

# Performance ranking, span of control, and grassroots government responsiveness

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## Abstract

Policy makers have increasingly relied on performance ranking regimes based on information collected through public complaint systems to improve grassroots governments' accountability, transparency, and responsiveness. This article contributes to the existing literature by examining whether grassroots governments strategically adjust their responsiveness according to their ranking positions and the number of their peers that are supervised by the same superior government (i.e., span of control). To test the theorized relationships, we built an original panel dataset consisting of monthly responsiveness information and socioeconomic and leadership characteristics of 333 grassroots governments in Beijing, China from February 2019 to December 2020. Our empirical findings consistently show that having a high/low ranking is associated with a decrease/increase in grassroots governments' responsiveness in the next period. Additionally, as the span of control increases, the effect of ranking position on responsiveness changes among grassroots governments weakens. A series of robustness checks were used to validate the theorized relationships.

## KEYWORDS

government responsiveness, grassroots governments, ICT complaint systems, performance ranking, span of control

## INTRODUCTION

Government responsiveness refers to how governments act in response to citizens' preferences (Broockman, 2013; Distelhorst & Hou, 2017). Grassroots governments (i.e., governments consisting of frontline agencies and employees) serve as the most common platform for citizen-state interactions, and their responsiveness significantly influences how the public perceives and interacts with a state, thus largely determining a state's performance and legitimacy (Brodtkin, 2011; Clark et al., 2020; Cohen, 2021; Einstein & Glick, 2017; Jakobsen et al., 2019; Kim et al., 2022; Lipsky, 1969, 2010; Zhang et al., 2020, 2021). Nevertheless, responsiveness to the public among grassroots governments varies across time and space. Against this background, identifying the determinants of this responsiveness can provide scholars and practitioners with significant insights into the patterns of policy implementation and grassroots decision-making, as well as the dynamics of citizen-state interactions.

In this article, in contrast to previous government responsiveness research mainly focusing on the effects of electoral and accountability institutions (Caughey & Warshaw, 2018; Cluverius, 2017; Dawood, 2015; Duggan & Martinelli, 2017; Fearon, 1999), we study how one of the most widely adopted managerial approaches, performance ranking, shapes grassroots government responsiveness. In recent decades, policy makers in developed and developing countries have increasingly relied on performance ranking regimes to improve public organizations' accountability and information transparency. Particularly, superior governments tend to evaluate grassroots responsiveness to the public through monthly or yearly rankings based on information collected through public complaint systems enabled by information and communication technologies (ICTs), such as the 311-hotline system or the Open311 app in San Francisco (Young, 2021), the FixMyStreet app in the UK (Sjoberg et al., 2017), or the U-Bridge platform in Uganda (Grossman et al., 2018). Despite the widely held view that performance ranking incentivizes public organizations to improve their performance (Rainey, 2009), we speculate that there are heterogeneous marginal returns of responsiveness improvement across ranking positions, which induce grassroots governments to strategically adjust their responsiveness to the public. Moreover, span of control, i.e., the size of the pool of peers supervised by the same superior government, could influence how grassroots governments evaluate the benefits or risks of responsiveness changes and thus how they should adjust their efforts according to their ranking positions.

To test our hypotheses, we used an original monthly panel dataset (February 2019–December 2020) relating to 333 grassroots governments in Beijing, China. This dataset's spatial and temporal variation enables us to simulate grassroots decision-making by estimating the potential effects of ranking position in the previous month and span of control on monthly changes in grassroots responsiveness. Moreover, because of the institutional homogeneity among grassroots governments in China's highly centralized governmental system (Lieberthal & Lampton, 2018), using this dataset will help us rule out the potential confounding effects of multiple existing institutional explanations. Therefore, our empirical findings on China could at least serve as an upper bound for guiding future research on the same topic in other developed and developing countries with heterogeneous local institutions.

This work contributes to the extant literature by providing a novel theoretical and empirical analysis of the managerial determinants of grassroots government responsiveness. Admittedly, in recent years, dozens of performance management studies based on the performance feedback theory have widely examined how the gap between performance and inferred aspirations based on historical or social comparisons shapes public organizations' strategic behaviors or performance (Moynihan & Pandey, 2010; Tang et al., 2018; Wei et al., 2022). However, unlike previous research,

this article directly examines the consequences of dynamic and objective performance ranking. Thus, it could inspire more straightforward theoretical and empirical predictions without relying on subjective concepts that are difficult to observe or measure. This article is also different from previous benchmarking research (e.g., Gerrish & Spreen, 2017) by examining a new outcome of performance ranking, the change in grassroots government responsiveness to the public.

## THEORETICAL BACKGROUND AND HYPOTHESES

Scholars and practitioners have documented multiple possible unintended consequences of performance measurement and ranking in the public sector (Muller, 2019; Propper & Wilson, 2003). For instance, information distortion is widespread in performance regimes because, due to time and information constraints, superiors tend to measure the most easily measurable rather than the most critical indicators (Bevan & Hood, 2006; Hood, 2007; Li et al., 2022). Moreover, public employees tend to game the system by selectively working for clients with less challenging circumstances or improving numbers through lowering standards or cheating (Bohte & Meier, 2000; Cluverius, 2021; Fryer et al., 2009; Smith, 1995). Therefore, in recent years, to reduce information distortion and improve government responsiveness, public electronic complaint systems enabled by ICT have been developed and adopted to combine top-down evaluation and bottom-up monitoring (Grossman & Slough, 2022). In such ICT complaint systems, grassroots governments are generally ranked by their responsiveness to public requests and concerns, and these rankings are regularly released to the public.

This article supports and adds to the existing literature by examining whether current performance ranking regimes could still induce unintended strategic responses among grassroots governments, even if information distortion is reduced by ICT complaint systems. We argue that grassroots governments with different ranking positions have different motivations and costs in terms of improving their responsiveness in the next period.

First, compared to high-ranking governments, low-ranking governments are more likely to be motivated to improve their responsiveness. Almost all modern countries have a multilevel governance system, with the number of government branches at each level determined by the allocation of geographical or functional jurisdictions (Zhang & Zhu, 2019). Generally, after a performance ranking regime is introduced to such a multilevel governance system, superior government levels allocate fiscal resources or promotion opportunities which are at least partially based on the ranking of the grassroots governments to incentivize them to improve their responsiveness (Heinrich, 2012; Heinrich & Marschke, 2010; Propper & Wilson, 2003; Soss et al., 2011). Even without direct material benefits, grassroots governments are still likely to be motivated to improve their responsiveness due to the potential reputational benefits. Admittedly, incentives provided in the public sector might be less high powered than in the private sector due to the problem of multiple principles and multiple goals (Dixit, 2002).

Nevertheless, research based on the negativity bias notion suggests that policy makers and citizens often react significantly negatively to low performance but not very positively to high performance (Hong & Kim, 2019; James et al., 2020; Nielsen & Baekgaard, 2015). In other words, low-ranking governments have to keep improving their responsiveness to avoid disproportionate punishments. By contrast, high-ranking governments may not be so strongly motivated because improving responsiveness does not lead to proportionate benefits. This logic is supported by the blame avoidance literature showing that bureaucrats are more concerned with avoiding blame than claiming credit (Hong et al., 2020; Nielsen & Baekgaard, 2015; Weaver, 1986).

Second, improving responsiveness has lower marginal costs among low-ranking governments than high-ranking governments. It is relatively easy for a low-ranking grassroots government to enhance its responsiveness, as it is unlikely that its current efforts and resources have been optimized. These low performers can directly improve their responsiveness to the public and future ranking position by learning from the practices of higher ranked governments (Boehmke & Witmer, 2004) and improving the attention, time, or economic costs invested in responding to each complaint in their jurisdiction. Therefore, low-ranking grassroots governments can attain high marginal returns for improving their responsiveness.

By contrast, it is difficult for high-ranking grassroots governments to further improve their responsiveness because their efforts and resources may already have been optimized. Previous research suggests that high-performing governments are likely to continue to search for new ideas and to have the human, organizational, and financial capital to continue to innovate (Walker, Avellaneda, & Berry, 2011). However, these management innovations do not necessarily directly improve organizational performance (Walker, Damanpour, & Devece, 2011). Moreover, since there are few opportunities to enhance their responsiveness by learning from their peers, these high performers will have to pay substantial costs to invent new public service practices to achieve marginal improvement in responsiveness or future ranking due to the ceiling effect (Poister et al., 2013). Therefore, high-ranking grassroots governments can only attain low marginal returns by continually improving their responsiveness. As such, we proposed the following hypothesis:

**Hypothesis 1.** Compared to high-ranking grassroots governments, low-ranking grassroots governments are more likely to improve their responsiveness in the next period.

Moreover, the effect of ranking position on grassroots governments' decisions might be contingent on contextual factors. One such salient factor is span of control, or the number of peers supervised by the same superior government. Since the early 20th century, management scholars have noted that superiors' attention, time, and resources are likely to be diluted if they have control over many subordinates (Gulick, 1937; Ouchi & Dowling, 1974). Therefore, given superiors' attention, resource, and time limits, span of control tends to be positively associated with the costs of monitoring and managing subordinates. Moreover, in a multilevel governance system, when span of control increases, promotion opportunities for lower level leaders are likely to decrease (Lü & Landry, 2014). Therefore, span of control is often found to be negatively associated with subordinates' compliance with organizational rules or superiors' decisions (Brehm & Gates, 1999; Thiel et al., 2018).

For grassroots governments, when the number of peers supervised by the same superior government increases: (a) the relative value of a change in ranking position becomes smaller; (b) the cost and risk of facing interventions or being punished by the latter due to a low-ranking position; and (c) the possibility of being rewarded due to a high-ranking position is expected to decrease. Therefore, grassroots governments may become less sensitive to their ranking positions when span of control increases; the relationship between ranking position and grassroots responsiveness is likely to be weakened due to a lower marginal return. Therefore, we hypothesized:

**Hypothesis 2.** As span of control increases, the effect of ranking on responsiveness among grassroots governments decreases.

## EMPIRICAL CONTEXT: THE “PROCESSING PUBLIC COMPLAINTS WITHOUT DELAY” REFORM IN BEIJING, CHINA

As the world's most populous national capital city, Beijing has a population of 22 million, a gross regional product per capita of 164,889 yuan (i.e., 23,909 dollars) in 2020, and an administrative area of 16,411 square kilometers. In terms of administrative divisions, Beijing consists of 16 lower second-level districts which are further subdivided into 333 lower third-level administrative units, including townships (*Xiang* and *Zhen*) and streets (*Jie*). The homogeneous general-purpose governments of these 333 townships and streets are typical grassroots bureaucracy responsible for direct interactions with the public, such as delivering various public services (e.g., transport, sanitation, or utilities) and responding to public complaints and concerns.

Despite the absence of western-style electoral democracies and accountability measures, the Chinese higher level governments still have strong incentives to require grassroots governments to respond to public complaints. Firstly, the Chinese central government needs to maintain social stability and prevent social unrest to sustain the legitimacy and survival of its regime (Chen et al., 2016). Studies on authoritarian responsiveness have demonstrated that higher level governments in China tend to evaluate lower level governments based on their ability to maintain social stability (Liu, 2019; Truex, 2016). Local officials have been disciplined for failing to address social unrest, prompting local governments to mobilize resources to resolve public complaints (Cai & Zhu, 2013; Liao & Tsai, 2019). Secondly, higher level governments face typical agency problems, such as information or interest asymmetry, when relying on lower level governments to implement public policies (Almén, 2018; Anderson et al., 2019). External information sources, such as public complaints, provide the former with valuable insights into problems with the latter's policies and practices, which can be addressed through adjustments and improvements (Chen & Xu, 2017; Kornreich, 2019). Requiring grassroots governments to respond to public complaints can, thus, reduce the costs of monitoring compliance for upper-level governments.

However, due to the potential conflicts between social stability maintenance and other policy goals (e.g., economic or revenue growth), managing public complaints can be costly for lower level governments, which may adopt various strategies to game the performance evaluation system (Gao, 2015; Li, 2015; Wang, 2015). This paper aims to explore the possible strategic choices made by Chinese grassroots governments in responding to ICT-based public complaints.

We tested the outlined hypotheses by examining a grassroots responsiveness dataset derived from a city-wide ICT complaint system adopted in Beijing in January 2019, *Jie Su Ji Ban* (“processing public complaints without delay”; PPCWD). Specifically, the Beijing government established a hotline (12345) and a mobile application for the public to report their questions, complaints, or requests about public service issues to the Citizen Service Center (CSC). More than 1400 CSC employees were responsible for sorting these complaints and sending the cases to the corresponding grassroots governments to deal with. Beijing's PPCWD system is similar to the nonemergency 311 system adopted in many cities in the US to provide the public with a single point of contact for questions, complaints, or requests (Young, 2021).

In contrast to the 311 system, the CSC also conducts regular follow-up telephone surveys among randomly selected citizens who have filed complaints to directly collect their feedback on the responsiveness of their grassroots government each month (this is done for all grassroots governments). On this basis, the CSC uses the combined average percentage value of three indicators to measure and rank the responsiveness of 333 grassroots governments, including response (“Has the government responded to your complaint? Yes; No”), resolution



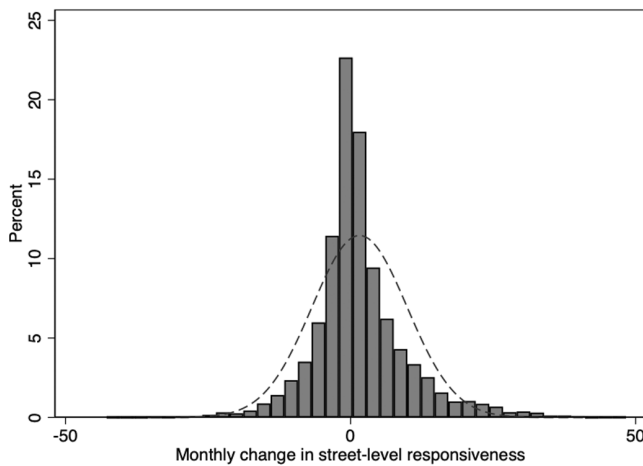
("Has the government resolved the issue raised by you? Yes; No"), and satisfaction ("Are you satisfied with the government's response? Yes; No") rates. Notably, individuals may still perceive a grassroots government to be responsive even if it could not resolve a public service issue due to the lack of necessary authority or resources. Therefore, when a grassroots government receives a low score in resolution rate and a high score in response and satisfaction rates, it may still receive a high overall responsiveness score. In other words, improving the responsiveness score implies improving citizen-state interaction or public service delivery. The CSC then publicly releases the scores (between 0 and 100) and rankings (between 1 and 333) of all grassroots governments each month to incentivize them to improve their performance. This managerial design, relying on individual input regarding both positive and negative aspects of performance, provides an excellent opportunity for us to systematically compare the responsiveness of grassroots governments across time and space and estimate the potential effects of ranking position and span of control.

Moreover, the case of Beijing is appropriate for testing our hypotheses because government institutions in China are much more centralized and homogeneous than their Western counterparts. This improves confidence in our ability to rule out the potential confounding effects of multiple existing institutional explanations for government responsiveness, such as electoral rules, decentralization, or professionalism (Caughey & Warshaw, 2018; Faguet, 2004; Fortunato & Turner, 2018; Tausanovitch & Warshaw, 2014). Additionally, given China's nomenklatura-style personnel management system, local officials' career prospects in China are more likely to be determined by their superiors' evaluations and decisions than in other federal and democratic contexts (Hou et al., 2022). In other words, grassroots governments in China might be particularly sensitive to ranking position and span of control. Therefore, our empirical findings from the context of China could serve as an upper bound for guiding future analysis on the same topic in other countries.

## Data and methods

Our analysis mainly relies on pooled time series data relating to 333 grassroots governments' responsiveness scores and rankings from February 2019 to December 2020, collected from monthly reports compiled by the Beijing city government at the end of each month. The systematic collection of other grassroots variables in China is difficult due to the lack of official statistical yearbooks for grassroots governments. Nevertheless, we hired multiple research assistants to manually collect administrative, fiscal, community, and leader information from the website of each grassroots government.

To better capture the strategic behavioral changes of grassroots governments and avoid potential bias caused by temporal autocorrelation, we measure the outcome variable by differencing the monthly responsiveness scores of each grassroots government. Thus, the outcome variable indicates monthly changes rather than absolute levels of grassroots responsiveness. As Figure 1 shows, its distribution is approximately symmetric at about zero, indicating that around half the observations showed a responsiveness increase while the other half showed a responsiveness decrease. However, this distribution exhibits a large skewness or kurtosis relative to a normal distribution. Therefore, we consider the potential effects of outliers in the later analyses. Notably, our field visits to the CSC suggest no systematic monthly data on the types of organizational changes. Therefore, this study only aims to evaluate the general trends of the grassroots governments' responsiveness changes (e.g., the change in the overall attention, time, or economic costs invested



**FIGURE 1** The distribution of monthly changes in grassroots responsiveness. The dashed line indicates a normal distribution.

in responding to individual complaints) rather than specific behavioral changes in response to their monthly ranking.

Our first explanatory variable is measured by the monthly ranking position of each grassroots government, ranging from 1 to 333; higher values indicate lower rankings. This variable is lagged by 1 month to maintain its temporal priority and avoid the potential reverse causality problem. Our interviews with dozens of grassroots officials in multiple grassroots governments also suggest that they pay close attention to their organizations' monthly rankings and tend to determine their efforts based on the previous month's results. For instance, if a grassroots government has a low ranking in the previous month, this government is likely to reallocate more resources and staff to respond to complaints made through the hotline this month. However, while responding to public complaints and maintaining social stability may help grassroots officials avoid blame from higher level governments, these officials can only gain more recognition in career competitions by achieving other policy goals, such as attracting foreign investments or promoting economic growth. Therefore, if a grassroots government has achieved a moderate or high ranking in the previous month, it will likely prioritize other policy tasks in the current month. Figure 2 reports bivariate correlations between monthly change in grassroots responsiveness and ranking in the previous month. The left panel reports a scatterplot of every data point. The right panel reports a binned scatterplot that groups the x-axis variable into 20 equal-sized bins and computes the mean of the x-axis and y-axis variables within each bin. Both panels in Figure 2 show a strong correlation consistent with our first hypothesis. Our second explanatory variable is measured by the number of grassroots governments in a district, ranging from 9 to 43. A higher value indicates a wider span of control. We further construct an interaction term between ranking position in the previous month and the span of control to test our second hypothesis.

We also construct a series of control variables, including grassroots fiscal expenditure per capita (*yuan*, logged), area size (square kilometers, logged), and population (logged). Moreover, some of the grassroots governments are located in nonurban areas. Thus, we create a dummy that equals 1 if a grassroots government is located in an urban area (*Jie*) and 0 otherwise (*Xiang* or *Zhen*). We further create a dummy that equals 1 if a grassroots government is located in a core district of Beijing City (i.e., Dongcheng, Xicheng, Chaoyang, Haidian, Fengtai, and Shijingshan) and 0 otherwise. Moreover, to rule out the potential confounding effects of leaders, we create three

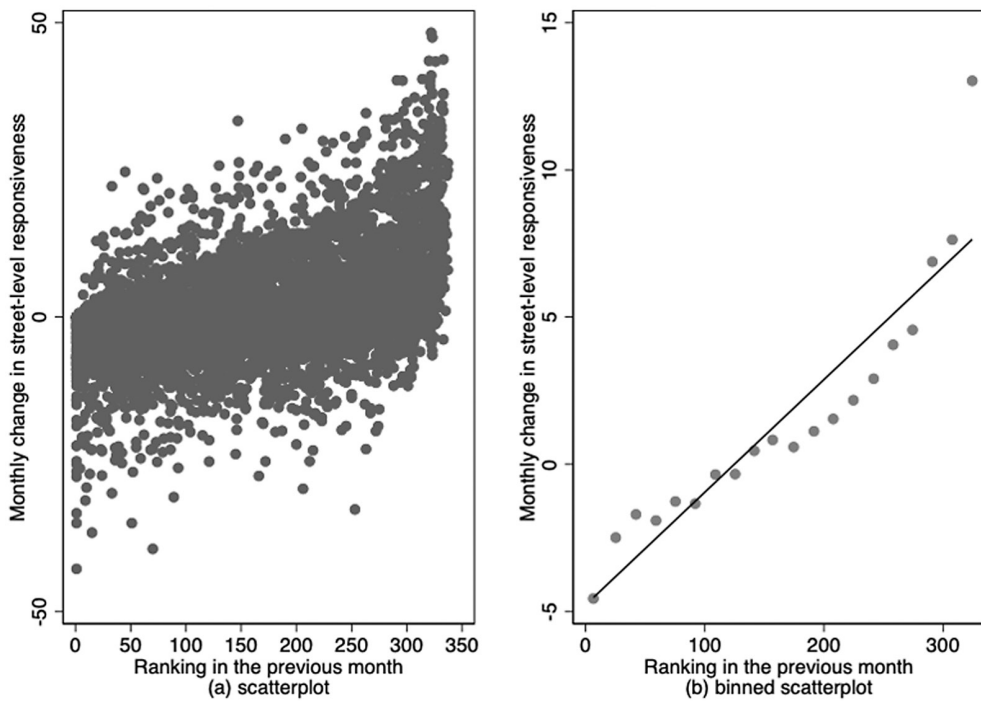


FIGURE 2 Bivariate correlations between the monthly change in grassroots responsiveness and ranking position in the previous month.

variables to measure grassroots government leaders' characteristics (i.e., the chiefs of grassroots committees of the Chinese Communist Party): age, gender (female = 1, male = 0), and education (graduate or above = 1, otherwise = 0). There were many missing values with respect to grassroots leaders' characteristics due to a lack of information on government websites. Therefore, we only included these variables in the later models as an additional robustness check. The summary statistics are reported in Table 1.

Given the continuous nature of the outcome variable, we employ an ordinary least squares (OLS) model to estimate the theorized relationships. Specifically, we use the following equation as the main model specification to test our hypotheses:

$$D. Responsiveness_{ikt} = \beta_0 + \tau_1 L. Ranking_{ikt} + \tau_2 Span_k + \tau_3 L. Ranking_{it} \times Span_k + \sum_{n=1}^n \beta_n X_{n\theta} + \mu_k + \nu_t + \varepsilon_{ikt}$$

where  $D. Responsiveness_{ikt}$  denotes the monthly change in responsiveness for grassroots government  $i$  in district  $k$  in month  $t$ .  $L. Ranking_{ikt}$  denotes the lagged ranking position.  $Span_k$  denotes span of control in district  $k$  and  $\tau_2$  denotes its coefficient. The key parameters of interest are  $\tau_1$  and  $\tau_3$ . According to our hypotheses, we expect  $\tau_1$  to be positively significant and  $\tau_3$  to be negatively significant. Additionally,  $\beta_0$  denotes the constant term.  $X_{n\theta}$  denotes the value of a control variable  $n$  in year  $\theta$  and  $\beta_n$  denotes its coefficient. We also included district ( $\mu_k$ ) and month ( $\nu_t$ ) dummies in the model to control for unobserved temporal (e.g., the spread of COVID-19) or spatial (e.g., administrative culture) factors. Notably, this differs from adding the default fixed effects option in STATA or R, which implements a fixed effects model by simply differencing the data before the regression and, therefore,



TABLE 1 Summary statistics.

Variable	Observation	Mean	Std. dev.	Min	Max
<i>Outcome variable</i>					
Monthly change in responsiveness	6952	1.57	8.35	−42.78	48.30
<i>Explanatory variables</i>					
Monthly ranking	7621	166.10	96.13	1.00	333.00
Span of control	7659	22.58	9.15	9.00	43.00
<i>Organization-level controls</i>					
Fiscal expenditure per capita (ln)	7350	8.59	1.08	2.00	14.48
Urban	7659	0.45	0.50	0.00	1.00
Core district	7659	0.40	0.49	0.00	1.00
Area (ln)	7659	3.05	1.45	−0.22	5.95
Population (ln)	7590	10.66	1.05	7.61	12.64
<i>Leader-level controls</i>					
Female	6555	0.15	0.35	0.00	1.00
Age	6532	47.88	5.37	35.00	62.00
Graduate or above	6417	0.67	0.47	0.00	1.00

Note: The leader-level control variables suffered from many missing values due to lack of information on grassroots government websites.

changing the interpretation of coefficients. We do not adopt a difference-in-difference specification (i.e., two-way fixed effects model) or include street- or township-level dummies in the model because there is little or no temporal variation in span of control or other control variables and the outcome variable has already been differenced.  $\varepsilon_{ikt}$  denotes the disturbance term. We employ robust standard errors clustered by grassroots governments to account for the possibility that unobserved errors may be correlated within the same grassroots government.

RESULTS

Baseline findings

Figure 3 reports the baseline results with the entire sample and 95% confidence interval. In addition to organization-level controls, month and district fixed effects, and span of control, the first column (Model 1) includes ranking in the previous month in the model to test its linear effect. The second column (Model 2) includes the interaction term between ranking in the previous month (rather than the squared term) and span of control to test their interaction effects. Given that the leader-level controls suffer from many missing values, a trade-off exists between controlling for these variables and losing observations in the regression sample. Therefore, we did not include these variables in the baseline models.

As Figure 3 shows, the effects of ranking in the previous month and span of control exhibit similar patterns across the two models. Specifically, lower rankings are related to an improvement in responsiveness, while wider span of control is associated with decreased responsiveness. Model 2 also shows a significant negative interaction effect between these two explanatory

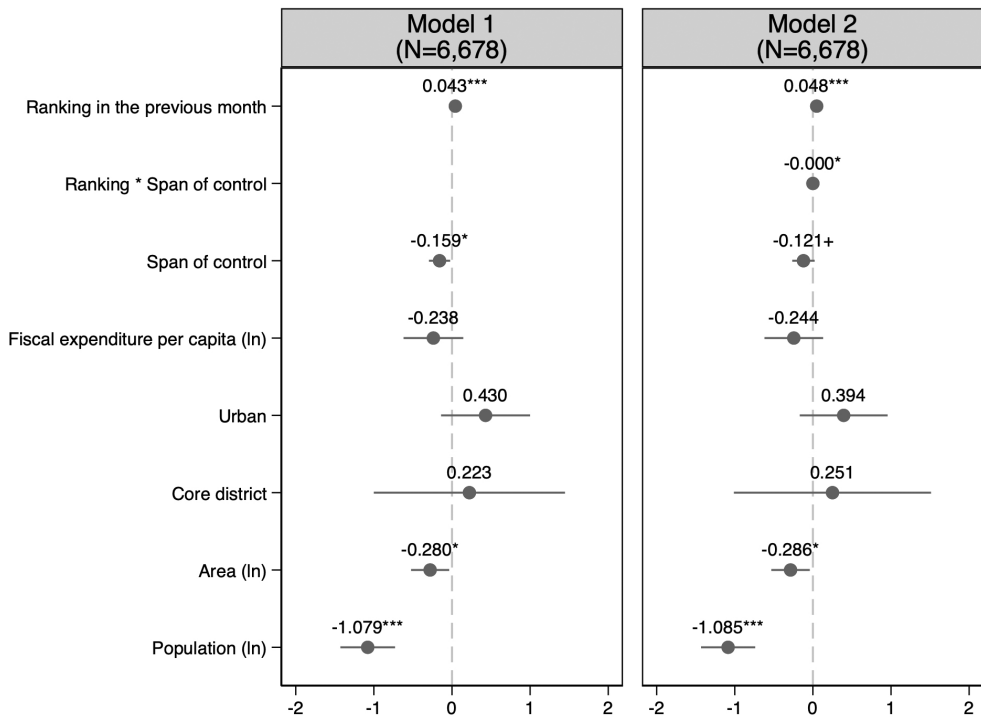


FIGURE 3 Baseline results.  $^+p < .1$ ,  $^*p < .05$ ,  $^{**}p < .01$ ,  $^{***}p < .001$ ; OLS with clustered SE; outcome variable = differenced monthly responsiveness; month and district dummies included; 95% confidence interval.

variables, suggesting that the effect of ranking on change in responsiveness weakens when span of control increases. These findings are consistent with Hypotheses 1 and 2.

Figure 4 illustrates the marginal effects of previous month's ranking. Based on Model 1, the left panel suggests that when a grassroots government's ranking is higher than 150, it is likely to reduce its responsiveness in the next month; a grassroots government with the highest ranking may reduce its responsiveness by 5%. By contrast, when a grassroots government's ranking is lower than 150, it will likely increase its responsiveness in the next month. A grassroots government with the lowest ranking may increase its responsiveness by 10%. These results suggest that grassroots governments probably strategically respond to their ranking positions.

Based on Model 2, the right panel illustrates the average marginal effects of ranking in the previous month contingent on span of control. As the span of control increases from 9 to 43, the average marginal effects of a one-unit decrease in ranking on monthly change in responsiveness significantly decrease from 0.046% to 0.038%. In other words, when the number of grassroots governments managed by the same district government increases, these grassroots governments are less likely to adjust their behaviors due to a change in their ranking positions. This effect seems trivial but is nonnegligible given that the range of a possible change in ranking is from 0 to 333.

As for the control variables, we find that population and geographic area are significantly negatively associated with changes in grassroots responsiveness. Intuitively, a considerable population or geographic area within the jurisdiction of a grassroots government implies that providing public services and adjusting responsiveness each month is complex and difficult. Nevertheless, we find no statistically significant effects of the other organization-level factors, that is, fiscal expenditure per capita, urban location, and being located in a core district.

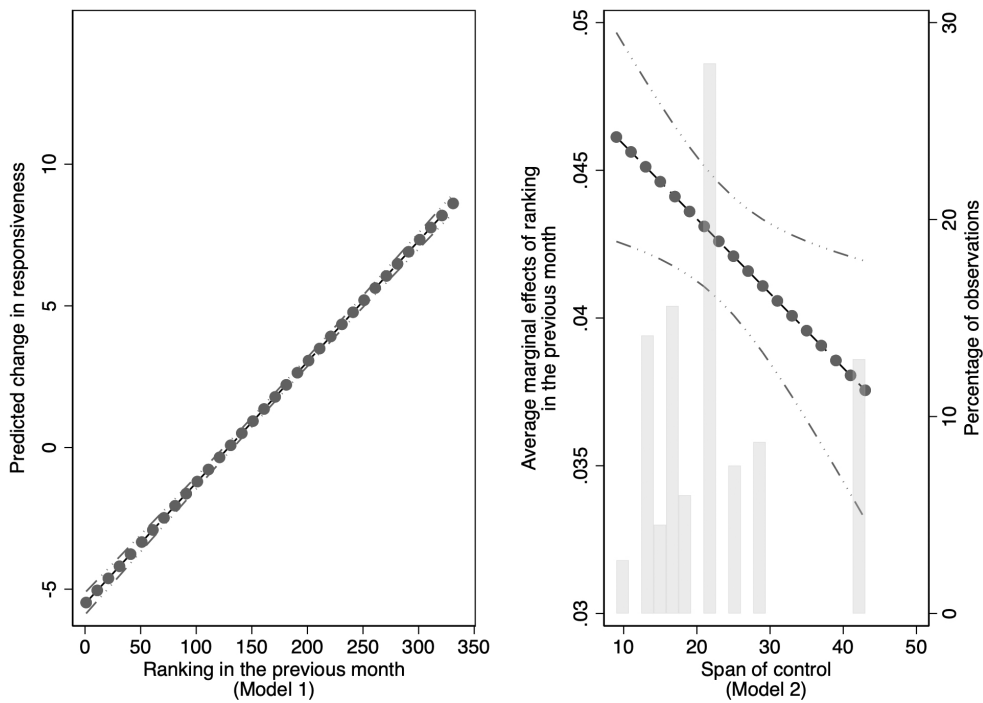


FIGURE 4 Marginal effects of city-level ranking in the previous month. 95% confidence interval.

## Robustness checks

A series of robustness checks were conducted to validate the baseline findings. First, our baseline models relied on city-level ranking as the key explanatory variable because the Beijing city government directly ranked 333 grassroots governments based on their responsiveness. However, if our hypotheses apply to city-level ranking, they should also apply to district-level rankings. Moreover, given that district governments are the direct superiors of grassroots governments, we should expect more substantial effects of district-level ranking on responsiveness improvement than city-level ranking. Therefore, we construct a new explanatory variable by ranking grassroots governments' responsiveness within each district and month. This variable ranges from 0 to 43. Figure 5 reports bivariate correlations between monthly change in grassroots responsiveness and district-level ranking in the previous month. Both panels in Figure 5 show a strong correlation consistent with our first hypothesis.

Figure 6 shows the results for Models 3–4, which replicates Models 1–2 but replaces city-level with district-level ranking. The statistically significant and substantively meaningful results provide strong support for our hypotheses. Figure 7 further illustrates the marginal effects of previous month's district-level ranking. Specifically, based on Model 3, the left panel suggests that when a grassroots government's district-level ranking is higher than 10, it is likely to reduce its responsiveness in the next month. A grassroots government with the highest ranking may reduce its responsiveness by 4%. By contrast, when a grassroots government's ranking is lower than 10, it will likely reduce its responsiveness in the next month. A grassroots government with the lowest ranking may increase its responsiveness by 15%. Based on Model 4, the right panel illustrates the average marginal effects of district-level ranking in the previous month contingent on span of control. As span of control increases from 9 to 43, the average marginal effect

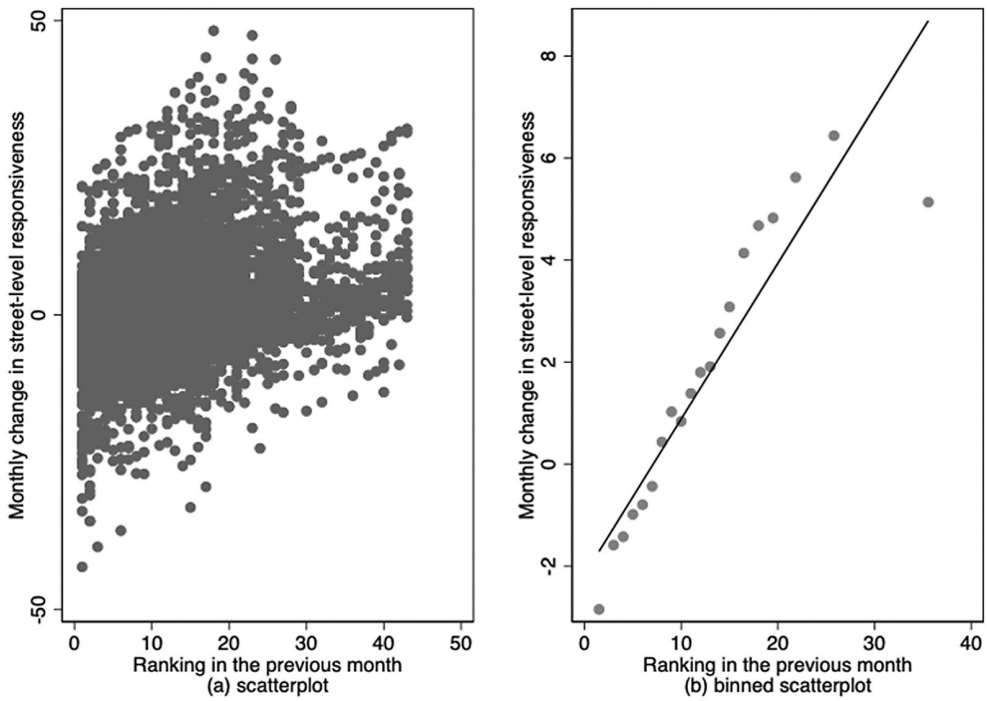


FIGURE 5 Bivariate correlations between monthly change in grassroots responsiveness and performance district-level ranking in the previous month.

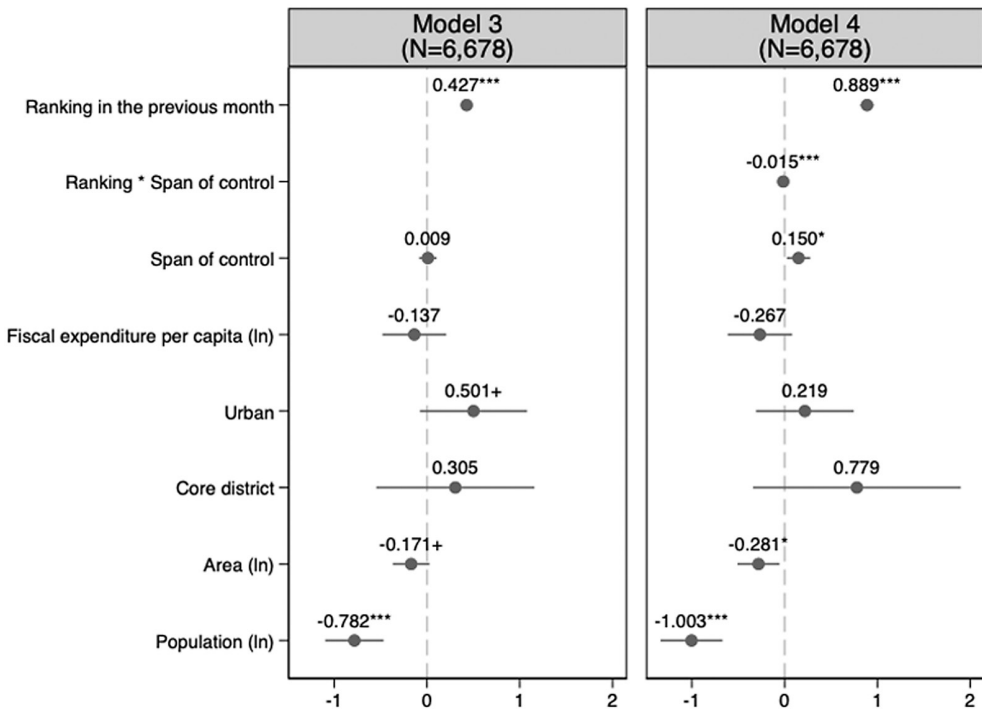


FIGURE 6 Replication of Models 1–2 replacing city-level with district-level ranking.

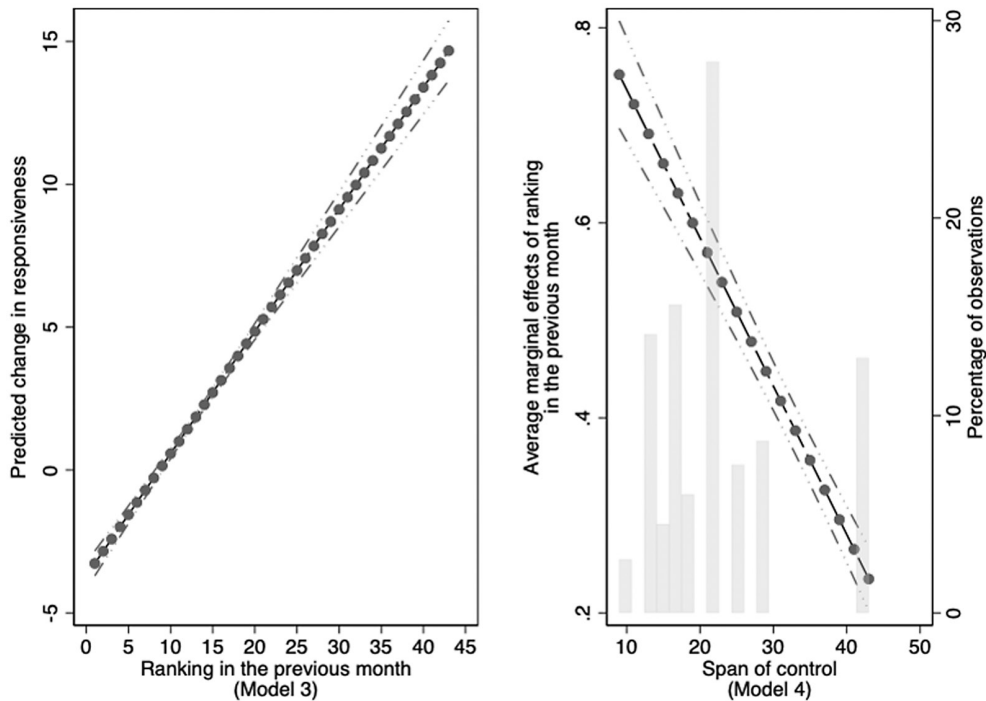


FIGURE 7 Marginal effects of district-level ranking in the previous month.

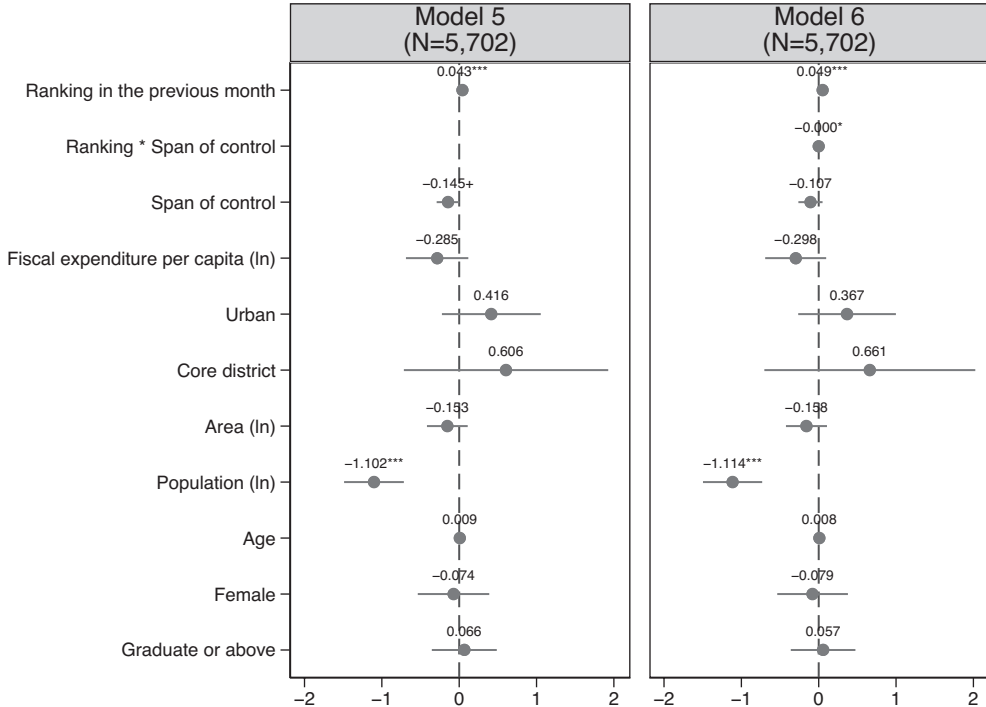


FIGURE 8 Replication of Models 1–2 including the leader-level controls. <sup>+</sup> $p < .1$ ,  $*p < .05$ ,  $**p < .01$ ,  $***p < .001$ ; OLS with clustered SE; outcome variable = differenced monthly responsiveness; month and district dummies included; 95% confidence interval.



of a one-unit decrease in district-level ranking on the monthly change in responsiveness significantly decreases from 0.75% to 0.25%. These findings suggest that district-level ranking has more substantial effects on grassroots governments' decision-making than city-level ranking. In other words, in addition to span of control, administrative hierarchy may also modify the effect of ranking position.

Second, as Figure 8 shows, we further include leader-level controls in the models to rule out potential rival explanations based on leadership characteristics. For instance, a leader's ability or preference may simultaneously affect an organization's ranking position and responsiveness to the public. Nevertheless, we find no statistically significant evidence to support the effects of age, gender, or education on changes in grassroots responsiveness. Moreover, the findings reported by Models 5–6 suggest that the effects of ranking in the previous month, span of control, and their interaction term remain consistent with those reported in Models 1–2. These results provide further evidence to support our hypotheses.

Third, as mentioned above, the outcome variable has a fat-tailed distribution and the outliers might bias our baseline results. Therefore, as Figure 9 shows, we replicate Models 1–2 by only including observations with the outcome variable ranging between  $-15$  and  $+15$ . In other words, 8% of outcome variable observations with extremely low or high values are excluded. Notably, the point estimates of the effects of ranking in the previous month and span of control in Models 7–8 diminish; the statistical significance of span of control also decreases. Nevertheless, the directions of the coefficients of key variables remain consistent with the baseline results and the hypotheses.

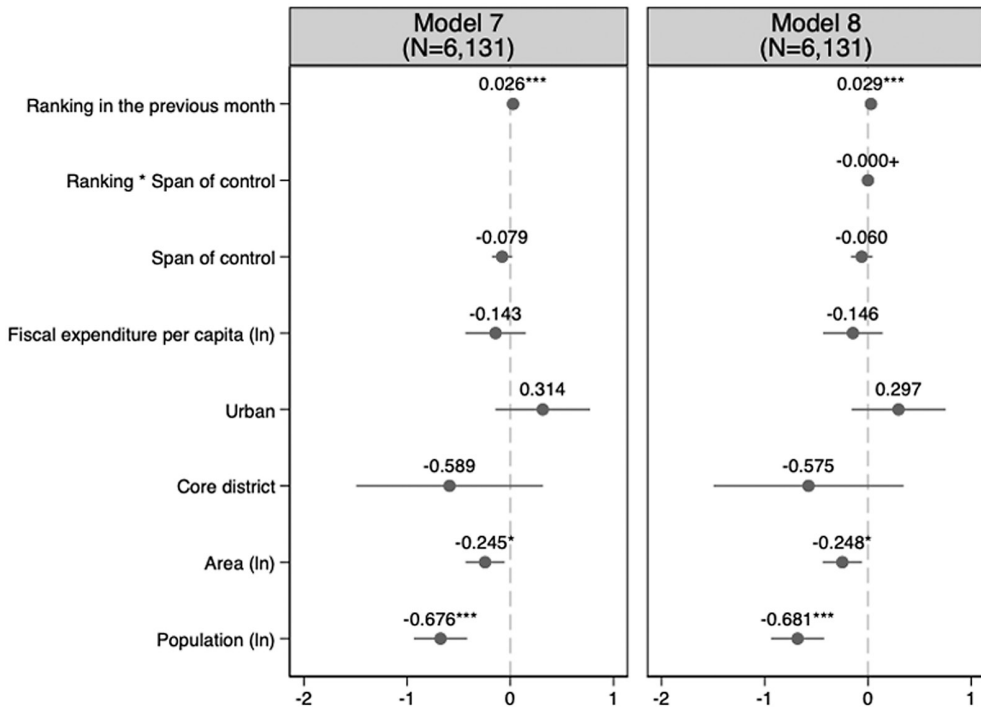
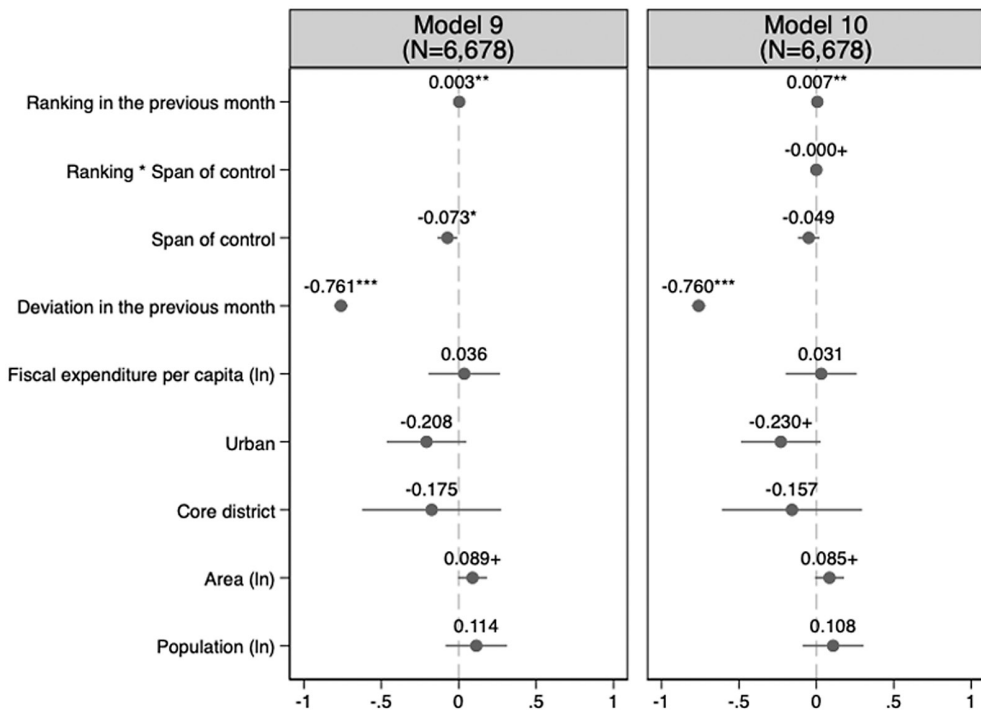


FIGURE 9 Replication of Models 1–2 only including outcome variable observations ranging between  $-15$  and  $+15$ .  $^+p < .1$ ,  $^*p < .05$ ,  $^{**}p < .01$ ,  $^{***}p < .001$ ; OLS with clustered SE; outcome variable = differenced monthly responsiveness; month and district dummies included; 95% confidence interval.

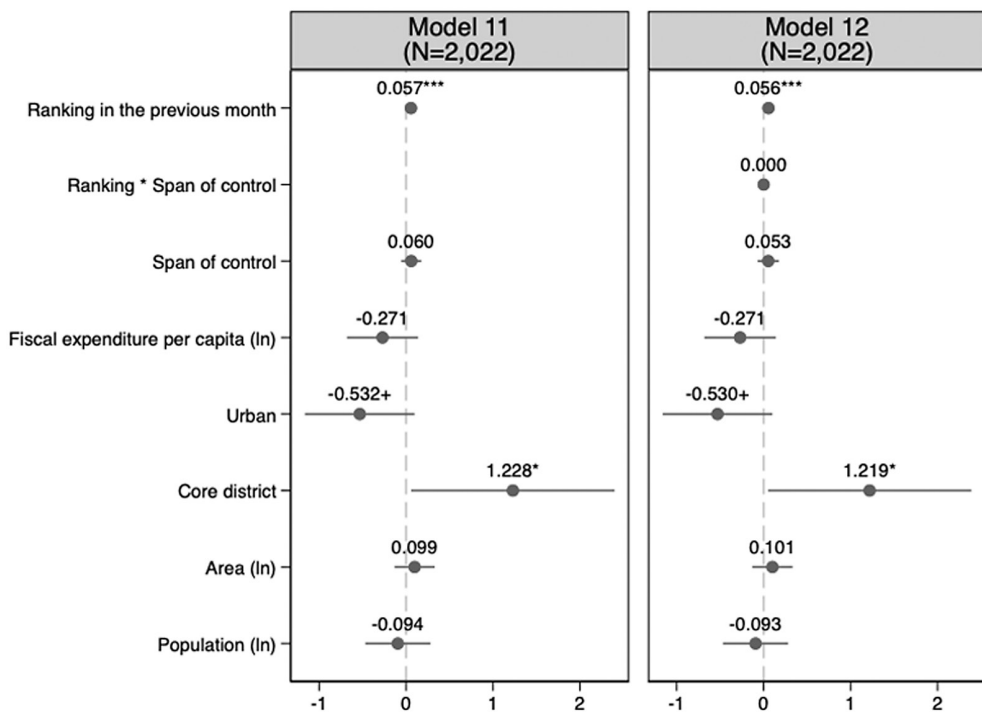


**FIGURE 10** Replication of Models 1–2 including monthly deviation from each government's average responsiveness in the previous month. <sup>+</sup> $p < .1$ ,  $*p < .05$ ,  $**p < .01$ ,  $***p < .001$ ; OLS with clustered SE; outcome variable = differenced monthly responsiveness; month and district dummies included; 95% confidence interval.

Fourth, grassroots governments' responsiveness may naturally vary around their expectations due to luck, noise, or random errors. In other words, the empirical findings could result from "regression toward the mean" rather than grassroots governments' strategic choices. To address this concern, we first calculated each government's mean average responsiveness in the observation period. We then included each government's monthly deviation from its average responsiveness in the statistical models to control for the potential effect of "regression toward the mean." Notably, this empirical strategy makes it much more difficult for us to identify the independent effect of performance ranking. Nevertheless, as Figure 10 shows, the main empirical conclusions remain consistent with the baseline findings despite smaller coefficients.

Fifth, due to the limited range of the responsiveness scores provided by the CSC, it might be difficult for some grassroots governments to adjust their responsiveness because their responsiveness scores are near the top or bottom. To reduce this potential confounding effect on our findings, as Figure 11 shows, we replicate Models 1–2 by only including observations with the monthly ranking ranging between 101 and 200 each month. Again, the directions of the coefficients of key variables remain consistent with the baseline results and the hypotheses.

Sixth, the COVID-19 pandemic might have significantly shaped how grassroots governments respond to public complaints. Figures 12 and 13 show that we replicate Models 1–2 by only including observations before or after December 2019. The findings generally remain consistent with the baseline results and the hypotheses. Additionally, the findings suggest that performance ranking and the span of control have weaker effects on grassroots government responsiveness after the outbreak of COVID-19. One potential explanation for these findings is that grassroots



**FIGURE 11** Replication of Models 1–2 only including observations with monthly ranking ranging between 101 and 200. <sup>+</sup> $p < .1$ ,  $*p < .05$ ,  $**p < .01$ ,  $***p < .001$ ; OLS with clustered SE; outcome variable = differenced monthly responsiveness; month and district dummies included; 95% confidence interval.

governments had to prioritize preventing and controlling COVID-19 due to the central government's campaign-style Zero-COVID policy issued after January 2020.

Finally, we also test the potential nonlinear effects of span of control on the outcome variable by including its squared term in the models (Lü & Landry, 2014). However, there are no statistically significant findings to support this nonlinear effect and thus we do not report them here.

## DISCUSSION AND CONCLUSION

Performance ranking has become an increasingly popular public sector management approach. This study explores how grassroots governments strategically adjust their responsiveness according to their ranking position and span of control. The theoretical analysis shows that when a superior government ranks grassroots governments' performance according to their public responsiveness, the marginal return of improving responsiveness decreases as the ranking increases. Moreover, given its role in determining the effectiveness of monitoring costs and promotion opportunities, span of control further weakens grassroots governments' responses to their ranking positions. We empirically corroborated our hypotheses using an original monthly panel dataset derived from a recently adopted ICT complaint system in Beijing, China.

This work contributes to the existing literature in at least three ways. First, we establish a theoretical relationship between performance ranking position and grassroots government responsiveness. Existing government responsiveness research mainly focuses on how policy decisions (e.g., fiscal resource allocation, speeches, or documents) reflect public preferences

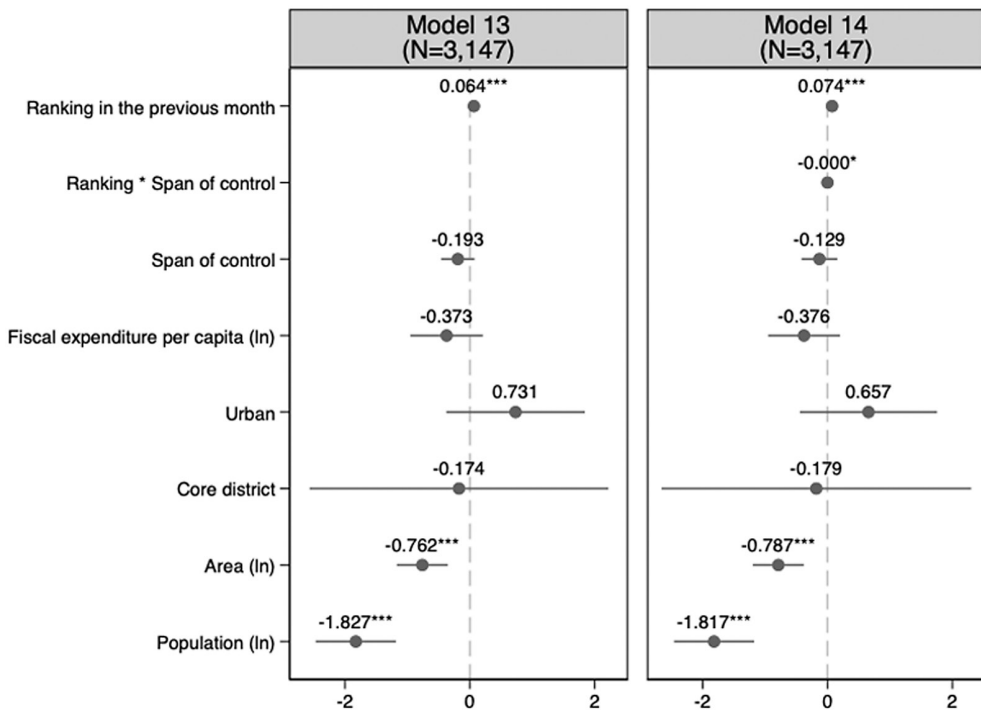


FIGURE 12 Replication of Models 1–2 only including observations before December 2019. <sup>+</sup> $p < .1$ ,  $*p < .05$ ,  $**p < .01$ ,  $***p < .001$ ; OLS with clustered SE; outcome variable = differenced monthly responsiveness; month and district dummies included; 95% confidence interval.

(Grossman & Slough, 2022). There is still a limited analysis of government responsiveness in the implementation stage. Meanwhile, although performance ranking based on ICT complaint systems has been increasingly adopted worldwide, we still lack theories and evidence to explain how such managerial reforms affect government responsiveness. This study took the first step toward exploring this influence and thus provided new theoretical insights into understanding the determinants of grassroots government responsiveness.

As Merton (1968) suggested, besides the manifest functions (i.e., the intended or expected outcomes), every social structure might also involve latent functions (i.e., the not-so-obvious or unintended outcomes) or even dysfunctions that undermine the operation of the system. In recent decades, studies have widely suggested that performance measurement might induce strategic responses from agents (Muller, 2019). For instance, public managers may pay disproportionate attention to the observable indicators stipulated by a performance regime rather than their actual responsiveness to each resident (Li, 2015). This work adds to the literature by showing that even if information distortion caused by problematic performance measurements has been reduced by ICT complaint systems, existing performance ranking regimes may still induce strategic responses across public organizations due to their differing motivations and marginal costs.

Further, our findings suggest that the role of government organizations' structural characteristics in shaping government responsiveness deserve more attention. Modern multilevel governance systems can be characterized by at least two structural characteristics: span of control and administrative hierarchy. Our baseline findings show that the effects of ranking position on grassroots decisions are contingent on span of control. Moreover, robustness tests reveal that administrative hierarchy is also likely to modify the effect of ranking position. This finding is intuitive

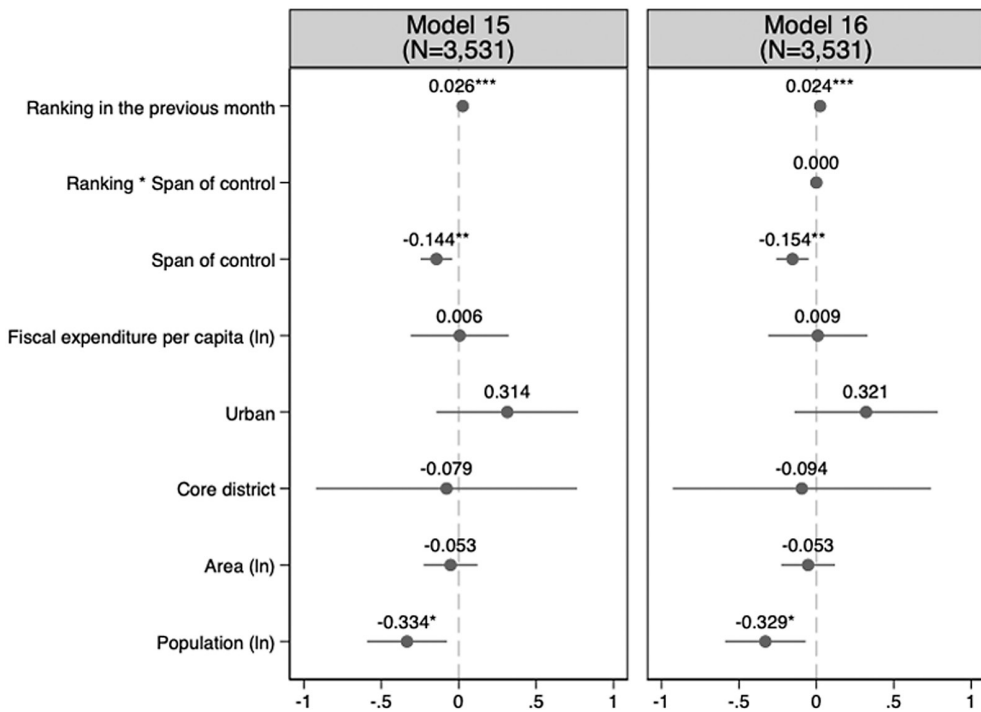


FIGURE 13 Replication of Models 1–2 only including observations after December 2019. <sup>+</sup> $p < .1$ ,  $*p < .05$ ,  $**p < .01$ ,  $***p < .001$ ; OLS with clustered SE; outcome variable = differenced monthly responsiveness; month and district dummies included; 95% confidence interval.

because superiors along the administrative hierarchy may have significantly differing resources, capabilities, and motivations in terms of punishing or rewarding subordinates. Therefore, this study highlights that structural characteristics of government organizations should be examined in more detail in terms of their effect on grassroots government responsiveness.

Second, this study empirically expands the scope of existing research on government responsiveness by testing theoretical hypotheses using a monthly panel dataset collected from 333 grassroots governments in China. Because government responsiveness to the public has long been viewed as a central democratic value, most existing studies derive their conclusions from evidence in countries with an electoral democracy (Besley & Burgess, 2002; Cleary, 2007). However, recent evidence suggests that countries without a typical democratic electoral system also exhibit substantial responsiveness to public requests and concerns in order to promote socioeconomic development (Distelhorst & Hou, 2017; Guo et al., 2022; Speer, 2012; Su & Meng, 2016). Our findings complement this literature by providing original systematic evidence drawn from grassroots governments in Beijing, thus facilitating understanding of government responsiveness in non-Western or nondemocratic contexts.

Third, on a practical level, this work could help practitioners more comprehensively grasp the consequences of implementing performance measurement and ranking reforms enabled by ICT complaint systems. Generally, ICT complaint systems can help supervisors collect information on their subordinates' service quantity and quality (Micheli & Pavlov, 2020). However, our analysis shows that subordinates with different ranking positions may strategically adjust their efforts according to the marginal returns of performance improvement. Therefore, practitioners could attempt to develop solutions before introducing performance management reforms. For



instance, besides the extrinsic incentives imposed through performance ranking, practitioners should also keep improving the compatibility of their subordinates' intrinsic motivations with public requests and concern through additional training programs or managerial communication (Ritz et al., 2016; Taylor, 2021).

For future research, our findings suggest that the latent functions or dysfunctions of public sector performance management should receive more attention. Moreover, this study might be limited by its reliance on subjective rather than objective measures of government responsiveness due to the potential sampling errors associated with the follow-up telephone surveys conducted by the CSC. Therefore, systematic evidence on grassroots governments' actual behavioral changes in more countries should be collected to further verify, refine, or expand our theoretical or empirical analyses. Finally, because of resource constraints, this study only studied the strategic interactions between superiors and subordinates within the public sector. Future research could further explore how the performance regimes enabled by ICT complaint systems shape the potential strategic interactions between grassroots governments and citizens.

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