

# HOW DO THE AFFLUENT INFLUENCE AUTHORITARIAN RESPONSIVENESS? THEORY AND EVIDENCE FROM URBAN CHINA \*

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## Abstract

While scholarship on advanced democracies has documented a prevailing unequal political responsiveness driven by the affluent's influence through electoral mechanisms, we still know little about the existence and origins of such bias in authoritarian countries that lack competitive elections. This paper shows an implicit privilege of the wealthy in an authoritarian context. Matching unique administrative data on municipal service records with apartment complex-level housing prices in downtown Shanghai, we demonstrate that the local government resolves cases more swiftly for residents living in pricier areas. To understand the mechanism, we conducted semistructured interviews and proposed a simple model illustrating that the implicit bias arises from the unique incentives facing bureaucrats and political leaders under authoritarian rule. We also provide evidence that excludes several alternative explanations, including issue heterogeneity, verbal signals, demand-side discrepancy, and local funding discrepancies.

**Keywords:** Government Responsiveness, Bureaucracy, Inequality, Housing Price, Authoritarianism, China

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Political responsiveness is a cornerstone of representative democracies, as politicians respond to citizens' preferences (Dahl, 1971; Przeworski et al., 1999). Recent literature reveals that this responsiveness is not exclusive to countries with competitive elections (Besley and Coate, 2003; Sances, 2016). It even appears in autocracies, where political representation is often nominal (Chen et al., 2016; Jiang and Zeng, 2020; Lueders, 2021). However, governments do not treat all citizens equally in their responsiveness (See the review by Elkjær and Klitgaard, 2021). The influence of affluence in politics is pronounced and substantive in democracies (Gilens, 2005). Research has identified two primary sources of this disparity. The first arises from elected politicians favoring the affluent and well-educated, often due to factors such as voter turnout, interest group donations, and tax contributions (Schlozman et al., 2012; Sances, 2016). The second stems from bureaucratic biases that manifest in daily administrative tasks, resulting in favorable treatment of businesses (Yackee and Yackee, 2006) and biases against marginalized groups, such as the poor (Erikson, 2015), immigrants, and ethnic minorities (Einstein and Glick, 2017; Olsen et al., 2022).

Unequal access to bureaucratic services serves as a crucial form of political inequality that determines the welfare of citizens. While evidence shows that unequal responsiveness appears in both mature and emerging democracies, we know little about the magnitude and mechanism of such inequality in *authoritarian countries*, where there is in the absence of meaningful representation through which the affluent influence the policymaking process through an institutionalized channel. On the one hand, authoritarian leaders may prioritize equal responsiveness, as they tend to use efficient governance to replace elections as the source of regime legitimacy. They may command bureaucrats to provide responsiveness to all groups of citizens, especially toward the poor, thereby reducing concerns about civil disobedience (Chen et al., 2016; Distelhorst and Hou, 2017; Mittiga, 2022). On the other hand, unequal bureaucratic responsiveness can be more severe under authoritarian rule, where political leaders fail to monitor bureaucrats who pander to the rich due to a lack of electoral incentives (Slough, 2021; Wirsching, 2022).

This study addresses this debate by theoretically and empirically examining how the affluent influence government responsiveness in an authoritarian context. We primarily focus on how spa-

tial inequality biases bureaucratic responsiveness in China. We demonstrate that wealth status can implicitly distort responsiveness using quantitative analysis of administrative data, qualitative interviews with street-level bureaucrats, and a formal model. We show that the rich enjoy an implicit privilege on response time, a critical and objective measure for government service quality ([Dipoppa and Grossman, 2020](#)). Petitions by the rich receive quicker government responses than those of the poor. However, bureaucrats do not explicitly discriminate against the poor in petition resolution.

To understand the mechanism giving rise to this implicit bias toward the rich, we develop a model to characterize the interaction among citizens, bureaucrats, and political leaders. We analyze how two distinctive survival logics lead to this implicit bias. First, authoritarian leaders are primarily concerned with political stability and thus use various means to prevent massive unrest. To reduce collective actions, political leaders devise a supervising mechanism to guarantee that the poor receive adequate public service. Therefore, the poor are not discriminated against in petition resolution. In contrast, as subordinates of political leaders, bureaucrats are less concerned about collective action. They are evaluated by political leaders based on the completion of daily administrative work. Faced with limited resources, bureaucrats prioritize resolving petitions raised by individuals with a higher capacity to incur costs to themselves (e.g., filing a lawsuit or reporting to upper government). As the wealth status of citizens is a strong signal of their capacity, we show that bureaucrats prioritize petitions submitted by the rich over those from the poor. This logic is supported by our semistructured interviews.

To document the implicit privilege of the rich, we analyze how spatial inequality manifests in municipal service responses in China's largest city, Shanghai. The urban context of China serves as an ideal case to study the effect of wealth inequality on government responsiveness. While achieving rapid economic growth, China has faced severe inequality problems in recent decades, with its Gini coefficient reaching 0.73 in 2012 ([Xie and Jin, 2015](#)). Furthermore, our focus, Shanghai, has seen escalating inequality; its Gini coefficient ranks second among China's thirty-one provincial units ([Bhattacharya et al., 2018](#)). Despite rising inequality, China exemplifies an authoritarian

regime that advances responsiveness without competitive elections. The government establishes various venues to respond to its citizens, such as online consultation forms, mayor mailboxes, and legislative deputy services (Dimitrov et al., 2014; Truex, 2017; Manion, 2015; Distelhorst and Hou, 2017; Ding, 2020).

Our main empirical analysis draws on a unique administrative dataset of all 12345 hotline petition records between 2016 and 2019 in urban Shanghai, China. Like the 311 services in the United States and Canada, the 12345 hotline is a nonemergent municipal service platform that allows citizens to submit complaints to local governments. By dialing 1-2-3-4-5, citizens can complain to the municipal government about various issues, such as the environment, housing, schools, and local businesses. Local governments typically respond to these complaints within two weeks with a resolution. Our administrative data include detailed information on each petition, including its call transcript, caller's address, time of resolution, case type, resolution outcome, and responses to a follow-up survey. Following the literature (Christensen and Ejdemyr, 2020; Lueders, 2021), we use resolution time and decision to measure responsiveness. In addition to examining the 12345 hotline records, we measure wealth inequality by focusing on its spatial variation. Following the literature on the political implications of housing and property prices (see review by Ansell, 2019), we use housing prices as a proxy for the wealth status of the caller. Specifically, we match the caller's address with apartment complex-level preowned housing price data.

Our main analysis estimate the disparity in government responsiveness to residents in rich and poor areas. By controlling for the type of petition topics and other confounders, our main specification shows that citizens from a rich community receive significantly quicker resolutions than their peers in poor communities. We do not find that the government provides more positive resolutions to complaints by the rich than those by the poor, given the same issue type. We also address the causal concern in identifying the effect of housing prices on responsiveness using an instrumental variable approach. We use the historical foreign settlement boundary as the instrumental variable to conduct two-stage least squares (2SLS) estimation. Our 2SLS result shows that response time decreases by 0.25 working days if the housing price where the caller resides is 20% higher. In other

words, those residing in high-end apartments with the top 5% property price receive a response at least one working day earlier than a resident in an apartment priced at the district average. Given that the law requires a government response within 15 working days, the magnitude of the quicker response is nontrivial. Beyond the IV estimate, we check the robustness of our findings by analyzing the demand-side of petition

In addition to showing a salient effect of property price on response priority, we provide evidence that excludes several alternative explanations. We first address the concern that the rich and the poor have heterogeneous issues that fail to be captured by government-classified case types. Our text analysis of all petition transcripts, with structural topic model and similarity measure, shows that petitions topics and their distributions from the rich and poor are highly homogeneous. Therefore, it is unlikely that the priority is driven by different content. Another concern is whether other possible signaling mechanisms exist. According to the theory, citizens cannot truthfully reveal their capacity by cheap talk, in other words, sending verbal signals when calling the hotline. We analyze four types of verbal signals that might affect government responsiveness: (1) legal knowledge, (2) threats of collective action, (3) reporting to upper government, and (4) demonstration of party membership. Our text analyses show that callers rarely mention keywords related to these signals when using the 12345 hotline. The regression estimation indicates that the rich do not use these verbal signals more often than the poor. Moreover, we demonstrate that the implicit bias toward the wealthy is not driven by discrepancies in demand, such as claims that the rich call more or less frequently than the poor. Our analysis at the apartment-complex level shows no strong correlation between housing prices and 12345 call frequencies. Last, we exclude the possibility that disparity in local funding results in richer neighborhoods receiving quicker responses. Using government budget reports and local spending data, we demonstrate that richer neighborhoods neither receive more funding from the upper-level government nor spend more. Increased public expenditure also does not result in quicker response times or more positive resolutions.

By documenting this implicit bias toward the rich, this paper speaks to a growing body of research on authoritarian responsiveness ([Chen et al., 2016](#); [Meng et al., 2017](#); [Lueders, 2021](#); [Pan,](#)

2020). As Grossman and Slough (2022) notes, government responsiveness appears in three sets of dyadic relationships: politician-citizen, politician-bureaucrat, and bureaucrat-citizen. Building on this framework, we characterize how the rich in authoritarian contexts influence all three relationships. Our findings shed light on the importance of spatial inequality in shaping government responsiveness and how the rich enjoy an implicit advantage, even in nondemocratic contexts. Before showing these empirical results, the next two sections introduce the background of China's rising inequality, the 12345 municipal service, and a theoretical framework that shows how the distinct incentives of bureaucrats and political leaders lead to an implicit form of unequal responsiveness.

## Background

### Rising Inequality in Urban China

Along with its rapid economic growth, China has experienced rising inequality in the past few decades. According to Xie and Zhou (2014), China's income inequality has increased significantly, with a Gini coefficient ranging from 0.53 to 0.55. The unequal distribution of wealth is even more pronounced. According to a nationally representative survey, the wealth Gini coefficient reached 0.73 in 2012 (Xie and Jin, 2015). The top 1% of the wealthiest individuals own over one-fourth of the national household wealth, while the household wealth of the poorest 25% accounts for only 2% of total household wealth.

Although the urban-rural divide and regional disparity are two primary contributors to China's rising inequality, within-city inequality is also acute. Our case, Shanghai, is not only the wealthiest city in China but also one of the most unequal places in the country. According to Bhattacharya et al. (2018), Shanghai's within-city Gini coefficient ranked second among China's 31 provincial units in 2012 (Figure F.1). In another across-city comparison by Chen et al. (2018), the Gini coefficient of Shanghai ranked 7th out of 252 Chinese cities.

In the urban context of China, housing is a significant component of wealth inequality. In 1988,

China initiated housing reforms to privatize urban housing. The reform transitioned the nature of urban housing from a benefit provided by working units (danwei) to a commodity. While urban residents do not own the land, they can purchase and sell their apartments at market prices (Zhu, 2018). Housing privatization has profoundly impacted the wealth disparity among urban residents in China. Housing capital gains have fuelled household wealth accumulation (Wang et al., 2020). The median housing price in Shanghai saw a 13-fold increase over 19 years, rising from 3,659 RMB in 2001 to 50,199 RMB in 2019. In this paper, we use housing prices as a proxy for the wealth status of urban residents for several reasons. First, housing assets comprise the largest portion (over 70%) of urban household wealth in China (Xie and Jin, 2015). Second, most Chinese people own private housing: private housing ownership surged from 50% in 1978 to over 95% in 2015 (Piketty et al., 2019).

## 12345 Municipal Service

We examine the urban unequal responsiveness using the case of 12345 municipal service records. 12345 hotline is the most prevalent nonemergent government service system among Chinese municipalities. The Shengyang municipal government was the first to introduce a major hotline in 1983, allowing citizens to request municipal services. Later, various government agencies and local governments opened separate hotlines in their jurisdictions to respond to the requests of citizens (Meng and Su, 2021). Beginning in 2010, Chinese municipalities integrated all government service hotlines into the 12345 system so that citizens only needed to call one number to request municipal services. In 2021, 313 of 333 Chinese municipalities had opened 12345 hotlines for citizens.<sup>1</sup>

We mainly focus on the 12345 municipal service in H District, Shanghai. Shanghai is an ideal context to analyze the effect of wealth inequality on the wide gap between the rich and the poor in urban China. Specifically, H District constitutes the traditional urban core of Shanghai — it is the seat of the Shanghai municipal government, and a part of it used to be the French Concession and

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<sup>1</sup>[http://www.gov.cn/fuwu/2021-01/07/content\\_5577726.htm](http://www.gov.cn/fuwu/2021-01/07/content_5577726.htm)

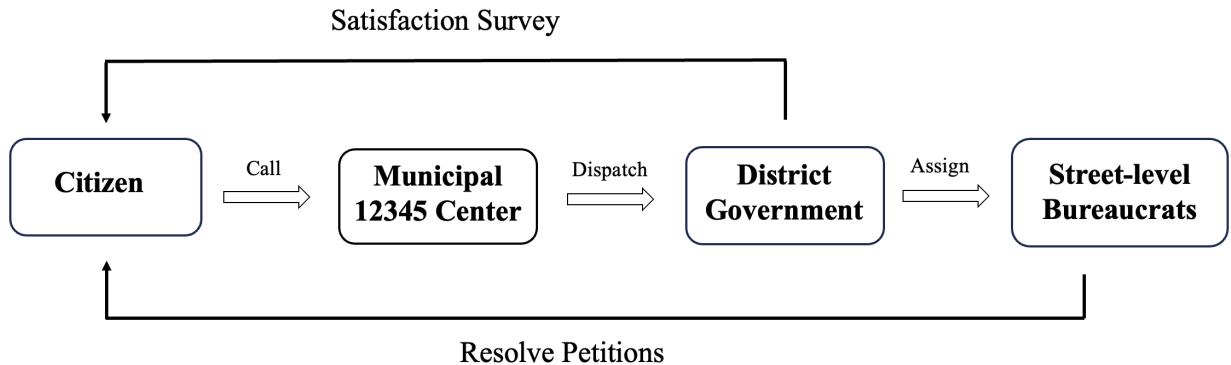


Figure 1: 12345 HOTLINE WORKFLOW

the International Settlement. According to the 2020 Census, H district has 660 thousand residents in a living area of 7.4 square miles. Its population density (89.18 thousand residents per square mile) is one of the highest in the world (Manhattan in New York City is 77 thousand per square mile). In 2021, H district was also the wealthiest urban district in China, with a GDP per capita of 438 thousand RMB (67 thousand USD) that is over 2 times that of Shanghai and 5 times that of China.<sup>2</sup>

The Shanghai municipal government opened the 12345 hotline in October 2012, combining over 230 separate government service phone numbers into one unified system. Over the first decade, the Shanghai 12345 hotline received over 30 million complaints through various channels, using phone calls, smartphone applications, and website platforms.<sup>3</sup>

Figure 1 illustrates the workflow of the Shanghai 12345 hotline. Typically, a case is handled by three tiers of governmental agencies: the municipal-level 12345 center, the district government, and street-level bureaucrats (either district departments or neighborhood officers). Initially, the municipal 12345 center accepts a petition and opens a case in the system. Table F.1 displays the media through which citizens access the 12345 hotline service. Our data suggest that the vast majority of citizens reach out to the municipal service by phone (98.1%).

Operating as a nonemergency 24-hour hotline, the platform categorizes complaints into nine

<sup>2</sup>The GDP per capita of Shanghai was 173.6 thousand RMB (27.2 thousand USD) and that of China was 81 thousand RMB (12.5 thousand USD) in 2021.

<sup>3</sup><https://finance.sina.com.cn/tech/2022-04-02/doc-imcwiwss9581356.shtml>

types: (1) Infrastructure and Transportation, (2) Public Security, Politics, and Law, (3) Social Management, (4) Science, Education, Culture, and Health, (5) Safety and Regulation, (6) Utilities, (7) Economy, (8) Social Organization, and (9) Others. Figure F.2 depicts the distribution of these case types. Each year, the H district government receives over 10,000 cases from residential areas, on average. Of the various case types, complaints concerning infrastructure and transportation are the most prevalent (77%), followed by public security, politics, and law complaints (8%) and then social management complaints (7%). In the subsequent step, the municipal 12345 center directs cases to the appropriate district-level agency based on the location of the case. For instance, if a resident complains about an infrastructure issue in H District, the H district government takes responsibility and channels it to the pertinent street-level agency within its jurisdiction, in this scenario, the construction and management commission. The street-level bureaucrats in these departments and dispatched agencies that manage the cases can view the case records, which include the address details, giving them insights into the potential wealth status. Based on our interviews, local officials, particularly those in the neighborhood office (*jie dao*), a dispatched agency of the district government in various neighborhoods, are well acquainted with the specifics of their jurisdiction, including real estate property — a trend consistent with the literature (Tomba, 2014; Read, 2000). Furthermore, sometimes the address information mentions the name of the apartment complex in urban China, allowing officials to estimate the potential property value. For example, if the property name contains “Garden” (*hua yuan*) or “Riverside” (*bing jiang*), it is likely a high-end commercial property. Conversely, if the case address mentions “New Village” (*xin cun*), it can be inferred to be an older Soviet-style apartment building established before housing was commercialized.

Once the case is addressed, street-level bureaucrats report back to the district government and offer feedback to the citizen via phone. The district government also sends an invitation inviting the citizen to complete a satisfaction survey regarding the quality of service after the street-level bureaucrats provide a resolution. Based on our interviews, government responsiveness plays a crucial role in performance evaluations, where the higher-tier government prioritizes three metrics:

(1) the total number of cases received and processed, (2) the average resolution time, and (3) the overall satisfaction rate.

We present an example to show how the response appears in the administrative records. The example is a noise complaint recorded in 2017. The 12345 hotline center recorded the case description as follows: “*Caller reflects that location A conducts major home repair around 6:00 am every day, which has been going on for more than a month. The same construction is carried out during the long holiday, affecting residents' normal rest and life. Appeal: Carry out construction at a specific time. (Reply required)*”

In this case, the district bureau of housing security and management took 13 days to respond to the caller and stated that the petition was valid but lacked a legal or policy foundation. The official response was as follows: “*After receiving the petition, our bureau promptly contacted the construction unit. This is a major renovation project for the entire building, and the construction unit has adjusted the work schedule to minimize disturbances. Additionally, we have intensified on-site management.*”

The 12345 municipal service center monitors the entire resolution process and logs pertinent information, including call pick-up time, address, phone number, description, type of complaint, response time, resolution decision, and citizen evaluation. We utilize comprehensive data from these administrative records to explore inequality in the 12345 municipal services. The subsequent section details the data and variables employed in our quantitative analysis. In undertaking this, we fully acknowledge the significance of conducting the research, which encompasses interviews, data processing, and data sharing, in an ethical fashion. The study has been approved by the Institutional Review Board at the authors’ affiliated institutions, and we stringently abide by all regulations to ensure the safeguarding of individual rights, privacy, and confidentiality (see SI A for additional details). The final dataset used for quantitative analysis and replication purposes does not contain any personally identifiable information.

## A Simple Model

This section proposes a simple theoretical framework to illustrate two empirically testable hypotheses on how wealth inequality shapes government responsiveness in the context of urban China. We show how the different survival logics of political leaders and bureaucrats lead to biased responsiveness that favors the rich, who can send credible signals to the government. On the one hand, bureaucrats prioritize the petitions from the rich and thus solve their complaints rapidly; on the other hand, the fear of unrest leads to minimal public service to the poor. Those incentives are supported by our semistructured interviews. The detailed formal model and its proof are shown in the SI B.

Our setup is a call-based municipal service with three players. One is a citizen who suffers disutility and asks for the service by submitting a petition (e.g., regarding noise, environment, education) to the government. A street-level bureaucrat determines the amount of effort or resources to use to address the petition, thereby affecting the response time and resolution decision. The third player is a political leader who is the direct principal of the bureaucrat and supervises the bureaucrat; the political leader can be the district chief or party secretary in the context of urban China.

Because of the limited resources and complex administration, it takes time for bureaucrats to resolve a petition. As Ting (2021) notes, waiting time reflects governance service quality. Therefore, if citizens use the petition system, the utility of citizens is also discounted depending on efficiency (government quality). Other than using the public service system, citizens have two alternative means to voice their demand. First, they can use private resources. For example, citizens connected with political leaders can directly use their connections to resolve their issues. Moreover, citizens can use the legal system to defend their interests if the petition response from the municipal service is not satisfactory. We use parameter  $\theta \in [0, 1]$  to gauge citizens' ability, including their social networks, knowledge of policies and laws, etc. It is natural to think that citizens incur additional costs for bureaucrats when using alternative channels (filing lawsuits or directly complaining to connected leaders). For example, bureaucrats have to spend additional effort on

lawsuits ([Gordon and Hafer, 2005](#)). Second, in extreme cases, citizens can also choose a costly form of petition – protest – that is often responded to by authoritarian governments because it is the primary threat to autocratic rules ([Acemoglu and Robinson, 2001](#); [King et al., 2013](#); [Wasserstrom and Perry, 1994](#); [O'brien and Li, 2006](#)). Successful protests in China are viewed as a political failure for local leaders; those who fail to prevent massive collective actions face “one vote veto”. Typically, they have no chance to be promoted in their career.

Political leaders receive fixed rent if they are not deposed and care about career advancement. Both depend on whether collective action occurs in the area. Political leaders can prevent such action by supervising whether bureaucrats successfully address citizens’ petitions. Political leaders can learn whether the demand is well responded to; if not, they can resend the case to the department and order someone to reconsider the case resolution, a pattern mentioned by the bureaucrat we interviewed.

Unlike political leaders driven by the imperative of maintaining stability, bureaucrats are more concerned with their careers, which are primarily evaluated based on their ability to complete administrative tasks. In interviews with district government bureaucrats, they expressed, “*We are less concerned about political stability, as this falls mainly under the purview of the chief executives of political leaders. Instead, our primary concern is the day-to-day administrative workload.*” They further emphasized, “*For instance, citizen-initiated lawsuits can significantly impact our work efficiency.*” Therefore, the bureaucrat mainly balances the cost of effort and satisfaction from citizens.

Because the public complaint system serves all citizen and responses take time, citizens who have higher ability may find that it is preferable not to use the public system; instead, they can bypass this stage and directly use private resources to obtain the service. Therefore, it is without loss of generality to assume people use private resources only after they receive feedback from bureaucrats.

Based on the model, we derive several formal results in SI [B](#). Notably, both the bureaucrat and political leader hope to know citizens’ capacity, and citizens also have an incentive to reveal their

type. The reason is straightforward. If  $\theta$  is public information, on the one hand, the political leader can design the best supervising strategy that can both prevent protests and minimize the supervision cost. On the other hand, the bureaucrat can effectively assign efforts and prevent unnecessary costs.

**Signaling through costless messages.** In the real world,  $\theta$  is not observed. The first available method for residents is to send a costless message when they complain through the public service system. For example, in a field experiment, [Chen et al. \(2016\)](#) finds that if people submit requests online with collective action threats, county governments are more likely to respond and provide informative responses. In our call-based municipal service system, however, rational citizens with lower capacity can tell a lie to imitate citizens with higher capacity. The main reason is that communication through phone calls is costless and unverifiable: anyone can threaten to take legal action or announce that they have a personal tie with higher officials.

**Proposition 1.** *In the call-based municipal service with pregame cheap talk, all equilibria are noninformative. (All proofs are in the SI B.)*

Accordingly, we expect no significant difference in how citizens use verbal signals to show their underlying capacity: we offer evidence to support this proposition in the Alternative Explanation section (Table 3).

**Unequal Responsiveness to Wealth Status.** Since citizens with low  $\theta$  always have an incentive to report a higher type, the politician leader and bureaucrats must rely on other information to effectively learn their types.<sup>4</sup> We argue that  $\theta$  is highly related to wealth status, and we use housing price  $p$  to approximate wealth.<sup>5</sup> Purchasing a house is one of the most important and expensive decisions that most people ever make in their lives ([Ansoll, 2019](#)). The substantial cost is not affordable to everyone. In addition, the price of real estate property is positively correlated with education, income, social status, connections, and family background. In the empirical context of this paper, citizens have to truthfully report the exact address or apartment complex name to the 12345 hotline to receive a government response: citizens have no incentive to lie because

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<sup>4</sup>The established scholarship shows several meaningful signals that convey information. For example, people use verbal signals (such as accents) to discriminate against immigrants ([Wolfson and Manes, 1985; Kayaalp, 2016](#)).

<sup>5</sup>See more discussions on  $\theta$ , wealth, and housing prices in the background section.

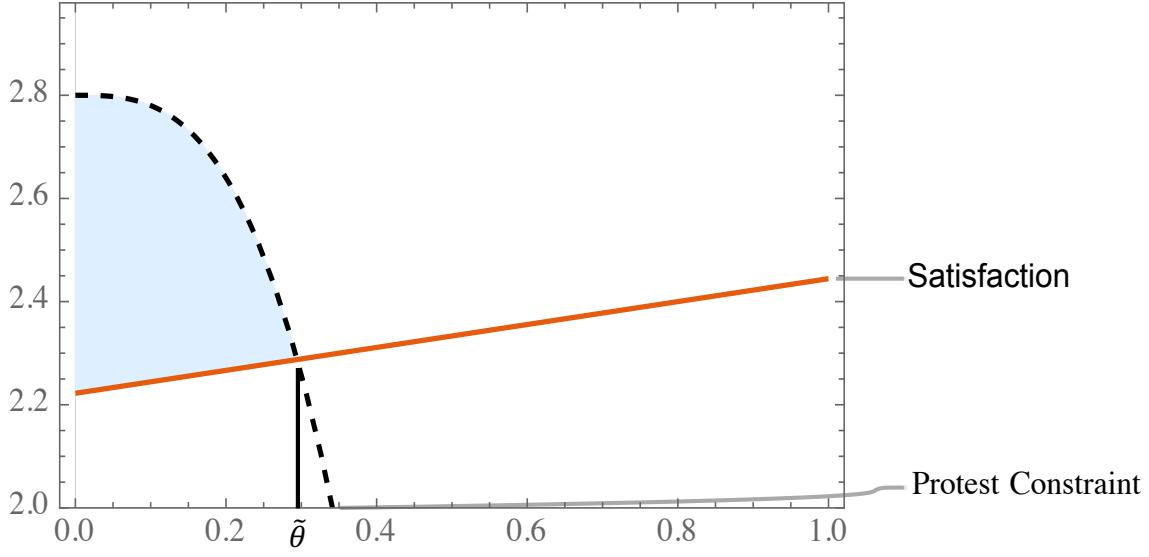


Figure 2: DUALITY OF UNEQUAL RESPONSIVENESS: NUMERICAL EXAMPLE

bureaucrats will arrive at the scene. Both street-level bureaucrats and citizens are familiar with the local housing area and corresponding housing prices, as we mentioned in the background; thus, bureaucrats can effectively learn  $\theta$  from the price  $p$ .

**Proposition 2.** *In the call-based municipal service with noisy signals, the nonprotest pure-strategy subgame perfect equilibrium has the following two properties:*

- (1) *Allocated resources from the bureaucracy are increasing in housing prices  $p$ .*
- (2) *There exists a housing price  $\tilde{p}$  for which the politician resends cases such that housing price  $p_i < \tilde{p}$ .*

The above proposition reveals two interesting patterns in the equilibrium. First, the bureaucrat tends to invest more effort in the rich (higher  $p$ ) because housing price as a signal is highly correlated to the underlying type  $\theta$ . Second, if the bureaucrat does not pay enough attention to the poor, petitions from the poor are less likely to be solved. This may increase the probability of collective action. Therefore, in equilibrium, the supervising mechanism (i.e., the politician leader) effectively identifies and remedies the bias by resending petitions from the poor and letting other

bureaucrats who have spare time readdress the petition.

Figure 2 illustrates the two results with a numerical example.<sup>6</sup> The horizontal line represents the housing price  $p$ . The upward solid curve denotes the satisfaction that a citizen with wealth  $p$  receives in equilibrium. This reflects that the rich can obtain more favors from the bureaucracy. The dashed curve denotes the lower bound of satisfaction needed to prevent protest in equilibrium. The intersection determines the critical value  $p = \tilde{\theta}$ . Citizens whose wealth  $p_i < \tilde{\theta}$  are not satisfied with the response from the bureaucrat. Their intensity of dissatisfaction is reflected by the height of the light blue area. The political leader must send such complaints back to bureaucrats to prevent protests. Accordingly, we derive the following two main hypotheses:

**H1: Bureaucrats prioritize petitions by the rich over those by the poor.**

**H2: Bureaucrats do not discriminate against the poor regarding petition resolution.**

## Data and Variables

We empirically test these hypotheses using administrative records from the 12345 hotline in H district, Shanghai, China. H district recorded over 120,000 complaints between 2016 and 2019. Although we are interested in how spatial inequality, measured by property prices, influences district-level government responsiveness, an empirical concern is that the issue in the petition might not have occurred where the petitioner resides. To address this, we employ a spatial matching method to pinpoint petitions originating in residential areas.<sup>7</sup> We initially gathered spatial information for each case from the Google Maps API, which includes longitude and latitude. After accessing these geographic data, we determined residential addresses by merging the data with apartment-complex polygons. Figure 3 offers an illustration: the red dot represents a residential address located within an apartment complex, while the black dot signifies a case emerging from nonresidential areas. By using this matching method, we identified over 43,000 cases that occurred in residential zones,

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<sup>6</sup>See SI B for details.

<sup>7</sup>Respondents are asked about the place of incident. According to the 12345 officials we interviewed, most callers record issues either near their residential addresses or report their residential addresses.

accounting for approximately 37% of all petitions.

Figure 3: IDENTIFYING RESIDENTIAL ADDRESS



*Note:* The figure is an illustrative figure to show how we identify residential addresses. The red dot denotes that the caller is in a residential address, and the black dot denotes that in a non-residential address. The purple polygon denotes all residential areas in H district.

We employ two measures of responsiveness as outcome variables, following the literature on government responsiveness ([Dipoppa and Grossman, 2020](#); [Lueders, 2021](#)). First, we measure the speed of response by focusing on resolution time. As [Dipoppa and Grossman \(2020\)](#) suggests, response time is a subjective measure that suffers less from manipulation and has abundant spatial and temporary variation. While our administrative records do not provide information on the precise time spent on each resolution, the district government assigned a label to indicate the extent to which the petition is delayed. Petition cases are classified into four types assigned different colors. Cases with green labels are on time, which means the complaints are resolved within 10 working days. Those that experienced minor (10-13 working days) and intermediate (13-15 days) delays are labeled yellow and orange, respectively. “Red” cases refer to complaints with significant

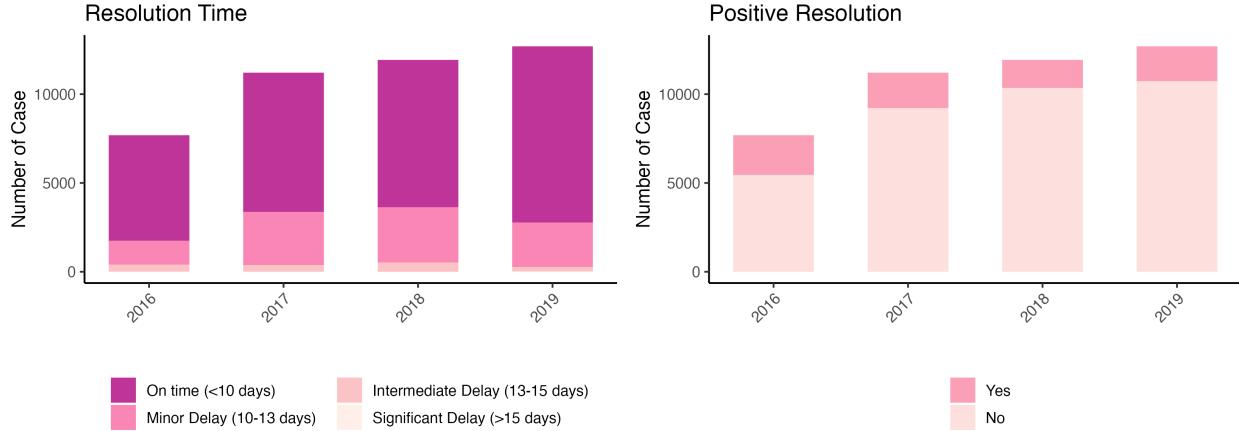
delays that take government over 15 business days to provide feedback to citizens. The left panel of Figure 4 shows the distribution of response time. In our sample, 73% of the petitions were resolved on time, while 23% and 3% experienced minor and intermediate delay. Only 17 cases (less than 1%) were resolved with significant delay, taking the government over 15 working days to respond. In our regression analysis, we assign the mean value of each category as a continuous measure of response time (in days). Specifically, on-time cases are coded as 5 days, cases with minor delay as 11.5 days, cases with intermediate delay as 13.5 days and cases with significant delay as 15 days. We also check the robustness using an ordinal measure (Table F.3).

Another outcome of interest is the extent to which the government positively responds to the petition. In our administrative data, resolution decisions are classified into four types: “actually resolved (shi ji jie jue)”; “show explanation” (jie shi shuo ming); “demand is too high” (su qiu guo gao), and “record it for reference and record” (can kao bei an). Examples of each type of resolution are shown in SI C. In the baseline specification, we use a conservative approach that only considers cases with actual resolution as a positive response. In doing so, we use a binary indicator, coding positive resolution as 1 and 0 otherwise. The right panel of figure 4 shows the distribution of case resolutions. Between 2016 and 2019, the H district government provided positive resolution to a small portion of cases (17.2%) under our conservative measure. Table F.2 shows summary statistics of these two outcome variables, along with other treatment and control variables. Again, we check the robustness using an ordinal measure (Table F.3). We also verify that both resolution time and positive resolution are important measures of responsiveness by showing their strong correlation with the overall stratification of callers in the follow-up survey conducted by the district-level government that supervises street-level bureaucrats (see details in SI D).

We use housing price as the key variable of interest to document the spatial variation in wealth inequality. We scraped the housing price data from *Fangtianxia.com*, a major real estate brokerage in China that is publicly listed on the New York Stock Exchange (Fang Holdings Ltd, NYSE: SFUNY).<sup>8</sup> Housing prices are at the apartment complex level (xiaoqu). In Chinese cities, most

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<sup>8</sup>Notably, we do not have the time-variant, apartment complex-level housing price. The apartment complex price data were scraped in a batch in late 2017. Using such microlevel, cross-sectional data enables us to measure the



**Figure 4: DISTRIBUTION OF ALLOCATION DURATION AND RESOLUTION**

*Source: H 12345 hotline records.*

residents live in apartment complexes managed by home owner association firms (*wu ye*). Considering that the new sales of real estate are undervalued because of government restrictions on new sales, we use preowned housing prices. In our sample, the preowned property price in H district varies across different apartment complexes, ranging from 7,000 to 1,40,000 RMB per square meter (approximately 92.2 to 1,858 USD per square foot).

We control for a set of individual covariates that address several other biases that might exist in the 12345 municipal services. We first consider gender bias by controlling for a binary variable that is coded as 1 if the caller is female and 0 otherwise. We also control for bias against native origins. In China, bias toward nonlocals prevails in major cities because of the relatively low social and economic status of people who do not have local hukou, a home registration indicator that distinguishes locally born residents. We account for this confounder by developing a proxy for local residential status. While the 12345 database does not ask for the hukou status of the caller, we use a telephone search engine developed to extract the registration location of each phone number. We use a binary measure, coding telephone numbers registered in Shanghai as 1 and 0 otherwise. Moreover, we account for bias toward foreigners. In China, non-Chinese foreigners and overseas Chinese enjoy preferential treatment in various policy domains, including housing, family

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spatial variation in housing prices. We verify that the spatial variation in housing prices remains stable over time using aggregate-level, time-variant data. Moreover, we show that most residential areas (*ban kuai*), a real estate term that refers to a cluster of apartment complexes, have a similar trend over time (Figure F.3).

planning, and banking (Bork-Hüffer and Yuan-Ihle, 2014). To control for the preferential treatment of foreigners, we develop a binary proxy for foreign or overseas Chinese status by coding whether the case description mentions a set of keywords that are related to foreigners or overseas Chinese.<sup>9</sup> Last, we consider the anonymity of the call. Anonymous callers might have different concerns in petitions than nonanonymous callers. For example, scholars show that anonymous users are more likely to voice politically sensitive concerns than nonanonymous users (Chen, 2021). The 12345 hotline allows callers to remain anonymous but still records addresses. We construct a binary indicator, coding an anonymous caller as 1 and nonanonymous caller as 0.

In addition to individual-level covariates, we account for the effect of the political cycle on responsiveness. The literature shows that authoritarian leaders enhance responsiveness before elections to enhance political legitimacy (Lueders, 2021). In the context of China, scholars also show a cyclical pattern of government behavior, including tax collection, repression, and public spending (Guo, 2009; Pan, 2019; Chen and Zhang, 2021). Following the practice in the literature, we develop proxies for local and national political cycles by focusing on the sessions of the People's Congress and the People's Political Consultative Conference (two sessions) at the national and local levels (Guo, 2009). We use two binary indicators of national and local sessions, coding the case as 1 if the reporting date is one month before or during the period of the national and local sessions. In addition to the cycles of national and local legislatures, we take into account the political turnover of chief executives, a crucial determinants of public resource allocation in China (Hou and Li, 2023; Li et al., 2023). In the context of this paper, changes in the leadership of these district governments might also affect government responsiveness. For example, district heads who face promotion may accelerate responsiveness to demonstrate their competence. To account for this political turnover effect, we create a binary indicator that is coded as 1 if the case is recorded when the district leader has experienced political turnover.

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<sup>9</sup>Keywords related to foreigners and overseas Chinese include huaqiao, haiwai, taibao, taiwan, hongkong, waiji, waiguoren, and other nationality, such as American, Canadian or Japanese citizens

## Effect of Housing Price on Bureaucratic Responses

We estimate the effect of housing prices on government responsiveness using over 40,000 hotline petitions recorded from 2016 to 2019. As a key empirical concern is that residents who live in poor or rich neighborhoods might raise different complaints, we choose to use a case type fixed effects specification that allows us to compare how bureaucrats respond to the rich and the poor given the same issue. The model is specified as follows:

$$Y_{i(jt)} = \beta_1 \log(Price_{i(jt)}) + \delta_1 X_i + \gamma_j + \zeta_t + \epsilon_{ijt},$$

where  $Y_{i(jt)}$  denotes the two forms of responsiveness measures: response time (number of days) and resolution of case  $i$  with type  $j$  that is handled in year  $t$ .  $\log(Price_{i(jt)})$  is the logged housing price of the caller's apartment complex.  $X_i$  denotes the set of case-level covariates and political cycle variables (local and national two sessions, executive turnover). As bureaucrats may handle cases differently, we control for case type fixed effects  $\gamma_j$  to address the concern about issue heterogeneity. We also control for year-month fixed effects ( $\zeta_t$ ) to exclude year-month specific shocks, such as seasonal trends and national and traditional holidays. The standard errors are clustered at the apartment complex level.

Table 1 shows the effects of housing prices on two measures of responsiveness. Columns 1 to 3 report the results for response time (in days). We begin the analysis by regressing response time directly on housing price in Column 1, controlling for type and year-month fixed effects. The model yields a negative and significant estimate of housing price, suggesting that callers from rich neighborhoods receive a quicker response than their poor counterparts. In Columns 2 and 3, we gradually add case-level covariates (gender, local resident status, foreign status, and anonymity) and political event controls – local and national two sessions, and local political turnover. The estimates of housing price increase slightly and remain statistically significant. In contrast to the significant estimates in Columns 1 to 3, the estimated effects of housing price on positive resolution in Columns 4 to 6 are small and statistically indistinguishable from zero.

Table 1: Baseline Specifications

	Resolution Time			Positive Resolution		
	(1)	(2)	(3)	(4)	(5)	(6)
Price	-0.200** (0.096)	-0.225** (0.093)	-0.225** (0.093)	0.005 (0.010)	-0.0004 (0.010)	-0.0005 (0.010)
Female		-0.105*** (0.040)	-0.104*** (0.040)		0.031*** (0.005)	0.031*** (0.005)
Local		0.746*** (0.060)	0.745*** (0.060)		0.009 (0.006)	0.009 (0.006)
Foreign		0.092 (0.290)	0.094 (0.291)		-0.025 (0.023)	-0.024 (0.023)
Anonymous		0.176*** (0.057)	0.175*** (0.057)		-0.076*** (0.006)	-0.076*** (0.006)
National Two Sessions			-0.485*** (0.113)			0.014 (0.014)
Local Two Sessions			0.495*** (0.146)			0.039** (0.016)
Executive Turnover			0.703** (0.294)			0.028 (0.035)
Type FE	Y	Y	Y	Y	Y	Y
Year-month FE	Y	Y	Y	Y	Y	Y
<i>N</i>	43,498	43,498	43,498	43,500	43,500	43,500
Adjusted R <sup>2</sup>	0.030	0.037	0.038	0.053	0.062	0.063

Notes: Standard errors clustered at the apartment-complex level are reported in parentheses. FE denotes fixed effects. \* $p<0.1$ ; \*\* $p<0.05$ ; \*\*\* $p<0.01$ .

While the baseline OLS estimation provides compelling evidence on the implicit bias toward the rich in response time, such estimation might be biased for several reasons. First, OLS estimation may suffer from the reverse causality problem that hotline responsiveness quality can affect housing prices; for example, people pay a premium for better public service. Second, we might suffer from omitted variable biases, such as citizens' preferences, that fail to be captured by the government-coded case types. To address these concerns, we use an instrumental variable (IV) approach to estimate the effect of housing prices on responsiveness. Our instrumental variable analysis exploits a historical determinant of housing prices in central Shanghai <sup>10</sup>: the foreign set-

<sup>10</sup>For example, [Miguel and Roland \(2011\)](#) use geographical boundaries as an IV to estimate the effect of US bombings on economic development.

tlement area that consists of the French Concession and the International Settlement established after the Qing government, which opened Shanghai as a treaty port to westerners. The left panel of Figure 5 shows the geographical boundary. The International Settlement (yellow area) is located in the north, and the French Concession (red area) is in the middle. The green part is the nonsettlement area, which used to be called the “Southern City” (nan shi) and is located in the southern part of the current H district.<sup>11</sup> The price premium of the settlement area emerged in the late 19th and early 20th centuries. According to Wang (2009), housing prices in the settlement area soared when compared to the nonsettlement area because of (1) the immigration of rich gentries in Jiangsu and Zhejiang fleeing from the war against the Taiping army; (2) foreign investment in real estate; (3) better infrastructure, such as street lights, sewage, and various aspects of public services; and (4) legal protection under the rule of the settlement agency. Lu Xun, a prominent leftist writer who lived in Shanghai in the 1930s, wrote in a letter to a friend that the primary reason he preferred renting a house but paying higher rents in the settlement area was safety.<sup>12</sup>

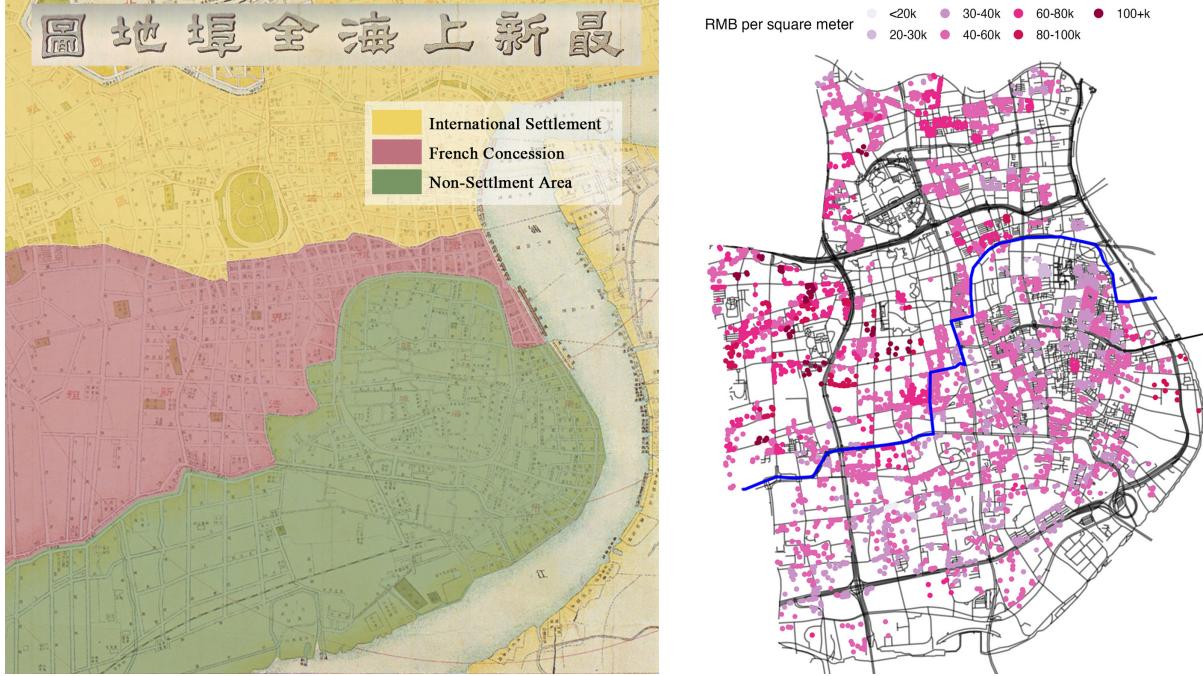
Although foreign settlement was abolished during World War II and the new government ruled by the Communist Party of China replaced the housing market with a housing allocation system in the 1950s, housing prices re-emerged after the readoption of the commercialized housing market in the 1990s. Currently, many celebrities, professionals, entrepreneurs, and ex-pats live in town-houses and apartments in the former settlement area. Two reasons account for the persistence of the price premium of the settlement area. First, the establishment of settlements shapes the urban landscape of downtown Shanghai. The municipal government of Shanghai, People’s Park (former Shanghai Race Club), the Bund, and many historical architectures, high-end apartments, and townhouses are located in the former settlement area. In addition to having an effect on the urban landscape, the foreign settlement has a cultural heritage. Native Shanghainese call the settlement area the “upper corner” (Shang Zhi Jiao), which means a high-end neighborhood, and the nonsettlement area the “lower corner” (Xia Zhi Jiao), which means a slum-like community (Shen,

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<sup>11</sup>The French Concession expanded over time in the late 19th and early 20th centuries. We use the latest boundary (1914) as the geographical cutoff for causal identification. A detailed description of the settlement is provided in SI E.

<sup>12</sup>Lu Xun, the letter to Cao Jinhua, 1936.

Figure 5: HOUSING PRICE IN H DISTRICT



Note: The left panel is the Shanghai Full Port Map published in 1925. The yellow and red areas denote the two parts of the settlement area: the French Concession and the International Settlement (Concession Internationale). The green part is the Non-Settlement Area. In the right panel, darker colors denote addresses with higher prices. The blue line denotes the settlement boundary.

2015). For these reasons, the settlement boundary formed in the early 20th century predominantly determines the spatial variation of housing prices in central Shanghai, albeit with a considerable amount of new construction. The right panel of Figure 5 shows the current disparity in housing prices across the settlement boundary. The red line denotes the boundary between the settlement area and the nonsettlement area.<sup>13</sup> We use darker colors to denote residential addresses with higher housing prices, and we observe a clear pattern that housing prices in the area that used to be the settlement are significantly higher than those in the nonsettlement area.

In addition to the eyeball test of price disparity, we estimate a 2SLS model as follows.

$$\log(Price_{i(jt)}) = \alpha_1 Settlement_{i(jt)} + \delta_1 X_i + \gamma_j + \zeta_t + \epsilon_{ijt}$$

$$Y_{i(jt)} = \beta_1 \log(\widehat{Price}_{i(jt)}) + \delta_2 X_i + \gamma_j + \zeta_t + \epsilon_{ijt}$$

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<sup>13</sup>The settlement area experienced several waves of expansion. We use the latest boundary established in 1914 as the border.

where the outcome variable in the first stage,  $\log(Price_{i(jt)})$ , is the logged housing price of the address where the caller of case  $i$  with type  $j$  reports in year  $t$ . The instrumental variable  $Settlement_{i(jt)}$  is a binary indicator that is coded as 1 if the call is from the settlement area and 0 otherwise. In the second stage, we regress the two outcome variables on the predicted housing price using the first-stage specification. Again, we also control for a set of case-level covariates ( $X_i$ ) including gender, residential status, foreign nationality, anonymity, and timing (whether during the national or local two sessions) as well as the case type and year-month fixed effects.

Table 2 presents the results of the 2SLS estimation. Column 1 shows the first stage, showing a positive estimate for  $Settlement$ , which is statistically significant at the 1% level. The estimation suggests that housing prices in the settlement area are approximately 29% higher than those in nonsettlement areas. After presenting the first-stage result, we show the second-stage estimation of response time in Column 2. Consistent with the OLS estimate in Table 1, the coefficient on housing price is again negative and significant at the 1% level, suggesting that the response time is 0.25 working day shorter if the housing price of the place the caller lives is 20% higher. Specifically, in the context of central Shanghai, our results suggest that, on average, a resident who lives in an apartment with a district average price (48,000 thousand RMB per square meter) is expected to receive a response at least one working day later than a resident who lives in a high-end apartment with a price over 86,000 RMB per square meter (approximately 5% of H apartment complexes have this price). Columns 4 and 5 report the results of petition resolution using IV and reduced-form estimations, respectively. In contrast to the significant estimates in Columns 3 to 4, the estimated effects of  $Price$  on the positive response are small and statistically insignificant. Taken together, our analysis offers compelling evidence on the implicit bias toward the rich neighborhood in response time. However, the district government does not favor the rich over the poor areas in the decision on petition resolution.

We conduct several other tests to demonstrate robustness. Our first concern is about the differences between OLS and IV estimates. We address this concern following the latest guide in IV estimates and diagnose our estimates with various refined methods (Lal et al., 2021). The results

Table 2: 2SLS Specifications

	Price First Stage (1)	Resolution Time IV (2)	Positive Resolution IV (3)	Positive Resolution RF (4)	Positive Resolution RF (5)
Settlement	0.298*** (0.036)		-0.373*** (0.070)		-0.006 (0.007)
Price		-1.255*** (0.295)		-0.021 (0.025)	
F Statistics	69.03				
Type FE	Y	Y	Y	Y	Y
Year-month FE	Y	Y	Y	Y	Y
Controls	N	Y	Y	Y	Y
N	43,500	43,498	43,498	43,500	43,500
Adjusted R <sup>2</sup>	0.238	0.028	0.041	0.062	0.063

Notes: Standard errors clustered at the apartment-complex level are reported in parentheses. FE denotes fixed effects. 1st, IV, and RF denote first stage ordinal least square, instrument variable, and reduced form specifications respectively. Controls are female, local, foreign, anonymous, local two sessions, national two sessions, and local turnover. \* $p<0.1$ ; \*\* $p<0.05$ ; \*\*\* $p<0.01$ .

are shown in Figure F.4. All estimates are similar to the baseline estimate, reducing our concern about the weak instrument.

Second, a key premise of the IV approach is the exclusion restriction that the instrument affects the outcome through only our key independent variable conditional on baseline controls. While this assumption is not empirically testable, we provide suggestive evidence that the exclusion restriction holds, and the effect of historical settlement does not influence government responses through other channels. In our study, we confirm that the settlement boundary is not strongly correlated with the four types of bias controlled for in the baseline specifications (female, local, foreign, and anonymous) (Table F.4).

In addition to analyzing the demand side, we are concerned that the results might be driven by idiosyncratic cases sent through channels other than phone calls, such as website messages or WeChat. We show that all results hold using the phone call-only sample F.5. Moreover, Table F.6 shows that our baseline results are robust to alternative measures, such as a binary measure of

resolution time, dispatch duration, and the minute-level response time, which is available only between September 2018 and August 2019. Both IV and OLS estimates are negative and significant, consistent with our baseline specifications.

Finally, we address the concern about the clustering nature of our data. In addition to clustering standard errors at the apartment complex level, we use the spatially adjusted standard errors proposed by [Conley \(1999\)](#). The results are similar to our baseline findings (Table F.7). Overall, these analyses provide consistent evidence for the implicit bias in response time.

## Alternative Explanations

Our theory suggests that the implicit privilege of the rich is primarily driven by bureaucrats' strategic reactions to a credible signal – the housing price. This section presents evidence to rule out several alternative explanations, including petition heterogeneity beyond the type of petition, verbal signaling, and discrepancies in public expenditure between the rich and the poor.

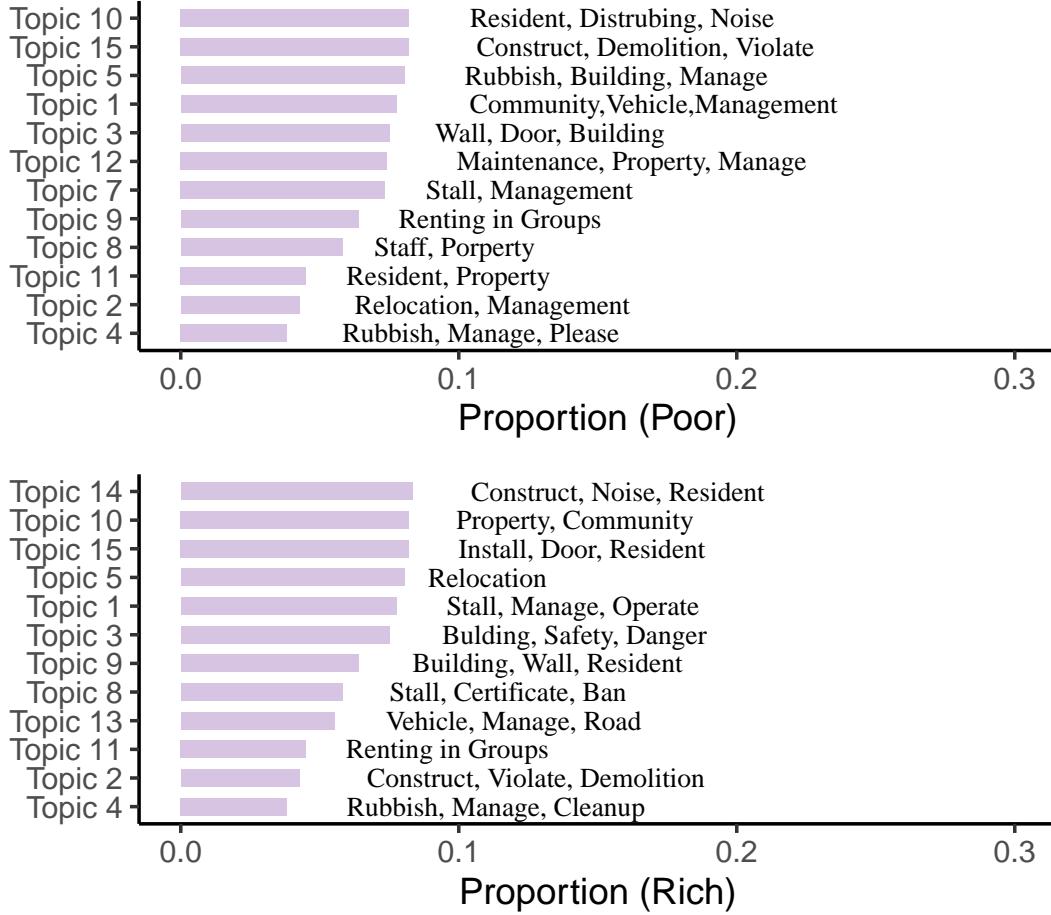
### Petition Heterogeneity

Our initial concern pertains to unobserved petition heterogeneity beyond the case type. It is possible that slower responses to the poor arise because their petitions are more challenging to resolve. Despite controlling for petition types in all empirical analyses, petitions classified by the 12345 hotline center under the same type might still demonstrate heterogeneity. To address this, we conduct a series of text analyses on petition transcripts to gauge issue similarity between the rich and the poor.

We begin by qualitatively exploring petition topics between the rich and the poor using a structural topic model. The groups are classified based on whether the property price of the caller's residence is above or below the average. Focusing on the modal case type—Infrastructure and Transportation—Figure 6 displays the top words in 12 topics, derived after removing three non-meaningful topics from the original 15. Overall, the petitions and their distributions are highly

homogeneous. Common complaints from both groups include issues related to noise, rubbish, walls, property management, relocation, stalls, and renting in groups.

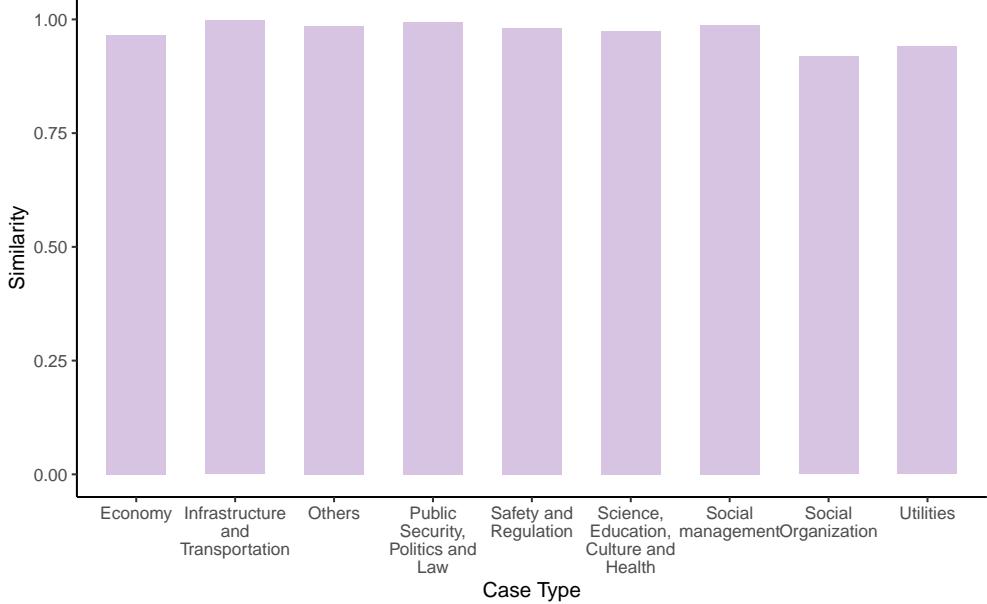
Figure 6: PETITION TOPICS



We then quantitatively measure the similarity of requests from poor or rich callers using cosine similarity, a metric that ranges from 0 to 1, with a larger value indicating greater textual similarity. Figure 7 presents the results comparing petitions from individuals residing in areas with housing prices either above or below the average. Across all nine case types as classified by the government, petitions from the high-price group (property price above the district average) and the low-price group (property price below the district average) exhibit substantial similarity, with cosine similarities between 0.86 and 0.99. Additionally, in the SI G, we compare the similarity of petition transcripts between the top and bottom 30% concerning housing prices.

In summary, the topic model and text analysis suggest that there is minimal issue heterogeneity within government-coded petition types. This implies that our baseline within-type estimation is not adversely affected by unobserved case heterogeneity, reaffirming our foundational findings.

Figure 7: TEXT SIMILARITY



## Verbal Signaling

Our second concern is about the verbal signal in citizens' complaints. According to our proposition 2, both political leaders and bureaucrats use housing prices as a credible signal to learn about citizens' type  $\theta$ . However, these petitions might also contain other signals. As proven by proposition 1, it is difficult for high-capacity citizens to verbally signal their type because the low types also have an incentive to use this costless strategy. Therefore, we expect no significant difference in how citizens signal in their calls to show their underlying capacity. We empirically test this implication by developing several measures of the signal conveyed by callers.

First, citizens can signal to bureaucrats their ability to use legal channels if their complaints are not resolved. Rightful resistance is common in China; citizens use legal means to challenge government rulings (O'brien and Li, 2006). In the case of the 12345 hotline petition, callers can

threaten to sue the local government if their complaint is not fully resolved. Although not all citizens, especially those with lower capacity  $\theta$ , can afford the high legal cost, the verbal threat of using the legal channel to defend their rights is costless. In addition to the use of laws, [Chen et al. \(2016\)](#) identifies three other types of verbal signals: (1) collective action; (2) threats of tattling to upper-level authorities; and (3) showing loyalty by mentioning Communist Party membership.

Using the transcripts of the petition calls, we conduct a text analysis to develop measures for the four types of verbal signals: legal, collective action, tattling to the upper government, and CCP membership (details of the coding rule are provided in SI [H](#)). We extract the keywords related to each signal from the transcripts of the 12345 calls. We construct four binary measures for these signals, coding them as 1 if the citizen mentions such keywords in the call and 0 otherwise. Consistent with our expectation, citizens rarely use verbal signals in municipal services in China, as shown by the summary statistics of each signal (Table [F.8](#)). Only approximately 3%, 0.8%, 1.8%, and 0.1% of the callers mention legal terms, collective actions, reporting to upper-level government, and CCP membership when using the 12345 hotline. Furthermore, we perform a 2SLS analysis using these four verbal signals as outcome variables. Table [3](#) presents the results. All estimates for the price are small and statistically insignificant, suggesting that wealthier citizens do not use verbal signals on legal terms, collective action motives, upper authority pressure, or political loyalty to obtain better responsiveness.

## Demand-side Discrepancy

Furthermore, we address the concern that the bias in response time is driven by demand-side factors. Specifically, we consider whether wealthier individuals might use the 12345 hotline less frequently than their less affluent counterparts because they have other channels to voice their concerns. Fewer petitions from wealthy neighborhoods could lead to quicker responses given a similar level of bureaucratic capacity. To address concerns over this alternative explanation, we conducted a correlational analysis by aggregating our 12345 petition data at the apartment-complex level. The bivariate analysis is presented in Figure [8](#). The results, visualized in the figure, show no

Table 3: Analysis of Verbal Signal

	Legal		Protest		Upper Gov		CCP Member	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Price	0.008 (0.005)		0.001 (0.003)		0.0002 (0.003)		0.0004 (0.001)	
Price		0.003 (0.013)		-0.001 (0.007)		-0.001 (0.007)		0.001 (0.002)
Type FE	Y	Y	Y	Y	Y	Y	Y	Y
Year-month FE	Y	Y	Y	Y	Y	Y	Y	Y
N	43,500	43,500	43,500	43,500	43,500	43,500	43,500	43,500
Adjusted R <sup>2</sup>	0.006	0.006	0.010	0.010	0.007	0.007	0.001	0.001

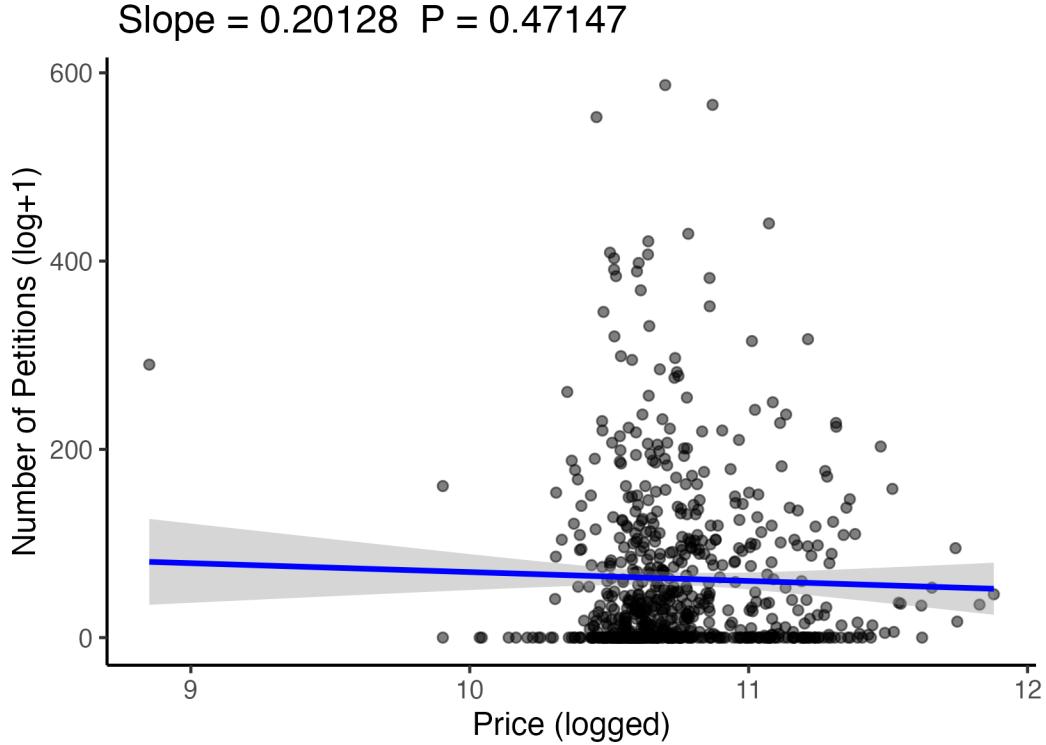
Notes: Standard errors clustered at the apartment-complex level are reported in parentheses. FE denotes fixed effects. \* $p<0.1$ ; \*\* $p<0.05$ ; \*\*\* $p<0.01$ .

strong correlation between price and petition frequency (slope = 0.2, P-value = 0.4), suggesting that wealthier residents do not call the 12345 hotline more or less often than poorer residents. We also regressed various measures of petition frequency, including its raw value, logged form, raw value per capita, and logged value per capita, against the logged housing price. Again, Table F.9 shows no correlation between housing price and 12345 call frequency, suggesting that the wealthy do not call more or less often than the poor, thereby rejecting the explanation that the implicit bias toward the rich is driven by weak demand.

## Local Funding

Another plausible explanation for the quicker response to the affluent could be a mechanical reason: their neighborhoods might have more funding than their less affluent counterparts. While such a mechanism is prevalent in countries with robust local property tax systems that fund local governments, it does not apply to urban China for several reasons. First, although Shanghai was among the pioneer Chinese cities in adopting property taxes, its enforcement remains lax, with the

Figure 8: CORRELATION BETWEEN HOUSING PRICE AND PETITION CALL FREQUENCY



majority of homeowners enjoying exemptions. Additionally, while district governments have the authority to collect taxes, their subdivisions, known as neighborhoods, the lowest administrative units, lack the authority to distribute revenue. Instead, they can only receive transfers from district governments. Furthermore, we calculated the per capita transfers and expenditures for each neighborhood from the district government and aligned them with the caller's addresses. Table 4 indicates that the spatial distribution pattern of public transfers and expenditures is progressive. Correlation analysis shows that residents in less rich neighborhoods, on average, receive more funding from district governments and have higher public expenditures than those in wealthier neighborhoods (Columns 1 and 2). Moreover, public expenditure positively correlates with resolution time (Columns 3 and 4) but does not show a strong relationship with the final resolution decision (Columns 5 and 6). This suggests that neither district transfers nor expenditures are behind the faster responses in wealthier neighborhoods. These findings negate a mechanical funding mechanism that drives the implicit bias highlighted in our primary analysis.

Table 4: Public Expenditure Analysis

	Price	Resolution Time	Positive Resolution			
	(1)	(2)	(3)	(4)	(5)	(6)
District Govt. Transfer	-0.181*** (0.065)		0.755*** (0.152)		-0.006 (0.013)	
Expenditure		-0.190** (0.080)		0.722*** (0.160)		-0.009 (0.018)
Type FE	Y	Y	Y	Y	Y	Y
Year-month FE	Y	Y	Y	Y	Y	
Controls	N	N	Y	Y	Y	Y
<i>N</i>	40,540	40,540	40,538	40,538	40,540	40,540
Adjusted R <sup>2</sup>	0.030	0.028	0.040	0.039	0.063	0.063

Notes: Standard errors clustered at the apartment-complex level are reported in parentheses. FE denotes fixed effects. \* $p<0.1$ ; \*\* $p<0.05$ ; \*\*\* $p<0.01$ .

## Conclusion

This paper unveils a form of spatial inequality through a standardized bureaucratic procedure handling citizens' complaints. Using detailed administrative data from urban Shanghai, China's largest and wealthiest city, we highlight an implicit privilege for the affluent. While government agencies display no explicit bias against the less wealthy in resolving their petitions, they do implicitly prioritize the rich by offering them faster responses.

Our paper delves into the intricate nature of unequal government responsiveness. The current literature offers theoretical perspectives from three dyads. One stream of scholarship, focusing on the interaction between politicians and voters, underscores the role of electoral incentives that compel politicians to execute public policies with bias toward specific groups of citizens (Besley and Coate, 2003; Sances, 2016). The second stream of scholarship emphasizes the relationship between bureaucrats and citizens, suggesting that local embeddedness is a pivotal factor behind unequal responsiveness. Studies indicate that bureaucrats often exhibit favoritism based on hometown, ethnicity, and nationality (Xu, 2021; Bhavnani and Lee, 2018). The third strand focuses on the interaction between politicians and bureaucrats and highlights how strategic behaviors lead to unequal responses to voters' preferences in democracies (Slough, 2021; Wirsching, 2022). Our

theory synthesizes all three actors in a single framework. We characterize how distinct survival incentives from politicians and bureaucrats and credible signaling from the rich result in unequal government responsiveness in an authoritarian regime.

Furthermore, our research emphasizes the crucial role of street-level bureaucrats in public service delivery, a literature stream pioneered by [Lipsky \(1980\)](#). While voters may sanction biased politicians through periodic elections, they interact regularly with street-level bureaucrats for routine governmental services, such as licensing, parking tickets, and infrastructure maintenance. The well-being of citizens, particularly those of lower socioeconomic status, can be significantly impacted by biases within the bureaucratic system, especially prevalent in authoritarian regimes that lack meaningful bureaucratic oversight.

Policy interventions should prioritize addressing biases exhibited by these street-level bureaucrats. However, such biases are often opaque to both citizens and external observers, making them challenging to identify and rectify. One potential solution involves bolstering transparency, shown to positively impact legislative responsiveness in authoritarian regimes ([Todd et al., 2021](#)). Another approach worth exploring is the enhancement of top-down monitoring, an institutional reform aimed at countering unequal bureaucratic responsiveness. The literature demonstrates the efficacy of such monitoring in mitigating corruption and curbing the preferential treatment of politically affiliated firms ([Olken, 2007](#); [Ni and Su, 2019](#)). Finally, bureaucratic performance evaluations should pivot toward objective metrics, such as response times, rather than subjective indicators prone to manipulation, such as self-reported satisfaction or resolution rates. Future studies should delve deeper into these proposed policy instruments to minimize biases in governmental responsiveness.

## References

- Acemoglu, D. and Robinson, J. A. (2001). A theory of political transitions. *American Economic Review*, 91(4):938–963.
- Ansell, B. W. (2019). The politics of housing. *Annual review of political science*, 22:165–185.

- Besley, T. and Coate, S. (2003). Elected versus appointed regulators: Theory and evidence. *Journal of the European Economic Association*, 1(5):1176–1206.
- Bhattacharya, P., Palacio-Torralba, J., Li, X., et al. (2018). On income inequality within china's provinces. *Chinese Studies*, 7(02):174.
- Bhavnani, R. R. and Lee, A. (2018). Local embeddedness and bureaucratic performance: evidence from india. *The Journal of Politics*, 80(1):71–87.
- Bork-Hüffer, T. and Yuan-Ihle, Y. (2014). The management of foreigners in china: Changes to the migration law and regulations during the late huwen and early xili eras and their potential effects. *International Journal of China Studies*, 5(3):571.
- Chen, B., Liu, D., and Lu, M. (2018). City size, migration and urban inequality in china. *China Economic Review*, 51:42–58.
- Chen, H. (2021). Reputational self-censorship: Evidence from an online question-and-answer forum in china. *Working Paper*.
- 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.
- Chen, L. and Zhang, H. (2021). Strategic authoritarianism: The political cycles and selectivity of china's tax-break policy. *American Journal of Political Science*, 65(4):845–861.
- Christensen, D. and Ejdemyr, S. (2020). Do elections improve constituency responsiveness? evidence from us cities. *Political science research and methods*, 8(3):459–476.
- Conley, T. G. (1999). Gmm estimation with cross sectional dependence. *Journal of econometrics*, 92(1):1–45.
- Dahl, R. A. (1971). *Polyarchy: Participation and Opposition*. Yale University Press.

- Dimitrov, M. K. et al. (2014). What the party wanted to know: Citizen complaints as a “barometer of public opinion” in communist bulgaria. *East European Politics and Societies*, 28(02):271–295.
- Ding, I. (2020). Performative governance. *World Politics*, 72(4):525–556.
- 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.
- Einstein, K. L. and Glick, D. M. (2017). Does race affect access to government services? an experiment exploring street-level bureaucrats and access to public housing. *American Journal of Political Science*, 61(1):100–116.
- Elkjær, M. A. and Klitgaard, M. B. (2021). Economic inequality and political responsiveness: A systematic review. *Perspectives on Politics*, pages 1–20.
- Erikson, R. S. (2015). Income Inequality and Policy Responsiveness. *Annual Review of Political Science*, 18(1):11–29.
- Gilens, M. (2005). Inequality and Democratic Responsiveness. *Public Opinion Quarterly*, 69(5):778–796.
- Gordon, S. C. and Hafer, C. (2005). Flexing muscle: Corporate political expenditures as signals to the bureaucracy. *American Political Science Review*, 99(2):245–261.
- Grossman, G. and Slough, T. (2022). Government responsiveness in developing countries. *Annual Review of Political Science*, 25:131–153.
- Guo, G. (2009). China’s local political budget cycles. *American Journal of Political Science*, 53(3):621–632.

- Hou, Y. and Li, S. (2023). Stimulated political decisions: local leadership turnover and firm subsidies in china. *Political Science Research and Methods*, 11(1):18–33.
- Jiang, J. and Zeng, Y. (2020). Countering capture: elite networks and government responsiveness in china’s land market reform. *The Journal of politics*, 82(1):13–28.
- Kayaalp, D. (2016). Living with an accent: A sociological analysis of linguistic strategies of immigrant youth in canada. *Journal of Youth Studies*, 19(2):133–148.
- King, G., Pan, J., and Roberts, M. E. (2013). How censorship in china allows government criticism but silences collective expression. *American political science Review*, 107(2):326–343.
- Lal, A., Lockhart, M. W., Xu, Y., and Zu, Z. (2021). How much should we trust instrumental variable estimates in political science? practical advice based on over 60 replicated studies. *Practical Advice based on Over*, 60.
- Li, D. Z., Li, Z., and Zhang, Q. (2023). Public investment as downward benefit distribution: Theory and evidence from china’s public–private partnership programs. *Journal of Economic Behavior & Organization*, 211:103–128.
- Lipsky, M. (1980). *Street-level bureaucracy: Dilemmas of the individual in public service*. Russell Sage Foundation.
- Lueders, H. (2021). Electoral Responsiveness in Closed Autocracies: Evidence from Petitions in the former German Democratic Republic. *American Political Science Review*, pages 1–16.
- Manion, M. (2015). *Information for Autocrats: Representation in Chinese Local Congresses*. Cambridge University Press.
- Meng, T., Pan, J., and Yang, P. (2017). Conditional Receptivity to Citizen Participation: Evidence From a Survey Experiment in China. *Comparative Political Studies*, 50(4):399–433.
- Meng, T. and Su, Z. (2021). When top-down meets bottom-up: Local officials and selective responsiveness within fiscal policymaking in China. *World Development*, 142:105443.

- Miguel, E. and Roland, G. (2011). The long-run impact of bombing Vietnam. *Journal of Development Economics*, 96(1):1–15.
- Mittiga, R. (2022). Political legitimacy, authoritarianism, and climate change. *American Political Science Review*, 116(3):998–1011.
- Ni, X. and Su, X. (2019). Institutional anticorruption in china: Effectiveness on bribery incidence. *Public Administration Review*, 79(4):538–551.
- O'brien, K. J. and Li, L. (2006). *Rightful resistance in rural China*. Cambridge University Press.
- Olken, B. A. (2007). Monitoring corruption: evidence from a field experiment in indonesia. *Journal of political Economy*, 115(2):200–249.
- Olsen, A. L., Kyhse-Andersen, J. H., and Moynihan, D. (2022). The unequal distribution of opportunity: A national audit study of bureaucratic discrimination in primary school access. *American Journal of Political Science*, 66(3):587–603.
- Pan, J. (2019). How chinese officials use the internet to construct their public image. *Political Science Research and Methods*, 7(2):197–213.
- Pan, J. (2020). *Welfare for Autocrats: How Social Assistance in China Cares for Its Rulers*. Oxford University Press.
- Piketty, T., Yang, L., and Zucman, G. (2019). Capital accumulation, private property, and rising inequality in china, 1978–2015. *American Economic Review*, 109(7):2469–96.
- Przeworski, A., Stokes, Susan Carol, S., Stokes, S. C., and Manin, B. (1999). *Democracy, Accountability, and Representation*. Cambridge University Press.
- Read, B. L. (2000). Revitalizing the state's urban “nerve tips”. *The China Quarterly*, 163:806–820.
- Sances, M. W. (2016). The distributional impact of greater responsiveness: Evidence from new york towns. *The Journal of Politics*, 78(1):105–119.

- Schlozman, K. L., Verba, S., and Brady, H. E. (2012). The unheavenly chorus. In *The Unheavenly Chorus*. Princeton University Press.
- Shen, Y. (2015). Yong fu lu :“ shang zhi jiao ” qing jie. *Shanghai Fang Di*, (10):59–59.
- Slough, T. (2021). Oversight, capacity, and inequality. *Work. Pap., New York Univ., New York, NY*. <http://taraslough.com/assets/pdf/oci.pdf>.
- Ting, M. M. (2021). The political economy of governance quality. *American Political Science Review*, 115(2):667–685.
- Todd, J. D., Malesky, E. J., Tran, A., and Le, Q. A. (2021). Testing legislator responsiveness to citizens and firms in single-party regimes: A field experiment in the vietnamese national assembly. *The Journal of Politics*, 83(4):1573–1588.
- Tomba, L. (2014). *The government next door: Neighborhood politics in urban China*. Cornell University Press.
- Truex, R. (2017). Consultative Authoritarianism and Its Limits. *Comparative Political Studies*, 50(3):329–361.
- Wang, S. (2009). wan qing shanghai di jia ji qi dui zao qi cheng shi hua de ying xiang. *Shi Xue Yue Kan*, 4.
- Wang, Y., Li, Y., Huang, Y., Yi, C., and Ren, J. (2020). Housing wealth inequality in china: An urban-rural comparison. *Cities*, 96:102428.
- Wasserstrom, J. and Perry, E. (1994). Popular protest and political culture in china: Lessons from 1989.
- Wirsching, E. M. (2022). Political power of bureaucratic agents: Evidence from policing in new york city.
- Wolfson, N. and Manes, J. (1985). *Language of inequality*, volume 36. Mouton Publishers Berlin.

- Xie, Y. and Jin, Y. (2015). Household wealth in china. *Chinese sociological review*, 47(3):203–229.
- Xie, Y. and Zhou, X. (2014). Income inequality in today's china. *Proceedings of the national academy of Sciences*, 111(19):6928–6933.
- Xu, G. (2021). Bureaucratic representation and state responsiveness during times of crisis: The 1918 pandemic in india. *The Review of Economics and Statistics*, pages 1–29.
- Yackee, J. W. and Yackee, S. W. (2006). A bias towards business? assessing interest group influence on the us bureaucracy. *The Journal of Politics*, 68(1):128–139.
- Zhu, L. (2018). Intergenerational housing asset transfer and the reproduction of housing inequality in urban china. *Chinese Journal of Sociology*, 4(4):453–480.

# **Supplementary Information**

<b>A Semi-Structured Interview and Ethical Statement</b>	<b>1</b>
<b>B Formal Model of the Unequal Responsiveness</b>	<b>1</b>
<b>C Examples of Resolution</b>	<b>9</b>
<b>D Does Government Responsiveness Enhance Satisfaction?</b>	<b>11</b>
<b>E Settlements in Shanghai</b>	<b>12</b>
<b>F Figures and Tables</b>	<b>12</b>
<b>G Text Similarity</b>	<b>25</b>
<b>H Coding Rule of Verbal Signals</b>	<b>25</b>

## A Semi-Structured Interview and Ethical Statement

In this study, we conduct an in-person semi-structured interview with two bureaucrats from the 12345 hotline centre. The research receives approval from exemption review (ID: 2000033480, IRB-FY2023-6816) from the authors' home institutions. Prior to the interview, we provide clear and comprehensive information on the research and how data will be collected, used, and saved. Each participant will read and sign the consent form before the interview.

Each interview involved 30 minutes. It is comprised of several prepared questions. We take all necessary measures to minimize any potential harm to participants. There were no known risks associated with participants because (1) we would not reveal any confidential information, and (2) we did not ask any subjective questions. All questions are related to administrative procedures, data information, policy implementation and performance evaluation criteria. The specific information we get is mentioned in the main text.

For the data processing, the decision to include only apartment complex-level data was made precisely to avoid the potential risks associated with sharing more detailed information. By aggregating the data at the apartment complex level, we effectively removed the possibility of identifying individual callers. This allowed us to analyze trends and patterns without compromising the privacy of the individuals involved. All personal identifiers, including phone numbers and precise addresses, were stripped from the dataset during our reprocessing stage, long before any analysis took place. Access to the data will be restricted to three authors.

We obtained the data through legal channels and in compliance with all relevant regulations and ethical guidelines. The raw data was handled only by a small, carefully trained team, following strict protocols to ensure confidentiality. Once the data was anonymous and aggregated, it was then used for our research.

## B Formal Model of the Unequal Responsiveness

We develop a model to analyze how two survival logic in the authoritarian regime distort the government responsiveness. The model setup is stated as follows. In the municipal,  $k \geq 2$  citizens suffer disutility  $\bar{S}$  and ask for the service from the government. Their complaints (e.g., noise, environment, education) are assigned to a department, where  $B$  is a street-level bureaucrat.  $B$  decides how much effort or resource  $r_i$  to use to address the petition. There is also a political leader ( $P$ ) who is the direct principal of the bureaucrat;  $P$  could be the district mayor or party secretary in the context we study. The political leader  $P$  supervises bureaucrat  $B$ .

Because of the limited resources and complex administration, it takes a few days  $t > 0$  for bureaucrats to resolve a petition. As in [Ting \(2021\)](#), waiting time  $t$  reflects the governance service

quality. Therefore, if citizens use the petition system, the utility of citizens is discounted depending on the efficiency (government quality)  $t$ . We assume common discount factor  $\delta \in (0, 1)$ . Thus, the utility function of citizen  $i$  who receives resource  $r_i$  can be represented by  $u_i = s(r_i)\delta^t$ . Increasing and concave function  $s(r_i)$  measures citizens' satisfaction after receiving  $r_i$ . According to the follow-up survey and interview <sup>14</sup>, satisfaction is also related to the bureaucrat's performance evaluation. Therefore,  $s(r_i)$  is also a part of  $B$ 's utility.

Instead of using the public service system, citizens have two alternative means to fulfill their demand. First, they can use private resources  $y \in [0, 1]$ . We use parameter  $\theta \in [0, 1]$  to gauge citizen's ability, including social networks, the knowledge of policies and laws, etc. Specifically,  $\theta$  represents the marginal effect of  $y$ . It is natural to think that citizens incur additional cost  $\eta y$  for  $B$  when using alternative channels (filing lawsuits or directly complaining to connected leaders). For example, bureaucrats have to spend additional effort to address the lawsuit. We use  $\eta > 0$  to denote the marginal cost. In extreme cases, citizens can also choose a costly form of petition–protest—that is often responded to by authoritarian governments because it is the primary threat to autocratic rules (Acemoglu and Robinson, 2001).

For the model of municipal service, if citizens use the complaint system, they must decide to spend private resource ( $A = 0$ ) or protest ( $A = 1$ ) after receiving feedback from the bureaucrat. If  $A = 0$ , citizens should also decide how much  $y$  to use according to the increasing and convex cost function  $c_0(y)$ . They capture the remaining utility  $\bar{S} - s(r_i)$ , which is proportional to the resource  $y$  spent and is affected by  $\theta$ . We assume  $\bar{S} > s(\bar{r})$ . If  $y = 0$ , citizens accept the current response; we let  $c'_0(0) = 0$ . If they protest  $A = 1$ , citizens capture all remaining utility with a sizable cost  $c_1(\theta)$ . Because protest itself is not our main focus, we suppress the uncertainty of success and strategic consideration of collective action into a single function  $c_1(\theta)$ . We let  $c_1(\theta)$  increase in  $\theta$  to reflect that the opportunity cost of high-capacity citizens is larger than that of their low-capacity peers. Thus, the complete utility function of citizen  $i$  is

$$u_i = s(r_i)\delta^t + \begin{cases} [(\bar{S} - s(r_i))\theta_i y - c_0(y_i)\delta^{-t'}]\delta^{t+t'} & \text{if } A_i = 0 \\ [(\bar{S} - s(r_i)) - c_1(\theta)\delta^{-t'}]\delta^{t+t'} & \text{if } A_i = 1 \end{cases} \quad (1)$$

where  $t' \in [0, t)$  denotes the efficiency of private resources. A key assumption is that the municipal service is less efficient  $t < t'$ . We multiply the cost by  $\delta^{-t'}$  to indicate that citizens exert effort first and then receive feedback after  $t'$  days.

Political leader  $P$  receives fixed rent  $R$  if is not deposed and given concern about career advancement. Both depend on whether collective action occurs in the area.  $P$  can prevent such action by supervising whether bureaucrat  $B$  successfully addresses complaints from citizens. Specifically,

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<sup>14</sup>See SI A

$P$  decides whether to check ( $D \in \{1, 0\}$ ) how  $B$  responds to citizen  $i$  with fixed cost  $c_P$  for each case. Political leaders can learn whether the demand is well responded to; if not, they can re-send the case to the department and order someone to reconsider the response, a pattern mentioned by the bureaucrat we interviewed. In the model, we assume  $P$  observes the effort  $r_i$  if they check the case. It is possible for  $P$  to learn  $r_i$  by carefully tracking the entire process of municipal services. Therefore, the utility function for  $P$  can be represented by

$$u_P = RI_{[\sum_{i=1}^k A_i=0]} - \sum_{i=1}^k c_P D_i \quad (2)$$

where  $I_{[\sum_{i=1}^k A_i=0]}$  is an indicator function that equals 1 if the condition  $\sum_{i=1}^k A_i = 0$  is true.  $I_{[\sum_{i=1}^k A_i=0]} = 1$  if and only if no single citizen protests.  $D_i$  is a binary decision variable for the politician for complaint case  $i$ . For simplicity, we assume that the rent is sufficiently high to maintain the supervising mechanism:  $R \geq kc_p$ .

Bureaucrat  $B$  has different career concerns that are evaluated primarily based on completion of their administrative work, as confirmed by our interview. It is natural to assume the cost of exerting effort is an increasing and convex function  $c_B(r)$ . Since no standard procedures guide how bureaucrats allocate effort, numerous biases can arise when bureaucrats have discretion in allocating effort and resources (Lipsky, 1980). Their utility function if  $A_i = 0$  is stated as follows:<sup>15</sup>

$$u_B = \sum_{i=1}^k s(r_i) - c_B(r_i) - \eta y_i \quad (3)$$

If  $A_i = 1$ , a bureaucrat has probability  $q$  of being removed from the government and afford cost  $\Delta > 0$ .

The timing is as follows:

1. Nature draws  $\theta_i$  from the distribution  $F_\theta$ ; the distribution  $F_\theta$  is common knowledge.
2. Bureaucrat  $B$  allocates resource  $r_i$  to each citizen  $i$  and reports to  $P$ .
3. Political leader  $P$  decides whether to check case  $i$ . If  $D_i = 0$ , the case is ended; if  $D_i = 1$ , the case is re-sent to other bureaucrats.
4. Each citizen  $i$  decides action  $A_i$ . If  $A_i = 1$ , the citizen also decides the value of  $y_i$ .

Notably, citizens make decisions only after they call 12345 and receive feedback. It is likely that there always exists a small group of citizens with high capacity ( $\theta$ ) who find that the public service system is not efficient enough. Because the public complaint system serves all citizen and takes time  $t$  to respond, citizens who have extremely higher  $\theta$  may find that it is dominated to use

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<sup>15</sup>Since in the model  $t$  is exogenous, the discount factor will not affect the bureaucrat's incentive. Therefore, we do not add it to the utility function. A more complicated model can let  $t$  be a decision variable, though we think our model captures the main intuition.

the public system; instead, they can bypass this stage and directly use private resources to obtain the service, which takes only  $t' < t$  days.

**Proposition B.1.** *In the call-based municipal service, there exists  $\bar{\theta} > 0$  such that citizens whose  $\theta > \bar{\theta}$  is dominant to bypass the public service and use the private approach. Moreover, as  $t'$  decreases (public service becomes more efficient), the cut-off  $\bar{\theta}$  decreases.*

*Proof.* Suppose citizen  $i$  with  $\theta$  bypass the 12345 hotline and directly use a private approach; the utility is

$$u_i = [\bar{S}\theta y - c_0(y)]\delta^{t'}$$

The optimal resource  $y_1$  satisfies  $c'_0(y_1) = \bar{S}\theta$ . Similarly, if citizen  $i$  with  $\theta$  use 12345 and possibly private approach later, the utility function is

$$u_i = s(r_i)\delta^t + [(\bar{S} - s(r_i))\theta y - c_0(y)\delta^{-t'}]\delta^{t+t'}$$

The optimal choice  $y_2$  satisfies  $c'_0(y^*) = (\bar{S} - s(r_i))\theta_i\delta^{t'}$  given  $r$  chosen by  $B$ .

Now let us find  $\bar{\theta}$  such that  $u_i(y_1) \geq u_i(y_2|r_i)$ . Simple algebra shows

$$\theta[\bar{S}y_1 - (\bar{S} - s(r_i))y_2\delta^t] \geq s(r_i)\delta^{t-t'} + c_0(y_1) - c_0(y_2)\delta^{t-t'}$$

Note that since  $c_I$  is increasing and  $[\bar{S} - s(r)] \leq \bar{S}$  by assumption, we get  $y_1 \geq y_2$ . Then it is easy to see both sides are positive.

Thus, define  $\bar{\theta}$  as  $\frac{s(r_i)\delta^{t-t'} + c_0(y_1) - c_0(y_2)\delta^{t-t'}}{\bar{S}y_1 + (\bar{S} - s(r_i))y_2\delta^t}$  and set  $r_i = \bar{r}$  to maximize formula (note  $y_2$  is also a function of  $r_i$ ), we prove the first part of the proposition B.1. The comparative statics is straightforward.

□

Also, in the data, we cannot observe the missing callers with the extremely high  $\theta$ . Therefore, it is without loss of generality to assume people use private resources only after they receive feedback from bureaucrats. Suppose  $\theta$  is public information. Political leader  $P$  hopes to design the best supervising strategy that can both prevent protests and minimize the supervision cost. In the last stage, collective action is not a credible threat if and only if the net benefit from private approach  $y^*$  exceeds that from protesting:

$$\begin{aligned} (\bar{S} - s(r_i^*))\theta_i y_i^* - c_0(y_i^*)\delta^{-t'} &\geq (\bar{S} - s(r_i)) - c_1\delta^{-t'} \\ s(r_i^*) &\geq \bar{S} - \frac{[c_1(\theta) - c_0(y_i^*(\theta_i, r_i^*))]\delta^{-t'}}{1 - \theta_i y_i^*(\theta_i, r_i^*)} \end{aligned} \tag{4}$$

The above inequality shows the lower bound on effort  $r_i$  for bureaucrat  $B$  assigned to case  $i$  for protest prevention in equilibrium. Intuitively, protest cost  $c_1$  decreases the lower bound. Based on the bureaucrat's action, it is optimal for political leader  $P$  to check only cases with a lower  $\theta$ . We conclude it in the following perfect information equilibrium:

**Proposition B.2.** *Suppose  $\theta$  is public information. There exists the pure-strategy subgame perfect equilibrium that citizens do not protest on the equilibrium path. Moreover, it has the following two properties:*

- (1) *The optimal recourse/effort  $r_i^*$  assigned by bureaucrat  $B$  is increasing in  $\theta_i$ :  $\frac{\partial r_i^*}{\partial \theta_i} > 0$*
- (2) *There exists a  $\tilde{\theta}$  that politician  $P$  checks and re-assigns cases  $D_i = 1$ , where  $\theta_i < \tilde{\theta}$ .*

*Proof.* For our complete and perfect information game, the pure-strategy subgame perfect equilibrium exists by backward induction and well-behaved citizens' utility function. We focus on the equilibrium that citizens do not protest if the net benefit from  $A = 1$  equals the optimal net benefit from  $A = 0$ .

In equilibrium, politician chooses  $D_i = 1$  if the equation 4 does not satisfies. Because we assume  $R \geq kc_P$ , the politician is always beneficial to do so. Now, since  $A_i = 0 \forall i$ , given  $r_i$ , citizen  $i$  maximizes utility function and finds  $y_i^*$  that balances benefit and cost:

$$c'_0(y^*) = (\bar{S} - s(r_i))\theta_i \delta^{t'}$$

We can see  $\frac{y^*}{\partial \theta} > 0$ . The optimal  $y^*$  is also a function of  $r_i$ , which needs to be determined. It is determined by the optimization problem for B,

$$\sum_{i=1}^K [s(r_i) - c_B(r_i) - \eta y_i(r_i, \theta_i)]$$

The optimal solution  $r_i$  is only a function of  $\theta_i$ . For each  $i$ , we can easily calculate the optimal choice  $r_i^*(\theta)$ . Tedious algebra shows the comparative statics that  $\frac{\partial r_i^*}{\partial \theta} = \frac{-\eta \frac{s'(r)\delta^{t'}}{c_0''(y)}}{s''(r) - c_B''(r) + \eta \frac{s''(r)\theta \delta^{t'}}{c_0''(y)}} > 0$ . This proves statement (1).

For statement (2), we need further study equation 4 in the main text:

$$s(r_i^*) \geq \bar{S} - \frac{[c_1(\theta_i) - c_0(y_i^*(\theta_i, r_i^*))]\delta^{-t'}}{1 - \theta_i y_i^*(\theta_i, r_i^*)} \quad (5)$$

The LHS is increasing in  $\theta$ ; and we know  $RHS = \bar{S} \geq s(r_i^*)$  if  $\theta = 0$ . Then  $\tilde{\theta}$  can be determined by the intersection of RHS and LHS. The value of  $\tilde{\theta}$  and whether  $\tilde{\theta}$  is unique depend on how RHS changes with  $\theta$ : (1) If RHS is monotonically decreasing in  $\theta$ , we can expect one

unique  $\tilde{\theta} \in [0, 1]$  or  $\tilde{\theta} = 1$  if there is no intersection; (2) if RHS is not monotonic, then  $\tilde{\theta}$  may have multiple values. Because we do not assume specific function form, it is hard to determine how  $\frac{[c_1(\theta) - c_0(y_i^*(\theta_i, r_i^*))]\delta^{-t'}}{1 - \theta_i y_i^*(\theta_i, r_i^*)}$  behaves. The difficulty lies in  $\frac{\partial y_i^*(\theta, r^*)}{\partial \theta}$  can be negative or positive. In the equilibrium of our interest, we assume  $c'_1(\theta)$  is large enough so that  $\frac{[c_1(\theta) - c_0(y_i^*(\theta_i, r_i^*))]\delta^{-t'}}{1 - \theta_i y_i^*(\theta_i, r_i^*)}$  is monotonically increasing. This assumption means that the opportunity cost for high capacity (large  $\theta$ ) is pretty high. Therefore, under the assumption, we can find  $\tilde{\theta}$  from equation 5 and  $\underline{r} = r^*(\underline{\theta})$ . See a numerical example in the main text.

To summarise, in the above non-protest pure strategy sub-game perfect equilibrium,

- (1) Politician  $P$  only check and re-assign cases  $D_i = 1$  if  $\theta_i < \tilde{\theta}$  and order bureaucrat  $B$  continue to invest effort;
- (2) Bureaucrat  $B$  assign  $r_i^*$ ;
- (3) Citizens  $i$  does not protest if  $r_i^* \geq \underline{r}$ . □

**Signaling through costless messages.** In the real world,  $\theta$  is not observed. The first available method for residents is to send a costless message when they complain through the public service system. In our call-based municipal service system, however, rational citizens with lower  $\theta$  can tell a lie to imitate citizens with higher  $\theta$ . The main reason is that communication through phone calls is costless and unverifiable: anyone can threaten to take legal action or announce that they have a personal tie with higher officials.

We add a simple cheap talk phase before the basic call-based municipal service model. By revelation principle, we assume the message space is exactly the space of  $\theta$ , i.e.  $M = \Theta$ <sup>16</sup>. The strategy of citizen  $i$  is a mapping  $m_i : \Theta \rightarrow \Delta\Theta$ . The bureaucrat, after observing message profile  $\times_{i=1}^k \Theta$ , assigns a vector of resource  $(r_1, \dots, r_k)$  to citizens. As standard in the literature, we focus on the Perfect Bayesian Equilibrium. As shown in the proof, however, our result is satisfactory for any further refined solution concepts. We use  $\beta(\theta_i|m)$  to denote bureaucrat's updated (equilibrium) belief of  $i$ 's type based on (equilibrium) message strategy and observed signals.

**Proposition B.3.** *In the call-based municipal service with pregame cheap talk, all equilibria are noninformative.*

*Proof.* First to note, in the optimization problem for  $B$ ,

$$\sum_{i=1}^K \mathbb{E}_{\beta_i} [\alpha w_i - c_B(r_i) - \eta y_i(r_i, \theta_i)]$$

the optimal solution  $r_i$  is only a function of  $\theta_i$  ( $\beta$  denotes the distribution of  $\theta$  under updated belief). And the type  $\theta_i$  of sender  $i$  is independent of others. Therefore, in equilibrium,  $\beta(\theta_i|m) =$

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<sup>16</sup>To avoid technical difficulty which does not add any intuition, WLOG, we assume  $\Theta$  is finite here.

$\beta(\theta_i|m_i)$ .

The key logic depends on citizens' similar preference on  $r$  for all types  $\theta$ . To be specific, their utility is all increasing in  $r$ . To see this, from  $c'_I(y_2) = [\bar{S} - s(r)]\theta$ , we get  $\frac{\partial y_2}{\partial r} = -\frac{\theta s'(r)}{c''(y)} < 0$ . Then it is easy to see  $\frac{\partial u_i}{\partial r} > 0$ .

WLOG, by Proposition B.1, we assume  $\Theta \in [0, \bar{\theta}]$  and in equilibrium all  $\theta \in \Theta$  is used.

Because  $\beta(\theta_i|m) = \beta(\theta_i|m_i)$ , let us focus on one sender  $i$ . Now, suppose there is a PBE that senders use strategy  $(m_1(\theta), \dots, m_k(\theta))$  where, sender  $i$ ,  $\exists j, k \in \Theta$  such that  $m_i(\theta_j) \neq m_i(\theta_k)$ . This means that for sender  $i$ , when  $i$ 's type is  $\theta_j$ , the message strategy is different from the message if  $i$ 's type is  $\theta_k$ .

Since  $m_i(\theta_j) \neq m_i(\theta_k)$ , with probability measure one,  $\beta(\theta_i|m_i(\theta_j)) \neq \beta(\theta_i|m_i(\theta_k))$  and so  $\mathbb{E}r_i(\theta_j) \neq \mathbb{E}r_i(\theta_k)$ . Then, because  $\frac{\partial u_i}{\partial r} > 0$ , sender  $i$  has incentive to deviate.  $\square$

Therefore, there is no Nash equilibrium in which citizens truthfully reveal  $\theta$  with pure communication.

**Unequal Responsiveness to Wealth Status.** Since citizens with low  $\theta$  always have an incentive to report a higher type, the politician  $P$  and bureaucrats  $B$  must rely on other information to effectively learn their types.<sup>17</sup> In China's urban context, we argue that  $\theta$  is highly related to wealth status, and we use housing price  $p$  to approximate wealth.<sup>18</sup>

The key assumption of the separating signal can be easily constructed. For example, consider a simple Pre-game decision problem: As housing is the largest individual investment for most people (Ansell, 2019), the housing price  $p$  reflects the overall conditions that we are concerned including location, safety, transportation, education, community life and et al. Thus, the benefit of certain property  $b(p)$  is an increasing and convex function of price. Although everyone hopes to have a good house, the huge cost  $c(p, \theta)$  drives individuals with different types  $\theta$  to make different decisions. Suppose we only consider two types  $\theta_L < \theta_H$ . Following the literature, we assume the single crossing condition  $c_p(p, \theta_L) > c_p(p, \theta_H)$ , i.e. the marginal cost of housing price for lower type  $\theta_L$  is higher than  $\theta_H$ . Then, it is straightforward to see the optimal choice  $p$  for type  $\theta_L$  is lower than  $\theta_H$ .

Therefore, we assume, for each case, that bureaucrat  $B$  and political leader  $P$  observe a noisy signal of  $\theta_i$ , the housing price  $p = \pi(\theta) + \epsilon$ , where  $\epsilon \sim N(0, \sigma^2)$ ,<sup>19</sup> and  $\pi : [0, 1] \rightarrow \mathbb{R}^+$  is a known affine and increasing function.

**Proposition B.4.** *In the call-based municipal service with noisy signal, the non-protest pure-strategy subgame perfect equilibrium has the following properties:*

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<sup>17</sup>The established scholarship shows several meaningful signals that convey information. For example, people use verbal signals (like accents) to discriminate against immigrants (Wolfson and Manes, 1985; Kayaalp, 2016).

<sup>18</sup>See more discussions on  $\theta$ , wealth, and housing prices in the background section.

<sup>19</sup>Precisely, because housing price  $p \geq 0$ , we can view  $p = \pi(\theta) + \epsilon$  as a latent variable; the realized housing price  $p' = 0$  if  $p < 0$ .

- (1) Allocated resource  $r_i^*$  from bureaucrat  $B$  is increasing in the housing price  $p$ :  $\frac{\partial r_i^*}{\partial p_i} > 0$ .
- (2) There exist a housing price  $\tilde{p}$  for which the politician re-sends cases  $D_i = 1$  such that housing price  $p_i < \tilde{p}$ .

*Proof.* We maintain all assumptions in the proof of B.2. Similar to the equilibrium in Proposition B.2 In the last stage, citizens do not protest if  $r_i^* \geq \underline{r}$ . Statement (1) follows straightforwardly.

For statement (2), suppose linear function  $\pi(\theta)$  has the form  $\pi(\theta) = a\theta + b$ . Then, when  $B$  and  $P$  observe signal  $p$ , they believe  $\theta \sim N(\hat{p}, \hat{\sigma}^2)$  where  $\hat{p} = \frac{p-a}{k}$  and  $\hat{\sigma} = \frac{\sigma}{k}$ . We use  $\Phi$  to denote the cumulative distribution function of the standard normal distribution. Then the optimal response of bureaucrat  $B$  becomes the expected value:  $r^* = \int r(\theta)d\Phi(\frac{\theta-\hat{p}}{\hat{\sigma}})$ .

For the optimal strategy for politician  $P$ , we still need to explore the equation 5:

$$s(r_i) \geq \bar{S} - \frac{[c_1(\theta) - c_0(y_i^*(r^*, \theta_i))] \delta^{-t'}}{1 - \theta_i y_i^*(r^*, \theta_i)}$$

We realize that, given  $p$ , any  $\theta \in [0, 1]$  is possible under distribution  $\theta \sim N(\hat{p}, \hat{\sigma}^2)$ . Given optimal  $r^* = \int r(\theta)d\Phi(\frac{\theta-\hat{p}}{\hat{\sigma}})$ , the RHS of above equation is decreasing in  $\theta$  under the assumptions in proof of B.2. Therefore, there is a  $\theta'$  that citizens with  $\theta_i < \theta'$  do not satisfy the equation, so they will protest. The probability that  $\mathbb{P}[\theta < \theta']$  is exactly  $\Phi(\frac{\theta'-\hat{p}}{\hat{\sigma}})$ .

For each case  $i$ ,  $D_i = 1$  if and only if the utility is higher than  $D_i = 0$ :

$$R - c_P \geq \Phi\left(\frac{\theta' - \hat{p}}{\hat{\sigma}}\right) \times 0 + (1 - \Phi\left(\frac{\theta' - \hat{p}}{\hat{\sigma}}\right)) \times R$$

that is  $\Phi\left(\frac{\theta' - \hat{p}}{\hat{\sigma}}\right) \geq \frac{c_P}{R}$ . Notice that the numerator  $\theta' - \hat{p}$  is monotonically decreasing in  $p$ ; thus we can find a  $\tilde{p}$  that if  $p \geq \tilde{p}$ , then  $\Phi\left(\frac{\theta' - \hat{p}}{\hat{\sigma}}\right) \leq \frac{c_P}{R}$ . In equilibrium, Politician  $P$  only  $D_i = 1$  if  $p < \tilde{p}$ . This proves the first part of the statement (2).

For the second part, we first note that  $\frac{c_P}{R} \leq \frac{1}{2}$ , because  $R \geq k c_p$  and  $k \geq 2$ . Therefore, given  $\tilde{p}$ , we expect  $\theta' - \hat{p} \leq 0$ . Then, for any  $\sigma_1 \geq \sigma_2$ , we have  $\Phi\left(\frac{\theta' - \hat{p}}{\hat{\sigma}_1}\right) \geq \Phi\left(\frac{\theta' - \hat{p}}{\hat{\sigma}_2}\right)$ . Thus, to maintain the equation  $\Phi\left(\frac{\theta' - \hat{p}}{\hat{\sigma}}\right) = \frac{c_P}{R}$ ,  $\tilde{p}_1 \geq \tilde{p}_2$ .

□

The figure 2 in main text is generated under  $\bar{S} = 2.8$ ,  $c_0(y) = \frac{1}{2}y^2$ ,  $s(r) = 2r$ ,  $\delta^{t'} = 0.1$ ,  $c_B(r) = \frac{9}{10}r^2$ ,  $\eta = 1$ ,  $c_1 = 2\theta^3$ ,  $\pi$  is the identity function, and we let  $\epsilon = 0$  for simplicity. Overall, the model shows that the rich effectively differentiate themselves from the poor and distort bureaucrats' priorities.

## C Examples of Resolution

1. **Actually resolved (shi ji jie jue)**: Resolution Definition: 市民反映的诉求合理、合法，已经得到完全解决The petitions of the citizens are reasonable and legal, and have been completely resolved.

Petition Case: 市民来电反映：上述地址为小区，小区内有一个会所，将装修垃圾堆放在26号门口，长期无人清理。诉求：希望管理部门尽快核实协调清理垃圾。（需回复）Citizens called to report: The above address is a residential community. There is a clubhouse within the community where building rubbish has been dumped at the 26 entrance and left there long-term without cleanup. Request: I hope the management department can verify and coordinate garbage cleanup as soon as possible. (Reply required)

Response: 已联系该处物业，目前已经清理干净。We have contacted the property management, and the building rubbish has been cleaned up now.

### 2. Show explanation (jie shi shuo ming)

Resolution Definition: 市民反映的诉求合理但不合法、不合理不合法或者当前不具备解决的条件，不属实或没有法律、政策依据，承办单位通过解释、说明的工作方法进行告知。The petitions raised by the citizens are reasonable but not legal, unreasonable and currently not feasible to solve, false or without legal and policy basis. The responsible unit informs with explanation and clarification.

Petition Case: 市民来电反映：XX区XXX路XXX弄X号楼每天6:00左右就进行大修房屋的施工，已经持续一个多月，长假期间也是这样施工，影响居民的正常休息和生活了。诉求：按照规定时间进行施工。（需回复）Citizens called to report: Building X, Lane X, XXXX Road, H District, conducts major repairs on houses at around 6:00 every day, which has been going on for more than a month. The same construction is carried out during the long holiday, affecting residents' normal rest and life. Appeal: Carry out construction according to the specified time. (Reply required)

Response: 接单后我局即联系施工单位。该处为房屋全项目大修项目，目前施工单位已调整施工时间，尽量减少扰民，同时加强了现场管理。After receiving the order, our bureau immediately contacted the construction unit. This is a major renovation project for the entire house, and the construction unit has adjusted the construction time to minimize disturbance and strengthen on-site management.

### 3. Demand is too high (su qiu guo gao)

Resolution Definition: 市民反映的诉求有悖社会公德、存在政策限制、明显不合理The petitions expressed by the citizens are contrary to social ethics, subject to policy restrictions, and clearly unreasonable.

Petition Case: 市民来电反映：其上述地址小区原来有三扇门，其中两扇为消防门。市民称其中一扇消防门被物业擅自砌成了墙。市民对此表示不认可。诉求：希望管理部门核实，对该处的消防门恢复原样。（需回复）Citizens called to report: In the above-mentioned address, there used to be three doors in the residential area, two of which were fire doors. The citizen claimed that one of the fire doors was illegally blocked by the property management. The citizen does not agree with this. Appeal: Hope the management department can verify and restore the fire door to its original state. (Reply required)

Response: 经向物业方面了解情况，物业表明该小区自竣工以来一直是两个出入口（含消防通道），不存在第三个消防通道。如诉求人对物业行为有异议可通过信访或司法途径进行申诉。According to the property management, since the completion of the community, there have always been two entrances (including fire exits), and there is no third fire exit. If the complainant has any objections to the behavior of the property management, they can file a complaint through letters or legal channels.

**4. Record it for reference and record (can kao bei an)** Resolution Definition: 指市民反映的诉求属于建议类的，可以留作参考备案The concerns reflected by the citizens belong to the suggestion category, they can be kept for reference and record.

Petition Case: 市民来电反映：其XXXX年X月XX日去上述地址的饭店吃饭然后饭店的地板上有油，摔了一跤，导致尾骨移位，医生表示要求不要上班，但是市民因此单位需求还是工作，但是尾骨是无法恢复的，现在一个多月了，和饭店协商表示不认可，不愿意协商。诉求：要求管理部门为其协调约谈补偿的问题。需回复。A citizen called to report: On XXXX year X month XX day, they went to the aforementioned address to dine at the restaurant. The restaurant's floor was oily, and they slipped and fell, resulting in a displaced tailbone. The doctor advised against working, but the citizen still had to work due to job demands. However, the tailbone cannot recover. Now, more than a month has passed, and the restaurant has refused to acknowledge or negotiate. Request: The citizen asks the management department to coordinate and discuss compensation. A response is needed.

Response: 我单位于XXXX年X月XX日接单，于X月XX日首次通过电话先行联系来电人，告知其问题已经收悉，正在我单位进行办理。X月XX日，由我单位南东所，对来电人所反映的情况进行核实。并通知该消费者把有关的身份证明、有关发票和医院的证据证明等有关复印件送致我所。XX月X号再了解具体情况后，我所就组织双方进行调解，因投诉方的要求和被诉方的理赔之间的相差太远，双方未能达成协议。我所决定终止调解。我所对投诉人就该问题进行了解释说明，现投诉人决定通过司法途径解决。我所现就将此案件参考备案。Our department accepted the order on September 28, 2016. On X month XX day, we first contacted the caller by phone to inform them that their issue had been received and was being processed by our department. On X month XX day, our Nandong office verified the situation reported by the caller. We then notified the consumer to provide copies of relevant identification,

related invoices, and hospital evidence to our office. On XX month X day, after understanding the specifics, our office organized mediation between the two parties. However, due to the significant difference between the complainant's demands and the defendant's compensation offer, the two sides could not reach an agreement. Our office decided to terminate the mediation. We explained the issue to the complainant, who has now decided to pursue a judicial solution. Our office will now file this case for reference.

## D Does Government Responsiveness Enhance Satisfaction?

This sections verify the validity of our two response measures by showing their strong correlation with the quality of resolution. To measure such quality, we utilize the follow-up survey conducted by district-level government. In this survey, the government inquires about callers' satisfaction levels with the provided resolution. Despite participation in the survey being entirely voluntary, over 60% of callers provide feedback. We regress the caller's satisfaction evaluation on two outcome measures of government responsiveness: response time and resolution decision. This regression is controlled for petition type and year fixed effects. We have coded the satisfaction levels in an ordinal manner: satisfied (4), basically satisfied (3), okay (2), and unsatisfied (1).

Table A.1: Satisfaction Analysis

	Satisfaction					
	(1)	(2)	(3)	(4)	(5)	(6)
Positive Resolution	0.444*** (0.020)		0.411*** (0.020)	0.409*** (0.020)	0.299*** (0.049)	0.296*** (0.049)
Resolution Time		-0.038*** (0.003)	-0.032*** (0.003)	-0.032*** (0.003)	-0.034*** (0.004)	-0.034*** (0.004)
Resolution Time*Positive Resolution					0.019** (0.008)	0.019** (0.008)
Type FE	Y	Y	Y	Y	Y	Y
Year-month FE	Y	Y	Y	Y	Y	Y
Controls	N	N	N	Y	N	Y
N	26,228	26,226	26,226	26,226	26,226	26,226
Adjusted R <sup>2</sup>	0.070	0.061	0.075	0.076	0.075	0.076

Table A.1 presents the results. As expected, the positive correlation between resolution time and satisfaction in Column 1 suggests that citizens are more content when the government agency resolves their concerns promptly. Furthermore, Column 2 displays a positive and significant correlation between satisfaction and a favorable response from the government. Columns 3 and 4

combine both resolution time and decision into a single model, and the estimates remain consistent with the earlier results in Columns 1 and 2. Lastly, Columns 5 and 6 factor in the interaction between resolution time and positive resolution, both with and without covariates. The full model with baseline covariates produces a significant estimate for the interaction term. In conclusion, the results underscore the significance of allocative duration. In general, citizens exhibit greater satisfaction with their cases when they undergo a shorter processing time.

## E Settlements in Shanghai

The establishment of foreign settlements in Shanghai began after the Opium War. In 1842, the Qing empire signed the treaty of Nanking with Britain, permitting it to open five treaty ports. Shanghai was one of these treaty ports that allowed foreign merchants to reside, trade, and enjoy extraterritoriality and consular jurisdiction. Three years later, the British settlement was established in the south of Suzhou Creek and the west of Huangpu River, under the agreement of the Shanghai Land Regulation (1854). The British settlement merged with the American settlement in 1863, forming a new international settlement. In addition to the British and American settlements, the French Consul obtained a proclamation to establish a concession in 1849. The French Concession is in the south of the International Settlement and north of the old Shanghai city, where Chinese residents lived. While these settlements remained under Chinese sovereignty, the Consul-General of France and Shanghai Municipal Council were the administrative authority for the French Concession and the International Settlement, respectively, providing public services such as water, drainage, street light, and paved road. Compared to the old Chinese city (华界), the foreign settlements (French Concession and the international settlement) have better infrastructure, extraterritoriality, and a dense population of foreigners and wealthy Chinese.

## F Figures and Tables

Table F.1: Frequency of Channels to the 12345 Hotline

	n	%	val%
Phone	42867.00	98.50	98.50
Website	440.00	1.00	1.00
Hotline initiated	164.00	0.40	0.40
No Information	36.00	0.10	0.10
Fax	11.00	0.00	0.00
Wechat	1.00	0.00	0.00

Table F.2: Summary Statistics

Statistic	N	Mean	St. Dev.	Min	Max
Resolution Time	43,517	6.83	3.09	5.00	15.00
Positive Resolution	43,519	0.18	0.38	0	1
Satisfaction	26,245	3.10	1.28	1	4
Female	43,519	0.38	0.48	0	1
Local	43,519	0.81	0.39	0	1
Foreign	43,519	0.004	0.07	0	1
Anonymous	43,519	0.26	0.44	0	1
Price	43,519	48,209.78	15,138.77	6,981	144,214
Municipal Two Sessions	43,519	0.07	0.26	0	1
National Two Sessions	43,519	0.06	0.24	0	1
Department Turnover	43,519	0.06	0.24	0	1

Table F.3: Ordinal Measure of Outcome Variables

	Resolution Time (Ordinal)			Positive Resolution (Ordinal)		
	OLS	IV	RF	OLS	IV	RF
	(1)	(2)	(3)	(4)	(5)	(6)
Price	-0.037** (0.015)			0.005 (0.013)		
Settlement			-0.063*** (0.012)			0.013 (0.010)
Price		-0.211*** (0.050)			0.044 (0.036)	
Type FE	Y	Y	Y	Y	Y	Y
Year-month FE	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y
N	43,498	43,498	43,498	43,500	43,500	43,500
Adjusted R <sup>2</sup>	0.036	0.027	0.039	0.087	0.086	0.087

Notes: Standard errors clustered at the apartment-complex level are reported in parentheses. FE denotes fixed effects. OLS, IV, RF denote ordinal least squared, instrument variable, and reduced form specifications respectively. To construct the ordinal measure of resolution time, we code green, yellow, orange, and red label cases as 1,2,3,4 respectively. We coding cases “actually resolved” as 3; “show explanation” as 2 and “demand is too high” as 1 as the ordinal measure of resolution decision. Controls are female, local, foreign, anonymous, local two sessions, national two sessions, and executive turnover. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01.

Table F.4: Exclusion Restriction

	Female (1)	Local (2)	Foreign (3)	foregin (4)
Settlement	0.011 (0.008)	0.017 (0.014)	-0.024 (0.022)	0.002 (0.002)
Type FE	Y	Y	Y	Y
Year-month FE	Y	Y	Y	Y
<i>N</i>	43,500	43,500	43,500	43,500
Adjusted R <sup>2</sup>	0.004	0.011	0.027	0.002

Notes: Standard errors clustered at the neighborhood level are reported in parentheses. FE denotes fixed effects.

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01.

Table F.5: Analysis Using Phone-call Only Sample

	Resolution Time			Positive Resolution		
	OLS (1)	IV (2)	RF (3)	OLS (4)	IV (5)	RF (6)
Price	-0.233** (0.093)			0.001 (0.010)		
Settlement			-0.377*** (0.070)			-0.006 (0.007)
Price		-1.269*** (0.295)			-0.020 (0.025)	
Type FE	Y	Y	Y	Y	Y	Y
Year-month FE	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y
N	42,846	42,846	42,846	42,848	42,848	42,848
Adjusted R <sup>2</sup>	0.038	0.027	0.041	0.063	0.063	0.063

Notes: Standard errors clustered at the apartment-complex level are reported in parentheses. FE denotes fixed effects. OLS, IV, and RF denote ordinal least squared, instrument variable, and reduced form specifications respectively. Controls are female, local, foreign, anonymous, local two sessions, national two sessions, and executive turnover. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01.

Table F.6: Using Alternative Measure of Resolution

	Late Resolution (Binary)		Allocation Time		Precise Resolution Time Sep 18- Aug 19	
	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)
Price	-0.034** (0.014)		-0.095** (0.039)		-27.144*** (4.672)	
Price		-0.179*** (0.042)		-0.352*** (0.099)		-98.319*** (17.831)
Type FE	Y	Y	Y	Y	Y	Y
N	43,498	43,498	43,500	43,500	12,471	12,471
Adjusted R <sup>2</sup>	0.037	0.027	0.020	0.018	0.043	0.007
Controls	Y	Y	Y	Y	Y	Y

Notes: Standard errors clustered at the apartment-complex level are reported in parentheses. FE denotes fixed effects. OLS, IV, denote ordinal least squared and instrument variable specifications respectively. Controls are female, local, foreign, anonymous, local two sessions, national two sessions, and executive turnover. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01.

Table F.7: Spatial-adjusted Standard Errors

	Resolution Time	
	(1)	(2)
	OLS	IV
Price	-0.225*** (0.080)	-1.255*** (0.215)
Observations	43,498	43,498
R-squared	0.009	-0.002
Type FE	Y	Y
Year-month FE	Y	Y
Controls	Y	Y

Notes: Standard errors clustered using Conely (1999)'s approach and is implemented using 'areg' in Stata. The spatial cutoff is set to be 20 km. FE denotes fixed effects. \* $p<0.1$ ; \*\* $p<0.05$ ; \*\*\* $p<0.01$ .

Table F.8: Summary Statistics of Verbal Signals

Statistic	N	Mean	St. Dev.	Min	Max
Legal	43,519	0.034	0.182	0	1
Collective Action	43,519	0.008	0.090	0	1
Upper Government	43,519	0.018	0.134	0	1
CCP Member	43,519	0.001	0.037	0	1

Table F.9: Correlation Between Housing Price and Petition Frequency

	Number of Petitions		Petitions Per Capita	
	raw	logged	raw	logged
	(1)	(2)	(3)	(4)
Price	-9.443 (12.086)	0.201 (0.279)	0.181 (0.184)	0.087 (0.073)
N	687	687	273	273
Adjusted R <sup>2</sup>	-0.001	-0.001	-0.0001	0.001

Notes: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01.

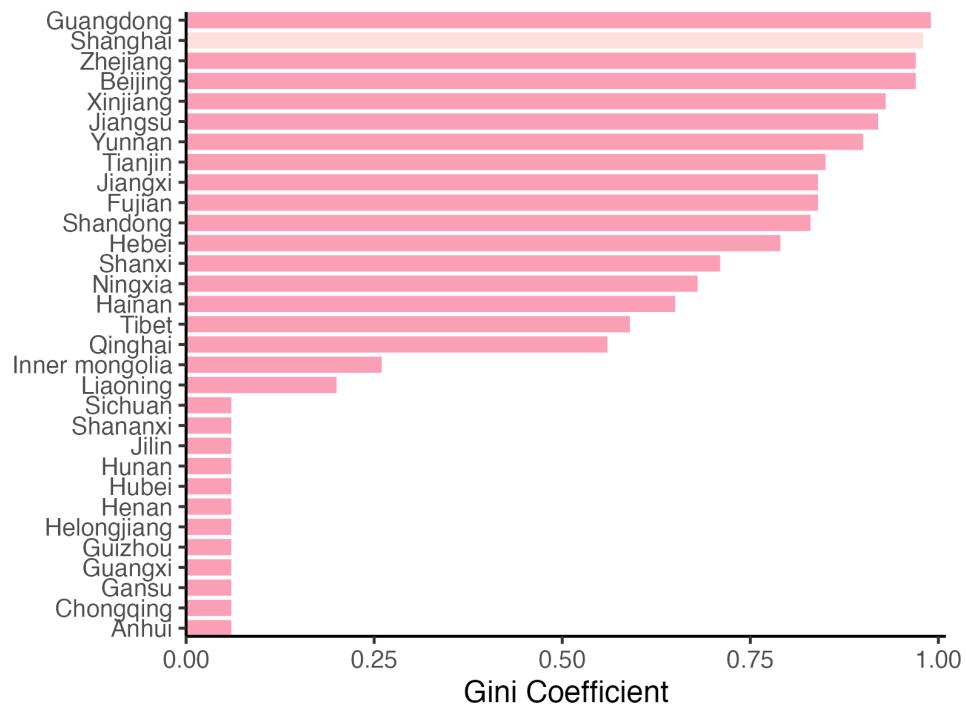
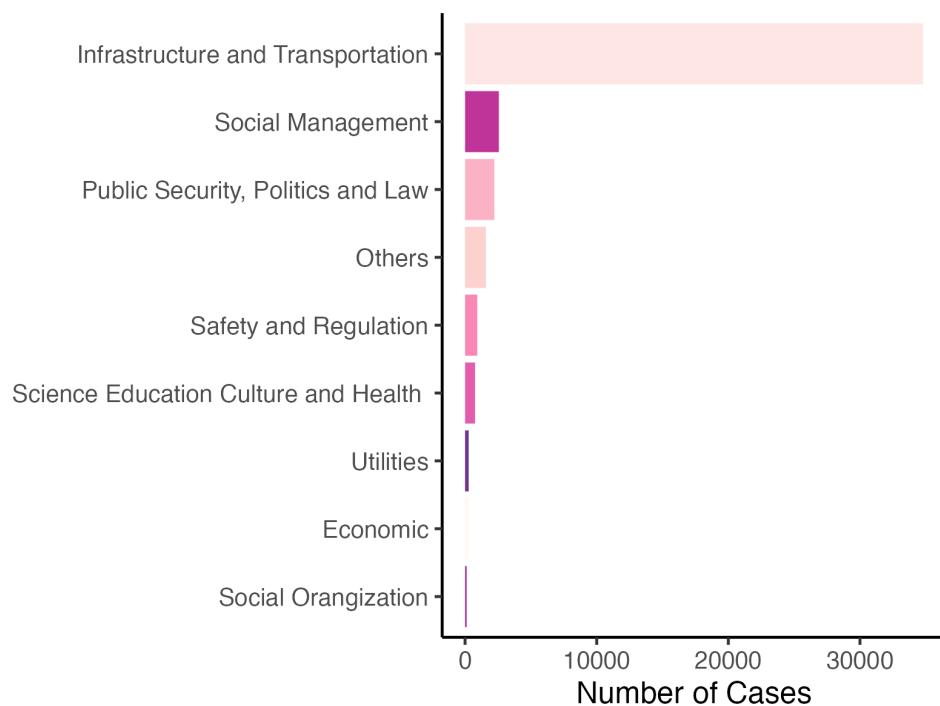


Figure F.1: PROVINCIAL-LEVEL GINI COEFFICIENT

Source: Bhattacharya, Prabir, Javier Palacio-Torralba, and Xinrong Li. "On Income Inequality within China's Provinces." Chinese Studies 7.02 (2018): 174.

**Figure F.2: CASE TYPES**



*Source: H District 12345 hotline records.*

Figure F.3: BANKUAI-LEVEL HOUSING PRICE TREND

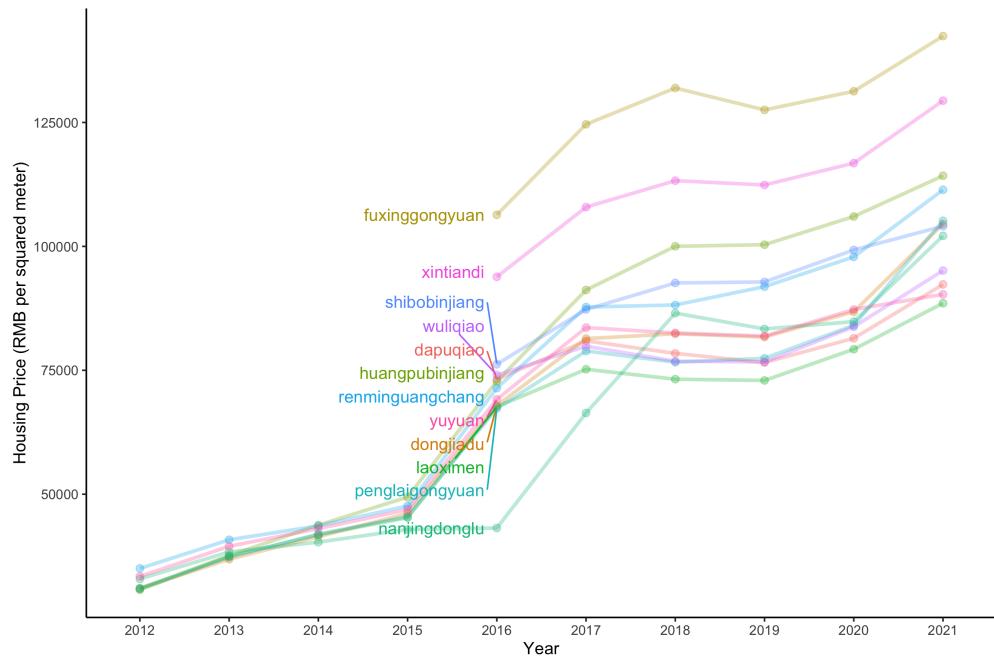
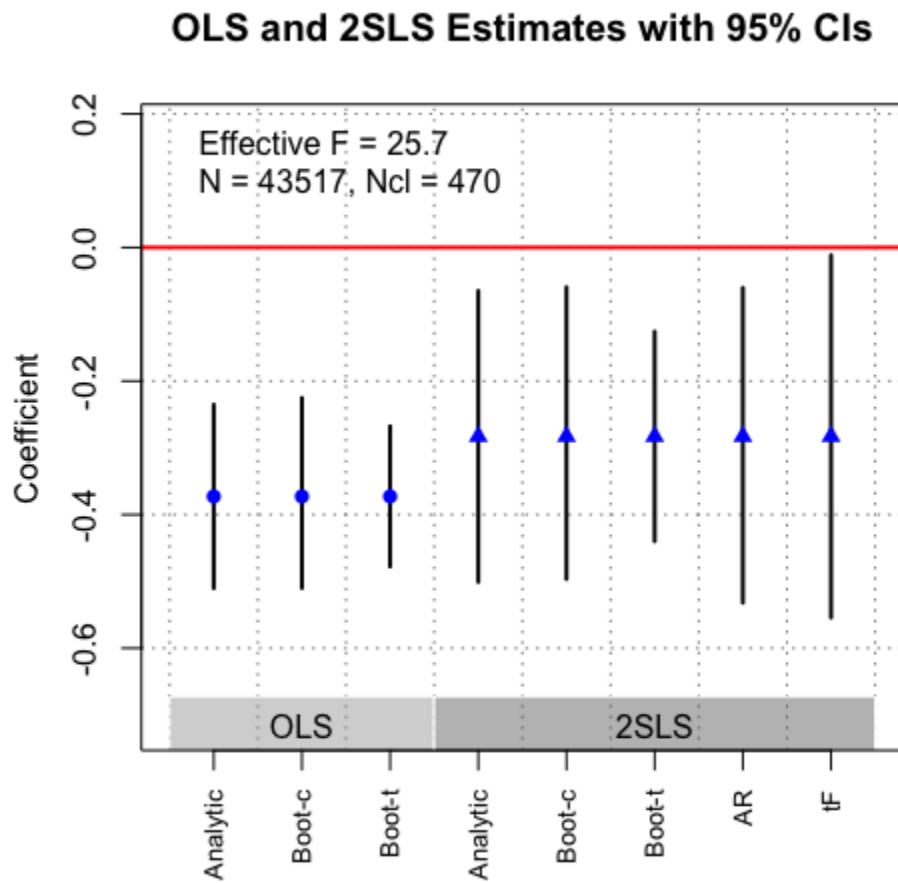


Figure F.4: ESTIMATION AND DIAGNOSTIC OF INSTRUMENTAL VARIABLES

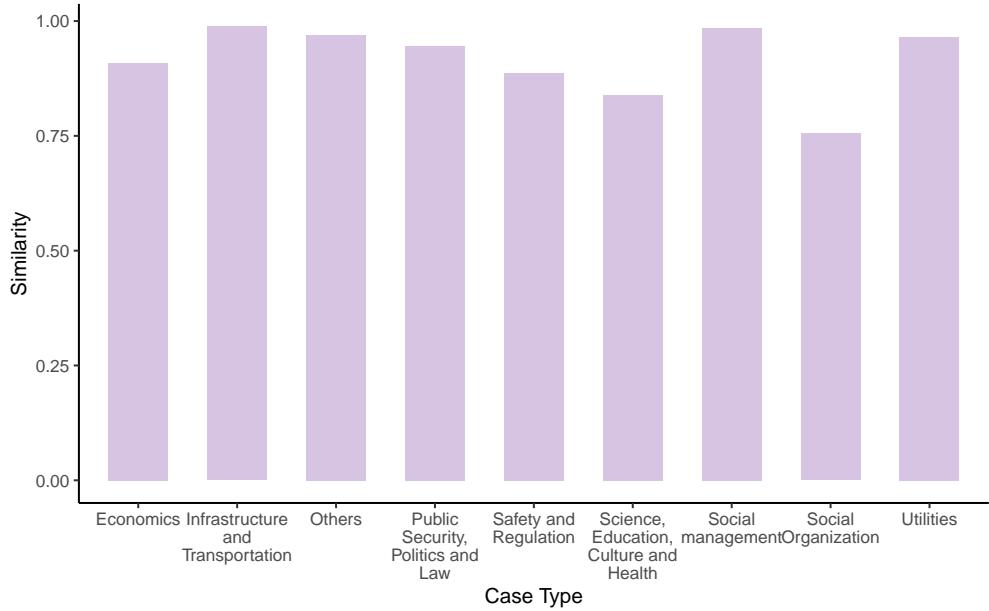


*The estimation uses ivDiag package in R. The model specification here is the same as column (2) in table 2. The figure reports robust estimation of OLS and 2SLS under different robust adjustments, including bootstrapped confidence intervals, effective F-statistic, Anderson-Rubin test and valid-t ratio test. All point estimates are similar and significant at the level of 0.05.*

## G Text Similarity

We conduct a text analysis of all petition transcripts to measure text similarity between the rich and poor. In the main text, we define the rich and the poor according to whether their housing price is above or below the average price. Here, we further examine the petition similarity between the top and bottom 30%. We extract the petition description of cases submitted by callers. Then, we compute the Cosine similarity, which measures the text similarity that ranges from 0 to 1 for each case type (Infrastructure and Transportation, Public Security, Politics and Law, Safety and Regulation, Others, Utilities, Social management, Science, Education, Culture and Health, Economics, Social Organization). The higher Cosine similarity means the more similarly the petition texts are. Figure G.1 shows the result of the text similarity analysis. Texts of petitions from the rich and the poor are pretty similar, with a Cosine similarity ranging from 0.85 to 0.99. The mode petition type, Infrastructure and Transportation, has the highest similarity (0.99). The evidence shows that petition texts of callers who are richest and poorest are not statistically different, suggesting they face homogeneous demand for public services.

Figure G.1: TEXT SIMILARITY



## H Coding Rule of Verbal Signals

*“...The new campus is located at the intersection of Road A and Road B. There is no sidewalk along the school. The school is shared with a nursing home. The*

*overall environment has a major hidden danger to the personal safety of grade one pupils. According to Article 16 of Chapter III "schools" of the compulsory education law of the people's Republic of China, it is clearly stipulated that the construction of a school shall comply with the school running standards stipulated by the state, and the construction shall ensure the safety of students and teaching staff..."*

## **Keywords for Verbal Signals**

Law: 法律,依法,规定

Party Membership Keyword: 党员

Upper-level Government: 上级,领导,市政府

Collective Actions: 上访,抗议,访民,信访