Small-Province Bias in China

Abstract

Many national governments provide outsized attention to smaller provinces. This bias is often ascribed to institutions allotting each province equal representation and thereby giving small-provinces more electoral and policymaking weight than their population share merits. However, governments have incentives to disproportionately favor smaller provinces even without institutional mechanisms that treat provinces equally. As evidence of this possibility, from 2012 to 2020 high-level national leaders of the People's Republic of China did not allocate their time visiting provinces in proportion to the provinces' population, tending instead to exceed that proportion for small-population provinces and fall short of it in large-population provinces.

Keywords: disproportionality, underrepresentation, subnational governments, scale, government attention, China

Institutional geography has consequences for how governments direct their attention and for what policies they enact. For example, the location of a jurisdiction's capital city affects everything from spending patterns to public corruption (Campante and Do 2014; Dascher 2000; Kaufmann et al. 2016). Similarly, the way space is partitioned into electoral and administrative units has pointed consequences for political outcomes (Chen 2010). Institutional designers can, as prominently seen with gerrymandering, intentionally devise territorial units to benefit preferred groups and places (Dragu and Rodden 2011), but even unintentional malapportionment can shift the distribution of government effort across space. This prominently manifests in small provinces' overrepresentation in the upper houses of bicameral legislatures (Samuels and Snyder 2001). The United States' Senate, to take one prominent example, gives disproportionate policymaking power to rural areas, so pork-barrel spending concomitantly flows there and the agricultural sector gets extensive government support (Stephens 1996; Thies 1998).

Much of the existing literature about the consequences of institutional geography, however, focuses specifically on democracies and institutions that explicitly weigh subnational units equally regardless of size. This focus makes sense, since one of the main measures of institutional effect is deviation from equal allocations per capita, a natural complement to the "one person, one vote" input of democratic institutions. Moreover, the theory of why political institutions' handling of space and place matters often hinges on questions of representation and the votes of residents of particular locations. Representation and voting, being core to democratic ideals, plainly have specific connections to democracy. Those gerrymanderers grouped places specifically to manipulate election results, an irrelevant consideration in regimes that do not involve actually contested elections.

Yet just as strategies of democratic institutional design can have analogues in non-democratic systems (Malesky 2009), the geographical consequences of institutions may also echo in authoritarian regimes (Gandhi 2008). Even governments not constrained by a need to win popular affirmation at the ballot box can feel pressure from popular opinion or bureaucratic actors to respond to institutional structure. Just as being in a small province can give a place greater heft in electoral institutions, the presence of a provincial administration dedicated to a specific place can create pressures for that place to draw government resources as the local government advocates for itself. At the same time, the very fact that a relatively minor-seeming locale obtained its own representation can indicate that it is a place that the institution designers thought deserved to punch above its seeming weight. This reinforces the likelihood that the government will favor smaller subnational divisions with more attention than their share of the population might seem to merit.

To test the hypothesis that smaller provinces may attract more than their share of government resources, I draw on data from the People's Republic of China. In particular, the analysis considers patterns in the publicly announced domestic travels of the two main leaders of the country, Xi Jinping and Li Keqiang, between their accession to leadership of the Communist regime in 2012 and the start of the COVID-19 pandemic in 2020. The personal attention of such high-level leaders, as a finite resource, is a costly signal of the government's attempts to indicate connection to different regions under its control. In the Chinese case, lower-population provinces (including other, equivalent first-level administrative divisions such as autonomous regions, municipalities, and special administrative regions) prove to have received an outsized share of attention as indicated by the number of days the leaders spent in the provinces: the lower the population of a province, the more time per resident the leaders spent in those provinces, on

average. The tendency for governments to balance resources across subnational geographical divisions and therefore "overrepresent" lower-population units appears then to extend beyond the democratic context to shape authoritarian governance as well.

Theoretical Background

Scale matters for political geography; thinkers since ancient times have dilated on how larger or smaller units affect politics (Golding and Golding 1975). Territorially smaller or more compact units can expedite institutional interactions (Stasavage 2010), for example, while larger units can capture additional efficiencies of administration (Alesina and Spolaore 2005). Moreover, different political functions can require differing scales, and governments have reason to want information comparing places internally within their jurisdiction in order to effectively direct policies where their effect might be most needed or desired. Hence, for statistical and administrative purposes, even highly centralized regimes typically subdivide their territory into units smaller than the whole.

These units themselves tend to vary in area and population, however. The landmarks that define natural areas may differ, for example between expansive plains and cramped valleys (Hortas-Rico and Rios 2020). Meanwhile, people are born in and move to new locations, so that the number of residents in any unit is constantly changing—often with an internal logic where the places that have been growing recently will continue to do so, in a positive feedback cycle (Fielding 1966). While for purposes of apportioning electoral districts, populations can be kept relatively equal, this both requires constant administrative effort and means that the units would repeatedly change in ways that complicate over-time comparisons. Thus, in practice, some administrative units generally end up larger than others, and variations in unit size can associate

with divergent social and political outcomes (e.g., Larraz and Sun 2022). Such variation need not imply any disparities in government attention: policymakers could mirror the differences in unit size when they allocated resources across units. Various forces, however, make it likely that governments will not achieve such proportionality, but will in many circumstances tend to give larger units less than their share, and smaller units concomitantly more.

One process encouraging this result is that constitution designers, when partitioning territory into administrative units, can intentionally differentiate those units. They may carve out smaller provinces for preferred locations or groups in order to provide them with extra resources or consideration while consigning others to the neglect of a larger, less-tailored jurisdiction. For example, in colonial or quasi-colonial arrangements, colonizers may set up smaller territorial units to represent co-ethnics whereas mostly Indigenous areas are less likely to get dedicated government representation, as with France's departments in Algeria. Or a group may extract its own smaller-scale territorial representation through threat of force: in an attempt to defuse a local insurgency, India created Nagaland out of Assam in the early 1960s even as other states mixed together more and larger identity groups (Johari 1975). When small provinces are set up specifically because the government wants to (or feels compelled to) give those provinces' populations extra attention, it is likely that the local populations will receive more than their share of government attention.

But even if provincial boundaries were determined randomly, with smaller provinces providing no initial indication of a privileged populations on whom the government seeks to lavish particular consideration, differences in unit size produce their own institutional logic. The mere existence of a unit can create various pressures for government attention, services, and facilities located in or dedicated to that unit. While these pressures may not demand rigid equal

provision across the units, any impetus to ensure smaller units get something tends to push towards their overrepresentation.

One potential source of pressure along these lines is officeholders whose remit is coextensive with a particular unit. When officials have responsibility for a section of territory, local outcomes will likely affect those officials' prospects for continuation in office or for career advancement (Li et al. 2019). In consequence, the officials have incentives to become advocates for the central government to devote resources and attentions to their constituency (Lam 2010). Even without having a direct vote in national policymaking as members of a national legislature representing the subnational unit might have, officials such as provincial governors (elected or appointed) can create a similar effect favoring smaller provinces through their efforts to secure benefits from the national government. That is, those with responsibility for a territorial unit have an incentive to lobby for more transfers and largesse for their local constituents. Receiving such benefits both demonstrate those subnational leaders' influence and potentially improve local outcomes, thereby demonstrating the ability to produce positive social and economic outcomes, whether through connections or through competence. Since each lower-level unit tends to have one governor or government—the same as other units, regardless of those units' size—this channel tends to provide each unit comparable voice in policymaking, thus overweighing smaller provinces.

It furthermore can matter that people have attachments and identities tied to places. This includes the places defined by administrative boundaries, both because subnational units often are demarcated to group people with a shared identity and because associating together within a defined administrative unit can help create a sense of common identity and interests (Desmet et al. 2022; Fitjar 2010): studying together at a university, or cheering for a football team,

associated with the local district, can help lead people to identify with that district (Shobe 2008). National governments that wish to show that they stand for and have a connection to their whole territory, then, may be obliged to devote resources to, and be seen to devote resources to, all territorial units that map on to the population's identities. Provinces and other administrative units that nurture a sense of coherent identity create an expectation that leaders acknowledge and cater to the units involved relatively regardless of size. In fact, in many contexts being part of a smaller territorial unit or identity group can intensify identification with the group, so smaller units may have especially adamant hunger for government acknowledgement (Nagtzaam and Louwerse 2022; van Oudenhoven et al. 2010).

This points to several mechanism, from biased initial demarcation of boundaries to unit-government lobbying to popular identities, that do not rely on processes that formally give subdivisions equal votes in policymaking. Institutions that do award each subdivision equal voice—or unequal voice but with compressed differences in the numbers of votes compared to the underlying differences in size among the subdivisions, so-called "degressive proportionality" (Koriyama et al. 2013)—would to be sure amplify or exacerbate the tendency for small provinces to get more than their share of government attention. Arguments that such institutions distort power, concentrating it among residents and representatives of smaller divisions, may however be overstated when the maldistribution of government resources also occurs in their absence. This point parallels other arguments about the political effect of territorial divisions, such as that the seeming effect of gerrymandering may partially reflect underlying geographic processes of how people behave in space (Rodden 2019). Institutional effects build on other forces, so that even absent the seemingly distortionary institutions, politics may not treat smaller and larger units in proportion to their size. Moreover, while small-province biases can sometimes

arise in conjunction with other institutions that favor large provinces, none of the arguments here required that sort of balancing act. Institutional logic may give relatively small provinces advantages in attracting outsized government effort even without multiple veto players representing different constituencies.

Materials and Methods: Chinese Leaders' Attention across Provinces

Consider the People's Republic of China. The country's institutions, while allowing provinces (I will use the term to generically include province equivalents, including autonomous regions, centrally-administered municipalities, and special administrative regions) some autonomy in matters such as how they raise revenue, also feature strong political centralization with little formal representation of provinces in central-government policymaking (Blanchard and Shleifer 2001; Zhang 2009). In fact, the central government exercises relatively strong control over many aspects of subnational governance (Dong and Kübler 2019). The country's legislature, the National People's Congress, is to be sure mostly elected by province-level bodies, based on a formula including not only population but also a cross-province equality, which would tend to lead to overrepresentation of lower-population provinces.[1] However, the degree to

[1] In the official English translation, Chapter IV, Article 16 of China's Election Law says that "the number of National People's Congress deputies of a province…shall comprise the number calculated based on the population, the equal base number and other numbers of deputies to be elected" (National People's Congress 2020). The base number is not specified for the national congress, and the "other numbers" could either exacerbate or mitigate disproportionalities across provinces.

which legislators actually represent the provinces that elected them is limited. They, for example, need not have much direct connection to or residence in that province. The National People's Congress also notably lacks a second chamber that explicitly represents provinces. In any event, it is a relatively weak legislature with limited autonomy; even within its circumscribed role, it often does not function as a representative tribune of specific constituents (Truex 2014). Instead, most power is vested in more-centralized institutions that act at the command of the leaders of the Chinese Communist Party.

This sort of unitary, authoritarian context involves neither the sort of democratic institutions designed to foster equal representation nor most of the institutional structures that give all provinces equal authority in central decision-making and so overrepresent smaller provinces. However, the absence of democratic constraints does not on its own provide much indication about what form any deviations from equality would take. Authoritarian leaders presumably have extensive freedom to allocate resources disproportionately to larger provinces, or smaller ones, or indeed to any pattern of provinces they preferred. An unconstrained institutional framework, of course, also allows autocrats to be scrupulously proportional in their governance.

Nevertheless, China has several characteristics that the theoretical discussion above suggested might motivate disproportionate government attention to smaller provinces. Provincial leaders have long engaged in feisty competition with one another across a wide range of issue areas (Caldeira 2012; Chien and Gordon 2008; Wang and Lei 2021), with concomitant interest in attracting government resources (Landry et al. 2018). The country also has pronounced provincial identities (Goodman 2002; Horowitz and Marsh 2002; Oakes 2000), which the public may feel to be honored by government attention to the province or slighted by government

inattention. These were precisely the conditions noted as potentially encouraging equal attention to provinces regardless of size, thereby giving more attention on a per-resident basis to the smaller provinces.

The Chinese case offers less reason to suspect that smaller provinces arose specifically in an attempt to cater to groups favored by modern-day leadership, if only because most Chinese provinces have endured in roughly their present form for generations (Donaldson 2010; Sng et al. 2018). Changes to provincial definitions have to be sure occurred in the modern period, as when Chongqing was separated from Sichuan to become a province-equivalent municipality in 1997 or Hainan separated from Guangdong in 1988. But these changes have been exceptions in a pattern of mostly longtime stability. Favoritism, though possible, would have to be exceptionally persistent to have both produced relatively smaller provinces at the long-ago time of their creation and also lead to any possible disparities in 21st-century government attention.

Focusing on provinces fits with recent increases in scholarly attention to subnational variation within China (Rithmire 2014). Despite the nominal centralization of the country as a hierarchical one-party authoritarian state, it exhibits a variety of regional disparities in governance (Wilson 2016). And government attention in particular has been linked to varying political and policy outcomes across China's provinces (e.g., Liu et al. 2022), so differences in government attention across provinces matters beyond those differences' potential intellectual interest.

Yet assessing how an autocratic government such as China's allocates its public attention can be difficult. One common tactic to operationalize the concept in studies of international relations considers the public appearances of leaders (Kastner and Saunders 2012): by dint of receiving an allocation of the leaders' finite time, places that the leaders visit have been given

government attention. Indeed, relating specifically to China, multiple data sets look at the travel patterns of the country's top leaders—typically the top two, both the president and the premier—as a measure of the world regions to which China is devoting diplomatic attention (e.g., Turcsányi et al. 2021; Wang and Stone 2022). The same logic applies domestically. With all the demands pressing upon the leader of a large country, choosing to devote time to visit a specific province or city indicates something about the government's interest in that location.[2] Several studies have analogously considered how visits by high-level Chinese leaders to domestic firms signal state attention to specific industrial sectors or economic trends (Li et al. 2022; Schuler et al. 2017), with the top leaders' visits sending the most important signals of government priorities (Zhang et al. 2020). The same holds true for governments and places as for businesses. That is, leaders' visits both represent a form of attention to the visited locality and a public avowal of that attention (Bliesemann de Guevara 2017), showing what the leaders want to be seen as being concerned with (even if they do not genuinely feel concern).[3]

Leader visits are particularly useful to test hypotheses concerning subunits of differing size because such visits have relatively limited economies of scale. This differs from many forms of fiscal expenditure, among other possible measures of government attention. When it takes less than less than a doubling of costs to double the number of students at a school, or when it does

[2] This is most often examined in the context of those seeking office (Wood 2016).

[3] Visits are also especially apt for a hypothesis where one motivating mechanism involves lobbying by subnational leaders. Opportunities to spend time with high-level national leaders can be key to gaining promotions given the central role of personal connections in China's political system (Ji 2020).

not require doubling the number of bureaucrats to process double the number of people seeking services, smaller provinces may appear to get a relatively large share of resources even if the quality of service is equivalent. But a leader making an appearance does not usually offer such returns to scale: it takes two days of the leader's time to make a two-day appearance in any province, large or small. Thus looking at leader travel is less likely to conflate reduced government attention with the fact that many government programs or expenditures may be less efficient in smaller provinces. Visits also, as discretionary acts by the national leaders, are relatively free from input from bodies such as the National People's Congress that might have biases in favor of smaller provinces because of their allocation of seats across provinces.

Visits as a form of government attention will tend to see overrepresentation of smaller provinces when leaders feel an obligation to make appearances in every administrative subdivision of the territory they represent (e.g., Slotnick 1961, 301–302). This can happen even when those subdivisions do not have formal voice in representation, as for example with the habit among Iowa's statewide politicians to do the so-called "full Grassley" and visit each of the state's 99 counties even though counties do not matter for electing statewide officials (Larimer 2015).[4] Politicians have made analogous efforts to visit every subdivision in other countries such as Turkey (Esen and Ciddi 2011, 20; McFadden 1985, 78) and Poland (Szczerbiak 2020). Visits accordingly seem to correspond in the domestic as well as the international context to

[4] Nor is going out of one's way to publicly acknowledge or represent every county or municipality, despite those division's lack of institutional relevant to selecting leaders, an idiosyncrasy of Iowa. Similar behavior recurs in other US states (e.g., Worthen 2006).

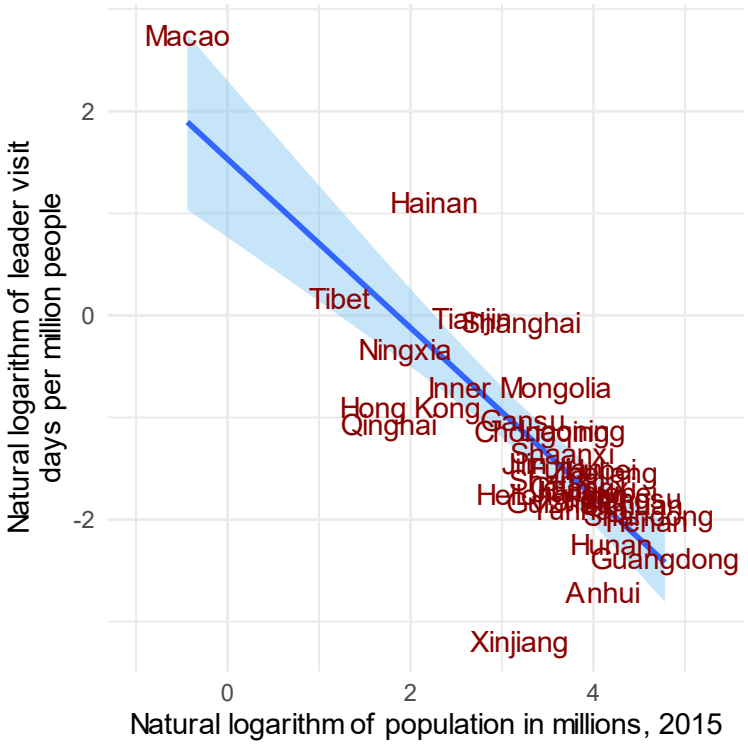
meaningful actions in which political leaders make strategic decisions about how to allocate their own time across space and territory.

To measure the distribution of government attention across Chinese provinces and province equivalents, I therefore follow the precedent of tracking the public appearances of China's top two leaders—the head of the Chinese Communist Party (Xi Jinping, in the period under study) and the national premier (Li Keqiang)—and track when these leaders appeared in each province other than Beijing.[5] Information about leader appearances comes from chinavitae.com, a compendium of press reports widely used in studies touching on China's leadership (e.g., Goldsmith et al. 2021; Jeffreys 2016; Tsai 2016), cross-checked using the official calendars reported at cpc.people.com.cn. These sources are used to count the number of calendar days the leaders appeared in each province from November 2012, when Xi Jinping acceded to the general secretaryship of the Chinese Communist Party and so as de facto head of government, to January 2020, when the COVID-19 pandemic started restricting leader travel. In counting the number of days in which a leader appeared in a province, the measure can count a leader as appearing in more than one province in a given day. For example, on April 20, 2017, Xi Jinping attended events in both Guangxi and Guizhou, while on October 31 of that year he appeared in both Shanghai and Zhejiang. In each such case, the measure counts the leader as having appeared in both provinces for the day, not implying that the leader spent the whole day there (just as a leader might fly in for a public speech before returning to Beijing the same day and be counted as having made the appearance in the visited province).

[5] Also excluded is China's claimed province of Taiwan, over which the Beijing-based government did not exert sovereign control.

Testing the hypothesis here involves assessing whether these visits are in proportion to the underlying province size. “Size” is measured as the province’s population as of 2015, near the midpoint of the study period, as reported by the National Bureau of Statistics (except for Hong Kong and Macao, where the source is each respective territory’s statistical agency). The relationship between this size measure and leader visit days per capita across the provinces is the central test of biases in favor of (or against) smaller provinces; to account for rightward skew in both variables, they are log-transformed in reported results. Leaders tending to visit smaller provinces more often than their share of the population would seem to warrant would produce a negative correlation between the variables.

Figure 1. Relationship between frequency of leader attention and province population size. Shaded area indicates 95% confidence interval on linear trend.



As a preliminary assessment of this possible relationship, Figure 1 plots the two key variables against one another, showing both the scatterplot of each province's values and the linear trend (with 95% confidence interval of that trend shaded). A negative association is evident, even if provinces such as Hainan or Xinjiang do diverge from the main trend line. Indeed, even a lowess or general additive model curve unconstrained to be a straight line shows a consistently downward slope (albeit somewhat less steeply downward in the portion of the graph's domain between the Tibet and Shanghai points, in the case of the lowess model).

Figure 1's simple bivariate scatterplot ignores the possibility of confounding variables. However, some additional factors are worth accounting for in more-formal hypothesis tests. For leaders based in Beijing, places near the Jingjinji metropolitan region require less time and effort to travel to than do those in the southern or western fringes of the country. It requires a greater investment to get to the far reaches of the country than to areas in Beijing's vicinity. Proximity to a national capital can moreover influence patterns of social and economic development (Pierskalla et al. 2017; Stahl 2022), perhaps especially in a centralized nondemocratic regime such as China's (Ades and Glaeser 1995). The unusual environment of places near the capital may accordingly have enterprises that particularly encourage or discourage attention from government leaders. Distance to Beijing may thus independently affect both the independent and the dependent variable of the hypothesis, thereby potentially producing the spurious appearance of a relationship between the variables of interest. Distance to Beijing is operationalized as the logarithm of the great-circle distance, in kilometers, between to the population-weighted centroid of the province as of 2015 as calculated in the GeographicCentroids database (Rigonz 2020). This measure attempts to capture that leaders typically travel by air and may go to various locations within a province but are typically likeliest to visit related populated locations.

Also potentially important, though ambiguously so, is the economic prosperity of the locale that the leader might visit. China's provinces vary notably in their wealth and incomes, with notable differences between north and south (Xie et al. 2022) and between coast and interior (Fan and Sun 2008). Leaders may be attracted to richer places to bring attention to, and associate themselves with, success stories and thriving industries. On the other hand, government concern for those economically less well-off—or for the potential for political unrest from those who feel left behind—may conversely spur leaders to devote attention to poorer parts of the country. The Chinese government has declaimed an aspiration for common prosperity across provinces, suggesting an interest in publicly demonstrating concern for lower-income provinces (Hong 2018). At the same time, affluence typically leads to in-migration and poverty to out-migration, so that the size of a province's population in part derives from its economic conditions (Gries et al. 2016). These economic conditions are measured here by the logarithm of per capita GDP as of 2015, in dollars, as reported by China's National Bureau of Statistics.

In light of the relatively small number of cases, the main models will include only these controls concerning distance to Beijing and per capita income. However, as additional checks, other variables are individually added to that baseline model. First, dimensions of social inequality other than income that might similarly attract attention to a government trying to emphasize social harmony. Some provinces have large ethnic-minority populations, for example; visible outreach to areas with such populations would be a relatively low-cost way for leaders to signal inclusivity to these minority populations. Ethnicity is measured with the natural logarithm of the percentage of the population that is not Han Chinese, based on figures from the 2020 national census, or from Hong Kong and Macao, from those territories' respective 2021 censuses.

Even aside from ethnicity, regions of China vary in how well connected and visible they are. Going to places highly linked to the media and business worlds may make it easier for a public appearance to attract widespread attention, and at the same time it is easier for the government to learn about situations that might call for government attention in such places. As with income, however, the reverse is also possible, where less overexposed places may better appreciate government attention: Shanghai may take for granted attention that a prefecture in Gansu or Qinghai would gratefully enjoy. As a proxy for this sort of prominence, I use the city tier of the province's highest-ranked city in Yicai's first, 2016 rankings of Chinese cities, a widely used measure of cultural centrality of Chinese places (e.g., Cai et al. 2022).[6] Relatedly, but incorporating information beyond a single city that may not represent a province, the share of the population defined by the National Bureau of Statistics as living in urban areas in 2015 serves as an alternative proxy for connectedness.

Results

Table 1 brings together these variables in ordinary least squares (OLS) regressions. Province size has the predicted negative coefficient, and does so consistently throughout the table's models. The estimated effect sizes are both statistically significant at standard benchmarks as well as substantively appreciable. For example, the estimated association with

[6] The rankings do not include Hong Kong or Macao. The analyses reported here include Hong Kong in the topmost tier and Macao in the third-highest tier, as the equivalent of a "Tier 2 city" in the Yicai nomenclature. Results are relatively insensitive to alternative codings of these cases (or, as the next section shows, to omitting them altogether from the analysis).

Table 1. OLS models of days of visits by high-level leaders to Chinese provinces and province equivalents, 2012–2020. N = 32. Standard errors in parentheses.

Population size	-0.826	-0.780	-0.823	-0.979	-0.781
	(0.106)	(0.114)	(0.140)	(0.210)	(0.116)
Distance to Beijing		-0.257	-0.228	-0.266	-0.246
		(0.152)	(0.164)	(0.152)	(0.171)
GDP per capita		0.374	0.315	0.015	0.308
		(0.208)	(0.238)	(0.381)	(0.512)
Ethnic minority percent			-0.053		
			(0.099)		
Tier of most-prominent city				-0.238	
				(0.211)	
Urbanization percent					0.003
					(0.020)
Constant	5.338	3.208	3.999	8.686	3.599
	(0.854)	(2.859)	(3.254)	(5.640)	(4.012)

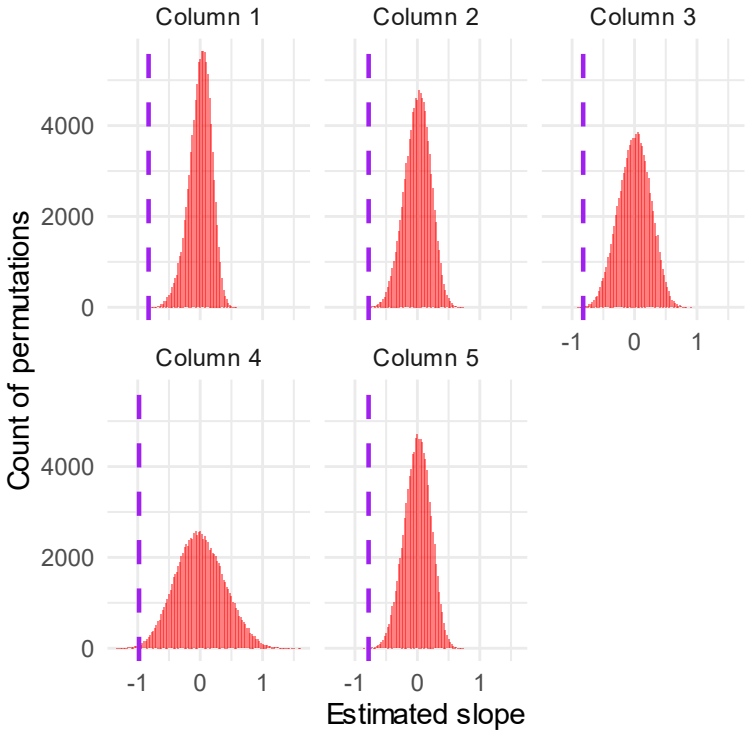
province size in Table 1's second column—the model in the table finding the smallest effect size for province population—implies that a province at the 25th percentile in population (roughly the size of Inner Mongolia) would have almost exactly twice the number of leader-visit days per capita as would one at the 75th percentile (roughly Zhejiang's size). This is a much stronger and more consistent relationship than is seen with any of the other predictor variables in the table,

although the point effects of the estimates suggest that China's top leaders may be somewhat more frequent visitors to provinces geographically closer to Beijing and to more economically prosperous (or connected, when the city-tier measure is included) places.

The assumptions of a regression model can, however, be misleading for small samples, especially in the calculation of statistical significance. One standard methodological recommendation to clarify the meaningfulness of regression results for small samples is thus to use a permutation test (Berry et al. 2011). This involves randomly reassigning the values of the dependent variable across the observations and then estimating the regression models on the simulated dataset with the permuted dependent variable; comparing the observed relationship in the actual data with the distribution of these simulated slopes provides a nonparametric indicator of the statistical significance of the observed effect while preserving the interrelationships among the predictor variables. Figure 2 accordingly presents the results of such permutation tests for the Table 1 models, with 100,000 resamples of the dependent variable for each of the models. To the extent the observed slope in Table 1's actual model—marked in Figure 2 with dashed vertical line—diverges from the mass of the simulated distribution, it suggests that the observed effect is distinguishable from a null effect.

The observed coefficients are throughout Figure 2 distinct from the simulated outcomes. Only a tiny fraction of the 100,000 permutations result in a coefficient as large as that observed. The highest implied *p* statistic occurs in the fourth column's model, the one controlling for the tier of provinces' premier city. In that case, the relatively high dispersion of the simulations implies a (two-tailed) *p* of roughly 0.008. Even in this permutation test relaxing several of the assumptions of traditional regression standard errors, then, the inverse association between province size and leader attention appears to hold with relatively high statistical confidence.

Figure 2. Permutation tests of statistical significance of Table 1 models. Dashed line indicates Table 1's slope on province size; shaded distribution shows slopes of 100,000 simulated permutations of the associated model.



Robustness Tests

Although a permutation test helps ensure that flukish anomalies in the small sample do not drive observed results, more theory-driven reasons may suggest that specific observations are so unusual that they may implicate distinct decision-making processes by national leaders. Including these observations with a distinct data-generating process may contaminate the larger sample and suggest misleading conclusions when included with the other Chinese provinces.

Perhaps most notably, the Special Administrative Regions of Hong Kong and Macao have histories and institutional arrangements unlike those of most other province equivalents. Colonial coercion determined their sizes and trajectories of population growth. Furthermore, the

Special Administrative Regions often require separate data sources, as when the main National Bureau of Statistics does not report information about them and so territory-specific analogues are needed. And as Figure 1 shows, Macao is substantially less populous than is any other province-equivalent unit. Being such an outlier on the independent variable may make it especially influential in the calculation of regression coefficients.[7] Consequently, estimating models without the Special Administrative Regions may provide greater certainty that those two atypical observations are not the sole determinant of Table 1's results.

Hong Kong and Macao are not the only province equivalents with distinctive features. During the period studied, both Xinjiang and Tibet saw widespread unrest that may have complicated the security arrangements for a potential high-level visit. Meanwhile, Tianjin and Shanghai have the status of municipalities rather than provinces while also being relatively tightly constrained to a single metropolitan area, which may reduce the impetus for leaders to visit repeatedly.[8] And the province of Hainan, though small, hosts the Boao Forum, a major effort by the Chinese government to launch a multilateral event through which could exert diplomatic influence and so an unusually strong magnet for leader visits (dos Santos et al. 2022).

[7] Robust-regression models that use Huber weights to reduce the importance of high-residual observations produce results very similar to those of the reported OLS models, however.

[8] Chongqing is also formally a municipality rather than a province but includes many rural areas and encompasses substantially more territory than do the other municipalities—or even than the non-municipal province equivalents Ningxia or Hainan. Excluding Chongqing alongside the other municipalities does not substantially change results.

Nor is it merely the province cases that may produce potentially misleading results. Additionally, some of the visits might also reflect a distinct process, because they derive from the mostly exogenous occurrence of mass-casualty disasters. For example, after an earthquake devastated Yunnan and killed hundreds of residents in August 2014, premier Li Keqiang hurried to the province to pay respects, demonstrate the state's concern, and (at least nominally) help supervise recovery efforts. Nor was this response limited to natural disasters; Li made a similar journey in August 2015 to Tianjin after a series of fiery explosions at a chemical-storage facility blasted the city's port area.

Such events are, fortunately, rare, but such rarity makes it possible that they may by chance have happened primarily in relatively smaller provinces during the study period. In that case, even if China's leaders do not generally spend disproportionate share of their travels in smaller provinces, the happenstance of those smaller provinces having suffered more disasters in this specific sample would make it appear that they do so. Of course, a propensity for hazards such as earthquakes could have discouraged settlement and led to locally smaller population, in which case it would not be entirely a coincidence that the disasters tended to reinforce the pattern hypothesized here. But a mechanism based on disasters is somewhat distinct from those discussed in the theories advanced above. To ensure such a mechanism is not the source of results, re-estimating the models while omitting disaster-related leader visit days from the dependent variable verifies that processes other than disasters are at play. To operationalize this systematically, leader visits are excluded from the alternative measure when they occurred within a week of mass-casualty event that caused 25 or more deaths.

Table 2 presents re-estimations of the model from Table 1's second column, excluding these possibly misleading cases. The effect of size remains consistent throughout these

specifications, roughly the same magnitude as in the baseline model from Table 1. Only upon excluding Hainan does the coefficient shrink at all from the Table 1 number, and even in that case the diminution is small (and accompanied by a proportionally larger decrease in the coefficient's standard error). The stability in the estimated association with province size is especially noteworthy because the various models in the table do see much more dramatic changes in the predicted effects of the control variables: the model could in fact be sensitive to the sorts of changes made across the columns, but the effect of province size nevertheless remains robust to these variations.

Table 2. Reanalysis of Table 1's second column, omitting unusual cases. Standard errors in parentheses. Column headers describe omission from baseline model.

	Hong Kong and Macao	Xinjiang and Tibet	Shanghai and Tianjin	Hainan	Post-disaster visits
Population size	-0.811	-0.789	-0.794	-0.710	-0.787
	(0.129)	(0.109)	(0.118)	(0.096)	(0.113)
Distance to Beijing	-0.195	-0.145	-0.263	-0.331	-0.267
	(0.149)	(0.137)	(0.189)	(0.128)	(0.152)
GDP per capita	0.696	0.316	0.303	0.481	0.385
	(0.328)	(0.192)	(0.217)	(0.174)	(0.208)
Constant	-3.687	-0.518	0.352	-1.179	-0.411
	(3.417)	(2.270)	(2.692)	(2.089)	(2.507)
N	30	30	30	31	32

Conclusion

Governments often allocate resources across space in biased ways (Psycharis et al. 2021). One widely noted example of such biases is that smaller units often get more than what would seem to be their proportionate share of disbursements and government resources. This can be because the units are represented equally regardless of population—or, as in the case of legislative institutions from Canada to Cabo Verde to the European Union, where larger subsidiary units get more representatives but not as many more as their populations might imply. But such official malapportionment need not be present for a central government to give disproportionate benefits or attention to its smaller units. The above analysis shows that even in the People's Republic of China, which as a politically centralized, authoritarian regime has little direct electoral or institutional pressure to overrepresent its smaller provinces, the leaders seem to give disproportionate attention to lower-population provinces, as measured by how much time the highest-level national leaders spent visiting the country's provinces from late 2012 to early 2020.

China is of course only a single case, one with many unique features that may not all translate to other contexts, so future research should explore further whether other national and institutional contexts without direct representation of provinces see similar effects. Similarly, while government attention in the form of leader visits has particular applicability to the hypothesis examined here, that very compatibility may also mean that the patterns seen here may not extend to other ways that governments expend resources and signal priorities. Future work might consider analogous effects among alternative expressions of government attention to see whether the results here extend to various ways that policymaking bodies might show more concern for some of the subunits in their territorial remit than for others.

Still, China is an important case in its own right, as well as one that illustrates the possibility that small-province biases can emerge even without important decision-making institutions being constitutionally malapportioned to overrepresent smaller provinces. The hypothesis and results presented here suggest that the ways that territory is subdivided for governance may have independent effects on how politics and policy play out across geographic space. The lines that governments draw on their internal map can, in effect, reshape their own future actions.

Disclosure Statement

The author reports that there are no competing interests to declare.

Data Availability Statement

Upon acceptance of a final version of the article, replication data and code will be uploaded to a recognized data repository.

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