



The Program on Governance
and Local Development
at Gothenburg



The Social Bureaucrat: How Social Proximity among Bureaucrats Affects Local Governance

Tugba Bozcaga

Working Paper
No. 35 2020

The Program on Governance
and Local Development



UNIVERSITY OF
GOTHENBURG

The Social Bureaucrat: How Social Proximity among Bureaucrats Affects Local Governance *

Tugba Bozcaga[†]

September 24, 2020

For the most recent version of the paper click [here](#).

Abstract

Most studies that examine subnational variations in public services associate low government performance with a lack of accountability. I instead offer a capacity-based explanation. Specifically, I develop a theory based on bureaucratic efficiency and argue that bureaucratic efficiency increases with social proximity among bureaucrats, bureaucrats' informal ties with other bureaucrats in their jurisdiction, because informal ties do not only serve communication or socialization purposes but also decrease transaction costs associated with the production and allocation process of public services. Testing the observable implications of this theory, I find that social proximity, as proxied by geographic proximity, increases bureaucratic efficiency. However, in line with theoretical expectations, geographic proximity is less likely to lead to high bureaucratic efficiency in socially fragmented network structures or when there are ethnic divisions between bureaucrats. Six months of fieldwork in regions of Turkey with different political and ethnic geographies inform the descriptive inferences underlying the theory and its observable implications. I leverage a geographical regression discontinuity design to test my theory. My empirical tests employ novel administrative data from 30,000 villages and 970 districts in Turkey, geospatial indicators constructed using spatial analysis tools and satellite images, and antenna-level mobile call detail records. This study advances research on public goods provision by studying local public services outside of citizen-centered accountability explanations, instead revealing capacity-driven sources of government performance.

*I am indebted to Pablo Balan, Melani Cammett, Fotini Christia, Danny Hidalgo, Chappell Lawson, and Lily Tsai for invaluable advice and guidance throughout the project. I thank Ozgur Bozcaga, Asli Cansunar, Cesi Cruz, Alice Evans, Alisha Holland, Dan Honig, Guy Grossman, Michael Freedman, Varun Karekurve-Ramachandra, Horacio Larreguy, Ellen Lust, Nina McMurry, Pete Mohanty, Cleo O'Brien-Udry, Ken Opalo, Virginia Oliveros, Jeremy Spater, Tara Slough, Martin Williams, Weihuang Wong, and conference participants at NEWEPS, POLNET, PolMeth, and APSA for helpful comments. I also thank Kayihan Kesbiç for excellent research assistance. This project is supported in part by grants from the Program on Governance and Local Development (GLD) and MIT Center for International Studies. The fieldwork was conducted with IRB approvals from Massachusetts Institute of Technology (1607624773 and 1709073269).

[†]Ph.D., Department of Political Science, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA 02139; Research Fellow, Middle East Initiative, Harvard Kennedy School. Email: bozcaga@mit.edu, URL: tugbabozcaga.com

1 Introduction

Government performance in the provision of public services forms the foundation of citizen welfare and state legitimacy. Poor performance in service provision can undermine trust in the state and, when service quality correlates with identity cleavages in a country, can even fuel conflicts. As the real producers of public goods, bureaucrats are critical to public services. Yet, low government performance in public services is typically explained by a lack of accountability: when citizens are unable to hold politicians or bureaucrats accountable, politicians and bureaucrats are not incentivized to perform. As distinct from these approaches, I offer a capacity-based explanation for subnational variations in public service delivery.

Citizen-based accountability explanations¹ focus on politicians' and officials' *willingness* to provide quality public services (Besley and Burgess, 2002; Ferraz and Finan, 2011; Björkman Nyqvist and Svensson, 2007; Tsai, 2007), rather than on their equally crucial *ability* to do so. Moreover, given mixed evidence on electoral accountability and community oversight mechanisms, these approaches probably cannot explain all variations in service quality.² To fill this gap in the literature, I offer a theory based on bureaucratic efficiency³ in which transaction costs associated with the production process of public services (e.g., red tape, opportunistic behavior, allocative inefficiency) play the key role. Specifically, I argue that transaction costs within bureaucracy decrease with *social proximity among bureaucrats*—bureaucrats' informal ties with other bureaucrats in

¹Here, I refer to studies that explain subnational variations in public service delivery through citizen sanctioning and how politicians and bureaucrats respond to that.

²For extensive evidence on electoral accountability, see Dunning (2019). For a review of literature on community oversight, see Pande (2011).

³Throughout the paper, I use bureaucratic efficiency to refer to how effectively governance and service provision processes function, keeping the inputs constant. It concerns the extent to which bureaucracies can accomplish good outcomes using given levels of time and resources, or the amount of time and resources they need to achieve a certain outcome. Bureaucratic efficiency can involve informational improvements and improvements to bureaucratic accountability (bureaucrats' responsiveness to upper-level bureaucrats); bureaucratic monitoring (bureaucrats' ability to observe the behavior of upper-level bureaucrats); and cooperation between bureaucrats at similar levels of hierarchy and in different institutions. See Section 3 for a detailed discussion.

their jurisdiction—because informal ties not only serve communication or socialization purposes but also provide channels for informal information exchange and cooperation. Therefore, bureaucratic efficiency should be higher in communities characterized by high social proximity among bureaucrats.

I test two observable implications of this theory. First, we should observe high bureaucratic efficiency in political geographies with high social proximity between bureaucrats, as proxied by geographic proximity. Second, regardless of bureaucrats' individual geographic positions, we should see lower bureaucratic efficiency in socially fragmented community structures, that is, network structures characterized by high social distance across subcommunities, or between bureaucrats from different ethnic backgrounds. Social fragmentation and ethnic divisions make it more difficult to establish social ties and reduces the reachability of any given individual in the community, including bureaucrats, thus lowering bureaucratic efficiency.

To empirically test these implications, I leverage a geographical regression discontinuity design (RDD) that employs village-level data. A geographical RDD allows one to isolate the impact of potential alternative factors on bureaucratic efficiency by focusing only on villages close to district borders. Such villages are, by assumption, very similar in terms of their background characteristics, while the home district of a given village—hence the distance to district headquarters—changes sharply at the border. With respect to the first observable implication, I find that geographic proximity between bureaucrats increases bureaucratic efficiency. Other findings, which help to confirm the mechanisms through which geographic proximity operates, show that geographic proximity becomes a less relevant factor in socially fragmented communities or when there are ethnic divisions between bureaucrats. Empirically, I show that the effect of geographic proximity is heterogeneous across provinces with different levels of social fragmentation, as measured by network indicators. I also find that the effect of geographic proximity decreases when village officials are from Kurdish (ethnic minority) and Alevi (sectarian minority)

backgrounds, unlike in the case of the majority-Turkish and Sunni district officials with whom they need to cooperate.

I examine the roots of bureaucratic efficiency in Turkey, a Muslim-majority country characterized by a centralized state structure. This setting allows me to examine a context in which social ties are rooted in multiple factors, including ethnic divisions, hometown identities, and political cleavages, and to rule out alternative explanations of government performance, such as inequalities in government resources, that are commonly seen in federal systems. To isolate the role of bureaucratic efficiency from the incentives of local political actors, I focus on access two sectors that are entirely financed and administered by the national government: village infrastructure and e-government.⁴

Six months of fieldwork in regions of Turkey with different political and ethnic geographies, and qualitative data from over 200 interviews, inform the observable implications of and descriptive inferences underlying my theory. My empirical tests employ original datasets that consist of novel administrative, geospatial, and network data from Turkey's over 35,000 villages and 970 districts. Due to the limitations of data availability in Turkey where, as in many hybrid regimes, data accessible to researchers are limited, the main administrative data were obtained by scraping tens of thousands of official web pages. To map the geolocation, ethnicity, and sect of each village, I created two original datasets that combine information collected through automated tools and manual coding from government web pages, Google and Yandex Maps, ethnic inventories, and online communities. To my knowledge, this is the first dataset on the geographical and ethnic distribution of villages in Turkey. For network measures, I used antenna-level mobile call detail records (CDR) that cover all the districts in Turkey.

By showing that bureaucrats' informal channels can play a complementary role in service delivery (Helmke and Levitsky, 2004), this study fills several gaps in the liter-

⁴The municipal boundaries of metropolitan provinces were extended from urban boundaries to villages in 2014, rendering municipalities, in addition to the national government, the authorities responsible for village infrastructure. Nevertheless, the village-level research design of this study does not extend to the period after 2014.

ature. The first theoretical contribution of this paper lies in its study of subnational variations in public service delivery outside of elections and other accountability relationships centered on citizens.⁵ By studying bureaucratic performance outside of this accountability framework and shifting the focus from relationships with citizens to informal interactions among bureaucrats, this study balances approaches that place too much faith in the actions of the ‘client’ of public services.

My research also contributes to the growing body of evidence on how the inner workings of government administration can influence the quality of service delivery (Finan et al., 2015). By highlighting the role played by community structures and the social ties among bureaucrats in bureaucratic efficiency, my study shows that state capacity is not a uniform feature of the state and varies by the local social context.

Third, my findings also speak to the literature on ethnicity and public goods (Alesina et al., 1999; Miguel and Gugerty, 2005; Chandra, 2007), where current studies pay little attention to the impact of ethnic heterogeneity on state capacity.⁶ By introducing the effects of social proximity and social fragmentation on the inner workings of bureaucracy, this study offers an alternative explanation for why public services are more likely to deteriorate in heterogeneous communities and in places such as immigrant and minority neighborhoods.

The rest of the paper proceeds as follows. Section 2 discusses classical and recent accounts of government performance in public services. Section 3 presents my theory of social proximity and bureaucratic efficiency. Section 4 describes social and governance structures and local bureaucracy in Turkey. Section 5 illustrates the descriptive inferences underlying my theory and its observable implications, drawing on data from 170 structured interviews (including close-ended questions) conducted with bureaucrats. Sections 6 and 7 present my research design and main findings. The following section, Section 8, provides additional empirical evidence to support the argument. Finally, Sec-

⁵See Section 3 for a detailed discussion.

⁶For an exception, see Charnysh (2019)

tion 9 discusses potential alternative explanations and responds to them through additional empirical analyses. Section 10 concludes with a discussion of the scope conditions and contributions of the paper.

2 Background

Government performance in the provision of public services forms the foundation of citizens' welfare and of state legitimacy. Inequality in access to public services can undermine trust in the state and, when service quality correlates with identity cleavages, can fuel ethnic or religious conflict. A handful of studies have noted differential levels of government performance in service delivery. For the bulk of these studies, variation is the deliberate result of politicians' targeting (Cox and McCubbins, 1986; Dixit and Londregan, 1996; Magaloni et al., 2007) and can be improved through electoral accountability (Besley and Burgess, 2002; Ferraz and Finan, 2011; Ashworth, 2012). Other studies shift the focus from electoral accountability to local accountability institutions and specifically to citizens' oversight over bureaucrats, where oversight takes place either through formal institutions (Olken, 2007; Björkman Nyqvist and Svensson, 2007) or informal mechanisms such as social sanctioning (Tendler and others, 1997; Davis, 2004; Tsai, 2007).

Because differential performance in service delivery often follows ethnic boundaries, a number of studies narrow their focus to how ethnicity and sectarianism affect government responsiveness in public goods provision.⁷ Following the broader literature on accountability and public goods provision, these studies highlight the role of ethnic or sectarian parties and electoral strategies. This line of research broadly argues that ethnicities or parties exclude non-coethnics in service provision as it is simply easier to win the votes of co-ethnics (Chandra, 2007). For example, Islamic sectarian parties deter-

⁷For an alternative approach, see Singh (2015).

mine their targeting decisions based on whether they prioritize electoral mobilization as a political strategy (Cammatt, 2014) or whether rival co-ethnic parties exist (Corstange, 2010). A second group concentrates on the ability of citizens to engage in collective action to hold politicians accountable. This group highlights the role of ethnic diversity, rather than discriminatory allocation against certain ethnic groups, and argues that diverse communities are more disadvantaged in coordinating collective action to demand better social services from the government (Banerjee and Somanathan, 2007; Algan et al., 2016; Singh and Hau, 2014). Some other studies go beyond ethnic boundaries and explain public goods provision by the higher electoral competition in places with more fractionalized family networks (Cruz et al., 2019).

These approaches grounded in accountability mechanisms associate good government performance in public goods provision with the ability of citizens or groups to demand service from politicians and service providers. However, this line of research provides mixed evidence. While some findings demonstrate that electoral accountability (Besley and Burgess, 2002; Ferraz and Finan, 2011) or community oversight (Björkman Nyqvist and Svensson, 2007; Díaz-Cayeros et al., 2014) improve development outcomes, others take a more pessimistic view (Banerjee et al., 2011; Chong et al., 2011; Humphreys and Weinstein, 2011; Olken, 2007; Banerjee et al., 2010; Keefer and Khemani, 2014). This inconclusive empirical evidence indicates that accountability approaches that link differential levels of government performance to citizens' ability to sanction politicians and bureaucrats may place too much faith in citizens.

To fill this gap in the literature, this study proposes a framework in which social proximity among bureaucrats and the resulting bureaucratic efficiency are crucial determinants of government performance in public goods provision. This study shows that the ability of the government to provide quality public services is at least as important as politicians' or bureaucrats' willingness to respond to citizens' sanctioning. As such, my theory provides answers to the questions of why so much variation in public goods pro-

vision persists despite citizens' limited access to information and sanctioning tools, and why variations appear even within electoral districts governed by the same politicians or with the same administrative structure.

With respect to its emphasis on the role of social ties among bureaucrats, this project is most closely related to the developmental state approach (Evans, 1995; Johnson, 1982). In his seminal work, Evans highlights "the indispensability of informal networks, both internal and external, to the state's functioning." (1995, p. 573). Similarly, Johnson (1982, p. 57-59) emphasizes the centrality of the *gakubatsu* ties, ties among classmates at the elite universities from which officials are recruited, in the performance of Japan's Ministry of Industry. Nevertheless, these studies are centered on external ties to society (or firms)—that is, embeddedness—and on national-level policy-making and coordination. In contrast, this work places at the core of its theory the internal ties within bureaucracy and focuses on all bureaucratic agents in an administrative unit regardless of whether they serve in the same institution or not.

3 Theory

In this section, I detail what makes bureaucratic processes in public goods provision costly; how these costs lead to differential levels of bureaucratic efficiency; and finally, how these costs and bureaucratic efficiency vary in different community structures, listing the testable implications the theory yields.

Theories of markets and hierarchical organizations suggest that the production process of public services is associated with various transaction costs stemming from informational asymmetries and lack of sanctioning. I argue that social proximity among bureaucrats, meaning the extent of bureaucrats' informal ties with other bureaucrats in their jurisdiction, is key to overcoming the costs associated with service provision.⁸

⁸Bureaucrats include officials of all kinds of government organizations, municipality workers, and village and neighborhood heads.

This is because bureaucrats' informal ties not only serve communication or socialization purposes but also create positive externalities (Manski, 2000) by offering informal information and cooperation channels to bureaucrats. Imagine two individuals: a district administrator and a village head he befriends. *Informal information flows* between the administrator and the village head are not limited to personal issues; they simultaneously transmit information on work-related matters. Similarly, repeated informal interactions and informal sanctioning between two bureaucrats cause them to adhere to certain behavioral norms, such as reciprocity and helping others, and thus lead to greater *informal cooperation*. In both cases, social proximity among bureaucrats creates positive externalities that modify bureaucratic behavior and increase bureaucratic efficiency (Easley and Kleinberg, 2010). Due to the positive externalities it creates, social proximity among bureaucrats does what governments and markets sometimes fail to do, playing a complementary role in service delivery (Helmke and Levitsky, 2004).

3.1 Transaction Costs Bureaucrats Face

The defining feature of an ideal Weberian bureaucracy is that it is hierarchical: lower levels are subordinate and answerable to higher levels (Weber et al., 1947). In reality, however, bureaucracies face many transaction costs (Williamson, 1975; Moe, 1984). Especially in local bureaucracies which, instead of taking the form of a single hierarchical unit, consist of a combination of horizontal networks and networks of overlapping principal-agent relationships among bureaucrats, transaction costs can pose an important challenge to bureaucratic efficiency. A more realistic scenario than the Weberian approach for local bureaucracies is that agents can rarely obtain information on other bureaucrats' and administrative units' resources and constraints or their full responsiveness and cooperation in the provision of service delivery.

Transaction costs bureaucrats face include costs stemming from weak monitoring and sanctions such as slacking and shirking (opportunistic behavior); the cost of re-

source misallocation (allocative inefficiency); and the administrative costs of deciding what, when, and how to produce and allocate (red tape and time costs). First, due to information asymmetries and lack of sanctions, bureaucratic agents are tempted to utilize their informational advantage and show opportunistic behaviors, such as slacking and shirking, toward other bureaucrats. (Alchian and Demsetz, 1972; Migué et al., 1974; Shleifer and Vishny, 1993). Put differently, the bureaucrat tends to shirk responsibility or use less discretion even in contexts where he could comply or cooperate. Second, information asymmetries also reduce allocative efficiency. Bureaucrats often make allocation decisions to administrative subunits such as schools, health clinics, or villages. Making decisions with incomplete information about these units' actual needs and resources results in cost and allocative inefficiencies in public sector organizations (Williamson, 1964; Niskanen, 1971). Finally, even in an 'ideal' bureaucracy where bureaucrats avoid shirking or cost inefficiencies, internal bureaucratic processes involve paperwork and time-consuming complex procedures (Wilson, 1989; Banerjee, 1997). These time costs may be particularly prohibitive for bureaucrats who interact minimally with other bureaucrats, such as those serving in geographically remote schools, health clinics, and villages.

Social proximity among bureaucrats offers a solution to many of these problems. Bureaucrats rely on information obtained from other bureaucrats and administrative units, as well as their responsiveness or cooperation, to implement projects and programs. Yet, particularly in local governance, bureaucrats cannot be considered isolated agents in a principal-agent relationship. Instead, they are a part of relational networks and local communities. As local bureaucrats establish informal ties with each other (i.e., as social proximity increases) informal information exchanges and informal cooperation among bureaucrats increase as well, thereby changing the conditions that induce bureaucratic transaction costs in the first place.

3.2 Bureaucratic Efficiency

Bureaucratic efficiency, the dependent variable of my main argument, concerns a specific dimension of state capacity that can be categorized under what Berwick and Christia Berwick and Christia (2018) refer to as ‘coordination capacity’ or what Hanson and Sigman Hanson and Sigman (2013) call ‘administration capacity’. Admittedly, transaction costs do not equally influence all dimensions of governance and public goods provision. They may provide little explanation, particularly when it comes to explaining inputs such as the quantity of investments, about which decisions are made by governments and politicians, or salaries and meritocracy, which depend on the overall quality of bureaucracy. Rather, this study is interested in how effectively governance and service provision processes function when inputs are kept constant. In other words, bureaucratic efficiency concerns the extent to which bureaucracies can accomplish good outcomes using given levels of time and resources, or the amount of time and resources they need to achieve a certain outcome.

Most scholars use datasets based on expert ratings to measure bureaucratic efficiency (La Porta et al., 1999; Rice and Sumberg, 1997; Knack, 2002). Yet, these country-level indicators cannot be used to explain within-country variations. Measuring bureaucratic efficiency is thus not a simple task. Two points are of note here. First, outcomes in governance and service provision may be attributed to a variety of factors of economic development or policy choices rather than the state’s ability to best utilize resources (Fukuyama, 2013). This is why, if the indicator used for bureaucratic efficiency is an *outcome-oriented* one (such as a public service outcome), a research design must keep input-oriented factors such as financial resources constant. Alternatively, the indicator can be a *process-oriented* one almost entirely dependent on bureaucratic processes. I employ both types of measures, process- (access to bureaucrats’ contact information) and outcome-oriented (quality of water infrastructure), in this study. Finally, the indicator can focus on direct measures of bureaucratic efficiency, such as the amount of time

and resources spent to achieve an outcome. Studies that employ this last approach use measures such as financial deficits (Alesina et al., 1999).

4 Setting: Turkey

This section discusses the governance structure, public services, and social factors that may influence social proximity in my empirical setting—Turkey. Turkey has a strictly centralized governance structure, allowing for the isolation of my findings from alternative explanations such as subnational differences in institutional structures or party performance. The services that are the primary focus of this study, village infrastructure and e-government, are administered and financed entirely by the national government and channeled through a nested hierarchy of nonpartisan officials.

Turkey, along with several of its successor states, inherited the governance structure of the Ottoman Empire. Within the Ottoman Empire, central power was represented at every administrative level by a nested hierarchy of nonpartisan administrative units: *vilayets*, headed by *valis*, were subdivided into *sancaks* under *muetesarrifs*, further into districts under *kaymakams*, and into villages and *mahalles* (neighborhood) under a *muhtar*. This nested structure, except for *sancaks*, has been preserved to this day. Today, the country is subdivided into 81 *vilayets* (provinces) headed by *valis* (province governors), where each *vilayet* corresponds to one multi-member district. Below these 81 vilayets sit 972 districts governed by *kaymakams* (district governors). Each district has several neighborhoods (in urban areas) and villages (in rural areas) (see Table 1.).

All local bureaucrats, including province and district governors, must be nonpartisan and are technically employees of the national government. The heads of neighborhoods/villages, *muhtars*, are also nonpartisan and technically employees of the national government. Despite that, they are elected by the local population. *Muhtars'* primary duty is to maintain communication and coordination between the neighborhood/village

Table 1: Administrative Structure of Turkey

Administration Level	Appointed (except <i>muhtars</i>) (Nonpartisan)	Elected (Partisan)
Province	Province Governorate (Vali)	City Municipalities
District	District Governorate (Kaymakam)	District or Town Municipalities
Neighborhood Village	Neighborhood Village Heads (Muhtar); Service Providers	
Responsibilities	Education, health, village infrastructure, programmatic social assistance	Water, sanitation transportation in <i>urban areas</i>

and higher authorities. While their influence is somewhat limited in urban areas, in rural areas they play a critical role in service provision. An important implication of this structure is that while officials working in province and district governorates are mostly from the majority ethnic and religious group in Turkey (Turkish and Sunni), village *muhtars* and village councils are from the local ethnic group, meaning that the village administration in minority villages is either Kurdish (the major ethnic minority group) or Alevi (the major sectarian minority group).⁹

Local Public Services. Most public services in Turkey, including all health, education, and village infrastructure services, are financed by the central government and administered by its local directorates such as the directorate of education, directorate of health, and unions for village services. Just as the Ministries (of Education, Health, or Interior Affairs, for example) work under the national government, these directorates work under district and province governorates along with all other local agents. As such, each province and district governorate is a micro-model of the central government. The services provided by the national government are thus channeled through this strict hierarchy.

Except for local bureaucrats working for the national government, the number of ac-

⁹Throughout this paper, I use ethnicity as a broad category which also covers sect.

tors involved in public goods provision is limited. The only elected partisan authorities at the local level are municipalities. Municipalities only serve in urban areas, meaning that, at least up until the administrative reform of 2014, no villages were under the municipal jurisdiction. Villages, therefore, received all their services from the central government and its local branches. Furthermore, even in urban areas, the duties and responsibilities of municipalities are limited to basic infrastructural services such as water, sewage, solid waste management, and public transportation.

Turkey's administrative structure creates a setting in which the performance of the national government and its representatives at the local level is vital to the short- and long-term welfare of citizens. The central government's primary incentive to enforce public service delivery is, expectedly, winning support from citizens. Due to the centralized character of public service provision in sectors such as health, education, and village infrastructure, voters can easily attribute responsibility to the central government, headed by Erdoğan and his AKP (*Adalet ve Kalkınma Partisi* - Justice and Development Party) since 2002. Many public opinion surveys have suggested that the AKP owes its dominance to its reputation in public goods provision. The majority (41%) of the AKP's constituency believes that satisfaction with public services is the primary reason people continue to vote for it en masse (KONDA, 2014).¹⁰ The party's organizational capacity, partially associated with its links to Islamic civil society organizations (Bugra and Keyder, 2006), has further reinforced its reputation in public goods provision. It is therefore not surprising that the enforcement of public goods provision is of primary interest to the national government.

Incentives of Local Bureaucrats. While politicians' incentives to enforce public services are clear, bureaucrats' extrinsic and intrinsic incentives are also crucial to public service quality. In Turkey, all local officials are technically hired and appointed by the central

¹⁰This favorable view in the public opinion can be attributed in part to the fact that AKP has been successful in eliminating petty corruption, especially in its first years in power (although it reproduced it at a more grand level) (Kimya (2019)).

government. With the exception of local hirings for non-tenure jobs, hirings are usually made based on exam scores. The stable wage and tenure guarantees associated with civil service jobs make civil service a unique career option for the majority of Turkish citizens with higher education degrees. The number of people (around 3.5 million) who take the annual central state exam, compared to the much lower number of available positions (approximately 100,000 at its peak), reveals how attractive civil service is as a career option. The possibility of being appointed to better locations and positions is also an important source of motivation for civil servants. While initial hirings and appointments are typically made based on exam scores or lottery, bureaucrats can usually move to their hometown or to more economically-developed cities after a few years of mandatory service.

The main ‘stick’ mechanisms that authorities in Ankara can levy against local bureaucrats, on the other hand, include performance indicators in the health sector (e.g., the arrival speed of emergency services, infant and mortality rates, vaccination rates, etc.), student test scores in the education sector, monitoring visits by high-level bureaucrats, and citizens’ and *muhtars*’ requests and complaints. Monitoring citizen complaints, which can be easily made through an online system called BIMER, is common in all public sectors.¹¹ Local actors cannot manipulate complaints made through BIMER, as they are simultaneously received and seen by central government agencies in Ankara. Hence, complaints about a doctor, teacher, or district directorate directly concern and can discredit all administrators in the hierarchical structure, from school directors to province directorates and even governors.

Influence of Local Bureaucrats. Local bureaucrats often use their discretion in daily service provision processes. Although a significant amount of the budget allocated to

¹¹While there are no statistics available on how BIMER usage varies at the subnational level, according to a survey conducted by the Turkish Statistics Agency (TUIK), citizen satisfaction with online government services is almost equal in urban and rural areas (87% and 84.5%, respectively), with only 2.6% of rural residents selecting ‘no idea’ (Life Satisfaction Survey, 2012).

province and district governorates is calculated according to population and development indicators, province-, district-, and street-level officials have considerable discretion and play the principal role in determining performance in many public services. Their influence varies across different types of public goods and different stages of the service delivery process.

With regard to infrastructural investments in villages, the main unit of analysis of this study, the discretionary power of local bureaucrats is much greater in water and sewage infrastructure than in the health and education sectors. District and province headquarters support a village's infrastructural project either by allocating it a budget or through in-kind support, such as sending construction equipment or staff to the village. Investments in the education and health sectors, which may include opening a new school or a health clinic, can also be made at the request of directorates in district and province governorates, but these requests must be justified through the provision of relevant information and indicators to the Ministry. For instance, if a new health clinic is expected to serve 1,000 people (2,500 people below the national standard), the directorate must provide cogent reasons supporting the construction of the clinic. Such reasons may include a remote geographical location or a large population. Directorates are also expected to propose a concrete plan, including allocating the land where the clinic is to be constructed. In the case of school investments, discretion is minimal. For instance, schools in villages with fewer than ten students have to be closed by law.

The equipment needs of villages are also often met by district and province governorates. If the *muhtar* has close ties with neighboring municipalities, some small needs can even be met through the *help* of municipalities. In the case of health clinic and school equipment needs, such as stationary materials and inventories, clinics and schools either submit forms to the Ministries directly or contact the province or district directorates. Nevertheless, even when they need to submit a request to the Ministry, the directorates in province and district governorates are the *de facto* decision-makers and problem-

solvers in emergent cases, as the final allocation is physically made by the directorates within the administrative region.

Finally, the availability of personnel depends on whether a village has a school or health clinic. Education and health providers are appointed to their initial duty stations based on their central exam scores and preferences. Crucial with respect to subnational variation in public services is the fact that the number of open positions in health and education services is reported to the relevant Ministry by local directorates. Local directorates are also able to intervene in the final staff allocation within the administrative region.

Social Structure in Turkey. As informal ties are at the center of this project, it is worth noting that traditional power authorities in Turkey were to a considerable extent undercut by the First World War and the Kemalist Revolution. This is because the local bourgeoisie, mostly composed of Christian minorities, eroded with the First World War and the subsequent nationalization process. Landlords and wealthy farmers were the only civilian power groups to preserve their dominant position in the hinterland. However, these remaining power groups were also subverted during the long single-party era that followed the war and the collapse of the Ottoman Empire. Atatürk, a “determined centralizer,” and his party, the CHP, eliminated virtually all of the social and economic privileges of the local elite “by means varying from persuasion to compulsion according to circumstances” (Lewis, 1961). The only region where semi-feudal landowners have survived is the Kurdish region, and the power of Kurdish landlords compared to that of the state is much more limited today. This social transformation in the hinterland in the early years of the Republic resulted in a social setting where traditional patron-client ties were largely destroyed and the salience of formal and informal state-society relationships was amplified.

The series of events that destroyed traditional power relationships also homogenized

the population of the new Republic. Turkey's population, where the major ethnicity is Turkish, and the dominant religion is Sunni Islam, includes two main minority groups. The first group, the Kurds, is an ethnic group that comprises more than 15% of the total population (KONDA, 2006) and is concentrated in southeastern Turkey. While the PKK (Kurdistan Workers' Party) insurgency has been ongoing since the 1980s, the Kurdish movement is also represented in parliament by their own party, the HDP (*Halkların Demokratik Partisi*-Peoples' Democratic Party). *Alevi*s, who adhere to a secularist branch of Islam with links to Shia Islam and Sufism, constitute around 10% of the population, forming the second-largest minority group. The majority of *Alevi*s support the CHP (*Cumhuriyet Halk Partisi*-Republican People's Party), a party established by Atatürk based on secularist ideology. Around 50% of the total Turkish population supports the conservative AKP and its allies, while the rest consists of the supporters of liberal, centrist, leftist, and secular camps.

5 Political Geography and Social Proximity

In this section, I first discuss how factors pertaining to political geography help form the observational implications of the theory, drawing on the relevant literature. Second, I present descriptive evidence from interviews I conducted with approximately 170 bureaucrats during six months of fieldwork in Summer 2016 and Fall 2017. The interviews reveal how geographic proximity is one factor among several that capture bureaucrats' informal ties with one another. They also explain how bureaucrats with more informal ties i) have more information about which official to contact for assistance with a given service and ii) are more likely to overcome bureaucratic obstacles caused by informational asymmetries and a lack of sanctioning.

5.1 Observable Implications of the Theory

In what contexts can we observe greater social proximity among bureaucrats? This question yields the potential testable implications of this study. A rich body of evidence suggests that bureaucrats are more likely to establish and maintain social ties when they share a space or identity (e.g., an ethnicity), come together through local institutions, or serve in close-knit communities. This study will leverage three sources of social proximity: geographic proximity, the network structure of the community, and coethnicity.

The most elementary finding about social proximity is that it increases with geographic and physical proximity and decreases with geographic dispersion: "Being physically proximate is thought to encourage chance encounters and opportunities for interaction, which can lead to the formation of new relationships and the maintenance of existing ones." (Rivera et al., 2010). Existing studies on social networks indicate that physical proximity is a significant predictor of establishing and maintaining social ties and communication (Marmaros and Sacerdote, 2006; Martin and Yeung, 2006). Similarly, the economics literature on information and knowledge spillovers provides direct evidence that information flow and reciprocity are more likely to occur between individuals and firms that are located more closely together (Jaffe et al., 1993; Zucker et al., 1998; Thompson and Fox-Kean, 2005; Agrawal et al., 2008; Fafchamps and Vicente, 2013). Finally, the decentralization literature posits that decentralization improves outcomes through the informational advantages of officials relative to central policymakers. Implicit in this argument is the idea that as the distance between bureaucrats and jurisdictions lessens, bureaucrats meet fewer information asymmetries (Oates, 1992; Gadenne and Singhal, 2014). The arguments made in these studies can be translated to bureaucrat-bureaucrat relationships. As the geographical proximity between administrative units in a jurisdiction (e.g., the proximity of schools and villages to district headquarters) increases, or the overall geographical dispersion decreases, informal ties among bureaucrats should increase. Therefore, one implication of my theory is that *geographical proximity among*

bureaucrats or administrative units will lead to higher bureaucratic efficiency.

Social proximity can also be influenced by the network structure of the community where a bureaucrat serves. In network structures characterized by high social distance across subcommunities, which I term *socially fragmented communities*, the reachability and the likelihood to establish informal ties will be low for any given individual, including bureaucrats. On the other hand, close-knit communities offer a host of advantages to bureaucrats regarding information diffusion and cooperation. First, social ties in these communities can transmit information on local needs and conditions and on how members of the bureaucratic network behave (Fafchamps and Vicente, 2013; Wibbels, 2019). Second, they can also provide shared expectations about what constitutes acceptable behavior Greif (1993); Kranton (1996). As a result, it is not only much easier for local officials to establish informal ties in close-knit communities, but also much more likely for them to know who needs what, who is shirking, and how to sanction shirkers. Because social proximity among bureaucrats appears to be less likely on average in socially fragmented communities, I expect that *bureaucratic efficiency will decrease in socially fragmented community structures.*

Finally, a longstanding consensus in the social sciences has held that coethnicity increases social ties, information diffusion, and cooperation.¹² One of the key arguments reinforcing this consensus is homophily, “a tendency for friendships to form between those who are alike in some designated respect” (Lazarsfeld et al., 1954, p.23). The homophily argument shows that individuals are more likely to create social ties and maintain their relationships with self-similar others, such as their coethnics. Other evidence on the effect of coethnicity comes from the ethnicity literature. This research strand shows that coethnics and ethnically homogeneous groups enjoy advantages in information dissemination (Varshney, 2001; Larson and Lewis, 2017) and the identification

¹²Other factors such as shared membership in a local institution such as churches and associations, albeit not the direct focus of this study, can help individuals establish informal ties as well (Putnam et al., 1994, 2000; Tsai, 2007).

and punishment of uncooperative individuals (Habyarimana et al., 2007; Miguel and Gugerty, 2005). Just as ethnic differences within a community constrain overall information diffusion and cooperation, ethnic differences within the bureaucratic community can do so as well. Thus, a final observable implication of my theory is that *social proximity among bureaucrats is less likely when there are ethnic divisions among bureaucrats, all else being equal.*

5.2 Geographic Proximity, Network Structure, and Social Proximity

To empirically confirm the extent to which geographic proximity between bureaucrats proxies their informal ties with one another and how that proximity translates to bureaucratic behavior, I primarily examine the responses to my close-ended questions. Most of the interviews were concentrated in two provinces home to ethnic (Kurdish) and sectarian (*Alevi*) minority populations and districts with varying levels of ethnic diversity, another potential source of social proximity, in order to have variation in this alternative independent variable measure as well. While the districts selected within provinces are stratified by ethnic diversity and geographic proximity, they were selected such that they neighbor each other, in order to keep broader regional and cultural variables constant. Within districts with minority populations, some villages were from the minority ethnic (Kurdish) or sectarian (*Alevi*) group, while others were Turkish or Sunni. For sampling, I focused on three groups of public employees: appointed civil servants in province and district governorates, frontline service providers (such as doctors and school directors), and village *muhtars*. In general, I conducted around 25-30 interviews per district and 75-80 interviews per province.

The first part of descriptive evidence focuses on how well bureaucrats of administrative units at higher levels of the hierarchy know bureaucrats who serve at lower levels. The left column of Figure 2 shows how geographic proximity between province governorates and district governorates translates to informal ties between administrators

serving in these two units. The right column of Figure 2 investigates a similar relationship but focuses on the district-village dyad. Specifically, the x-axis depicts the distance of a given province (district) to the district headquarters (villages) below its jurisdiction, while the y-axis depicts the response of the province (district) administrators to the following question (averaged for all respondents in a given province (district)): *Consider people in the following districts/villages you work with or contact for work-related reasons. Choose which category that person belongs to in terms of how well you know him or her. [List of a random mix of districts/villages with the following options: Family/relative (4), Friend (3), Someone else I can contact (2), No one (1)].* Each point in Figure 2 thus represents a certain district (village). As Figure 2 shows, there is significant negative correlation between geographic distance and informal ties between bureaucrats.

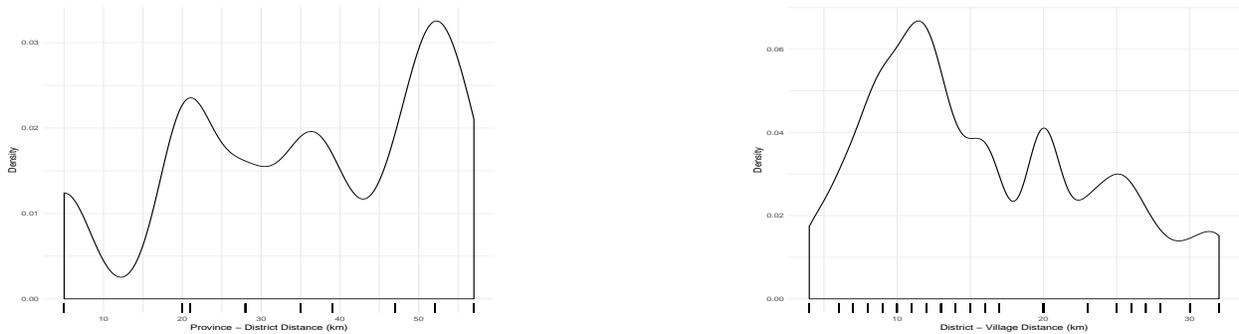


Figure 1: Density of District (Left) and Village (Right) Level Bureaucrats in the Sample by Geographic Distance

The second part focuses on the extent to which village *muhtars* know the bureaucrats who serve in their district headquarters or service provision centers affiliated with the district. In other words, unlike the previous figure, Figure 3 shows how well bureaucrats at the lower levels of the hierarchy know those serving at a higher level. Each point on the plot represents a village *muhtar*, while the y-axis represents the average value of the *muhtars'* responses for the following position generator question: *This question is about people working and/or living in the district where you work...If you know several people who have a job from the list below, please only tick the box for the person who you feel closest to.*

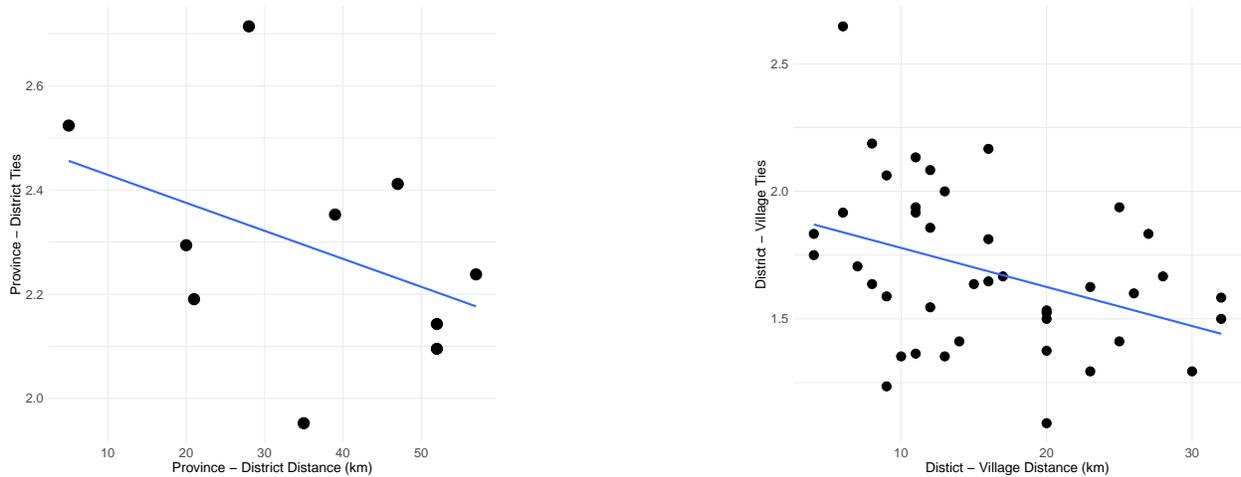


Figure 2: Ties of Province (Left) and District (Right) Level Bureaucrats

Do you know a woman or a man who works as a ... in your district? [List of a mix of bureaucrats/service providers holding different positions with the following options: Family/relative (4), Friend (3), Someone else I can contact (2), No one (1)]. As expected, there is a significant negative correlation between geographic distance and how well a *muhtar* knows district-level bureaucrats and service providers.

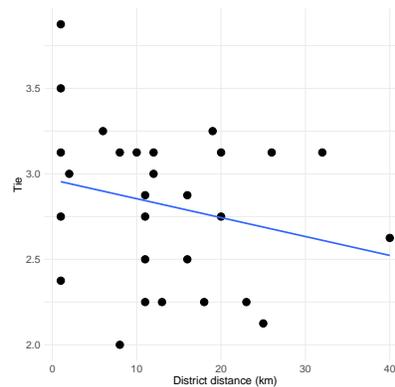


Figure 3: Ties of Province-(Left) and District-(Right) Level Bureaucrats

Finally, Figures 4 and 5 illustrate whether village *muhtars* with a larger number of informal ties have more information about the exact person they need to reach for a given service and are more likely to overcome bureaucratic obstacles. The figure shows the *muhtars'* response to the two questions below, as grouped by the number of informal ties,

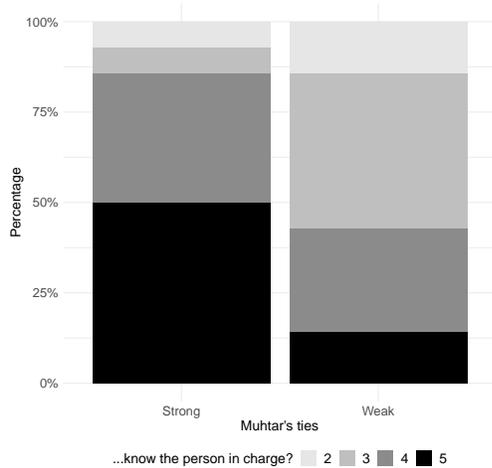


Figure 4: Information about the Bureaucrat in Charge

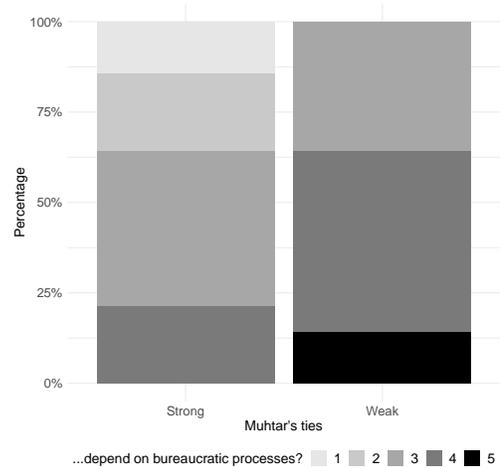


Figure 5: Bureaucratic Processes

such that *muhtars* with stronger ties than the median value are grouped together while the rest are in a second group: *How much would you agree with the following statements? i) If, to provide ..., the office needs the help of an external unit to provide a service, I would directly know the person in charge. ii) Once I ask for the help of the other unit for this specific service, how fast and useful the staff in the other unit are would primarily depend on bureaucratic processes. [Strongly Disagree (1), Disagree (2), Neither Agree nor Disagree(3), Agree (4), Strongly Agree (5)].*

Among *muhtars* with stronger ties to bureaucrats and service providers, 50% report that when they need the help of another bureaucrat to obtain a service, they are likely to personally know the individual in charge, while among *muhtars* with weaker ties, only 12.5% of *muhtars* respond similarly. *Muhtars* with stronger ties also state that their service is less likely to be affected by bureaucratic processes: While only 20% of *muhtars* with stronger ties “agree” or “strongly agree” that bureaucratic processes play a central role in determining how fast and useful the staff in the other unit would be, among *muhtars* with weaker ties, this ratio is as high as 60%. The correlation between the average strength of a given *muhtar*’s ties with other bureaucrats and their responses to the questions is strikingly high: 0.45 for the first question and -0.3 for the second question.

Officials' answers to structured interview questions also demonstrate the mechanisms that lead to higher bureaucratic efficiency by highlighting the importance of geographic proximity to establishing and maintaining informal ties, overcoming asymmetrical information, and enhancing cooperation. I find that a variety of reasons related to geographic proximity, such as more frequent visits, sharing the same social space (e.g., coffee houses, restaurants, celebrations, and festivities), having a larger number of common acquaintances, or longstanding friendships and family ties, shape informal ties, information flow, and cooperation between bureaucrats.

Frequent social contact between *muhtars* and province or district officials is particularly invaluable for implementing village infrastructural works such as roads, water, and sewage systems. For example, among village *muhtars* with little or no relationship to the officials in the Special Provincial Administration (SPA), the province-level authority for infrastructural works, a commonly-held opinion is that budget constraints are the primary reason the SPA cannot help them in a timely fashion. Furthermore, as one *muhtar* points out: "They [the SPA] can never offer us the service they want at the time we need it. And when they do, it is never complete; when they send the pipes the bulldozer is missing, when they send the bulldozer, the cement is missing."¹³ However, another village official who serves in a village closer to the SPA and is in contact with them had a very different story: "We did not have enough water... So I visited everyone I knew: the district governorate, the SPA... They said they could only give a limited budget. I said okay, I will collect 30% from you, 30% from the other, and the village will pay the rest... If you come together with them, you always find some solution."¹⁴

Informal ties not only affect bureaucratic relationships between officials on different levels of the hierarchy, but also across officials on the same level. One *muhtar*, for instance, remembers how having a friend, another *muhtar*, on the evaluation committee on social assistance helped him bring more effective social assistance transfers to his village.

¹³Author interview with a *muhtar*, Kirikkale, Turkey, October 10, 2017.

¹⁴Author interview with a *muhtar*, Kirikkale, Turkey, October 18, 2017.

He reports that outside of the four-year period when he knew someone on the committee, those who needed assistance the most were not always guaranteed benefits. To take one example, the committee once rejected the application of an 83-year-old woman based on the justification that she owned agricultural property, despite the fact that she was too old to farm the land and had no family. The committee made more accurate decisions about transfers when it received first-hand information about the village from the *muhtar* in charge and failed to do so when decisions were made based on paperwork alone.¹⁵

It should be noted that geographic proximity does not capture social proximity equally across all contexts. In diverse contexts where individuals are less likely to establish and sustain informal ties—i.e., in socially fragmented communities—*muhtars* appear to rely less on informal ties with headquarters, and therefore, geographical distance becomes a less relevant factor. Most of the village *muhtars* I interviewed in a diverse district of Iğdır, where residents are from varied hometowns and ethnic backgrounds (some are Kurdish and others Turkish),¹⁶ state that they submit their requests first to the district governorship and then to the upper authority. They follow a Weberian bureaucratic strategy in which it is uncommon for them to engage in any informal information exchanges prior to getting in touch with authorities. This pattern significantly diverges from those reported by village officials in another district of Iğdır. This second district's residents are mostly locals, so it is more homogeneous. In this second district, it is common for *muhtars* to contact district officials on a regular basis. When they need a vehicle, for example, they directly contact the officials in charge. Furthermore, their networks extend beyond the district governorate: in addition to mentioning the names of governorate officials, they frequently mention the names of municipal administrators in interviews.¹⁷

¹⁵Author interview with a *muhtar*, Kırıkkale, Turkey, October 10, 2017.

¹⁶To avoid disclosing the identities of *muhtars*, I do not reveal district names. They are available upon request.

¹⁷Multiple author interviews with *muhtars*, Iğdır, Turkey, 18-31 November 2017.

6 Data and Research Design

There are several challenges in empirically examining bureaucratic efficiency and distinguishing among the various explanations underlying it. In an attempt to address concerns related to endogeneity and confoundedness, I employ a geographical RDD (Dell, 2010; Keele and Titiunik, 2015), drawing on its assumption that near district borders, the side of the border on which the village is located is as-if random. This design examines the impact of dyadic social proximity between bureaucrats, as proxied by geographical proximity between villages and district headquarters on various dependent variable indicators at the village level. For the dependent variable, I employ both process- and outcome-oriented indicators related to access to bureaucratic information, water infrastructure, and the quality of water services.

6.1 Dependent Variables

Cell Phone Information. The first indicator I use to measure bureaucratic efficiency is a process-oriented one: whether district officials can get or have access to village officials' personal cell phone information. The measure comes from a specific e-government project, *YerelNet* (henceforth, Local Network). Local Network was developed in 2001 to provide local administrators and national policy-makers with a platform where they could gather reliable and up-to-date information about local administrations and share their questions and answers through electronic discussion forums. The project also required the personal cell phone information of *muhtars* to be added to villages' e-government profiles (henceforth, e-profiles). I use a dummy variable that takes 1 if the personal cell phone information of the *muhtar* could be entered on the village's e-profile, and 0 if not.

The availability of this information on villages' e-profiles is a good proxy for bureaucratic efficiency for a number of reasons. First and foremost, the task of getting access

to *muhtars'* personal cell phone numbers and entering this information on villages' e-profiles depended entirely on coordination between district and village officials and on bureaucratic processes. While all villages had e-profiles that needed to be filled out, villages were not given a log-in account, and gathering information from each village was the district governorate's responsibility. Since villages did not have a log-in account, accessing a given *muhtar's* cell phone information required the input of the *muhtar* or other village officials and coordination between district and village officials.

This indicator of bureaucratic efficiency is unlikely to be affected by accountability relationships between bureaucrats and citizens—this is crucial as it allows me to rule out potential alternative explanations. Local Network was an e-government project designed to provide bureaucrats of all levels with reliable information and collaboration opportunities. Citizens were not specifically informed about the project, and the project was put on hold around 2010 when all other European Union-supported Turkish policies and programs were also suspended. For these reasons, citizen oversight cannot be an explanation for potential effects estimated through this measure.

Water Infrastructure and Water Services. The other indicators I use to measure bureaucratic efficiency—indicators related to the quality of water infrastructure and water services—are outcome-oriented. I use three different indicators. The first one shows whether the village has a water supply network. It is a dummy variable that takes 1 if the village has a water supply network and 0 if it uses alternative ways to access water. The second indicator shows whether the village has a drinking water infrastructure system. It is a dummy variable that takes 1 if the drinking water comes from a water supply network or a borehole, and 0 if it directly comes from a river, lake, dam or percolation well. The third indicator is a dummy variable that indicates whether the quality of the water in the village is regularly controlled or not, a task that requires district health officials and village officials to coordinate.

The quality of water infrastructure and services such as water quality controls are good indicators for bureaucratic efficiency for several reasons. Water is an essential public service that should ideally be provided in every village. Therefore, it does not rely on centralized rules and the decisions of national-level bureaucrats in the same way as schools and health clinics do. At the same time, water infrastructure and water quality controls are public services whose provision is a function of interactions among *muhtars* and district- and province-level bureaucrats in the empirical context: As the qualitative evidence presented in Sections 4 and 5 indicates, water infrastructure and services can be improved not only by allocating it a budget but also through in-kind support (through the provision of equipment, staff, etc.) by district and province headquarters. As public goods heavily dependent on the discretion and transactions of local bureaucrats, outcomes related to water infrastructure and the quality of water services are good indicators for bureaucratic efficiency. The data for water indicators come from the database created within the scope of the Local Network project.¹⁸

Since these three indicators related to water infrastructure and water services are public service outcomes, the empirical design must make sure to keep input-oriented factors such as financial resources constant. I address this by using a research design relying on the identification assumption that two villages very similar to each other in other respects are under the jurisdiction of two different districts (See Section 6.4 for more detail.).

6.2 Measuring Geographic Proximity

To calculate geographic proximity between villages and district headquarters, I use data created using geospatial tools. The main independent variable, *Distance*, is a continuous treatment variable calculated based on the geodesic distance (in kilometers) between the

¹⁸The data on the drinking water infrastructure system and access to electricity—another indicator I use in this paper— are available only for a subset of villages. Yet, the analysis in Appendix Table A4 shows that missing values do not correlate with geographic distance.

village and district headquarters. To calculate the spatial distance between villages and district governments, I compiled the geo-coordinates (that is, the latitude and longitude) of all villages (around 35,000) and district governorates (around 970) in Turkey. For the majority of villages, the geo-coordinate information was scraped from official government web pages. The coordinates were then matched with the village names on the e-government site. This strategy allowed me to reach the coordinates of around 27,000 villages. The coordinates for 6,000 of the villages were matched from spatial vector data that specify the geo-locations of local administrations in Turkey. The remaining coordinates (for over 1000 villages) were manually coded using information gathered from Google or Yandex Maps. This manual coding prevents bias and uncertainty that would result from missing coordinates. The geo-coordinate information for district headquarters was gathered using Google Maps Places and Distance Matrix APIs.

6.3 Control Variables

Village-Level Controls. My analyses include a set of demographic, geographic, and electoral covariates. The geographic controls include the distance of a given village to the closest highway, and urban areas of different sizes (with populations over 50,000, 100,000, and 500,000) and the elevation of the village (calculated using village geo-coordinates and spatial vector data). Several of these village-level covariates—particularly, distance to urban areas—may capture some post-treatment variation as they may be affected by geographic proximity between the village and district headquarters. Imbalances in distance to the closest urban areas would not be surprising because for some villages in my sample, the nearest urban area, particularly one above the 50,000 population level, may be serving as the village’s district headquarter. Therefore, I run my main models both with and without these potential post-treatment variables.

As ethnicity may act as another source of social proximity between village *muhtars* and district headquarters, it must be controlled for as well. Considering that the major-

ity of staff in district headquarters tend to be Turkish Sunni, the dominant ethnic and sectarian group in Turkey, I add controls that indicate minority villages to eliminate any potential bias and reduce uncertainty. To control for sect, I include a binary variable that controls for *Alevi* villages, the major sectarian minority group in the country. To identify *Alevi* villages, I created an original dataset that specifies all *Alevi* villages across the country. Specifically, I constructed a binary measure by manually coding whether a given village is Alevi or Sunni using information from an ethnographic inventory that lists the names of ethnic minority (e.g., Alevi, Kurdish, previous Armenian or Greek, etc.) settlements in Turkey. While around 2,500 out of a total of 35,000 villages are indicated to be Alevi, after I conducted further research in online Alevi communities, the number increased to 3,200. To my knowledge, this is the first comprehensive dataset on the sectarian distribution of villages in Turkey. Kurdish villages, on the other hand, are controlled for through segment, district, or province fixed effects (when the Kurdish region is included in the sample), as Kurdish villages in Turkey are concentrated in the Kurdish region. I also check the balance for the AKP vote share in the village.¹⁹

District-Level Controls. In Turkey, districts only serve as administrative units and coordinating agencies, while provinces are the electoral districts and hold the main administrative power at the local level. In models without district fixed effects, I control for the key development, electoral, and demographic characteristics of districts, employing an original night lights dataset, building census data, electoral data, and official statistics. Due to the absence of any district-level data for GDP per capita, I use average night light density in a district as a measure of economic development (Doll et al., 2006; Henderson et al., 2012). To control for the effect of investments in the district by the national government, I use the number of public health and education buildings (adjusted by

¹⁹I do not add this covariate to the model as the analysis focuses on cross-sectional variations independent of the specific time of the infrastructure development, meaning that if the support for the current incumbent party is affected by a legacy of underdevelopment and low bureaucratic performance, the support for the current incumbent party may capture some post-treatment variation.

population) in a district. The political control variable is the vote share of the ruling party, the AKP. I also control for the literacy rate of the district. Table A1 presents a list of all district-and village-level controls and data sources.

6.4 Empirical Strategy

Social proximity between village and district administrators is proxied by the geographic distance between village and district headquarters. Yet, correlational estimates between geographic distance and bureaucratic efficiency incur potential sources of bias. Villages located far away from their district headquarters (distant villages) might not be a valid counterfactual for relatively closer villages (proximate villages). The latter are likely to have higher education levels, better employment opportunities, or different socio-demographic characteristics. Thus, the raw correlation between distance to the district center and local government performance may confound the causal effect of interest.

My empirical strategy allows for isolating these confounding factors by focusing only on villages close to district borders. The identification strategy relies on the assumption that the home district of a given village, and so the distance to district headquarters, changes sharply at the border, while other village-level characteristics such as economic, political, and demographic factors change smoothly across the border. Figure 6 illustrates the empirical strategy, showing three districts and the borders separating them. The locations of district headquarters are indicated by district names.

To ensure that I compare villages in close geographical proximity, I create a separate segment for each district-district dyad. Within each segment, the home district of the village changes depending the side of the border on which the village is located. As I restrict my sample to a small bandwidth around district borders, whether a given village is on one side or the other of a border is, by assumption, the outcome of a chance process. Therefore, two villages very similar to each other in other respects may be under two different jurisdictions.

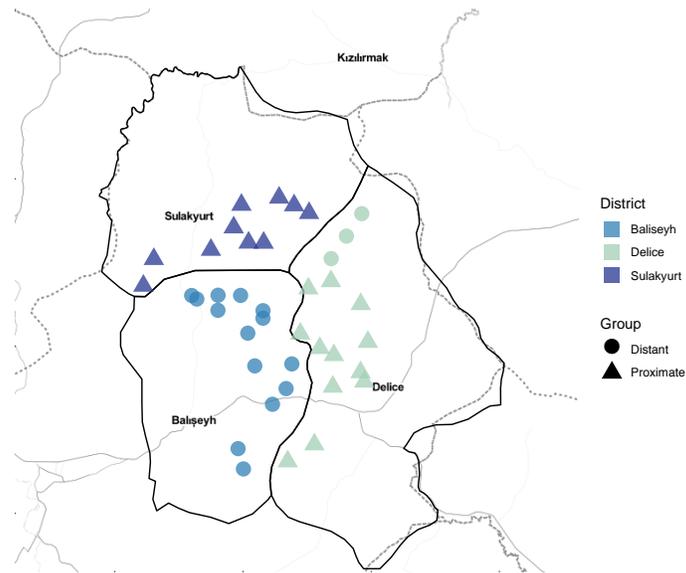


Figure 6: Empirical Strategy

Note: The figure does not use any bandwidth and only includes the villages that are adjacent to one of the three districts shown.

While villages have similar background characteristics, some of these villages are ‘luckier’ in that they are on the side of the border where the district headquarters are closer. While I use a continuous treatment variable, i.e., geodesic distance between the villages and district headquarters, the villages in the district with the closer headquarters can be considered the treatment group, and the villages in the district with the more distant headquarters can be considered the control group. If a given village is on the more advantageous side of the border (in other words, if its home district is the one with the closer headquarters), I refer to it as a proximate village. Otherwise, I refer to it as a distant village. In Figure 6, proximate villages are shown with a triangle, and distant villages are shown with a circle. Villages are colored by their home district.

Because district borders form a two-dimensional discontinuity (in longitude and latitude), my baseline model includes a polynomial in latitude and longitude instead of a single variable. Following [Gelman and Imbens \(2019\)](#) and [Dell and Olken \(2017\)](#), I use a linear polynomial in longitude and latitude. I estimate the following geographical RDD

equation:

$$y_{vsd} = \beta \text{Distance}_{vsd} + f(\text{Location}_v) + \gamma Z_v + \eta_d + \theta_s + \epsilon_{vsd} \quad (1)$$

where y_{vsd} is the outcome of interest for village v located in district d along segment s of the border between district d and the neighboring district. Distance_{vsd} is my continuous treatment variable. For each segment s , I have villages on both sides of the district border. $f(\text{Location}_{vsd})$ is the local linear polynomial that controls for smooth functions of geographic location.

Even though the model assumes that proximate and distant villages have, in expectation, similar demographic, political, and geographic characteristics, I add a battery of village-level controls to the model, as referred to by Z_{vsp} : a dummy variable indicating the ethnicity of the village, distance to the nearest highway, distance to the nearest urban area with a population over 50,000, distance to the nearest urban area with a population over 100,000, distance to the nearest urban areas with a population over 500,000, and elevation. I also check the covariate balance in incumbent vote share. In alternative specifications where I use district-level covariates instead of district fixed effects, X_{dp} indicates the district-level controls: average night lights density, the number of public health and education buildings (per 10k persons), the vote share of the incumbent party, literacy rate, a conservativeness measure (female literacy rate divided by male literacy rate), and a rurality rate (rural population in the district divided by the district's total population).

To confirm my hypothesis—that social proximity, as captured by geographical proximity, positively affects bureaucratic efficiency—I expect the coefficient on the distance variable, β , to be negative and statistically significant. While there is no optimal bandwidth choice for multidimensional RD designs (Dell and Olken, 2017), I calculate the CER (coverage error rate)-optimal bandwidths for each dependent variable by using geodesic distance between my observations and district borders as the running variable.

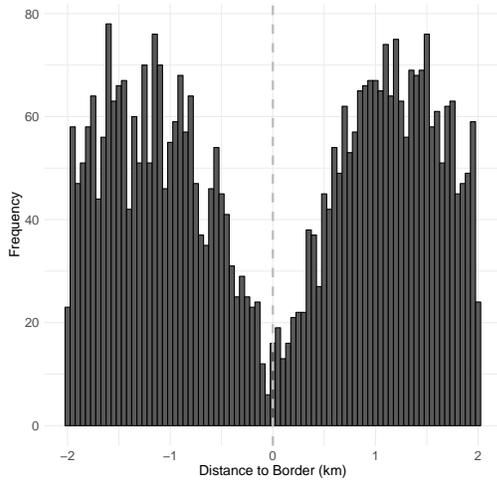


Figure 8: Histogram of the Running Variable: Distance to District Borders

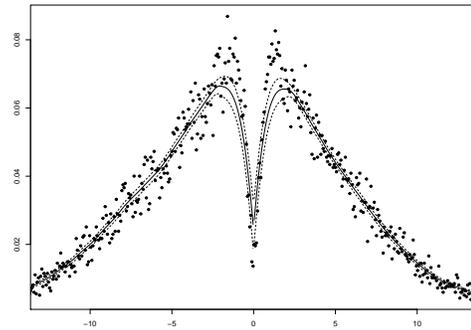


Figure 9: McCrary Density Test for Discontinuity in the Running Variable

CER-optimal bandwidths vary between 2.2–3.8 kilometers. I mainly use a bandwidth of 2.5 kilometers (around 1.5 miles) around the district border to interpret the results.

Lastly, given the continuity assumption in RDDs, it is essential to check whether agents appear to sort around geographical borders. If we observe that villages cluster on the side of the border with closer district headquarters, we can suspect that borders are being manipulated to favor certain types of villages. Nevertheless, the running variable in my empirical design, the distance of villages to district borders, has a balanced distribution (Figure 8), and the formal test of discontinuity around the threshold (McCrary, 2008) fails to reject the null hypothesis of continuity with a p-value of 0.5 (see Figure 9).²⁰ The graph also illustrates the low density of villages around the border, which stems from the fact that district borders usually follow natural boundaries such as rivers and mountains that separate settlement areas.

The null finding for the sorting of villages around the treatment threshold is not surprising because most of the villages in Turkey have their origins in the Ottoman era. Village locations predate district borders, which were drawn mainly in 1924 with the

²⁰The villages in the district with the closer headquarters are assigned to the treatment group, and the rest to the control group.

establishment of the Republic of Turkey. Because borders drawn in 1924 were based on certain principles as outlined by provisions of a 1924 law, it is unlikely that they were manipulated to favor some villages and place them in districts with closer headquarters. Article 4 of Law No. 422 reads: "The boundaries of a newly established settlement shall include all the lands that have been used by its residents from early on," and "if it is not possible to pass the borders along any rivers, hills, roads, or other landmarks, then borders should be drawn as straight as possible [...]" (published in Official Gazette No. 68, 07 April 1924).²¹ Accordingly, while natural boundaries appear to be the primary determinant of Turkish borders, land tenure also affect district borders, because borders were drawn such that land parcels were not divided and placed in a neighboring village or district.

The new provinces and districts founded after 1924 were formed by dividing old districts into multiple districts and therefore did not lead to important changes in preexisting borders. Moreover, the manipulation of district borders with motivations such as gerrymandering is unlikely in Turkey. Districts are the only administrative units below provinces while provinces constitute Turkey's multi-member electoral districts. Therefore, changes in district borders do not affect electoral results. This is true even for local elections because voters residing in villages could not vote in provincial or district municipal elections until the administrative reform of 2014.

7 Results

7.1 Balance checks

I begin my analysis by examining whether the village-level control variables mentioned above are similar in proximate and distant villages. As the focus of the main analysis is

²¹This law was amended in 2005 with Article 5 of Law No. 5393, published in Official Gazette No. 25874, 13 July 2005.

the effect of geographic distance, and because I address the heterogeneity by ethnicity—an alternative source of social proximity—in the next section, I exclude district borders in the Kurdish region from the analysis below. Although social proximity between villages and districts can vary with a number of village-level characteristics, my empirical strategy relies on the assumption that village-level characteristics change smoothly at the border. In other words, the treatment variable, *Distance*, should not have a statistically significant effect on the balance variables. To test the continuity assumption, I regress each control variable in the model on the continuous treatment variable and on all other controls in Equation 1. Estimates from these regressions are presented in Table A5. If the identification assumptions hold, I should not be able to reject the null hypothesis that β in these regressions is zero.

The first row in Table A5 presents estimates from regressing the ethnicity variable on the treatment variable. The following five rows present estimates for village-level geographic controls. The final row shows whether the treatment is associated with any statistically significant difference in AKP vote share. If I find that distant villages have lower levels of support for AKP, and if those villages also receive fewer public investments, the coefficient of the distance variable would be overestimated. I find that, at a bandwidth of 2.5 kilometers, β is statistically indistinguishable from zero for the majority of covariates. It is statistically significant for only three covariates: distance to the nearest city with a population over 50,000, elevation, and AKP vote share. Nevertheless, its substantive significance is negligible for all these three covariates. An additional kilometer in distance to district headquarters corresponds to an around 0.01 standard deviation change. Imbalances in distance to the closest urban areas are expected as for some villages in my sample, the nearest urban area, particularly one above the 50,000 population level, may be serving as the village's district headquarters and could capture some post-treatment variation. Imbalances in elevation are not surprising either, because, as explained in Section 6.4, natural boundaries such as mountains and hills

have historically been the primary determinant of Turkish borders and settlements, and therefore, may correlate with distance to district centers. Finally, the relationship between distance and AKP vote share is also likely to capture some posttreatment variation as local government performance in previous decades may have increased support for the then newly founded AKP. Furthermore, although the relationship between distance and AKP vote share is statistically significant, the direction of the coefficient is positive, suggesting that omitting this covariate would, if anything, underestimate the size of the treatment effect. Overall, the results illustrate that the covariates are fairly balanced for proximate and distant villages.

Table 2: Balance in Covariates

Variable	β	(se)	SD	Change in SD
Minority village	0.00	0.00	0.29	0.000
Distance to City 50k+ (km)	0.22	0.04***	30.29	0.007
Distance to City 100k+ (km)	-0.00	0.00	91.19	-0.000
Distance to City 500k+ (km)	-0.00	0.00	91.19	-0.000
Distance to Highway (km)	-0.03	0.05	141.87	-0.000
Elevation (m)	9.08	1.07***	562.75	0.016
AKP Vote Share	0.26	0.06***	27.00	0.010

Bandwidth: 2.5 km
 Polynomial: Linear in latitude and longitude

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

All models include a linear polynomial in longitude and latitude, segment fixed effects, district fixed effects, and village-level controls (except the control variable for which the balance is calculated).

7.2 Main Findings

In this section, I present the main effects of social proximity on bureaucratic efficiency, relying on the idea that social proximity can be proxied by geographical distance. Table 3 presents regression coefficients from estimating equation (1) for the four outcome variables, access to *muhtars'* personal cell phone information, water supply network, drinking water infrastructure, and water quality control. To measure the outcome variables, I use

binary measures that indicated district officials' access to the *muhtar's* personal cell phone information for the e-government project, whether the village has a water supply network, whether the village's drinking water comes from a water supply network or bore hole, and whether the quality of water is being regularly controlled. As the continuous treatment variable for any given village is based on the distance to district headquarters in two adjacent districts, the table presents the impact of each additional kilometer in distance to the district headquarters. For the sake of brevity, I only interpret results for a sample with a bandwidth of 2.5 kilometers.

Columns 1–4 of Table 3 present the results. Columns 1–2 present results from a specification with province and segment fixed effects and district-level covariates, while the specifications in Columns 3–4 employ both segment- and district-level fixed effects, as shown in equation (1). Columns 1–3 and 2–4 show the estimates without and with village-level covariates, respectively. According to Model 2, I find that an increase of one standard deviation in the distance to a district headquarters (that is, an increase of 9.13 kilometers) decreases the likelihood to access the *muhtar's* personal cell phone information by 0.046 (4.6 percentage points), or 8.63% of the sample mean and 0.1 standard deviation. Estimates from the same analysis show a 0.027 (2.7 percentage points) decrease in the likelihood of having a water supply network, a 0.037 (3.7 percentage points) decrease in the likelihood of having drinking water infrastructure, and a 0.055 (5.5 percentage points) decrease in the likelihood of having water quality controls. These numbers correspond to a %3.86 decrease in water supply network, a % 4.38 decrease in drinking water infrastructure, and a %18.51 decrease in water quality controls, compared to the sample means. In Model 4, the effect sizes decrease for all the dependent variable indicators, corresponding to a % 3.46 decrease in access to the *muhtar's* personal cell phone information, a % 3.86 decrease in water supply network, a %5.48 decrease in drinking water infrastructure, and a % 6.17 decrease in water quality controls, compared to the sample means.

Table 3: Change in Bureaucratic Efficiency at District Borders

<i>Bandwidth: 2.5 km</i>	(1)	(2)	(3)	(4)
		Panel A: Personal Cell Phone Information		
Distance	-0.005*** (0.001)	-0.005*** (0.001)	-0.002** (0.001)	-0.002** (0.001)
Observations	8,627	8,626	8,632	8,631
R ²	0.455	0.456	0.659	0.660
		Panel B: Water Supply Network		
Distance	-0.004*** (0.001)	-0.003** (0.001)	-0.004*** (0.001)	-0.003** (0.001)
Observations	8,627	8,626	8,632	8,631
R ²	0.431	0.434	0.537	0.541
		Panel C: Drinking Water		
Distance	-0.005*** (0.002)	-0.004** (0.002)	-0.006*** (0.002)	-0.005** (0.002)
Observations	2,763	2,763	2,766	2,766
R ²	0.476	0.481	0.535	0.541
		Panel D: Water Quality Control		
vgeodesic	-0.005*** (0.001)	-0.006*** (0.001)	-0.001 (0.001)	-0.002** (0.001)
Observations	8,627	8,626	8,632	8,631
R ²	0.527	0.529	0.760	0.760
Segment fixed effects	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	No	No
District fixed effects	No	No	Yes	Yes
Village controls	No	Yes	No	Yes

Note: Standard errors clustered at the segment level. * p<0.1; ** p<0.05; *** p<0.01

Figure 10 presents the results from the most conservative model, the model in Column 4 of Table 3, graphically, charting a rise (decrease) in bureaucratic efficiency with proximity (geographic distance). It shows how the coefficients on bureaucratic efficiency change as the bandwidth increases from 1.5 to 3.5 kilometers, after segment fixed effects, district fixed effects, control variables, and a linear polynomial in latitude and longitude are accounted for. The negative values on the x-axis represent different bandwidth choices, where villages are selected based on their (geodesic) distance to the nearest district border. The y-axis shows the effect of only one additional kilometer in distance (where a one standard deviation change in distance corresponds to 9.13 km). The estimates confirm that the main results are robust to different bandwidth choices.

7.3 Robustness

In this section, I demonstrate whether the results are robust to alternative polynomial choices, sample inclusion criteria, and standard error estimations. Table 4 illustrates the coefficients for these robustness checks. One concern might be that the results are driven by the type of the polynomial used, a linear polynomial in latitude and longitude. Panel A of Table 4 shows that the results are robust to using a quadratic polynomial in latitude and longitude and a linear polynomial in (geodesic) distance to border. Then, in Panel B, I present estimates using two-way clustering, specifically by clustering standard errors at both the segment and the district level (Cameron et al., 2012). The effect of geographic distance on bureaucratic efficiency is statistically significant across all these specifications.

Finally, while the baseline model does not involve any geographic restriction criteria to limit my sample, geographic features such as mountains create natural barriers (Nunn and Puga, 2010). Natural barriers imply that at a border, not only a village's home district but also its geographical conditions may alter. To see whether borders with a significant change in elevation drive the effect, I test whether my estimates are robust to

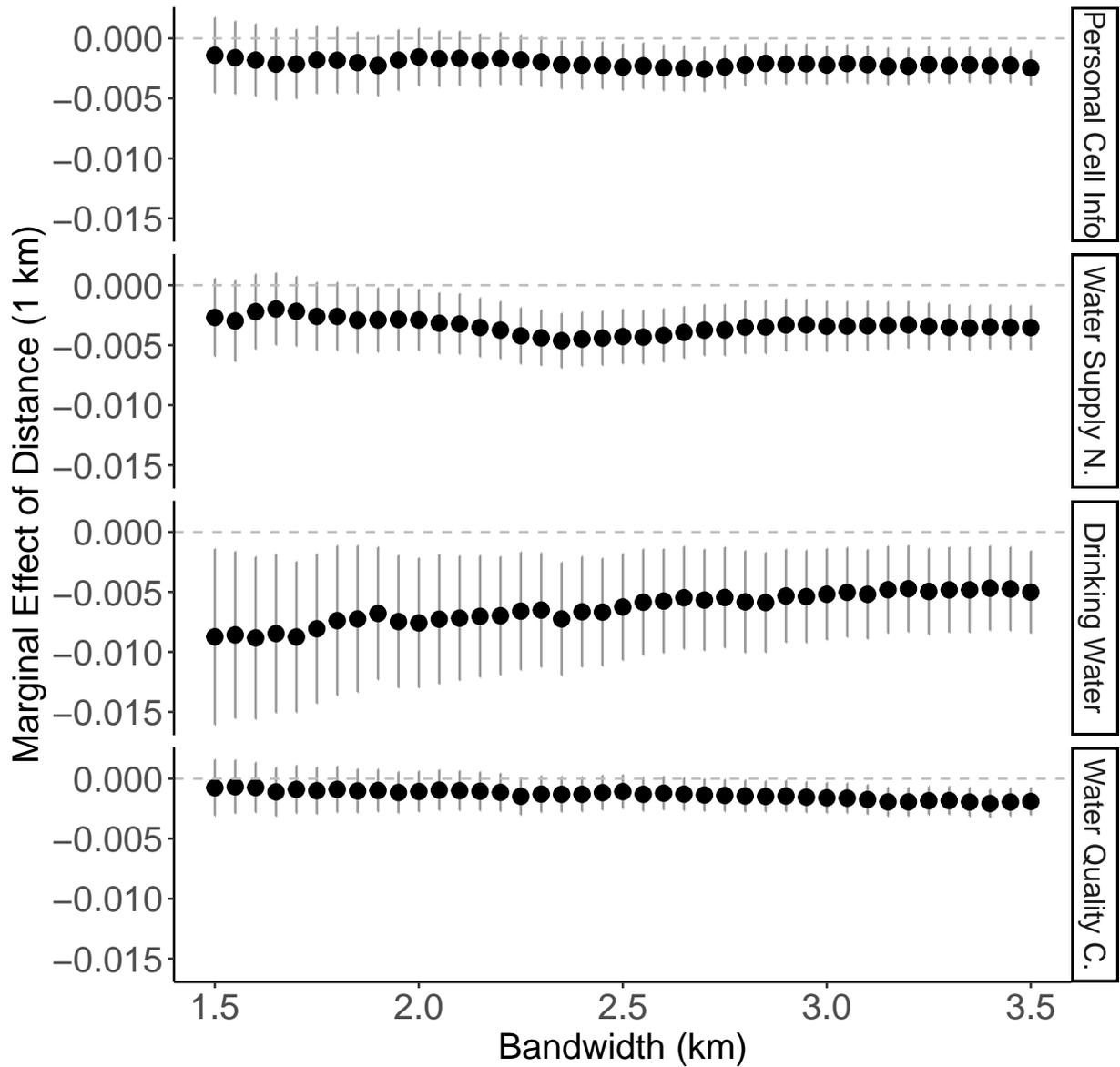


Figure 10: Main Estimates by Different Bandwidth Choices

more conservative sample-inclusion criteria. To that end, I drop segments across which elevation change is greater than the 95th percentile. Nevertheless, as presented in Panel C, the estimates remain substantially and statistically significant.

8 Social Fragmentation and Bureaucratic Efficiency

Table 4: Change in Bureaucratic Efficiency at District Borders by Specification

DV Measure	β_1 (se)	Polynomial	Cluster
Panel A: Polynomial			
Contact Cell Information	-0.002** (0.001)	Quadratic	Segment
Contact Cell Information	-0.002** (0.001)	Distance to Border	Segment
Piped Water	-0.003** (0.001)	Quadratic	Segment
Piped Water	-0.003** (0.001)	Distance to Border	Segment
Drinking Water	-0.005** (0.002)	Quadratic	Segment
Drinking Water	-0.006*** (0.002)	Distance to Border	Segment
Water Quality Control	-0.002** (0.001)	Quadratic	Segment
Water Quality Control	-0.002** (0.001)	Distance to Border	Segment
Panel B: Multiway Clustering			
Contact Cell Information	-0.002** (0.001)	Linear	District-segment
Piped Water	-0.003** (0.001)	Linear	District-segment
Drinking Water	-0.005** (0.002)	Linear	District-segment
Water Quality Control	-0.002** (0.001)	Linear	District-segment
Panel C: Omitting Natural Borders			
Contact Cell Information	-0.002** (0.001)	Linear	Segment
Piped Water	-0.003** (0.001)	Linear	Segment
Drinking Water	-0.005** (0.002)	Linear	Segment
Water Quality Control	-0.002** (0.001)	Linear	Segment

Bandwidth: 2.5 km

Note: *p<0.1; **p<0.05; ***p<0.01

I use network and ethnicity data to provide further evidence for my theory. Two other implications of my theory, which help to confirm the mechanism through which geographic proximity affects bureaucratic performance, is that geographic proximity (or geographic distance thereof) should become a less relevant factor when communities are in socially fragmented units or when there are ethnic divisions between bureaucrats. Empirically, the effect of geographic proximity should be heterogeneous across provinces with different levels of social fragmentation, which I measure by network indicators. In addition, the effect of geographic proximity should decrease when village officials are from Kurdish (ethnic minority) and Alevi (sectarian minority) backgrounds, unlike the majority-Turkish and Sunni district officials with whom they need to cooperate. This is because when administrative boundaries overlap with fragmented communities or when bureaucrats are from different ethnic backgrounds, they may not find opportunities to

reach other bureaucrats through personal networks, regardless of the geographic position of the administrative unit in which they serve. In other words, social fragmentation or ethnic differences may impede bureaucrats from expanding their informal networks to other villages, districts, and province centers. To empirically test this implication of my theory, I analyze how the effects of geographic proximity differ across provinces with different network structures or for Kurdish and Alevi villages.

8.1 Heterogeneity by Network Structure

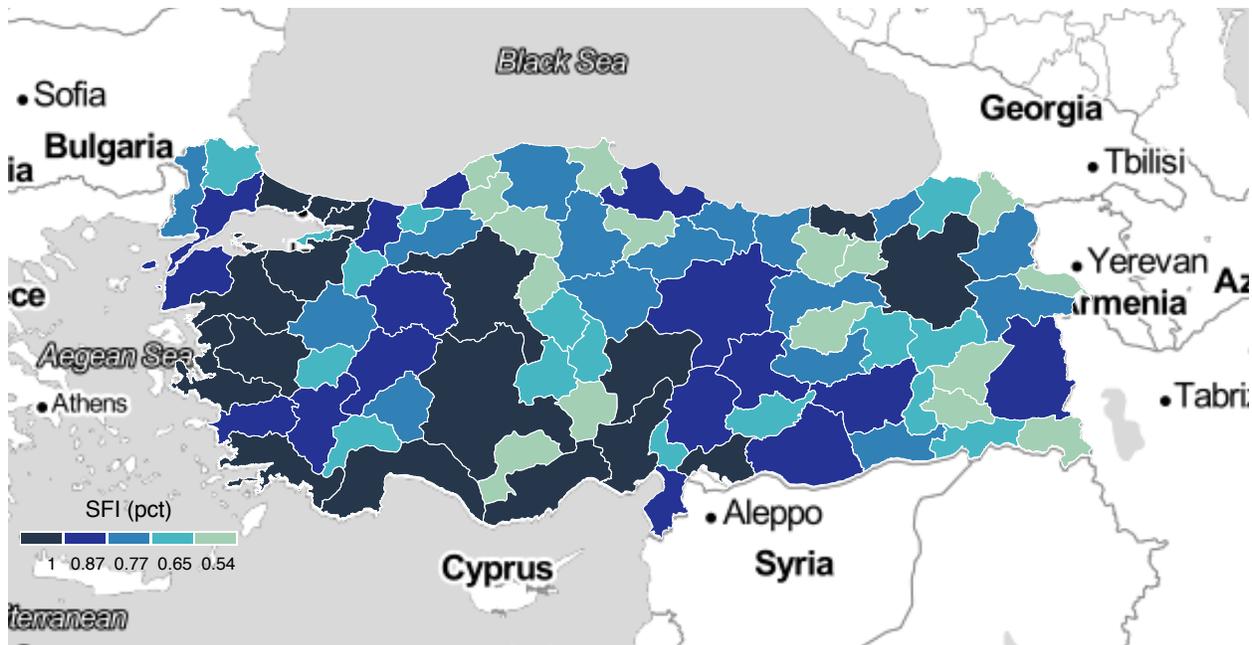


Figure 11: Province-Level Social Fragmentation Score

Measuring Social Fragmentation. To see whether the effect of geographic proximity is lower in fragmented communities, I use antenna-level mobile call detail records and calculate a province-level social fragmentation score. The mobile call dataset, which covers each Turkish province, includes information on the site-to-site call traffic of Turk Telekom (TT) customers on an hourly basis over an entire year.²² The antenna-level site-

²²See Salah, A.A., Pentland, A., Lepri, B., Letouzé, E., Vinck, P., de Montjoye, Y.A., Dong, X. and Dagdelen, Ö.: Data for Refugees: The D4R Challenge on Mobility of Syrian Refugees in Turkey. arXiv

to-site call traffic enables to see whether and how much subcommunities at different antenna locations communicate with one another. To calculate the province-level social fragmentation score, I first calculate the social proximity of a given antenna location (i.e., node) to all other antenna locations in the province. Following [Breza et al. \(2014\)](#), I measure social proximity of a node to other nodes based on the length of the shortest path between them, which, in this context, depends on the presence of calls between antennas. This is calculated as $1 / \sum_{i \neq j} l(i, j)$, where $l(i, j)$ is the number of links in the shortest path between i and j ([Jackson, 2010](#)). After obtaining a social proximity score for each antenna location, i.e., for each subcommunity, I calculate the average social fragmentation of a given province. It is simply the average of antenna-level social proximity scores, but scaled such that it takes a value between 0 and 1, where lower values indicate close-knit communities and higher values indicate fragmented communities. [Figure 11](#) illustrates province-level variation in the social fragmentation score across Turkey.

Network data as a measure of social fragmentation has certain advantages over other possible fragmentation indicators, such as ethnic fractionalization. While a province's social fragmentation affects the average reachability of the individuals who live there, it may not necessarily be explainable by a single factor like ethnic groupings. Therefore, a social fragmentation measure that only relies on ethnic fractionalization may miss other potential sources of fractionalization in the district and perhaps even lead to omitted variable bias. Thus, a social fragmentation measure relying on network data has the advantage of capturing all potential sources of social fragmentation in a province.

In Turkey, as in many other countries, social fragmentation can stem from several factors rooted in identity-based and social distinctions including, but not limited to, hometown backgrounds, ethnic identities, and political views. [Figure 12](#) illustrates the relationship between the province-level social fragmentation score and these other diversity indicators. All measures used in the figure are continuous and take values between 0

preprint arXiv:1807.00523 (2018). While the data originally included refugees' call detail records as well, I only employ data on Turkish citizens.

and 1. The first indicator is a hometown fractionalization index showing the heterogeneity of the district population by the hometowns of its residents, calculated based on the Herfindahl-Hirschman formula.²³ In Turkey, hometown information is written on identification cards. An individual’s hometown is usually their birthplace or that of their father or paternal grandparents. The hometown is an important dimension of Turkish identity regardless of the place of residence, as is demonstrated by the number of hometown associations in cosmopolitan cities such as Istanbul: out of 15,821 associations in the city, 6,450 are hometown associations.²⁴ Ethnic diversity is another potential source of social fragmentation. The second graph in Figure 12 shows the correlation of the social fragmentation score with an ethnic fractionalization index calculated by the shares of Turkish and Kurdish populations. As the Turkish state ceased collecting information on ethnicity after the 1965 census, districts’ Kurdish populations were calculated by the number of people whose hometown is a majority Kurdish-speaking province according to the 1965 census (or if the province supported the Kurdish party in the 2015 elections). Finally, I also present correlation with a political fractionalization index calculated based on the vote shares of each major political party in Turkey.

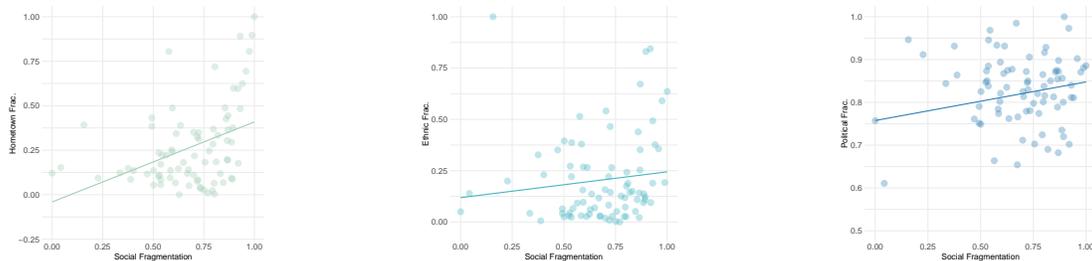


Figure 12: Correlation of Social Fragmentation Score with Alternative Indicators by Province

The plot reveals that, as expected, the social fragmentation score is correlated with the measures listed above. This suggests that social fragmentation in a province indeed

²³If s_j is the share of people from hometown j in a province, then the hometown fractionalization index in the province can be expressed as $HomeFrac = 1 - \sum s_j^2$.

²⁴This is calculated based on information from the database of the Ministry of Interior.

depends on a multitude of factors and that any indicator that exclusively focuses on a single factor might lead to potential sources of bias in a regression model that employs observational data. Specifically, the correlation of social fragmentation with hometown fractionalization is 0.44, with ethnic fractionalization, 0.38, and with political fractionalization, 0.17.²⁵

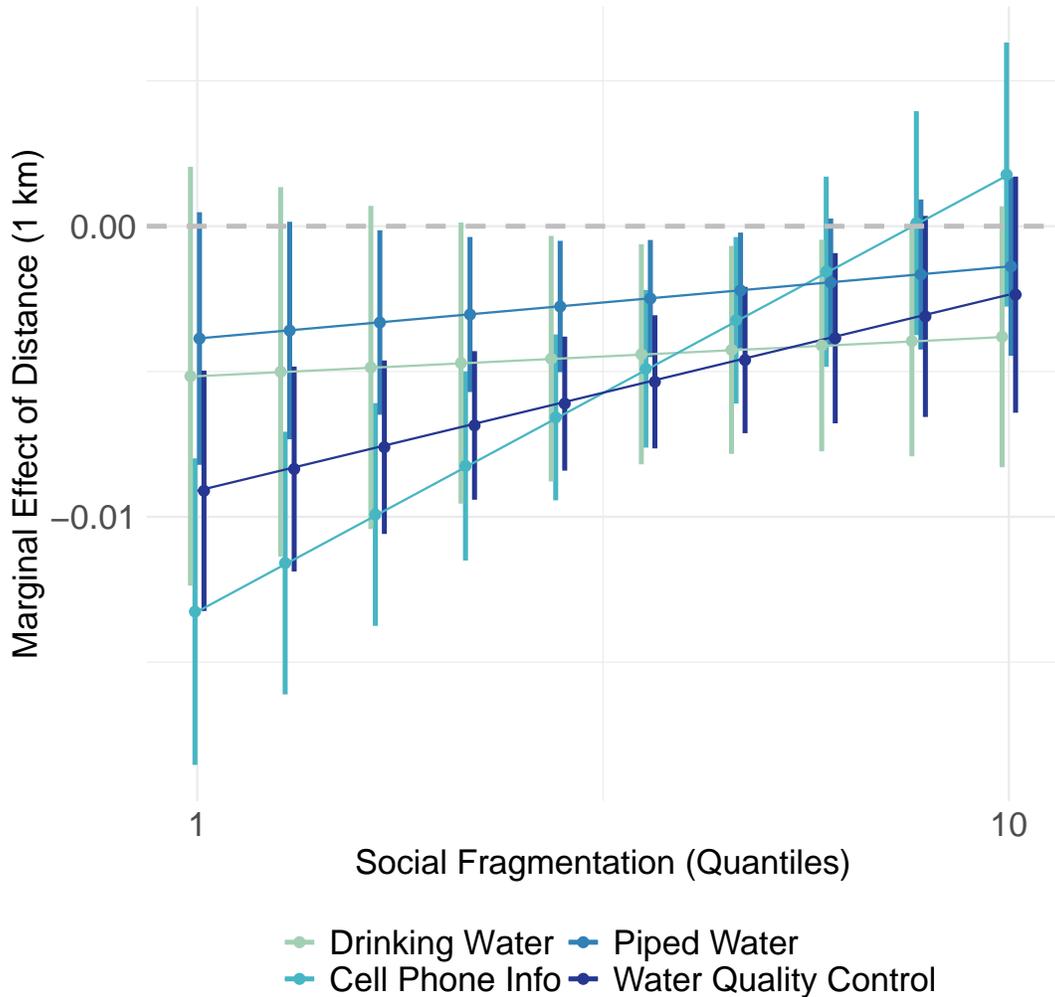


Figure 13: Effect of Geographic Proximity at Different Levels of Social Fragmentation

²⁵Other potential sources of social fragmentation that may be captured by the social fragmentation score include family networks (Cruz et al., 2019) or fragmentation by social class.

Findings. To examine whether geographic proximity plays a smaller role in inducing social proximity in socially fragmented communities, I demonstrate heterogeneity in the treatment effect across provinces with different network structures. I predict that in socially fragmented provinces, social proximity between bureaucrats is less likely to hold, and therefore, factors such as geographic distance should play a smaller role in inducing social proximity. To test this argument, I add an interaction term to equation (1) (see Appendix Section C). This new specification interacts the continuous village-level treatment variable $Distance_{vsp}$ with the province-level social fragmentation score, $SocialFrag_p$. $SocialFrag_p$ is a discrete measure on a scale of 0 to 9 that relies on the quantile values of the social fragmentation score, where 0 indicates the 10% of the provinces with the lowest scores. Given that the coefficient of $Distance_{vsp}$ in the baseline model has a negative sign, and the prediction that this effect would be observed less frequently in socially fragmented communities, the coefficient of the interaction variable, β_2 , should have a positive sign here. The results (Figure 13) indicate that the effect of geographic distance on bureaucratic efficiency is generally negative and statistically significant ($p < 0.05$) in communities with low social fragmentation. On the other hand, the estimate tends to decrease in size or loses its statistical significance at higher levels of socially fragmentation—albeit the interaction term is not statistically significant for the drinking water infrastructure and water supply network indicators (Appendix Table A3).

8.2 The Effect of Ethnic Divisions

Another important observable implication of my theory is that geographic distance should become a less relevant factor of bureaucratic efficiency when ethnic divisions exist between bureaucrats, as individuals are less likely to create social ties and maintain their relationships with out-group members, making information diffusion and cooperation less likely. To test this implication, I examine whether the effect of geographic

distance diminishes when village officials are from ethnic or sectarian minority backgrounds. Specifically, I re-estimate the same results as in Figure 10 for two different subsamples entirely composed of minority villages: Kurdish and Alevi villages. While officials working in province and district governorates are mostly from the majority ethnic and religious group in Turkey, Turkish and Sunni, *muhtars* and village councils are from the local ethnic group, and hence village administrations in minority villages are either Kurdish or Alevi. This often leads to ethnic divisions between village officials in minority villages and other public officials. Therefore, I expect the effect of geographic distance to be substantively and/or statistically less significant in these two subsamples.

To categorize Alevi villages, I use an original dataset that maps the sectarian distribution of all villages in Turkey. As Kurdish villages are concentrated in the Kurdish region, to identify them, I simply select the villages located in Kurdish provinces. I categorize a province as Kurdish if the majority of the population speaks Kurdish according to the 1965 census or if at least 40% of the voters in the province voted for the Kurdish Party (HDP, or Halkların Demokratik Partisi - Peoples' Democratic Party) in the 2015 general elections. I present the coefficients of the continuous treatment variable, $Distance_{vsd}$, in Table 5 (See also Appendix Figures A2 and A3 which present estimates with a breakdown according to different bandwidth choices.). As shown in the table, when the analysis is restricted to a comparison within each of the two subsamples, I find that not only are the effects of the distance treatment statistically insignificant across all the dependent variable indicators, but the directions of the effects are either positive or are inconsistent across different bandwidth choices. For instance, in the subsample composed of Alevi villages, I find a positive estimate for the effect of geographic distance on access to the *muhtar's* personal cell phone information and drinking water infrastructure (at bandwidths of 2 and 2.5 kilometers). In the subsample composed of Kurdish villages, the estimates are positive for two dependent variable indicators: access to the *muhtar's* personal cell phone information and water quality controls. Overall, the results are con-

Table 5: Change in Bureaucratic Efficiency at District Borders by Muhtars' Ethnicity

<i>Bandwidth</i>	Alevi			Kurdish		
	2 km	2.5 km	3 km	2 km	2.5 km	3 km
	Panel A: Personal Cell Info					
Distance (km)	0.007* (0.004)	0.003 (0.004)	-0.001 (0.003)	0.0001 (0.002)	0.001 (0.002)	-0.0004 (0.001)
Observations	732	922	1,098	1,236	1,600	1,937
R ²	0.825	0.785	0.767	0.724	0.697	0.688
	Panel B: Water Supply Network					
Distance (km)	-0.001 (0.004)	-0.001 (0.003)	-0.003 (0.003)	-0.001 (0.002)	-0.0004 (0.001)	-0.001 (0.001)
Observations	732	922	1,098	1,236	1,600	1,937
R ²	0.761	0.711	0.698	0.608	0.587	0.564
	Panel C: Drinking Water					
Distance (km)	-0.011** (0.005)	-0.002 (0.007)	-0.005 (0.008)	-0.0002 (0.006)	-0.001 (0.004)	-0.003 (0.004)
Observations	199	244	280	145	189	225
R ²	0.700	0.722	0.692	0.514	0.529	0.436
	Panel D: Water Quality Control					
Distance (km)	-0.0005 (0.004)	-0.001 (0.003)	-0.003 (0.003)	0.001 (0.001)	0.0005 (0.001)	0.001 (0.0004)
Observations	732	922	1,098	1,236	1,600	1,937
R ²	0.841	0.812	0.780	0.565	0.583	0.537
Segment fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Village controls	Yes	Yes	Yes	Yes	Yes	Yes

Note: Standard errors clustered at the segment level. *p<0.1; **p<0.05; ***p<0.01

sistent with my argument that geographic proximity plays a smaller role in inducing social proximity when there are ethnic divisions between bureaucrats.

9 Alternative Explanations

Having presented the effect of social proximity on bureaucratic efficiency, I now address alternative explanations. Public goods outcomes such as water infrastructure can be influenced by several other factors that are potentially correlated with geographic proximity such as logistical costs and economic development. I address each of these specific alternative explanations below.

Low Infrastructural or Logistical Costs. One alternative explanation for bureaucratic efficiency in proximate villages could be that due to low infrastructural or logistical costs, the quality of any public service is higher in these villages. Although this alternative explanation cannot explain access to *muhtars'* cell phone information, logistical costs could affect the presence of water infrastructure and water quality controls. By considering another crucial major public goods investment, schools, I find evidence that in the context of Turkey, the high logistical costs of investments in distant villages cannot explain service delivery performance. I focus on schools because decisions about these investments are usually made by the national government and Ministry, ideally based on criteria such as the number of school-aged children in the village, with little or no influence from local bureaucrats. Consequently, if geographic proximity has a positive and significant effect on schools, logistical costs could be a plausible explanation.

To formally test this hypothesis, I use equation (1) and estimate the effect of geographic distance on a binary variable that indicates whether a village has any schools. As Panel A in Table A7 demonstrates, while schools require large investments and staff, thus increasing the salience of potential logistical and infrastructural costs, proximate villages do not receive more school investments than villages far from their district head-

quarters. Furthermore, the direction of the effect of geographic distance on schools is positive, raising our confidence in the validity of this finding. This finding suggests that infrastructural or logistical costs in geographically distant villages do not pose a barrier to government performance in service provision in Turkey, making this alternative explanation unlikely.

Table 6: Change in Alternative Outcomes at District Borders

<i>Bandwidth</i>	2 km	2.5 km	3 km
Panel A: Elementary School			
Distance (km)	0.002 (0.001)	−0.00004 (0.001)	0.00005 (0.001)
Observations	6,718	8,632	10,334
R ²	0.492	0.452	0.423
Panel B: Electricity			
Distance (km)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001* (0.0001)
Observations	2,420	3,097	3,732
R ²	0.370	0.305	0.227
Panel C: Owns Computer			
Distance (km)	0.0004 (0.003)	0.001 (0.002)	0.0001 (0.002)
Observations	2,420	3,097	3,732
R ²	0.669	0.638	0.615
Segment fixed effects	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes
Village controls	Yes	Yes	Yes

Note: Standard errors clustered at the segment level. *p<0.1; **p<0.05; ***p<0.01

Economic and social development. Finally, the particular legacies of administratively proximate villages may play a role in local government performance if their proximity to district centers leads to an overall higher economic and social development level. Yet, if this were a factor, one would expect proximate villages to own more private assets or to forge ahead in services offered by private providers. As Panels B-C in Table A7 demonstrate, this does not appear to be the case. To determine how geographic proximity affects private services, I estimate the effect of the geographic distance treatment

on two binary variables: one that indicates whether the village has access to electricity, a service provided by private companies, and one that indicates whether the *muhtar* owns a computer. I find that not only are the effects of the distance treatment statistically insignificant, but the directions of the effects are inconsistent across different bandwidth choices.

10 Discussion

The core argument of this study is that social proximity among bureaucrats creates positive externalities that reduce the transaction costs commonly seen in local governance and increase bureaucratic efficiency (Manski, 2000). By examining the impacts of dyadic social proximity and community structures on bureaucratic efficiency, this study shows that bureaucrats' informal channels can do what governments and markets sometimes fail to do and play a complementary role in service delivery (Helmke and Levitsky, 2004).

Local bureaucrats play the key role in the production and allocation process of local public services. Yet, the effect of social proximity on bureaucratic efficiency should emerge differentially across different types of public goods outcomes. Bureaucratic efficiency may be a less relevant dimension of public service delivery in public goods determined by centralized decisions or entirely subject to budgetary constraints. For example, in the Turkish context, the number of schools in a district cannot be attributed to bureaucratic efficiency, as decisions about school investments are in general made by the central government. On the other hand, how fast a school building is constructed, how cost-efficient the construction process is, or the quality of the building are all shaped by local bureaucratic processes. Therefore, for bureaucratic efficiency to be a salient dimension of government performance in a given public service, local bureaucrats should play a role in its production and/or allocation process.

How can lessons from the Turkish case be applied elsewhere? Admittedly, the same social ties among bureaucrats that increase bureaucratic efficiency can also give bureaucrats the opportunity to leverage their private information and sanctioning power for their personal interest. In other words, bureaucrats may abuse their within-bureaucracy ties to engage in corrupt behavior (Ashraf and Bandiera, 2018). This concern can be addressed in two ways. First, corruption and overall government performance may not necessarily have a negative correlation. Positive externalities created by social proximity can compensate for corrupt behavior and may still lead to an overall increase in bureaucratic efficiency. Second, the potential negative effects of social proximity among bureaucrats can be prevented by controlling bureaucratic behavior through carrot-and-stick mechanisms (e.g., high salaries, tenure guarantees, or centrally-administered monitoring tools) so that bureaucrats have fewer incentives to abuse their local networks (Aghion and Tirole, 1997). Bureaucratic efficiency may increase to the extent to which the overall administrative structure relies on a reasonably well-functioning hierarchy to engage in these controlling mechanisms. Therefore, the implications of my theory might be weaker for countries with failed states, where the national or federal government has little or no control over bureaucrats. Third, the extent of a potential negative effect of social proximity depends on the type of service provided: while corrupt behavior might be of more concern in ‘capital-intensive’ services such as allocation of school funds corrupt behavior, it may not be a concern in ‘labor-intensive’ services such as collaboration in major school events.

Given that the empirical evidence of this study comes from rural areas, how does this theory fare in urban contexts? Although this study utilizes village-level variables in its research design, the theory is not only applicable to rural contexts. On the contrary, one implication of the theory is that bureaucratic efficiency is likely to be higher in close-knit communities and lower in socially fragmented communities. As such, it can shed light on the differences between rural and urban settings and on puzzles such

as why government performance in public services is sometimes better in poorer rural areas. This theory predicts that, *other things being constant*, bureaucratic processes might function more easily in rural contexts, where a bureaucrat's informal ties are more likely to expand to different parts of the local bureaucracy.

The theoretical contribution of this study is to link literatures on political geography, ethnic geography, and state capacity, thereby advancing research on public goods provision. This project studies government performance in public services outside of the accountability relationships and citizen sanctioning, revealing instead previously unidentified, capacity-driven sources of government performance. In emphasizing that within-bureaucracy ties may affect public goods provision through state capacity, I offer an explanation distinct from, but complementary to, the emphasis in alternative approaches.

Second, this paper extends the literature on within-country variation in state capacity. While some studies emphasize the uneven distribution of state capacity at the subnational level (O'Donnell, 1993), surprisingly few studies discuss the sources of subnational variations (Herbst, 2014). Even fewer studies point to the relationship between local social context and state capacity (Charnysh, 2019). By demonstrating that social ties among bureaucrats and social fragmentation in the communities they serve influence bureaucratic efficiency, this study shows that bureaucratic performance and state capacity can vary systematically at the subnational level. This finding contributes to the growing literature on how the inner workings of the state can influence the quality of service delivery (Finan et al., 2015).

Finally, although a number of studies have addressed the adverse effects of ethnic divisions on the provision of public goods, there is little evidence on how these divisions influence the bureaucratic efficiency dimension.²⁶ While this study confirms the con-

²⁶A recent study looks at the effect of ethnic diversity on project completion rates in Nigeria and finds a positive association between (Rasul and Rogger, 2015) ethnic diversity and project completion rates using survey data.

clusion held by much of the extant research that heterogeneity may undermine public goods provision, it diverges from that scholarship by demonstrating that heterogeneity in communities not only leads to lower co-production by citizens or lower collective action in demanding service from the state, but also to lower bureaucratic efficiency.

Looking to policy, this work will provide policymakers with key insights concerning the origins of good performance in local public services, yielding important implications for social welfare. It indicates that citizen empowerment and accountability are not the only paths to better governance. This work also reveals alternative explanations for why public services are more likely to deteriorate in ethnically diverse and underrepresented communities, suggesting that states must prioritize coordination and cooperation within the bureaucracies in such communities. Potential policy recommendations informed by this study include: projects to strengthen local networks among bureaucrats, particularly in socially heterogeneous settings; optimizing jurisdictional borders to ensure that central administrators have access to all bureaucratic agents and groups in the district regardless of geographical segregation or ethnicity; enriching social networks among bureaucrats by using new information technologies; and preventing high bureaucratic turnover rates in underdeveloped regions.

Bibliography

- Aghion, Philippe and Jean Tirole (1997, February). Formal and Real Authority in Organizations. *Journal of Political Economy* 105(1), 1–29.
- Agrawal, Ajay, Devesh Kapur, and John McHale (2008, September). How do spatial and social proximity influence knowledge flows? Evidence from patent data. *Journal of Urban Economics* 64(2), 258–269.
- Alchian, Armen A. and Harold Demsetz (1972). Production, Information Costs, and Economic Organization. *The American Economic Review* 62(5), 777–795.
- Alesina, Alberto, Reza Baqir, and William Easterly (1999, 11). Public Goods and Ethnic Divisions*. *The Quarterly Journal of Economics* 114(4), 1243–1284.
- Algan, Yann, Camille Hémet, and David D. Laitin (2016, May). The Social Effects of Ethnic Diversity at the Local Level: A Natural Experiment with Exogenous Residential Allocation. *Journal of Political Economy* 124(3), 696–733.
- Ashraf, Nava and Oriana Bandiera (2018). Social Incentives in Organizations. *Annual Review of Economics* 10(1), 439–463.
- Ashworth, Scott (2012). Electoral accountability: recent theoretical and empirical work. *Annual Review of Political Science* 15, 183–201.
- Banerjee, Abhijit and Rohini Somanathan (2007, March). The political economy of public goods: Some evidence from India. *Journal of Development Economics* 82(2), 287–314.
- Banerjee, Abhijit V. (1997). A theory of misgovernance. *The Quarterly Journal of Economics*, 1289–1332.
- Banerjee, Abhijit V, Rukmini Banerji, Esther Duflo, Rachel Glennerster, and Stuti Khemani (2010, February). Pitfalls of Participatory Programs: Evidence from a Randomized Evaluation in Education in India. *American Economic Journal: Economic Policy* 2(1), 1–30.
- Banerjee, Abhijit V, Selvan Kumar, Rohini Pande, and Felix Su (2011). Do Informed Voters Make Better Choices? Experimental Evidence from Urban India. pp. 46.
- Berwick, Elissa and Fotini Christia (2018, May). State Capacity Redux: Integrating Classical and Experimental Contributions to an Enduring Debate. *Annual Review of Political Science* 21(1).
- Besley, Timothy and Robin Burgess (2002, November). The Political Economy of Government Responsiveness: Theory and Evidence from India. *The Quarterly Journal of Economics* 117(4), 1415–1451.
- Björkman Nyqvist, Martina and Jakob Svensson (2007). Power to the people: evidence from a randomized field experiment of a community-based monitoring project in Uganda. Technical report, CEPR Discussion Papers.

- Breza, Emily, Arun G Chandrasekhar, and Horacio Larreguy (2014, July). Social structure and institutional design: Evidence from a lab experiment in the field. Working Paper 20309, National Bureau of Economic Research.
- Bugra, Ayse and Caglar Keyder (2006, August). The Turkish welfare regime in transformation. *Journal of European Social Policy* 16(3), 211–228.
- Cameron, A Colin, Jonah B Gelbach, and Douglas L Miller (2012). Robust inference with multiway clustering. *Journal of Business & Economic Statistics*.
- Cammett, Melani (2014). *Compassionate communalism: Welfare and sectarianism in Lebanon*. Cornell University Press.
- Chandra, Kanchan (2007, February). *Why Ethnic Parties Succeed: Patronage and Ethnic Head Counts in India*. Cambridge University Press.
- Charnysh, Volha (2019). Diversity, institutions, and economic outcomes: Post-wwii displacement in poland. *American Political Science Review* 113(2), 423–441.
- Chong, Alberto, Ana De La O, Dean Karlan, and Leonard Wantchekon (2011, December). Looking Beyond the Incumbent: The Effects of Exposing Corruption on Electoral Outcomes. Technical Report w17679, National Bureau of Economic Research, Cambridge, MA.
- Corstange, Daniel (2010). Vote buying under competition and monopsony: Evidence from a list experiment in lebanon. In *Presentation at the Annual Meeting of the American Political Science Association, Washington, DC*.
- Cox, Gary W. and Mathew D. McCubbins (1986). Electoral politics as a redistributive game. *The Journal of Politics* 48(02), 370–389.
- Cruz, Cesi, Julien Labonne, and Pablo Querubin (2019). Social Fragmentation, Electoral Competition and Public Goods Provision.
- Davis, Jennifer (2004). Corruption in public service delivery: experience from South Asia’s water and sanitation sector. *World development* 32(1), 53–71.
- Dell, Melissa (2010). The Persistent Effects of Peru’s Mining Mita. *Econometrica* 78(6), 1863–1903.
- Dell, Melissa and Benjamin Olken (2017, November). The Development Effects of the Extractive Colonial Economy: The Dutch Cultivation System in Java. Technical Report w24009, National Bureau of Economic Research, Cambridge, MA.
- Dixit, Avinash and John Londregan (1996, November). The Determinants of Success of Special Interests in Redistributive Politics. *The Journal of Politics* 58(04), 1132.
- Doll, Christopher N. H., Jan-Peter Muller, and Jeremy G. Morley (2006, April). Mapping regional economic activity from night-time light satellite imagery. *Ecological Economics* 57(1), 75–92.

- Díaz-Cayeros, Alberto, Beatriz Magaloni, and Alexander Ruiz-Euler (2014, January). Traditional Governance, Citizen Engagement, and Local Public Goods: Evidence from Mexico. *World Development* 53, 80–93.
- Easley, David and Jon Kleinberg (2010). *Networks, crowds, and markets: Reasoning about a highly connected world*. Cambridge University Press.
- Evans, Peter B. (1995). *Embedded autonomy : states and industrial transformation / Peter Evans*. Princeton paperbacks. Princeton, N.J. : Princeton University Press, c1995.
- Fafchamps, Marcel and Pedro C. Vicente (2013, March). Political violence and social networks: Experimental evidence from a Nigerian election. *Journal of Development Economics* 101, 27–48.
- Ferraz, Claudio and Frederico Finan (2011, June). Electoral Accountability and Corruption: Evidence from the Audits of Local Governments. *American Economic Review* 101(4), 1274–1311.
- Finan, Frederico, Benjamin A. Olken, and Rohini Pande (2015, December). The Personnel Economics of the State. Working Paper 21825, National Bureau of Economic Research.
- Fukuyama, Francis (2013, July). What Is Governance? *Governance* 26(3), 347–368.
- Gadenne, Lucie and Monica Singhal (2014). Decentralization in Developing Economies. *Annual Review of Economics* 6(1), 581–604.
- Gelman, Andrew and Guido Imbens (2019). Why high-order polynomials should not be used in regression discontinuity designs. *Journal of Business & Economic Statistics* 37(3), 447–456.
- Greif, Avner (1993). Contract enforceability and economic institutions in early trade: The maghribi traders' coalition. *The American economic review*, 525–548.
- Habyarimana, James, Macartan Humphreys, Daniel N. Posner, and Jeremy M. Weinstein (2007, November). Why Does Ethnic Diversity Undermine Public Goods Provision? *American Political Science Review* 101(04), 709–725.
- Hanson, Jonathan K. and Rachel Sigman (2013). Leviathan's Latent Dimensions: Measuring State Capacity for Comparative Political Research.
- Helmke, Gretchen and Steven Levitsky (2004). Informal institutions and comparative politics: A research agenda. *Perspectives on politics* 2(04), 725–740.
- Henderson, J. Vernon, Adam Storeygard, and David N. Weil (2012, April). Measuring Economic Growth from Outer Space. *American Economic Review* 102(2), 994–1028.
- Herbst, Jeffrey (2014). *States and power in Africa: Comparative lessons in authority and control*, Volume 149. Princeton University Press.

- Humphreys, Macartan and Jeremy M Weinstein (2011). Policing Politicians: Citizen Empowerment and Political Accountability in Uganda Preliminary Analysis. pp. 54.
- Jackson, Matthew O (2010). *Social and economic networks*. Princeton university press.
- Jaffe, Adam B., Manuel Trajtenberg, and Rebecca Henderson (1993, August). Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations. *The Quarterly Journal of Economics* 108(3), 577–598.
- Johnson, Chalmers A (1982). *MITI (Ministry of International Trade and Industry) and the Japanese miracle: the growth of industrial policy, 1925-1975*. Stanford, Calif.: Stanford University Press.
- Keefer, Philip and Stuti Khemani (2014, July). Mass media and public education: The effects of access to community radio in Benin. *Journal of Development Economics* 109, 57–72.
- Keele, Luke J. and Rocío Titiunik (2015). Geographic Boundaries as Regression Discontinuities. *Political Analysis* 23(01), 127–155.
- Kimya, Firat (2019, May). Political economy of corruption in Turkey: declining petty corruption, rise of cronyism? *Turkish Studies* 20(3), 351–376.
- Knack, Stephen (2002). Social Capital and the Quality of Government: Evidence from the States. *American Journal of Political Science* 46(4), 772–785.
- KONDA (2006). Who are we? social structure survey. Technical report, Istanbul.
- KONDA (2014). Post-local elections survey. Technical report, Istanbul.
- Kranton, Rachel E (1996). The formation of cooperative relationships. *The Journal of Law, Economics, and Organization* 12(1), 214–233.
- La Porta, Rafael, Florencio Lopez-de Silanes, Andrei Shleifer, and Robert Vishny (1999). The Quality of Government. *Journal of Law, Economics, & Organization* 15(1), pp. 222–279.
- Larson, Jennifer M. and Janet I. Lewis (2017). Ethnic Networks. *American Journal of Political Science* 61(2), 350–364.
- Lazarsfeld, Paul F., Robert K. Merton, and others (1954). Friendship as a social process: A substantive and methodological analysis. *Freedom and control in modern society* 18(1), 18–66.
- Lewis, Bernard (1961). *The emergence of modern Turkey*. Number 135. Oxford University Press.
- Magaloni, Beatriz, Alberto Diaz-Cayeros, and Federico Estévez (2007). Clientelism and portfolio diversification: a model of electoral investment with applications to Mexico. *Patrons, Clients, and Policies*, 182–205.

- Manski, Charles F. (2000, September). Economic Analysis of Social Interactions. *Journal of Economic Perspectives* 14(3), 115–136.
- Marmaros, David and Bruce Sacerdote (2006, February). How Do Friendships Form? *The Quarterly Journal of Economics* 121(1), 79–119.
- Martin, John Levi and King-To Yeung (2006, October). Persistence of close personal ties over a 12-year period. *Social Networks* 28(4), 331–362.
- McCrary, Justin (2008). Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of Econometrics* 142(2), 698 – 714. The regression discontinuity design: Theory and applications.
- Miguel, Edward and Mary Kay Gugerty (2005, December). Ethnic diversity, social sanctions, and public goods in Kenya. *Journal of Public Economics* 89(11–12), 2325–2368.
- Migué, Jean-Luc, Gérard Bélanger, and William A. Niskanen (1974, March). Toward a general theory of managerial discretion. *Public Choice* 17(1), 27–47.
- Moe, Terry M. (1984). The new economics of organization. *American journal of political science*, 739–777.
- Niskanen, Jr (1971, September). *Bureaucracy and Representative Government*. Aldine Transaction.
- Nunn, Nathan and Diego Puga (2010, November). Ruggedness: The Blessing of Bad Geography in Africa. *The Review of Economics and Statistics* 94(1), 20–36.
- Oates, Wallace E. (1992). *Fiscal Federalism*. Edward Elgar Publishing.
- O'Donnell, Guillermo (1993). On the state, democratization and some conceptual problems: A latin american view with glances at some postcommunist countries. *World Development* 21(8), 1355 – 1369. SPECIAL ISSUE.
- Olken, Benjamin A. (2007, April). Monitoring Corruption: Evidence from a Field Experiment in Indonesia. SSRN Scholarly Paper ID 981448, Social Science Research Network, Rochester, NY.
- Pande, Rohini (2011). Can informed voters enforce better governance? experiments in low-income democracies. *Annu. Rev. Econ.* 3(1), 215–237.
- Putnam, Robert D et al. (2000). *Bowling alone: The collapse and revival of American community*. Simon and schuster.
- Putnam, Robert D, Robert Leonardi, and Raffaella Y Nanetti (1994). *Making democracy work: Civic traditions in modern Italy*. Princeton university press.
- Rasul, Imran and Daniel Rogger (2015). The impact of ethnic diversity in bureaucracies: Evidence from the nigerian civil service. *American Economic Review* 105(5), 457–61.

- Rice, Tom M. and Alexander F. Sumberg (1997, January). Civic Culture and Government Performance in the American States. *Publius: The Journal of Federalism* 27(1), 99–114.
- Rivera, Mark T., Sara B. Soderstrom, and Brian Uzzi (2010, June). Dynamics of Dyads in Social Networks: Assortative, Relational, and Proximity Mechanisms. *Annual Review of Sociology* 36(1), 91–115.
- Shleifer, Andrei and Robert W. Vishny (1993, August). Corruption. *The Quarterly Journal of Economics* 108(3), 599–617.
- Singh, Prerna (2015, July). Subnationalism and Social Development: A Comparative Analysis of Indian States. *World Politics* 67(3), 506–562.
- Singh, Prerna and Matthias vom Hau (2014, December). *Ethnicity, State Capacity, and Development: Reconsidering Causal Connections*. Oxford University Press.
- Tendler, Judith and others (1997). *Good government in the Tropics*. Johns Hopkins University Press.
- Thompson, Peter and Melanie Fox-Kean (2005, February). Patent Citations and the Geography of Knowledge Spillovers: A Reassessment. *American Economic Review* 95(1), 450–460.
- Tsai, Lily L. (2007). *Accountability without democracy: Solidary groups and public goods provision in rural China*. Cambridge University Press.
- Varshney, Ashutosh (2001). Ethnic conflict and civil society: India and beyond. *World politics* 53(03), 362–398.
- Weber, Max et al. (1947). The theory of economic and social organization. *Trans. AM Henderson and Talcott Parsons*. New York: Oxford University Press.
- Wibbels, Erik (2019). *The Social Underpinnings of Decentralized Governance*, Chapter 2. Cambridge University Press.
- Williamson, Oliver E. (1964). *The economics of discretionary behavior: managerial objectives in a theory of the firm*. Prentice-Hall. Google-Books-ID: Ile3AAAAIAAJ.
- Williamson, Oliver E. (1975). Markets and Hierarchies: Analysis and Antitrust Implications: A Study in the Economics of Internal Organization. SSRN Scholarly Paper ID 1496220, Social Science Research Network, Rochester, NY.
- Wilson, James Q (1989). *Bureaucracy: What government agencies do and why they do it*.
- Zucker, Lynne G., Michael R. Darby, and Marilyn B. Brewer (1998). Intellectual Human Capital and the Birth of U.S. Biotechnology Enterprises. *The American Economic Review* 88(1), 290–306.

Appendix

A Data

Table A1: Variables and Data Sources

Variable	Measure	Data Source
Social Proximity (β)	Geodesic Distance	Google Maps Places, Distance Matrix APIs
Heterogeneity	Social fragmentation rate	Antenna-level mobile call traffic (CDRs)
	Alevi (minority) village	Manually coded from ethnographic inventories
Bureaucratic Efficiency	Access to cell phone information (%)	Scraped from official web-pages
	Various measures of water infrastructure (Binary)	Scraped from official web-pages
Village Controls (γ)	Distance to closest highway	Spatial vector data
	Distance to closest urban areas (+50k)	Spatial vector data
	Distance to closest urban areas (+100k)	Spatial vector data
	Distance to closest urban areas (+500k)	Spatial vector data
	Elevation	Spatial vector data
District Controls (δ)	Alevi (minority) village	Manually coded from ethnographic inventories
	Average night lights density	Satellite images
	Public education investments	Building census
	Public health investments	Building census
	Literacy rate	Official statistics
	Incumbent vote share	Official statistics
	Conservativeness (female/male illiteracy rate)	Official statistics
	Rurality rate (rural/total population)	Official statistics

B Balance by Bandwidth

Table A2

Variable	2 km		2.5 km		3 km		SD
	β	(se)	β	(se)	β	(se)	
Minority village	0.000	0.000	0.001	0.001	0.001	0.001	0.290
Distance to City 50k+ (km)	0.192***	0.216	0.229***	0.050	0.045***	0.044	30.294
Distance to City 100k+ (km)	0.000	0.000	0.000	0.000	0.000	0.000	91.191
Distance to City 500k+ (km)	0.000	0.000	0.000	0.000	0.000	0.000	91.191
Distance to Highway (km)	-0.066	-0.034	-0.049	0.042	0.045	0.046	141.873
Elevation (m)	9.890***	9.075	8.853***	1.232	1.072***	0.948	562.748
AKP Vote Share	0.268***	0.258	0.232***	0.065	0.058***	0.054	26.997

All models include a linear polynomial in longitude and latitude, segment fixed effects, district fixed effects, and village-level controls (except the control variable for which the balance is calculated). In columns 1 to 3, the sample includes observations which are located between 2 and 3 kilometers of the district boundary. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

C Notes on Heterogeneity by Network Structure

Network measure. For the left graph of Figure A1, the average shortest path is $3/2$ for C and $17/6$ for A. Specifically, the social proximity of the node C is calculated as $\frac{2+1+1+2+2+1}{6} = 3/2$, and then, $\frac{1}{3/2} = 2/3$. Likewise, the social proximity of the node A is calculated as the inverse of $\frac{1+2+3+3+4+4}{6} = 17/6$, or $\frac{1}{17/6} = 6/17$. The social fragmentation score of the whole network is the average of individual scores from A to F, as scaled by the theoretical maximum of a 7-node graph so that the measure is not dependent on the number of nodes. The final measure is adjusted such that it takes a value between 0 and 1, where higher values indicate higher social fragmentation.



Figure A1: A graph with low (left) and high (right) social fragmentation

Equation. I use the following specification to estimate the models in Table A3 and in Figure 13. The continuous village-level treatment variable $Distance_{vsp}$ is interacted with the province-level social fragmentation score $SocialFrag_p$. $SocialFrag_p$ is a discrete measure on a scale of 0 to 9 that relies on the quantile values of the social fragmentation score, where 0 indicates the 10% of the provinces with the lowest scores. As it is calculated based on antenna-level social proximity measures, higher values show lower social fragmentation.

$$y_{vsp} = \beta_1 Distance_{vsp} + \beta_2 Distance_{vsp} \times SocialFrag_p + f(Location_{vsp}) + \gamma Z_{vsp} + \delta X_{dp} + \eta_p + \theta_s + \epsilon_{vsp} \quad (2)$$

Table A3: Change in Bureaucratic Efficiency at District Borders, Heterogeneity by Network Structure

<i>Bandwidth:</i>	2 km	2.5 km	3 km
Panel A: Personal Cell Phone Information			
Distance (km)	−0.014*** (0.003)	−0.013*** (0.003)	−0.012*** (0.002)
Distance (km) × SFI	0.002*** (0.001)	0.002*** (0.0005)	0.002*** (0.0004)
Observations	6,693	8,591	10,281
R ²	0.491	0.457	0.438
Panel B: Water Supply Network			
Distance (km)	−0.004* (0.002)	−0.004* (0.002)	−0.004** (0.002)
Distance (km) × SFI	0.001 (0.0004)	0.0003 (0.0004)	0.0004 (0.0003)
Observations	6,693	8,591	10,281
R ²	0.456	0.435	0.419
Panel C: Drinking Water			
Distance (km)	−0.009** (0.004)	−0.005 (0.004)	−0.004 (0.003)
Distance (km) × SFI	0.0005 (0.001)	0.0002 (0.001)	0.0002 (0.0004)
Observations	2,146	2,750	3,312
R ²	0.522	0.481	0.446
Panel D: Water Quality Control			
Distance (km)	−0.010*** (0.002)	−0.009*** (0.002)	−0.010*** (0.002)
Distance (km) × SFI	0.001** (0.0004)	0.001* (0.0004)	0.001** (0.0004)
Observations	6,693	8,591	10,281
R ²	0.550	0.528	0.516
Segment fixed effects	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes
Village controls	Yes	Yes	Yes
District controls	Yes	Yes	Yes

Note: Standard errors clustered at the segment level. *p<0.1; **p<0.05; ***p<0.01

D Change in Bureaucratic Efficiency in Minority Villages by Bandwidth

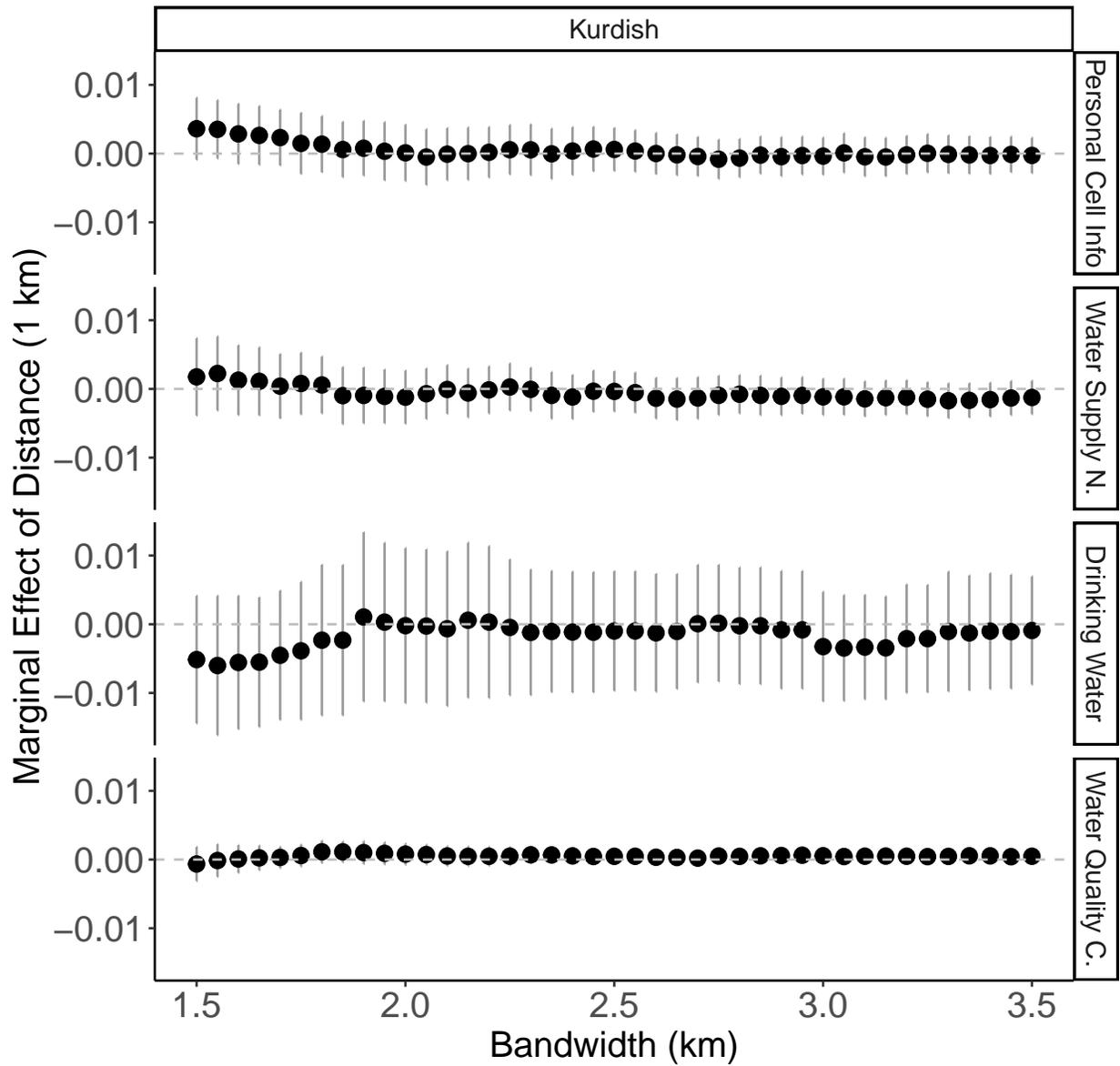


Figure A2: Main Estimates for Kurdish Villages by Different Bandwidth Choices

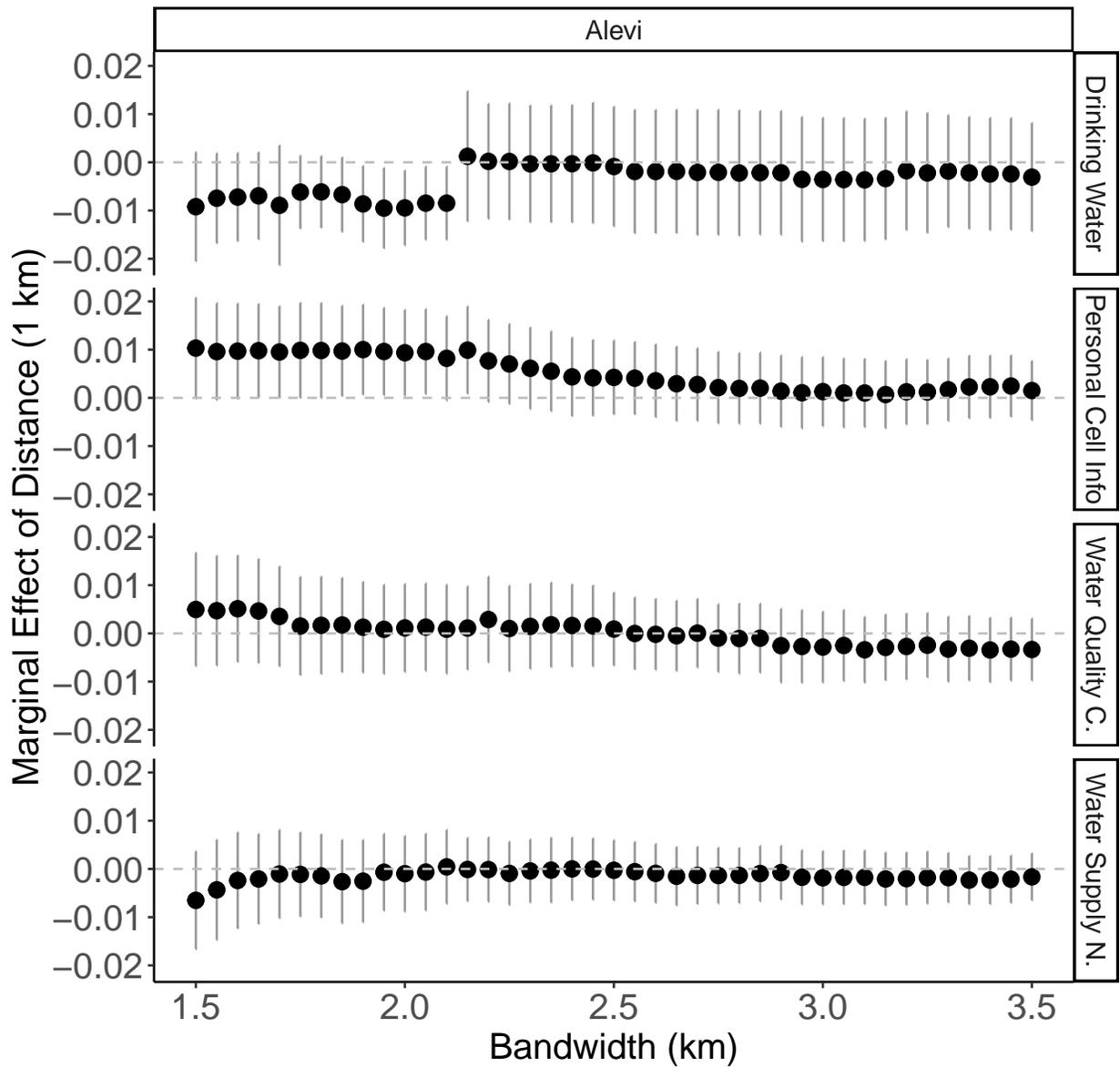


Figure A3: Main Estimates for Alevi Villages by Different Bandwidth Choices

E Other Notes on Data

To see if geographic distance, the main independent variable, affects the missingness of values for the drinking water infrastructure and electricity indicators, I estimate a local linear regression. The dependent variable measures take 0 if the data point is missing, and 0 otherwise, and the treatment is distance in kilometers. I use a bandwidth of 2.5 kilometers. As Table A4 shows, geographic distance does not affect the pattern of missingness.

Table A4: Geographic Distance and Missing Values in Dependent Variable Indicators

	<i>Dependent variable:</i>	
	(1)	(2)
Distance (km)	-0.0004 (0.001)	0.0002 (0.001)
Longitude	0.062 (0.048)	0.046 (0.041)
Latitude	0.047 (0.062)	0.035 (0.054)
Segment fixed effects	Yes	Yes
District fixed effects	Yes	Yes
Village controls	No	No
Observations	8,632	8,632
R ²	0.796	0.868

Note: Standard errors clustered at the segment level. *p<0.1; **p<0.05; ***p<0.01

Table A5: Balance in Covariates

Variable	β	(se)	SD	Change in in SD
Minority village	0.04	0.04	0.29	0.13
Distance to City 100k+ (km)	-0.01	0.00	91.19	-0.00
Distance to City 50k+ (km)	-0.00	0.01	30.29	-0.00
Distance to City 500k+ (km)	-0.01	0.00	91.19	-0.00
Incumbent Vote Share	-0.04	0.03	27.00	-0.00
Elevation (log)	0.01	0.01	0.98	0.01
Distance to Highway (km)	-0.00	0.00	141.87	-0.00
Population (log)	-0.01	0.03	0.87	-0.01

Bandwidth: 2.5 km
Polynomial: Linear in latitude and longitude

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

All models include a linear polynomial in longitude and latitude, segment fixed effects, and district fixed effects.

Table A6: Change in Alternative Outcomes at District Borders

<i>Bandwidth</i>	2 km	2.5 km	3 km
Panel A: Elementary School			
Distance (km)	0.002 (0.001)	-0.00004 (0.001)	0.00005 (0.001)
Observations	6,718	8,632	10,334
R ²	0.492	0.452	0.423
Segment fixed effects	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes
Village controls	Yes	Yes	Yes

Note: Standard errors clustered at the segment level. *p<0.1; **p<0.05; ***p<0.01

Table A7: Change in Alternative Outcomes at District Borders

<i>Bandwidth</i>	2 km	2.5 km	3 km
Panel A: Electricity			
Distance (km)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001* (0.0001)
Observations	2,420	3,097	3,732
R ²	0.370	0.305	0.227
Panel B: Owns Computer			
Distance (km)	0.0004 (0.003)	0.001 (0.002)	0.0001 (0.002)
Observations	2,420	3,097	3,732
R ²	0.669	0.638	0.615
Segment fixed effects	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes
Village controls	Yes	Yes	Yes

Note: Standard errors clustered at the segment level. *p<0.1; **p<0.05; ***p<0.01