Full Title: Family Matters: The Double-Edged Sword of Police-Community Connections

Short Title: Family Matters

Dotan Haim	*dhaim@fsu.edu*
Matthew Nanes	*matthew.nanes@slu.edu*
Michael W. Davidson	*midavids@microsoft.com*

Abstract

Scholars and policymakers frequently advocate recruiting "embedded" bureaucrats with strong ties to citizens to improve service delivery. Yet, officials who are too embedded in their community are often blamed for corruption, favoritism, and ineffectiveness. We argue that this ambiguity stems from a mismatch between individual- and community-level effects of embeddedness. While personal ties increase engagement between directly connected citizens and bureaucrats, a community-level increase in bureaucrats' personal ties alienates unconnected citizens and undermines claims of impartiality. We test this argument on public safety provision in the Philippines. We measure family networks in 286 villages, locate police officers within those networks, and analyze citizen survey responses. Citizens are more willing to trust and engage with officers to whom they are more closely related. However, in villages where officers are highly embedded, unconnected citizens evaluate their performance more poorly. Consequently, village-level officer embeddedness is associated with higher rates of feuds and disputes.

Keywords: Police, Networks, Embeddedness, Crime, Bureaucracy

Supplementary material for this article is available in the appendix of the online edition.

Replication files are available in the JOP Data Archive on Dataverse (https://doi.org/10.7910/DVN/06ITCK).

Procedures involving human subjects were approved by the UC San Diego IRB under project numbers 161252S and 170415S and were conducted in compliance with relevant laws.

Support for this research was provided by the UC San Diego Policy Design and Evaluation Lab and by Evidence in Governance and Politics Metaketa IV.

States suffering from low legitimacy face a challenge in providing public goods. Institutions that deliver safety, education, and healthcare rely on citizen cooperation to provide services effectively, but low legitimacy reduces citizens' willingness to engage. This problem is particularly pertinent to policing, where rank-and-file officers need information from citizens to identify hot spots, resolve disputes, and prevent crimes. When cycles of poor governance take hold, scholars and policymakers frequently advocate recruiting street-level bureaucrats who are more "embedded," or have stronger social ties to the communities they serve (Tendler and Freedheim 1994; Tsai 2007; Ricks 2016). They argue that citizens are more likely to trust and cooperate with providers who are familiar to them. Support for closer ties between service providers and citizens is especially common in public safety, including calls for "community policing" (Skogan and Hartnett 1997) and racial representation (Kennedy et al. 2017). For example, the Israeli police have emphasized recruiting Muslim officers over the last decade in hopes that Muslim citizens will cooperate with officers from their community (Nanes 2019).

Despite the inherent appeal of bureaucratic embeddedness, social ties between public officials and citizens present a tradeoff. Officials whose ties to the community are too strong may be prone to corruption, favoritism, and clientelism (Kiser and Sacks 2009; Kitschelt and Wilkinson 2007). In the security sector, governments commonly respond to this problem by turning to less-embedded officers. Mexico regularly addresses police corruption by replacing local police with officers from the state and federal forces.[1] In response to anti-police protests in Ferguson, Missouri in 2014, Governor Jay Nixon asked the local police to withdraw in hopes that protesters would view the state Highway Patrol as impartial.[2] How can we reconcile these conflicting strategies, with both more embedded and less embedded policing used to address similar problems of illegitimacy and ineffective service delivery?

[1]Mexico News Daily (2014), "Federal Forces Replace Local Police." 20 October. `http://mexiconewsdaily.com/news/federal-forces-replace-local-police/`

[2]Rosenberg, Eli (2014), "Ferguson awaits next step as Missouri Highway Patrol takes over." *KMBC News* 14 August. `https://www.kmbc.com/article/ferguson-awaits-next-step-as-missouri-highway-patrol-takes-over/3466531`

We argue that a mismatch exists between theories linking embeddedness with individual-level behavior on the one hand and community-level public goods provision on the other hand. Theories that predict positive outcomes of embeddedness focus primarily on how citizens' individual-level social *proximity* to officers, meaning the strength of the direct relationship between the two individuals, affects their behavior. However, these individual-level ties occur within a community-wide social network. The concept of officer *embeddedness* describes a situation where officers are, on average, socially proximate to a greater number of individuals in their community overall. Increasing the police's community-level embeddedness not only increases the number of citizens who trust the police, it also increases the salience of personal ties for those who lack connections. As officers become more embedded in their communities, we predict that unconnected citizens will feel increasingly marginalized and fear biased treatment. This backlash by unconnected citizens compromises police claims of impartiality and undermines police officers' ability to arbitrate disputes.

We explore these arguments using data from the Philippines, where naming conventions allow us to identify individuals' family relationships and construct village-level social networks (Cruz et al. 2017; Cruz 2018). We locate public safety officers, called *tanods*, within these networks to measure officers' embeddedness in their communities. We then conduct original surveys of nearly 3,000 citizens in 286 villages. At the individual level, we find that citizens exhibit greater trust in, perceive as fairer, and are more likely to report a crime to officers to whom they are more closely related. However, in the context of broader social networks, we observe backlash from unconnected citizens as community-level embeddedness increases. In villages where tanods are highly embedded, citizens who lack personal connections to officers are far less likely to think tanods effectively protect public safety. Consistent with these mechanisms, feuds and disputes, which require impartial mediators to resolve, are significantly *more* common in villages where tanods are highly embedded.

Our findings contribute to the broader understanding of the impact that the makeup of service-providing institutions has on public goods provision. By accounting for how bu-

reaucratic embeddedness affects the behavior not just of connected citizens but also of unconnected citizens, we reconcile ambiguity in the effects of bureaucratic embeddedness on public good provision. Whereas most studies of bureaucratic embeddedness focus either on bureaucrats' place of origin or ascriptive group identity, we unpack what it means functionally for bureaucrats to be embedded – namely, that citizens interact with them more frequently and feel more comfortable sharing information with them. Thus, while we explore embeddedness in the form of family networks, we identify underlying mechanisms like contact and trust that are common to shared ethnicity, place of origin, or membership in social organizations. Finally, we highlight the importance of service providers' image of impartiality in their ability to serve effectively. Bureaucratic embeddedness presents a tradeoff between increased information flows from some segments of the population and a diminished image of impartiality from others. Embeddedness' effects on public goods provision therefore depends on the way that both connected and unconnected citizens interact with service providers.

The Double-Edged Sword of Embeddedness

A growing line of research views street-level service providers as de-facto policy makers with tremendous influence over public goods delivery. Citizens form perceptions of the state based on their interactions with these frontline providers, but paradoxically, the quality of provision depends heavily on the extent to which citizens cooperate with those same providers (Lipsky 1980; Pepinsky et al. 2017). Government service provision depends on "legibility," or knowledge by government officials about local-level issues, to identify problems and develop appropriate solutions (Scott 1998; Lee and Zhang 2017).[3] The public works department needs to know where street lights are out, the fire department needs to know when a building is burning, and the police need to know which street corners host illegal activities. Bureaucrats work most efficiently when citizens provide this information voluntarily. Citizen cooperation is especially important for delivery of public safety, one of the most important public goods

[3]Ostrom (1996) uses the related concept of "co-production" to explain the importance of citizen involvement in public goods and services delivery.

provided by the modern state (Akerlof and Yellen 1994). Even under a "police patrol" model (McCubbins et al. 1987) in which officers patrol the streets to deter crime, scarce resources are most efficiently distributed when the police have information about the location and nature of crime (Weisburd and Green 1995).

Existing scholarship finds that citizen cooperation with state institutions depends on whether service providers are "embedded" in the community's social structures. Pepinsky et al. (2017) define embeddedness as the strength of pre-existing social relationships between frontline providers and citizens, characterized by "frequent interaction with clients" and "frequent exchange of knowledge" (p. 258). Citizens are more likely to cooperate with individuals with whom they share norms, cultures, or experiences (Habyarimana et al. 2007; Laitin 2007; Karim 2020). Frontline providers who are more embedded in local social structures may exert greater effort due to enhanced intrinsic motivation (Tendler and Freedheim 1994) and an increased sense of accountability (Tsai 2007; Bhavnani and Lee 2018). Finally, embedded bureaucrats are more likely to be in touch with local needs, allowing them to target services more efficiently (Ricks 2016; Evans 1995).

Community ties are especially important in the security domain. Existing research suggests that security forces and police may encourage citizens to engage by recruiting officers who are representative of the population they serve on the basis of ethnicity (Blair et al. 2016; Lyall et al. 2015), race (Kennedy et al. 2017; Tyler 2004), or religion (Weitzer 1995; Nanes 2019). The value of personal ties is particularly salient in community policing, which aims to enhance cooperation by strengthening personal connections between citizens and officers (Skogan and Hartnett 1997).

On the other hand, personal relationships between citizens and bureaucrats might foster favoritism or corruption. Service providers often face pressure to deliver favors to people in their social networks (Kiser and Sacks 2009) and, due to this pressure, may turn to corruption as a way to defray higher expenses (Fjeldstad 2005). This is especially true in economies that rely heavily upon informal patronage networks to distribute goods. From

the citizen perspective, personal ties to people in government positions increase the likelihood of receiving benefits such as employment, access to government programs, or electoral clientelism (Kitschelt and Wilkinson 2007; Fafchamps and Labonne 2018; Cruz 2018; Marx et al. 2019). The lack of consensus among researchers regarding the benefits of bureaucratic embeddedness is consistent with the mixed approach adopted by policymakers, who often rotate frontline providers between districts in order to prevent them from establishing overly strong ties with citizens.

We argue that officer embeddedness presents a tradeoff: A highly embedded police force increases the number of citizens who are personally connected to, and thus more likely to cooperate with, the police. However, the more embedded officers become, the more visible the leveraging of personal connections becomes, leading unconnected citizens to feel marginalized. Citizens are likely aware not just of their own social proximity to the police but also of officers' connections to others. As unconnected citizens become increasingly marginalized, they become less willing to engage with officers and more likely to interpret officers' behaviors as biased. Consequently, officers face difficulties carrying out tasks that depend on their image of impartiality.

To clarify our theory, we define two terms that are often conflated with each other. Social *proximity* is a dyadic concept that describes the relationship between a pair of individuals. A citizen's social proximity to a particular officer is defined by whether that officer is a personal acquaintance, an acquaintance of an acquaintance, and so on.[4] In contrast, social *embeddedness* describes an individual's position relative to others in a broader community network (Granovetter 1985). A more embedded officer is one who has a greater number of (or stronger) social ties to citizens in the community where he serves. In network terms, an officer's embeddedness can be captured by how "central" he is in a community's social network. Community-level embeddedness of a police force, then, can be thought of as the average embeddedness of all officers serving the community. When the police are more

[4]Social media websites often refer to this concept as 1^{st}, 2^{nd}, or 3^{rd} degree connections.

embedded, a greater number of citizens will be socially proximate to the police. However, because the number of officers that can be assigned to any one community is limited, social proximity to officers varies significantly from citizen to citizen even when community-level officer embeddedness is high. There are always unconnected citizens, and a complete theory must account for how embeddedness impacts citizens with both high and low levels of proximity to police officers.

In the subsections that follow, we develop our theory by first focusing on how citizens' individual-level proximity to officers shapes their trust in and engagement with those officers. Next, we zoom out to the community-level, considering how officer embeddedness in a community impacts citizens' expectations about public safety provision, and how individual proximity to officers affects perceptions at different levels of community embeddedness. Finally, we consider how these patterns of citizen buy-in shape public safety outcomes on services requiring different types of police actions.

Dyadic Ties Improve Citizen Buy-In

We expect that, on average, citizens will be more likely to engage with officers to whom they are socially proximate. Personal ties reduce search costs by decreasing the effort a citizen must make to come into contact with law enforcement. A citizen with no personal ties to the police must go through formal channels to report an incident or request help, which may include long telephone hold times or travel to a police station. This problem is exacerbated in rural and less economically-developed areas where cell service is unreliable and travel to population centers time consuming and expensive. While citizens may be willing to incur these costs in true emergencies, they may hesitate to report less serious – but still important – issues (Blair et al. 2019). Citizens who know officers personally may encounter them informally or be able to contact them directly when needed.

Social proximity may also minimize expectations of mistreatment (Tellez et al. 2018). Personal relationships reduce psychological discomfort from interacting with unfamiliar au-

thority figures and decrease fears of extortion, abuse, or unfair treatment in the case of a dispute. For example, existing research links shared group identity with lower expectations of exploitation by security forces (Lyall et al. 2015; Nanes 2020).

Citizens' social proximity to officers also increases the expected benefits of cooperation. In return for their effort in providing information, citizens expect the state to use that information to deliver public services. However, citizens are uncertain about the degree of effort bureaucrats will exert and may reasonably expect that officers are less likely to shirk when doing so would harm someone the officer knows. If personal connections increase expected effort, connected citizens should be more willing to incur personal costs to communicate information to officers.

As a result of the decreased costs and increased benefits of engagement, we expect greater citizen "buy-in" with socially proximate officers. Buy-in includes attitudinal outcomes such as trust and perceptions of fairness, as well as behavioral outcomes like willingness to report crimes.

To test these mechanisms, we hypothesize that individuals who are more socially proximate to a police officer will:

H_1**:** Report greater trust in that officer.

H_2**:** Perceive that officer as fairer.

H_3**:** Be more likely to report a hypothetical crime to that officer.

Embeddedness Increases Inequality in Citizen Buy-In

Given our expectations about individual-level proximity, we might reasonably expect that community-level officer embeddedness will improve public safety outcomes by increasing overall engagement with the police. This inference drives much of the existing theory on the benefits of group-level representation in bureaucratic institutions. We challenge this logic, arguing that it fails to account for the effects of embeddedness on citizens without connections to bureaucrats. As the number and strength of officer ties to citizens increases

overall, the salience of *lacking* a tie increases as well. As a result, increased community-level embeddedness can expand inequality in citizen buy-in.

The primary constraint on translating embeddedness into service delivery is that, even in heavily-policed communities, the ratio of officers to citizens is small enough that a non-trivial number of citizens will lack connections to police officers. This limitation is true of most bureaucratic institutions, where a relatively small number of street-level providers are expected to serve a much larger population. Thus, while bureaucratic embeddedness increases the number of connected citizens, it never eliminates unconnected citizens entirely.

Given this constraint, if embeddedness increases the salience and visibility of personal connections, unconnected citizens may feel marginalized. Especially in the small, socially connected communities typical of rural areas, family ties and personal relationships with government officials tend to be widely known. Relatives share names, while race and ethnicity have observable components that allow citizens to determine their relationship with street-level service providers. Existing research suggests that citizens develop feelings of unfairness relatively quickly. In Karim (2020)'s study of policing in Liberia, individuals whose households did not receive a randomly-assigned 20-30 minute visit by police officers but heard about others receiving the visit exhibited significantly more negative attitudes towards the police, compared to those who did not know about the visits.

When officers have well-known ties to certain members of the community, citizens who lack connections may worry that other citizens have greater access to services than they do, affecting their expected costs and benefits from engaging with officers. In particular, because citizens often go to police officers to help resolve disputes or crimes committed by other members of the community, unconnected citizens may worry that embedded officers will unfairly side against them. Furthermore, even if officers do not actively engage in favoritism, well-connected officers may rely more heavily on their personal connections to distribute services, eschewing other sources of information in the process. Because officers are more likely to patrol a street corner where they have already heard reports of crime, they

may allocate more resources to the areas of town where personal ties to citizens increase crime reporting. In short, as citizens become aware that their connections to officers are weak relative to other citizens, they may expect officers to expend less effort on their behalf, reducing the expected benefits of engagement.

Because of its anticipated effect on inequality in citizen buy-in, we expect that embeddedness will result in a larger gap between connected and unconnected citizens' perceptions of officers' ability to effectively protect public safety:

> H_4**:** As community-level police embeddedness increases, citizens with low social proximity to the police will be less likely to think officers effectively protect public safety.

Stated another way, we think that the *interaction* between community-level officer embeddedness and individual-level proximity to officers is a crucial variable that shapes citizen buy-in.

The Impact of Embeddedness on Public Safety Depends on the Type of Crime

What is the net effect on service provision from this tradeoff between increasing the number of engaged citizens and increasing the marginalization of unconnected citizens? In terms of citizen-tanod information flows, the net effect of embeddedness simply depends on whether increases in reporting from connected citizens outweigh decreases in reporting from unconnected citizens. Of greater interest is embeddedness' impact on public safety itself, in terms of the prevalence of crimes. Here, our expectations depend on the type of crime.

We expect embeddedness to have the clearest effects when the importance of impartiality is greatest, for example when officers mediate disputes or act as impartial arbitrators. Law enforcement officers do not just arrest offenders after they have committed crimes; they also intervene to negotiate informal resolutions to problems before they become so serious as to require formal legal intervention. In the part of the Philippines where we conducted

this study, feuds between families or neighbors periodically spiral from relatively minor incidents and continue for generations (Torres 2007). Officers' abilities to resolve these disputes depends on the parties to the dispute perceiving the police as fair and unbiased. Recruiting officers who have ties to some members of a community but not others undermines officers' claims of impartiality, hindering their ability to mediate. Thus, even if individuals who are proximate to an officer are more likely to report a dispute, we expect that when officers are highly embedded they will be less effective at *resolving* a dispute and preventing further incidents if one of the parties views them as biased.

The expected impacts of embeddedness are less clear for typical perpetrator-victim crimes like theft or vandalism. In these cases, embeddedness should improve crime prevention if the increased communication from connected citizens outweighs the decreased communication from disgruntled unconnected citizens. This balance is likely context-specific, leading to the real-world heterogeneity we observe in the introduction. On balance, however, crime deterrence is a local-level public good (Nanes 2019), suggesting that information from connected citizens can be used to prevent crime against both connected and unconnected citizens. This logic leads to two hypotheses regarding the relationship between embeddedness and public safety:

Community-level officer embeddedness will be associated with:

H_5**:** An increase in crimes involving disputes between citizens.

H_6**:** A decrease in perpetrator-victim crimes.

Sources of Embeddedness

The interpersonal connections that are the basis for the concepts of proximity and embeddedness come from a wide range of context-dependent sources. Above, we note examples of connectedness on the dimensions of family, ethnicity, religion, and region of origin, among others. When politically-activated, these dimensions share mechanisms like increased contact, enhanced cultural understanding, and norms of expected behavior (Fearon and Laitin

1996; Habyarimana et al. 2007). Shared group membership is also closely correlated with direct personal ties (Larson and Lewis 2017). As a result, we expect that social proximity on any of these dimensions may foster the dyadic buy-in we posit in Hypotheses 1-3, but also that community-level social embeddedness on any of these dimensions may foster the feelings of marginalization among unconnected citizens that underlie Hypotheses 4-5. For example, when a greater proportion of people share a fiction of shared ancestry with powerful bureaucrats or officials, those who lack these ties may feel left out.

In the empirical section that follows, we focus on a dimension of social connectedness, family ties, which shares many of these mechanisms. On average, family members tend to interact with one another more frequently and are better able to predict how others will behave in a given situation compared to unrelated individuals. We focus on family ties because they are both highly salient and easily observable in our study's context. While we think that our findings are likely to travel to contexts where other sources of embeddedness are more salient, we also acknowledge that different sources of connectedness may introduce other confounding factors. We include an extended discussion on the generalizability of our findings to other sources of social embeddedness in the discussion section.

Public Safety Provision in the Philippines

We test these hypotheses in Sorsogon, one of 81 provinces in the Philippines and home to about 800,000 people. Located on the southern tip of Luzon, the most populated island in the Philippines, Sorsogon is primarily rural, with a population center in the provincial capital of Sorsogon City. Sorsogon Province is subdivided into 541 barangays, an administrative unit akin to a village in rural areas or a neighborhood in urban areas, across 15 municipalities. Eighty percent of barangays in Sorsogon have between 385 and 1700 citizens. Sorsogon's economy is largely agricultural. The province has few salient divisions in group identity; 95% of the population practices Catholicism.

Sorsogon, and the Philippines in general, is a good context in which to test our theory for several reasons. First, family ties are measurable at unusually granular levels, allowing us to measure both individual-level proximity and community-level embeddedness. Our study location is also typical of other locations in the Global South. Politics in Sorsogon is highly local; political influence depends largely on personal connections, and citizens often turn to local governments when they have a problem. The importance of local influence and personal connections marks politics and security provision across countries, from India (Bhavnani and Lee 2018) to Ghana (Ichino and Nathan 2013) to Mexico (Magaloni et al. 2019). While we cannot draw definitive conclusions about the entire developing world from a single case, the nature of politics and the role of interpersonal relationships in Sorsogon is common to hundreds of millions of people worldwide.

Two government institutions provide policing services in the Philippines, the Philippine National Police (PNP) and barangay-level security officers called "tanods." The PNP is a typical full-service national police force responsible for crime prevention, traffic enforcement, investigations, and counterterrorism. The PNP is less relevant in many rural areas, rarely patrolling beyond the main highways. In our representative survey, 20.6% of respondents reported that they see PNP officers "almost never," while an additional 24.6% say they see officers "once per month."

More relevant in our context are tanods, semi-professional community safety officers who serve at the barangay level. The barangay captain, elected directly by barangay residents every three years, appoints the barangay's tanods and oversees their activities. Tanods receive training on basic tasks like traffic enforcement, community patrols, and dispute resolution and are the most relevant institution for day-to-day public safety. They tend to be intimately familiar with their barangay. The 183 tanods surveyed for this project have lived in their current barangay for an average of almost 40 years and served in their role for an average of seven years. Our focus on bureaucrats who are almost universally from the barangay in which they work holds constant the higher-level measure of bureaucratic

embeddedness used in many existing studies, place of residence or home town, allowing us to directly test our argument about the more granular mechanisms at play.[5]

All tanods receive basic equipment like a uniform t-shirt and bamboo club. In barangays near the municipal centers, barangays also sometimes provide flashlights, communication equipment, and vehicles. Pay varies by barangay, but tanods make less money than PNP officers. In Sorsogon, each barangay has between 5 and 15 tanods – approximately one tanod per 80 residents. The Department of Interior and Local Government (DILG) determines the maximum number of tanods it will employ based on population and land area. Whereas many citizens never interact with PNP officers, tanods are ubiquitous: 53.2% of our respondents say they see tanods multiple times per day, and an additional 30.9% see them at least once per day. 46% say that tanods are the most important officials for providing security in their barangay. Because of the importance and presence of tanods relative to the PNP, and because only tanods are attached to a specific barangay, our analysis focuses on these officers.

Like most other bureaucrats, tanods are not chosen randomly, but are selected by the elected barangay captain based on expressed interest, qualifications, and of course political connections. We explore several pertinent predictors of tanod embeddedness, including political connections, in the Supporting Information. Not surprisingly, barangays whose tanods are especially embedded have denser networks overall. They also tend to have more tanods. Our analyses control for both of these variables, as well as other demographic factors like average household size and barangay population. Most importantly, we find no evidence that barangays with more dispute-type crimes systematically appoint tanods who are more (or less) connected, which would have biased in favor of Hypotheses 4 and 5.

[5]Compared to the bureaucrats under consideration in canonical research on street-level bureaucrats (Lipsky 1980), tanods have far more frequent contact with and are related to a greater proportion of citizens. In this sense, we depart somewhat from the typical conceptualization of "embeddedness." Even so, we observe sufficient variation in both dyadic relationships and barangay-level embeddedness to test our hypotheses.

Research Design

We analyze family ties between tanods and citizens as a proxy for personal connections. In the Philippines, as in many areas of the world, family structures form the core of individuals' social and political lives (McCoy 2009). Citizens rely on family connections to attain politically relevant information (Haim 2019), while politicians rely on family connections to maintain power (Cruz et al. 2017; Ravanilla et al. Forthcoming). Family networks are highly stable over time, with one's position in the network determined strictly by kinship and marriage. Divorce is illegal in the Philippines, making exit from one's family network extremely difficult. Only 2.6 % of survey respondents report moving between barangays in the last six years. Because of this stability, family ties form a social network that is unlikely to be shaped endogenously by our outcome variables.

Family networks are the most salient source of embeddedness in our study's context. That said, we expect that these interpersonal ties affect service provision through the same underlying mechanisms as shared origin or coethnicity: frequent bureaucrat-client interactions and exchanges of information (Pepinsky et al. 2017), and shared norms and expectations which structure interactions. We empirically demonstrate the link between family ties and these mechanisms below. Thus, our test of family networks identifies mechanisms that underly other sources of embeddedness which generate interactions and information exchanges.

We map family networks by matching surnames for all registered voters in 286 barangays across Sorsogon Province.[6] Two features of Filipino naming conventions make the creation of family networks based on shared surnames possible. First, colonial governors in the mid 1800s arbitrarily assigned Hispanic surnames to all Filipinos by giving barangay leadership a unique list of surnames to distribute to families. Consequently, unrelated families in the same province rarely share surnames. Second, surnames are passed down from

[6] 85% of the eligible population in Sorsogon are registered to vote, giving us a nearly complete frame of the adult population.

both the mother's and father's side according to the Spanish naming convention, allowing us to track family names through the maternal and paternal lines. Following existing procedures (Cruz et al. 2017), we denote a family tie between any pair of individuals within a barangay who share at least one surname. By this measure, the median individual has 25 direct family members who live in their barangay and is connected to approximately half of the other individuals in the barangay by three degrees of separation or less.[7]

After constructing networks for each barangay, we identify tanods in these networks by matching names from the official list of registered tanods provided by the Department of Interior and Local Government (DILG). We then calculate citizens' social proximity to each tanod along with tanods' social embeddedness in the community-level network.

We operationalize proximity as *Social Distance*, the minimum number of steps along the network connecting a tanod-citizen pair. For example, if a citizen has a direct family tie to a tanod (i.e. they share at least one surname), the social distance to that tanod is coded as 1. If a citizen does not have a direct tie to a tanod but has a tie to another citizen who has a direct tie to the tanod, the social distance is coded as 2, and so forth.[8] Since higher values of social distance correspond to citizens who are *less* socially proximate to tanods, we expect citizen buy-in to be negatively correlated with this measure.

In addition to the dyadic social distance between a citizen and a specific tanod (the explanatory variable in H_1, H_2, and H_3), we calculate each citizen's aggregate social distance to all tanods in their barangay (one component of H_4) as the average of the dyadic distances between a citizen and all tanods in her barangay *Distance (Avg.)*. The measure is negatively correlated with proximity; as it increases, we expect citizen buy-in to decrease.

Finally, we create a barangay-level measure of tanods' embeddedness in the family network. We measure each tanod's embeddedness as his "degree centrality," a count of the number of direct family ties he possesses in his barangay. We then calculate the overall

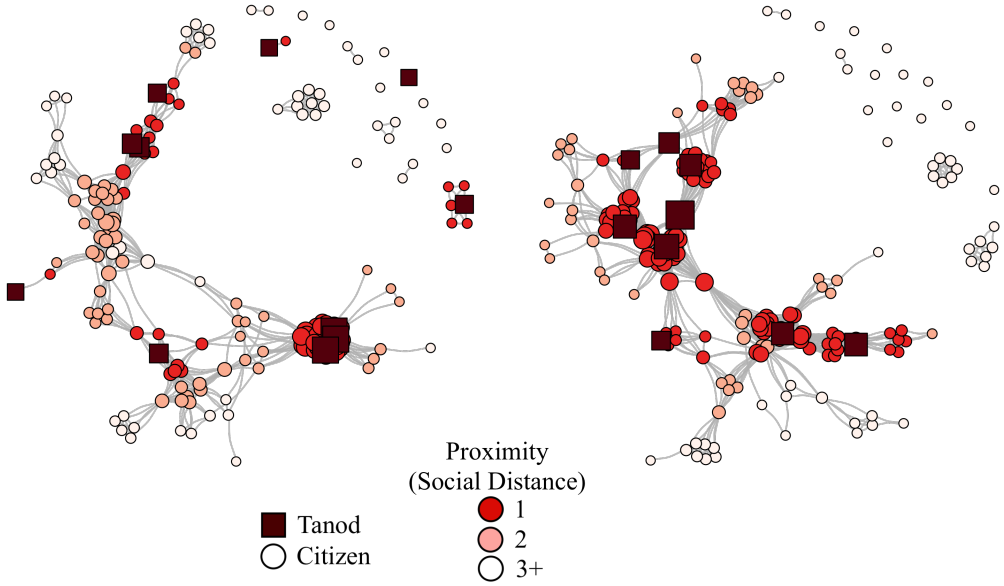
[7]See SI Section 2 for additional details on the nature of family networks in our sample units.

[8]If there is no path connecting a citizen-tanod pair, we code social distance as one greater than the maximum calculable social distance between any pair of individuals in the barangay. Results are robust to excluding citizen-tanod dyads where no path connects the two individuals.

level of tanod *Embeddedness* as the mean degree centrality of all tanods in the barangay. Degree centrality best captures our definition of embeddedness because it is easily visible to all citizens in the barangay.[9] Simply by knowing a tanods' name, citizens know to which families the tanod is connected.

Figure 1: Village Family Networks

(A) Low Embedded Tanods (B) High Embedded Tanods



Family networks in two villages with different levels of tanod embeddedness. Nodes, sized by degree centrality, represent individuals and ties represent family relationships between those individuals. Tanods are represented as square nodes.

Figure 1 illustrates the family networks of two barangays in our sample that have similar geographic locations, populations, socioeconomics, and network densities, but vary on tanod embeddedness. In Barangay A, tanods average 12 direct family ties within the barangay, whereas in Barangay B tanods average 18 family ties. In A, the average citizen's social distance to tanods is 4.3, whereas in B, the average citizen-tanod social distance is

[9]In SI Tables D.3 and D.4, we substitute measures that account for the proportion of citizens with no closely connected tanods in the barangay as well as inequality in citizen distance to tanods.

6.5.[10] Our first three hypotheses predict that individuals who are more socially proximate to a specific tanod (darker nodes in the plot) are more likely to trust that tanod, perceive her as fair, and be willing to report a crime to her. However, if our fourth hypothesis holds, less proximate citizens (lighter colored nodes) in B, where tanods are more embedded, will feel marginalized and "left out" of effective public safety provision relative to similarly positioned citizens in A.

To test our hypotheses, we conducted two surveys of citizens. The first asked 1,203 citizens across 60 randomly-selected barangays about their perceptions of specific tanods and their experiences with crime. After analyzing these data, we determined that the tests of H_4, H_5, and H_6, which rely on barangay-level variation, were underpowered.[11] We therefore ran a second survey of 2,991 respondents in all 286 barangays in the original sampling frame. For both surveys, we randomly selected respondents from the same list of registered voters that forms the basis for the village network maps. We provide details on sampling and survey procedures in the Supporting Information.

Hypotheses 1, 2, and 4 refer to attitudinal outcomes at the beginning of our causal chain, making survey measures natural. We also rely on a survey-based measure to test Hypothesis 3, asking citizens about their likelihood of reporting information to a tanod. This measure has several advantages over administrative data because it allows us to isolate the effects on citizens likelihood to report crimes to a *specific* tanod using the procedures above. It also creates a standard baseline of opportunities for reporting information across citizens, which might otherwise confound results if certain citizens are more likely to encounter information worth reporting to the tanods.

[10] Across all barangays in our study, average citizen-tanod social distance is 2.95 at the 10^{th} percentile of tanod *Embeddedness* and 6.07 at the 90^{th} percentile.

[11] We found smaller than expected effects (though in the expected direction) alongside higher than expected variance on crime, making a design with 60 clusters insufficiently powered.

Results: Embeddedness and Citizen Buy-In

In evaluating the effects of citizen-tanod relationships, the challenge for causal inference is to isolate the effects of the dyadic relationship from citizen, tanod, and barangay characteristics. No doubt some citizens are simply more trusting than others, some tanods are more approachable than others, and these characteristics may correlate with their positions in the family network. To avoid conflating the nature of the relationship between citizens and tanods with the characteristics of the individuals themselves, we employ a fixed effects design. We first conducted a short demographic survey of three randomly selected tanods in each barangay, during which we asked for their consent to use their name and photograph. In the subsequent citizen survey, the enumerator showed the respondent one tanod's photo and name on a printed card and asked the respondent a series of questions about their familiarity with and attitudes towards that tanod. The enumerator then repeated the procedure for the second and third tanods, randomly varying the order of tanods across respondents.

We regress the respondents' answers on their logged social distance to each tanod and include fixed effects for both the respondent and tanod.[12] The inclusion of respondent and tanod fixed effects is possible because each respondent was asked about multiple tanods and each tanod was assessed by multiple citizens. This design allows us to observe the effects of the dyadic citizen-tanod relationship independent of citizen, tanod, or barangay characteristics (since tanods are nested within barangays).

Table 1 shows the results of models testing the first three hypotheses. Citizens who are a shorter distance from the tanod, i.e. are more closely related to them, are more likely to trust the tanod, perceive him or her as fair, and say they would feel comfortable reporting a crime to him or her.[13] The dependent variable in each of these models in measured on

[12] We log social distance because the change in outcomes driven by differences in low values of social distance is likely to be larger than than differences at high values of social distance (Figure 2.)

[13] *Trust:* How much do you agree with the following statement: I trust this Tanod. *Fair:* This Tanod treats the people who live in my Barangay fairly. *Report:* If I observed a crime, I would feel comfortable reporting it to this Tanod.

a 5-point Likert scale, which we then normalize to mean 0, standard deviation 1 for ease of interpretation. Models 1-3 test our hypotheses, while Models 4 and 5 probe the validity of family ties as a measure of social proximity. They show that respondents interact more frequently with and report closer knowledge of tanods to whom they are closer in the family network.[14]

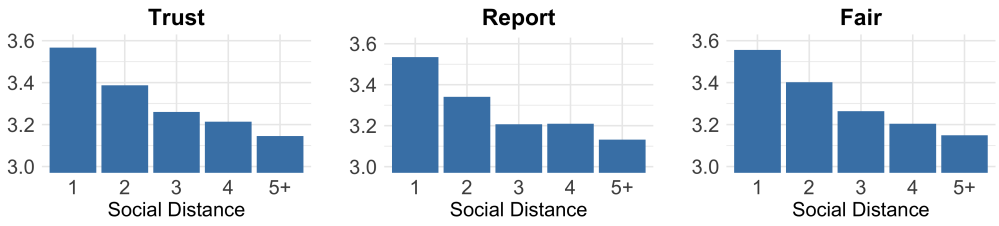
Table 1: Family Ties and Citizen Perceptions of Tanods

	(1) Trust	(2) Report	(3) Fair	(4) Interact	(5) Know
Social Distance	-0.197***	-0.174***	-0.191***	-0.232***	-0.582***
	(0.0593)	(0.0634)	(0.0625)	(0.0646)	(0.0722)
Observations	3583	3586	3576	3580	3587
R^2	0.131	0.122	0.124	0.123	0.150

OLS with respondent-clustered SE. Respondent and tanod fixed effects.
* $p < .10$, ** $p < .05$, *** $p < .01$

Figure 2 shows the raw data underlying these results. Moving from a direct connection to a second-degree connection decreases trust by more than 1/4 of a standard deviation, with similar magnitude changes for crime reporting and perceived fairness. Family connections between citizens and tanods have an important effect on citizens' perceptions of tanods, along with their willingness to provide them with information about crimes in the community.

Figure 2: Social Distance and Citizen Perceptions of Tanods



Results: Embeddedness and Marginalization

Hypothesis 4 states that in barangays where tanods are highly embedded overall, citizens who are not personally connected to tanods will feel marginalized and therefore less sat-

[14]See question text in SI Section 5.

isfied with public safety provision. Because tanod embeddedness varies at the barangay-level, we test this hypothesis using the second, larger survey covering all 286 eligible barangays. We measure the dependent variable, perceived tanod effectiveness, with the question, "How well do the tanods protect public safety in your barangay?" answered on a five point likert scale (-2 to 2). Because responses are non-normally distributed (skewed positively), we use ordered logistic regression. All models cluster standard errors at the barangay level. The key independent variable is the interaction between a respondent's average distance from each tanod in the barangay (*Distance (Avg.)*) and the tanods' embeddedness in the barangay (*Embeddedness*).

Table 2 presents results from several models testing this hypothesis. In addition to our main explanatory variables, Model 1 includes barangay-level controls for the overall network structure (logged average path length between individuals),[15] population size, average household size, average educational attainment, and religion. All variables except network structure come from the 2010 census. Model 2 adds barangay-level random effects, and Model 3 adds a slate of respondent-level controls listed in the table caption. Model 4 uses an alternative measure of respondent proximity to tanods, a citizen's shortest path to the nearest tanod rather than her average path to all tanods.[16]

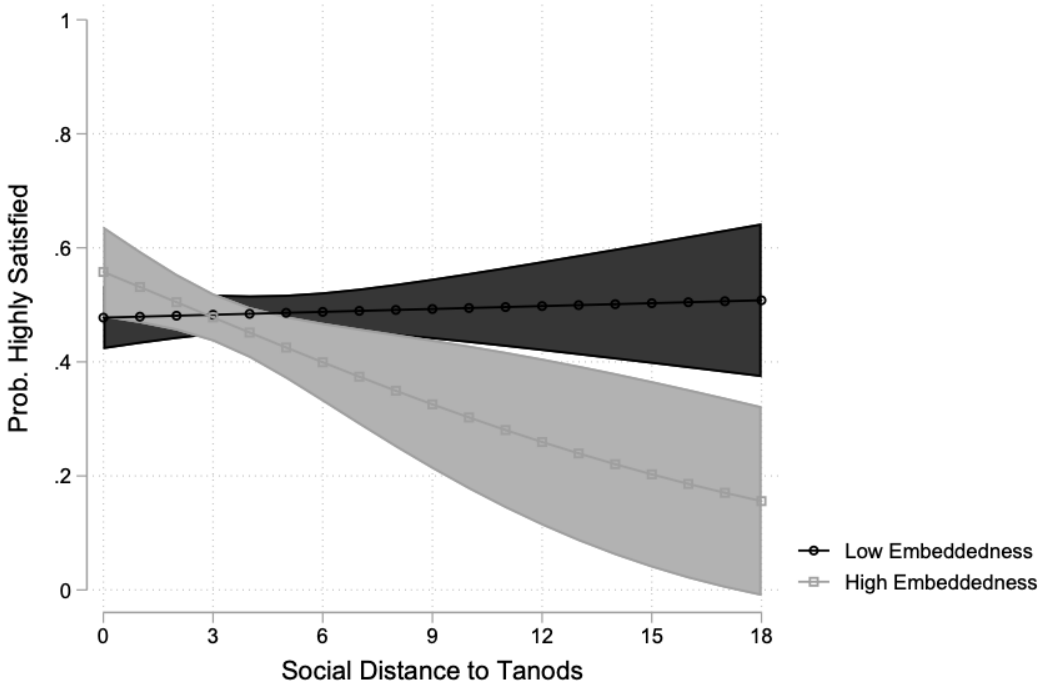
Figure 3 plots the predicted probability that a person is highly satisfied with her barangay's tanods across the range of values for individuals' average social distance from tanods, based on the results of Model 1. The lighter line holds barangay-level tanod embeddedness at the 10^{th} percentile, while the darker line holds embeddedness at the 90^{th} percentile. The plot shows that in barangays with low-embedded tanods, personal proximity to tanods has little association with a citizen's evaluation of tanods' performance. However, in barangays with highly-embedded tanods, as an individual's level of disconnectedness in-

[15] In the SI, we also show that even though tanods are more embedded on average in barangays with larger, denser, and more centralized networks, these correlations are relatively weak. Results are robust to including these other structural variables as controls (Supporting Information Table D.1).

[16] When using *Distance (Min.) with individual controls, results are marginally significant* ($p = .052$ (SI Table E.4).

creases, her satisfaction with tanod performance declines as well. In the Supporting Information, we see a similar pattern when dividing the dyadic models from Table 1 between respondents in high- and low-embeddedness barangays, with only those in high-embeddedness barangays showing a significant link between social distance and trust, willingness to report, and perceived fairness.[17]

Figure 3: Barangay Embeddedness, Social Distance, and Perceived Service Provision



The relationship between tanod embeddedness and marginalization of non-proximate citizens is substantively important. Respondents in high-embeddedness barangays who are, on average, five or more degrees separated from tanods have significantly worse perceptions of tanods' ability to protect public safety relative to their counterparts in low-embeddedness barangays. One might think that this backlash would be mitigated by the increased number of connected citizens in high-embedded barangays. However, even in barangays with the most-embedded tanods, more than half of the citizens are more than five degrees of separation from tanods on average.

[17]Tables E.1 and E.2

Table 2: Heterogeneous Effects on Evaluations of Tanod Service Provision

	DV: Satisfaction with Tanod Service Provision			
	(1)	(2)	(3)	(4)
Tanod Embeddedness	0.00639	0.00522	0.00521	0.00320
	(0.00390)	(0.00415)	(0.00409)	(0.00310)
Distance (Avg.)	0.0386	0.0299	0.0481*	
	(0.0281)	(0.0298)	(0.0271)	
Distance (Avg.)*Embedded	-0.00225**	-0.00195**	-0.00196**	
	(0.000938)	(0.000976)	(0.000967)	
Distance (Min.)				0.0403
				(0.0290)
Distance (Min.)*Embedded				-0.00202**
				(0.000875)
Avg. Network Path	-0.173*	-0.174	-0.150	-0.158
	(0.103)	(0.107)	(0.106)	(0.108)
Num. Tanods	-0.0205*	-0.0211*	-0.0281**	-0.0238*
	(0.0123)	(0.0126)	(0.0124)	(0.0127)
Population (Bgy)	0.532	0.483	0.972	0.633
	(0.857)	(0.897)	(0.892)	(0.919)
HH Size (Bgy)	-0.00228	-0.00133	-0.0209	-0.0337
	(0.0914)	(0.0950)	(0.0890)	(0.0909)
Education (Bgy)	-0.730***	-0.752***	-0.413**	-0.304
	(0.178)	(0.182)	(0.198)	(0.200)
Pct. Catholic (Bgy)	-2.078**	-2.163**	-2.635**	-2.744**
	(1.059)	(1.096)	(1.209)	(1.259)
Individual Controls	No	No	Yes	No
Random Effects (Bgy)	No	Yes	No	No
Observations	2663	2663	2622	2533

Coefficients from ordered logistic regression with barangay-clustered SE.

* $p < .10$, ** $p < .05$, *** $p < .01$

Individual-level controls are respondent degree centrality, age, education, employment status, years residing in current barangay, religion, sampling status (primary or proxy), distance from barangay hall.

While we observe that the interaction of social embeddedness and proximity is associated with perceptions of service provision, we cannot distinguish with certainty the mechanisms underlying this relationship. Officers might intentionally engage in favoritism that benefits their family members, and this behavior may be more visible in barangays where officers have many family ties. Alternatively, embedded officers might rely more heavily on personal connections in the course of their duties and focus efforts on addressing the public safety issues that come to their attention through these connections. Finally, this test does not distinguish whether embedded tanods actually provide worse public safety to unconnected citizens, or whether this perception is merely driven by citizens' awareness of their status relative to others. We explore the relationship between embeddedness and public safety in the following section. However, all of these possible mechanisms deal with the way that community-level embeddedness creates a system of perceived winners and losers. Despite clear evidence that citizen-tanod proximity improves engagement at the dyadic level, increasing the number of individual connections does not aggregate into improved perceptions of public safety.

Results: Embeddedness and Crime

The tradeoff tanod embeddedness presents for citizen buy-in has important, but ostensibly ambiguous, implications for crime prevention. If embeddedness marginalizes unconnected civilians, they may withdraw from engaging with law enforcement, counteracting the increased engagement of connected citizens. On the other hand, the nature of *public* safety provision implies that even if some citizens feel marginalized, improved information flows from select citizens may still allow officers to prevent crime in a way that benefits the whole community. Our last two hypotheses attempt to untangle this ambiguity by predicting that the relationship between officer embeddedness and crime prevention depends on the nature of the crime in question.

We expect that tanod embeddedness will be associated with an increase in crimes involving disputes between civilians due to officers' lessened ability to act as neutral arbiters. In Sorsogon, disputes between neighbors and long-running feuds between families are among the most common issues reported on our victimization survey: 13.2% of respondents were involved in a family feud in the last six months, while 14.5% were party to a dispute between neighbors. The police blotter in Donsol municipality details a series of escalating altercations between families which began when a man slapped another individual, and escalated when another extended family member brandished a gun. The following week, the adult daughter of the original victim got in a "heated argument" and assaulted the original aggressor. According to the report, these incidents stem from "an old grudge between the families."[18]

Citizens who feel marginalized challenge officers' abilities to mediate these disputes. In barangays with highly embedded tanods, unconnected citizens may allow their grievances to fester or reject tanod attempts to informally mediate disputes, leading them to spiral into more serious problems. If a proximate citizen goes to the tanods for help resolving a dispute, the other party may reject the tanods' attempts to mediate for fear that their relative lack of connections puts them at a disadvantage.

We initially expected increased information flows from connected citizens to help embedded police reduce perpetrator-victim crimes, as officers use citizen-provided information to allocate crime-fighting resources more efficiently. However, the results in the previous section suggest that, at least in Sorsogon, the disgruntlement of unconnected citizens may counteract the benefits of information from connected citizens, implying a null or even positive effect of embeddedness on crime. In Sorsogon, the most common crimes of this nature are petty theft and juvenile delinquency, which often involves vandalism or public intoxication. For example, in Barangay Salog, Sorsogon City, a citizen reported to the tanods that youths throwing bottles had broken the windshield of her car.[19] On our survey, 8.8% of

[18]PNP Blotter Donsol 3705 (14 Oct 2017) and 3731 (22 Oct 2017)
[19]Salog barangay blotter, 12 September 2018

respondents said they had experienced a theft in the last six months, and 7% said they had experienced juvenile delinquency during the same period.

We test the relationship between barangay-level tanod embeddedness and the quality of service provision using a crime victimization survey. Rather than using administrative crime statistics, which are susceptible to reporting bias and confounded with citizens' trust in the police, we survey citizens and ask whether they experienced any of several types of issues in the last six months. We focus on less-serious public safety problems – petty thefts, juvenile delinquency, neighbor disputes, and family feuds – for three reasons. First, these are the types of items that tanods are most likely to deal with, while more serious crimes like homicide and assault are referred to the PNP. Second, less serious crimes are likely to go unnoticed by the police if citizens do not report them, whereas more serious issues like vehicle thefts and murders are unlikely to escape the attention of law enforcement. Finally, these four crimes allow us to distinguish between dispute-type problems (neighbor disputes, family feuds) and more conventional crimes (theft, juvenile delinquency).

Table 3 shows the results of models testing the relationship between tanod embeddedness and crime. Each dependent variable is coded as "1" if the respondent experienced the issue in question in the past six months, otherwise "0." All models use logistic regression and control for a full slate of barangay-level controls in addition to the individual-level controls reported in Table 3. The key explanatory variable is *Tanod Embeddedness*, the average degree centrality of the barangay's tanods. We cluster standard errors by barangay.

Consistent with our theory, the effects of tanod embeddedness on crime depend on the nature of the crime. Family feuds and neighbor disputes are significantly *more* common in barangays where tanods are more embedded. On the other hand, the effect of tanod embeddedness on juvenile delinquency and petty theft is not significantly different from zero.[20]

[20]We also find a null result testing embeddedness' relationship with drug incidents and insurgent activity (not shown).

Several alternative mechanisms could explain the observed positive relationship between tanod embeddedness and disputes. First, in contrast to the findings from Bhavnani and Lee (2018), embedded tanods might put less effort into their duties, perhaps due to complacency associated with increased job security. However, low effort does not explain why embeddedness primarily affects disputes but not other types of crimes.

Table 3: Tanod Embeddedness and Crime

	DV: Crime Victimization by Type			
	(1)	(2)	(3)	(4)
	Family Feuds	Neighbor Disputes	Juvenile Delinquency	Petty Theft
Tanod Embeddedness	0.00771**	0.00846***	-0.00888	-0.000682
	(0.00344)	(0.00304)	(0.00550)	(0.00438)
Captain Embeddedness	-0.00238	0.000921	0.00198	0.00119
	(0.00201)	(0.00184)	(0.00363)	(0.00255)
Age	-0.0451***	-0.0342***	-0.0306***	-0.0108**
	(0.00523)	(0.00498)	(0.00832)	(0.00484)
Education	-0.0386	0.0159	0.0642	0.176***
	(0.0516)	(0.0493)	(0.0712)	(0.0524)
Employed FT	-0.00344	-0.112	0.545**	0.0935
	(0.137)	(0.136)	(0.217)	(0.170)
Income	-0.571	-0.620	0.824	-0.112
	(0.626)	(0.650)	(0.626)	(0.252)
Yrs in Bgy	0.00200	0.00146	-0.00164	0.000709
	(0.00191)	(0.00219)	(0.00434)	(0.00214)
Observations	2680	2679	2664	2691

Logit coefficients with barangay RE. Barangay-clustered SE in parentheses.

* $p < .10$, ** $p < .05$, *** $p < .01$

Controls in all models not displayed: number of Tanods, respondent degree, network structure (logged average path length), population, gender, average household size, overseas foreign workers, average barangay education, percent catholic, barangay proportion age 18-39.

Another possibility is that tanod embeddedness proxies for the connections of local *politicians* who affect security and citizen satisfaction through other means (Tellez et al.

2018). These local "bosses" are notorious for displaying high levels of corruption and favoritism (Sidel 1999). Barangay captains often act as arbiters for the most serious citizen disputes and, because tanods are assigned by barangay captains, citizens may simply perceive tanods to be an extension of the captain's sphere of influence.[21] At the same time, it is common for tanods to serve across the terms of multiple barangay captains, allowing them to have an independent effect on local public safety. In Table 3, we control for the captain's embeddedness (degree centrality) and find that the embeddedness of street-level tanods is far more predictive of local dispute-type crimes. In the Supporting Information, we further explore the role of local politics, showing that the results are robust to barangay councilor embeddedness and are not driven by whether tanods are socially connected to the barangay captain.

A third alternative is reverse-causation. Barangays with high rates of disputes may be more likely to choose highly-embedded tanods in expectation that they will prevent crime more effectively. Several factors suggest this is not the case. Most tanods have served in their position for quite a long time – an average of more than seven years among our sample. If embedded tanods were assigned in response to high crime rates, that assignment happened years ago, in which case they failed to reduce crime to rates comparable to non-embedded areas over their tenure. Furthermore, this selection would likely affect the observed relationship between embeddedness and all types of crimes, not just disputes.

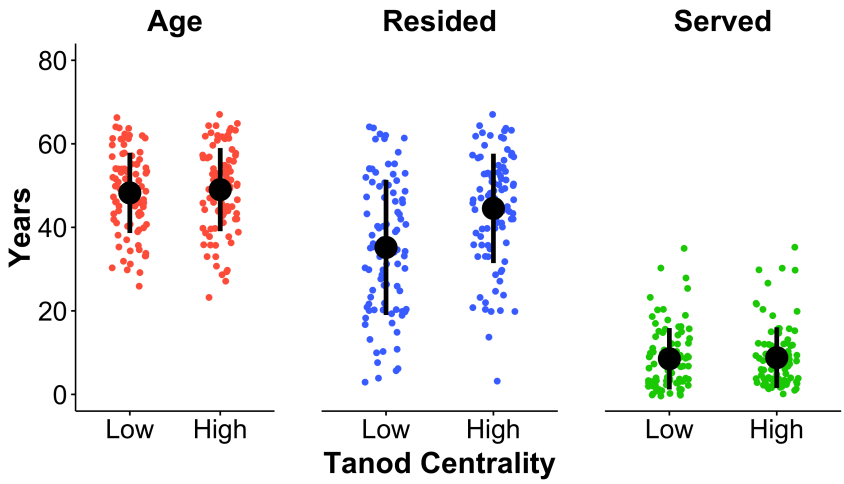
Still, to reaffirm that intentional selection of embedded tanods does not drive our results, in the Supporting Information we test whether barangays' past levels of disputes predict the embeddedness of tanods assigned in subsequent periods. To do this, we identified the 508 tanods assigned between 2016 and 2017 and coded their degree centrality in barangay family networks. We then attained 2013-2015 Sorsogon police blotter reports (containing nearly 10,000 reported crimes) and coded the rate of dispute-type crimes in the period before

[21] Indeed, tanod embeddedness and captain embeddedness are positively correlated with each other (cor=.42). This connection between bureaucratic and political embeddedness is generalizeable to many other contexts where government jobs are distributed as patronage.

the assignment of these new tanods. We find that a barangay's history of disputes was not a significant predictor of new tanods' embeddedness.[22] Supporting Information Section 3 contains a full discussion of the determinants of tanod selection.

Finally, tanod embeddedness might be correlated with other characteristics like experience that are associated with professional effectiveness. To explore this possibility, we compare characteristics of high and low embedded tanods using all available metrics from our survey of 183 tanods.[23] Figure 4 suggests that high and low embedded tanods are extremely similar in terms of their age and years served, though highly embedded tanods have resided in their barangay for longer (44.5 years versus 35.2). Tanods are also balanced on education and whether they were assigned by the current barangay captain.[24]

Figure 4: Balance of Tanod Experience by Embeddedness



Discussion and Conclusion

We find that interpersonal ties between citizens and rank-and-file law enforcement officers significantly increase citizens' trust in and willingness to engage with police officers. Yet, personal ties present a double-edged sword for the delivery of public safety. As officers become more embedded in their communities, unconnected citizens become less satisfied with

[22] SI Table C.3.
[23] High and low centrality in Figure 4 defined as being above or below the median tanod degree centrality.
[24] SI Table C.1.

the services they provide, compromising officers' claims of impartiality and impeding their ability to arbitrate disputes. Consequently, communities where the police are more embedded experience significantly higher rates of family feuds and disputes between neighbors. At best, the police's inability to resolve these disputes informally shifts the burden to the courts, a costly and inefficient outcome for both citizens and the state. Unfortunately, at least in the communities we study, these disputes often fester and escalate into long-lasting conflicts.

Existing studies operationalize bureaucrat-citizen social ties in a variety of ways like bureaucrats' location of origin (Bhavnani and Lee 2018; Fjeldstad 2005), involvement in community organizations (Tsai 2007), frequency of contact with citizens (Ricks 2016; Tendler and Freedheim 1994), and ethnic representativeness (Blair et al. 2016). Regardless of the particular source of personal ties under consideration, existing work shares a common conceptualization of embeddedness defined by shared norms or interpersonal contact that foster trust between citizens and bureaucrats. Our empirical focus on a localized and personal version of embeddedness uncovers important mechanisms of bureaucrats' personal relationships that are applicable to many other varieties of embeddedness.

For example, in studies that measure embeddedness based on whether bureaucrats are from the community they serve, it is important to consider bureaucrats' connections to individuals in addition to their connections to the community at large. Where officials have ties to a community, they will inevitably have stronger ties to some people than others. Our article suggests that bureaucrats operating in their home communities may leave a significant portion of the population with an increased sense of being left out of government networks, which could undermine state legitimacy regardless of bureaucrats' level of effort. The same may be true of shared membership in social or religious organizations. If not everybody in the community is a member the organizations attended by bureaucrats, higher embeddedness in organizations can foster concerns that the government gives preferential treatment to some citizens over others.

Our theory also sheds light on politics in divided societies, where calls for group-based representation in service-providing institutions are common. We demonstrate that personal connections increase citizens' willingness to provide information to public officials. Findings that representation on the basis of group identity improves public goods provision (Habyarimana et al. 2007) or security forces effectiveness (Lyall 2010) may simply proxy for the higher likelihood of personal connections between individuals who share a salient group identity or home town. The salience of joint membership in social or religious organizations, coethnicity, or online connections on social media platforms, like family ties, varies across contexts. The underlying mechanisms of trust, shared norms, and frequent interactions serve as the common link between embeddedness and political outcomes.

The pivotal role of citizen-state information flows, and the role personal connections play in driving these flows, extends to other state functions as well. Existing research shows that citizens are more willing to provide tips to counterinsurgents who are co-ethnics (Lyall et al. 2015), enhancing their ability to locate and defeat rebels. Our findings suggest that when recruiting more "embedded" counterinsurgents, governments should be wary of how embeddedness impacts those who already feel marginalized. Similarly, existing research shows that politicians use personal networks to distribute jobs, infrastructure, and other livelihood programs as patronage (Fafchamps and Labonne 2018). In locales where some individuals have strong ties to the bureaucrats in charge of service delivery, our theory predicts greater inequality in the distribution of resources and greater feelings of marginalization among unconnected citizens.

From a policy perspective, one of the weaknesses of relying on pre-existing sources of embeddedness like shared local origin or family ties is that it inevitably leaves some citizens disconnected. Rather than hiring bureaucrats who are embedded through pre-existing structures, initiatives that *build* stronger social ties between citizens and officials may serve a similar purpose while allowing the government to fill in the gaps by engaging with otherwise-marginalized individuals. For example, the Philippine National Police in Sorsogon embarked

on a large community engagement drive shortly after this study concluded. The drive sought to generate thousands of informal interactions between police officers and citizens in hopes of building familiarity and improving communication. In Liberia, Karim (2020) found that a single household visit of 20-30 minutes between a pair of police officers and a citizen noticeably improved the extent to which the citizen perceived the police as effective and prefer them to handle crisis situations. This strategy extends beyond the police. Agencies for social work, public education, and tax collection can become more embedded in their communities not just by recruiting bureaucrats with existing ties but by employing policies that generate interpersonal ties between qualified bureaucrats and citizens.

Embeddedness is likely to be most salient where bureaucratic professionalization and centralization are low. In these weakly-institutionalized settings, bureaucrats shape citizens' relationships with the state by distributing goods and services on the basis of personal preferences and relationships. Thus, our theory is especially applicable in the developing world, where bureaucracies often lack the capacity to distribute goods in a programmatic rather than a personalistic way. Institutionalization and centralization may reduce the negative outcomes of disconnectedness by reducing the overall salience of embeddedness.

Ultimately, our results paint a picture of embeddedness that is neither entirely rosy nor entirely bleak. At the community-level, we find that an embedded police force is associated with increased disputes between citizens while finding no improvement in the prevention of perpetrator-victim crimes due to embeddedness. One might interpret this to say that embeddedness leads to worse policing outcomes on net. However, we think that our results relating to the benefits of individual-level citizen-officer proximity provide some room for optimism and we do not propose that embeddedness may never cause improvements in public safety provision. We speculate that community-level embeddedness causes the backlash we observe primarily in the small, close-nit communities typical of rural, developing contexts. In Los Angeles, Mexico City, or Manila where large police forces serve large populations, baseline embeddedness may be low enough that it holds little salience for unconnected citizens.

In these contexts, information from a small number of civilian informants might improve the police's ability to fight crime to a degree that it outweighs any costs of reduced buy-in for unconnected citizens. Additional research in a variety of contexts is needed to determine the conditions under which the benefits of personal connections outweigh the costs of community-level embeddedness.

Embeddedness comes with a specific tradeoff between engagement from socially proximate citizens and backlash from those who remain unconnected. We address the existing ambiguity of police embeddedness, with some countries viewing embedded law enforcement as a panacea and others viewing citizen-police connections as the cause of corruption, by pointing out the inconsistency between individual-level social proximity and community-level embeddedness. By taking into account how embeddedness impacts unconnected individuals, we clarify the choices policymakers have to grapple with when determining whether the benefits of embeddedness outweigh the costs in their specific policy domain.

Acknowledgements

We thank our partners in the Philippines who facilitated data collection, including the field research team under the leadership of Grace Labalan. We are also grateful to Stephan Haggard, Melissa Lee, Kelly Matush, Nico Ravanilla, and Renard Sexton for helpful comments on this manuscript, as well as the feedback on the research design provided by Cesi Cruz, Mitch Downey, Craig McIntosh and audiences at Dartmouth College, UC San Diego, the 2018 International Studies Association and the 2019 American Political Science Association meetings.

References

Akerlof, George and Janet L Yellen. *Gang behavior, law enforcement, and community values.* Canadian Institute for Advanced Research, 1994.

Bhavnani, Rikhil R and Alexander Lee. Local embeddedness and bureaucratic performance: evidence from india. *The Journal of Politics*, 80(1):71–87, 2018.

Blair, Robert A , Sabrina M Karim, Michael J Gilligan, and Kyle Beardsley. Policing ethnicity: Lab-in-the-field evidence on discrimination, cooperation and ethnic balancing in the liberian national police. *Social Science Research Network*, 2016. `https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2772634`.

Blair, Robert A , Sabrina M Karim, and Benjamin S Morse. Establishing the rule of law in weak and war-torn states: Evidence from a field experiment with the liberian national police. *American Political Science Review*, 113(3):641–657, 2019.

Cruz, Cesi . Social Networks and the Targeting of Vote Buying. *Comparative Political Studies*, forthcoming, 2018.

Cruz, Cesi , Julien Labonne, and Pablo Querubin. Politician family networks and electoral outcomes: Evidence from the philippines. *American Economic Review*, 107(10):3006–37, 2017.

Evans, Peter B . *Embedded autonomy: states and industrial transformation*. Princeton University Press, 1995.

Fafchamps, Marcel and Julien Labonne. Family Networks and Distributive Politics. *Working Paper*, November 2018. `https://web.stanford.edu/~fafchamp/polnet.pdf`.

Fearon, James D and David D Laitin. Explaining interethnic cooperation. *American political science review*, 90(04):715–735, 1996.

Fjeldstad, Odd-Helge . *Corruption in tax administration: lessons from institutional reforms in Uganda*. Tech. rep., Chr. Michelsen Inst. (CMI), Bergen, Norway, 2005.

Granovetter, Mark . Economic action and social structure: The problem of embeddedness. *American Journal of Sociology*, 91(3):481–510, 1985.

Habyarimana, James , Macartan Humphreys, Daniel N Posner, and Jeremy M Weinstein. Why does ethnic diversity undermine public goods provision? *American Political Science Review*, 101(4):709–725, 2007.

Haim, Dotan A . Civilian Social Networks and Credible Counterinsurgency. *Working Paper*, September 2019. `http://dotanhaim.com/wp-content/uploads/2019/08/Haim_CivilianNetworks.pdf`.

Ichino, Nahomi and Noah L Nathan. Crossing the line: Local ethnic geography and voting in ghana. *American Political Science Review*, 107(2):344–361, 2013.

Karim, Sabrina . Relational state building in areas of limited statehood: Experimental evidence on the attitudes of the police. *American Political Science Review*, pages 1–16, 2020.

Kennedy, Brandy A. , Adam M. Butz, Nazita Lajevardi, and Matthew J. Nanes. *Race and Representative Bureaucracy in American Policing*. Palgrave Macmillan, 2017.

Kiser, Edgar and Audrey Sacks. Improving tax administration in contemporary african states: lessons from history. In Martin, Isaac William , Ajay K. Mehrotra, and Monica Prasad, editors, *The New Fiscal Sociology*, pages 183–200. Cambridge University Press, 2009.

Kitschelt, Herbert and Steven I. Wilkinson. Citizen-politician linkages: an introduction. In Kitschelt, Herbert and Steven I. Wilkinson, editors, *Patrons, Clients, and Policies. Patterns of Democratic Accountability and Political Competition*, pages 1–49. Cambridge University Press, 2007.

Laitin, David D . *Nations, states, and violence*. Oxford University Press, 2007.

Larson, Jennifer M and Janet I Lewis. Ethnic networks. *American Journal of Political Science*, 61(2):350–364, 2017.

Lee, Melissa M and Nan Zhang. Legibility and the informational foundations of state capacity. *The Journal of Politics*, 79(1):118–132, 2017.

Lipsky, Michael . *Street-level bureaucracy: dilemmas of the individual in public services*. New York: Russell Sage Foundation, 1980.

Lyall, Jason . Are coethnics more effective counterinsurgents? evidence from the second chechen war. *American Political Science Review*, 104(01):1–20, 2010.

Lyall, Jason , Yuki Shiraito, and Kosuke Imai. Coethnic bias and wartime informing. *The Journal of Politics*, 77(3):833–848, 2015.

Magaloni, Beatriz , Alberto Díaz-Cayeros, and Alexander Ruiz Euler. Public good provision and traditional governance in indigenous communities in oaxaca, mexico. *Comparative Political Studies*, 2019.

Marx, Benjamin , Thomas M Stoker, and Tavneet Suri. There is no free house: Ethnic patronage in a kenyan slum. *American Economic Journal: Applied Economics*, 11(4): 36–70, 2019.

McCoy, Alfred W . *An anarchy of families: State and family in the Philippines*. Univ of Wisconsin Press, 2009.

McCubbins, Mathew D , Roger G Noll, and Barry R Weingast. Administrative procedures as instruments of political control. *Journal of Law, Economics, & Organization*, 3(2): 243–277, 1987.

Nanes, Matthew . Police integration and support for anti-government violence in divided societies: Evidence from iraq. *Journal of Peace Research*, 57:329–343, 2020.

Nanes, Matthew J . Policing in divided societies: Officer inclusion, citizen cooperation, and crime prevention. *Conflict Management and Peace Science*, Online First, 2019.

Ostrom, Elinor . Crossing the great divide: coproduction, synergy, and development. *World development*, 24(6):1073–1087, 1996.

Pepinsky, Thomas B , Jan H Pierskalla, and Audrey Sacks. Bureaucracy and service delivery. *Annual Review of Political Science*, 20(1), 2017.

Ravanilla, Nico , Dotan A Haim, and Allen Hicken. Brokers, Social Networks, Reciprocity, and Clientelism. *American Journal of Political Science*, Forthcoming.

Ricks, Jacob I . Building Participatory Organizations for Common Pool Resource Management: Water User Group Promotion in Indonesia. *World Development*, 77:34–47, 2016.

Scott, James C . *Seeing like a state: How certain schemes to improve the human condition have failed*. Yale University Press, 1998.

Sidel, John T . *Capital, coercion, and crime: Bossism in the Philippines*. Stanford University Press, 1999.

Skogan, Wesley G and Susan M Hartnett. *Community policing, Chicago style*. Oxford University Press New York, 1997.

Tellez, Juan Fernando , Erik Wibbels, and Anirudh Krishna. Local order, policing, and bribes: Evidence from india. *Presented at the American Political Science Association Annual Meeting*, 2018.

Tendler, Judith and Sara Freedheim. Trust in a rent-seeking world: health and government transformed in northeast brazil. *World Development*, 22(12):1771–1791, 1994.

Torres, Wilfredo Magno III . *Rido: Clan Feuding and Conflict Management in Mindanao*. The Asia Foundation, 2007.

Tsai, Lily L . *Accountability without democracy: Solidary groups and public goods provision in rural China*. Cambridge University Press, 2007.

Tyler, Tom R . Enhancing police legitimacy. *The annals of the American academy of political and social science*, 593(1):84–99, 2004.

Weisburd, David and Lorraine Green. Policing drug hot spots: The jersey city drug market analysis experiment. *Justice Quarterly*, pages 711–735, 1995.

Weitzer, Ronald John . *Policing under fire: Ethnic conflict and police-community relations in Northern Ireland*. State University of New York Press, 1995.

Biographical Statements

Dotan Haim is an Assistant Professor in Political Science at Florida State University, Tallahassee, FL, 32304.

Matthew Nanes is an Assistant Professor in Political Science at Saint Louis University, St. Louis, MO 63108.

Michael W. Davidson is a Senior Data and Applied Scientist at Microsoft, Redmond, WA 98052

Supporting Information

Family Matters: The Double-Edged Sword of Police-Community Connections

SI Table of Contents

A. Sampling and Materials 2

B. Summary Statistics 3

C. Tanod Selection and Balance 7

Selection Process and Correlates of Embeddedness 7

Reverse Causation 9

Local Politics 11

D. Operationalizing Network Measures 16

Robustness to Barangay Network Structure 16

Operationalization of Barangay-Level Embeddedness 20

E. Robustness Checks and Mechanisms 23

Mechanisms 23

Robustness to Alternate Specifications 23

A Sampling and Materials

From Sorsogon Province's 541 barangays, we created an initial sampling frame of 298 barangays which the Armed Forces of the Philippines (AFP) deemed "safe for research" as part of a different research project. Insurgent presence in the other 243 barangays posed too great of a risk to send enumerators to conduct door-to-door surveys related to law enforcement and public safety.

We acquired the list of active tanods from the Department of Interior and Local Government (DILG) in 286 of these 298 barangays. From these, we randomly selected 60 barangays to survey. We randomly selected 20 citizens from the list of voters in each of these barangays, dropping 13 responses (0.8%) from the analysis due to concerns about data quality, resulting in a usable sample of 1,203 citizens. We randomly sampled three tanods from each sample barangay to interview prior to the citizen survey and received their consent to display their picture to citizens. An example tanod photo card is shown in the figure below. After analyzing the rate of crime victimization in our data, we discovered that we were under-powered to make comparisons of crime rates across barangays. We ran a second survey several months later in all 298 safe barangays to measure all variables needed for barangay-level analyses. We randomly selected 10 registered voters in each barangay using the same procedures as the first survey.

For both surveys, we randomly selected respondents from the same list of registered voters that forms the basis for the village networks. Enumerators went to the barangay hall and asked where they could find the selected individuals. If a subject was not home but was likely to come back the same day, the enumerator returned to conduct the interview later. If the selected individual was not available that day, the enumerator interviewed a "proxy," the person available in the household with the next upcoming birthday.[25] If the home could not be located, or if everyone in the household refused to answer, the enumerator

[25]Proxies made up 30% and 24.5% of the samples in the first and second surveys, respectively.

Figure A.1: Tanod Photo Card

proceeded to the next randomly-selected subject from the voter list until the assigned number of respondents had been interviewed.

B Summary Statistics

Tables B.1 and B.2 collectively show descriptive statistics for all variables used in the analysis. The left hand columns of Table B.1 (Survey 1) describes the dyadic dataset which we use for the analysis in Table 1. Because of the dyadic nature of the data, whereby each respondent answered questions about three separate tanods, we have about 3,600 responses for each variable. The values in the right hand columns of Table B.1 describe the second, larger survey used in Tables 2 and 3. Finally, Table B.2 shows barangay-level descriptive statistics for each of our 286 study barangays.

Figure B.1 shows the distribution of two key independent variables in our sample, the average social distance of each respondent to all tanods in the barangay, and a barangay tanods' overall level of embeddedness. Both measures are somewhat skewed towards lower values,

Table B.1: Summary Statistics – Surveys

	Survey 1 (dyadic)			*Survey 2*		
Variable	Mean	SD	n	Mean	SD	n
Trust	3.272	.699	3,602			
Report	3.239	.733	3,605			
Fair	3.274	.715	3,595			
Interact	2.546	1.188	3,599			
Know	3.060	1.118	3,606			
Social Distance	1.207	.563	3,589			
Employed (incl. part time)	.488	.500	3,609			
Age	44.97	16.04	3,603	47.3	15.9	2923
Education	1.584	1.381	3,606	1.58	1.41	2916
Income	.0067	.0083	3,558	.0077	.0213	2879
Years in Barangay	34.55	29.81	3,606	36.7	24.4	2912
Employed FT				.262	.440	2901
Avg. Connected				-4.29	2.27	2814
Min. Connected				-2.45	2.34	2814
Degree (Tnds)				37.1	21.7	2804
Perceived Public Safety				1.15	1.00	2814
Feud				.132	.339	2870
Dispute				.125	.331	2868
Juvenile Delinquency				.049	.217	2852
Theft				.080	.272	2884

Table B.2: Summary Statistics – Study Barangays

Variable	**Mean**	**SD**	**N**
Num. Tanods	12.44	5.37	286
Population (thousands)	0.96	0.08	286
HH Size	3.30	0.46	286
Education	1.87	0.27	286
Pct. Catholic	0.95	0.04	286
Avg. Network Path Length	4.77	0.63	286
Degree Centrality	35.95	36.40	286
Male	0.50	0.02	286
Overseas Foreign Workers	0.01	0.01	286
Age 18–39	0.54	0.04	286

but exhibit substantial variation nevertheless. In particular, the left panel shows that the overwhelming majority of individuals are near-normally distributed between 2 and 7 steps removed from their barangay's tanods.

Figure B.1: Distribution of Proximity and Embeddedness

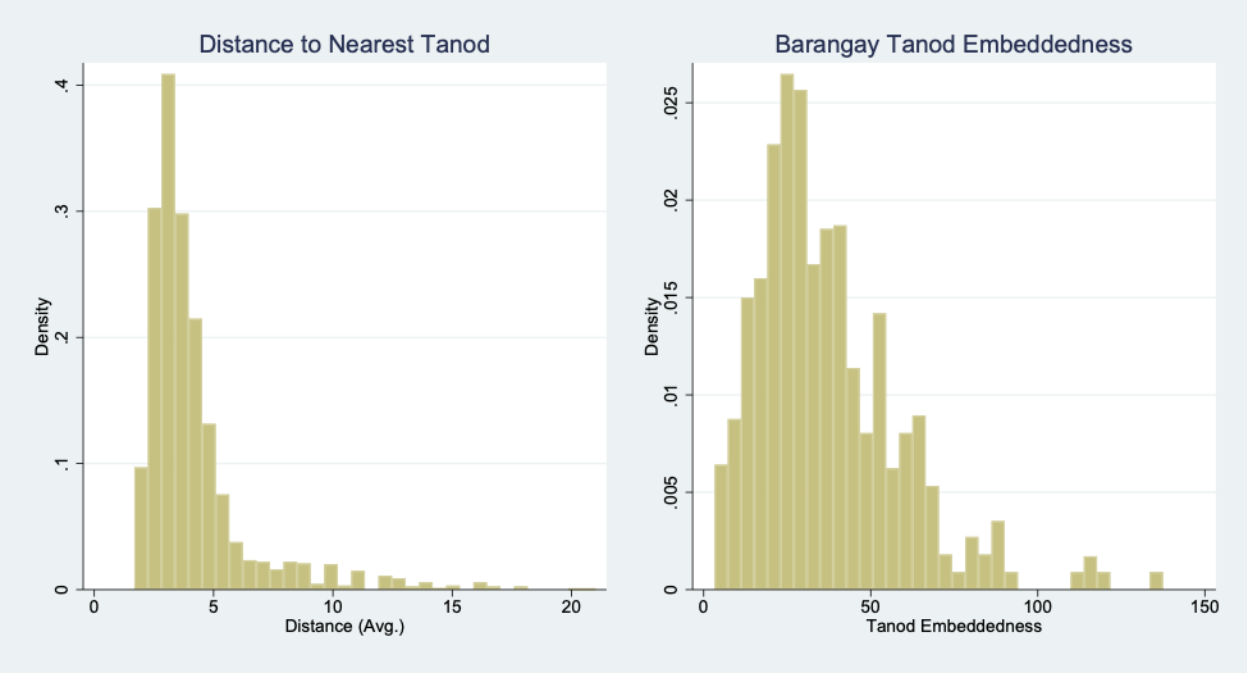


Figure B.2: Distribution of Family Sizes

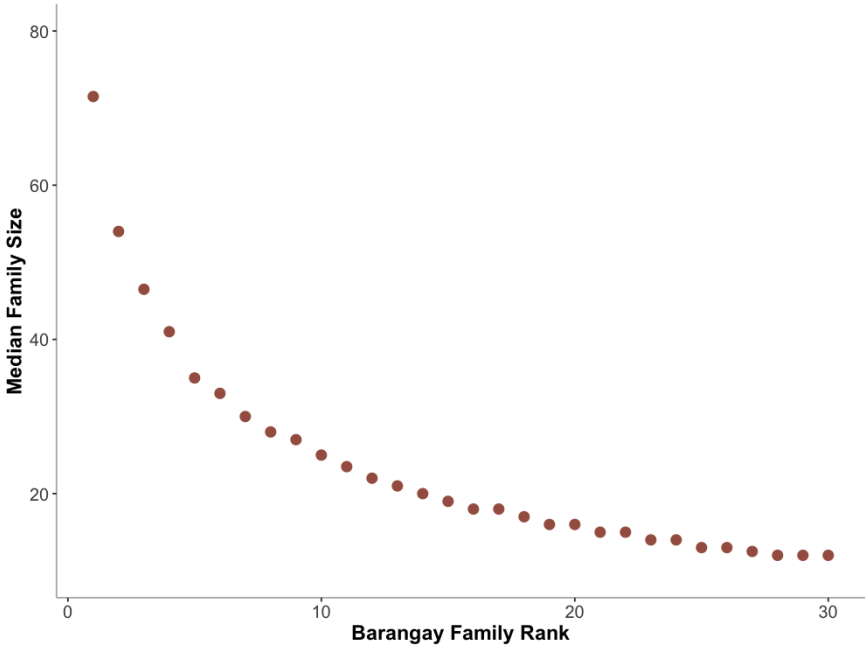
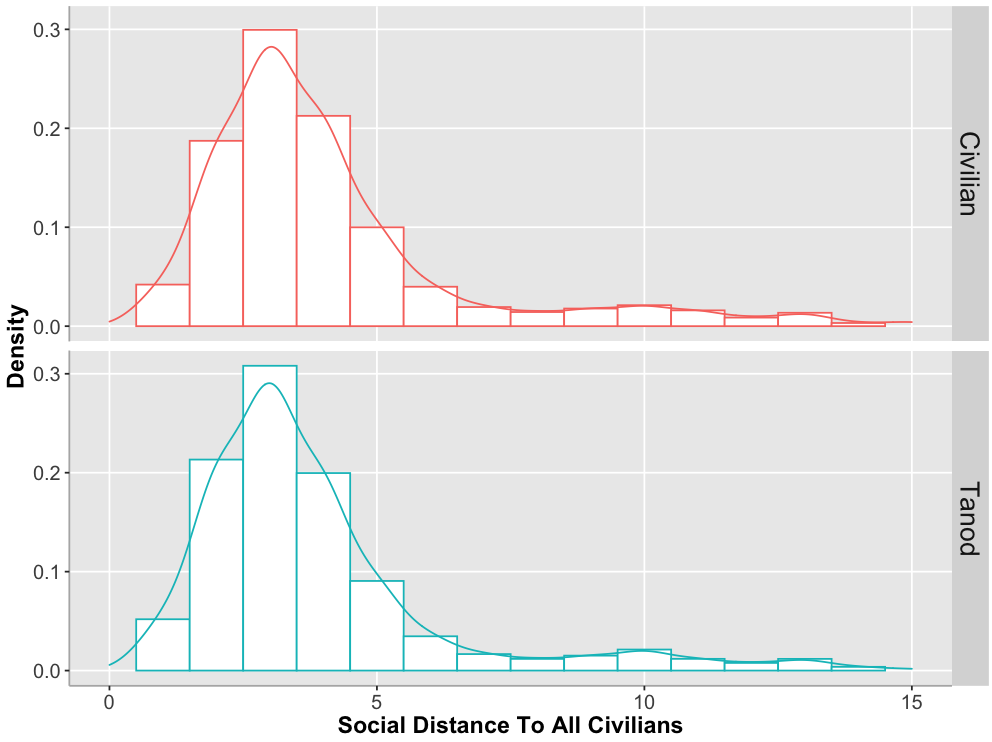


Figure B.2 shows the median family size for the 30 largest families in each of our sample barangays. This was calculated as the number of individuals who held a particular surname (middle or last). On average, the largest family in a barangay had approximately 71 members, with the majority of people belonging to families that contain between 15 and 40 members.[26] The median citizen in our sample has 25 direct family members who live in their barangay.

In addition to these direct family ties, our theory also predicts that indirect family ties will mediate peoples' relationships with and perceptions of officers. Figure B.3 displays the average social distance between each pair of individuals in the barangay, disaggregated by tanods and civilians. Among pairs of individuals, approximately 5% are direct family members (indicated by a shared surname). However, more than 50% of pairs of individuals were separated by a social distance of three or less.

Figure B.3: Distribution of Social Distance Between Individuals



[26]Note that by this measure, an individual is coded as belonging to two families represented by their middle and last name.

Text for the questions "Interact" and "Know" (Table 1):

Interact: In your day-to-day life, how often do you interact directly with this Tanod?

Know: How would you describe your relationship to this Tanod?

Answer choices to *Know* constitute an ordinal scale of familiarity: I have never met him/her; I know of him/her but do not know him/her personally; I know him/her personally but do not consider him/her a close friend; I consider him/her to be a friend; I am related to him/her.

C Tanod Selection and Balance

Selection Process and Correlates of Embeddedness

Tanods are selected directly by the barangay captain, sometimes upon the recommendation of a barangay councilmember. Barangay captains and councilmembers are elected every three years, but in most cases newly elected captains choose to allow existing tanods to continue to serve. The Department of Interior and Local Government (DILG) determines the maximum number of tanods allowed to be on the barangay payroll based on population and land area.

In this section, we investigate the determinants of tanod embeddedness in several ways. First, we look at the correlates of tanod embeddedness at both the individual and community level. Table C.1 shows the correlation between several personal characteristics and degree centrality for the randomly-selected tanods about whom we collected data before our first survey. Most variables show no significant relationship with tanods' degree centrality, indicating that conditional on being selected as a tanod, a tanod's level of embeddedness is not simply a proxy for gender, age, education, years of service, or whether the current captain assigned her. Tanods' years of residence in their barangay is an exception. Those who have lived in their barangay for longer tend to have more family connections within the

barangay. We speculate that individuals with more family connections might reasonably be less likely to move out of their home barangay.

Table C.2 displays the correlates of tanod embeddedness at the community-level. The sample for this regression includes the 286 barangays in our study. As shown, the significant predictors of tanod embeddedness at the community level (measured as average tanod degree centrality) are barangay population, overall network structure, household size, and barangay captain embeddedness.

Table C.1: Correlates of Tanod Embeddedness (Individual-Level)

	DV: Tanod Degree Centrality	
	(1)	(2)
	OLS	Neg. Binom.
Male	-15.55	-0.447*
	(9.688)	(0.252)
Age	-0.385	-0.0128
	(0.387)	(0.0113)
Education	-3.037	-0.0590
	(3.136)	(0.0842)
Years Resident	1.062***	0.0315***
	(0.199)	(0.00633)
Years Served	-0.490	-0.0107
	(0.569)	(0.0114)
Current Cap Assigned	-6.098	-0.145
	(5.157)	(0.134)
Constant	45.63**	3.701***
	(17.64)	(0.388)
lnalpha		-0.225*
		(0.128)
Observations	182	182
R^2	0.111	

SE clustered by barangay.
* $p < .10$, ** $p < .05$, *** $p < .01$

The first three of these variables indicate how features of the barangay population structurally induce levels of embeddedness. In barangays with larger populations, any given

individual is likely have a greater number of family members in the barangay. This is also true in barangays with denser social networks (inversely correlated with average path length) where people have more family members relative to population size. This analysis highlights the importance of controlling for these variables in all regression specifications. The fact that tanod embeddedness is correlated with captain embeddedness likely has to do with the fact that captains are in charge of assigning tanods. We explore this further in section 3.3.

Reverse Causation

Table C.3 tests for one possible source of endogeneity, the scenario in which local governments systematically appoint more embedded tanods when there are more disputes in hopes that these embedded tanods will help solve the disputes. We draw on crime blotter data collected by the Philippine National Police between 2013 and 2015 as the predictor. Each blotter entry identifies the barangay in which the crime occurred, along with the type of crime in question. There is some ambiguity in the PNP's coding of crime types regarding which should be considered as "disputes." For example, a crime listed as "destruction of private property" may or may not have been induced by a dispute. Each of the three authors independently coded whether a crime type should be considered a dispute based on the criteria, "crimes committed out of malice towards a victim known to the perpetrator, rather than solely with the goal of enriching oneself." We use each of the three authors' codings, as well as the majority opinion on each crime type, as the independent variable in four models, along with a fifth model which uses the total number of crimes regardless of type.

We match this crime data with a list of 508 tanods appointed no earlier than March 2016 in the barangays for which we have crime data. The new tanods were identified by comparing the March 2017 registered tanod list with the March 2016 registered tanod list. We estimate each tanod's embeddedness as his or her degree centrality using the same procedures described in the body of the paper. We use these variables in OLS regressions,

Table C.2: Predictors of Barangay-Level Tanod Embeddedness

	(1)
Population (Bgy)	0.00907***
	(0.00301)
Prop. Male (Bgy)	62.94
	(81.99)
HH Size (Bgy)	-6.587***
	(2.293)
Overseas Foreign Workers	19.48
	(107.0)
Education (Bgy)	-1.931
	(5.766)
Prop. Age 18-39	-0.988
	(33.96)
Pct. Catholic (Bgy)	-31.79
	(33.13)
Pct. Indigenous	4.714
	(40.50)
Captain Embeddedness	0.211***
	(0.0428)
Bgy Capt. Elect. Margin	-5.959
	(3.936)
Avg. Network Path	-7.549***
	(2.680)
Constant	80.82
	(55.82)
Observations	286

OLS regression with robust standard errors

* $p < .10$, ** $p < .05$, *** $p < .01$

controlling for each barangay's network density, average household size, average education level, number of tanods, civilian population, and the percentage of the civilian population that is male according to the 2010 census. Standard errors are clustered by barangay.

We find no evidence that the prevalence of disputes in a barangay is systematically related to the embeddedness of tanods appointed in the near future. While we acknowledge that this finding is based on noisy data, and we cannot rule out selection bias entirely, we note that the key coefficient is negative in all but one of the models. If noise alone were contributing to the null result, a hypothetical negative relationship would bias *against* our finding that tanod embeddedness is associated with an increase in disputes.

Local Politics

Because tanods are appointed by barangay elected officials, we consider the extent to which our findings are a function of local *political* conditions. It is conceivable that public safety, as well as citizen perceptions of public safety, is shaped by local politics rather than (or in combination with) bureaucratic embeddedness. To explore this, we first look at the correlation between tanod embeddedness and local politician embeddedness (Table C.4). We find that tanod embeddedness is closely correlated with the embeddedness of the barangay captain and the barangay kagawads (an elected body of seven councilors). Even though the captain is in charge of their assignment, tanod embeddedness is actually most correlated with kagawad embeddedness, likely due to the fact that averaging the embeddedness of a higher number of kagawads in each barangay reduces variance of the measure. We also show correlations with the embeddedness of the *losing* candidates for captain and kagawads.[27]

Bureaucratic and political embeddedness are clearly interrelated in this setting, and we think this is typical of other contexts where bureaucratic positions are distributed as patronage by local politicians. With that in mind, we explore whether tanod embeddedness is better viewed as a mediator in the relationship between public safety and local political

[27]For Captains, this is the average of the 2nd and 3rd (where applicable) placing candidates. For Kagawads, this is the average of the 8th through 14th placing candidates.

Table C.3: Relationship Between Prior Crime and Tanod Selection

	DV: Newly Appointed Tanod Degree Centrality				
	(1)	(2)	(3)	(4)	(5)
Disputes (Consensus)	-0.0423				
	(0.0289)				
Disputes (Auth 1)		0.0503			
		(0.123)			
Disputes (Auth 2)			-0.0313		
			(0.0236)		
Disputes (Auth 3)				-0.0115	
				(0.0132)	
All Crimes					-0.00547
					(0.00649)
Network Density (Bgy)	37.48***	36.84***	36.50***	36.88***	36.29***
	(10.61)	(10.60)	(10.70)	(10.66)	(10.79)
HH Size (Bgy)	-0.562	-0.627	-0.564	-0.579	-0.561
	(0.478)	(0.493)	(0.481)	(0.490)	(0.494)
Education (Bgy)	1.035	0.537	0.974	0.794	0.789
	(0.917)	(0.925)	(0.923)	(0.918)	(0.936)
Num. Tanods	0.0974***	0.0896***	0.0972***	0.0921***	0.0908***
	(0.0346)	(0.0339)	(0.0342)	(0.0346)	(0.0342)
Population (Bgy)	0.000255	0.0000782	0.000205	0.000190	0.000195
	(0.000264)	(0.000277)	(0.000263)	(0.000258)	(0.000264)
Pct. Male	9.663	11.55	9.439	10.29	10.55
	(11.34)	(11.89)	(11.26)	(11.68)	(11.66)
Constant	-2.778	-2.460	-2.462	-2.481	-2.611
	(6.601)	(6.752)	(6.579)	(6.678)	(6.689)
Observations	508	508	508	508	508

Barangay-clustered SE in parentheses.

* $p < .10$, ** $p < .05$, *** $p < .01$

Table C.4: Correlations between Tanod and Politician Embeddedness

	Tanod	**Captain (In office)**	**Kagawad (In office)**	**Captain (Loser)**	**Kagawad (Loser)**
Tanod	1.00				
Captain (In office)	0.42	1.00			
Kagawad (In office)	0.73	0.40	1.00		
Captain (Loser)	0.41	0.29	0.45	1.00	
Kagawad (Loser)	0.75	0.44	0.70	0.53	1.00

conditions in the barangay, or whether tanods appear to have an independent relationship with public safety. The first step we take is to control for barangay captain embeddedness in all models predicting crime rates in the main body of the paper. From a theoretical standpoint, we think this is the most important political variable to account for, given that barangay captains assign tanods and also serve as the final arbiter for the most serious disputes. As discussed, it appears that tanod embeddedness has an important independent relationship with crime victimization after accounting for captain embeddedness.

Table C.5 adds a control for barangay kagawad (councilor) embeddedness to these models. While the relationship between tanod embeddedness and family feuds is no longer statistically significant (p=.14), the positive relationship with neighbor disputes is still highly significant, as is the relationship between tanod embeddedness and an index of both dispute-type crimes (not shown). We advise caution in interpreting these results due to multi-collinearity introduced by including all three embeddedness measures in the same model.

In Table C.6, we explicitly model whether the importance of tanod embeddedness is *driven* by the relationships between tanods and the barangay captain. We calculate a measure of the average social distance between the captain and all tanods (*Distance Tnd-Capt*) and interact it with the measure of tanod embeddedness. The goal is to test whether

Table C.5: Tanod Embeddedness and Crime Controlling for Politicians

	(1) Family	(2) Neighbor	(3) Delinquency	(4) Theft
Tanod Embeddedness	0.00608	0.0116***	-0.0000293	-0.00326
	(0.00418)	(0.00397)	(0.00652)	(0.00594)
Captain Embeddedness	-0.00253	0.00126	0.00302	0.000954
	(0.00205)	(0.00183)	(0.00369)	(0.00258)
Kagawad Embeddedness	0.00257	0.000790	-0.0149**	0.00525
	(0.00493)	(0.00394)	(0.00720)	(0.00477)
Age	-0.0450***	-0.0342***	-0.0305***	-0.0108**
	(0.00519)	(0.00498)	(0.00847)	(0.00484)
Education	-0.0372	0.0150	0.0565	0.177***
	(0.0516)	(0.0494)	(0.0720)	(0.0521)
Employed FT	-0.00172	-0.121	0.542**	0.0954
	(0.137)	(0.137)	(0.217)	(0.170)
Income	-0.575	-0.631	0.849	-0.114
	(0.625)	(0.651)	(0.643)	(0.254)
Yrs in Bgy	0.00208	0.00128	-0.00226	0.000837
	(0.00191)	(0.00217)	(0.00462)	(0.00210)
Observations	2680	2679	2664	2691

Logit with barangay random effects. Barangay-clustered standard errors in parentheses.
* $p < .10$, ** $p < .05$, *** $p < .01$

our results are driven by barangays where tanods are most highly connected to the captain and are thus most likely to be viewed as an extension of the captain's sphere of influence. We do not find evidence for this explanation. The coefficient on the embeddedness variable remains significant while the interaction of embeddedness and tanod-captain connections is insignificant. Tanod embeddedness appears to be associated with increased dispute crimes independent of whether tanods are more or less tied to the barangay captain. Interestingly, the coefficient on the base term for tanod-captain connections suggests that tanod-captain connections may play a significant independent role in exacerbating dispute crimes.

Table C.6: Tanod Embeddedness, Tanod-Captain Connections and Crime

	(1) Family	(2) Neighbor	(3) Delinquency	(4) Theft
Tanod Embeddedness	0.0121**	0.0200***	-0.0163	0.00121
	(0.00503)	(0.00629)	(0.0106)	(0.00954)
Distance (Avg.) Tnd-Capt	0.106**	0.102*	-0.0465	-0.0229
	(0.0454)	(0.0604)	(0.0847)	(0.0602)
Dist. Tnd-Capt*Embedded	-0.000894	-0.00165	0.00283	-0.000877
	(0.00150)	(0.00178)	(0.00256)	(0.00289)
Age	-0.0451***	-0.0339***	-0.0306***	-0.0109**
	(0.00523)	(0.00495)	(0.00830)	(0.00483)
Education	-0.0331	0.0172	0.0631	0.174***
	(0.0516)	(0.0491)	(0.0715)	(0.0522)
Employed FT	0.00544	-0.124	0.536**	0.0916
	(0.136)	(0.137)	(0.216)	(0.170)
Income	-0.633	-0.655	0.808	-0.110
	(0.651)	(0.643)	(0.621)	(0.246)
Yrs in Bgy	0.00212	0.00135	-0.00170	0.000651
	(0.00188)	(0.00217)	(0.00441)	(0.00213)
Observations	2680	2679	2664	2691

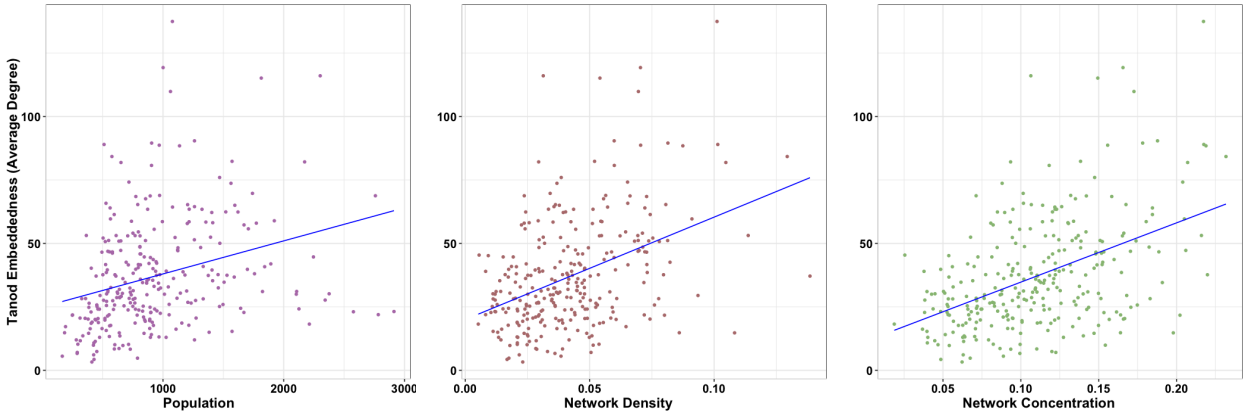
Logit with barangay random effects. Barangay-clustered standard errors in parentheses.
* $p < .10$, ** $p < .05$, *** $p < .01$

D Operationalizing Network Measures

Robustness to Barangay Network Structure

In this section, we begin by exploring how our measure of barangay-level tanod embeddedness relates to measures that describe the structure of the barangay population. Figure D.1 displays a scatterplot of tanod embeddedness (on the y-axis) relative to the barangay's population, network density, and network concentration.[28] The plots suggest that, intuitively, tanods have more family members on average in barangays with larger populations, barangays where more people have ties to each other on average (density), and barangays where network ties are dominated by a small number of large families (concentration). That said, it is also apparent that at any level of population, density, or concentration, a great deal of variation still exists in our measure of embeddedness.

Figure D.1: Correlation of Embeddedness and Barangay Network Structure



To account for this fact in all models of the main paper, we control for the barangay population and the logged average path length between individuals in the barangay, which is a commonly used summary statistic for overall network composition. As shown above, there also exist other features of barangay network composition that one might point to as potential confounders. The following tables display the main results controlling for several of the most prominent aspects of network structure. The additional variables we control for are: 1)

[28] See the section below for a description of these variables.

Density - the proportion of existing ties relative to the maximum possible ties in a population, 2) *Transitivity* (also known as the global clustering coefficient) - the degree to which nodes tend to cluster together, and 3) *Concentration* (also known as degree centralization) - whether ties are held by a few disproportionately central nodes.

Table D.1 displays the results for citizen evaluations of tanod service provision corresponding to Table 2 in the main paper, including all controls from the full model. Table D.2 displays the results for crime victimization of dispute-type crimes (Table 3 in the main paper). Results for victim-perpetrator crimes (theft and juvenile delinquency) are not shown, but remain statistically insignificant, consistent with the main results. Because the different network measures are strongly correlated with each other, we add one at a time to the main models to mitigate the effects of multicollinearity. All results are highly robust to these different specifications.

Table D.1: Robustness to Barangay Network Structure (Citizen Perceptions)

	DV: Satisfaction with Tanod Provision		
	(1)	(2)	(3)
Tanod Embeddedness	0.00332	0.00517	0.00494
	(0.00415)	(0.00415)	(0.00415)
Distance (Avg.)	0.0367	0.0386	0.0398
	(0.0280)	(0.0279)	(0.0282)
Distance (Avg.)*Embedded	-0.00191**	-0.00198**	-0.00199**
	(0.000970)	(0.000975)	(0.000981)
Avg. Network Path	-0.0750	-0.171*	-0.158
	(0.128)	(0.103)	(0.115)
Density (Bgy)	4.470		
	(3.629)		
Transitivity (Bgy)		0.429	
		(1.375)	
Concentration (Bgy)			0.301
			(1.455)
Observations	2663	2663	2663

Ordered logit with Barangay-clustered SE. Includes all barangay- and individual-level controls from the full model (Table 2, Model 3) in text.
* $p < .10$, ** $p < .05$, *** $p < .01$

Table D.2: Robustness to Network Structure (Crime)

	(1) Family	(2) Family	(3) Family	(4) Neighbor	(5) Neighbor	(6) Neighbor
Tanod Embeddedness	0.00852**	0.00777**	0.00839**	0.0121***	0.00851***	0.0120***
	(0.00376)	(0.00346)	(0.00362)	(0.00348)	(0.00303)	(0.00338)
Captain Embeddedness	-0.00230	-0.00231	-0.00228	0.00130	0.00102	0.00149
	(0.00201)	(0.00202)	(0.00203)	(0.00182)	(0.00184)	(0.00183)
Avg. Network Path	0.143	0.214	0.163	-0.0693	0.181	-0.00230
	(0.157)	(0.142)	(0.139)	(0.180)	(0.156)	(0.168)
Density (Bgy)	-2.458			-11.28**		
	(4.454)			(4.572)		
Transitivity (Bgy)		-1.838			-1.960	
		(1.488)			(1.418)	
Concentration (Bgy)			-0.922			-4.985**
			(1.907)			(2.048)
Observations	2680	2680	2680	2679	2679	2679

Logit with barangay RE. Barangay-clustered SE. Includes all controls from Table 3.

* $p < .10$, ** $p < .05$, *** $p < .01$

Operationalization of Barangay-Level Embeddedness

Next, we explore whether our measure of village-level embeddedness matches our theoretical construct of a greater proportion of citizens being personally connected to tanods. One might be concerned that similar levels of average tanod degree centrality could reflect different realities in terms of the positions tanods occupy relative to citizens. For example, high degree centrality (our measure of embeddedness) could reflect either 1) a situation where individual tanods are highly connected to different clusters of citizens throughout the barangay, leaving fewer citizens unconnected to tanods (matching our theory) or, 2) a situation where all tanods are highly connected to the same group of citizens, leaving a large proportion of citizens unconnected.

To investigate this possibility, we calculate the proportion of citizens in each barangay who are more than four degrees of separation from the average tanod. We find that this measure has a strong negative correlation with our original measure of average tanod degree centrality (cor=-.63).[29] This negative correlation suggests that high tanod embeddedness is more indicative of a situation where individual tanods are connected to different clusters of citizens, and that our operationalization of embeddedness is appropriate for our theory that increased embeddedness implies a greater number of citizens closely connected to tanods.

Still, to ensure that our tests capture the intended concepts, in Table D.3, we interact our original measure of tanod embeddedness with the proportion of citizens who are more than four steps from tanods in order to examine whether our results are different in the barangays that more closely resemble the two different types of barangays described above. Tanod embeddedness remains a positive and significant predictor of dispute crimes. On the other hand, the insignificant interaction term suggests that there is no difference in crime levels that might be driven by this alternative interpretation of our embeddedness measure. This finding is consistent with our theory: Where tanods are highly embedded and very few

[29]Average tanod degree is even more closely correlated with the proportion of citizens who are more than three degrees of separation from tanods (cor=-.72).

citizens are disconnected from tanods, those disconnected citizens are likely to feel extremely marginalized. Where tanods are highly embedded and a greater proportion of citizens are disconnected, disconnected citizens feel only somewhat marginalized.

Table D.3: Tanod Embeddedness (Alternate Measure 1) and Crime

	(1) Family	(2) Neighbor	(3) Delinquency	(4) Theft
Tanod Embeddedness	0.0128***	0.0155***	-0.0169**	0.00151
	(0.00414)	(0.00423)	(0.00757)	(0.00565)
Prop. Disconnect (Bgy)	0.848**	0.552	-0.864	0.244
	(0.367)	(0.402)	(0.652)	(0.466)
Tanod Embed*Prop. Disconnect	-0.00450	-0.0101	0.0497**	-0.00906
	(0.0142)	(0.0164)	(0.0217)	(0.0169)
Captain Embeddedness	-0.00179	0.00157	0.00245	0.00123
	(0.00206)	(0.00186)	(0.00369)	(0.00256)
Age	-0.0448***	-0.0342***	-0.0300***	-0.0109**
	(0.00523)	(0.00496)	(0.00835)	(0.00483)
Education	-0.0339	0.0160	0.0690	0.175***
	(0.0517)	(0.0492)	(0.0709)	(0.0525)
Employed FT	-0.00922	-0.125	0.549**	0.0908
	(0.136)	(0.137)	(0.216)	(0.170)
Income	-0.633	-0.665	0.861	-0.118
	(0.643)	(0.650)	(0.648)	(0.257)
Yrs in Bgy	0.00198	0.00127	-0.00199	0.000709
	(0.00194)	(0.00218)	(0.00453)	(0.00213)
Observations	2680	2679	2664	2691

Logit with barangay random effects. Barangay-clustered standard errors in parentheses.
* $p < .10$, ** $p < .05$, *** $p < .01$

Table D.4 substitutes an alternative measure of unconnected citizens, *inequality* in citizen social proximity to tanods, the GINI coefficient for average citizen social distance to tanods. Higher values mean some citizens are very connected to tanods and others are very disconnected. Consistent with our main results, we find that tanod embeddedness is

independently associated with a significant increase in dispute crimes. Inequality in citizen proximity to tanods is also independently associated with an increase in neighbor disputes. Consistent with Table D.3, the *interaction* between the two measures is not significant.

Table D.4: Tanod Embeddedness (Alternate Measure 2) and Crime

	(1) Family	(2) Neighbor	(3) Delinquency	(4) Theft
Tanod Embeddedness	0.0417**	0.0402**	-0.0306	-0.0109
	(0.0195)	(0.0169)	(0.0259)	(0.0179)
Citizen Proximity Inequality	5.192	8.666**	0.728	-4.449
	(4.129)	(3.839)	(6.062)	(4.078)
Tanod Embed*Inequality	-0.198*	-0.163	0.117	0.0621
	(0.110)	(0.0995)	(0.142)	(0.0991)
Captain Embeddedness	-0.00224	0.00158	0.00185	0.00114
	(0.00205)	(0.00184)	(0.00367)	(0.00256)
Age	-0.0450***	-0.0345***	-0.0310***	-0.0107**
	(0.00522)	(0.00501)	(0.00831)	(0.00482)
Education	-0.0387	0.0118	0.0626	0.178***
	(0.0518)	(0.0497)	(0.0722)	(0.0524)
Employed FT	-0.00134	-0.127	0.533**	0.101
	(0.136)	(0.137)	(0.216)	(0.170)
Income	-0.613	-0.639	0.868	-0.123
	(0.636)	(0.664)	(0.649)	(0.248)
Yrs in Bgy	0.00205	0.00127	-0.00159	0.000688
	(0.00192)	(0.00220)	(0.00419)	(0.00212)
Observations	2680	2679	2664	2691

Logit with barangay random effects. Barangay-clustered standard errors in parentheses.
* $p < .10$, ** $p < .05$, *** $p < .01$

E Robustness Checks and Mechanisms

This section explores alternate specifications of the main models presented in the body of the paper.

Mechanisms

The results presented in Table 2 suggest that the relationship between social distance and evaluations of tanods is conditional on the barangay-level tanod embeddedness, with individual-level social distance increasing in salience when barangay-level embeddedness is higher. We should observe a similar pattern in the dyadic models presented in Table 1. Tables E.1 and E.2 subset the sample into high- and low-embeddedness barangays at the variable's median value. The results show that the effects in Model 1 are being driven almost exclusively by barangays in which tanods are highly embedded; in low-embeddedness barangays, there is no systematic benefit to reduced social distance between an individual and a tanod in terms of trust, willingness to report a crime, or perceived fairness. Importantly, the relationship between citizen social distance to a tanod and whether they *know* that tanod remains extremely similar in high- and low-embeddedness barangays.

This pattern speaks to our theory that where service providers lack strong interpersonal ties to citizens, citizens – even connected ones – view interpersonal ties as less relevant. It also explains the overall positive relationship that we find between tanod embeddedness and feuds/disputes. Family ties are most relevant in high-embeddedness barangays, where tanods' personal connections undercut their ability to mediate disputes.

Robustness to Alternate Specifications

Table 1 clusters standard errors by barangay. Below, Table E.3 replicates these results using a more restrictive two-way clustering on both barangays and tanods. While standard errors increase, results remain significant at conventional levels.

Table E.1: Family Ties and Perceptions of Tanods, High Embeddedness

	(1) Trust	(2) Report	(3) Fair	(4) Interact	(5) Know
Social Distance	-0.334***	-0.341***	-0.373***	-0.368***	-0.667***
	(0.0982)	(0.115)	(0.110)	(0.0972)	(0.126)
Observations	1732	1733	1729	1730	1733
R^2	0.138	0.152	0.140	0.155	0.167

OLS with respondent-clustered SE. Respondent and tanod fixed effects.

* $p < .10$, ** $p < .05$, *** $p < .01$

Table E.2: Family Ties and Perceptions of Tanods, Low Embeddedness

	(1) Trust	(2) Report	(3) Fair	(4) Interact	(5) Know
Social Distance	-0.107	-0.0643	-0.0719	-0.143*	-0.525***
	(0.0661)	(0.0614)	(0.0613)	(0.0767)	(0.0819)
Observations	1851	1853	1847	1850	1854
R^2	0.126	0.091	0.112	0.091	0.133

OLS with respondent-clustered SE. Respondent and tanod fixed effects.

* $p < .10$, ** $p < .05$, *** $p < .01$

Table E.3: Dyadic Models with 2-way clustering

	(1) Trust	(2) Report	(3) Fair	(4) Interact	(5) Know
Social Distance	-0.209**	-0.175**	-0.191**	-0.169**	-0.483**
	[-0.276, -0.139]	[-0.245, -0.113]	[-0.254, -0.128]	[-0.243, -0.103]	[-0.574, -0.406]
Observations	3583	3586	3576	3580	3587
R^2	0.161	0.143	0.158	0.138	0.187

OLS with respondent and tanod clustered SE.

95% CI from bootstrapped SE in parentheses.

Includes respondent and tanod fixed effects.

* $p < .10$, ** $p < .05$, *** $p < .01$

Table E.4 presents additional model specifications testing the heterogeneous relationship between individual proximity/distance and barangay-level tanod embeddedness on satisfaction with tanod performance (2 in main text). Models 1 and 2 substitute OLS for ordered logistic regression. Model 3 replicates Table 2, Model 4 (which uses the alternative measure of social distance to tanods – minimum distance to closest tanod) but adds individual-level controls. Models 4 and 5 reproduce Table 2, Model 1 while excluding outliers on tanod embeddedness and barangay population (respectively). Outliers are defined as barangays whose embeddedness/population is more than 1.5 times the interquartile range outside the 1st and third quartiles of the distribution. Figure E.1 plots the marginal effect of social distance on satisfaction with tanods based on Model 2, showing essentially the same pattern as Figure 3 in-text.

Figure E.1: Barangay Embeddedness, Social Distance, and Perceived Service Provision

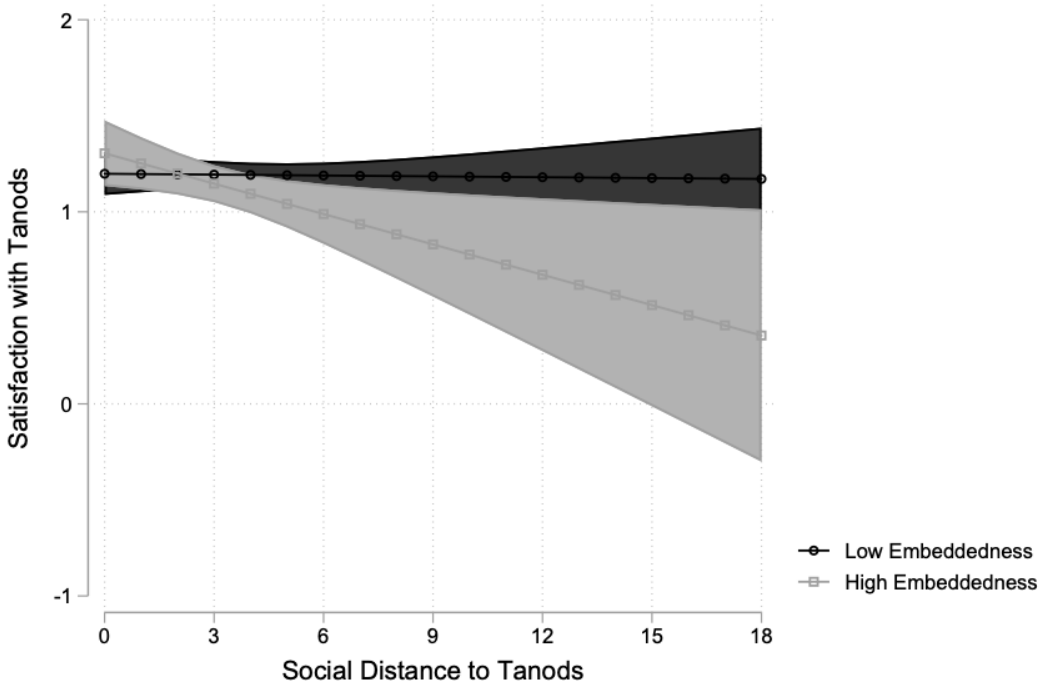


Table E.4: Heterogeneous Effects on Evaluations of Tanod Service Provision

	DV: Satisfaction with Tanod Service Provision				
	(1) Full (OLS)	(2) Full (OLS)	(3) Full	(4) Embedded Outliers	(5) Pop. Outliers
Tanod Embed	0.00309	0.00260	0.00165	0.00674	0.00647
	(0.00209)	(0.00211)	(0.00290)	(0.00548)	(0.00477)
Distance (Avg.)	0.0158	0.0200		0.0515	0.0446
	(0.0137)	(0.0127)		(0.0416)	(0.0406)
Dist. (Avg.)*Embed	-0.00103**	-0.000854*		-0.00231**	-0.00196*
	(0.000473)	(0.000483)		(0.00115)	(0.00111)
Distance (Min.)			0.0267		
			(0.0253)		
Dist. (Min.)*Embed			-0.00163*		
			(0.000852)		
Captain Embed	-0.000621	-0.000835		-0.00164	-0.00145
	(0.000747)	(0.000739)		(0.00142)	(0.00142)
Num. Tanods	-0.00918	-0.0128*	-0.0283**	-0.0252**	-0.0292**
	(0.00670)	(0.00651)	(0.0124)	(0.0128)	(0.0134)
Population (Bgy)	0.315	0.514	0.804	1.032	-0.822
	(0.487)	(0.498)	(0.908)	(0.889)	(1.611)
HH Size (Bgy)	0.0115	0.00719	-0.0116	-0.0583	-0.0272
	(0.0466)	(0.0437)	(0.0888)	(0.0943)	(0.0938)
Education (Bgy)	-0.422***	-0.274***	-0.366*	-0.377*	-0.422**
	(0.0947)	(0.101)	(0.197)	(0.207)	(0.205)
Pct. Catholic (Bgy)	-0.800	-0.982*	-2.526**	-2.561**	-3.017**
	(0.517)	(0.574)	(1.227)	(1.267)	(1.264)
Individual Controls	No	Yes	Yes	Yes	Yes
	(0.517)	(0.574)	(1.227)	(1.267)	(1.264)
Observations	2663	2622	2622	2438	2377

1–2 OLS, 3–5 ordered logit. Barangay-clustered SE.

* $p < .10$, ** $p < .05$, *** $p < .01$