritizing responding to complaints submitted through personal connections is much higher than the CCTS and the cost is about the same or lower. This means that politicians will prioritize complaints submitted through personal connections first before addressing those submitted to the CCTS (Church 1973; de Wit 2009; Mohan, Cutrell and Parthasarathy 2013). Even if politicians want to re-direct all complaints into the CCTS in order to manage them more efficiently, existing public-politician relationships make this goal very difficult.

Hypothesis: Politicians will be less responsive to complaints using the centralized complaint tracking system than to complaints delivered to them through personal connections.

Complaint Management in India

I study public complaints in urban municipal governments. Large municipal governments in India — called Municipal Corporations (MCs) — are tasked with providing individuals with basic public services (Datta 1995).³ One of the primary goals of a municipal corporation is to manage public service delivery. Elected representatives to the municipal corporation are called municipal corporators. Prior to the institution of a CCTS, municipal corporators were responsible for acting as an intermediary between constituents and bureaucrats in order to provide services. This role involved processing government paperwork as well as forwarding complaints to appropriate bureaucratic agencies (e.g., Berenschot 2010). Under this system, individuals established meaningful relationships with politicians, and politicians relied on their reputation for interfacing with the municipal bureaucracy to ensure re-election.

In 2011, members of the Indian parliament proposed a bill mandating that national, state, and local governments develop a process for individuals to report public service complaints.⁴ While the bill never passed, it represented the beginning of a push toward increasing transparency in government and the ability of the public to have their grievances redressed. As a result, many government departments, alongside state and municipal governments, began implementing centralized complaint tracking systems to address public grievances quickly and efficiently.

Surat and Rajkot are two municipal corporations in the state of Gujarat widely recognized for successfully implementing a well-functioning CCTS. In Surat, their CCTS system was

³ Respondents 2 and 3. 2019. Interviewed by Author. Delhi.

Respondent 12. 2020. Interviewed by Author. Delhi. Interviews approved by the Institutional Review Board #201910066.

⁴ "The Right of Citizens for Time Bound Delivery of Goods and Services and Redressal of their Grievances Bill, 2011," Lok Sabha Bill No. 131 of 2011.

established in 2010 with a phone hotline and has since expanded to allow members of the public to report grievances by phone, text, through a complaint app, on a website, or in person. All information is centrally processed by Surat government staff through a complaint dashboard. Surat reports that 97% of complaints are resolved on average and that the longest complaint resolution time is about 5 days (Patel et al. 2021). Both Surat and Rajkot are some of the only municipal corporations to publish publicly available data on their complaint response (Bhatt 2021; Gohil 2021).

Even in these successful cases, the CCTS' can become overwhelmed with requests. For example, daily complaint data from Surat shows that the coronavirus pandemic prompted an exponential increase in the number of unresolved complaints, with pending complaints rising from a typical average of around 1,500 to more than 5,000 in December 2020. More importantly, Surat and Rajkot represent the best and most utilized CCTS' in India. State-level complaint data from January 2016 to November 2019 indicates that 18 (50%) of the 36 states and union territories in India addressed fewer than 50% of complaints received during this period (Bagga 2019). What is worse is that 14 states had more than 50% of unaddressed complaints reported to them at least a year prior. Clearly, CCTS' throughout India are failing to address complaints quickly, if at all.

I focus on complaints registered in Delhi, the capital of India and one of the world's largest urban areas. Municipal governance of the National Capital Territory of Delhi is split between five bodies: the New Delhi Municipal Council, which governs central Delhi; the Delhi Cantonment Board, which governs military areas; and the North, South, and East Delhi Municipal Corporations. Data for this study comes from the CCTS in the latter three bodies. The

three municipal corporations are responsible for local governance for the overwhelming majority of people living in Delhi.

Each municipal corporation is comprised of corporators who represent individual constituencies and are elected in single member district plurality elections every five years. Constituencies are grouped together into wards, with multiple corporators representing adjacent constituencies serving on a ward committee whose job is to manage public service requests within the ward (Shah and Bakore 2006).⁵ Corporators can also serve on corporation-level committees including a standing committee, the highest form of elected governance in the corporation.⁶

Individuals can choose to submit a complaint to the CCTS by using various mobile applications, by calling complaint hotlines, and by completing written forms. Each complaint is assigned an identification number that the complainant can use to check on the status of the complaint. Complaints submitted to the CCTS are recorded at the ward level (12 wards in Delhi). One reason for this is purely convenience: Delhi municipal corporations have established ward level offices (called Zonal Offices) to collect and process complaints for individuals in the constituencies that comprise a given ward. When individuals report a complaint, they are directed to their Zonal Office and, therefore, the complaint is registered at the ward level. Complaints are then assigned to a low-level bureaucrat to address with a deadline for examining

⁵ Many MCs operate with a ward committee for each constituency, but Delhi is set-up differently.

⁶ Respondents 2 and 3. 2019. Interviewed by Author. Delhi.

Respondent 13. 2020. Interviewed by Author. Delhi.

the complaint and taking corrective action (Marathe et al. 2016; Mohan, Cutrell and Parthasarathy 2013). However, a high percentage of complaints are closed without ever being resolved (Narayanan 2010). Municipal corporators' role in this system is to monitor the complaints in the CCTS submitted from their constituency and to raise those complaints that are not redressed promptly by asking questions of bureaucrats during municipal corporation committee meetings. Given the tendency of bureaucrats to close complaints without resolving them, there is a lot of room for corporators to facilitate public service delivery through the centralized complaint tracking system if they so choose.

I test my Hypothesis in this context in two steps. First, I determine whether corporators respond to complaints registered with the CCTS. The evidence shows that corporators are not responsive to such complaints. Then, I establish that corporators are responsive to complaints submitted to them through personal connections without going through the CCTS. Taken together, these results suggest that politicians are differentially responsive, in line with my theoretical expectations. Corporators respond to complaints submitted to them through evidence that corporators are responsive to complaints submitted to them through the CCTS.

Centralized Complaint Tracking System Responsiveness

I assess corporators' responsiveness to complaints registered with the CCTS using a unique dataset from Delhi on public complaints and municipal corporator performance, measured by the number of questions corporators ask during corporation meetings, from 2018 and 2019. These data were collected by a non-profit organization through the use of Right to Information Act requests. See SI.1 for details on the data collection.

Complaints

Public complaints from the CCTS are available for a one year period from April 2018 to April 2019. During this period 86,492 complaints were registered with Zonal Offices in the North, South, and East Delhi Municipal Corporations. The fact that there were so few complaints for a city with so many people (over 20 million) is evidence that individuals use the CCTS as an avenue of last resort. Complaints are relatively evenly distributed throughout Delhi, with most wards having between 8% and 10% of the total number of complaints.

Along with the ward where the complaint was recorded, the CCTS provides a description of the agency responsible for handling the complaint and a description of the complaint. There are 160 different complaint descriptions, and neither the descriptions nor the listed agencies match the agencies and descriptions provided in the database of corporator questions described below. I standardized the complaint descriptions into 15 categories so that complaints and questions can be linked based on the topic of the complaint or question. Complaints are not evenly distributed across topics: pest, Solid Waste Management (SWM), and drainage complaints are extremely common. Some topics like education, welfare, and environment received few complaints, though this is partially based on the way in which complaints were categorized --- complaints about garbage and waste were categorized as SWM not environment, for example. The most common complaint descriptions were for nuisance animals, dead animals, drainage, and garbage in the road.

The analysis relies on a sample of 51,161 complaints where the location of the complaint could be successfully geocoded to a corporators' constituency. As is clear from the tables in SI.3, the complaints successfully geocoded are not representative of all complaints. These complaints

come from systematically different wards, so including ward fixed effects in the empirical models will be necessary. Complaints successfully geocoded did not differ significantly in type compared to those complaints not geocoded. Of the fifteen complaint types, the difference in the proportion of complaints in a particular category never exceeded 2%. Hence, although the complaints are not geographically representative, they are representative in type. I aggregate complaints to the constituency-level for the main analysis.

Questions

I assess politician responsiveness to complaints lodged in the CCTS by examining the content of questions that corporators raise in public corporation meetings. Corporators are expected to raise complaints submitted to the centralized complaint tracking system by asking questions during public corporation meetings.⁷ Engaging with public complaints in this way is part of corporators' regular job duties and is their assigned role in responding to complaints registered with the CCTS. By raising complaints, corporators draw bureaucrats' attention to particular issues and hopefully spur action to resolve the complaint for the complainant.

Municipal corporators publicly ask questions in three main venues. First, corporators can speak during a municipal corporation general body meeting — the local government equivalent of a legislative assembly meeting. Second, each municipal corporator is a member of various corporation committees. These committees range in importance from the standing committee (the main corporation decision-making body) to committees for parks, language, and waste collection. Committees meet with varying frequency, providing differing opportunities to ask

⁷ Respondents 2 and 3. 2019. Interviewed by Author. Delhi.

questions. Finally, each corporator is a member of a ward committee, where most constituency related business is meant to be discussed.⁸

In terms of question asking activity, corporators asked 19,501 questions during the one year period from April 2018 to April 2019, a ratio of one question for every five complaints. The general body meeting and standing committees dominate the dataset, each accounting for about 13% of questions asked. Beyond these two committees, ward committees are the most popular question-asking venue, accounting for 30% of the questions asked across all twelve ward committees.

Corporators' question asking frequency varied dramatically. For example, Shikha Roy (a standing committee member) asked the most overall questions (614), but she asked none of them in her ward committee. SI.4 presents the top question askers both overall and in ward committees and provides more details on corporator question asking.

Empirical Strategy

I analyze the relationship between complaints and questions at the constituency-level. I run several model specifications with the total number of complaints and questions in a constituency including a linear model with ward fixed effects and wild bootstrapped clustered standard errors by ward, a multilevel model with random effects by ward, and a Bayesian multilevel model with random effects by ward. These three modeling strategies are all appropriate ways to model hierarchical data (constituencies are part of wards), therefore, I am interested in identifying

⁸ Questions can be of different types, but 87.9% are classified as the same type — "raising an issue."

consistent empirical patterns regardless of modeling strategy.⁹ Additionally, I run models for each of the fifteen different types of questions and complaints. I look at both all questions a corporator asked and just questions asked during ward committee meetings.

Each model contains control variables including an indicator for whether the particular corporator holds a caste reserved seat (minority group status) and the percentage of scheduled caste residents in each constituency (minority constituents). I also include controls for the corporator's gender, age, whether they have a college degree, if they are members of the BJP (one of the two major political parties in Delhi), the number of committees they are on, and whether they are on the standing committee. At the constituency level, I control for the margin of victory in the previous election and the population.

Results

Figure 1 displays point estimates broken down between all questions that corporators ask and just questions that corporators ask during ward committee meetings. Three model specifications are shown. Starting with the results at the top of the figure which use the dependent variable including all corporator questions, the linear model and Bayesian multilevel model point estimates are not different from zero. The point estimate for the maximum likelihood multilevel model is slightly negative, though substantively quite small. Therefore, for the models that include all questions, there is not a statistically significant relationship between questions and complaints. Moving to the bottom of Figure 1 and the dependent variable that includes just

⁹ See SI.1 for more details about the empirical strategy including the use of wild bootstrapped clustered standard errors, these three modeling strategies, and other technical details.

questions asked during ward committee meetings, none of the three model specifications are associated with a statistically significant relationship between questions and complaints. See SI.5 for full model specifications and robustness checks.





Regression model point estimates for the relationship between complaints and questions with confidence intervals. Both all questions and only ward questions shown.

I examine the robustness of these results by running models with each type of complaint and question separately. It is possible that different types of complaints are more appropriately resolved using different mechanisms (Kramon and Posner 2013; Kumar, et al. 2022), and testing each type of complaint separately can help to determine if this is indeed the case. These results (shown in SI.5) largely confirm the non-statistically significant findings displayed here. I also examined the possibility of heterogeneous effects based on the various control variables included in the analysis. The interactions between four control variables ---- gender, population, number of committees, and education --- and the number of complaints were statistically significant. However, marginal effects plots for these variables indicate that there is little substantive effect on the number of questions asked as the control variable in the interaction changes (see SI.5).

In failing to reject the null hypothesis of no relationship between complaint volume and question asking it is possible that the quality of the data is sufficiently poor, that Delhi is a particularly anomalous case of society-politician relationships, or that examining a different time period might yield different results. Yet, as I show in the next section, amid this lack of responsiveness to CCTS complaints, corporators are responsive to complaints delivered to them via personal connections.

Connections and Responsiveness

To whom are corporators responding? The results thus far suggest that corporators are not particularly responsive to complaints registered in the CCTS. In order to fully test the Hypothesis, however, I need to show that corporators do respond to some kinds of complaints from members of the public, just not those submitted to the CCTS.

To do so, I rely on evidence gathered from primary sources and qualitative interviews. Primary source data consists of corporation meeting minutes from the South Delhi Municipal Corporation for the period from May to October 2012 (some of the only publicly available meeting minutes), alongside similar documents from other municipal corporations and municipal corporation committees. I also conducted a series of interviews with politicians, scholars, and

non-profit group leaders about how municipal corporators manage and respond to complaints. In the following section, I draw two main conclusions from these two sources of data. First, I find that municipal corporation complaints are addressed on two parallel tracks, one public and one private. Second, while public complaint response is highly choreographed and controlled by corporation leaders, thereby reducing opportunities for credit claiming, politicians have substantially more ability to respond to complaints brought to them in private using connections in a way that facilitates credit claiming. This means that individuals more frequently lean on their political connections for help redressing complaints and that politicians respond to such complaints substantially more frequently than they do complaints registered with the CCTS.

Even though corporators are told to respond to complaints registered in the CCTS by asking questions during corporation meetings, this process is strictly controlled and limited.¹⁰ As a result, corporators have relatively few opportunities to respond to complaints submitted to the CCTS. This logistical constraint also presents problems for corporators ability to make it known to the complainant and to their constituency as a whole that they responded to a complaint reported to the CCTS. When combined with the overwhelming number of complaints delivered, corporators have few incentives to try to be responsive to complaints submitted to the CCTS.

In Delhi, public complaint response during corporation meetings takes three forms. First, the agenda for some corporation meetings includes a so called "Question of the Month" from one corporator. These questions are submitted in writing in advance of the meeting and are directed toward bureaucrats. In only one of the eight meetings between May and October 2012 (October 10, 2012) were replies to the Question of the Month provided. Asking a Question of the Month,

¹⁰ Respondent 5. 2019. Interviewed by Author. Delhi.

therefore, is not an effective way for a corporator to redress a complaint. The nature of this form of redressing a complaint means that at most one complaint from one corporator is redressed by the bureaucracy per corporation general body meeting, which happen once per month. This creates a large backlog of unredressed complaints for which corporators will have a difficult time claiming credit with constituents for resolving if simply raising the issue to a bureaucrat in a corporation meeting takes months.

Second, corporators can submit "Proposals Under Section 74," which are similar in format to Questions of the Month. Section 74 refers to the part of the legislation governing the municipal corporation that provides notice of business in advance of meetings. In this case, corporators use these proposals to describe major policy issues that they want to be addressed, like unauthorized colonies or income taxes. These proposals sometimes were discussed in corporation meetings, but this was rare. Like the Question of the Month, few corporators submitted proposals, meaning that their ability to respond to complaints registered with the CCTS was limited. The format of these proposals discourages corporators from using them to redress CCTS complaints because Proposals Under Section 74 discuss major policy initiatives, not specific public service requests. Even if an entrepreneurial corporator combined complaints about a given topic into one Proposal Under Section 74 request, that corporator would have a difficult time articulating to the complainant exactly how their complaint was redressed by such a broad policy proposal. Hence, Proposals Under Section 74 are not effective tools for politicians to use to claim credit for redressing complaints.

Finally, five of the eight meetings between May and October 2012 contained an open discussion item on the agenda, sometimes called "short term questions" or "half hour debates." During these sessions, a long list of corporators asked questions and aired grievances. These

sessions were highly controlled: the topic was determined in advance and discussion was moderated by party leaders. For example, this portion of the May 22, 2012 meeting started with corporators asking questions about the impact of illegal cooking on parking before abruptly transitioning to an extensive discussion of drain cleaning. During each of these discussions, many corporators spoke and aired both general and specific grievances. The structure of these discussions provides corporators with few opportunities to be responsive to complaints submitted to the CCTS because they cannot control the topic of the discussion.

The amount of effort required for a corporator to get a complaint redressed by one or more of these methods of question asking is high. Nevertheless, such effort might be worth it if it had a large and direct electoral payoff for the corporator. Unfortunately, the structure of question asking promotes vague questions asked a significant time after the initial complaint is recorded in the CCTS. Corporators are unlikely to be able to effectively use this type of question-asking behavior to claim credit for being responsive to complaints and further to help their re-election efforts. Second, municipal corporation meetings are poorly publicized, meaning that the chance that the original complainant hears that the corporator has redressed their complaint during a committee meeting is extremely low. Third, people submit complaints via personal connections when possible, meaning that complaints submitted to the CCTS are either duplicates of complaints already submitted via personal connections or are from individuals without personal connections. People who have personal connections are most likely to use them and not to submit a complaint exclusively to the CCTS because the CCTS is poorly designed and inefficient. Even people without personal connections to politicians or bureaucrats are eager to

find a way to submit a complaint via a personal connection because of the poor quality of the CCTS.¹¹

Instead of responding to complaints registered with the CCTS, corporators devote much of their time and energy to addressing complaints delivered to them through personal connections. These complaints include those from constituents with direct, indirect, and brokered connections (see SI.3). In fact, the corporator may be unaware of the exact connection the person presenting them with a complaint has to the original complainant. Extensive prior work has examined the ways in which politicians, bureaucrats, constituents, and brokers operate in an informal complaint redressal system (e.g., Auerbach 2020; Berenschot 2019), and the evidence presented here corroborates these findings. Indeed, the contribution of this article is to show that delivering complaints to a politician using connections remains a key way to redress grievances *even with the existence of an e-governance system*.

Berenschot (2010) paints a picture of a corporator as an all-purpose problem solver, processing government paperwork and pushing bureaucrats for help addressing public complaints. As many government functions have gone online, corporators' roles in processing paperwork have all but disappeared, but their complaint role remains.¹² Complainants choose to register their complaints with corporators because corporators have an established track record of resolving issues with public service delivery.¹³ Corporators build up this image by providing their contact information to constituents and asking them to contact them directly with

¹¹ See SI.3 for interview evidence to support these conclusions.

¹² Respondent 13. 2020. Interviewed by Author. Delhi.

¹³ Respondents 2 and 3. 2019. Interviewed by Author. Delhi.

complaints. Upon receiving such a complaint, corporators call bureaucrats and resolve the substance of the complaint without involving the CCTS.¹⁴

Corporators establish an informal method of complaint response outside of the centralized complaint tracking system. Often, several corporators meet privately to share information about complaints. Corporators advise one another on how to best redress complaints, and these networks sometimes involve passing the complaint around to a number of different corporators so that each can use his or her connections to benefit from the complaint redressal.¹⁵ In other cases, particular corporators serve as gatekeepers, where all complaints of a certain type are routed to a specific corporator who then determines whether the complaint will be sent to the bureaucracy and redressed.¹⁶ Influential individuals living in a constituency may also be consulted in order to determine how these individuals perceive the severity of the complaint and how they would like it to be addressed.¹⁷ Throughout this system, political brokers play a key role in linking members of the public who would otherwise not have connections to politicians (Berenschot 2019).

By establishing a complaint redressal system separate from the CCTS, corporators can exert much more control over the entire complaint redressal process. Thus, the corporator makes him or herself the critical player in delivering public services. The corporator's hope is that in

¹⁴ Respondents 2 and 3. 2019. Interviewed by Author. Delhi.

¹⁵ Respondent 12. 2020. Interviewed by Author. Delhi.

Respondent 13. 2020. Interviewed by Author. Delhi.

¹⁶ Respondent 6. 2019. Interviewed by Author. Chennai.

¹⁷ Respondent 15. 2020. Interviewed by Author. Delhi.

establishing themselves as a key provider of public services, complainants will recognize and reward good constituency service by supporting the corporator and the corporator's party in future elections. One particularly illustrative example of a corporator embodying this role involved public complaints about lack of green space in a particular constituency. The corporator could have chosen to forward the complaint to the bureaucracy where it most likely would not have been resolved. Alternatively, he could have forwarded the complaint to the corporation garden committee who might have studied the subject and recommended allocating money to build a new park in the ward. But instead of choosing either of these options, the corporator used money from donations to install a park without any authorization from the bureaucracy. As a result, the park was constructed where the complainant wanted it and the project was completed quickly. Importantly for the corporator, he could claim credit for the success of the entire project, down to the park benches bearing his name. In this case, both the public and the corporator benefited from ignoring the centralized complaint tracking system and communicating privately about the complaint.¹⁸

Taken together, these qualitative results suggest that corporators are responsive to complaints from members of the public when they are received through personal connections. Complaints entered into the CCTS are rarely responded to both because corporators are already overwhelmed with complaints registered with them through personal connections and because the structure of corporation meetings limits corporators' ability to effectively claim credit and generate electoral support from complainants who submit complaints to the CCTS. On balance,

¹⁸ Respondent 15. 2020. Interviewed by Author. Delhi.

corporators' time is best spent responding to complaints from individuals with connections who are more likely to acknowledge and reward corporators' effort.

Discussion and Conclusion

In Delhi, where a centralized complaint tracking system was added to existing public-politician relationships, members of the public, politicians, and political brokers have incentives to continue expressing and solving complaints in private, without using the CCTS. As a result, politicians prioritize redressing complaints submitted to them personally which, given the volume of complaints, means politicians rarely have the time to respond to complaints submitted to the CCTS.

One solution to this problem is to focus on bureaucratic responses to public complaints. If bureaucrats acted on all complaints forwarded to them by politicians and all complaints submitted to the CCTS, public service delivery would improve, regardless of the method that a member of the public used to file a complaint. However, like politicians, bureaucrats face a capacity problem where the volume of complaints far outweighs their ability to address them. What is more, both members of the public and politicians exert pressure on bureaucrats to resolve the complaints that they bring to them directly. Should bureaucrats consistently ignore complaints from prominent members of the public or politicians, they risk being transferred to another position or location.¹⁹

One potentially appealing, but deeply problematic solution to this problem is to eliminate the informal, private path of complaining directly to bureaucrats or politicians and instead route

¹⁹ Respondent 12. 2020. Interviewed by Author. Delhi.

all complaints through the CCTS. From a technical perspective, even if the bureaucracy lacked capacity to respond to all complaints, the bureaucracy could then prioritize complaints by importance regardless of how they were submitted. However, in proposing this as a solution, scholars should recognize that complaints are not handled in this way in wealthy, developed countries. In the United States, individuals with a public service delivery problem do tend to use the CCTS as a first step to resolve a complaint. But, if the complaint is not redressed quickly, individuals who know local politicians frequently ask them to intervene. Many complaints are resolved without escalating them to local politicians, but the bigger the complaint, the more likely that the bureaucracy will not resolve it without local politician involvement. Attempting to route all complaints through the CCTS also ignores the fact that complainants may not feel comfortable using the CCTS because of poor prior experiences, general government distrust, or systematic bureaucratic discrimination in how bureaucratic services are provided (Auerbach 2016; Auerbach and Kruks-Wisner 2020; Baud and Nainan 2008; Baldwin 2013; Berenschot 2011; Das and Chattopadhyay 2020).

Instead, this article suggests that politicians could diversify the ways in which they communicate with constituents to ensure that all constituents have information about how to submit complaints. Recent work where politicians use forms of Internet-enabled communication like e-mails and text messages may help to educate constituents on the complaint process and to establish relationships with them that can lead to improved delivery of public services and more accountability for politicians (Buntaine, Hunnicutt and Komakech 2020; Gaikwad and Nellis 2021; Grossman, Humphreys and Sacramone-Lutz 2020).

My empirical results focus on showing that politicians choose not to respond to CCTS complaints because there are few opportunities to claim credit for responding to such complaints

and to generate electoral support. It would be beneficial to examine which constituents use the CCTS to more fully assess whether constituents who submit complaints via the CCTS give any credit to elected corporators when and if their complaints are resolved. Unfortunately, it is not possible to describe the demographics of CCTS users. The Delhi CCTS system does not collect such characteristics, and to my knowledge, there are not surveys of members of the public who use the CCTS that include extensive demographic controls. One suggestive piece of evidence is that people who are socially and economically disadvantaged tend to choose to solve problems themselves — absent political connections — instead of going through the formal complaint resolution process (Chakraborty, Ahmad and Seth 2017).²⁰

Future work would do well to more clearly link complaints registered in the CCTS with corporator question-asking. In Delhi, I measure corporator responsiveness by correlating the volume of complaints and questions on the same topic. This is because neither complaints nor questions are specific enough to link one complaint directly with a question asked. Qualitative work could involve interviewing complainants about the complaint resolution process to try to discern whether certain complaints do spur corporator question-asking even though the volume of complaints largely does not. Additionally, studying e-governance complaint systems in other country-contexts may help to show the extent to which public-politician relationships dictate responsiveness to complaints submitted via a CCTS. The results of this study generalize to the large number of other countries with strong existing public-politician relationships before the introduction of a CCTS provides one of the first opportunities for members of the public to

²⁰ Respondent 12. 2020. Interviewed by Author. Delhi.

engage directly with politicians and the bureaucracy to see whether public-politician relationships begin to form outside of the CCTS and indeed become the predominant way in which public service complaints are resolved. For now though, it is clear that introducing a centralized complaint tracking system — even in a context where individuals and politicians are comfortable making and responding to complaints — does not necessarily improve politician responsiveness. Thus, such systems should be implemented alongside broader public service reforms that increase capacity to redress public complaints (Mansuri and Rao 2012).

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Supplemental Information: Politicians' Complaint Response: E-Governance and Personal Relationships

Contents

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Replication data and code for all empirical analysis is posted on the author's website.

SI.1: Data Sources

- Questions: All questions asked by corporators from April 2018 to April 2019 including all questions and just those asked in ward committee meetings. Questions obtained via Right to Information requests. Initial question categorization conducted by an Indian not-for-profit organization. Final question types coded by the author. Logged values used.
- Complaints: Raw data consists of all complaints recorded by Zonal Offices in Delhi from April 2018 to April 2019 as obtained through Right to Information requests. Initial complaint categorization conducted by an Indian not-for-profit organization. Final complaint types coded by the author.

Though the complaints dataset is organized by ward, the dataset also provides a short description of the area where the complaint is located. There are 33,786 unique area descriptions. In order to study the relationship between questions and complaints at the individual corporator level, I need to match each area description to one of the 272 constituencies in the three corporations, which means geolocating the area description and identifying the constituency matching the geolocation information. This is a challenging task for two reasons: lack of available constituency maps and vague area descriptions.

The three municipal corporations re-drew their constituency boundaries in 2017. Though the boundaries were updated, no digital maps of the new boundaries were published. To link the area description to the appropriate constituency, I obtained a publicly available attempt to draw 2017 constituency boundaries on a GIS map published by *The Hindustan Times*. These shapefiles were extracted from PDFs of constituency boundaries published by the State Election Commission. This led to many errors, chiefly misalignment between constituency boundaries such that either two boundaries would overlap or two boundaries would not touch. In order to proceed, these boundary issues needed to be fixed. I employed a professional GIS programmer to correct the shapefiles. These corrections eliminated the misalignment problems. Since reference maps showing the constituency boundaries lack the required resolution to make these adjustments, the GIS programmer made decisions at the constituency boundaries about where one constituency ends and the next one begins. Decisions were made based on the features around the boundary: major roads, rivers, and other features were used as guidelines to help establish clear constituency boundaries. These decisions are reasonable given that actual electoral boundaries are not drawn arbitrarily and usually follow some geographic features.

The corrected shapefiles were used to geolocate each complaint. I assume that a complaint with a geographic location in a corporator's constituency will be up to the corporator to address. I took the area description information and processed it through the Google Maps geolocation API, ensuring that the area description was appended with "Delhi, India" to indicate that the area description was in Delhi. Many are descriptions were vague like "School gali" (school road). This could refer to any number of things: a road called School Road, a road where a school is, or a general description of an area that locals call "school road." There is no way to determine which of these interpretations is correct in any one case. The intuition is that Google Maps returns the most common location for any search term, and this location is most likely what people are talking about when they make a complaint.

Of the 86,492 complaints, Google Maps was able to geolocate 80,304 to a constituency within Delhi (92.85%). This is significantly better than geolocation with another service, Open Street Map, which was only able to geolocate 34,921 complaints (40.38%). What contributes to these coding errors? First, there are some cases where the area description is so vague that the geolocation algorithm is unable to find any matching location. As is evident from the success rates displayed here, Google is much better at matching vague area descriptions with their most likely location. Second, a small number of area descriptions were geolocated outside of Delhi, despite the search field including "Delhi, India." These complaints were dropped.

Using the ward information provided in the complaint database, I checked to see whether the constituency that Google or Open Street Map associated with a complaint was actually located in the recorded ward. This process assumes that the ward recorded in the complaints database is the ward where the complaint occurred. Google identified a constituency within the recorded ward in 51,161 cases, a success rate of 63.71%, whereas Open Street Map had significantly more error, with a success rate of 14,105 cases and 40.39%. These errors are again probably the result of vague area descriptions and the fact that many area descriptions may make sense in several wards. Further processing by hand would only compound existing errors, as it is impossible for a coder to know exactly what the complainant was referring to when the area description was recorded. Logged values used.

• Female: Gender as recorded in the 2018 and 2019 Delhi Municipal Corporator Report

Card. Derived from Municipal Corporation websites and Election Commission lists.

- SC Pct: As listed on elections.in for each constituency.
- BJP: Party as recorded in the 2018 and 2019 Delhi Municipal Corporator Report Card. Derived from Municipal Corporation websites and Election Commission lists. 1 if a member of the BJP. 0 otherwise.
- Reserved: Reservations in effect at the time of the 2017 Municipal Corporation election. Reserved constituencies list provided by the State Election Commission. 1 if a constituency was reserved. 0 otherwise.
- Population: As listed on elections.in for each constituency.
- Standing Committee: Committee membership as recorded in the 2018 and 2019 Delhi Municipal Corporator Report Card. Derived from Right to Information Act requests for the Municipal Corporations. 1 if a member of the standing committee in a corporation. 0 otherwise.
- Number of Committees: Sum of all committees to which a corporator is a member including ward committees and the standing committee. Committee membership as recorded in the 2018 and 2019 Delhi Municipal Corporator Report Card. Derived from Right to Information Act requests for the Municipal Corporations.
- Age: Age as recorded in the 2018 and 2019 Delhi Municipal Corporator Report Card. Derived from Election Commission lists.
- BA: Education as recorded in the 2018 and 2019 Delhi Municipal Corporator Report Card. Derived from Election Commission lists. 1 if has a Bachelor's Degree. 0 otherwise.
- MOV: Margin of victory in 2017 Municipal Corporation election. Calculated from Election Commission lists by subtracting the winner's vote share from the second place finisher's vote share.
- Overall Score: Out of 100 points as derived by a prominent Indian non-governmental organization using their formula based on the characteristics they believe a corporator should possess.
 - Attendance: 15 points, see below.
 - Issues Raised: 10 points, see below.
 - Importance of Issues Raised: 23 points. Consider issues raised and weight them based on which duties fall to the corporators and which fall to other decisionmaking bodies. 11 points for raising issues on which the corporator is obliged to act, 8 points for raising issues on which the corporator has discretion on whether to act, and 4 points for raising issues of state importance.
 - Issues Raised Compared to Citizen Complaints: 10 points. Compare citizen complaints to issues raised; no further details specified.

- Discretionary Funds Used: 5 points. 5 points if 90-100% of discretionary funds are used, 4 points for 76-90%, 3 points for 61-75%, 2 points for 51-60%, 0 otherwise. Does not apply to East Delhi Municipal Corporation whose overall score is out of 95 points.
- Education: 1 point if passed 10th standard.
- Income Tax: 1 point if has a PAN card.
- Criminal Record: 5 points unless 3 points for a criminal case, 0 points if a murder, rape, riot, or extortion case.
- Perceived Performance: 30 points, see below.
- New Criminal Cases: Subtract 5 points for any new FIR in the past year.
- Charge Sheet: Subtract 5 points for criminal case charge sheet.
- Attendance: Attendance at general body meetings, committee meetings, and ward committee meetings. Obtained via Right to Information requests. Attendance was weighted based on the type of committee meeting: if corporators belonged to committees other than ward committees then attendance was calculated as the percentage of general body meetings attended x 7, the percentage of ward committee meetings attended x 4, and the percentage of other committees the formula was general body meeting attendance percentage x 9 and ward committee meeting attendance percentage x 6. Original score was out of 15 points, normalized for the analysis.
- Issues Raised: Number of issues raised starts with a count of all questions, discussions, resolutions, motions, points of order, amendments, and other speaking opportunities as listed in documents obtained by Right to Information requests. Normalized.
- Awareness and Accessibility: Results from a survey of 100 individuals in each constituency with quotas for age and gender. Convenience sample based on popular gathering areas in the constituency. Survey conducted by a prominent Indian nongovernmental organization. Five points awarded based on respondents' ability to recall their corporator's party and name as well as respondent rating of the accessibility of the corporator. Normalized.
- Perceived Performance: Thirty points awarded based on respondents' impression about living in the constituency (infrastructure, public services, et. cetera), awareness and accessibility, corruption perceptions, and overall satisfaction. Normalized.

Modeling Strategy

The analysis relies on three main modeling strategies for two different dependent variables. I employ this approach in order to help ensure that the results are not due to model specifications or dependent variable choices because the structure of the data is complex.

First, there are two dependent variables used throughout the analysis: all questions asked by corporators and only questions asked during ward committee meetings. The all

questions measure reflects the fact that committees of all varieties include bureaucrats and can be appropriate venues for trying to resolve complaints. However, this measure assumes that all corporators have equal access to committees in order to ask questions. This is clearly not the case, as some corporators are appointed to more committees than others. Committee membership (other than the general body meeting to which all corporators belong and individual ward committees) is decided based on elections among elected corporators. The ward committee measure reduces these biases since all corporators belong to a ward committee.

Second, I use three modeling strategies: linear regression, maximum likelihood multilevel models, and Bayesian multilevel models. The data is hierarchical because corporators are elected to constituencies that are organized by ward. Wards are particularly important in this analysis because complaints are collected at the ward level and corporators can raise questions about complaints during ward committee meetings. In the linear regression analysis, I use fixed effects by ward and wild cluster bootstrapped standard errors by ward. There are a total of twelve wards, meaning that cluster robust standard errors may be unreliable because of the small number of clusters (Cameron, Gelbach and Miller, 2008). Cameron, Gelbach and Miller (2008) suggest using boostrapping (in particular wild cluster bootstrapping) instead (Zeileis, Köll and Graham, 2020). I employ both maximum likelihood multilevel models and Bayesian multilevel models because Browne and Draper (2006) suggest using both modeling strategies to triangulate results. These modeling strategies allow for random effects by ward, which better incorporates ward-level variation.

The suggested interpretation of the results is to look for consistent patterns across modeling strategies and dependent variables.

In analyzing the relationship between the volume of complaints and questions, I account for as many control variables as are available. Characteristics about individual corporators like their gender, party membership, age, reserved seat status, and education may impact how many questions these corporators ask, as well as their attentiveness to complaints in their constituency. Corporators who are on more committees and particularly who are on the standing committee may have more ability to diversify where they ask questions and how they respond to complaints. Demographic details of particular constituencies may also be important. Higher population constituencies may be associated with more complaints and give the corporators more power to respond by asking questions. Constituencies with more scheduled caste members may have lower quality public services that warrant more complaints and more responsiveness. Finally, the margin-of-victory in a constituency may dictate how closely a corporator needs to pay attention to complaints.

Despite the inclusion of these control variables, I also include ward fixed effects in order to address omitted variable bias. Data on corporators and the demographic details of their constituencies is extremely limited. We do not know, for example, constituency income, public service need, or ward committee decision making procedures. Adjacent constituencies within the same ward share many similar characteristics, so including ward fixed effects is one way to address the lack of available data on constituencies. Further, ward committee operation is partially dependent on the personalities of the corporators in the ward committee at a given point in time. Including ward fixed effects is the most appropriate way to account for personal dynamics that are present within each ward committee.

Finally, we might wonder whether corporators who ask a lot of questions attract more

complaints because constituents view these corporators as efficient. This would indeed be possible if constituents knew that corporators were responding to complaints by asking questions. However, the main argument of the article is that asking questions is an ineffective strategy because it is less visible than is resolving complaints directly through personal connections. The current analysis seeks to establish a correlation between complaints and questions. Future research would do well to investigate situations where a causal relationship between complaints and questions could be analyzed.

SI.2: MC Descriptives

Table SI.2.1 contains models predicting various performance indicators for municipal corporators in 2018 and 2019.

					Dep	endent varial	ble:			
	Overa	l Score	Atten	dance	Issues	Raised	Awareness and	d Accessibility	Perceived I	Performance
	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Female	-0.038 (0.025)	-0.032 (0.020)	-0.033 (0.022)	0.004 (0.019)	0.004 (0.017)	-0.018 (0.014)	-0.011 (0.021)	0.026 (0.023)	-0.047 (0.030)	0.031^{**} (0.015)
SC Pct.	$\begin{array}{c} 0.320^{***} \\ (0.112) \end{array}$	0.093 (0.157)	0.324^{**} (0.156)	$\begin{array}{c} 0.140\\ (0.184) \end{array}$	0.018 (0.077)	$0.037 \\ (0.068)$	0.188 (0.160)	$0.162 \\ (0.221)$	-0.055 (0.182)	-0.266 (0.206)
BJP	0.061^{**} (0.031)	0.032^{*} (0.017)	$\begin{array}{c} 0.126^{***} \\ (0.041) \end{array}$	$\begin{array}{c} 0.137^{***} \\ (0.024) \end{array}$	-0.024^{**} (0.011)	-0.012 (0.012)	0.048 (0.032)	$\begin{array}{c} 0.040 \\ (0.030) \end{array}$	0.034^{*} (0.020)	-0.044^{***} (0.017)
Reserved Caste	-0.040 (0.046)	$\begin{array}{c} 0.001 \\ (0.038) \end{array}$	-0.023 (0.054)	$0.004 \\ (0.038)$	$0.002 \\ (0.019)$	-0.006 (0.018)	-0.053 (0.038)	-0.042 (0.046)	$0.026 \\ (0.039)$	$\begin{array}{c} 0.025\\ (0.045) \end{array}$
Population	-0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)	$\begin{array}{c} 0.00000\\ (0.00000) \end{array}$	-0.00000 (0.00000)	-0.00001^{***} (0.00000)	-0.00000^{**} (0.00000)	-0.00000^{**} (0.00000)	-0.00000^{***} (0.00000)
Standing Comm.	$\begin{array}{c} 0.134^{***} \\ (0.023) \end{array}$	$\begin{array}{c} 0.071^{***} \\ (0.025) \end{array}$	-0.016 (0.029)	$\begin{array}{c} 0.002\\ (0.024) \end{array}$	0.176^{***} (0.036)	$\begin{array}{c} 0.143^{***} \\ (0.044) \end{array}$	-0.055 (0.035)	-0.041 (0.031)	-0.016 (0.036)	-0.042^{**} (0.021)
Num. Committees	$\begin{array}{c} 0.034^{***} \\ (0.011) \end{array}$	$\begin{array}{c} 0.040^{***} \\ (0.009) \end{array}$	0.022^{**} (0.010)	0.046^{***} (0.010)	0.010^{*} (0.006)	$0.006 \\ (0.005)$	0.009 (0.017)	$\begin{array}{c} 0.035^{***} \\ (0.009) \end{array}$	$0.011 \\ (0.011)$	0.032^{***} (0.009)
Age	$\begin{array}{c} 0.003^{***} \\ (0.001) \end{array}$	0.002^{*} (0.001)	0.004^{***} (0.002)	0.002^{***} (0.001)	0.002^{***} (0.001)	0.002^{**} (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.00004 (0.001)	-0.0003 (0.001)
ВА	$0.035 \\ (0.028)$	0.075^{***} (0.014)	$\begin{array}{c} 0.010 \\ (0.036) \end{array}$	$0.020 \\ (0.019)$	$\begin{array}{c} 0.035^{***} \\ (0.014) \end{array}$	$\begin{array}{c} 0.044^{***} \\ (0.013) \end{array}$	$\begin{array}{c} 0.021\\ (0.018) \end{array}$	$0.019 \\ (0.017)$	$0.023 \\ (0.020)$	$\begin{array}{c} 0.031 \\ (0.019) \end{array}$
MOV	-0.049 (0.104)	$0.005 \\ (0.104)$	$\begin{array}{c} 0.041 \\ (0.136) \end{array}$	-0.137 (0.099)	0.167^{*} (0.098)	0.053 (0.076)	-0.024 (0.134)	$ \begin{array}{c} 0.032 \\ (0.105) \end{array} $	-0.081 (0.085)	0.116^{**} (0.055)
Constant	$\begin{array}{c} 0.426^{***} \\ (0.093) \end{array}$	$\begin{array}{c} 0.440^{***} \\ (0.093) \end{array}$	0.338^{**} (0.138)	$\begin{array}{c} 0.415^{***} \\ (0.103) \end{array}$	-0.121^{*} (0.064)	-0.006 (0.053)	0.689^{***} (0.150)	$\begin{array}{c} 0.522^{***} \\ (0.115) \end{array}$	$\begin{array}{c} 0.694^{***} \\ (0.100) \end{array}$	0.600^{***} (0.107)
Observations Ward FE	267 ✓	264 ✓	267 ✓	264 ✓	267 ✓	264 ✓	267 ✓	264 ✓	267 ✓	264 ✓
Note:									*p<0.1; **p<0.	.05; ***p<0.01

Table SI.2.1: MC Descriptives By 2019, 2018

Constituency-level linear models predicting corporator performance based on demographic and constituency characteristics.

SI.3: Complaints Descriptives

Constituents who have a public service problem can choose to report it in several different ways. I argue that two factors determine how individuals decide to whom to address their complaint: connections to government officials and disadvantaged status (economically disadvantaged, a member of an ethnic minority, and/or other forms of social disadvantage). Individuals who are not disadvantaged, but who have no bureaucratic or political connections, will file complaints exclusively using the CCTS. Because most individuals will try as hard as possible to find or to develop either bureaucratic or political connections, those individuals who file complaints exclusively with the CCTS will be a non-electorally salient group. Politicians' time can be better spent providing political favors to individuals who are more able to help their re-election chances, i.e., those who are politically connected (Bussell, 2019).

Complaint Submission Methods

Individuals with personal connections use them. "Connections" refer to any way in which a member of the public can reach a bureaucrat or a politician with their complaint outside of using the CCTS. I delineate between three types of connections. Direct connections occur when an individual has some personal relationship with a bureaucrat or politician whom she can contact to get the complaint redressed (Auerbach and Kruks-Wisner, 2020; Kruks-Wisner, 2020). These connections can be as weak as having access to a politician's phone number (Grossman, Humphreys and Sacramone-Lutz, 2014). Indirect connections are those where an intermediary connects a complainant to a bureaucrat or politician for the purposes of redressing the complaint. One form of an indirect connection is a brokered connection. Brokered connections rely on political entrepreneurs who take complaints from members of the public and convey them to bureaucrats or politicians, usually in return for some explicit or implied political favor or money. An extensive literature documents the strategies and effectiveness of brokers at resolving public complaints (e.g., Auerbach, 2020; Auerbach and Thachil, 2018; Björkman, 2015; Chatterjee, 2004; Gupta, 2012; Harriss, 2006; Jha, Rao and Woolcock, 2007). Not all indirect connections are necessarily brokered: a complainant who has a friend who knows a politician is an example of an indirect connection without a brokered component. Connections are perhaps most useful when they connect the complainant to a bureaucrat, as bureaucrats are ultimately responsible for redressing grievances (e.g., Min, 2015). Utilizing bureaucratic connections saves time, as complaints submitted to a CCTS are automatically assigned to the most junior bureaucratic employees (Marathe et al., 2016) and are only escalated to more senior bureaucrats later, whereas complainants may know or know someone who knows a mid- or senior-level bureaucrat who can escalate the complaint immediately. Additionally, having a relationship with a bureaucrat creates at least some investment on behalf of the bureaucrat to get a complaint redressed (Jansson and Erlingsson, 2014; Narayanan, 2010). Bureaucrats have too many requests to address all of them, so they have incentives to prioritize complaints from people they know personally and people who can provide them with quid-pro-quo exchanges or bribes (Cornea, Veron and Zimmer, 2017; Min, 2015; Priyam, 2016; van Teeffelen and Baud, 2011). In general, wealthier individuals tend to be more likely to have bureaucratic connections because bureaucrats are educated professionals who share social circles with them.

Absent bureaucratic connections who can directly address a member of the public's complaint, individuals can turn to politicians for help (Thomas and Melkers, 2001). The public-politician relationship can be established in many ways. Individuals may become involved in political party activities in order to develop relationships with low-level politicians. Many individuals, especially those belonging to historically disadvantaged groups, feel more comfortable talking to politicians because they distrust the bureaucracy (Auerbach, 2016; Auerbach and Kruks-Wisner, 2020; Baud and Nainan, 2008; Baldwin, 2013; Berenschot, 2011; Das and Chattopadhyay, 2020). Membership in local organizations may also help enable individuals to organize grievances and to deliver them to politicians (Auerbach, 2017). Collectively organizing grievances is particularly appealing for disadvantaged individuals possessing some political connections because politicians tend to react favorably to collective organization, seeing an opportunity to deliver services in return for establishing a stable voting bloc. Because there are major advantages to having connections when trying to get a complaint redressed, individuals will exploit any and all potential connections, including the connections of family members, neighbors, and colleagues if possible. Indeed, Grossman, Humphreys and Sacramone-Lutz (2014) show that a having politicians' phone number may be enough of a connection for individuals to be willing to submit complaints (see also Grossman, Platas and Rodden, 2018; Grossman, Humphreys and Sacramone-Lutz, 2020).

Individuals without connections are the target audience to use a CCTS. It is important to note that, given the myriad ways in which members of the public can establish connections with bureaucrats or politicians, the number of individuals with no connections is already small. I argue that individuals' status as a member of a disadvantaged or discriminated against group matters here. Disadvantaged status can include ethnic/caste disadvantage and/or class or socio-economic disadvantage. While both disadvantaged and non-disadvantaged individuals are likely to have connections, historically marginalized individuals without connections have little reason to trust the government since the government is at least partly responsible for not providing them with assistance. Trust in government is one of the key drivers of willingness to use complaint tracking systems (Brewer, 2007; Carter and Bélanger, 2005; Horst, Kuttschreuter and Gutteling, 2007; Kurfali et al., 2017), so these individuals will opt-out of reporting their complaint altogether because they seriously doubt that anything would happen if they went to the effort of submitting a complaint (Chakraborty, Ahmad and Seth, 2017).

CCTS vs. Personal Connections

It is important to note that submitting a complaint via a personal connection is not necessarily a substitute for submitting a complaint via the CCTS. Indeed, constituents who have personal connections may choose to also submit a CCTS complaint on the off chance that it gets resolved there. Constituents without personal connections have no option but to submit a complaint via the CCTS. Politicians' primary concern in responding to complaints is to respond to complaints that are most likely to benefit them electorally. We know that complaints delivered via personal connections enable politicians to claim credit for resolving a complaint much more easily than do complaints submitted via the CCTS. Therefore, even if a constituent submits a complaint to both the CCTS and through a personal connection, the politician is more likely to pay attention to the complaint submitted through the personal connection because it enables credit claiming.

Given the sheer volume of complaints submitted via personal connections, it is unlikely during this particular study that constituents who had a positive experience submitting a complaint using a personal connection (or both a personal connection and the CCTS) will switch to submit complaints exclusively using the CCTS. Even if the constituent had a positive experience in getting the complaint redressed, politician and bureaucratic capacity to respond to CCTS complaints is limited to the extent that any gains in external efficacy by having a complaint successfully redressed via a personal connection are unlikely to lead to a constituent willing to submit exclusively to the CCTS, since CCTS complaints are unlikely to be redressed.

How do we know that a person who submitted a complaint to the CCTS truly had no other option and not that they chose to do so when they had personal connections that they could have used?¹ In addition to the evidence presented above, here I specifically engage with this question using qualitative interview data. Two themes emerge. First, the CCTS is poorly designed and inefficient, meaning that people do not want to use it. A nationally known bureaucrat who held many high-ranking positions described the development of the CCTS system as "very techie. And all these sexy technologies we have now...AI...they basically serve to exclude people. That's what happens" because "the specialist [bureaucrat] makes the plan and it's a nice looking document. It's got red and green colors...How do you design a clean city? You design an app. Really...then what happens after you design that app? Nothing happens." The app just gets ignored alongside other technological initiatives because "there are so many hotlines [and apps and complaint systems] you need a hotline to get ahold of all the hotlines."² I interpret this quote to mean that both politicians and constituents know that the CCTS is not an effective tool and that neither group wants to use it to manage complaints.

Two managers of an organization involved in assisting constituents in submitting grievances advised going directly to corporators (also known as councillors) instead of using the CCTS saying, "as I show you the complaint register through the department wise, most of the citizens of each ward they can register their complaint directly to the councillor and the councillors resolve these issues, these common local issues, by calling the department people and resolving these issues. So councillors meet on a regular basis and resolve the issues of citizens on a regular basis."³ Corporators and constituents do not want to use the CCTS to manage complaints because using personal connections is the default and expected way to do so. It is also more efficient than adding the CCTS into the complaint resolution process. Corporators particularly like receiving complaints via personal connections because it gives them more control over the complaint resolution process.

A prominent scholar characterized the role of corporators as integral to grievance redressal this way, "councillors make the geography speak," and they do so regardless of caste or class differences. Constituents want their elected representatives to be directly involved in

¹I thank a Reviewer for asking this question.

²Respondent 13. 2020. Interviewed by Author. Delhi.

³Respondents 2 and 3. 2019. Interviewed by Author. Delhi.

grievance redressal.⁴ That grievance role matters because it is one of the primary ways that constituents decide how to vote in municipal corporation elections. The effectiveness of obtaining government services is critically important, and constituents prefer to involve corporators in this process because they believe that doing so will lead to better quality services than if corporators are not involved.⁵ Taken together, there are technological and user friendliness issues with the CCTS, politicians and constituents are more familiar with using personal connections, and using personal connections is more efficient. Thus, if a complainant has a personal connection, it is unlikely that they will choose not to use it and to report a complaint exclusively to the CCTS.

Second, even people without personal connections to politicians or bureaucrats are eager to find a way to establish those connections because of the poor quality of the CCTS. If the CCTS were an effective way to redress grievances, then making this extra effort to establish personal connections for the explicit purpose of redressing a grievance would be unnecessary. But, the poor quality of the CCTS necessitates this response. "At the corporation level, you are likely to find more of these deeply entrenched networks [where] a lot of how this work happens... who you know, who you can put in a good word for, whose daughter is you know, married to whose brother" these connections are what people want to use to redress grievances.⁶ "Without a formal structure, you will not get anything done [any grievances redressed]. So if you are required to have one standing committee meeting on finance every three months, and have the decisions recorded, and publicize it... then you get interest."⁷ Ironically, the technological structure of the CCTS is ineffective because it lacks political and cultural structure that is present when reporting a complaint using personal connections. Because using personal connections is a default and expected method of reporting a complaint, those without personal connections will seek to establish them in any way possible.

Future research would do well to track constituents in order to determine when and how they decide to submit complaints. While outside the scope of the current project, doing so could enable researchers to better understand how constituents choose how to submit a complaint and how they develop personal connections for complaint submission purposes. Interview evidence suggests that constituents have no compelling reason to choose to submit a complaint exclusively to the CCTS when they have the option of using a personal connection or a personal connection combined with the CCTS.

Complaint Submission Procedure

There are many ways to submit a complaint to the CCTS including using an app, an online webform, calling a complaint hotline, or visiting a Zonal office to complete a written form. Required information includes the location of the complaint, the details of the complaint,

⁴Respondent 12. 2020. Interviewed by Author. Delhi.

⁵Respondent 15. 2020. Interviewed by Author. Delhi.

 $^{^{6}}$ Respondent 5. 2019. Interviewed by Author. Delhi. Respondents 10 and 11 (2020. Interviewed by Author. Delhi.) also address the importance of councillors seeking out personal relationships with constituents.

⁷Respondent 13. 2020. Interviewed by Author. Delhi.

and the complainant name and mobile phone number.⁸ There is also an opportunity to categorize the complaint and to provide additional contact information like an address for the complainant. After submitting a complaint, the complainant receives a complaint identification number that they can use to track the status of the complaint. Complaints are automatically assigned to low-level bureaucrats to resolve. Due to the volume of complaints and the level of oversight of bureaucrats, complaints are often closed (marked as resolved) without any action being taken.

Corporators' Roles in Complaint Resolution

Corporators' role in this procedure is to monitor complaints submitted for their constituency and to ask questions to bureaucrats during corporation meetings to prompt responsiveness. The corporator's role is necessary because without pressure from corporators, bureaucrats are likely to close complaints without resolving them. Corporators could conceivably select certain kinds of complaints about which to ask questions and others to ignore. One way to do this would be to ask questions about the most common complaints and, therefore, address major issues that could result in a large number of complainants being satisfied. This technique would align with a corporators' desire to respond to complaints that could benefit them electorally, though as argued in the main text, it is more difficult to claim credit for responding to CCTS complaints because complainants do not know that corporators were involved in resolving the complaint unless a corporator specifically advertises this fact to constituents.

Corporators could also attempt to selectively respond to complaints that they feel are from well-known complainants or complainants from certain geographic areas or castes. While this is possible, it would require carefully reviewing hundreds of complaints. In a system where corporators are overwhelmed with complaints made via personal connections, it seems unlikely that key complainants would not have existing personal connections with corporators and that corporators would devote time to infer demographic information about complainants in order to selectively respond to only certain types of CCTS complaints instead of focusing on complaints made via personal connections.

Complaint Status

It is not possible to track which complaints submitted to the CCTS are actually resolved. This is for two reasons. First, the status of complaints as marked in the CCTS is not publicly available. Second, even if this status was publicly available, a complaint marked as resolved does not mean that any action was taken to actually address the complaint. Bureaucratic performance is measured based on how quickly complaints can be marked as resolved. This gives bureaucrats incentives to mark complaints as resolved quickly regardless of whether the complaint was actually addressed. In doing so, bureaucrats are counting on the fact that only a subset of constituents will contact the corporation about their complaint not being resolved and continue to pursue the complaint. If constituents do take this action, they are

⁸See, for example: http://www.northmcdcallcenter.com/register-complaint.php.

incentivized to use personal connections instead of to continue using the CCTS because the CCTS procedure has already been demonstrated to be ineffective.

The fact that complaint status as marked in the CCTS may not actually reflect whether the complaint was successfully resolved highlights the relationship between bureaucrats and politicians in resolving complaints. Bureaucrats close complaints submitted to the CCTS quickly in order to improve their perceived job performance. Politicians contact bureaucrats with whom they have relationships in order to get complaints that they deem to be important resolved. Politicians have incentives to do so because constituents evaluate politicians based on their ability to deliver public services and to improve their constituency. The situation is one where politicians and bureaucrats have incentives to cooperate with one another. Only bureaucrats can complete the public service tasks about which constituents complain, but politicians need bureaucrats and bureaucratic compliance in order to be able to tell constituents that they have successfully resolved public service problems. Because it is more difficult for politicians to claim credit with constituents for resolving complaints submitted to the CCTS, the symbiotic relationship between politicians and bureaucrats tends to exist outside of the CCTS.

Costs of Submitting Complaints

What are the costs of submitting complaints via the CCTS compared to using personal connections? It takes less time and effort to submit an initial complaint to the CCTS if a person is familiar with the process and completes it online. We cannot assume that all constituents know that the CCTS exists and particularly that they know that complaints can be submitted online. Further, some people may be uncomfortable with submitting a complaint online. Everyone falling into these categories would need to go in person to their Zonal office to submit the complaint or to do so over the phone. In the case of the in-person option, because the complaint process is centralized at the Zonal level (and, therefore, some Zonal offices may be far away), it might be quicker to report the complaint directly to a corporator or bureaucrat either in person or via phone. In any case, the cost of submitting a complaint through the CCTS is typically lower than the cost of submitting a complaint directly via a personal connection.

However, we must also take into account the effectiveness of submitting a complaint via the CCTS compared to directly via a personal connection. While the cost of submitting a complaint via the CCTS is low, we already know that the likelihood that a submitted complaint will be resolved in a satisfactory manner is relatively low. Of course, a complainant can continue to submit complaints, but there is no recourse for complaints that are submitted and are not resolved, nor are there incentives for bureaucrats to resolve repeat complaints. The cost of submitting a complaint via a personal connection is higher. Yet, the probability of that complaint being resolved in a satisfactory manner is also higher because the complainant can follow up directly with the politician or bureaucrat to whom they reported the complaint. In the case of politicians, since the complainant knows the politician is involved in resolving the complaint, this motivates politicians to ensure that the complaint is successfully resolved in order to claim credit for providing the constituency service.

Comparing Geocoded and Non-Geocoded Complaints

Only complaints that could be successfully geocoded using Google Maps and where the constituency identified was in the same ward as the ward listed in the complaint database were used in this analysis.

Table SI.3.1 shows a comparison between geocoded and not geocoded complaint types. Though six of the 15 pairwise *t*-tests indicate that there are significant differences, the actual proportion of complaints is quite similar between geocoded and not geocoded complaints. Hence, the type of complaint is not related to whether the complaint can be successfully geocoded. In other words, the geocoded complaints are fairly representative of complaint types.

Type	Geocoded	Not Geocoded	<i>t</i> -value	<i>p</i> -value
Drainage	0.14	0.13	2.79	0.01
Electricity	0.01	0.01	0.70	0.49
Environment	0.00	0.00	-0.04	0.97
Health	0.00	0.00	-0.57	0.57
Infrastructure	0.03	0.03	1.66	0.10
Other	0.00	0.00	-2.17	0.03
Pests	0.48	0.50	-5.89	0.00
Pollution	0.00	0.00	0.30	0.76
Roads	0.03	0.03	-0.73	0.47
Services	0.01	0.01	-0.60	0.55
SWM	0.20	0.19	6.02	0.00
Unauthorized	0.07	0.07	-2.43	0.02
Water	0.01	0.01	1.27	0.21
Welfare	0.00	0.00	1.00	0.32
NA	0.01	0.01	-4.12	0.00

Table SI.3.1: Comparing Geocoded and Not Geocoded Complaint Categories

Type of complaint dichotomized into whether the complaint was successfully geocoded or not. Percentages of overall number of complaints shown with pairwise t-tests. No education complaints.

Table SI.3.2 displays a similar table, but compares the proportion of complaints successfully geocoded by ward. Here, there are major differences in the proportion of complaints by ward in the geocoded and not geocoded dataset. This provides us with an indication of where geocoding was most successful and where it clearly failed. The clear failures are in Keshav Puram and Civil Line, both of which have zero geocoded complaints. For this reason, I run a robustness check dropping these wards. Representation of other wards is somewhat better. Table SI.3.3 compares geocoded complaints with all complaints, both geocoded and not geocoded. Compared to the full dataset, the geocoded dataset is usually off by just a few percent. Geocoding struggled in the Central, South, Keshav Puram, Rohini, and Civil Line wards. In no way are the results presented here representative: future work should try to improve the geolocation to more accurately represent the population of complaints.

Ward	Geocoded	Not Geocoded	<i>t</i> -value	<i>p</i> -value
Central	0.02	0.20	-73.49	0.00
Civil Line	0.00	0.22	-89.39	0.00
Karol Bagh	0.08	0.02	41.82	0.00
Keshav Puram	0.00	0.22	-90.56	0.00
Najafgarh	0.11	0.09	8.88	0.00
Narela	0.09	0.05	26.44	0.00
Paharganj	0.04	0.02	13.24	0.00
Rohini	0.16	0.04	60.18	0.00
Shahdara North	0.11	0.04	42.30	0.00
Shahdara South	0.12	0.05	35.84	0.00
South	0.14	0.03	61.49	0.00
West	0.12	0.03	54.14	0.00

Table SI.3.2: Comparing Geocoded and Not Geocoded Complaints

Ward where complaint was recorded dichotomized into whether the complaint was successfully geocoded or not. Percentages of overall number of complaints shown with pairwise t-tests.

Ward	Geocoded	All Complaints	<i>t</i> -value	<i>p</i> -value
Central	0.02	0.08	-54.14	0.00
Civil Line	0.00	0.08	-84.69	0.00
Karol Bagh	0.08	0.06	17.50	0.00
Keshav Puram	0.00	0.08	-86.35	0.00
Najafgarh	0.11	0.10	3.89	0.00
Narela	0.09	0.08	9.85	0.00
Paharganj	0.04	0.05	-6.36	0.00
Rohini	0.16	0.11	25.06	0.00
Shahdara North	0.11	0.08	18.03	0.00
Shahdara South	0.12	0.09	15.24	0.00
South	0.14	0.10	20.32	0.00
West	0.12	0.09	19.39	0.00

Table SI.3.3: Comparing Geocoded and All Complaints

Ward where complaint was recorded dichotomized into whether the complaint was successfully geocoded or not where geocoded complaints are compared to all complaints. Percentages of overall number of complaints shown with pairwise *t*-tests.

Popular Complaints

Table SI.3.4 lists the most common complaint descriptions broken down by the number successfully geocoded and the total number of complaints. The rank order of complaint descriptions between the geocoded dataset and all complaints is similar. Pests, drainage, and garbage are the biggest issues for Delhi residents.

In terms of least popular complaints, the complaint categories with only one complaint are "new roads," "nuisance detector," "contaminated water supply," "factory," "private land," "slum development," "unauthorized drainage," and "unauthorized explosives." There is nothing about these complaint types that is particularly noteworthy. Asking for a new road or asking a question about private land (or a factory) are issues that corporators are unlikely to be able to resolve. The other complaint types are all variations on common complaints about basic public services. It is unlikely that a corporator can infer demographic information about the complainant based only on the type of complaint submitted.

Description	Geocoded Complaints	All Complaints
Nuisance Animals	12679	21578
Dead Animals	8317	14281
Drainage	6313	10426
Garbage Road	3194	4936
Fogging	1859	3184
Tree Cutting	1167	2005
Garbage Trees	1142	1962
Encroachments	869	1530
Collection Point	845	1482
Debris	843	1481
Pest Control	959	1465
Garbage House	809	1241
Garbage Missing	734	1160
Sweeping Roads	783	1080
Lighting	637	1061
Roads Related	657	1044
Parking	630	1011
Hawkers	549	1002
License Related	493	904
Unauthorized Business	523	878
SWM Related	428	843
Flooding Monsoon	409	785
Garden Development	526	747
Repair Manhole	453	688
Fire Brigade	398	686

Table SI.3.4: Most Common Complaints

Count of most common complaint descriptions dichotomized into whether the complaint was successfully geocoded or not.

Complaint Locations

We might wonder whether politicians can infer information about the complainant based on the type of complaint submitted. Table SI.3.5 breaks down complaints by ward and type with the percentage of each type of complaint in a given ward shown. We can see that drainage, pests, and solid waste management are by far the most common complaints across wards. This is despite the fact that wards differ substantially in the percentage of scheduled caste individuals (an indicator of disadvantaged status). For example, Karol Bagh has the highest percentage of scheduled caste residents (24%) and West has the lowest percentage (13%), but both have 22% of complaints submitted about solid waste management and the same top three complaint types. This is an imperfect measure, but if constituents tend to submit complaints about the same types of issues, then it would be difficult for politicians to infer information about the complainant based on the type of complaint submitted.

Ward	Drainage	Electricity	Environment	Health	Infrastructure	Other	Pests	Pollution	Roads	Services	SWM	Unauthorized	Water	Welfare	NA
Central	0.16	0.00	0.00	0.00	0.02	0.00	0.41	0.00	0.04	0.00	0.25	0.09	0.01	0.00	0.01
Civil Line	0.16	0.02	0.00	0.00	0.03	0.00	0.50	0.00	0.03	0.02	0.15	0.06	0.01	0.00	0.02
Karol Bagh	0.11	0.03	0.00	0.00	0.05	0.00	0.43	0.00	0.04	0.00	0.22	0.08	0.02	0.00	0.01
Keshav Puram	0.08	0.01	0.01	0.00	0.04	0.00	0.58	0.01	0.02	0.01	0.14	0.07	0.02	0.00	0.01
Najafgarh	0.15	0.00	0.00	0.00	0.02	0.00	0.48	0.00	0.03	0.01	0.22	0.05	0.02	0.00	0.01
Narela	0.19	0.00	0.00	0.00	0.01	0.00	0.52	0.00	0.02	0.03	0.15	0.04	0.02	0.00	0.02
Paharganj	0.13	0.03	0.00	0.00	0.05	0.01	0.38	0.01	0.03	0.02	0.19	0.09	0.03	0.00	0.03
Rohini	0.14	0.00	0.01	0.00	0.04	0.00	0.52	0.00	0.02	0.01	0.16	0.07	0.01	0.00	0.01
Shahdara North	0.13	0.03	0.00	0.00	0.04	0.00	0.44	0.00	0.04	0.01	0.22	0.07	0.01	0.00	0.01
Shahdara South	0.10	0.03	0.00	0.00	0.06	0.01	0.46	0.01	0.03	0.03	0.17	0.08	0.01	0.00	0.02
South	0.12	0.01	0.00	0.00	0.03	0.00	0.45	0.00	0.03	0.01	0.24	0.08	0.01	0.00	0.01
West	0.15	0.01	0.00	0.00	0.02	0.00	0.47	0.00	0.02	0.01	0.22	0.06	0.01	0.00	0.01

 Table SI.3.5: Percentage of Complaint Types By Ward

Percentage of complaints in a ward by type.

SI.4: Questions

As discussed in the main text, the appropriate way for corporators to engage with complaints to try to get them resolved is by asking questions during corporation meetings. These questions draw bureaucrats' attention to specific complaints. The main dependent variable is the total number of questions asked by a given corporator with other dependent variable specifications for questions asked during ward committee meetings and for questions about different types of issues. Questions were categorized into types of issues by the non-governmental organization that obtained the questions via a Right to Information Act request from the municipal corporation government. The text of the question is also provided. The text is more like a paraphrase of the text of the question as recorded in the minutes of the municipal corporation meeting and as edited by the non-governmental organization.

It is not possible to directly link a particular question to a complaint because the complaint identifier is not used by corporators when asking questions. Therefore, it is possible that asking one question serves to resolve multiple complaints. Of course, asking a question in a corporation meeting does not mean that the complainant knows that the corporator is trying to be responsive to their complaint. In fact, one of the challenges of this project is simply collecting the data on questions and complaints because this information is not readily available and, even when obtained, is not easy to search through. So, if a corporator was using one question to respond to multiple complaints, the corporator would need to make the complainants aware that she took this action since complainants are unlikely to be able to figure out what went on during municipal corporation meetings on their own.

The way in which questions are asked and the specificity of questions varies. Take two questions from the same corporator — Shyam Kumar Mishra — asked on the same day in the same committee meeting. The first question (#1012) says, "Asked what action is initiated against the contractor who does not carry out works. Explanation should be given." The second question (#1013) says, "House no.94 is constructed by the builder in A-1 block with wall of either fourth or fifth or sixth floor has collapsed. People were scared to death. The builder is using substandard quality material. Action should be initiated." One or both of these questions could have come directly from a constituent making a complaint. The first question does not specify a contractor and so the only thing that the bureaucracy could do would be to provide the corporator with general information about dealing with such contractors. The second question is specific enough that the bureaucrat assigned to redress the complaint knows exactly where to go and what action to take to resolve the issue. Because the questions are paraphrased and are provided independent of minutes from the committee meetings, some context surrounding the question could have been lost, making it more difficult to discern exactly whether a question came from a constituent complaining. Since the complaints data includes only the category of the complaint and its location not a specific description, questions and complaints cannot be matched directly based on details from the complaint. Future research would do well to try to obtain the specific complaint descriptions that constituents provide when they submit a complaint in order to more effectively match questions and complaints, though the feasibility of getting such information is unclear given the low level of existing transparency surrounding the complaint process.

Tables SI.4.1 and SI.4.2 display the total number of questions and questions asked in

ward committees by constituency. Note that while there is corporation-based variation in total question asking, all of the corporators asking the most questions in ward committees came from the North Delhi Municipal Corporation.

Constituency	Questions	WardQuestions
086-S	614	0
038-S	613	1
063-N	426	0
101-N	349	1
016-N	248	0
036-N	245	23
083-N	230	54
031-E	228	0
089-S	227	39
005-S	222	4
032-N	222	49
086-N	219	53
095-N	214	84
046-S	199	0
102-N	197	90
061-E	194	0
042-N	186	113
011-N	179	130
072-N	177	13
100-N	174	72
059-S	172	23
084-N	168	60
085-N	167	55
013-N	163	123
012-N	161	135

Table SI.4.1: Most Overall Questions

Constituencies where most questions were asked.

Constituency	Questions	WardQuestions
012-N	161	135
011-N	179	130
013-N	163	123
021-N	157	123
009-N	144	120
042-N	186	113
010-N	103	93
102-N	197	90
095-N	214	84
094-N	137	84
048-N	130	79
041-N	121	78
006-N	145	77
028-N	129	73
015-N	86	73
100-N	174	72
019-N	79	68
093-N	128	66
020-N	74	64
022-N	126	63
087-N	149	61
084-N	168	60
103-N	105	60
099-N	118	59
085-N	167	55

Table SI.4.2: Most Ward Questions

Constituencies where most ward questions were asked.

Table SI.4.3 displays the type of questions asked in ward committees broken down by ward committee. Not all ward committees talk about the same issues, and not all types of issues are equally important. For example, even though pests, drainage, and garbage are the most common complaints, unauthorized colonies and revenue are major topics of conversation in the Civil Line ward committee.

Ward	Drainage	Education	Electricity	Environment	Health	Infrastructure	Other	Pests	Pollution	Revenue	Roads	Services	SWM	Unauthorized	Water	Welfare	NA
Central	8	5	9	7	12	55	25	8	0	0	8	35	94	55	2	3	0
Civil Line	41	14	80	52	22	137	70	59	1	147	31	52	238	202	19	64	0
Karol Bagh	11	20	50	59	12	78	78	22	1	8	23	32	107	111	15	29	0
Keshav Puram	6	0	16	4	5	21	21	36	1	6	9	34	59	49	0	0	0
Najafgarh	0	0	5	5	0	2	8	2	0	0	1	9	23	2	0	1	0
Narela	17	4	32	5	3	21	14	10	0	4	5	34	48	35	6	1	0
Paharganj	6	5	74	13	4	63	28	38	0	4	42	25	58	67	2	5	0
Rohini	45	19	59	60	15	79	34	82	0	2	8	58	272	180	1	17	1
Shahdara North	10	8	46	28	18	29	8	8	0	2	5	22	69	38	2	4	0
Shahdara South	33	3	18	30	12	50	16	19	0	2	13	41	96	80	9	3	1
South	11	4	21	14	8	26	12	9	0	2	9	14	62	27	1	1	0
West	16	0	21	17	4	37	3	11	0	0	19	46	101	31	6	4	0

Table SI.4.3: Ward Questions By Ward

Question type asked in ward committees.

Question Topic Modeling

I use topic modeling techniques to analyze these questions. Questions are short: the average question is only 32 words long. Hence, we should be careful when implementing a standard topic model routine, as topic models do not always work well with short text. To address this problem, I employ a standard structural topic model (STM) and a bi-term topic model (BTM).

I prepared the STM corpus using standard techniques that involve stripping punctuation and removing stopwords, including common stopwords in this corpus like "corporator." The committee name, corporation, and complaint type were all included in the STM as metadata. Using diagnostic tests, I determined that there were 35 topics in the corpus.

BTM uses pairs of words that occur next to each other instead of relying exclusively on the bag-of-words approach inherent in STM. This makes BTM more suitable for use in shorttext situations. I removed all non-nouns, adjectives, and verbs and again used diagnostic tests to determine that 35 topics was appropriate.

Figure SI.4.1 presents a plot of the topic model results for both the STM and BTM. The x axis refers to the proportion of the corpus devoted to each of the topics. Topics are described using the three most frequent words. Most corporator questions are about topics related to public complaints. The most frequent topics include those about completing work and taking action to remove items as well as some specific types of complaints like garbage, market, and toilet issues. Hence, we can be relatively sure that corporators are using many of their questions to ask about topics about which members of the public might complain.

I provide further details on the two approaches below.

STM is designed for use with longer documents. With an average length of only 32 words, it may be difficult for a STM to accurately discern the number of topics (Qiang et al., 2016). However, Wüest (2018) faces a similar problem with short-text responses and argues that STM is a viable solution. Several other solutions have attempted to rely heavily on STM metadata to improve classification (Qiang et al., 2019).⁹

BTM is specifically designed to work with short text responses (Yan et al., 2013). The advantage of BTM is that it groups words into co-occurring pairs and models these pairs across the corpus. This helps to improve the classification of any one document because the model can utilize corpus level co-occurrence patterns to help describe individual documents that contain few words. Li et al. (2016) show that BTM performs competitively when compared to more advanced short text solutions.¹⁰

The most important decision in any topic modeling routine is choosing the number of topics. To perform this task, I first ran a series of standard diagnostic tests on a range of topics from 10 to 50. Figure SI.4.2 shows these diagnostic results. Best fitting models have the highest held-out likelihood, lowest residuals, high semantic coherence, and high exclusivity. These factors are all trade-offs, as increasing coherence usually reduces exclusivity, for example. The Figure suggests that higher numbers of topics are better, but that increasing topic number beyond 40 starts increasing residuals. Given this, 35 topics appears to be a reasonable number.

⁹See Chae and Park (2018) for an example using STM with short text.

¹⁰See Pietsch and Lessmann (2018) and Santos, Rita and Guerreiro (2018) for applications with BTM.



Figure SI.4.1: Topic Model Results

Proportion of questions belonging to each of 35 topics and three words most associated with each topic.

Figure SI.4.2: STM Models Diagnostics



Diagnostic Values by Number of Topics

Best fitting model has highest held-out likelihood, lowest residuals, high semantic coherence, and high exclusivity.

The process for finding the optimal number of topics for a BTM model is still being refined and discussed. There are no built-in diagnostics for BTM models. One suggestion is to compare model fit by running several BTM models, calculating their log likelihood, and picking the number of topics associated with the highest log likelihood. I implement this procedure in Figure SI.4.3 for between 10 and 35 topics. In this case, the model with 35 topics has the highest log likelihood. It is possible that models with more topics have better performance, but I selected the model with 35 topics in order to match the number of topics in the STM.



Figure SI.4.3: BTM Models Log Likelihood

Points represent log likelihood for a given number of topics in a BTM topic model.

Table SI.4.4 displays the 35 topics sorted by topic probability and lists the seven most common words associated with each topic. Table SI.4.5 performs the same procedure with the ten most common words for the 35 BTM topics.

Topic								Probability
27	work	done	complet	fund	start	soon	tender	0.05
14	date	propos	letter	resolv	approv	recommend	resolut	0.05
29	given	one	last	day	month	two	answer	0.05
1	light	instal	repair	led	fix	electr	high	0.04
23	remov	immedi	encroach	near	nagar	block	stall	0.04
22	inform	mani	regard	give	ask	file	sought	0.04
10	clean	need	water	drain	machin	regular	big	0.04
12	worker	staff	cleanli	ensur	sanit	shortag	deploy	0.03
19	peopl	due	rais	problem	get	henc	lot	0.03
2	made	provis	avail	lakh	arrang	children	centr	0.03
13	commission	zone	carri	order	pass	till	citi	0.03
16	garbag	vehicl	collect	dump	wast	clear	lift	0.03
4	shop	seal	licens	open	meat	factori	close	0.03
20	corpor	govern	offici	respons	present	receiv	rule	0.03
9	year	budget	crore	fund	head	plan	develop	0.03
25	park	garden	tree	wall	maintain	develop	big	0.03
18	provid	member	list	discuss	name	form	mcd	0.03
32	depart	appoint	transfer	post	health	engin	inspector	0.03
31	road	lane	villag	cut	repair	main	along	0.03
33	construct	toilet	hospit	public	dispensari	facil	new	0.03
8	school	student	teacher	educ	run	wall	inspect	0.03
24	hous	tax	properti	collect	notic	peopl	year	0.03
15	action	illeg	appropri	function	concern	even	taken	0.03
5	number	tipper	come	increas	auto	allot	visit	0.02
11	revenu	increas	use	corpor	put	fee	well	0.02
30	place	take	\mathbf{make}	small	talk	mobil	peopl	0.02
34	time	paid	pay	everi	payment	money	special	0.02
17	area	market	land	week	oper	held	new	0.02
6	taken	initi	even	immedi	${ m must}$	person	concern	0.02
21	build	condit	$\operatorname{communiti}$	book	chang	old	bad	0.02
3	charg	without	stray	owner	process	challan	earliest	0.02
26	per	matter	case	shri	report	penalti	store	0.02
7	COW	caus	$\operatorname{complaint}$	\log	kept	resid	remov	0.01
28	coloni	unauthor	polici	amount	fine	unauthoris	develop	0.01
35	hall	go	$_{ m still}$	locat	sinc	privat	even	0.01

Table SI.4.4: STM Topics and Associated Words

Topic											Probability
1	ward	give	take	work	make	action	school	corporation	committee	issue	0.12
14	work	carry	officer	order	corporation	court	sealing	department	policy	make	0.05
31	meeting	issue	member	committee	raise	state	ward	last	regard	commissioner	0.04
8	ward	drain	work	clean	need	road	water	condition	repair	school	0.04
16	give	information	regard	provide	list	councillor	ask	department	seek	notice	0.04
35	worker	staff	ward	number	cleanliness	cleaning	work	increase	appoint	sanitation	0.04
28	delhi	government	corporation	municipal	give	act	ndmc	central	pay	state	0.04
12	committee	date	stand	resolution	recommend	proposal	regard	matter	disciplinary	vide	0.03
34	shop	meat	market	illegal	weekly	ward	stall	encroachment	sell	take	0.03
13	nagar	road	park	ward	vihar	block	colony	market	school	temple	0.03
2	ward	colony	building	land	house	open	park	dairy	unauthorized	construct	0.03
30	letter	proposal	date	commissioner	wide	no.	resolve	present	contain	propose	0.03
21	tax	property	charge	collect	pay	house	fee	penalty	amount	impos	0.03
18	commissioner	officer	post	deputy	engineer	office	municipal	chief	additional	basis	0.03
11	department	health	issue	license	inspector	work	building	licence	dept	give	0.02
17	take	action	appropriate	initiate	place	illegal	regard	immediate	solicit	strict	0.02
20	revenue	corporation	fund	increase	crore	lakh	give	rs.	amount	budget	0.02
4	problem	cow	stray	dog	cause	people	ward	face	lot	traffic	0.02
7	school	municipal	corporation	primary	ward	student	room	construct	building	toilet	0.02
3	light	install	lead	ward	mast	repair	high	fix	lights	work	0.02
26	garbage	waste	dump	ward	house	collect	lift	vehicle	road	remove	0.02
27	parking	illegal	place	area	vehicle	charge	park	unauthorized	construction	commercial	0.02
29	year	time	pay	last	pension	month	give	work	salary	staff	0.02
25	people	student	school	day	teacher	child	meal	give	get	provide	0.02
24	zone	hall	ward	area	community	city	house	building	line	civil	0.02
23	tipper	door	auto	ward	garbage	give	provide	collection	vehicle	tractor	0.02
5	make	budget	head	estimate	year	account	provision	budgetary	regard	recommendation	0.02
22	ward	mobile	conduct	people	camp	councillor	organise	meeting	program	towers	0.02
10	water	tree	park	electricity	plant	form	install	range	board	discusss	0.02
6	shri	singh	present	case	jain	marg	nirmal	follow	rda	ram	0.02
33	road	name	renam	lane	village	roads	naming	main	chowk	street	0.02
32	hospital	machine	provide	facility	give	medicine	available	dispensary	sucker	doctor	0.01
9	make	centre	child	citizen	bharat	community	say	construct	senior	park	0.01
19	approval	grant	date	regard	proposal	naming	condition	resolve	accord	subject	0.01
15	give	report	certificate	company	rate	contract	record	free	private	booking	0.01

Table SI.4.5: BTM Topics and Associated Words

SI.5: Models

Table SI.5.1 shows linear and maximum likelihood multilevel regression results with a constituencylevel unit-of-analysis for both all questions asked and just questions asked in the ward committee meetings. Tables SI.5.2 and SI.5.3 show the same results for Bayesian multilevel models.

	Linear	MLM	Linear	MLM
	All	All	Ward	Ward
(Intercept)	2.74**	2.83	3.43**	3.45
	(1.37)	(1.21)	(1.35)	(1.96)
Complaints	0.13	-0.05^{***}	0.05	-0.09^{***}
	(0.10)	(0.03)	(0.17)	(0.07)
Female	-0.07	-0.08^{***}	0.31	0.31
	(0.22)	(0.22)	(0.28)	(0.34)
SC Pct.	1.30	2.29	1.90	2.35
	(1.27)	(1.47)	(1.43)	(2.40)
BJP	0.38^{**}	0.51	0.58^{*}	0.66
	(0.19)	(0.26)	(0.35)	(0.41)
Reserved Caste	0.10	-0.11^{***}	-0.04	-0.10^{***}
	(0.36)	(0.44)	(0.30)	(0.70)
Population	-0.00^{*}	-0.00^{***}	-0.00	-0.00^{***}
	(0.00)	(0.00)	(0.00)	(0.00)
Standing Comm.	1.09^{***}	1.10	-1.86^{***}	-1.87^{***}
	(0.17)	(0.35)	(0.51)	(0.55)
Num. Committees	0.26^{***}	0.26	0.29^{**}	0.28
	(0.09)	(0.10)	(0.12)	(0.16)
Age	0.01	0.01	-0.02	-0.02^{***}
	(0.01)	(0.01)	(0.02)	(0.02)
BA	0.28	0.25	-0.95^{***}	-0.95^{***}
	(0.17)	(0.22)	(0.24)	(0.35)
MOV	-0.21	-0.21^{***}	-2.38^{**}	-2.22^{***}
	(0.95)	(0.94)	(1.03)	(1.50)
Num. obs.	267	267	267	267

Table SI.5.1: Predicting Questions

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

Linear regression models with ward fixed effects and wild cluster bootstrapped standard errors by ward and multilevel models with ward random effects.

	Estimate	Std. Error	2.5%	97.5%
(Intercept)	2.93	1.24	0.48	5.47
Complaints	-0.05	0.03	-0.10	0.02
Female	-0.07	0.21	-0.49	0.33
SC Pct.	2.02	1.48	-0.97	5.15
BJP	0.50	0.24	0.01	0.98
Reserved Caste	-0.07	0.43	-0.94	0.83
Population	-0.00	0.00	-0.00	0.00
Standing Comm.	1.10	0.35	0.39	1.80
Num. Committees	0.26	0.10	0.07	0.46
Age	0.01	0.01	-0.02	0.04
BA	0.25	0.22	-0.21	0.69
MOV	-0.20	0.94	-2.09	1.68

Table SI.5.2: All Questions Bayesian

Bayesian multilevel model results with ward-level random effects for all questions.

	Estimate	Std. Error	2.5%	97.5%
(Intercept)	3.49	2.06	-0.51	7.53
Complaints	-0.09	0.08	-0.24	0.09
Female	0.30	0.34	-0.35	0.95
SC Pct.	2.48	2.41	-2.28	7.08
BJP	0.66	0.42	-0.14	1.48
Reserved Caste	-0.12	0.69	-1.51	1.24
Population	-0.00	0.00	-0.00	0.00
Standing Comm.	-1.86	0.57	-2.99	-0.77
Num. Committees	0.28	0.16	-0.01	0.59
Age	-0.02	0.02	-0.06	0.02
BA	-0.96	0.34	-1.62	-0.28
MOV	-2.17	1.47	-5.18	0.67

Table SI.5.3: Just Ward Questions Bayesian

Bayesian multilevel model results with ward-level random effects for just ward committee questions.

Tables SI.5.4, SI.5.5, and SI.5.6 display the regression tables point estimates for the relationship between complaints and questions excluding the Civil Lines and Keshav Puram wards where none of the complaints could be accurately geocoded.

	Linear	MLM	Linear	MLM
	All	All	Ward	Ward
(Intercept)	2.85^{*}	2.33	3.15^{**}	2.67
	(1.55)	(1.39)	(1.40)	(2.28)
Complaints	0.11	0.13	0.02	0.03
	(0.10)	(0.09)	(0.18)	(0.16)
Female	-0.11	-0.11^{***}	0.33	0.33
	(0.25)	(0.24)	(0.31)	(0.38)
SC Pct.	1.02	1.92	1.38	2.03
	(1.49)	(1.65)	(1.50)	(2.73)
BJP	0.44^{**}	0.44	0.64	0.64
	(0.22)	(0.29)	(0.40)	(0.46)
Reserved Caste	0.16	0.05	0.11	0.07^{*}
	(0.42)	(0.50)	(0.29)	(0.81)
Population	-0.00^{*}	-0.00^{***}	-0.00	-0.00^{***}
	(0.00)	(0.00)	(0.00)	(0.00)
Standing Comm.	1.09^{***}	1.08	-1.79^{***}	-1.79^{***}
	(0.17)	(0.40)	(0.58)	(0.63)
Num. Committees	0.31^{***}	0.30	0.29^{**}	0.28
	(0.09)	(0.11)	(0.13)	(0.17)
Age	0.01	0.01	-0.02	-0.01^{***}
	(0.01)	(0.02)	(0.02)	(0.02)
BA	0.40^{**}	0.34	-0.84^{***}	-0.87^{***}
	(0.19)	(0.25)	(0.28)	(0.40)
MOV	0.16	0.24	-2.27^{**}	-2.07^{***}
	(0.97)	(1.01)	(1.07)	(1.63)
Num. obs.	232	232	232	232

Table SI.5.4: Predicting Questions without Civil Lines or Keshav Puram

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

Linear regression models with ward fixed effects and wild cluster bootstrapped standard errors by ward and multilevel models with ward random effects. Excludes Civil Line and Keshav Puram wards.

	Estimate	Std. Error	2.5%	97.5%
(Intercept)	2.46	1.43	-0.35	5.35
Complaints	0.12	0.09	-0.06	0.31
Female	-0.12	0.25	-0.59	0.37
SC Pct.	1.83	1.66	-1.47	5.13
BJP	0.44	0.28	-0.11	1.00
Reserved Caste	0.05	0.50	-0.94	1.07
Population	-0.00	0.00	-0.00	0.00
Standing Comm.	1.09	0.39	0.32	1.86
Num. Committees	0.30	0.11	0.08	0.51
Age	0.01	0.02	-0.02	0.04
BA	0.35	0.26	-0.13	0.82
MOV	0.21	1.02	-1.82	2.25

Table SI.5.5: All Questions Bayesian without Civil Lines or Keshav Puram

Bayesian multilevel model results with ward-level random effects for all questions. Excludes Civil Lines and Keshav Puram.

	Estimate	Std. Error	2.5%	97.5%
(Intercept)	2.72	2.27	-1.74	7.21
Complaints	0.03	0.17	-0.30	0.36
Female	0.33	0.38	-0.40	1.10
SC Pct.	2.07	2.78	-3.28	7.48
BJP	0.62	0.45	-0.28	1.55
Reserved Caste	0.07	0.82	-1.49	1.60
Population	-0.00	0.00	-0.00	0.00
Standing Comm.	-1.80	0.64	-3.01	-0.50
Num. Committees	0.29	0.18	-0.06	0.62
Age	-0.01	0.02	-0.06	0.04
BA	-0.86	0.40	-1.64	-0.07
MOV	-2.03	1.59	-5.22	1.07

Table SI.5.6: Just Ward Questions Bayesian without Civil Lines or Keshav Puram

Bayesian multilevel model results with ward-level random effects for just ward committee questions. Excludes Civil Lines and Keshav Puram.

Finally, I break-down the results by type of question/complaint. Tables SI.5.7, SI.5.8, SI.5.9, and SI.5.10 show these results at for all questions and just ward questions both by specifying linear regression and multilevel models.

We might be interested in whether corporators respond to certain types of complaints using the CCTS. It is possible that they see the CCTS as an effective way to resolve only certain complaints and, therefore, the aggregate analysis is obfuscating some interesting and relevant variation. Examining the four tables, we can immediately observe that there are relatively few complaint types where the volume of complaints is significantly associated with the number of questions asked about that type of complaint. The results that are significant are not consistently significant between models. It does not appear, therefore, that corporators are selectively using the CCTS to respond to only certain types of complaints. This makes sense because acting in this way would require logging onto the CCTS and reviewing complaints in order to respond by asking questions only about certain complaint types. If a corporator were to log on to the CCTS, it makes more sense to respond to whichever complaints pop up first or most frequently instead of being selectively responsive by complaint type.

	Dependent variable:											
	Pollution	Pests	Infra.	SWM	Roads	Water	Drainage	Elec.	Env.	Services	Unauth.	Health
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Pollution	-0.001 (0.003)											
Pests		$\begin{array}{c} -0.080^{**} \\ (0.035) \end{array}$										
Infrastructure			0.067 (0.062)									
SWM				0.238 (0.300)								
Roads					-0.058 (0.057)							
Water						0.589^{*} (0.310)						
Drainage							0.025 (0.026)					
Electricity								0.009 (0.007)				
Environment									-0.015 (0.022)			
Services										$\begin{array}{c} 0.021^{*} \\ (0.011) \end{array}$		
Unauthorized											$\begin{array}{c} 0.187\\ (0.126) \end{array}$	
Health												0.813* (0.322
Female	-0.379 (0.457)	$\begin{array}{c} 0.948 \\ (0.800) \end{array}$	(0.089) (0.262)	$\begin{array}{c} 0.861 \\ (0.758) \end{array}$	-0.541 (1.889)	$\begin{pmatrix} 0.062 \\ (0.254) \end{pmatrix}$	$\begin{array}{c} 0.038\\ (0.083) \end{array}$	-0.163 (0.331)	-0.545 (1.172)	-0.319 (1.410)	-0.333 (0.859)	-0.00 (0.126)
SC Pct.	2.056 (1.664)	-7.964^{**} (3.868)	$3.700 \\ (4.021)$	-0.512 (2.910)	-5.438 (11.241)	4.632^{*} (2.809)	-0.035 (0.442)	-2.152 (2.473)	3.335 (7.668)	6.606 (7.725)	10.574 (7.332)	1.628* (0.968)
BJP	-0.248 (0.529)	-1.082^{**} (0.527)	-0.212 (0.482)	-0.496 (0.459)	-3.264^{***} (1.038)	-0.288 (0.243)	-0.044 (0.075)	-0.452 (0.512)	-2.236^{***} (0.509)	-2.029 (1.634)	-0.779 (1.065)	-0.109 (0.142)
Reserved Caste	-0.632 (0.690)	2.298*** (0.871)	-1.558 (1.131)	$\begin{array}{c} 0.583 \\ (0.638) \end{array}$	2.168 (2.421)	-1.379^{**} (0.644)	$\begin{array}{c} 0.035\\ (0.103) \end{array}$	$\begin{array}{c} 0.057 \\ (0.374) \end{array}$	$\begin{pmatrix} 0.551 \\ (1.193) \end{pmatrix}$	-0.894 (2.733)	-4.263 (2.595)	-0.558 (0.332)
Population	-0.00000 (0.00003)	$\begin{array}{c} -0.00002 \\ (0.00003) \end{array}$	-0.00003 (0.00002)	$\begin{array}{c} 0.00002\\ (0.00002) \end{array}$	$\begin{array}{c} 0.0001^{**} \\ (0.0001) \end{array}$	$\begin{array}{c} -0.00001 \\ (0.00001) \end{array}$	-0.00001 (0.00000)	$\begin{array}{c} 0.00000\\ (0.00002) \end{array}$	$\begin{array}{c} 0.00001 \\ (0.00005) \end{array}$	$\begin{array}{c} 0.00001 \\ (0.0001) \end{array}$	-0.00003 (0.00005)	-0.000 (0.0000
Standing Comm.	1.447^{**} (0.632)	4.292*** (1.507)	$\begin{array}{c} 0.527\\ (0.774) \end{array}$	4.190^{***} (1.473)	24.874*** (4.031)	-0.123 (0.589)	0.580^{***} (0.170)	1.521^{**} (0.616)	14.234^{***} (3.048)	9.663*** (3.174)	10.723*** (2.199)	0.131 (0.272
Num. Committees	$\begin{array}{c} 0.248\\ (0.153) \end{array}$	$\begin{pmatrix} 0.144 \\ (0.314) \end{pmatrix}$	$\begin{array}{c} 0.108\\ (0.155) \end{array}$	$\begin{array}{c} 0.481^{***} \\ (0.170) \end{array}$	$\begin{pmatrix} 0.270 \\ (0.593) \end{pmatrix}$	$\begin{array}{c} 0.240^{*} \\ (0.135) \end{array}$	0.035^{**} (0.017)	$\begin{array}{c} 0.104 \\ (0.119) \end{array}$	$\begin{array}{c} 0.369\\ (0.411) \end{array}$	1.183^{*} (0.624)	$\begin{array}{c} 0.512 \\ (0.360) \end{array}$	0.026 (0.056
Age	$\begin{array}{c} 0.014 \\ (0.020) \end{array}$	$\begin{array}{c} 0.117^{***} \\ (0.036) \end{array}$	$\begin{pmatrix} 0.032 \\ (0.021) \end{pmatrix}$	$\begin{pmatrix} 0.043 \\ (0.034) \end{pmatrix}$	$\begin{array}{c} 0.330^{***} \\ (0.114) \end{array}$	$\begin{array}{c} 0.005\\ (0.021) \end{array}$	$\begin{array}{c} 0.004 \\ (0.003) \end{array}$	$\begin{array}{c} 0.041^{***} \\ (0.013) \end{array}$	$\begin{array}{c} 0.210^{***} \\ (0.043) \end{array}$	$\begin{array}{c} 0.091 \\ (0.062) \end{array}$	$\begin{array}{c} 0.053 \\ (0.050) \end{array}$	0.001 (0.007
BA	-0.139 (0.251)	2.349^{***} (0.618)	-0.454 (0.283)	$\begin{array}{c} 0.908 \\ (0.570) \end{array}$	6.110^{***} (1.647)	-0.005 (0.387)	$\begin{array}{c} 0.016 \\ (0.060) \end{array}$	0.463^{**} (0.211)	2.420^{***} (0.666)	(1.590) (1.535)	$\begin{pmatrix} 0.430 \\ (1.398) \end{pmatrix}$	-0.11 (0.102
MOV	(2.089)	7.035^{*} (3.595)	1.481 (1.879)	5.831^{*} (3.027)	27.305** (12.054)	$\begin{pmatrix} 0.941 \\ (2.010) \end{pmatrix}$	$\begin{pmatrix} 0.525 \\ (0.359) \end{pmatrix}$	5.124^{**} (2.481)	8.749 (5.441)	2.787 (8.388)	2.273 (7.278)	-0.12 (0.400
Constant	-0.161 (2.294)	-5.348^{**} (2.587)	$\begin{array}{c} 0.416\\ (1.854) \end{array}$	-4.258 (2.788)	$\begin{array}{c} -27.883^{***} \\ (8.791) \end{array}$	$\begin{pmatrix} 0.307 \\ (1.731) \end{pmatrix}$	-0.040 (0.350)	-2.364 (1.511)	-9.248^{***} (3.010)	$\begin{array}{c} 0.138\\ (6.897) \end{array}$	$\begin{array}{c} 0.333 \\ (3.987) \end{array}$	0.833 (0.853

Table SI.5.7: All Questions

Linear regression models with ward fixed effects and wild cluster bootstrapped standard errors by ward. All questions included.

						Dependent	t variable:					
	Pollution	Pests	Infra.	SWM	Roads	Water	Drainage	Elec.	Env.	Services	Unauth.	Health
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Pollution	-0.001 (0.002)											
Pests		$\begin{array}{c} 0.015 \\ (0.017) \end{array}$										
Infrastructure			0.025 (0.041)									
SWM				-0.009 (0.117)								
Roads					0.004 (0.010)							
Water						0.364 (0.273)						
Drainage							-0.003 (0.004)					
Electricity							. /	0.009 (0.007)				
Environment								· ···/	-0.002 (0.004)			
Services									()	0.011*** (0.003)		
Unauthorized										()	0.098 (0.060)	
Health											()	1.483** (0.188
Female	0.139 (0.152)	-0.068 (0.107)	0.553^{***} (0.199)	0.007 (0.072)	-0.291 (0.196)	0.192 (0.187)	0.009 (0.013)	$\begin{array}{c} 0.031 \\ (0.085) \end{array}$	0.140 (0.213)	0.514 (0.417)	-0.072 (0.266)	0.053 (0.062
SC Pct.	1.020 (0.672)	$\begin{array}{c} 0.164 \\ (0.731) \end{array}$	2.000 (1.708)	1.762*** (0.506)	0.551 (1.769)	4.233*** (1.411)	0.211 (0.198)	0.434 (0.909)	3.189 (2.158)	8.639 (5.986)	7.087*** (2.715)	1.122** (0.421
BJP	0.049 (0.141)	-0.165 (0.175)	-0.050 (0.234)	0.114^{*} (0.067)	-0.085 (0.230)	-0.163 (0.267)	-0.026 (0.020)	-0.104 (0.194)	-0.123 (0.124)	-0.039 (0.563)	0.444 (0.414)	-0.05 (0.107
Reserved Caste	-0.404 (0.311)	-0.079 (0.248)	-0.651 (0.554)	-0.306 (0.203)	-0.147 (0.389)	-1.073^{***} (0.323)	-0.035 (0.029)	-0.284 (0.205)	-0.398 (0.365)	-2.028 (1.709)	-2.107^{*} (1.198)	-0.413 (0.133
Population	0.00000 (0.00002)	0.00000 (0.00001)	-0.00001 (0.00002)	$\begin{array}{c} 0.00000\\ (0.00001) \end{array}$	-0.00000 (0.00001)	-0.00003^{***} (0.00001)	-0.00000 (0.00000)	-0.00000 (0.00001)	-0.00003 (0.00002)	$\begin{array}{c} 0.00001 \\ (0.00003) \end{array}$	-0.0001^{**} (0.00003)	-0.000 (0.0000
Standing Comm.	-0.253 (0.239)	$\begin{array}{c} 0.176 \\ (0.191) \end{array}$	-0.893^{***} (0.283)	-0.227 (0.159)	-0.168 (0.418)	-0.424^{*} (0.239)	-0.020 (0.015)	-0.230^{*} (0.138)	$\begin{array}{c} 0.464 \\ (0.311) \end{array}$	-1.513^{**} (0.737)	-0.362 (0.463)	-0.193 (0.079
Num. Committees	$\begin{array}{c} 0.047 \\ (0.057) \end{array}$	-0.057^{*} (0.032)	$\begin{array}{c} 0.035\\ (0.074) \end{array}$	$\begin{array}{c} 0.019 \\ (0.048) \end{array}$	-0.002 (0.073)	0.078 (0.068)	$\begin{array}{c} 0.001 \\ (0.003) \end{array}$	$\begin{array}{c} 0.049 \\ (0.052) \end{array}$	-0.070 (0.080)	$\begin{array}{c} 0.005\\ (0.219) \end{array}$	-0.031 (0.161)	-0.02 (0.032
Age	-0.009 (0.010)	$\begin{array}{c} 0.005 \\ (0.007) \end{array}$	$\begin{array}{c} 0.015\\ (0.014) \end{array}$	0.007^{*} (0.005)	-0.015 (0.012)	-0.011 (0.011)	$\begin{array}{c} 0.001 \\ (0.001) \end{array}$	0.009^{*} (0.005)	$\begin{pmatrix} 0.002 \\ (0.018) \end{pmatrix}$	$\begin{pmatrix} 0.018 \\ (0.025) \end{pmatrix}$	-0.016 (0.023)	-0.000 (0.004
BA	$\begin{array}{c} -0.323^{**} \\ (0.127) \end{array}$	-0.143 (0.110)	-0.360^{**} (0.161)	-0.198^{*} (0.107)	$\begin{array}{c} 0.217 \\ (0.330) \end{array}$	-0.376 (0.231)	$\begin{array}{c} 0.004 \\ (0.012) \end{array}$	$\begin{array}{c} 0.030 \\ (0.107) \end{array}$	-0.506^{**} (0.210)	-1.410^{***} (0.521)	-1.292^{*} (0.661)	-0.163 (0.079
MOV	-1.060^{*} (0.629)	-0.483 (0.327)	-0.051 (1.296)	-0.213 (0.427)	-1.176 (0.948)	-0.298 (0.660)	$\begin{array}{c} 0.027\\ (0.042) \end{array}$	$\begin{pmatrix} 0.181 \\ (0.872) \end{pmatrix}$	-0.875 (1.274)	-7.243^{***} (2.478)	-5.699 (3.581)	-0.29 (0.269
Constant	$\begin{array}{c} 0.838\\ (1.119) \end{array}$	$\begin{array}{c} 0.336\\ (1.005) \end{array}$	-0.114 (1.279)	-0.171 (0.510)	2.079*** (0.738)	2.529*** (0.898)	-0.016 (0.110)	$\begin{array}{c} 0.064 \\ (0.696) \end{array}$	3.219*** (1.233)	3.819 (2.629)	7.311*** (2.175)	0.381 (0.487

Table SI.5.8: Just Ward Questions

Linear regression models with ward fixed effects and wild cluster bootstrapped standard errors by ward. Only ward questions included.
	Dependent variable:											
	Pollution	Pests	Infra.	SWM	Roads	Water	Drainage	Elec.	Env.	Services	Unauth.	Health
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Pollution	(0.0003) (0.005)											
Pests		-0.047 (0.080)										
Infrastructure			$0.060 \\ (0.116)$									
SWM				0.357 (0.601)								
Roads					-0.031 (0.078)							
Water						0.577*** (0.217)						
Drainage							$\begin{array}{c} 0.026\\ (0.021) \end{array}$					
Electricity								(0.013) (0.025)				
Environment									-0.011 (0.027)			
Services										$\begin{array}{c} 0.021\\ (0.014) \end{array}$		
Unauthorized											$\begin{array}{c} 0.156 \\ (0.168) \end{array}$	
Health												1.205 (1.014
Female	-0.365 (0.353)	$\begin{array}{c} 0.936 \\ (0.574) \end{array}$	$\begin{array}{c} 0.097\\ (0.382) \end{array}$	0.857^{**} (0.436)	-0.679 (1.723)	(0.058) (0.332)	$\begin{array}{c} 0.040\\ (0.059) \end{array}$	-0.158 (0.345)	-0.592 (0.991)	-0.354 (1.295)	-0.327 (1.079)	-0.01 (0.119
SC Pct.	3.565 (2.477)	-6.043 (4.014)	4.158 (2.740)	$\begin{array}{c} 0.617\\ (2.942) \end{array}$	2.256 (11.948)	4.796** (2.379)	$\begin{array}{c} 0.095 \\ (0.395) \end{array}$	-1.555 (2.467)	7.560 (6.878)	9.607 (9.154)	12.168 (7.713)	1.964* (0.875
BJP	-0.251 (0.426)	-0.891 (0.694)	-0.265 (0.464)	-0.464 (0.512)	-2.958 (2.067)	-0.343 (0.403)	-0.062 (0.069)	-0.526 (0.423)	-2.182^{*} (1.190)	-1.949 (1.567)	-0.823 (1.322)	-0.06 (0.144
Reserved Caste	-0.995 (0.730)		-1.662^{**} (0.801)	$\begin{array}{c} 0.380\\ (0.876) \end{array}$	$\begin{array}{c} 0.254 \\ (3.528) \end{array}$	-1.391^{**} (0.696)	-0.007 (0.118)	-0.086 (0.724)	-0.234 (2.031)	-1.448 (2.685)	-4.512^{**} (2.261)	-0.646 (0.250
Population	-0.00000 (0.0002)	-0.00000 (0.00004)	-0.00003 (0.00003)	$\begin{array}{c} 0.00002\\ (0.00003) \end{array}$	$\begin{array}{c} 0.0001 \\ (0.0001) \end{array}$	-0.00002 (0.00002)	$\begin{array}{c} -0.00001^{**} \\ (0.00000) \end{array}$	$\begin{array}{c} 0.00000\\ (0.00002) \end{array}$	$\begin{array}{c} 0.00001 \\ (0.0001) \end{array}$	$\begin{array}{c} 0.00001 \\ (0.0001) \end{array}$	$\begin{array}{c} -0.00004 \\ (0.0001) \end{array}$	-0.000 (0.0000
Standing Comm.	1.425^{**} (0.576)	$\begin{array}{c} 4.405^{***} \\ (0.939) \end{array}$	$\begin{array}{c} 0.543 \\ (0.624) \end{array}$	4.192^{***} (0.710)	25.537*** (2.811)	-0.125 (0.543)	$\begin{array}{c} 0.585^{***} \\ (0.095) \end{array}$	1.558^{***} (0.565)	14.505^{***} (1.617)	9.544*** (2.115)	10.797^{***} (1.767)	0.164 (0.195
Num. Committees	$\begin{array}{c} 0.250 \\ (0.162) \end{array}$	$\begin{array}{c} 0.166\\ (0.263) \end{array}$	$\begin{array}{c} 0.103 \\ (0.175) \end{array}$	$\begin{array}{c} 0.464^{**} \\ (0.199) \end{array}$	$\begin{array}{c} 0.244 \\ (0.789) \end{array}$	$\begin{pmatrix} 0.231 \\ (0.153) \end{pmatrix}$	$\begin{pmatrix} 0.035 \\ (0.027) \end{pmatrix}$	$\begin{array}{c} 0.098\\ (0.159) \end{array}$	$\begin{array}{c} 0.376\\ (0.454) \end{array}$	1.089^{*} (0.594)	0.464 (0.496)	0.023 (0.055
Age	$\begin{array}{c} 0.011 \\ (0.022) \end{array}$	$\begin{array}{c} 0.103^{***} \\ (0.036) \end{array}$	$\begin{pmatrix} 0.033 \\ (0.024) \end{pmatrix}$	$\begin{array}{c} 0.041 \\ (0.027) \end{array}$	$\begin{array}{c} 0.305^{***} \\ (0.108) \end{array}$	$\begin{array}{c} 0.009\\ (0.021) \end{array}$	$\begin{array}{c} 0.004 \\ (0.004) \end{array}$	(0.042^{*}) (0.022)	$\begin{array}{c} 0.213^{***} \\ (0.062) \end{array}$	$\begin{array}{c} 0.098\\ (0.082) \end{array}$	0.063 (0.068)	-0.000 (0.008
BA	-0.188 (0.366)	2.183^{***} (0.594)	-0.495 (0.397)	0.803^{*} (0.446)	5.608^{***} (1.779)	-0.014 (0.345)	-0.003 (0.060)	$\begin{pmatrix} 0.405 \\ (0.359) \end{pmatrix}$	2.140^{**} (1.023)	1.499 (1.340)	$\begin{array}{c} 0.378\\ (1.123) \end{array}$	-0.13 (0.123
MOV	$1.126 \\ (1.561)$	6.596*** (2.528)	1.554 (1.704)	6.073^{***} (1.875)	25.928^{***} (7.563)	1.049 (1.479)	(0.506^{**}) (0.253)	5.154^{***} (1.539)	9.032** (4.348)	2.567 (5.736)	$2.780 \\ (4.817)$	-0.14 (0.529
Constant	$\begin{array}{c} 0.885\\ (2.021) \end{array}$	-4.206 (3.266)	$3.194 \\ (2.315)$	-4.320^{*} (2.427)	-21.155^{**} (9.758)	1.893 (1.968)	$\begin{array}{c} 0.184 \\ (0.326) \end{array}$	-0.615 (2.026)	-7.290 (5.615)	2.168 (7.436)	5.445 (6.343)	0.935 (0.697

Table SI.5.9: Multilevel All Questions

Note:

Multilevel models with random effects by ward and all questions included.

	Dependent variable:											
	Pollution	Pests	Infra.	SWM	Roads	Water	Drainage	Elec.	Env.	Services	Unauth.	Health
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Pollution	-0.001 (0.002)											
Pests		$\begin{array}{c} 0.022\\ (0.015) \end{array}$										
infrastructure			0.025 (0.073)									
SWM				-0.029 (0.140)								
Roads					0.006 (0.012)							
Water						0.356** (0.158)						
Drainage							-0.003 (0.005)					
Electricity							. /	0.010 (0.011)				
Environment									-0.003			
Services									(0.010		
Unauthorized										(0.000)	0.079 (0.087)	
Health											(01001)	1.636** (0.654)
Female	0.143 (0.181)	-0.067 (0.100)	0.557** (0.239)	0.008 (0.098)	-0.293 (0.241)	0.190 (0.243)	0.008 (0.014)	0.034 (0.148)	0.142 (0.240)	0.518 (0.569)	-0.067 (0.551)	0.053 (0.077)
SC Pct.	1.389 (1.285)	$\begin{array}{c} 0.428\\ (0.715) \end{array}$	2.291 (1.718)	1.916^{***} (0.695)	0.897 (1.736)	4.448** (1.737)	0.251*** (0.091)	0.538 (1.058)	3.724** (1.695)	9.100** (4.095)	7.750** (3.954)	1.248** (0.565)
BJP	0.065 (0.219)	-0.150 (0.123)	-0.076 (0.291)	0.123 (0.118)	-0.069 (0.295)	-0.193 (0.295)	-0.019 (0.016)	-0.130 (0.181)	-0.116 (0.291)	-0.015 (0.695)	0.476 (0.677)	-0.040 (0.093)
Reserved Caste	-0.477 (0.377)	-0.124 (0.210)	-0.713 (0.502)	-0.325 (0.204)	-0.209 (0.507)	-1.101^{**} (0.508)	-0.042 (0.027)	-0.304 (0.310)	-0.494 (0.498)	-2.104^{*} (1.194)	-2.226^{*} (1.157)	-0.444^{*} (0.161)
Population	0.00000 (0.00001)	0.00000 (0.00001)	-0.00001 (0.00002)	0.00000 (0.00001)	-0.00000 (0.00002)	-0.00003** (0.00002)	-0.00000 (0.00000)	-0.00000 (0.00001)	-0.00003^{*} (0.00002)	0.00001 (0.00004)	-0.0001 (0.00004)	-0.0000
Standing Comm.	-0.281 (0.295)	0.180 (0.164)	-0.889^{**} (0.391)	-0.235 (0.161)	-0.153 (0.395)	-0.444 (0.397)	-0.016 (0.022)	-0.227 (0.241)	0.447 (0.392)	-1.549^{*} (0.931)	-0.366 (0.903)	-0.185 (0.125)
Num. Committees	0.042 (0.083)	-0.060 (0.046)	0.031 (0.110)	0.015 (0.045)	-0.008 (0.111)	0.068 (0.112)	0.0002 (0.006)	0.044 (0.068)	-0.081 (0.110)	-0.010 (0.262)	-0.049 (0.254)	-0.027 (0.035)
Age	-0.009 (0.011)	0.005 (0.006)	0.016 (0.015)	0.008 (0.006)	-0.015 (0.015)	-0.008 (0.015)	0.002* (0.001)	0.010 (0.009)	0.004 (0.015)	0.020 (0.036)	-0.013 (0.035)	-0.000 (0.005)
BA	-0.313* (0.188)	-0.148 (0.104)	-0.378 (0.249)	-0.194^{*} (0.102)	0.206 (0.252)	-0.375 (0.252)	0.003 (0.014)	0.021 (0.154)	-0.513** (0.249)	-1.398^{**} (0.591)	-1.299^{**} (0.574)	-0.166 (0.079)
MOV	-0.997 (0.804)	-0.464 (0.447)	0.0003 (1.068)	-0.127 (0.436)	-1.144 (1.079)	-0.207 (1.081)	0.033 (0.058)	0.209 (0.659)	-0.771 (1.063)	-7.097*** (2.541)	-5.492** (2.464)	-0.29 (0.341)
Constant	1.091 (1.049)	0.258 (0.586)	1.280 (1.461)	-0.431 (0.566)	2.442* (1.473)	3.203** (1.428)	-0.032 (0.075)	0.530 (0.885)	3.013** (1.380)	3.738 (3.436)	7.708** (3.317)	0.440 (0.454

Table SI.5.10: Multilevel Ward Questions

Note:

Multilevel models with random effects by ward and just ward questions included.

Because publicly available data from the CCTS does not include information about complainant's demographics, we must rely on aggregate data in order to discern who submits complaints. Tables SI.5.11 and SI.5.12 show models predicting the total number of complaints to the CCTS based on the control variables used throughout the analysis. There are two possible interpretations of these results. First, because the dependent variable is the total number of complaints submitted to the CCTS in a given constituency, the independent variables could reveal variation in which constituencies submit more complaints to the CCTS. Second and relatedly, complaints submitted to the CCTS may be correlated with the total number of complaints in a given constituency — that is, the total of CCTS complaints and complaints delivered via personal connections. In any case, the variables included here are largely not predictive of the number of complaints in a constituency. This suggests that the ability to complain via the CCTS is not a phenomenon exclusive to certain kinds of constituencies.

We do see a negative impact of the percentage of scheduled caste individuals — the measure of disadvantaged status used in this analysis — on the number of complaints submitted to the CCTS. This result is in line with the idea that people who are disadvantaged and do not have personal connections often opt out of submitting complaints to the CCTS because they believe that doing so is likely to be ineffectual.

Like is the case for the CCTS, there is not demographic information available regarding people who submit complaints directly to politicians or bureaucrats through personal connections. The nature of complaints submitted directly to politicians or bureaucrats is that they exist outside of the formal complaint response system such that there is not a publicly available record of the complaint and its resolution. Berenschot (2010) describes the process of corporators receiving all manner of complaints from a wide variety of people, which aligns with the qualitative evidence in this study. Future research would do well to attempt to survey constituents who submit complaints via personal connections and those who submit complaints via the CCTS to see whether they are demographically similar.

	Linear	MLM
(Intercept)	0.86	1.02
	(0.76)	(1.55)
Female	-0.06	-0.06^{***}
	(0.08)	(0.14)
SC Pct.	-1.78^{*}	-1.78^{***}
	(1.07)	(0.98)
BJP	0.50***	0.51
	(0.15)	(0.17)
Reserved Caste	0.18	0.18
	(0.25)	(0.29)
Population	0.00***	0.00
	(0.00)	(0.00)
Standing Comm.	0.06	0.06
	(0.16)	(0.22)
Num. Committees	0.07	0.07
	(0.09)	(0.06)
Age	0.01	0.01
	(0.01)	(0.01)
BA	0.13	0.13
	(0.16)	(0.14)
MOV	-0.11	-0.12^{***}
	(0.35)	(0.60)
Num. obs.	267	267
datat		

Table SI.5.11: Predicting Complaints

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

Linear regression models with ward fixed effects and wild cluster bootstrapped standard errors by ward and multilevel models with random effects by ward.

	Estimate	Std. Error	2.5%	97.5%
(Intercept)	1.03	1.43	-1.79	3.99
Female	-0.06	0.14	-0.32	0.21
SC Pct.	-1.75	0.95	-3.63	0.22
BJP	0.50	0.16	0.18	0.83
Reserved Caste	0.18	0.27	-0.39	0.72
Population	0.00	0.00	0.00	0.00
Standing Comm.	0.06	0.23	-0.37	0.49
Num. Committees	0.07	0.06	-0.05	0.20
Age	0.01	0.01	-0.01	0.02
BA	0.13	0.15	-0.16	0.41
MOV	-0.12	0.62	-1.31	1.02

Table SI.5.12: Predicting Complaints Bayesian

Bayesian multilevel model with ward-level random effects.

Finally, I explore interaction effects between the control variables and the number of complaints. It is possible that only certain kinds of corporators or only certain kinds of constituencies have an association between complaints and questions. Table SI.5.13 shows linear models with interactions between complaints and each control variable with all questions as the dependent variable. We can see that there are four significant interaction effects: female, population, number of committees, and Bachelor's degree. However, just because an effect is statistically significant does not mean that it has a substantive impact on the number of questions asked. Figure SI.5.1 shows marginal effects plots for all four of these interactions. These figures demonstrate that there is little substantive impact of the control variables on the relationship between complaints and questions. Female corporators and corporators representing high population constituencies respond to complaints in much the same way as do male corporators and corporators representing low population constituencies. As the number of committees a corporator is on and the corporator's education level increases, corporators are more likely to be more responsive to complaints, though the wild cluster bootstrapped standard errors by ward remain large. Taken together, the results do not suggest that certain types of corporators or certain types of constituencies are more likely to be responsive to an increasing number of complaints.

					Dependent	t variable:						
	Questions											
Complaints	(1) 0.162 (0.109)	(2) 0.161^{*} (0.098)	$(3) \\ 0.105 \\ (0.094)$	(4) 0.137 (0.100)	(5) 0.305** (0.146)	(6) 0.130 (0.097)	(7) 0.070 (0.085)	(8) 0.159 (0.109)	$(9) \\ 0.110 \\ (0.096)$	(10)) 0.063 (0.115)		
SC Pct.	2.075^{*} (1.216)	1.359 (1.248)	1.269 (1.308)	1.373 (1.296)	1.274 (1.282)	$ \begin{array}{r} 1.302 \\ (1.271) \end{array} $	1.121 (1.294)	1.305 (1.279)	1.233 (1.300)	1.286 (1.298)		
Female	-0.064 (0.224)	$\begin{array}{c} 0.066\\ (0.219) \end{array}$	-0.073 (0.217)	-0.070 (0.218)	-0.079 (0.225)	-0.078 (0.221)	-0.089 (0.219)	-0.073 (0.221)	-0.091 (0.217)	-0.08 (0.216)		
BJP	0.410^{**} (0.191)	0.388^{**} (0.186)	$\begin{array}{c} 0.229\\ (0.223) \end{array}$	$\begin{array}{c} 0.415^{**} \\ (0.191) \end{array}$	0.389^{**} (0.188)	0.383^{**} (0.190)	0.404^{**} (0.190)	0.379^{*} (0.195)	$\begin{array}{c} 0.378^{*} \\ (0.194) \end{array}$	0.426^{**} (0.184)		
Reserved Caste	$\begin{pmatrix} 0.107 \\ (0.372) \end{pmatrix}$	$\begin{array}{c} 0.089\\ (0.367) \end{array}$	$\begin{pmatrix} 0.081 \\ (0.374) \end{pmatrix}$	$\begin{array}{c} 0.306 \\ (0.428) \end{array}$	$\begin{array}{c} 0.097 \\ (0.363) \end{array}$	$\begin{array}{c} 0.087\\ (0.362) \end{array}$	$\begin{pmatrix} 0.161 \\ (0.381) \end{pmatrix}$	$\begin{array}{c} 0.096 \\ (0.363) \end{array}$	$\begin{array}{c} 0.120\\ (0.366) \end{array}$	0.068 (0.367)		
Population	-0.00002^{*} (0.00001)	$\begin{array}{c} -0.00002^{*} \\ (0.00001) \end{array}$	$\begin{array}{c} -0.00002^{*} \\ (0.00001) \end{array}$	$\begin{array}{c} -0.00002^{*} \\ (0.00001) \end{array}$	-0.00001 (0.00001)	$\begin{array}{c} -0.00002^{*} \\ (0.00001) \end{array}$	$\begin{array}{c} -0.00002 \\ (0.00001) \end{array}$	$\begin{array}{c} -0.00002^{*} \\ (0.00001) \end{array}$	-0.00002^{*} (0.00001)	-0.0000 (0.00001		
Standing Comm.	1.088^{***} (0.168)	1.099^{***} (0.173)	1.063^{***} (0.173)	1.091^{***} (0.172)	1.073^{***} (0.179)	0.938^{***} (0.242)	1.058^{***} (0.163)	1.088^{***} (0.169)	1.012^{***} (0.173)	1.093** (0.163)		
Num. Committees	0.265^{***} (0.090)	0.262^{***} (0.091)	$\begin{array}{c} 0.270^{***} \\ (0.090) \end{array}$	0.259^{***} (0.092)	0.258^{***} (0.091)	0.260^{***} (0.093)	$\begin{array}{c} 0.130\\ (0.083) \end{array}$	0.261*** (0.092)	0.277*** (0.087)	0.270** (0.086)		
Age	0.008 (0.007)	$\begin{array}{c} 0.007\\ (0.007) \end{array}$	$0.008 \\ (0.007)$	0.008 (0.007)	0.007 (0.007)	$0.007 \\ (0.007)$	0.007 (0.006)	0.009^{*} (0.005)	$0.008 \\ (0.006)$	0.007 (0.007)		
BA	0.287^{*} (0.173)	0.291^{*} (0.175)	$\begin{array}{c} 0.287\\ (0.175) \end{array}$	$\begin{array}{c} 0.282\\ (0.175) \end{array}$	$\begin{array}{c} 0.282\\ (0.172) \end{array}$	$\begin{array}{c} 0.274 \\ (0.179) \end{array}$	0.320^{*} (0.169)	$\begin{array}{c} 0.282\\ (0.175) \end{array}$	$\begin{array}{c} 0.010\\ (0.169) \end{array}$	0.277 (0.174)		
MOV	-0.215 (0.953)	-0.188 (0.939)	-0.194 (0.958)	-0.202 (0.953)	-0.182 (0.928)	-0.202 (0.934)	-0.129 (0.914)	-0.206 (0.935)	-0.182 (0.936)	-1.661 (1.235)		
Complaints:SC Pct.	-0.226 (0.182)											
Complaints:Female		-0.041^{*} (0.023)										
Complaints:BJP			$\begin{array}{c} 0.047 \\ (0.041) \end{array}$									
Complaints:Reserved Caste				-0.065 (0.046)								
Complaints:Population					-0.00000^{*} (0.00000)							
Complaints:Standing Comm.						$\begin{array}{c} 0.041 \\ (0.045) \end{array}$						
Complaints:Num. Committees							0.037**** (0.012)					
Complaints:Age								-0.001 (0.001)				
Complaints:BA									0.087^{***} (0.024)			
Complaints:MOV										0.342 (0.273)		
Constant	2.566^{*} (1.421)	2.674^{**} (1.362)	2.750** (1.372)	2.654^{*} (1.363)	2.217^{*} (1.322)	2.743** (1.345)	2.869** (1.344)	2.680^{**} (1.319)	2.730^{**} (1.374)	3.112^{**} (1.381)		

Table SI.5.13: Interaction Effects

Linear regression models with ward fixed effects and and wild cluster bootstrapped standard errors by ward. All questions included.





Marginal effects plots for significant interactions.

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