How complaint type shapes bureaucratic responsiveness to citizens: Evidence from Mumbai's water sector*

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Abstract

Formal systems for collecting citizen complaints about service delivery are increasingly common, yet there is minimal evidence on patterns of responsiveness, particularly for systems managed by non-elected officials. Analyzing over 20,000 complaints in Mumbai's water sector, I show that in-line with literature on distributive politics, responsiveness initially appears to vary by complainant identity. Yet in interviews, officials report that professional incentives lead to prioritization by the content of a complaint. I therefore classify the complaint text and find that certain types of complaints are more likely to get a response. In fact, once controlling for complaint type, there is no relationship between complainant identity and responsiveness. I explain differential responsiveness by citizen identity by suggesting that citizens from marginalized groups experience lower levels of service provision, which leads them to make complaints that are more difficult to address. Bureaucratic constraints may perpetuate inequalities in service provision by hindering responsiveness to certain complaint types.

1   Introduction

In low- and middle-income countries (LMICs) where resources are particularly scarce, politicians have been known to strategically allocate resources to different groups of citizens, with brokers or informal leaders serving as channels of communication and distribution (see Golden and Min, 2013, for a review). This process of distributive politics often leads to uneven access to public services such as water, electricity, or sanitation by certain ethnic, income, or voting blocs (Bates, 1974; Bardhan and Mookherjee, 2006;

Besley et al., 2004; Burgess et al., 2015; Chandra, 2004; Franck and Rainer, 2012; Kumar et al., 2022; Min, 2015; Nichter, 2008; Stokes, 2005).

Formal institutions for collecting complaints, such as online grievance redressal systems, participatory governance institutions, or local bureaucracies with citizen-facing offices, can level the playing field for disadvantaged citizens by creating an alternative channel to demand improved services (eg. Blair, 2000; Kosec and Wantchekon, 2020; Mansuri and Rao, 2012; Grossman et al., 2014; Olken, 2010; Wampler, 2010; Speer, 2012). Indeed, the World Bank has optimistically promoted the use of such institutions to strengthen the voice of the poor, marginalized, and minoritized (World Bank, 2004). Yet in most cases, officials will not be able to respond to every complaint, and will therefore be forced to prioritize some over others. While existing work considers the propensity of citizens to make complaints (Minkoff, 2016; White and Trump, 2018), less is known about when they will receive a response. When do formal mechanisms for complaint-making yield a response from government officials?

This paper seeks to shed light on responsiveness in grievance redressal systems by investigating predictors of responsiveness to citizen complaints, particularly for institutions staffed by unelected officials, or bureaucrats. Existing literatures identify at least two sets of variables that might be relevant here. On the one hand, if bureaucrats are politicians' agents, they may be expected to prioritize complaints based on *who* is making them. As seen in the broader literature on distributive politics, citizens belonging to politically important groups or constituencies may see greater responsiveness to their requests (eg. Bates, 1974; Besley et al., 2004; Chandra, 2004; Franck and Rainer, 2012; Min, 2015; Nichter, 2008). On the other hand, officials face capacity constraints and professional incentives that may make it easier or more attractive to respond based on *what* a complaint is about (Dasgupta and Kapur, 2020; Tendler, 1997).

I explore these possibilities in the context of Mumbai's water sector. While complaints here are frequently made through political networks and other informal means (Anand, 2011; Björkman, 2015), citizens can also make formal complaints with the city online, through an app, or on the phone. I collected the universe of complaints lodged from 2016-2018 through the website used for tracking these complaints and developed a dataset of 21,384 unique complaints about water. Rates of resolution initially appear high, with over 90% of complaints marked as "Closed" in the portal. Yet closure rates alone are an uninformative measure of responsiveness, as handlers are incentivized to complete the process for as many complaints as possible; one must look at the written response to a complaint to learn if any meaningful action was taken. Using supervised machine learning techniques to classify the categories of complaints and text of responses reveals that just 44% of complaints receive what I call a "true response," suggesting that officials have to prioritize some complaints over others.

How do they make these decisions? I undertake a multi-method research design to find out. First, I geocode and classify the names of complainants and find that complaints issued by those not from marginalized groups (in this case, Muslims), and from politically competitive electoral districts are more likely to receive a true response. These patterns are in line with the first set of expectations outlined above.

Yet qualitative interviews with handling officials indicate a different logic for resolution. They share that some types of complaints, like those about shortages or unau-

thorized use, are too costly to address. Others, like those about leaks, are prioritized because they are both less costly and align with the policy goals of their higher-ups and the bureaucracy as a whole. And indeed, when I classify the text of complaints, I see a distinct pattern of responsiveness that varies by complaint type. In fact, when holding complaint type constant, the identity and political constituency-related variables are not statistically significant predictors of responsiveness.

I explain these patterns by suggesting that complaint type is an important moderator in the process of bureaucratic grievance redressal. If complaint type is a proxy for the quality of the service about which a complaint is being made, then different groups of citizens may tend to make different types of complaints, which in turn vary in their likelihood of receiving a response. In the Mumbai water sector, Muslims and those from non-competitive districts are more likely to make complaints about shortages and unauthorized use. Complaints about shortages in particular tend to come from places with the lowest mean daily supply hours. Yet these complaints are among the least likely to gain a response, indicating that handlers can do little to meaningfully shift existing levels of service delivery. The patterns suggest that complaint platforms address quality issues for services that may have already been allocated through a political process, but incentives for differential responsiveness by type can reinforce existing inequities.

The theory and findings make multiple contributions to research on service delivery, bureaucratic constraints, and governance interventions. First, I empirically demonstrate and explain variation in bureaucratic responsiveness to different types of citizen complaints. I am able to illustrate patterns of responsiveness by classifying novel data that includes both the text of a complaint and the response it receives. This is, to my knowledge, one of the first studies of the *content* of complaints in either a formal or informal setting. I further rely on insights from qualitative interviews to explain intra-sector variation in service delivery and government responsiveness to complaints, thereby developing new insights about bureaucratic behavior. Third, the study illustrates the role of grievance redressal systems in the broader process of the distributive politics of service delivery. In the short term, these systems may ease the registration and resolution of certain complaints, particularly is resolving those complaints is aligned with broader organizational incentives. Yet bureaucratic handlers may only be able to focus on tackling minor complaints rather than addressing systemic issues of inadequate and inequitable resource allocation.

2   To whom or what will bureaucrats respond?

The late 20th century wave of decentralization across LMICs (see e.g Rondinelli et al., 1983) gave substantial power to non-elected local officials to allocate funds related to service delivery and program implementation (Lipsky, 2010). Today, many citizens' most common interactions with government occur through these street-level bureaucrats.

In recent years, the growth of e-governance initiatives has further led to the proliferation of online portals for citizens to make complaints about public services (eg. Chen et al., 2016; Dipoppa and Grossman, 2020; Distelhorst and Hou, 2017; Grossman

et al., 2017, 2018, 2020; Sharan and Kumar, 2020). In the United States, these are commonly known as 311 complaint hotlines (Minkoff, 2016; White and Trump, 2018). Public-private partnerships, such as Colab in Brazil and FixMyStreet in the United Kingdom (Dipoppa and Grossman, 2020), are common as well. In India, these portals, commonly known as "grievance redressal systems," have been implemented at the central, state, and municipal levels. Typically, appointed bureaucrats manage such systems and choose how and whether to respond to the complaints they receive.

These institutions can level the playing field for citizens to demand more resources in contexts where complaints are typically mediated through clientelistic networks. Grossman et al. (2014), for example, find that when citizens in Uganda are presented with the opportunity to send text messages to their representatives, a greater share of marginalized populations do so than use existing political communication channels. More generally, studies of participatory governance structures suggest that formal institutions for citizen participation increase the accountability and responsiveness of government by addressing problems of elite capture and the clientelistic distribution of public goods (e.g. Blair, 2000; Kosec and Wantchekon, 2020; Mansuri and Rao, 2012; Grossman et al., 2014; Olken, 2010; Wampler, 2010; Speer, 2012).

This increase in equity can occur only if bureaucrats and elected officials acknowledge, process, and respond to the citizens' input. Under what conditions will bureaucrats be responsive? They usually cannot respond to all requests. Dasgupta and Kapur (2020) illustrate how block-level officials in rural India lack sufficient time and resources to complete all of their tasks. If officials are capacity constrained, then they must prioritize. I consider two dimensions of a complaint that may shape how officials choose whether or not to respond: the identity of who makes the complaint and what it is about.

2.1 Responsiveness based on citizen characteristics

Substantial existing research attempts to understand whether officials will be more responsive to certain individuals or groups of citizens. Generally, this literature assumes that bureaucrats are agents who are responsive to their principals, politicians. To ensure that bureaucrats are serving citizens well, politicians must monitor their behavior. One body of literature suggests that they will undertake this costly monitoring action when it is most electorally beneficial to do so. Gulzar and Pasquale (2017), for example, argue that politicians will tend to monitor bureaucrats and generate high levels of service delivery when they can claim credit for their actions. In other words, politicians will ensure bureaucrats are responsive to citizens when it part of their strategy to win elections. Citizens can also participate in the monitoring process. Slough (2020), for example, argues that bureaucrats will be most responsive to the citizens they believe will be most likely to complain to higher-level politicians.

As such, we should expect bureaucratic responsiveness to follow similar patterns to those seen in the broad literature on distributive politics wherein politicians are strategic in allocating them to certain groups over others within a constituency (Dixit and Londregan, 1996; Golden and Min, 2013). Here, researchers have found that the delivery of important public services such as water or electricity favors certain eth-

nic/religious groups (eg. Bates, 1974; Besley et al., 2004; Burgess et al., 2015; Chandra, 2004; Franck and Rainer, 2012) socioeconomic classes (Bardhan and Mookherjee, 2006; Kumar et al., 2022; Min, 2015), competitive districts (Golden and Min, 2013), and areas with core (or swing) voters (Nichter, 2008; Stokes, 2005).

Beyond mirroring politicians' incentives, bureaucrats may also feel social pressure to respond to certain groups. Bureaucrats and citizens, for example, may share certain identity-based characteristics leading to taste-based discrimination in responsiveness (Butler and Broockman, 2011), responsiveness due to fear of social sanctions from the in-group (Tsai, 2007), or greater responsiveness due to better information about the citizens (Ricks, 2016). This family of theories generally argues that bureaucrats will be most responsive to the group of citizens in which they are "embedded" (Granovetter, 1985).

Whether they are serving their own personal incentives or being monitored by higher ups, these theories generally predict that bureaucratic responsiveness depends on *who* is making a complaint. This follows naturally from the fact that the main research question animating much of the literature on distributive politics as why service delivery outcomes varies across groups of citizens will be more responsive to certain citizens or groups (Golden and Min, 2013; Lasswell, 2018).

2.2 Responsiveness based on complaint characteristics

At the same time, there are reasons to believe that the identity of the complainant may not be the only factor shaping responsiveness– the content of the complaint may play an important role as well. Even assuming that bureaucratic preferences mirror those of politicians, politicians often have not just distributive preferences, but programmatic ones as well. Véron et al. (2006), for example, highlight how the Communist Party of India-Marxist had a broad agenda aimed at development and poverty alleviation and therefore aimed to improve implementation of an employment guarantee. Tendler (1997, p. 1-27) further describes how a state-level government in a poor region in Brazil motivated local-level bureaucrats to prioritize work on a preventative health program. Beyond politicians, other higher-ups in a bureaucracy– often bureaucrats themselves– may have strong programmatic preferences as well.

Capacity constraints may also lead to prioritization based on complaint type. Certain requests might require less time or fewer resources to address. Officials are particularly incentivized to prioritize low-cost complaints where the number of complaints or average time to resolution is monitored. In an effort to maximize the number of complaints addressed or minimize the time to resolution, they will have an incentive to address many easy-to-resolve complaints over expending resources on few difficult-to-resolve complaints.

Officials may also avoid prioritizing complaints that are likely to affect other citizens. Examples here would involve the removal of street vendors, squatters, or those illegally tapping a water source. These might lead to complaints about the bureaucrat to politicians or higher-ups and activate oversight mechanisms, or could also lead to more complaints from another set of citizens, which would increase the bureaucrat's work load in the short term. Handlers are likely to proceed in such cases with caution,

as resolution may be seen as overtly political. Indeed, Holland (2016) describes a bureaucratic process to detect land invasions in Bogotá, but reveals that it is eventually *mayors* who decide whether or not to sign the orders for eviction.

If politics is the study of "who gets what" (Lasswell, 2018), then studying prioritization based on complaint characteristics may not seem particularly important to scholars of the field. Yet it becomes much more relevant when one considers that different groups of citizens may make different types of requests. These dynamics are typically difficult to explore given a dearth of comprehensive data on the universe of complaints made and whether each one gets a response in any given setting. Data on complaints and responsiveness in a grievance redressal portal in Mumbai provides useful leverage here.

3 Complaints and redressal in Mumbai's water sector

I study the predictors of bureaucratic responsiveness in Mumbai. The city is India's financial, commercial, and entertainment capital, and a sprawling metropolitan area home to over 20 million residents. An estimated 12-13 million residents live under the direct purview of the Municipal Corporation of Greater Mumbai (MCGM), the city's governing body. Like other major cities in urbanizing countries, the city constantly faces insufficiency and inequity in the provision of many public services, such as water, electricity, and sanitation. Because patterns of responsiveness and distributive politics likely vary by sector (Kramon and Posner, 2013), I focus on one, namely water.

The water supply and infrastructure face a great deal of pressure. While the city technically sources sufficient water from nearby lakes and dams to provide its citizens with adequate daily supply, different authorities estimate that anywhere between 7-25% of this supply is lost through leaks and pipe bursts between the points of origin and supply (Varshney, 2021b).[1] Water supply is also unequal: as is typical in cities with insufficient water, it is rationed out to different areas in rotation for several hours at a time. Despite the launch of a 24x7 water supply project in 2014, the mean duration of supply across the city was only six hours in 2018, with 180 out of 273 zones receiving four or fewer hours of supply a day (PRAJA, 2020). The level of supply also varies with communities' socio-demographic characteristics. In 2019, the MCGM found that non-slum areas received more than three times the daily volume of water as slum areas, where over 50% of the city's population lived at the time.

Complaints about water form a central component of political life in the city. Anand (2011) illustrates through careful ethnographic work how insufficient water shapes the lives of Mumbai citizens (particularly women, see p 97-126) and the intermediaries – including engineers, informal fixers, and social workers – they approach to access more of it. Björkman (2015, 198-227) further illustrates how citizens' demands and politicians' promises for water have become a routine "spectacle" of Mumbai politics.

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[1]This figure is lower than usual estimates for non-revenue water in cities in LMICs because it does not include unbilled supply. With the inclusion of unbilled supply, estimates for non-revenue water for cities in India can reach 50-90% (Bandari and Sadhukhan, 2021).

Citizens can also approach officials with their complaints directly through a formal process. They can lodge a complaint with MCGM through its online portal, a smartphone app, or through the phone (see Varshney (2021a) and Figure SI.1, top panel).[2] These complaints are then given a number with which citizens' can subsequently track the progress of the complaint. According to PRAJA, an NGO aiming to improve transparency and accountability in Indian cities, complaints about water are frequent; "Water supply" has been in the top 5 complaint categories every year since 2010, the year in which PRAJA first makes its reports available.

4   Data

I collected data on complaints concerning water supply made to the MCGM from the online citizen complaint portal which collects and tracks formal complaints. I inputted every possible permutation of the details requested (eg. municipal ward, complaint-type, and date, Figure SI.1, bottom panel) to collect individual-level data for every complaint lodged from 2016-2018. This process generated information on 21,384 complaints in the "Water supply" complaint-type.

Each observation also contains information on its status, with the majority (93%) marked as "Closed," and others marked as "Registered," "In process," "Re-assigned," "Incomplete information," or with no status information. Figure 1 shows the number of complaints and rate of ticket closure by month from 2016-2018. Overall, the total ticket closure rate is high at 93.4%. The generally high rate of closure reflects the an office's incentives to resolve as many cases as possible. A backlog of open cases reflects poorly on the office as a whole.

## 4.1   Detecting rates of true responsiveness

Yet not all observations that are marked as "Closed" are actually accompanied by meaningful action or resolution. Each "Closed" observation includes response text from the final handling officer in Hindi, Marathi, or English. This response text reveals that several "Closed" complaints are not actually resolved. For example, many complaints receive "False complaint" as a response, and several complaints about water shortages receive "Water in reservoir is low" as a response. I used this text to develop my dependent variable of interest, true responsiveness, which is whether a complaint appears to be met with some meaningful action.

I first translated the text using Google Translate, after which a team coded 3% of the responses as "Action taken," "False complaint," "Incorrect or missing information," "Referred to other department," or "No action taken" for some other reason.[3] Each observation was coded twice by independent coders, and I made the final judgement on any discrepancies. I then used the coded observations to build a model to predict the categories of the remaining 97% of the sample. I first tokenized the sentences and phrases into words, removed special characters, removed stopwords, and stemmed any

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[2]The website can be accessed at http://www.mcgm.gov.in/.

[3]I validated the translations by manually confirming the translation of 100 randomly selected rows.

Figure 1: Overall complaint (top) and closure rate (bottom) in Mumbai's water sector, 2016-2018.
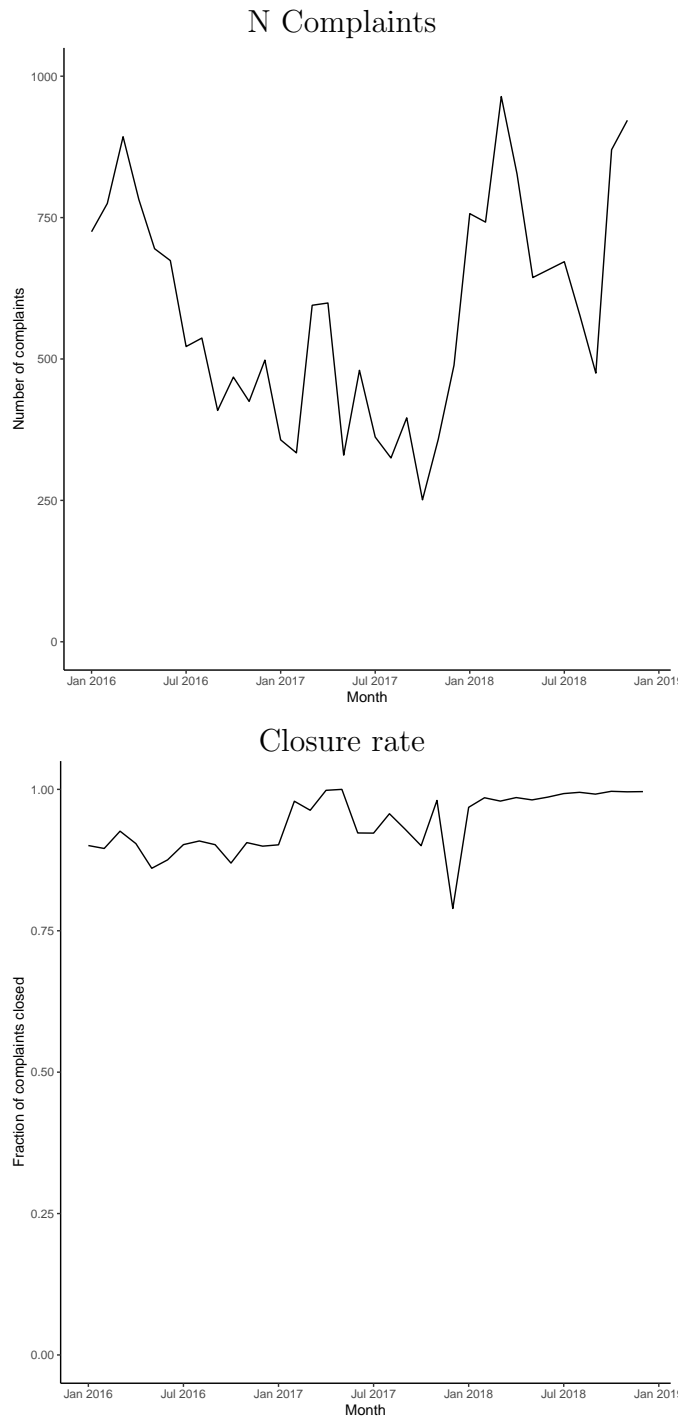

remaining words. Using a "bag of words" approach, I fit least absolute shrinkage and selection operator (LASSO) models to a 70% training sample of the already categorized

sample to select the words or features most predictive of each complaint topic as defined by the handler.[4] I selected the words with non-zero coefficients from each of the LASSO models to fit a random forests model on the training sample of the classified data.[5] The final model predicted response categories in the test dataset with 92.5% accuracy, and the words used as predictors can be seen in Table SI.1.

The overall rate of true responsiveness is much lower than the rate of complaint closure, at 44%. The rates of true responsiveness over time are shown in Figure 4. Complaints marked as "Action taken" are usually (99.6%) marked as "Closed," but the reverse is not true, as just 47% of complaints marked as "Closed" are classified as "Action taken." Categorization as "Action taken" is my main measure for responsiveness throughout the paper.

Figure 2: Percentage of complaints with true responsiveness in Mumbai's water sector, 2016-2018.
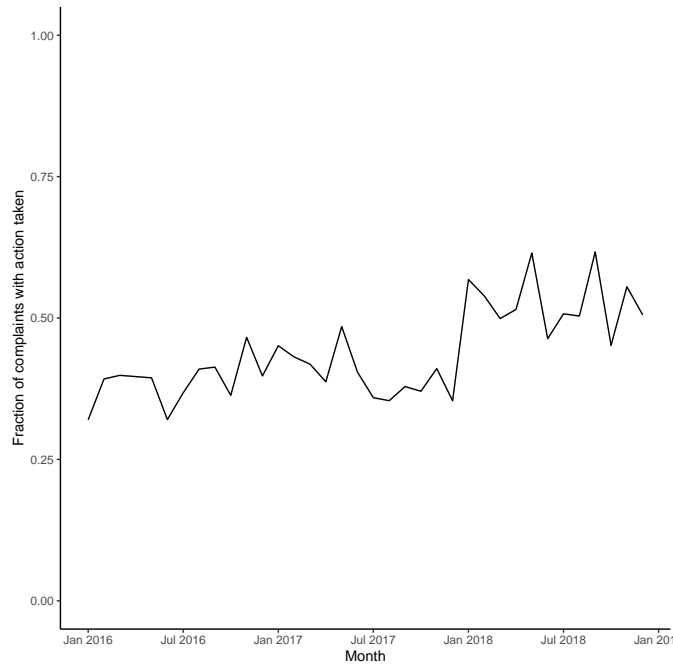
"True responsiveness" defined as whether the an indicator for whether the text filed in response to a complaint is classified as denoting some action was taken.

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[4]I selected λ for each model using k-fold cross validation.

[5]Random forests provided a higher accuracy rate than k-nearest neighbors, gradient boosting, and naive Bayes, other popular algorithms for multi-class classification. The number of trees and number of variables available for splitting at each node (eg. "mtry") were determined using holdout cross validation.

5 Politics and identity as predictors of responsiveness

I first examine whether local electoral politics and the complainant's identity are predictive of true responsiveness. A few notes about how complaints are typically resolved are relevant here. First, the complaints are handled at the administrative ward, which is a grouping of 6-14 adjacent electoral wards. Electoral wards are political constituencies that democratically elect representatives to Mumbai' municipal legislature. These 227 electoral wards are grouped into administrative wards that share infrastructure, funding, and bureaucratic personnel. The individual who handles complaints from the digital system varies by the sector in which it is made. In the case of complaints about water, the relevant office is that of the Assistant Engineer for Water Works, which is responsible for both maintaining a given municipal ward's water infrastructure and addressing citizen complaints. Individuals working in this office triage the complaints and send them to employees, sub-departments, or other agencies for resolution.

I examine how true responsiveness varies with features of a complaint. Alongside the citizen-provided description of the content itself, complaints provide information on the submitter's name and address. Handlers can use these fields to learn about the complainant's identity and neighborhood, after which they can make decisions about prioritizing certain complaints. Such decision-making could reflect bureaucratic responsiveness to the demands of appointing politicians to prioritize certain citizens or groups. It is particularly likely that bureaucrats will prioritize the complaints of politically powerful groups, as these are the ones who are most likely to complain to a politician about the bureaucrat or handling system and activate the threat of politician oversight (Slough, 2020).

I use the same complaint characteristics that handlers see to develop variables about citizen identity and political characteristics that are salient in the Mumbai case. Regarding individual identity, the name that one provides can convey important information about religion, caste, and region of origin. In Mumbai, religion and region are particularly salient markers of political power. As in much of the country, divisions between Hindus (67% of the population) and Muslims (19% of the population) are deep and long-standing, and Muslims face widespread discrimination on the basis of their identity every day, often with endorsement by political actors (Gaikwad and Nellis, 2017; Jaffrelot, 2010; Varshney, 2002).

An individual's region of origin also sheds light on the likelihood of her being a migrant, another politically salient individual characteristic in this city that has experienced rapid population growth due to migration Gaikwad and Nellis (2017). In fact, Maharashtra's Shiv Sena party was founded in 1966 to protect the interests of native citizens (Joshi, 1970). In 2006, a particularly strident brand of nativism emerged as the Maharashtra Navnirman Sena, an offshoot of the Shiv Sena (Helms, 2023). As documented by Gaikwad and Nellis (2017), nativist politicians have a variety of policy platforms in service of the goal of "protecting" certain citizens, including the use of Marathi in the public sector, limiting the availability of public funds and programs for non-native citizens, and even the intimidation of migrants. These political platforms ostensibly represent the interests of voters, but the behavior of elites may also be purely

instrumental: Gaikwad and Nellis (2021) show that politicians are less responsive to non-native citizens because they believe they will be less likely to vote.

Given these patterns, a key predictor of responsiveness is an individual's religion or migrant status as revealed through a name. I use the NamSor API to classify a complainant's name as Muslim or native to the state of Maharashtra.[6] I do not assume that classifications are necessarily correct, particularly if individuals change their names through marriage or for some other reason. I simply aim to mirror mental shortcuts that handling officers might use when seeing a name. Also, not all complainants supply their names. If certain identities are given preferential treatment, withholding a name could even be strategic. I therefore also include an indicator for whether a name is provided at all. Across the full sample of water-related complaints, 9% have a name categorized as Muslim, 18% are categorized as Maharashtrian, 17% are blank, and the remaining 55% fall into some other category.

In addition to characteristics of a complainant's identity, I also examine features of the address from which a complaint originates. After all, many of the complaints are about public or club goods that serve not just an individual, but neighborhoods as a whole. For such goods, politicians might pressure bureaucrats to be most responsive in locations where their actions have the greatest likelihood of changing electoral outcomes. As such, a large literature on the distributive politics of public goods provision finds that service delivery is targeted at the electoral constituencies that are most competitive (Besley, 2006; Golden and Min, 2013; Min, 2015; Weingast, 1995; Kumar et al., 2022). In this case, it is possible that politicians who face the greatest chance of losing their seats in the next election will be the most motivated to pressure handlers to prioritize complaints from their neighborhoods.

Alternatively, others have found that central governments will allocate resources to their supporters, or the constituencies that voter in members of the party in the majority (e.g. Arulampalam et al., 2009; Carlitz, 2017; Jensenius and Chhibber, 2023). The city legislature here, which has been controlled by the Shiv Sena party for decades, might place pressure on Assistant Engineers to be most responsive to the constituencies that elect Shiv Sena councillors.

I create constituency-level variables measuring political competitiveness and alignment using the complainant-provided addresses. First, I used the Google geocode API to collect GPS coordinates for each address. I then placed the coordinates into electoral wards, after which I could attach data on the ward's margin of victory and party representation.[7] Mumbai held municipal elections in 2017, in the middle of the three-year period for which I have data. The margin of victory variable refers to this election, and the Shiv Sena representation variable refers to the relevant value for party control for the date on which a complaint was received. In the 2017 election, the mean margin of victory across the 227 electoral wards was about 14 percentage points, with a standard deviation of 12 percentage points. Prior to 2017, the Shiv Sena held 75 seats, and won 84 seats in the election.

I investigate the extent to which these identity and political constituency-related

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[6]The NamSor API assigns a likelihood of being a certain identity. I classify a name as being Muslim or from Maharashtra when its likelihood of being so is greater than 50%.

[7]Ward maps were provided by the Urban Design Research Institute (http://www.udri.org).

Table 1: Complaint-level predictors of true responsiveness

	Information	Identity	Constituency	Identity+Constituency
Intercept	−0.080***	0.023	−0.037	−0.053*
	(0.026)	(0.028)	(0.025)	(0.031)
Location provided	0.042***			
	(0.007)			
Name provided	0.101***			
	(0.009)			
Maharashtrian[1]		−0.001		−0.012
		(0.009)		(0.011)
Muslim[1]		−0.065***		−0.072***
		(0.012)		(0.013)
Margin of victory[2]			−0.086***	−0.099***
			(0.033)	(0.033)
Shiv Sena ward			−0.001	−0.001
			(0.009)	(0.010)
Num.Obs.	21 397	17 734	12 916	10 828
R2	0.079	0.076	0.083	0.091
R2 Adj.	0.076	0.073	0.078	0.086
Std.Errors	HC2	HC2	Clustered by ward	Clustered by ward

*p<0.1; **p<0.05; ***p<0.01
All regressions include month-year and administrative ward dummies.
[1] The reference category is name classification as a non-Muslim or non-Maharahstrian name.
[2] Refers to the 2017 municipal election.

complaint features predict true responsiveness through a series of linear regressions
(Table 1). In each model, the dependent variable is my measure of true responsiveness,
or whether the response to a complaint suggests action was taken in response. Standard
errors are heteroskedasticity-robust (HC2) unless any independent variable is coded at
the electoral ward level, in which case they are clustered there. I include controls for
each month-year to hold time-related trends constant. I also control for the adminis-
trative ward, which is the level at which decision-making happens. Importantly, this
holds constant the office or individual making a decision.

In the first model (Information), I examine whether providing information about
one's name and address is correlated with true responsiveness. And indeed, it appears
that this information is correlated with significantly greater responsiveness, suggesting
that these features provide useful information to handlers. The second model (Iden-
tity), examines whether (conditional on a name being provided), responsiveness varies
with a name being either Maharashtrian or Muslim in origin relative to any other
background. In line with expectations about discrimination against Muslims, a com-
plaint with a Muslim background is 6.5 percentage points less likely to receive a true

response. The third model (Constituency) examines whether, conditional on the provision of an address that can be geolocated, the constituency's electoral competitiveness or alignment with the Shiv Sena party predicts responsiveness. In line with swing voter theories of pubic goods provision, as the margin of victory increases, the likelihood of responsiveness decreases. The final model (Identity+Constituency) includes both sets of predictors and finds that the patterns remain the same.

Overall, the results suggest that political characteristics commonly associated with public service delivery, namely a citizen's identity and the competitiveness of the constituency in which they live, are predictive of true responsiveness. The results therefore support existing research on distributive politics suggesting that it is *who* makes a complaint that matters. I next examine whether the content of the complaint is at all important in shaping the decision-making of officials.

6   Complaint type as a predictor of responsiveness

To determine whether responsiveness varies with complaint type, I classify the complaints. Each complaint ticket includes the original complaint text in Hindi, Marathi, or English. I used the same basic text-analysis methods as described above to first prepare this content for classification. About 68% of these complaints had been classified into categories by the handling officer, and I used this sample as a training set to classify the remaining observations using LASSO and and random forests, as above.[8] This approach predicted complaint categories in the remaining 30% test dataset with 86% accuracy. The words used in the final model can be seen in Table SI.1.

The overall incidence of the most frequently occurring categories in each month for which I collected data can be seen in Figure 3. These categories comprise 91% of all complaints made.[9] Complaints about leaks and shortages make up the vast majority of topics covered. At first glance, it still appears that bureaucrats resolve most complaints. The rate of complaint closure over time and by category can be seen in Figure 4, with minimal variation across complaint type.

Examining true responsiveness, however, reveals a distinct pattern to responsiveness that varies by type. Figure 5 shows that action is taken for almost 83% of complaints about leaks, and 49% of complaints about contaminated water, 21% of complaints about shortages, and only 12% of complaints about unauthorized use.

6.1   Easy vs. difficult complaints

What accounts for this clear variation in responsiveness to different types of demands in the water sector? I explore these dynamics through five unstructured interviews

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[8]I chose to collapse two predefined categories, "Leaks in water lines" and "Leakage near meter" into the umbrella category of "Leaks."

[9]The analysis from here on out drops the remaining categories of complaints related to billing, water supply during non-supply hours, water tankers, burst mains, and overflow which make up less than 10% of the sample.

Figure 3: N complaints for most common complaint categories in Mumbai's water sector, 2016-2018.
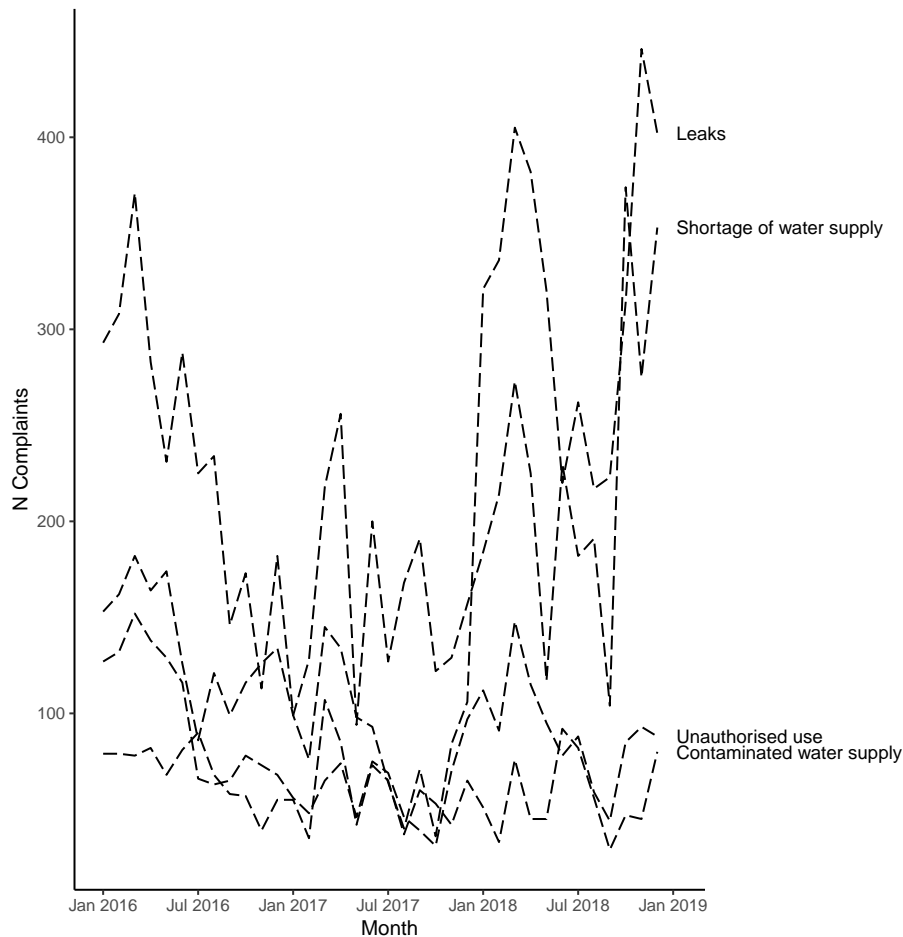
(conducted in January 2018) with the Assistant Engineer for Water Works in randomly sampled wards. The interviews illustrate the reasons for patterns of responsiveness in handlers' own words. Complaints about unauthorized use, such as instances in which a pipe is being tapped by an individual or settlement, are low priority. These complaints are very clearly about other citizens, and the engineers hesitate to address them. "I don't know what the arrangement is with the leader or people there. It is best that the corporators [ward-level representatives], police, or courts deal with such issues," one engineer (all ward names omitted for anonymity) replied when I brought up the issue. These complaints therefore receive the lowest levels of responsiveness.

On the other hand, engineers do have some latitude to respond to complaints about shortages without immediately harming another citizen. "We don't like to do it, but we can sometimes reshuffle the timings of the water supply to give one area more water and another one a little less. We can only do this sometimes and if the need is very great, though, otherwise people get upset." Notably, these short-term solutions do not have large budget outlays, but are instead costly because of the likelihood of citizens'

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Figure 4: Complaint closure rate for most common complaint categories in Mumbai's water sector, 2016-2018.
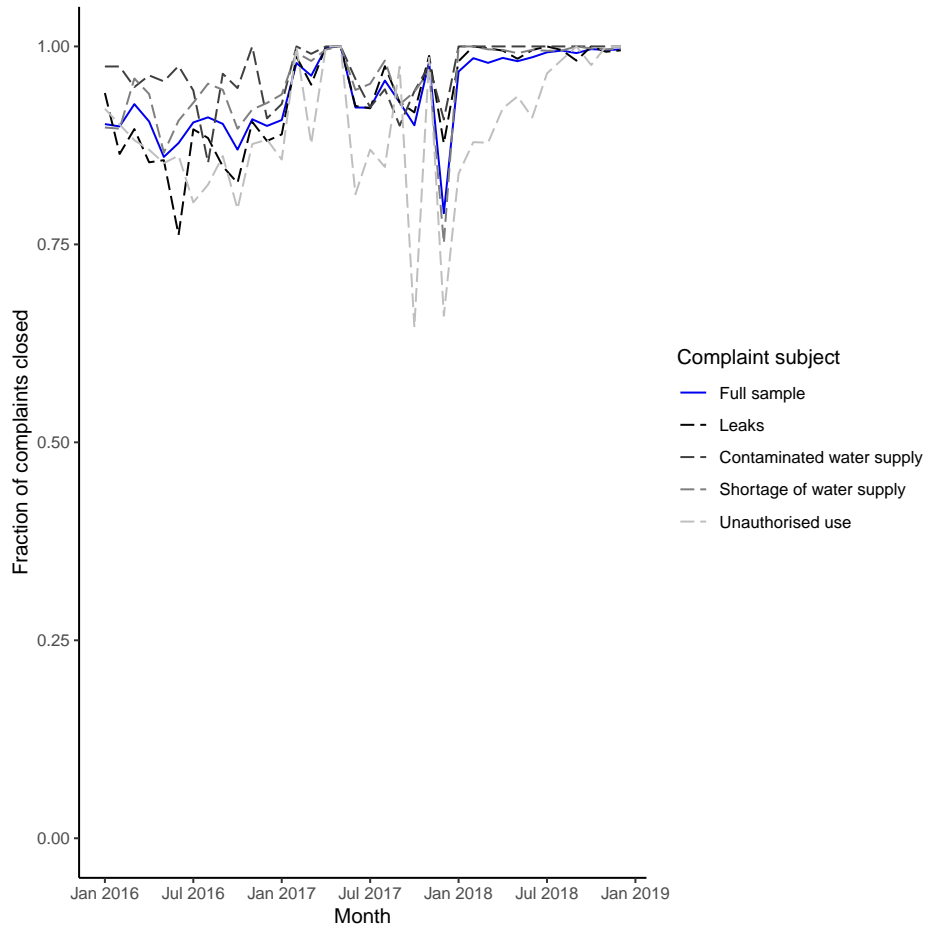

complaints. Another option is to send a water tanker which, given a fixed supply of tankers, is itself a reshuffling of existing supply.

In most cases, there is no solution to a complaint about a shortage other than diverting water from one area of supply to another. Handling engineers often do not choose this option, as it simply "generates more complaints from other citizens." As reported by the Assistant Engineer, "this makes no sense. If my job is to get through as many of these grievances as possible, why would I do something that makes other people complain? In some cases the MCGM can send a tanker, but not for every problem." More often, if an area is receiving less water than usual for a known reason, that reason, such as "water in reservoir is low" is given in the response to the complainant. If multiple complaints are arising from a neighborhood for an unknown reason, an engineer will be sent to learn if there are problems with the infrastructure, but large infrastructural causes of water shortages, like water main bursts, are more likely to be submitted under a different category of complaint.

Next, consider complaints about contamination. According to an Assistant Engi-

Figure 5: Rate of meaningful action taken by complaint type for most common complaint categories in Mumbai's water sector, 2016-2018.
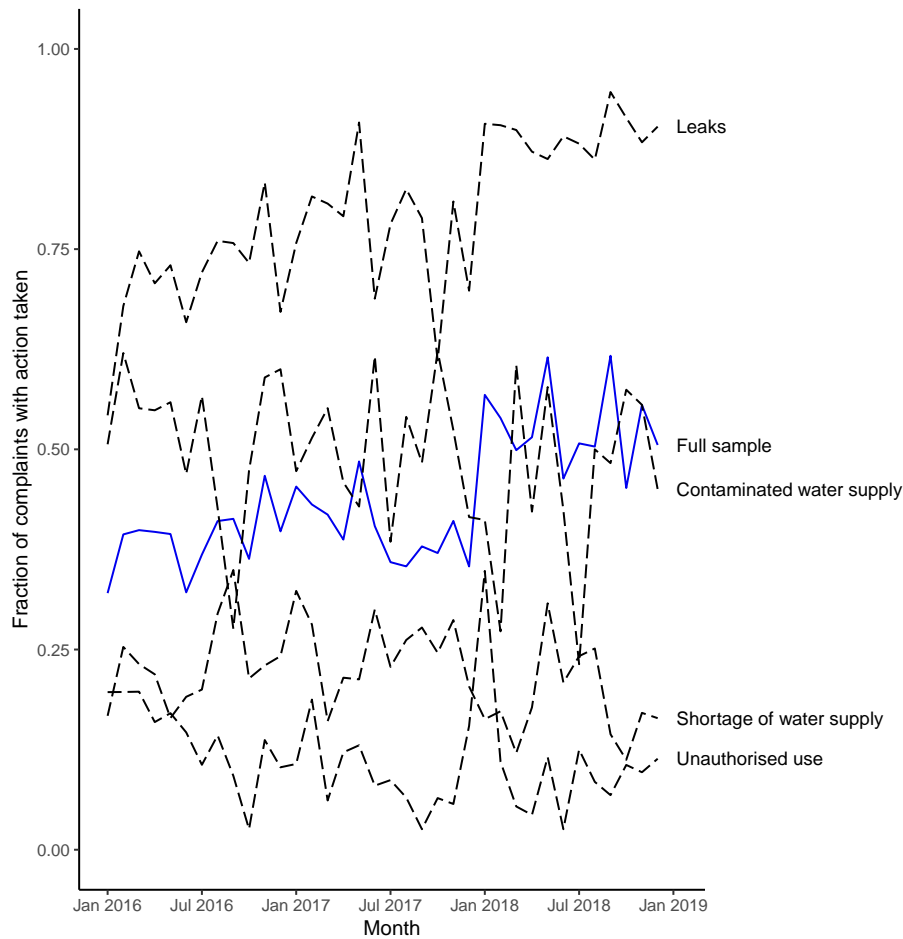
neer , the department may work to see whether there is a sewage leak or some debris in the reservoir, but this is rarely the case, he says. "People will have a bad smell in the neighborhood and blame it on the water. There's usually nothing wrong," he explains. Whether or not this is true, the attitude indicates that such complaints are rarely prioritized or taken seriously. This is partly because, as another engineer explains, households can boil or filter the water to clean it. Their first priority is ensuring that households actually have the water. Within the MCGM's set of constraints, complaints about contamination are deprioritized.

Most important are complaints about leaks. The MCGM has been operating under a steady campaign to resolve leaks and decrease non-revenue water, or water that is generated in the system but does not reach the end user. In 2011, after a 15-day effort, city engineers found 653 leaks in the pipe system (Purohit, 2011). Citizens' complaints are key to supporting such initiatives to map, maintain, and upgrade leaky pipes, and resolving leaks is therefore central to the engineers' job description. As such, the local context incentivizes prioritizing these complaints, even if they incur monetary costs.

In fact, there is a sanctioned budget that is easily accessible to address problems of leaks. The modal response to a complaint about a leak, therefore, is to quickly repair or replace a section of pipe. As reported by the Assistant Engineer, "sometimes fixing a leak can take time, but the office has the support to do it and it doesn't affect other people [who don't live in the area]."

These observations and interviews suggest that within the context of Mumbai, complaints about shortages or the unauthorized use of water are low priority because their resolution explicitly entails removing or redirecting another citizen's water supply. In other words, they are *difficult* to resolve. Within these, handlers can feasibly respond to those about shortages; responding to complaints about unauthorized use is politically risky.

Complaints about contamination and leaks, on the other hand, do not require denying other citizens water. They are, therefore, relatively *easy* to resolve. Within these, those about leaks are most relevant to the handlers' broader mission to reduce non-revenue water. These explanations are reflected in the differential rates of true responsiveness across complaint types seen in Figure 5. Complaints about shortages and unauthorized use receive lower rates of responsiveness than those about leaks and contamination.

To determine whether these patterns hold even when controlling for administrative capacity and time trends, I first explore whether complaint type predicts responsiveness when controlling for month-year and administrative wards. Table 2 shows patterns that align with those seen in Figure 5 and the remarks from the engineers. In the Type-only model, the intercept refers to complaints about contamination and suggests that Leaks at are resolved at a much higher rate than these. Shortages are resolved less often and unauthorized use issues are resolved the least of all.

These patterns, however, could be driven by patterns of political selection. Officials might believe, for example, that complaints about shortages are more likely to be made by Muslims or those in uncompetitive districts and therefore de-prioritize them. I therefore limit the analysis to the subset in which this information is provided and control for complaint-level identity and political constituency-related variables. As shown in the Constituency+Identity model, the variables related to complaint-type remain statistically significant and of comparable magnitude.

7 Complaint type as a mediator

In fact, Table 2 reveals another important insight: when including information abut complaint type, the coefficient related to a complaint being filed by someone with a Muslim name or in a low margin of victory constituency shrink dramatically in absolute value and are no longer statistically significant. This suggests that when holding type constant, the identity and political features of a complaint are no longer predictive of a response. A complaint about leaks filed by someone with an identifiably Muslim name has a similar likelihood of getting a response as one filed by a non-Muslim in the same month.

What, then, accounts for the results seen in Table 1? There are two possibilities here (Figure 6). One is that complaint type is a confounder, or an omitted variable

Table 2: Complaint-level predictors of true responsiveness including complaint type.

	Type-only	Constituency+Identity
Intercept	0.232***	0.171***
	(0.025)	(0.038)
Leaks (easy)[1]	0.321***	0.254***
	(0.012)	(0.017)
Shortages (difficult)[1]	−0.288***	−0.336***
	(0.011)	(0.017)
Unauthorised use (difficult)[1]	−0.358***	−0.389***
	(0.012)	(0.021)
Maharashtrian[2]		0.001
		(0.010)
Muslim[2]		−0.012
		(0.012)
Margin of victory[3]		−0.007
		(0.028)
Shiv Sena ward		−0.004
		(0.009)
Num.Obs.	19 869	9841
R2	0.370	0.369
R2 Adj.	0.368	0.365
Std.Errors	HC2	Clustered by ward

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

*p<0.1; **p<0.05; ***p<0.01

All regressions include month-year and administrative ward dummies.

[1] The reference category is complaints about contamination.

[2] The reference category is name classification as a non-Muslim or non-Maharahstrian name.

[3] Refers to the 2017 municipal election.

Figure 6: Complaint type as confounding (A) or mediating (B) the relationship between identity and politics and responsiveness.

A: Confounding

Identity and politics - - - - - - - - - - - - - - - - - - -► Responsiveness

Type

B: Mediating

Identity and politics ———► Type ———► Responsiveness
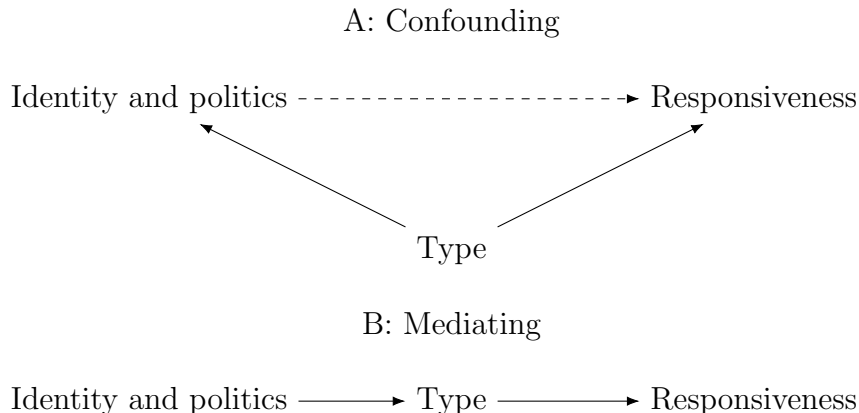
causing both citizen identity and complaint type. When unaccounted for, the relationship between citizen identity and complaint type would misleadingly appear strong, but disappear once controlling for the confounder. The other is that complaint type is a mediator in the relationship between identity and political constituency characteristics and responsiveness. In other words, it is possible that political and demographic characteristics tend to predict the types of complaints that citizens make which, in turn, receive rates of response. A true relationship between identity and responsiveness weakens when controlling for a mediator because of post-treatment bias, or controlling for the consequences of the independent variable of interest. Whether it is a confounder or a mediator, complaint type affects responsiveness. The testimony of MCGM employees suggests this is the case. The difference between the mediating and confounding scenario lies in the nature of the direction of the relationship between complaint type and identity/political characteristics. At least in the short term, it is implausible that the types of complaints made in an area causally affect its political competitiveness or the identity of its complainants, ruling out the possibility of complaint type being a confounder. It is therefore more likely to be a mediator, or a consequence of citizen identity which, in turn, shapes responsiveness.

Table 3 examines whether complaint-type varies with the political and identity characteristics of a complainant. Complaints to which officials are least responsive (unauthorized use and shortages) tend to be made by Muslims and those living in unresponsive wards, while complaints that are more likely to get a response (those about contaminated water and leaks) are more less likely to be made by Muslims and more likely to be made by those living in competitive wards.

Why would identity and politics shape the types of complaints made? One explanation is that different citizens are responding to different types of problems. Some citizens and constituencies are more likely to experience problems with shortages and unauthorized use, while others are more likely to experience problems with leaks and contamination. In other words, the incidence of complaints can be seen as a measure of levels of service delivery. These patterns therefore indicate that, in line with existing

Table 3: Political and identity-related predictors of complaint-type.

| | Difficult | | Easy | |
	Unauthorized use	Shortages	Contamination	Leaks
Intercept	0.144***	0.615***	0.144**	0.069
	(0.055)	(0.058)	(0.062)	(0.042)
Maharashtrian[1]	−0.002	0.030***	−0.001	−0.019*
	(0.006)	(0.011)	(0.007)	(0.010)
Muslim[1]	0.075***	0.033**	−0.021**	−0.076***
	(0.012)	(0.016)	(0.010)	(0.013)
Margin of victory[2]	0.048*	0.122**	−0.068***	−0.102***
	(0.027)	(0.051)	(0.025)	(0.036)
Shiv Sena ward	−0.006	0.006	0.007	−0.008
	(0.006)	(0.010)	(0.007)	(0.010)
Num.Obs.	9841	9841	9841	9841
R2	0.056	0.120	0.057	0.142
R2 Adj.	0.050	0.115	0.051	0.136

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

*p<0.1; **p<0.05; ***p<0.01
All regressions include month-year and administrative ward dummies. Standard errors clustered at the electoral ward level.
[1] The reference category is name classification as a non-Muslim or non-Maharahstrian name.
[2] Refers to the 2017 municipal election.

literature on the distributive politics of service delivery, constituency demographics and political competitiveness shape underlying levels of service provision, which shape the type of complaints that are made, which in turn shapes responsiveness.

And indeed, the incidence of different types of complaints varies with existing levels of service provision. Consider leaks and shortages, which are by far the most commonly placed complaints. I test whether the administrative ward-level daily complaint rate varies with fixed ward-level service provision levels.[10] Here, I use the mean daily hours of water supply as the indicator of service provision levels because supply hours best approximate the total volume of water households receive from the public utility. This data is from PRAJA (2020) and covers the year 2018. Because the data on mean daily supply hours is from the beginning of 2018, I include observations from 2018 only. All models include day fixed-effects to account for any events or trends affecting complaint levels over time.[11]

Note that I do not contend that an increase in mean supply hours causes more

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[10] The ward-level service provision data is available at the administrative ward only.
[11] Table SI.2 shows summary statistics for the outcomes of interest at the ward-day level for the three years that the dataset covers.

Table 4: Correlation between number of complaints per capita and mean daily supply hours (2018).

	All water complaints[1]	Leaks	Shortages
Mean daily supply hours	0.0002	0.001***	−0.0003**
	(0.0003)	(0.0001)	(0.0001)
Constant	0.008*	−0.0004	0.003**
	(0.004)	(0.002)	(0.001)
Observations	8,760	8,760	8,760
R^2	0.070	0.086	0.072
Adjusted R^2	0.030	0.046	0.032

*p<0.1; **p<0.05; ***p<0.01

Observations are at the day-ward level for 2018. All regressions include a dummy for each day, and standard errors clustered at the ward level.

[1] Number of complaints per day divided by the number of individuals in the ward.
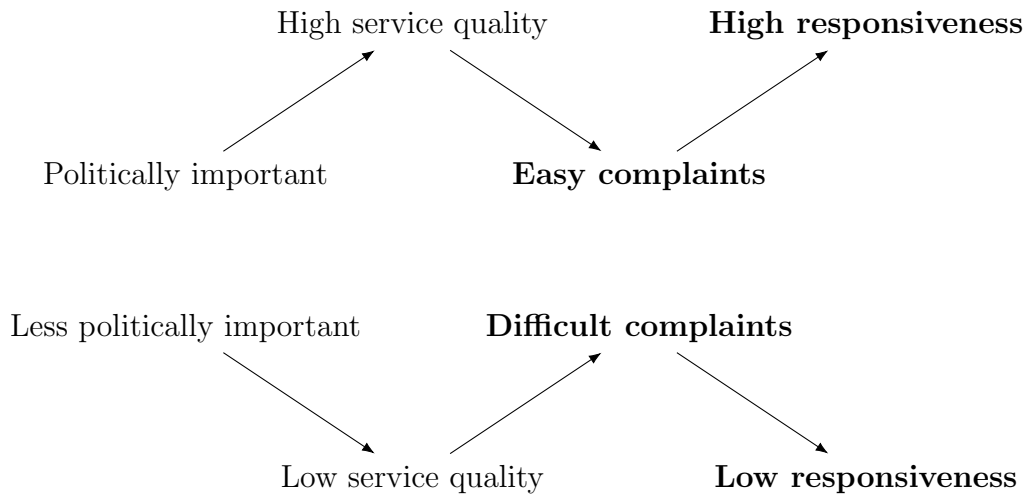
or less complaints. It is likely that both supply hours and the incidence of complaint-making are correlated with some other variables, particularly ward-level socio-economic characteristics or real problems about service delivery, that drive the relationship. This exercise simply shows that different types of complaints tend to come from different types of places and that levels of service provision are an important differentiating factor. For this reason, I do not include any control variables aside from the day fixed-effects.

The results can be seen in Table 4. First, there is no measurable relationship between the ward-level daily complaint rate per capita for all water-related and the mean daily supply hours. This suggests that areas with different levels of service delivery are unlikely to exhibit variation in complaint-making *in general*. This null relationship masks two correlations going in opposite directions. Wards that experience one more hour of service generate 0.001 more complaints about leaks per person and 0.00003 fewer complaints about shortages per person per day. I therefore see a divergence in the types of complaints that are made as levels of service provision increase.[12]

These patterns suggest that bureaucratic grievance redressal occupies a specific place in the broader process of distributive politics (Figure 7). First, levels of service quality, such as hours of water supply or the availability of formal connections, are allocated by existing policy-making processes to the most politically important citizens. In this case, these would be non-Muslims and those in competitive wards. This allocation then gives rise to different types of complaints, which is where bureaucratic grievance

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[12]These trends are further mirrored in the analysis of how ward-level characteristics are correlated with complaint-making using data from the 2010 census (Table SI.3). The use of the complaint-making system in the water sector does not increase with the ward's population of Scheduled Caste, literate, or regularly employed individuals. Yet as literacy increases, complaint-making about leaks increases while complaint-making about shortages decreases. Similar trends can be seen with respect to the regular employment rate. These patterns suggest that a divergence in complaint-making and, therefore, responsiveness, has implications for equity in service delivery across socio-demographic boundaries as well.

Figure 7: Hypothesized relationship between political influence and eventual responsiveness to complaints.

High service quality   **High responsiveness**

Politically important   **Easy complaints**

Less politically important   **Difficult complaints**

Low service quality   **Low responsiveness**

The role of grievance redressal is highlighted in bold

redressal plays a role. Complaints from areas with high levels of service quality tend to be easier to address, because the nature of the problems these areas face is different. Because officials are limited their ability to respond to all requests, they tend to prioritize these easier complaints. The differential rates of responsiveness combined with differential rates of claim-making leads patterns of responsiveness to mirror the initial patterns of service delivery. Those from the least politically competitive constituencies are the most likely to suffer form shortages, suggesting they have low underlying levels of service quality. Yet their complaints about the problems are deprioritized in favor of complaints about leaks, because these are professionally incentivized and easier to respond to anyway. And it is those with better quality that face the problem of leaks. And so it appears that bureaucratic grievance redressal is constrained in its ability to make meaningful shifts in existing patterns of service delivery.

8 The role of bureaucratic grievance redressal in distributive politics

There is a growing recognition that politicians and bureaucrats "co-produce" public services (Slough, 2024). Politicians are typically theorized as initiating the allocation of public services, either in a strategic effort to win elections (Golden and Min, 2013) or in response to citizen demands as a form of "constituency service" (Bussell, 2019). In this view, bureaucrats implement the decisions of politicians.

Yet the proliferation of grievance redressal systems creates a direct channel for citizens to access bureaucrats. An optimistic view of these institutions would be that they provide access to marginalized citizens who do not have the requisite connections

or political leverage to work through politicians. A pessimistic view would be that even here, bureaucrats follow the wishes of politicians when choosing which requests to prioritize. Using original data on complaints, responsiveness, and characteristics of both the complaints and the complainants themselves, I am able to shed new light on patterns of responsiveness.

This study suggests that the truth lies somewhere between the optimistic and pessimistic views. In addition to the directives of politicians, handlers face capacity constraints and broader organization goals (e.g. fixing Mumbai's leaks) when deciding which complaints to prioritize. At least in the case of Mumbai's water sector, these constraints seem to be more important than political considerations, leading to prioritization by complaint type rather than complainant characteristics. Highlighting the importance of the *content* of a complaint is among the main contributions of the paper.

At the same time, the capacity constraints limit responsiveness to those with the worst services, which may themselves have been allocated through a a political process. In other words, those operating grievance redressal platforms might face the same capacity constraints as politicians allocating public services. In the case of Mumbai, politicians are constrained in the hours of water supply they can allocate and officials are constrained in their ability to respond to complaints about shortages. This is likely for the same reason: there is simply not enough water to go around. As such this study further underscores the limits of bureaucratic grievance redressal systems in shifting entrenched patterns of service delivery.

In this way, the paper synthesizes and builds upon research on formal institutions for complaint-making that have found them to be minimally effective in in increasing political accountability (eg. Grossman et al., 2018, 2020) and identifies important conditions under which they would fulfill their promise to improve equity in service outcomes (World Bank, 2004). In the short term, these institutions serve the primary (and important) functions of making it easier for citizens to register complaints and crowd-sourcing information about service problems for local officials. As described by Grossman et al. (2018), they can serve as "hotlines" alerting the government about urgent problems. In the long-term, formal institutions for complaint-making might increase equity in service delivery if information about the distribution and incidence of demands reaches those with the power and incentives to redistribute or increase capacity and expand the total resources available to a system. In short, these institutions may complement but are not substitutes for accountable politicians.

References

Anand, N. (2011). Pressure: The PoliTechnics of Water Supply in Mumbai. *Cultural Anthropology*, 26(4):542–564.

Arulampalam, W., Dasgupta, S., Dhillon, A., and Dutta, B. (2009). Electoral goals and center-state transfers: A theoretical model and empirical evidence from india. *Journal of Development Economics*, 88(1):103–119.

Bandari, A. and Sadhukhan, S. (2021). Determinants of per capita water supply in

indian cities with low surface water availability. *Cleaner Environmental Systems*, 3:100062.

Bardhan, P. and Mookherjee, D. (2006). Decentralisation and accountability in infrastructure delivery in developing countries. *The Economic Journal*, 116(508):101–127.

Bates, R. H. (1974). Ethnic competition and modernization in contemporary africa. *Comparative Political Studies*, 6(4):457–484.

Besley, T. (2006). *Principled agents?: The political economy of good government*. Oxford University Press, USA.

Besley, T., Pande, R., Rahman, L., and Rao, V. (2004). The politics of public good provision: Evidence from Indian local governments. *Journal of the European Economic Association*, 2(2-3):416–426.

Bjrkman, L. (2015). *Pipe Politics, Contested Waters: Embedded Infrastructures of Millennial Mumbai*. Duke University Press.

Blair, H. (2000). Participation and accountability at the periphery: Democratic local governance in six countries. *World development*, 28(1):21–39.

Burgess, R., Jedwab, R., Miguel, E., Morjaria, A., and Padró i Miquel, G. (2015). The value of democracy: evidence from road building in kenya. *American Economic Review*, 105(6):1817–51.

Bussell, J. (2019). *Clients and Constituents: Political Responsiveness in Patronage Democracies*. Oxford University Press.

Butler, D. M. and Broockman, D. E. (2011). Do politicians racially discriminate against constituents? a field experiment on state legislators. *American Journal of Political Science*, 55(3):463–477.

Carlitz, R. D. (2017). Money flows, water trickles: Understanding patterns of decentralized water provision in tanzania. *World Development*, 93:16–30.

Chandra, K. (2004). *Why ethnic parties succeed*. Cambridge: Cambridge University Press.

Chen, J., Pan, J., and Xu, Y. (2016). Sources of Authoritarian Responsiveness: A Field Experiment in China. *American Journal of Political Science*, 60(2):383–400.

Dasgupta, A. and Kapur, D. (2020). The political economy of bureaucratic overload: Evidence from rural development officials in india. *American Political Science Review*, 114(4):1316–1334.

Dipoppa, G. and Grossman, G. (2020). The effect of election proximity on government responsiveness and citizens participation: Evidence from english local elections. *Comparative Political Studies*, 53(14):2183–2212.

Distelhorst, G. and Hou, Y. (2017). Constituency Service under Nondemocratic Rule: Evidence from China. *The Journal of Politics*, 79(3):1024–1040.

Dixit, A. and Londregan, J. (1996). The determinants of success of special interests in redistributive politics. *The Journal of Politics*, 58(4):1132–1155.

Franck, R. and Rainer, I. (2012). Does the leader's ethnicity matter? ethnic favoritism, education, and health in sub-saharan africa. *American Political Science Review*, 106(2):294–325.

Gaikwad, N. and Nellis, G. (2017). The Majority-Minority Divide in Attitudes toward Internal Migration: Evidence from Mumbai. *American Journal of Political Science*, 61(2):456–472.

Gaikwad, N. and Nellis, G. (2021). Do politicians discriminate against internal migrants? evidence from nationwide field experiments in india. *American Journal of Political Science*, 65(4):790–806.

Golden, M. and Min, B. (2013). Distributive Politics Around the World. *Annual Review of Political Science*, 16(1):73–99.

Granovetter, M. (1985). The problem of embeddedness. *American journal of sociology*, 91(3):481–510.

Grossman, G., Humphreys, M., and Sacramone-Lutz, G. (2014). I wld like u WMP to extend electricity 2 our village: On Information Technology and Interest Articulation. *American Political Science Review*, 108(3):688–705.

Grossman, G., Humphreys, M., and Sacramone-Lutz, G. (2020). Information technology and political engagement: Mixed evidence from uganda. *The Journal of Politics*, 82(4):1321–1336.

Grossman, G., Michelitch, K., and Santamaria, M. (2017). Texting complaints to politicians: Name personalization and politicians encouragement in citizen mobilization. *Comparative Political Studies*, 50(10):1325–1357.

Grossman, G., Platas, M. R., and Rodden, J. (2018). Crowdsourcing accountability: Ict for service delivery. *World Development*, 112:74–87.

Gulzar, S. and Pasquale, B. J. (2017). Politicians, Bureaucrats, and Development: Evidence from India. *American Political Science Review*, 111(1):162–183.

Helms, B. (2023). Global economic integration and nativist politics in emerging economies. *American Journal of Political Science*.

Holland, A. C. (2016). Forbearance. *American Political Science Review*, 110(2):232–246.

Jaffrelot, C. (2010). *Religion, caste, and politics in India*. Primus Books.

25

Jensenius, F. R. and Chhibber, P. (2023). Privileging ones own? voting patterns and politicized spending in india. *Comparative Political Studies*, 56(4):503–529.

Joshi, R. (1970). The shiv sena: A movement in search of legitimacy. *Asian Survey*, 10(11):967–978.

Kosec, K. and Wantchekon, L. (2020). Can information improve rural governance and service delivery? *World Development*, 125:104376.

Kramon, E. and Posner, D. N. (2013). Who benefits from distributive politics? How the outcome one studies affects the answer one gets. *Perspectives on Politics*, pages 461–474.

Kumar, T., Post, A. E., Ray, I., Otsuka, M., and Pardo-Bosch, F. (2022). From Public Service Access to Service Quality: The Distributive Politics of Piped Water in Bangalore. *World Development*, 151:105736.

Lasswell, H. D. (2018). *Politics: Who gets what, when, how*. Pickle Partners Publishing.

Lipsky, M. (2010). *Street-level bureaucracy: Dilemmas of the individual in public service*. Russell Sage Foundation.

Mansuri, G. and Rao, V. (2012). Localizing development: Does participation work?

Min, B. (2015). *Power and the vote: Elections and electricity in the developing world*. Cambridge University Press.

Minkoff, S. L. (2016). Nyc 311: A tract-level analysis of citizen–government contacting in new york city. *Urban Affairs Review*, 52(2):211–246.

Nichter, S. (2008). Vote Buying or Turnout Buying? Machine Politics and the Secret Ballot. *American Political Science Review*, 102(1):19–31.

Olken, B. A. (2010). Direct democracy and local public goods: Evidence from a field experiment in Indonesia. *American Political Science Review*, 104(2):243–267.

PRAJA (2020). Report on status of civic issues in mumbai. Technical report, PRAJA.

Purohit, K. (2011). BMC plugs 605 pipe leaks. *Hindustan Times*.

Ricks, J. I. (2016). Building participatory organizations for common pool resource management: Water user group promotion in indonesia. *World Development*, 77:34–47.

Rondinelli, D. A., Nellis, J. R., and Cheema, G. S. (1983). Decentralization in developing countries. *World Bank Staff Working Paper*, 581:13–28.

Sharan, M. and Kumar, C. (2020). Something to complain about: How minority representatives overcome ethnic differences.

Slough, T. (2020). Bureaucrats driving inequality in access: experimental evidence from colombia. *Unpublished Manuscript. New York University.*

Slough, T. (2024). Bureaucratic quality and electoral accountability. *American Political Science Review.*

Speer, J. (2012). Participatory Governance Reform: A Good Strategy for Increasing Government Responsiveness and Improving Public Services? *World Development*, 40(12):2379–2398.

Stokes, S. C. (2005). Perverse Accountability: A Formal Model of Machine Politics with Evidence from Argentina. *American Political Science Review*, 99(3):315–325.

Tendler, J. (1997). *Good government in the tropics.* Johns Hopkins University Press.

Tsai, L. L. (2007). Solidary groups, informal accountability, and local public goods provision in rural china. *American Political Science Review*, 101(2):355–372.

Varshney, A. (2002). *Ethnic conflict and civic life: Hindus and Muslims in India.* Yale University Press.

Varshney, A. (2021a). Accountability: how to raise complaints with the BMC. *Citizen Matters, Mumbai.*

Varshney, A. (2021b). A leak here, a leak there. No way to quantify water wastage in Mumbai. *Citizen Matters, Mumbai.*

Véron, R., Williams, G., Corbridge, S., and Srivastava, M. (2006). Decentralized corruption or corrupt decentralization? community monitoring of poverty-alleviation schemes in eastern india. *World Development*, 34(11):1922–1941.

Wampler, B. (2010). *Participatory budgeting in Brazil: Contestation, cooperation, and accountability.* Penn State Press.

Weingast, B. R. (1995). The economic role of political institutions: Market-preserving federalism and economic development. *The Journal of Law, Economics, and Organization*, 11(1):1–31.

White, A. and Trump, K.-S. (2018). The promises and pitfalls of 311 data. *Urban affairs review*, 54(4):794–823.

World Bank (2004). *World Development Report 2004: Making services work for poor people.* The World Bank.

Appendices

SI.1   Tables and Figures

Figure SI.1: MCGM's website and complaint-tracking portal.
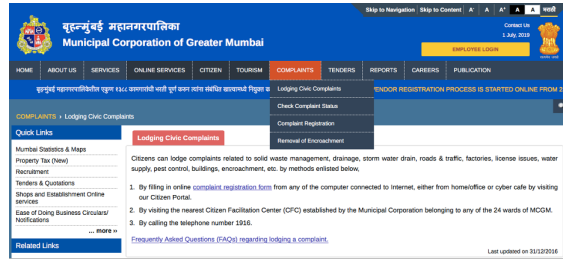
Figure SI.2: Distribution of mean rates of action taken in response to different types of complaints MCGM wards, October 2016-March 2017
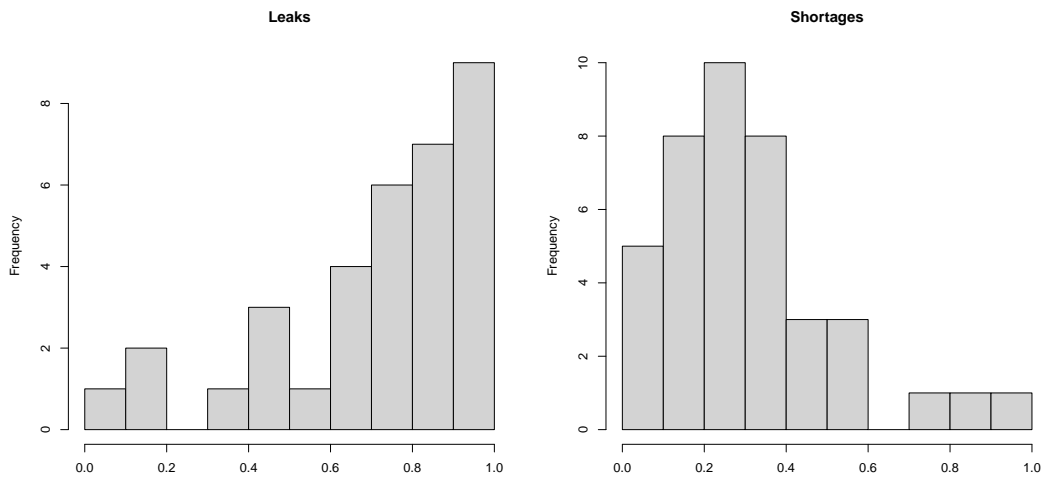
Table SI.1: Words used in predictive models for response and complaint categories.

Outcome	Predictive words (stemmed)
Complaints	booster, pump, use, day, suppli, leakag, shortag, complaint, connect, get, road, unauthor, tap, illeg, taken, leak, kurla, start, contamin, last, water, line, low, pressur, sinc, bill, overflow, tank, broken, wast, instal, meter, not, bad, provid, near, even, problem, smell, two, come, short, main, receiv, issu, less, past, burst, dirti, tanker, pipelin, pipe, flow
Responses	pleas, mobil, bill, provid, address, suppli, due, found, inspect, unauthor, repair, contact, joint, aqueduct, consent, inner, site, leakag, fals, henc, must, fact, contamin, cut, regular, action, connect, damag, entir, not, offic, smooth, complaint, disconnect, detect, water, declar, short, meter, request, done, hous, servic, check, low, email, usual

Table SI.2: Summary statistics for complaints and responsiveness by the ward-day, Mumbai 2016-2018.

Variable	Min.	Max.	Mean	SD
Complaints (all types)	0	23	0.81	1.38
Complaints (unauthorized use)	0	9	0.11	0.41
Complaints (contamination)	0	10	0.08	0.36
Complaints (shortages)	0	22	0.28	0.81
Complaints (leaks)	0	12	0.25	0.63
Closure rate (all types)	0	1	0.95	0.20
Closure rate (unauthorized use)	0	1	0.91	0.28
Closure rate (contamination)	0	1	0.97	0.18
Closure rate (shortages)	0	1	0.96	0.20
Closure rate (leaks)	0	1	0.96	0.20
Action taken rate (all types)	0	1	0.45	0.44
Action taken rate (unauthorized use)	0	1	0.12	0.32
Action taken rate (contamination)	0	1	0.50	0.49
Action taken rate (shortages)	0	1	0.22	0.39
Action taken rate (leaks)	0	1	0.82	0.64

Table SI.3: Correlation between number of complaints per capita and ward characteristics (based on 2010 Census)

	Complaint type:				
	All Water Complaints	Leaks	Shortages	Unauthorized Use	Contamination
	(1)	(2)	(3)	(4)	(5)
% Scheduled caste	0.005	0.025**	−0.024	−0.010	0.008
	(0.046)	(0.011)	(0.024)	(0.011)	(0.009)
% Literate	−0.054	0.036**	−0.071**	−0.012	−0.010
	(0.046)	(0.017)	(0.028)	(0.011)	(0.008)
% Main worker[1]	0.060	−0.035*	0.059**	0.030***	0.011
	(0.048)	(0.019)	(0.026)	(0.012)	(0.013)
Constant	0.030	−0.017	0.039	0.0004	0.006
	(0.035)	(0.010)	(0.025)	(0.008)	(0.008)
Observations	26,304	26,304	26,304	26,304	26,304
R^2	0.090	0.106	0.075	0.055	0.053
Adjusted R^2	0.050	0.067	0.035	0.014	0.011
Residual Std. Error (df = 25205)	0.028	0.011	0.018	0.010	0.009

*p<0.1; **p<0.05; ***p<0.01
Observations are at the day-ward level for 2016-2018. All regressions include a dummy for each day, and standard errors clustered at the ward level.
Individuals who were employed for the major part of the past year.