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Abstract[⋆]

Low trust in state actors constrains state capacity, hindering growth and development. This paper studies how state actors can build public trust by improving the quality of their interactions with citizens. First, we propose a mechanism that links improved interactions to public trust—the belief that the state actor implements welfare-enhancing policies: Improved interactions lower the expected burden of engaging with the state actor, promoting cooperation. This motivates citizens to believe cooperation is worthwhile, increasing their trust in the state actor. Then, we empirically assess the relationship between the quality of interactions and public trust in the Colombian National Police. We experimentally evaluate a low-cost intervention that retrains officers in procedural justice principles—such as fairness and respect—while intensifying police-citizen interactions. We find that the intervention improved public trust, willingness-to-pay for police services, and citizens' perceptions of fair treatment, suggesting low-cost interventions can help build trust between police and communities. Our analysis suggests that merely intensifying interactions is not enough to increase public trust; however, when combined with improved treatment, it positively shifts citizens' perceptions of the police. We also find a limited impact on officers' trust in citizens and their beliefs about citizens' public trust, implying that institutional culture change may require more profound efforts.

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"Trust is an important lubricant of a social system. It is extremely efficient; it saves a lot of trouble to have a fair degree of reliance upon other people's words."— Kenneth J. Arrow, *The Limits of Organization*

1 INTRODUCTION

States frequently struggle to build public trust. In OECD countries, more than half of the population reports that they do not trust their government. In the United States, public trust in the federal government is at historic lows.[1] Lack of trust in government is an obstacle to growth and development: over the past century, variation in trust explains a substantial portion of the variation in economic development (Algan and Cahuc 2010; Guiso et al. 2006). One possible explanation for this link is that untrusting citizens are less likely to comply with government policies, which reduces state capacity and limits its effectiveness (Besley and Dray 2022). In turn, when state actors struggle to deliver services, public trust decreases.[2] The importance of public trust in the efficient provision of services makes the question of whether and how state agents can establish trusting relationships with citizens a critical issue for state capacity and development. These challenges are particularly relevant for state actors such as police agencies, which serve as the face of the state in virtually all communities, wield the power to use violence, and often face difficulties in cultivating public trust.[3]

This paper examines whether promoting procedurally just interactions between citizens and bureaucrats can increase trust in state actors. Procedural justice emphasizes the importance of fair and respectful interactions throughout a process or procedure (Bennett et al. 2018).[4] We model a mechanism that links increased perceptions of procedural justice to public trust in state actors. In the model, enhanced perceptions of procedural justice reduce the expected burden of interacting with the state actor, thereby increasing cooperation with it. Through motivated reasoning, as people cooperate more with the state actor, they increasingly perceive that doing so benefits them.[5] This shift in beliefs represents an increase in trust in the state actor, which we define as

[1] See OECD (2023) and Pew Research Center (2022) for OECD and United States figures, respectively.

[2] See Acemoglu et al. (2020) on the importance of information about improved public services in building trust in state actors. See also Almond and Verba (2015) and Coleman (1994) on norms, trust, and civic culture as determinants of state effectiveness. Finally, Acemoglu (2005); Evans (2012); Dell et al. (2018); Rothstein and Stolle (2008); Zmerli and Newton (2008) examine how citizen cooperation disciplines and constraints state institutions.

[3] Many countries, such as the United States, frequently face massive anti-police protests following trust crises (e.g., Ang 2021; DiPasquale and Glaeser 1998).

[4] Procedural justice is the fairness of processes used by authority figures to reach decisions (Bennett et al. 2018). Procedural justice has two linked and essential components: the quality of decision-making procedures and the quality of treatment. These two components build on the four constructs of procedural justice: voice, trustworthy motives, dignity and respect, and neutrality in decision-making. The term was originally coined by Thibaut and Walker (1975) and further popularized by the work of Tyler (1990).

[5] The model assumes citizens are Bayesian and engage in motivated reasoning when updating their beliefs. Motivated reasoning refers to situations in which a person manipulates her beliefs for either direct benefits or strategic purposes.

the belief that it implements welfare-enhancing policies. The mechanism highlights the economic relevance of procedural justice, a concept most often examined in management and other social sciences: by promoting cooperation and trust, procedural justice reduces enforcement costs and expands the range of feasible policies, in turn expanding state capacity (Besley and Dray 2022). The model also aligns with a growing literature on state legitimacy, which shows that different forms of procedurally-just behavior increase public reliance on state actors (e.g., Acemoglu et al. 2020).

We then empirically assess the relationship between procedurally fair interactions and public trust. We partnered with the Colombian National Police—a centralized police force with roughly 160,000 sworn officers—to evaluate a procedural justice intervention across five large cities: Barranquilla, Bucaramanga, Cartagena, Cali, and Medellín, which together comprise a total population of more than 7 million people, roughly 15% of Colombia's residents. The National Police implemented the intervention, the *COP Initiative*, from mid-March to late April 2022. The COP Initiative was set to retrain patrolling officers in procedural justice principles, seeking to improve the quality of officer-citizen encounters by emphasizing the importance of respect, fairness, transparency, and the opportunity to be heard. In terms of our conceptual framework and the intervention's theory of change, the initiative sought to improve the ease of citizens' interacting with police officers, thereby decreasing the perceived costs of cooperating with the police and promoting cooperation and public trust.

In order to credibly estimate the causal impact of the intervention, we used an experimental design, randomizing the intervention at the level of police *quadrants*, equivalent to police "beats." Each police quadrant has six assigned officers who patrol in pairs during 8-hour shifts. Our experimental sample consists of 345 quadrants across all five cities, randomly selected from a universe of 883 eligible quadrants. We stratified our experimental sample by city, baseline poverty levels, and baseline levels of public trust in the police—the latter measured through an original survey conducted 4-5 months before the intervention began. We then randomly assigned police quadrants to one of three arms.

Quadrants assigned to the first treatment arm received the core components of the COP Initiative. A team affiliated with the Central Command of the National Police held an in-person session with police station commanders to emphasize the importance of adopting procedural justice principles in interactions with citizens. They also instructed commanders to regularly retrain and remind officers under their command about the importance of applying these principles. This reinstruction of patrols happened regularly over the six weeks of the intervention, typically at every shift

Motivated reasoning follows a long tradition across disciplines, first in psychology and more recently in economics and political science (e.g., Acemoglu et al. 2020; Akerlof and Dickens. 1982; Festinger 1962; Ortoleva and Snowberg 2015; Bénabou and Tirole 2002; 2004; 2016).

change.[6] Next, commanders instructed officers to increase interactions with ordinary citizens on a randomly-selected street block within treatment police quadrants to put these principles into practice. Police patrols in Colombia receive procedural justice training and instructions in the academy but are seldom retrained in these practices. The average officer received this training nine years prior to the intervention. During the intervention, patrolling officers received a weekly reminder about their target street block location.

The second treatment arm received the core components of the program we describe above, with the addition of an information campaign. Patrolling officers assigned to this treatment arm also received daily reminders about the logic behind procedural justice. These reminders emphasized, for instance, the importance of being transparent and impartial, greeting citizens cheerfully, and listening to their concerns. We designed this second arm to explore whether low-cost informational campaigns could help align police behavior with procedural justice values beyond commanders' instructions.

The third arm consisted of a pure control group featuring everyday policing practices. Officers in these quadrants did not receive any instructions regarding the COP Initiative or the information campaign.[7]

Taking into account the time constraints of police officers, who often have demanding schedules, and to bolster the scalability potential of the COP Initiative, the intervention was purposefully designed to be low-cost in terms of both financial resources and police officers' time. We achieved this by harnessing the National Police's existing command structure, forgoing the use of external trainers, and not allocating specific time or space exclusively for officer training.

We begin by evaluating the impact of the intervention, considering both treatment arms together. Several findings emerge. First, consistent with the proposed conceptual framework and the intervention's objectives, we observe a positive impact of the intervention on citizens' willingness-to-pay for policing services—our proxy for their cooperation with the police—and public trust in the police. One month after implementation, citizens in treatment quadrants report an 8 percent increase in willingness-to-pay for policing services and a 7 percent increase in trust in the police when compared to those in control quadrants. We leverage our randomization strata and other baseline socioeconomic variables to examine the heterogeneous treatment effects of the intervention on these outcomes. For most variables, we do not find significant differences in impacts on willingness-to-pay and public trust, indicating that the results were fairly widespread. However,

[6] See Battiston et al. (2020), who provide evidence about the importance of face-to-face encounters in general, with specific application to police forces.

[7] The head of the National Police's patrolling service issued an executive order providing binding instructions to both station commanders and patrolling officers about which quadrants would receive the treatment. This was done to ensure adherence to the treatment schedule and to avoid contamination, such as station commanders broadcasting procedural justice recommendations to all personnel. Due to the police's hierarchical nature, we expected and achieved high levels of adherence to the treatment schedule.

we find that trust in the police improved more in quadrants with higher baseline levels of violent crime, demonstrating the potential value of the intervention even in particularly violent contexts.

Second, we examine differences across the two treatment arms to better understand the fundamental components of the intervention. We find no evidence that the daily reminders sent to police officers produced benefits beyond what the core components of the intervention achieved in the first treatment arm. Our leading interpretation, based on interviews with police officers conducted after the intervention ended, is that the reminders did not add further information to what the main components of the COP Initiative provided. Commanders' instructions and their reinforcement of procedural justice proved to be sufficient for police officers, a finding consistent with the strong hierarchical nature of police agencies. Understanding how different components of the intervention affected our results (or not) can inform the design and scale-up of similar initiatives in the future.

Third, we investigate the intervention's effect on another set of citizens' perceptions to gain insights into the information conveyed by the intervention to citizens and the potential explanations behind its impact on public trust. To achieve this, we define four indices capturing drivers of trust in the police, as identified in the specialized literature (Abril et al. 2022): perceptions of just treatment; perceptions of police efficacy; perceptions of police integrity; and the alignment of citizens' values with the police's law enforcement responsibilities. We find that the intervention improved citizens' perceptions of just treatment, and did not affect the other dimensions. Furthermore, we ask residents about their degree of empathy with police officers and the public in general and find that the intervention improved citizen empathy towards officers but not towards other citizens. Taken together, these results suggest that the observed impact on public trust is driven by the improvement in the quality of treatment, rather than merely increased police presence, in line with the proposed conceptual framework and the intervention's theory of change.[8]

Fourth, we observe a practically large but imprecisely estimated reduction in reported crimes, misdemeanors, and perceptions of insecurity, in addition to an increase in the number of arrests. Although the intervention was not directly targeted at altering crime rates in the short term, its impact on cooperation and public trust could have driven changes in these dimensions, which are the ultimate goals of the police. Public trust and cooperation can enhance effectiveness, eventually leading to less crime. Most coefficients have signs consistent with this narrative; however, the imprecision of these estimates renders these results inconclusive.[9]

[8]In further support of this interpretation, we document that the impacts on trust are highest when the police increase interactions with citizens and the perception of fair treatment is high. When police interactions are high but perceptions of fair treatment are low, we observe no treatment effects. Finally, it is worth noting that other studies in comparable contexts have not observed improvements in public trust following hot spots policing interventions that merely increase police presence in targeted locations without implementing adjustments in the quality of police treatment towards citizens.(e.g., Blair et al. 2021; Blattman et al. 2021; Collazos et al. 2021).

[9]This lack of precision could stem from both an actual absence of immediate effects, as the impacts are more likely to materialize in the long run, and limitations in crime statistics, which are subject to underreporting and other

Finally, we examine whether the intervention affected police officers' trust in citizens and their beliefs about citizens' trust in them. This analysis aims to assess the intervention's capacity to influence officer attitudes and indirectly capture the perceived effectiveness of the intervention. We find that the intervention did not significantly impact these perceptions. The absence of effects on these dimensions, despite the positive outcomes on citizens' perceptions, underscores the challenge of promoting institutional culture change within state bureaucracies while also highlighting potential risks regarding the sustainability of effective interventions over time.

Due to its history and current security challenges, Colombia provides an ideal laboratory to study our research questions. State capacity in Colombia—as measured by state presence, public goods provision, and prosperity—is relatively low and heterogeneous both within and across cities (Acemoglu et al. 2015). During the prolonged and widespread protests of 2019 and 2021, there were instances where, according to reports from the Supreme Court of Colombia (2020) and the UN High Comissioner for Human Rights (2021), Colombian police and army forces used excessive force. This created a deep crisis of trust for Colombian institutions, and in particular for the National Police: the latter experienced record-high levels of unfavorable views by the end of 2021.[10] Finally, because some Colombian cities feature non-state armed actors who compete with state authorities in providing basic public services (including security and dispute resolution), police forces typically struggle to build citizen trust and legitimacy (Arjona 2016; Blattman et al. 2022; 2023; Blair et al. 2022).

Our work contributes to different strands of the literature in economics and other social sciences. First, we add to a growing body of research on the determinants of public trust in state actors and the importance that such trusting relations have for effective service delivery. Acemoglu et al. (2020), for instance, document how the provision of truthful information about public service provision increases trust in state authorities while decreasing reliance on non-state actors. Other studies focus on trust and cooperation between citizens as a necessary condition for reliance on state institutions (e.g., Dell et al. 2015; Evans 2012; Mishler and Rose. 2001; Zmerli and Newton 2008). Our study emphasizes how to implement low-cost interventions with law enforcement agencies to build back public trust in high-stakes contexts—characterized by high crime and low public trust. Closely related, other research focuses on links between the provision of public goods, state legitimacy, and citizens' trust in the state (e.g., Flückiger et al. 2019; Risse and Lehmkuhl 2012; DeBruin et al. 2022). Our results align with earlier findings that better provision of public goods improves public trust, highlighting the importance of procedurally just interactions. Recent crises of legitimacy in both new and established democracies stress the importance of finding novel ways

measurement errors.

[10] See Gallup (2021), which reports the share of the population with an unfavorable opinion of the Colombian National Police over more than twenty years.

to bolster citizens' perceptions of the state and commitments to democratic politics (e.g., Neblo and Wallace 2021). Our results provide new evidence on how to do so.

Second, we contribute to a growing literature on different aspects related to police reform, such as strategies to increase citizen trust in the police (e.g., Blair et al. 2019; 2021; Karim 2020); interventions on procedural justice training (e.g., Owens et al. 2018; Weisburd et al. 2022); the role of officer race, gender and other forms of peer effects that affect police-civilian interactions (e.g., Ba et al. 2021; Holz et al. 2023); and strategies to improve police effectiveness in reducing crime (e.g., Banerjee et al. 2021; Blattman et al. 2021; Blair and Weintraub 2022; 2023; Collazos et al. 2021; Magaloni and Rodriguez 2020; Harris et al. 2022; Braga et al. 2019).[11] Prior studies of community policing and recurring patrols in rural communities, for example, seldom find positive impacts on public trust (Blair et al. 2021). Our empirical evaluation stresses how improving the quality and frequency of interactions between citizens and the police increases public trust, including in particularly adverse contexts. Furthermore, studies in the developing world seldom find positive impacts on outcomes such as crime reduction or trust building, while results from developed economies are much more encouraging (e.g., Braga et al. 2019; Mazerolle et al. 2013). This paper shows that low-cost interventions in developing economies can produce tangible gains in citizen trust in the police.

Finally, and most broadly, we contribute to our understanding of trust in human interactions, which economists and political scientists for several decades have addressed. Seminal contributions focus on trust games that study two-person interactions in different settings (e.g., Dasgupta 1988; Kreps 1990; Berg et al. 1995). This literature evolved to include multiple agents in controlled behavioral experiments (e.g., Fehr and Gächter 2000), while others took the analysis of trust beyond the laboratory, studying how people form and reveal beliefs about trust (e.g., Glaeser et al. 2000; Ermisch et al. 2009). We contribute to this literature by exploring the determinants of trust in contexts characterized by asymmetric power relations, between the state as the governing authority and its citizens. Our study demonstrates how improving certain behaviors of state actors, such as police forces, can lead to increased trust from citizens with whom they habitually interact.

2 Conceptual framework

2.1 Setup

We propose a formal framework to define the concepts of trust and procedural justice, connect them to state capacity, and present a mechanism through which improvements in citizens' perceptions

[11] González (2023) argues that while societal pressures for reform typically target structural factors such as police violence and corruption, the reforms that are actually implemented tend to prioritize operational measures aiming to enhance police performance and social trust.

of procedural justice can enhance trust in institutions. Our model builds on the work of Besley and Dray (2022) and Acemoglu et al. (2020).

A representative individual determines the extent of her cooperation (c) with a given government actor. Cooperation encompasses a broad array of behaviors, such as accepting decisions made by the state actor, contributing to its functioning, and complying with its policies and supporting their implementation. The extent of cooperation influences the state's capacity to execute welfare-enhancing policies. When enforcement and implementation capacity are limited, cooperation with the government's policies reduces effective enforcement costs and expands the feasible set of policies, increasing state capacity (Besley and Dray 2022). To capture these ideas in our model, we assume that the citizen's degree of cooperation affects the state actor's effectiveness. Within the realm of police agencies, this cooperation can manifest, for example, as collaboration with police investigations, crime reporting, participating in police-citizen town halls or contributing to fundraising initiatives. Such engagement can significantly affect the resources and information available to the police, shaping the effectiveness of their crime prevention and patrolling strategies.

When deciding her level of cooperation with the state actor, the individual is uncertain about the quality of its policies and actions. The policies' quality depends on the trustworthiness of the state actor implementing it: trustworthy state actors are more likely to implement welfare-improving and context-appropriate policies, while untrustworthy state actors are prone to acting opportunistically and negligently and therefore implement bad policies. The individual has a certain level of trust in the state actor (π_T), which we define as the expected probability that the state actor is not acting opportunistically and its policies (p) are of high-quality:

$$\pi_T \equiv \mathbb{E}[P(p \in p^\star)]$$

where $p^\star$ is the set of high-quality policies.

After observing the state actor's policies but before learning about their quality, the individual chooses her degree of cooperation. Cooperation increases the individual's utility if policies are of high quality, but brings no benefits if of low quality. The individual's trade-off arises from the fact that engaging in cooperative behaviors entails costs, regardless of the policies' quality. These cooperation costs may include financial contributions, time commitments, emotional tolls, and the administrative burden of searching for information about policies, aligning one's behavior with rules and requirements, and the stress, loss of autonomy, or stigma associated with this process (Moynihan et al. 2015). Individuals have an expectation of the costs of cooperating and complying with the state actor's policies (π_P). For simplicity, we assume that these costs are linear in the degree of cooperation. In our context, we focus on the economic and psychological costs individuals might incur when interacting with police agents. The magnitude of these costs arguably hinges on

the quality of these interactions, particularly as it pertains to procedural justice. Fair and respectful interactions, at the core of procedural justice, can mitigate these costs.

When deciding her degree of cooperation, we assume that the individual maximizes her expected utility and solves the following optimization problem:

$$\max_{c \geq 0} \quad \pi_T \cdot U(c) - \pi_P \cdot c$$

where we assume that $U(\cdot)$ is a positive, twice differentiable, increasing, and strictly concave function.

2.2 BAYESIAN UPDATING

We assume the individual is Bayesian and updates her beliefs about trust and cooperation costs in the face of new information.

Trust. Following Besley and Dray (2022), we assume that the individual observes the quality of policies after deciding her degree of cooperation. The individual builds her perception of trust by learning about the quality of the state actor's policies. If she learns that a policy is of high quality ($p \in p^\star$), then her trust in the state actor increases. If the policy is of low quality, trust decreases. Formally, we assume that the individual has an initial expectation about the probability that a policy is of high quality (π_T^O), based on prior information. When the individual receives additional information about the quality of the state actor's policies, she updates her beliefs (π_T^B). Positive news about the quality of the policies increase trust, while negative news decrease it.[12]

Cooperation costs. Likewise, the individual updates her expected costs of cooperating with the state actor as interactions with state officials occur and new information about the burden of cooperating is received. Formally, we assume that the individual has an initial expectation about the cost of cooperation (π_P^O) based on prior information. When the individual interacts with the state actor, she receives additional information about the costs of cooperation and updates her beliefs accordingly (π_P^B). Positive news about the cost of cooperating reduce its expected value, while negative news increase it.[13]

[12] To characterize "positive" and "negative" news more precisely, we can impose distributional assumptions on the individual's prior. For example, if we further assume that the prior distribution of the probability that a policy is of high quality follows a Beta distribution with parameters $\alpha_T(>0)$ and $\beta_T(>0)$, we have: $\pi_T^O = \alpha_T/(\alpha_T + \beta_T)$ and $\pi_T^B = (\alpha_T + h)/(\alpha_T + \beta_T + h + l)$, where h and l are the numbers of policies implemented by the state actor that are of high and low quality, respectively. This formulation implies that learning about one high (low) quality policy is received as positive (negative) news and increases (decreases) trust in the state actor.

[13] As for trust, to characterize "positive" and "negative" news on the cost of cooperation more precisely, we can impose distributional assumptions. If we assume that the cost of cooperation follows a Poisson distribution (with unknown

2.3 BASIC IMPLICATIONS

The theoretical framework provides a set of implications as to how individuals respond to information about the quality of a state actor's policies and interactions with state officials.

Proposition 1. *Suppose that the individual is Bayesian. Both positive news about the quality of a state actor's policies (which increase π_T^B) and about the cost of cooperating with it (which reduce π_P^B) weakly increase the individual's level of cooperation (c).*

Proof. See Appendix A.1.

The first result implies that both higher trust and lower perceived cooperation costs lead to greater cooperation with government actors.

2.4 MOTIVATED REASONING

We assume the individual engages in motivated reasoning and manipulates her own beliefs. Following Acemoglu et al. (2020), we model this behavior by modifying the maximization problem in two ways. First, we assume the individual chooses her own level of trust in the state actor. For simplicity, we focus solely on this belief and assume that the expected cost of cooperating is not manipulated. Second, we incorporate a loss term, which penalizes the deviation of the belief from what is implied by Bayesian updating.

With motivated reasoning, the individual solves the following maximization problem:

$$\max_{c,\pi_T} \quad \pi_T \cdot U(c) - \pi_P \cdot c - d(\pi_T - \pi_T^B)$$

where $d(\cdot)$ is a strictly convex function that is increasing when the argument is positive and decreasing when it is negative. We also assume that $d(\cdot)$ is differentiable, with $d'(0) = 0$.

Proposition 2. *Suppose that the individual engages in motivated reasoning. Positive news about the cost of cooperating with the state actor (which reduces π_P^B) weakly increase the individual's trust in it (π_T).*

mean) and the prior distribution of the expected cost follows a Gamma distribution with shape parameter $\alpha_P(>0)$ and rate parameter $\beta_P(>0)$, we have that: $\pi_P^O = \alpha_P/\beta_P$ and $\pi_P^B = (x+\alpha_P)/(1+\beta_P)$, where x is the new information about the costs of cooperation based on novel interactions. This formulation implies that interactions that result in costs lower (higher) than expected represent positive (negative) news about the costs of cooperation.

Proof. See Appendix A.2.

Trust—the expectation that the state actor will not act opportunistically but implement positive policies—and cooperation costs—the quality of interactions and the ease of processes—may be orthogonal to one another. Courteous and respectful treatment, agile processes, and low bureaucratic burdens do not necessarily imply that the institution is effective or reliable. However, when incorporating "motivated beliefs," information about the quality of treatment can affect public trust. In such a way, the model presents a mechanism through which public perceptions of these two dimensions are linked. The intuition is that reducing the perceived costs of cooperating with the state actor provides incentives to cooperate. When citizens cooperate, they are "motivated" to believe their cooperation is worthwhile, making trust in the state actor increase.

2.5 Discussion

The model implies that improving perceptions of cooperation costs can produce increased trust in state actors, which highlights the economic and institutional importance of working towards improved processes and interactions between citizens and bureaucrats. There is extensive research on the importance of trust for economic development: recent work by Besley and Dray (2022), for example, posits that trust is critical to state capacity. By formally linking reduced cooperation costs and trust, the model proposes that efforts to improve processes can be instrumental to state capacity and, ultimately, economic and social development.

There are multiple ways a state actor can attempt to improve citizens' perceptions of cooperation costs. One involves procedural justice, the notion that everyone should be treated fairly, equitably, and respectfully, irrespective of socioeconomic status, race, gender, or personal background. Arguably, respectful and fair treatment can reduce the burden of interacting with state officials. This discussion has been particularly salient in the context of police agencies, where procedural justice emphasizes how individuals are treated during officer-citizen encounters, prioritizing respect, fairness, transparency, and opportunities for various parties to be heard. Advocates of procedural justice argue that, over and beyond its intrinsic ethical value, if police officers treat citizens with dignity and respect they should be more successful in eliciting and obtaining cooperation from citizens (e.g., Mazerolle et al. 2013). Indeed, the literature has demonstrated that applying these principles generally leads to better perceptions of treatment and willingness to cooperate (e.g., Owens et al. 2018; Weisburd et al. 2022). Given this evidence, our model suggests that the exposure of citizens to fair and respectful treatment by police officers has the potential to foster citizen trust, underscoring procedural justice's role in enhancing state capacity.

3 BACKGROUND, CONTEXT, AND INTERVENTION

3.1 THE CONFLICT

Colombia has experienced civil conflict for over five decades, which has shaped social and economic outcomes. The causes of the conflict are multiple, ranging from the rise of insurgent and counterinsurgent groups to the country's role in international drug trafficking. Colombia's Truth Commission (*Comisión de la Verdad*)—an expert mission emerging from a 2016 peace agreement signed with the country's largest rebel group, the FARC-EP—documents more than 450,000 deaths between 1985 and 2018 directly attributable to the conflict. Considering possible underreporting, the true estimate may be closer to 800,000 deaths or almost 2% of the country's current population (Comisión de la Verdad 2022).

The conflict also determined the deployment and legal order of the Colombian armed forces. For example, Colombia is one of a handful of countries in the Western Hemisphere where the police forces are housed within the Ministry of Defense (Casas et al. 2018). In addition, in large swaths of the country's territory, the military performs tasks usually entrusted to the police—such as patrolling in the streets (Blair and Weintraub 2022; 2023). The opposite is also true, as the police have actively participated in combat with insurgent and counterinsurgent forces and play a leading role in efforts to reduce the supply of cocaine.

3.2 THE NATIONAL POLICE OF COLOMBIA AND THE PATROLLING SERVICE

The National Police of Colombia is a centralized force that depends upon the national government and holds a constitutionally granted monopoly on the use of force within the country's territory. The police force consists of almost 180,000 individuals (according to 2021 figures). Because of its centralized nature, the National Police of Colombia is likely the largest police department in the region.[14]

The patrolling service is organized into three levels, all part of the centralized hierarchy: metropolitan police departments, police stations, and police quadrants. The patrolling service represents about 35% of the total police force (approximately 63,000 individuals in total). Police quadrants are equivalent to police beats in the United States or the United Kingdom and signify a geographically delimited patrolling area. Each quadrant has six patrolling officers who patrol in pairs, covering three 8-hour shifts. Each pair has one motorcycle that officers use to move within the quadrant. Their activities are standard and include: stopping, questioning, and frisking sus-

[14]The Brazilian, Mexican, and Argentine police have more aggregate reported personnel but are not structured as a national police force. Rather, they are organized similarly to the United States' police forces, with one or several federal agencies and either state- or city-level departments—or a combination of both.

picious people; running criminal background checks; carrying out door-to-door visits to discuss security concerns; seizing weapons and drugs; and conducting arrests.

Patrolling officers respond directly to police station commanders, who meet them in person to provide instructions at least three times per day—at each shift change. Shift changes are a key operational moment. Police station commanders provide specific instructions to each pair of patrols on their duties during the shift and discuss the main challenges they expect to face within their quadrants.

3.3 Current challenges and police reform

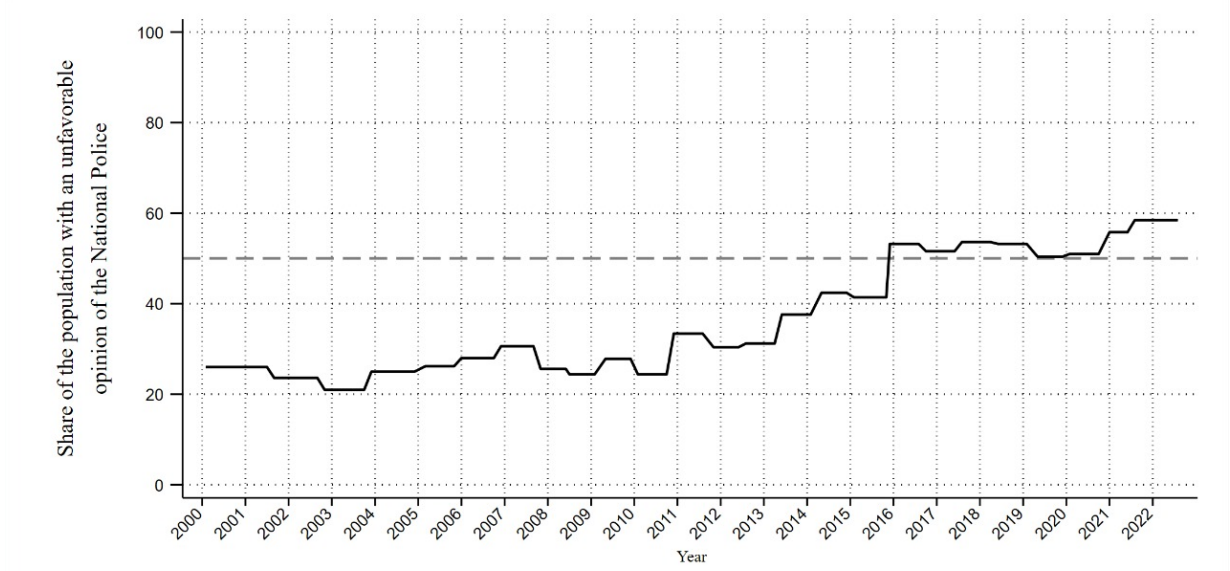
Although violence has reached historic lows across the country, recent years have seen significant challenges for the police. Rising inequality and social discontent have produced prolonged and widespread protests across the country, some of which turned violent (UN High Comissioner for Human Rights 2019). The Colombian Police is constitutionally mandated to protect protesters while they exercise their right to peaceful protest, yet when demonstrations turn violent the police oftentimes use force to contain such violence; the Supreme Court of Colombia (2020) indicated that, at times, this use of force has turned excessive. In 2021, for example, international agencies held the National Police responsible for the deaths of at least 28 civilians during protests across the country (UN High Comissioner for Human Rights 2021).

In part due to these highly publicized encounters, public trust in the police has suffered. While most Colombians expressed significant trust in the police during the years when Colombia faced its most serious threats to public order, this pattern changed in the post-conflict period. Figure 1 depicts the share of the Colombian population holding an unfavorable opinion of the National Police. Until roughly 2012, most citizens held positive opinions of the National Police. The pattern changed, however, producing record high levels of unfavorable views in recent years.

In response to this and other challenges, the National Police of Colombia initiated an institutional reform process based loosely on the Task Force on 21^{st} Century Policing that President Barack Obama established in the United States (President's Task Force on 21st Century Policing 2015). Since the National Police of Colombia is centralized, the expectation is that implementation of the recommendations would be comparatively smoother than in more decentralized systems.[15]

[15]The reform process had three structural components: an advisory board that made final decisions on the recommendations; a technical team that produced the inputs and outlined recommendations; and a unit within the police that facilitated the implementation process and created inputs for the discussions. The reform focused on eight broad subjects: a new police patrolling model; strengthening police education and training; the role of the police on the national stage; strengthening protocols for the use of force; improving the career plan, welfare, and health of the police force; strengthening criminal investigation and intelligence; improving technology; and developing strategies to improve citizen trust in the police and police legitimacy. As the leadership in Colombia's presidency changed in August 2022, the reform process was adjusted but still continues. A subset of the authors of this study participated in the technical team supporting the reform process, both before and after the change in the presidency.

Figure 1: Evolution of unfavorable opinions of the National Police of Colombia



Notes: Data is from Gallup (2021). We depict a five-month moving average of answers to the question "Do you have an unfavorable opinion of the National Police of Colombia?"

The process formally began in July 2021 and had as one of its aims to improve public trust in the police. The intervention described here was developed as part of the reform process, intended to explore whether and how procedural justice interventions could bolster the legitimacy of the police and improve police–community relations.

3.4 Colombia in a broader perspective

An upper middle-income country with relatively high levels of economic inequality (see The World Bank 2022), Colombia has faced several challenges to reducing crime and improving law enforcement performance. Compared to other countries, Colombia features medium-high to high levels of crime and violence, ranking in the first or second quartile across all countries (depending upon crime type) (UNODC 2018). Although cross-country comparisons are problematic due to differences in measurement and measurement error, a World Economic Forum executive opinion survey shows that Colombia is well above the median for perceived crime incidence, comparable to countries like Sierra Leone, Bosnia and Herzegovina, and Kenya.[16]

Colombian state's capacity to address these threats, however, is higher than for countries with similar challenges. Colombia has approximately 367 police per 100,000 inhabitants, which places it at roughly the global median (UNODC 2018), and similar to Mexico or Perú.[17] Citizens in

[16] Appendix Figure B.1 presents cross-country comparisons of crime incidence.
[17] Appendix Figure B.2 reports cross-country comparisons on police personnel per 100,000 people.

Colombia also generally mistrust the police more than citizens from other countries: the country ranks 54 among 58 countries in public trust in the police, according to the World Values Survey (Haerpfer et al. 2020).[18]

Despite the particularities of the Colombian case described above, challenges related to building public trust in the police and reducing crime are common in other developing economies and even some cities within developed countries. Hence, while the question of external validity is always difficult to answer, we believe Colombia is similar to a broad set of countries and cities across the world in terms of its security challenges, state capacity, and public mistrust of the police.

3.5 INTERVENTION

As part of the police reform process that began in 2021, the National Police developed a series of initiatives to improve policing services. The COP Initiative aimed to retrain patrolling officers in procedural justice principles to improve the quality of officer-citizen encounters by emphasizing the importance of respect, fairness, transparency, and the opportunity to be heard. It sought to complement the core training that patrolling officers receive during their first year in the police. This basic training, taught in about a dozen schools throughout Colombia, consists of 3,500 hours of instruction, after which the officers graduate as "professional technicians" in police service. The training includes, for instance: the development of tactical skills for police service, including firearms training; knowledge of law and regulations; and service-related competencies. This last component includes lessons and exercises on procedural justice principles. However, beyond the initial training, police officers do not receive any formal, systematic instruction or reinforcement of these fundamental principles. The average police officer dedicated to patrolling received this training nine years prior to the implementation of the COP Initiative. The program, therefore, sought to update knowledge and reinforce the adoption of procedural justice principles among patrolling officers.

The COP Initiative was implemented by the National Police for six weeks, from mid-March to late April 2022. It has two core components—commander instructions and practice—plus an information campaign (the latter only for those assigned to the second treatment arm).

COMMANDER INSTRUCTIONS. All police station commanders with officers assigned to the program received reinstruction on procedural justice principles, which took place in person at the headquarters of the corresponding police station. The sessions lasted between 3 and 4 hours and were led by other police officers specifically trained for this reinstruction. These commanders were then instructed to retrain and reinforce procedural justice principles with patrols assigned to

[18] Appendix Figure B.3 reports cross-country comparisons on public trust in the police.

the program. This happened regularly over the six weeks of the intervention, typically at every shift change, when commanders have the opportunity to provide additional, in-person instructions separately to each patrol.

PRACTICE. Officers assigned to the intervention arms were asked to put into practice the procedural justice principles on one randomly-selected target street block within their quadrant. To improve—and more easily monitor—adherence to the treatment, all officers assigned to the program received a reminder of the practice twice per week, with a map highlighting the designated street block. Appendix Figure B.4 depicts an example of the map patrolling officers received.

INFORMATION CAMPAIGN. A subset of officers assigned to the treatment group also took part in an information campaign. The objective was to examine whether daily reminders of procedural justice principles increased the probability of their adoption during the patrols' shifts. This subset of officers received these messages daily over the course of the day. Messages included tips on attitudes when talking to a citizen—e.g., cordially greeting people before starting any dialogue or being empathetic with whoever they interact with. Appendix Table B.1 lists the messages that patrolling officers received.

Overall, the COP Initiative aimed to improve the quality of officer-citizen interactions as a means of increasing public trust in the National Police. In light of our conceptual framework presented in section 2, the initiative sought to provide positive news about the ease of interacting with police officers, thereby reducing the perceived cost of cooperating with the police. In this way, the initiative intended to improve cooperation and public trust.

Recognizing the time constraints of police officers, who often have demanding schedules, the COP initiative was deliberately designed to be low-cost in terms of both financial resources and staff time, while maximizing its potential for scalability. This was achieved by leveraging the existing command structure of the National Police, avoiding the use of external trainers, and avoiding the need for dedicated time or space solely for officer training. This approach aimed not only to streamline the intervention, but also to facilitate its seamless integration into the daily operations of the police force, minimizing any disruption to their ongoing responsibilities.

4 RESEARCH DESIGN

4.1 SELECTING THE EXPERIMENTAL SAMPLE

The experiment includes 345 police quadrants across five cities in Colombia: Barranquilla, Bucaramanga, Cali, Cartagena, and Medellín. The universe of eligible units consists of 883 quadrants.

Within each quadrant, we focused the intervention and data collection in one randomly–selected street block.

SAMPLE OF QUADRANTS. We followed two steps to select the experimental sample of quadrants. First, we excluded small police stations—those possessing fewer than three quadrants—and stations that were too particular—such as one police station in Cartagena that covered a small island dedicated to tourism. Second, stratifying by city, we randomly selected quadrants from all eligible police stations in triplets until we reached approximately 70 quadrants in each city. More specifically, we randomly selected three quadrants from all eligible police stations in each city and then randomly selected an additional group of three quadrants from police stations with at least six total quadrants. We repeated the process with larger stations and stopped when we reached the desired sample size for each city, totaling 345 quadrants across all cities. The final sample size was agreed upon in consultations with the National Police, taking into consideration statistical power.[19]

TARGET STREET BLOCKS. We selected a target street block within each quadrant in the experimental sample. With this final step, our goals were two-fold. This facilitated the implementation of the instructions patrolling officers received: officers were instructed to put into practice the procedural justice lessons learned within a clearly–identified area. It also facilitated the data collection process, which we purposefully concentrated on these target street blocks. To select the target street blocks, we first excluded those that had fewer than 75 percent residential units (out of the total physical units on the block), given that the police sought to focus on residential areas rather than highly commercial or industrial ones. We then excluded street blocks closer than 40 meters to quadrants' borders to avoid problematic spillovers.[20] We performed the same exercise to select the street block within control quadrants where endline data collection occurred.

Appendix Figure B.5 depicts the experimental sample of quadrants across all five cities. The shades denote quadrants in the experimental sample. Non-shaded quadrants were not included.

4.2 DATA

Our evaluation combines data from multiple sources, which together allow us to test the treatment effects of the intervention.[21]

[19] Running 10,000 simulations of our experiment using survey-based measures of public trust—which we collected pre-treatment, we estimate our experiment was powered to detect treatment effects of roughly 0.1 standard deviations (or 4.9 percentage points).

[20] For reference, the average quadrant size is 6.5 square kilometers.

[21] We pre-registered our Pre-Analysis Plan with the American Economic Association RCT Registry prior to endline data collection and is available at https://www.socialscienceregistry.org/trials/8947.

RESIDENT SURVEYS. In December 2020, we conducted a baseline survey of 726 residents.[22] We surveyed approximately two residents from the target street block in each police quadrant.[23] In late April and May 2021, we conducted an endline survey of 2,097 residents, approximately six per quadrant, all in the same target street block where we collected the baseline survey. We use these data to build the following outcomes:

- *Willingness-to-pay for police services.* To measure willingness to pay for policing services, our proxy for cooperation, we asked respondents to what extent they would be willing to pay an additional tax to improve policing services. More specifically, enumerators asked: "In general, keeping in mind the way that police officers who have patrolled in this area over the last two months have behaved, I would be in favor of creating a new tax to improve policing services." Responses were measured on a Likert scale from 1 to 4, and then transformed to a 0-1 scale (1 is the most positive answer possible).

- *Public trust in the police.* To capture trust in the police, we asked residents to what extent they agreed with the following statement: "The National Police of Colombia is an institution in which I can trust." We also measured responses on a Likert scale from 1 to 4, and then transformed them to a 0-1 scale (where 1 is the most positive response possible).

- *Police activity index.* Our measure of first-stage officers' adherence to the COP Initiative has two sub-components: police presence and attention, and frequency of interactions with police. To capture police presence and attention, we asked respondents the following: "During the last two months, how often did you see the police patrolling the area where you live and responding to citizen requests?." To capture the frequency of interactions, we asked respondents: "During the last two months, how often did you personally interact with any police officer in the sector where you live?." We measured responses on a Likert scale from 1 to 4 and then transformed it into a 0-1 scale, with 1 being the most positive answer possible. We then added these indices into a police activity index and normalized it again on a 0-1 scale.

- *Measures of other citizens' beliefs.* First, we asked respondents 16 questions related to four potential pre-specified beliefs potentially linked to public trust: perceptions of procedurally just treatment (4 questions); perceptions of the effectiveness of policing services (3 questions); perceptions of the integrity of patrolling officers (5 questions); and the convergence

[22] See Abril et al. (2022), who conduct an analysis of the determinants of public trust in the police using the baseline survey.

[23] While collecting baseline survey data, the survey firm was unable to reach the minimum of two residents in 212 cases. The leading reason for replacing blocks concerned incorrect census data—e.g., blocks had no residents to survey because they were located in commercial areas. In all cases, we provided the survey firm with a randomly selected replacement that was provided afterwards to the National Police for the purposes of the experiment.

of personal values with the faculties granted by states to police forces to enforce the law (4 questions). We measured all responses on a Likert scale from 1 to 4 and then transformed them into a 0-1 scale. Then, we combined questions within each topic into an additive index and then standardized it to produce a 0-1 scale.[24] Second, we measure empathy by asking residents about their beliefs towards police officers and the public in general. We asked two questions: "When I see a group of police officers in a life-threatening situation, I become distressed," and "When I see a group of people in a life-threatening situation, I become distressed." In each case, we measured responses on a Likert scale from 1 to 4 and then transformed them into a 0-1 scale, with 1 being the most positive answer possible. We expected the questions on empathy to provide further context to the interpretation of the summary indices on potential mechanisms.

POLICE SURVEYS. We collected data during implementation and administered a survey to 2,123 police officers.[25] We use these data to build the following outcomes on police adherence to the intervention and beliefs:

- *Adherence to the intervention.* During the intervention, we coordinated with the National Police to record information on officers' interactions with the instructions. Since officers were contacted regularly through their police-assigned devices, our research team recorded the number of interactions and responses each officer had after having received instructions. These data are restricted to the intervention arms because control patrols received no instructions.

- *Officers' trust in citizens.* One way to indirectly measure the perceived effectiveness of procedural justice training for officers is by looking at the extent to which police express trust towards ordinary citizens. To capture the officers' trust of the public, we asked officers to what extent they agreed with the following statement: "I trust most of the people in the area where I provide security services." We measured responses on a Likert scale from 1 to 4 and then transformed them to a 0-1 scale (where 1 is the most positive response possible).

- *Officers' beliefs about citizens' public trust.* To further assess the perceived effectiveness of procedural justice training for officers we look at their perceptions of public trust. We asked officers to what extent they agreed with the following two statements: "The majority of citizens believe that the police is an institution that can be trusted," and "Most citizens

[24] For compactness, we include the precise wording of these 16 questions in Appendix Table B.2.

[25] This number is larger than 2,070, which was the expected number of police officers in experimental quadrants (six per quadrant), as reported in Table 1. This discrepancy was mainly due to officer reallocations and transfers. In section C.2, we discuss why this should not threaten the identification of causal effects.

would alert the police to be on the lookout for home security if they go on a trip." We measured responses on a Likert scale from 1 to 4 and then transformed them into a 0-1 scale, with 1 being the most positive answer possible. We then added the two answers into a single measure of officers' beliefs.

ADMINISTRATIVE DATA. We also use administrative records provided by different agencies of the Colombian government:

- *Crime data.* We collected geo-referenced and time-stamped administrative crime data. These include reports on homicides, personal thefts, car and motorcycle theft, shoplifting, and burglary. We use these data to build additive counts of violent crime, property crime, and total crime. These data are from the National Police of Colombia.
- *Census data.* Finally, we use data from the 2018 census to build the sampling frame of street blocks within quadrants and stratify by baseline poverty levels. These data are from the Colombian Bureau of Statistics—DANE.

POLICE INTERVIEWS. Finally, to better understand police beliefs about the intervention and the procedural justice principles, we interviewed 15 officers distributed across the two intervention arms. The sample consists of three randomly selected officers from each of the five cities where the National Police implemented the COP Initiative. We conducted semi-structured interviews with each, eliciting officer perceptions about the intervention, changes in citizen attitudes they may have observed, and recommendations about how to improve the intervention's reach.

4.3 RANDOMIZATION

We use complete stratified randomization to assign treatment. First, we stratify by city, effectively making each of the five cities in our sample an independent experiment. Second, we divide all street blocks into three poverty terciles within each city, using baseline poverty information from Colombia's 2018 census, and then stratify on this variable. The logic behind this level of stratification is that citizens may respond differently to interactions with the police depending upon historical class tensions—which are pervasive in some parts of Colombia. Lastly, within each city and poverty stratum, we rank all police quadrants based on levels of public trust in the police, as measured in a baseline survey conducted 4-5 months prior to the intervention. We then group these quadrants into triplets based on this ranking. Within each triplet, we randomly assign one quadrant to each of the groups (control and both treatment arms). We opt for this final strata because baseline public trust is presumably a strong predictor of endline public trust, helping to improve statistical

Table 1: Distribution of quadrants and police officers across treatment arms

	COP Initiative	COP Initiative + information campaign	Pure control	Total
	(1)	(2)	(3)	(4)
Commander instructions	Yes	Yes	No	-
Practice	Yes	Yes	No	-
Information campaign	No	Yes	No	-
Quadrants	115	116	114	345
Approx. number of police officers	690	696	684	2,070

Notes: The table displays the final distribution of quadrants and patrolling officers across treatment arms, as well as the components of the COP Initiative to which they were exposed during the experiment.

power. Table 1 reports the final distribution of quadrants and corresponding police officers across treatment arms.[26] We obtain a total of 113 strata.

4.4 Estimation

Most of our outcomes are measured at the individual level using survey data, while our crime outcomes are measured at the block level using administrative data. Generally, we obtain the intention-to-treat (ITT) effects of the intervention on individual-level outcomes using a linear regression model, which we estimate by ordinary least squares:

$$y_{i,j,c,p,k} = \beta T_{j,c,p,k} + \delta \mathbf{X_{j,c,p,k}} + \gamma \mathbf{Z_{i,j,c,p,k}} + \alpha_c \times \phi_p \times \theta_k + \varepsilon_{i,j,c,p,k} \quad (1)$$

where y denotes the outcome. Sub-indices are for respondent i in police quadrant j in the city c at poverty level p and baseline public trust in the police k. T denotes assignment to treatment. $\mathbf{X}$ denotes quadrant-level covariates and $\mathbf{Z}$ denotes individual-level covariates. We either only include strata fixed effects or strata fixed effects and baseline controls for a subset of covariates selected using the double-lasso method proposed by Urminsky et al. (2019).[27] α_k, ϕ_p, and θ_k denote city, poverty tercile, and baseline trust triplet fixed effects, which we interact. Finally, ε is an individual-level error term clustered by the police quadrant. We also report randomization inference p-values, which are agnostic as to the structure of clusters (Fisher 1935). We analyze

[26] Appendix Table B.3 reports baseline descriptive statistics and balance tests for each intervention arm, considered independently and pooled. Broadly, all these comparisons are consistent with random treatment assignments. Appendix Figure B.5 maps the police quadrants in our sample by realized treatment status.

[27] We use the double lasso method taking as input the full set of baseline covariates we report in Appendix Table B.3 to eliminate researcher discretion over which covariates to include.

two versions of equation (1): pooling both intervention arms and separately estimating treatment effects for each. For block-level outcomes, such as crime reports, we estimate the equation at the block level.

4.5 Spatial spillovers

Because of the dense network of street blocks and quadrants in large urban areas, our experiment is subject to the risk of spatial spillovers. This would directly violate the independence assumption and threaten the identification of causal effects (Blattman et al. 2021). We identify three main threats.

First, the intervention's core depends upon police station commanders' delivering specific instructions to patrolling officers and re-training them during shift changes and other moments. Even without considering patrol reallocations, there is a risk that station commanders may have delivered these instructions to officers belonging to the control group. We believe this risk is minimal because enforcement of executive orders within the Colombian police is high. Furthermore, if the intervention is effective, this would lead to an underestimation of its impact.

Second, routine changes in policing services meant that patrolling officers could be reassigned during the experiment. This became evident when we sent the endline survey instrument—focused on police measures—to all officers who patrolled a quadrant in the experimental sample at any point during the intervention. We received 2,123 survey responses, surpassing our target of 2,070. Such reallocations could pose challenges: untrained officers might be introduced into treatment quadrants mid-intervention, or trained officers could move to control group quadrants. However, given the short duration of the intervention—six weeks—and the fact that rotations are not very frequent, we believe the impact of these reallocations is limited. Additionally, as officers patrol in pairs, the likelihood of an entirely untrained pair operating in treatment quadrants remains low. Even in such instances, both officers would still receive regular instructions from the station commander. If any of these potential issues did influence the outcome, they would likely bias our results towards finding no effect.

Finally, there may be spatial spillovers resulting from police officers in the treatment group patrolling control quadrants or residents from treatment quadrants observing police activity nearby. For example, because they live on a block within a control group quadrant that is contiguous with a treatment quadrant. We deem this risk to be minimal, because we restricted our selection of target street blocks to those at least 40 meters from a police quadrant border. Police quadrants are also relatively large: they contain, on average, 69 street blocks. For this reason, targeted police activities are not easily observable for those living on distant street blocks.

Taken together, we believe the chances that our main estimates are exaggerated are minimal.

Nonetheless, we follow Blattman et al. (2021) to examine whether the main effects spill over to surrounding areas. More specifically, we estimate the direct and spillover effects of the intervention on individual-level outcomes using an ordinary least squares regression given by:

$$y_{i,j,c,p,k} = \eta T_{j,c,p,k} + \pi S_{j,c,p,k} + \lambda \mathbf{X_{j,c,p,k}} + \kappa \mathbf{Z_{i,j,c,p,k}} + \alpha_c \times \phi_p \times \theta_k + \nu_{i,j,c,p,k} \tag{2}$$

where y, T, $\mathbf{X}$, $\mathbf{Z}$, α_k, ϕ_p, and θ_k follow from equation (1). S is an indicator of proximity to the treatment group that splits the control quadrants into two groups: a spillover group and a pure control group. To maximize statistical power, we split these groups at the median distance to the treatment group—approximately 600 meters. Finally, because statistical inference is problematic in the presence of spatial spillovers (as the structure of the clusters for units assigned to spillover regions does not correspond to any geographical region, such as a quadrant or neighborhood), we use randomization inference to estimate exact p-values under the sharp null of no treatment or spillover effects for any unit.

4.6 Ethics

Given citizen mistrust towards the police globally, and in Colombia in particular, we believed a rigorous impact evaluation of a procedural justice intervention was crucial to orient policymaking and refine our understanding of state-society relations. Nonetheless, both the program and our evaluation posed a few potential risks, which we aimed to anticipate and mitigate.

The first risk was that citizens seen to be collaborating with the police during the intervention or during endline data collection would be targeted for violence by organized criminal groups. There was also a risk that due to this threat (or others), survey responses by residents would not be truthful. To mitigate these risks, we consulted extensively with the Universidad EAFIT human subjects committee, validating every aspect of the intervention and impact evaluation, including all survey instruments. We conducted all surveys in private, within citizens' homes, to prevent observability. We preserved both the anonymity and confidentiality of all survey responses, while at the same time advising subjects via informed consent regarding potential limitations in our ability to do so. Respondents were informed that they would receive no personal benefit for participating in this study, that they could skip any survey question that generated discomfort, and that they could terminate the survey at any time without penalty. To the best of our knowledge, survey respondents were not adversely affected in any of the ways described above as a result of the experiment and data collection effort.

The second risk was that the National Police would seek to interfere with the results of the impact evaluation if they did not provide favorable conclusions. We mitigated this risk by seeking and obtaining formal assurances from the National Police regarding the independence of the

experiment and the dissemination of its results. Additionally, all survey data generated from the experiment was controlled exclusively by the principal investigators. Finally, we pre-registered all primary and secondary outcomes and analyses and report here any and all deviations from the pre-specified plan.

The third risk was that our experiment would distract police officers from normal policing activities, exposing residents living within treatment quadrants to an increased risk of crime. We mitigated this risk by ensuring that the intervention represented only a minor reallocation of existing resources rather than a disruptive change to policing practices. More specifically, we sought to minimize the amount of time that both commanders and officials spent engaging in activities related to the intervention (while being mindful of the need for a strong treatment).

5 RESULTS

5.1 OFFICERS' ADHERENCE TO THE COP INITIATIVE

We begin by looking at first-stage program impacts. Results are reported in Table 2. As we discuss in section 4.2, we pre-specified an index of police activity with two sub-components: police presence ("During the last two months, how often did you see the police patrolling the area where you live and responding to citizen requests?") and frequency of citizen-police interactions ("During the last two months, how often did you interact with any police officer in the area where you live?"). Data from our citizen surveys suggest that treatment take-up was relatively high: residents in quadrants assigned to either treatment arm report an increase of roughly 5-6 percent in police activity around their households.

We also assess treatment adherence by monitoring officers' interactions on their police-assigned devices. Records indicate that, upon receiving instructions or reminders from the coordination unit, officers in the treatment group responded approximately 60% of the time. These interaction rates did not depend on baseline levels of public trust or crime, as we show in Appendix Figure B.6.

5.2 CITIZEN COOPERATION AND PUBLIC TRUST

We next consider the effects of the COP Initiative when both intervention arms are pooled—i.e., we assume the information campaign made no difference—and then examine treatment effects separately below. Panel A in Table 3 reports the intention-to-treat effects of the intervention on citizen outcomes. The core independent variable in Table 3 is assignment to *either* of the two treatment arms. We include fixed effects for the interaction between city, poverty level, and prior levels of trust in the police in all our estimates. Standard errors are clustered at the police quadrant

Table 2: ITT on police activity

	Control mean	ITT	S.E.	N
	(1)	(2)	(3)	(4)
Police activity index	0.414	0.024*	0.012	2,097
Frequency of policing	0.561	0.035**	0.015	2,097
Frequency of interactions	0.241	0.013	0.013	2,097

Notes: *** p<0.01, ** p<0.05, * p<0.1. The table displays the first-stage effects of the intervention. We focus on our pre-specified police activity index, which consists of two components: frequency of policing and frequency of interactions. Column (1) presents the control mean, column (2) the intention to treat effect, column (3) the corresponding standard errors, and column (4) the number of observations.

Table 3: Intention-to-treat effects on citizen and police primary outcomes

	Control mean	ITT	S.E.	N
	(1)	(2)	(3)	(4)
Panel A. Citizen survey				
Willingness-to-pay for policing services	0.469	0.036**	0.015	2,097
Public trust	0.562	0.039***	0.010	2,097
Panel B. Police survey				
Trust in citizens	0.690	0.013	0.010	2,123
Second-order beliefs about citizens' public trust	0.623	0.001	0.001	2,123

Notes: *** p<0.01, ** p<0.05, * p<0.1. The table displays the effects of the intervention on our main outcomes: public trust in the police, willingness to pay for policing services, officers' trust in citizens, and officers' second-order beliefs about citizens' public trust. Column (1) presents the control mean, column (2) the intention to treat effect, column (3) the corresponding standard errors, and column (4) the number of observations.

level for all outcomes.

WILLINGNESS-TO-PAY FOR POLICING SERVICES. We proxy citizens' cooperation with the police with a measure of their willingness-to-pay for policing services. Respondents were asked to indicate their agreement with the phrase: "In general, keeping in mind the way that police officers who have patrolled in this area over the last two months have behaved, I would be in favor of creating a new tax to improve policing services." We converted these answers into a 0-1 scale, where 1 is the most positive answer possible. We hypothesized that individuals who experienced improved interactions with the police (or, in terms of the theoretical model, those receiving a positive signal on the costs of cooperating with it) would be more likely to approve of this new tax, denoting greater cooperation with the police. We find that the intervention increased willingness

to pay for police services by 0.036, equivalent to an 8 percent increase relative to the control mean (Table 3, panel A, row 2). This effect is statistically significant at conventional levels. These results are also robust to changes in the specification (see Appendix Table C.1).

PUBLIC TRUST IN THE POLICE. As we discuss in section 4.2, to capture trust in the police respondents were asked to what extent they agreed with the following statement: "The National Police of Colombia is an institution in which I can trust." We then transform answers to a 0-1 scale, where 1 is the most positive response possible. We hypothesized that the intervention would increase trust in the police. We find support for that hypothesis: the program increased trust in the police by 0.039, equivalent to a 7 percent improvement relative to the control mean (panel A, row 1). This effect is statistically significant at conventional levels. Results are robust to the inclusion of controls and remain precise when we use randomization inference p-values (see Appendix Table C.1).

HETEROGENEOUS TREATMENT EFFECTS. In Table 4 (Panel A), we explore heterogeneous treatment effects on willingness to pay and public trust. In all cases, we use continuous measures of each characteristic and interact these variables with our treatment indicator.[28] Columns (1) and (2) examine whether intent-to-treat effects on the main outcomes vary across baseline poverty levels. We observe no treatment effect heterogeneity by baseline poverty for either willingness to pay or public trust. Columns (3) and (4) explore heterogeneous impacts given baseline public trust. Again, we observe no differences in citizen responses depending on baseline public trust. Finally, columns (5) to (8) evaluate heterogeneous treatment effects by baseline crime. Focusing on the total number of reported crimes and the total number of reported violent crimes, our results suggest that while public trust in the police increased in the safest places, these improvements are more pronounced as baseline violence levels rise.

EFFECTS OF THE INFORMATION CAMPAIGN. We examine results for our main citizen outcomes separating the analysis by intervention arm. Results are in Panel A of Table 8. We find no evidence that providing information to police officers offered any additional increases in trust in the police, nor willingness-to-pay for policing services, as shown in column (6), where we report the p-value of the difference between the coefficients for assignment to both treatment arms.

[28] For instance, when estimating heterogeneous impacts based on baseline poverty levels, we estimate three coefficients: the treatment indicator, a continuous poverty measure from the 2018 census—which takes higher values for higher poverty—and the interaction between both variables.

Table 4: Heterogeneous treatment effects

	Baseline poverty		Baseline trust		Baseline crime			
					Total crimes		Violent crimes	
	ITT (1)	S.E. (2)	ITT (3)	S.E. (4)	ITT (5)	S.E. (6)	ITT (7)	S.E. (8)
Panel A. Citizen survey								
Willingness to pay for policing services								
COP initiative	0.047**	0.022	-0.014	0.049	0.049**	0.018	0.038**	0.018
Baseline	0.003***	0.001	-0.094	0.067	0.000	0.000	0.002	0.003
Interaction	-0.001	0.000	0.101	0.083	-0.001	0.001	0.015	0.01
Public trust								
COP initiative	0.026	0.017	0.057*	0.034	0.035**	0.14	0.031**	0.013
Baseline	0.000	0.001	0.019	0.047	0.000	0.000	0.004	0.003
Interaction	0.000	0.001	-0.039	0.057	0.000	0.000	0.016**	0.007
Panel B. Police survey								
Trust in citizens								
COP initiative	0.028*	0.017	0.068*	0.037	0.014	0.013	0.015	0.013
Baseline	0.000	0.000	0.058	0.052	0.000	0.000	0.000	0.003
Interaction	-0.001*	0.001	-0.101	0.065	-0.001	0.001	-0.013*	0.007
Beliefs about citizens' public trust								
COP initiative	0.012	0.021	0.054	0.048	-0.001	0.016	0.004	0.015
Baseline	-0.001	0.001	0.089	0.067	0.001	0.000	0.002	0.004
Interaction	-0.001	0.001	-0.102	0.082	0.000	0.001	-0.025**	0.010

Note: *** p<0.01, ** p<0.05, * p<0.1. The table displays the heterogeneous treatment effects of the intervention on our pre-specified primary outcomes: public trust in the police, willingness to pay for policing services, and appropriation of procedural justice principles by police officers. Column (1) presents the intention to treat effect on public trust, column (2) the corresponding standard errors, column (3) the intention to treat effect on willingness to pay for policing services, column (4) the corresponding standard errors, column (5) the intention to treat effect on the appropriation index of procedural justice principles, and column (6) the corresponding standard error. Additionally, we included in column (7) the intention to treat the effect on crime and the corresponding standard errors in column (8).

Table 5: Intention-to-treat effects on citizen and police outcomes by treatment arm

	Control mean	COP Initiative		COP Initiative + Information campaign		P-value	N
		ITT	S.E.	ITT	S.E.		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A. Citizen survey							
Willingness-to-pay for policing services	0.490	0.037**	0.016	0.034*	0.017	0.824	2,097
Public trust	0.575	0.047***	0.013	0.031*	0.012	0.219	2,097
Panel B. Police survey							
Trust in citizens	0.690	0.013	0.012	0.005	0.014	0.890	2,123
Second-order beliefs about citizens' public trust	0.623	0.013	0.012	-0.002	0.015	0.180	2,123

Notes: *** p<0.01, ** p<0.05, * p<0.1. The table displays the effects of the intervention on our main outcomes: public trust in the police, willingness to pay for policing services, officers' trust in citizens, and officers' second-order beliefs about citizens' public trust. Column (1) presents the control mean, column (2) the intention to treat effect of the first intervention arm, column (3) the corresponding standard errors, column (4) the intention to treat effect of the second intervention arm, column (5) the corresponding standard errors, column (6) is p-values of the differences between the coefficients, and column (7) the number of observations.

5.3 Other citizens' beliefs

Our findings indicate that the intervention led to increases in willingness-to-pay for policing services and public trust in the police. In order to assess the information conveyed by the intervention to citizens, we examine the effects of the intervention on an additional set of citizens' perceptions.

Pre-specified beliefs. We first focus on four sets of questions related to beliefs related to citizens' trust in the police, as identified in the literature:[29] (i) citizen-police interactions and procedural justice principles; (ii) effectiveness of policing services; (iii) integrity of patrolling agents; and (iv) the alignment of values between citizens' and the police. We aggregate each set of answers into a 0-1 scale, where 1 is the most positive answer possible. Results are reported in Panel A of Table 6. We only see significant changes in citizens' perceptions of procedurally just behavior by police officers. The change in the aggregate index is 0.016, equivalent to a 2 percent improvement relative to the control mean. We find no evidence that those exposed to the treatment perceived the police to be more efficient, more honest, nor do we find evidence of values convergence.

[29] Prior literature, mostly qualitative or quantitative but featuring small sample sizes, documents distinct drivers of public trust in the police. First, some point to procedurally just treatment whenever there is an interaction between citizens and police agents (e.g., Bottoms and Tankebe 2012; Jackson et al. 2012; Tyler et al. 2014; Woolard et al. 2008). Second, others refer to the effectiveness of policing services and their ability to deliver (e.g., Bradford et al. 2014; Hawdon and Ryan 2003; Ho and McKean 2004). Third, officer integrity, transparency, and accountability appear to be important (e.g., Wells 2007; Akinlabi 2017). And finally, value alignment, or the convergence of values between the public and the idea that the police should hold a monopoly on violence and security provision (e.g., Alalehto and Larsson 2016; Stoutland 2001).

Table 6: ITT on outcomes related to potential mechanisms

	Control mean (1)	ITT (2)	S.E. (3)	N (4)
Panel A. Pre-specified mechanisms				
Procedural justice index	0.581	0.016*	0.008	2,097
Legitimacy	0.645	0.025**	0.010	2,097
Transparency	0.599	-0.003	0.010	2,097
Voice	0.644	0.022*	0.012	2,097
Neutrality	0.435	0.020*	0.012	2,097
Effectiveness of policing index	0.511	-0.002	0.011	2,097
Security perceptions	0.418	0.018	0.011	2,097
Interest in reporting (self)	0.597	-0.010	0.017	2,097
Interest in reporting (others)	0.520	-0.014	0.015	2,097
Police integrity index	0.535	-0.002	0.008	2,097
Corruption	0.437	-0.004	0.015	2,097
Collusion with criminals	0.531	0.007	0.016	2,097
Accountability	0.485	0.002	0.013	2,097
Abuse of power	0.719	-0.019	0.013	2,097
Use of force	0.503	0.005	0.016	2,097
Convergence of values index	0.730	0.009	0.008	2,097
Relevance of the police (self)	0.852	0.015	0.010	2,097
Relevance of the police (others)	0.801	0.011	0.011	2,097
Ethical coincidence (self)	0.655	0.004	0.013	2,097
Ethical coincidence (others)	0.611	0.005	0.013	2,097
Panel B. Citizen empathy				
Empathy for police officers	0.642	0.026**	0.011	2,097
General empathy	0.715	0.001	0.011	2,097

Notes: *** p<0.01, ** p<0.05, * p<0.1. The table displays the effects of the intervention on outcomes related to potential mechanisms. Column (1) presents the control mean, column (2) the intention to treat effect, column (3) the corresponding standard errors, and column (4) the number of observations.

FEATURES OF POLICE-CITIZEN INTERACTIONS. The COP Initiative aimed to improve the quality of officer-citizen encounters by emphasizing procedural justice principles. By evaluating the intervention's impact on perceptions regarding various aspects of police-citizen interactions, we aim to identify the specific channels influenced by the intervention. We measure each sub-component on a 0-1 scale, where 1 is the most positive answer possible. The intervention induced positive and precisely estimated changes along three of these dimensions (see Panel A of Table 6): (i) legitimacy, which we measure by asking "When the police carry out an intervention, they do so in line with their responsibilities;" (ii) voice, which we measure by asking "Citizens can express themselves during a police procedure and request explanations;" and (iii) neutrality, which we measure asking residents "Police treat all citizens equally, regardless of race, gender identity, or income level."

EMPATHY. We also examine changes in citizens' empathy towards police officers and the general public. Results are in Panel B of Table 6. As we mentioned above, we measure empathy towards police officers by asking citizens the following: "When I see a group of police officers in a life-threatening situation, I become distressed," which we turn into a 0-1 scale, where 1 is the most positive answer possible. We find an improvement of 0.026, equivalent to a 4 percent increase relative to the control mean. We measure empathy towards the general public by asking residents "When I see a group of people in a life-threatening situation, I become distressed," normalizing the outcome as with all other measures. We see no significant changes in empathy towards the general public due to the intervention.

5.4 TREATMENT EFFECTS ON CRIME

Improvements in trust towards the police may produce improvements in crime deterrence. We examine intention-to-treat effects on reported crimes. We focus on treatment effects on additive indices for total crime, violent crime, and property crime. Table 7 shows that the intervention decreased total crime by about 5 percent: all coefficients move in the expected direction, with crimes, misdemeanors, and insecurity perceptions decreasing, and arrests increasing. The only exception is the coefficient on direct victimization, which takes on an unexpected sign. These coefficients are, however, imprecisely estimated, so we cannot reject the null of no effect.

5.5 RESULTS ON INSTITUTIONAL CULTURE

Panel B in Table 3 presents the intention-to-treat effects of the intervention on police officers' outcomes. As before, our core independent variable is assignment to *either* of the two treatment

Table 7: ITT on reported crime

	Control mean (1)	ITT (2)	S.E (3)	N (4)
Panel A. Official reported crimes				
Total crime	0.831	-0.044	0.165	345
Violent crime	0.160	-0.022	0.050	345
Property crimes	0.671	-0.022	0.154	345
Arrests	0.922	0.208	0.243	345
Misdemeanors	3.496	-0.690	0.882	345
Panel B. Survey based data				
Victimization	0.093	0.009	0.012	2,097
Insecurity perception	0.296	-0.025	0.019	2,097

Notes: *** p<0.01, ** p<0.05, * p<0.1. The table displays the effects of the intervention on reported crime: total crime, violent crime and property crime. Column (1) presents the control mean, column (2) the intention to treat effect, column (3) the corresponding standard errors, and column (4) the number of observations.

arms, and we include fixed effects for our randomization strata. We cluster standard errors at the police quadrant level.

OFFICERS' TRUST IN CITIZENS. We measure officers' trust in citizens by asking them to what extent they agreed with the following statement: "I trust most of the people in the area where I provide security services." We also converted these answers into a 0-1 scale, where 1 is the most positive answer possible. We hypothesized that officers who participated in the initiative would increase their trust in citizens, which could result from self-reinforcing reciprocal dynamics. We find that the intervention increased officers' trust in citizens 0.013, equivalent to a 2 percent increase relative to the control mean (panel B, row 1). This effect is imprecisely estimated, however, and we cannot reject the null of no effect. These results remain unchanged to changes in specification (see Appendix Table C.1. We do observe some heterogeneous effects for police trust in citizens (reported in Table 4, Panel B): officers' trust increased in areas with the lowest levels of poverty, but the improvements lessened with increasing poverty. The impact on officers' trust was also influenced by the level of violent crimes: the more violent an area, the more negative the impact on officers' trust in citizens.

OFFICERS' BELIEFS ABOUT CITIZENS' PUBLIC TRUST. As we mentioned above, we measure officers' beliefs by aggregating two questions into a 0-1 scale, where 1 is the most positive answer. We asked them to what extent they agreed with the following two statements: "The majority of citizens believe that the police is an institution that can be trusted," and "Most citizens would

alert the police to be on the lookout for home security if they go on a trip." We hypothesized that, as an indirect measure of the effectiveness of procedurally-just behaviors, officers' beliefs about citizens' public trust would increase. We find that the intervention shifted such beliefs by 0.001, which is not only imprecise but also negligible relative to the control mean (Table 3, panel B, row 2). As above, this effect is imprecisely estimated, and we cannot reject the null. These results also remain relatively unchanged to changes in specification (see Appendix Table C.1). As with officers' trust, the intervention's impact on officers' beliefs about citizens' public trust was also influenced by the level of violent crimes (see Table 4, Panel B).

EFFECTS OF THE INFORMATION CAMPAIGN. We also examine results for our main police outcomes disaggregating by treatment arm, reported in Panel B of Table 8. We compare the two intervention arms separately against the control group. Similar to our findings with citizen outcomes, we find no evidence that providing information to police officers offered any significant, additional changes in officer beliefs.

5.6 SPILLOVER EFFECTS

As we discuss in Section C.2, even though we designed the experiment to minimize the risk of spillovers, experiments in a dense network of streets can potentially lead to interference between experimental units. We examine if this is the case in Appendix Table C.2. We split the sample of control units by half—at the median distance, to create a spillover and a pure control group. Because assuming the presence of spillovers leads to fuzzy clustering patterns, we estimate exact p-values using randomization inference. We see no evidence of either adverse or beneficial spillovers.

6 DISCUSSION

6.1 BETTER TREATMENT BY THE POLICE OR SIMPLY INCREASED CONTACT?

The intervention combined an increase in police presence with commanders' instructions for improved officer treatment. This bundled intervention prompts the question of whether both components were essential. Given our emphasis on procedural justice, it is relevant to assess if simply increasing police presence—without improving citizens' perception of the quality of treatment—could have achieved the same impact on trust.

Several factors suggest that merely increasing police presence would not have produced the same outcomes. As discussed in section 5.3, the intervention improved citizens' perceptions of treatment in domains explicitly highlighted by commanders' procedural justice instructions, such as legitimacy, the opportunity to be heard, and neutrality. The rise in citizens' empathy towards

the police also points to improved quality of interactions. Within our framework, interactions with officers in treated quadrants likely conveyed positive signals about the ease of cooperating with the police.

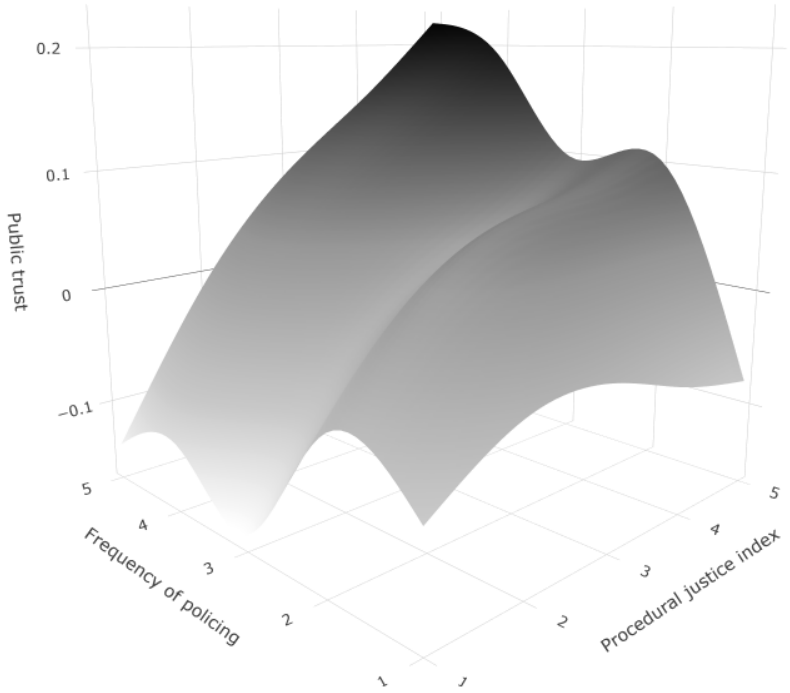
Our experimental setting allows us to examine the relationship between increased police presence, improved treatment, and increases in public trust. We compute treatment effects (i.e., the difference in outcomes between treatment and control quadrants) for each of our 113 strata—given by the interaction between city, baseline poverty level, and baseline public trust— for the three variables: police presence, perceptions of quality of treatment (procedural justice) and public trust in the police. We then examine whether the impact on trust varies depending on the impact on the quality of treatment and on the reported police presence. We report this analysis in Figure 2. The figure displays treatment effects on public trust (vertical axis), perceptions of procedural justice in police interactions (right-horizontal axis), and police frequency (left-horizontal axis), with the last two sorted into quintiles for clarity. Broadly, the plot suggests that the improvements in public trust are highest when both changes in perceptions of procedurally just behavior and changes in the frequency of policing are at their highest levels.

We further examine this relationship by looking at four two-dimensional cross-sections of the previous graph, which we report in Figure 3. Panels (a) and (b) help to evaluate if merely increasing police presence can improve trust. Panel (a) shows the relationship between the impact on trust and the impact on perceptions of treatment quality, for the quintile of strata with the largest increases in policing frequency. In strata where the improvement in treatment quality is minimal, even a large increase in policing frequency does not lead to positive changes in public trust. Only when perceptions of procedurally just behavior improve, we observe positive and large changes in public trust. Panel (b) displays the correlation between the impact on public trust and the impact on policing frequency, among the strata in the lowest quintile of improvements in treatment quality. The data also implies that simply augmenting policing frequency does not enhance public trust without improvements in perceived procedural justice by officers.

Panel (c) and (d) present the analog analysis. Panel (c) shows the relationship between the impact on trust and the impact on perceptions of treatment quality, for the quintile of strata with the lowest increases in policing frequency. Without an increase in interactions, improvements in perceptions of procedural justice do not lead to increases in public trust. Finally, Panel (d) shows the correlation between the impact on public trust and the impact on policing frequency, among the strata in the highest quintile of improvements in perceptions of procedurally just behavior. We observe that, when the impact on treatment quality in large, greater increases in the frequency of policing lead to larger gains in trust.

Overall, these figures suggest a strong complementarity between increasing the frequency of policing and improving perceptions of the quality of the treatment by the police. Both may be

Figure 2: Changes in public trust in the police, as a function of perceptions of procedurally just behavior and frequency of policing



Notes: The figure depicts an adjusted plot of the difference between treatment and control quadrants on public trust (vertical axis), quintiles of the difference between treatment and control quadrants in perceptions of procedurally just behavior (right-horizontal axis), and quintiles of the difference between treatment and control quadrants in perceptions of frequency of policing (left-horizontal axis). Adjustment is over 113 strata, that result from the interaction between city, baseline poverty level, and baseline public trust.

necessary to improve public trust: a multiplicity of interactions absent good behavior, or good behavior without frequent interactions may not produce improvements in public trust. In terms of our framework, it appears that citizens require consistent, positive signals regarding interactions with the police to adjust their beliefs.

Finally, in previous randomized hot spots policing evaluations conducted in Colombian cities—specifically Bogotá and Medellín—where the main intervention was simply an increase in patrolling time without any other significant change, there were no consistent or statistically significant improvements in trust (Collazos et al. 2021; Blattman et al. 2023; Blair et al. 2021). Had increased contact been the sole driver of improved trust, these studies would likely have also observed a rise in trust. However, they did not. Overall, these analyses and evidence suggest that the procedural justice component of the COP Initiative likely plays an important role in the positive outcomes we identify.

6.2 Why no additional benefit from daily reminders?

In our pre-analysis plan, we hypothesized that sending daily reminders with information on procedural justice principles—the extra component included in the second treatment arm—would provide additional benefits beyond the core procedural justice training and instructions. However, our findings indicate that this was not the case. While we cannot definitively explain why the information campaign failed to produce additional benefits, we consider a few possibilities. First, daily reminders may have been too frequent, potentially causing fatigue or diminishing the impact of the messages. A second possibility is that the information conveyed in the messages may have raised officers' expectations about what they might encounter during interactions with civilians. If increased expectations led to frustrated encounters from the officers' perspective, it is unsurprising that we observed no additional benefits from this treatment arm.

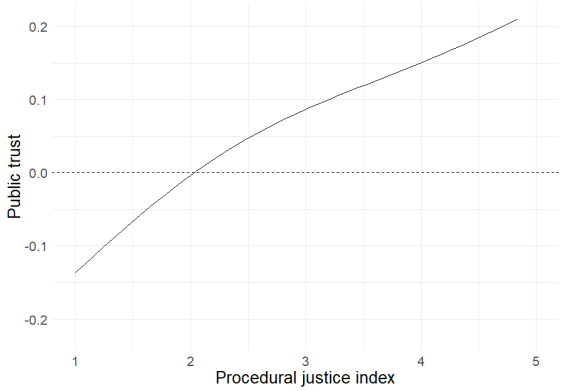
Conversely, commanders' instructions and their reinforcement of procedural justice proved to be sufficient for police officers, a finding consistent with the strong hierarchical nature of police agencies. This understanding of how different components of the intervention affected our results (or not) can inform the design and scaling of similar initiatives in the future.

6.3 How did police officers assess procedural justice values?

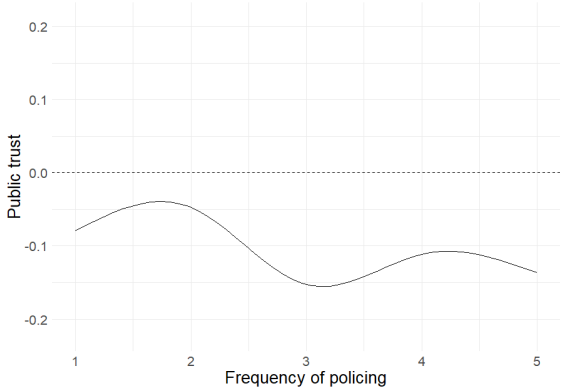
We exploit the police officer survey to better understand how state agents assess procedural justice values and whether the intervention improved identification with these values. Were police officers in the treatment groups more likely to identify with procedural justice principles? We build a procedural justice values index using the extent to which police officers agree with a set of statements related to police officers' responsibility for explaining their intentions and actions to

Figure 3: Changes in public trust in the police, along extreme combinations of changes in perceptions of procedurally just behavior and frequency of policing

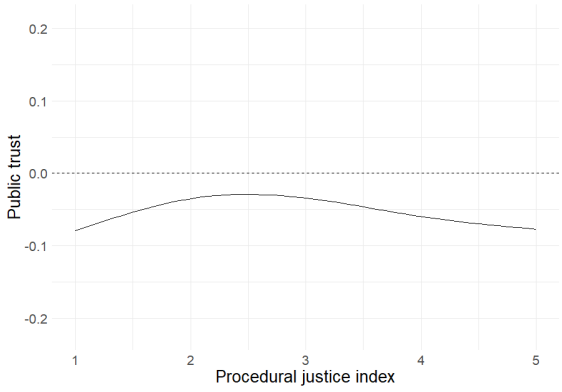
(a) *Trust by quintile of procedural justice, highest quintile of frequency of policing*



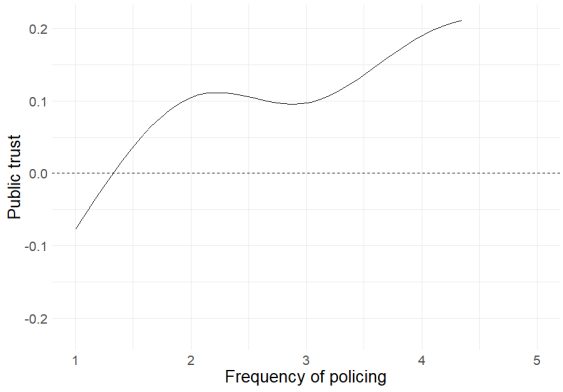
(b) *Trust by quintile of frequency of policing, lowest quintile of procedural justice*



(c) *Trust by quintile of procedural justice, lowest quintile of frequency of policing*



(d) *Trust by quintile of frequency of policing, highest quintile of procedural justice*



Notes: The figure depicts the four cross-sectional views of Figure 2. Sub-figure (a) presents the changes in public trust as changes in perceptions of procedurally just behavior improve, holding changes in the frequency of policing at the highest level. Sub-figure (b) presents the changes in public trust as changes in the frequency of policing improve, holding changes in perceptions of procedurally just behavior at the lowest level. Sub-figure (c) presents the changes in public trust as changes in perceptions of procedurally just behavior improve, holding changes in the frequency of policing at the lowest level. Sub-figure (d) presents the changes in public trust as changes in the frequency of policing improve, holding changes in perceptions of procedurally just behavior at the highest level.

Table 8: Intention-to-treat effects on procedural justice values by treatment arm

	Control mean	COP Initiative		COP Initiative + Information campaign		P-value	N
		ITT	S.E.	ITT	S.E.		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Procedural justice values	0.807	-0.020	0.010	-0.035***	0.010	0.180	2,123

Notes: *** p<0.01, ** p<0.05, * p<0.1. The table displays the effects of the intervention on a measure of procedural justice values. Column (1) presents the control mean, column (2) the intention to treat effect of the first intervention arm, column (3) the corresponding standard errors, column (4) the intention to treat effect of the second intervention arm, column (5) the corresponding standard errors, column (6) is p-values of the differences between the coefficients, and column (7) the number of observations.

citizens; the rights of citizens to express themselves during police activities; and citizens' rights to receive equal treatment from police officers. (The exact wording of these questions can be found in Table B.2.) We measure responses for each statement using a Likert scale from 1 to 4, transform these items into a 0-1 scale (where 1 is the most positive answer possible), aggregate responses, and then standardize again to produce a procedural justice values index.

Table 8 surprisingly demonstrates that the intervention actually *undermined* police officer perceptions about procedural justice values in both treatment arms when compared to the control group. While we can only speculate, the experiment may have increased officer awareness about the importance of procedural justice principles while revealing that the intervention itself was insufficient to produce the breadth of changes required to transform police/citizen interactions. Higher expectations simply could not be met. A second explanation concerns officer incentives: because performance assessments for police officers are solely based on crime reports, arrests, and drugs or merchandise seizures—not the extent to which they internalized lessons about procedural justice, nor the quality of their interactions with citizens—officers in the treatment groups may have resented the exercise and rejected identification with these principles. If overstretched officers are forced to incorporate procedural justice values into their actions, misaligned incentives and fatigue may prevent societies from realizing the full potential gains of such interventions.

These findings supplement those presented in Section 5.5 on police officers' trust in citizens and their beliefs about citizens' trust in them. The lack of effects on all these dimensions, despite the positive outcomes on citizens' perceptions, emphasizes the difficulty of fostering institutional culture change within state bureaucracies and draws attention to potential risks concerning the sustainability of effective interventions over time.

6.4 WHY NO (STATISTICALLY SIGNIFICANT) EFFECTS ON CRIME?

One reason state actors seek to improve cooperation and public trust is to enhance their effectiveness. In the case of police agencies, this primarily involves reducing crime. We observe a potentially large but imprecisely estimated reduction in reported crimes, misdemeanors, and perceptions of insecurity, as well as an increase in the number of arrests. Although the intervention did not directly aim to alter crime rates in the short term, its impact on cooperation and public trust could have driven changes in these dimensions, which represent the ultimate goals of the police. Most coefficients are consistent with this narrative; however, the imprecision of these estimates renders the results inconclusive. This lack of statistically significant results could be attributed to several factors: an actual absence of immediate effects as impacts are more likely to materialize in the long run, limitations in crime statistics subject to underreporting and other sources of measurement error, or the possibility that the intervention may require further refinement to fully realize its potential.

7 CONCLUSIONS

States in developing countries often struggle to provide even the most basic services to their citizens, with citizen security being a major concern. The social and economic costs of crime and violence are substantial (e.g., Rozo 2018; Jaitman et al. 2017), resulting in lives lost and hindering growth and development. Consequently, strengthening citizen security institutions and ultimately reducing crime should be a core public policy priority. A precondition for improving policing in violent settings is public trust; trust in the police can foster public cooperation with police agencies, favoring their effectiveness (e.g., Blanes i Vidal and Kirchmaier 2017). Furthermore, given regular interactions between the police and citizens, enhancing the quality of these interactions may be essential for consolidating the legitimacy of democratic states (e.g., Blair et al. 2019).

While extensive transformations of policing institutions might be desirable, they are rarely successful. A more promising approach may involve finding low-cost, politically acceptable interventions to improve trust and service delivery, initiating virtuous cycles. We present results from an experimental evaluation of a low-cost policing intervention across five Colombian cities aiming to achieve this goal. Our findings indicate that the program increases public trust in the police and willingness-to-pay for policing services. These results are noteworthy, considering the intervention's short duration and low cost. Our analysis of mechanisms and heterogeneous treatment effects suggests that improvements in trust are likely driven by perceptions that the police in treatment quadrants demonstrated respect for established protocols, allowed citizens to voice their concerns, and were perceived as more neutral and impartial than their counterparts in the

control group. Additionally, while we cannot be certain how our results would generalize to other settings, we believe that the five Colombian cities where we conducted this experiment resemble other cities in both developed and developing economies facing high levels of crime and persistent trust deficits towards the police. We acknowledge that the endline survey was administered shortly after the intervention concluded, and therefore, we cannot determine whether these effects will persist over time.

In addition to the theoretical payoffs for understanding how societies can build trust between state authorities and citizens, our results hold relevance for public policy. Regrettably, we have few proven solutions to reduce crime in the developing world: prominent alternatives that seem to work in rich, industrialized countries show mixed results in developing countries (Collazos et al. 2021; Blair et al. 2021). Our study represents a step forward in identifying feasible and scalable policies to enhance police trust and legitimacy, and potentially, to contribute to crime reduction over the long term.

We also contribute to a broader conversation about declining trust in state institutions in democracies, which has facilitated the rise of outsider populists in several countries, with concerning consequences for democracy and human rights (Garbiras-Díaz 2022; Ivanov 2023). Unchecked ruptures in citizen trust have the potential to undermine the very foundations of democratic rule, leading to catastrophic consequences. Low-cost interventions such as the one we study here—both within and beyond the citizen security sector—may help renew faith in democratic institutions, allowing societies to escape costly cycles that undermine both public service delivery and institutional trust.

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Appendix

A PROOFS

A.1 PROPOSITION 1

Proof. The first-order conditions (FOCs) for the individual's maximization problem are:

$$\pi_T^B \cdot U'(c) - \pi_P^B = \lambda \tag{A.1}$$

$$\lambda \leq 0 \tag{A.2}$$

$$\lambda \cdot c = 0 \tag{A.3}$$

where λ is the Lagrange multiplier associated to the non-negativity constraint on c. Let $c^\star$ be a (interior) solution to the individual's problem for π_P^B and π_T^B. Then, from the FOCs, it follows that $\pi_T^B \cdot U'(c^\star) - \pi_P^B = 0$. Suppose the individual receives positive news that increase trust to π_T^N ($> \pi_T^B$). Let $c^{\star\star}$ be the solution to the individual's problem for π_P^B and π_T^N. If $c^{\star\star} < c^\star$, then $\pi_T^N \cdot U'(c^{\star\star}) - \pi_P^B \leq 0$, which, given the strict concavity of $U(\cdot)$, contradicts $\pi_T^B \cdot U'(c^\star) - \pi_P^B = 0$. Therefore, it must be that $c^{\star\star} \geq c^\star$. An analogous reasoning applies to positive news on π_P^B. ■

A.2 PROPOSITION 2

Proof. The first order conditions of the individual maximization problem are:

$$\pi_T \cdot U'(c) - \pi_P - \lambda_c = 0 \tag{A.4}$$

$$U(c) - d'(\pi_P - \pi_P^B) - \lambda_T^0 + \lambda_T^1 = 0 \tag{A.5}$$

$$\lambda_c \cdot c = 0 \tag{A.6}$$

$$\lambda_T^0 \cdot \pi_T = 0 \tag{A.7}$$

$$\lambda_T^1 \cdot [1 - \pi_T] = 0 \tag{A.8}$$

$$\lambda_c,\ \lambda_T^0,\ \lambda_T^1 \leq 0 \tag{A.9}$$

where λ_c, λ_T^0 and λ_T^1 are the Lagrange multipliers associated to the non-negativity constraint on c, and the constraints on π_T, respectively.

The proof proceeds in two steps. First note that, from equation A.5 and the assumptions on $U(\cdot)$ and $d(\cdot)$, it follows that, in equilibrium, $\pi_T \geq \pi_T^B$ and higher levels of c imply higher levels of π_T. (The relationship is strict among interior optima.) Then, note that a fall in π_P weakly increases the equilibrium level of c. Let (c^1, π_T^1) be the solution to the individual's problem for π_P^1, and

(c^2, π_T^2) the solution for π_P^2, with $\pi_P^1 > \pi_P^2$. From the optimality of (c^2, π_T^2), it follows that:

$$\pi_T^2 \cdot U(c^2) - \pi_P^2 \cdot c^2 - d(\pi_T^2 - \pi_T^B) \geq \pi_T^1 \cdot U(c^1) - \pi_P^2 \cdot c^1 - d(\pi_T^1 - \pi_T^B)$$
$$\pi_T^2 \cdot U(c^2) - d(\pi_T^2 - \pi_T^B) - [\pi_T^1 \cdot U(c^1) - d(\pi_T^1 - \pi_T^B)] \geq \pi_P^2(c^2 - c^1)$$

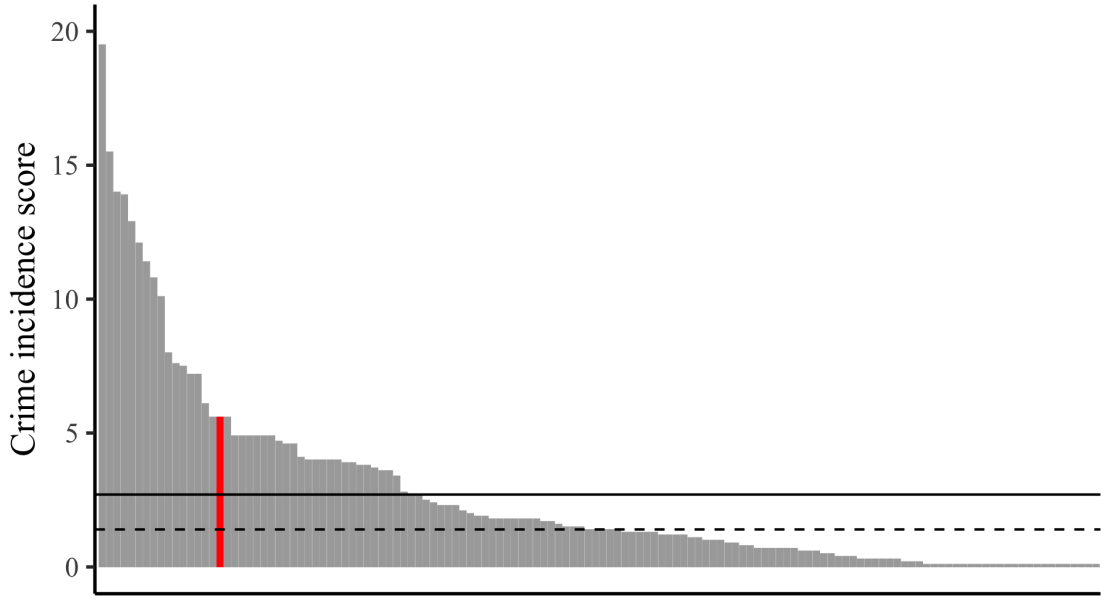
Suppose $c^1 > c^2$. Then:

$$\pi_T^2 \cdot U(c^2) - d(\pi_T^2 - \pi_T^B) - [\pi_T^1 \cdot U(c^1) - d(\pi_T^1 - \pi_T^B)] > \pi_P^1(c^2 - c^1)$$
$$\pi_T^2 \cdot U(c^2) - \pi_P^1 \cdot c^2 - d(\pi_T^2 - \pi_T^B) > \pi_T^1 \cdot U(c^1) - \pi_P^1 \cdot c^1 - d(\pi_T^1 - \pi_T^B)$$

which contradicts the optimality of (c^1, π_T^1) for π_P^1. Therefore, if $\pi_P^1 > \pi_P^2$, it must be that $c^1 \leq c^2$, and, from the first step of the proof, that $\pi_T^1 \leq \pi_T^2$. ■

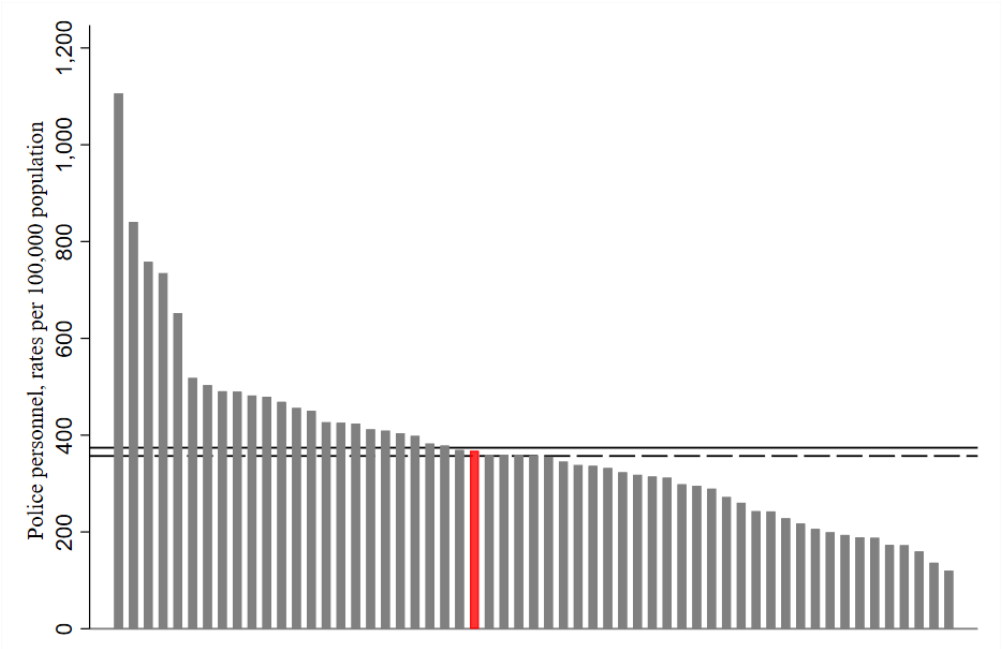
B SUPPORTING FIGURES AND TABLES

Figure B.1: International crime incidence for 136 countries



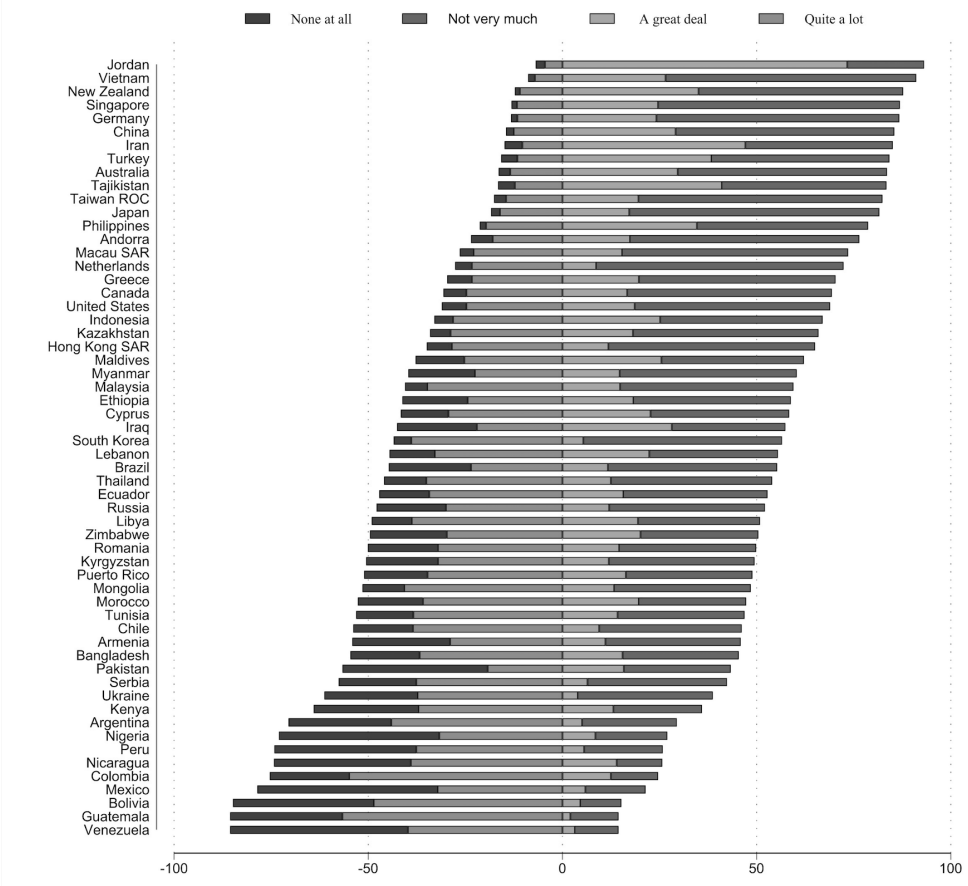
Notes: The solid line represents the mean and the dashed line the median for 136 countries. Colombia is represented by the red vertical bar. Crime incidence scores are from the World Economic Forum, depicting how relevant a problem is according to an executive opinion survey.

Figure B.2: Police personnel for 120 countries, rates per 100,000 population



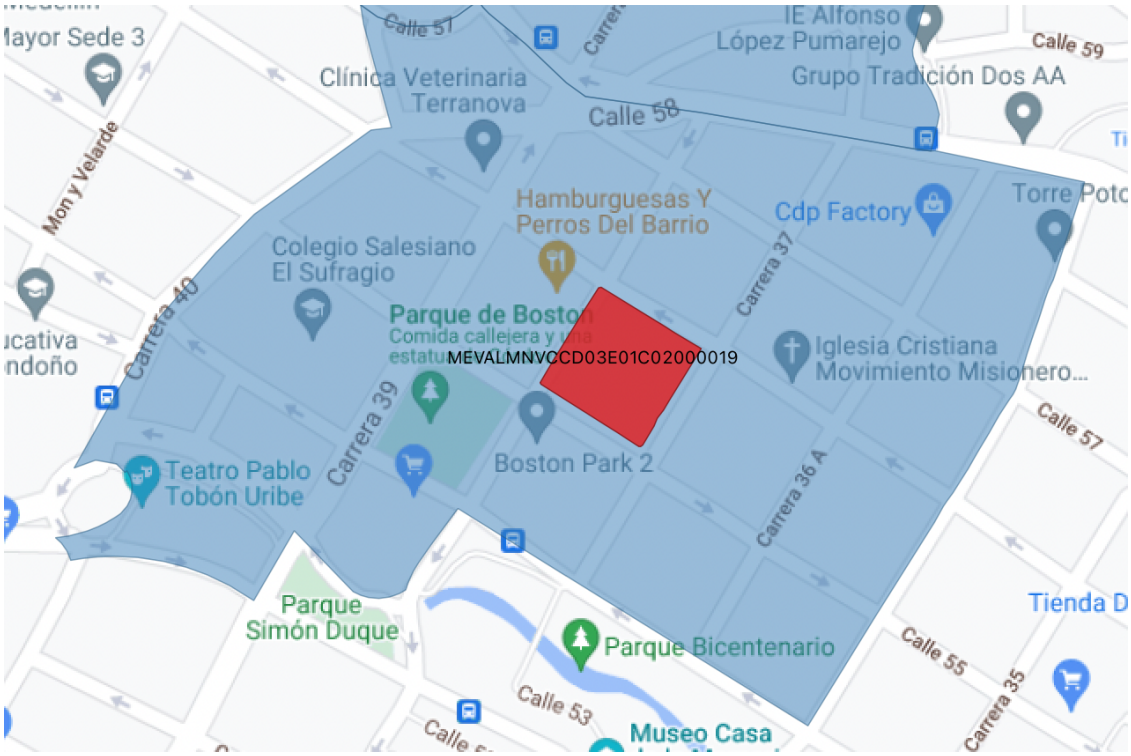
Notes: The solid line represents the mean and the dashed line the median for 120 countries. Data are collected from national authorities through the annual United Nations Crime Trends Survey (UN-CTS). Last year available.

Figure B.3: Citizen trust in the police per country



Notes: Data from the World Values Survey 2017-2022. We depict answers to the question "I am going to name a number of organizations. For each one, could you tell me how much trust you have in them: is it a great deal of trust, quite a lot of trust, not very much trust or none at all?"

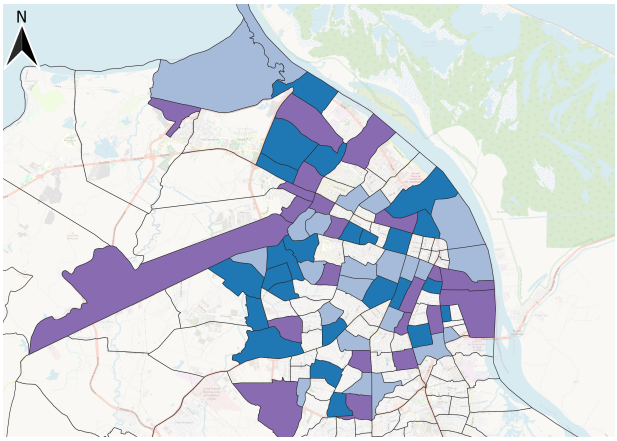
Figure B.4: Illustration of the map patrolling officers received.



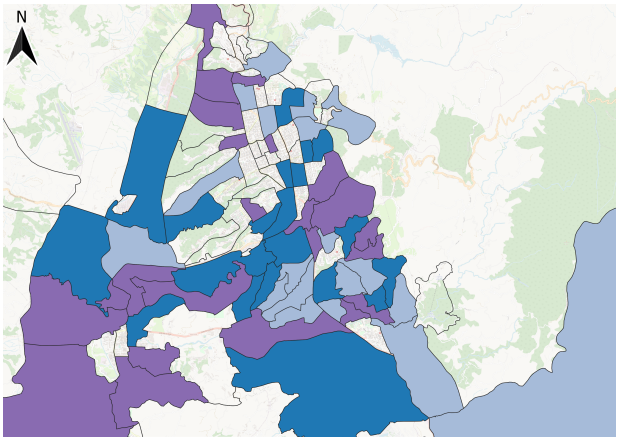
Notes: Police officers in the intervention arms received these maps twice a week to remind them of their targeted street block within the quadrant. The illustration is for a quadrant in downtown Medellín.

Figure B.5: Treatment assignment of police quadrants across cities

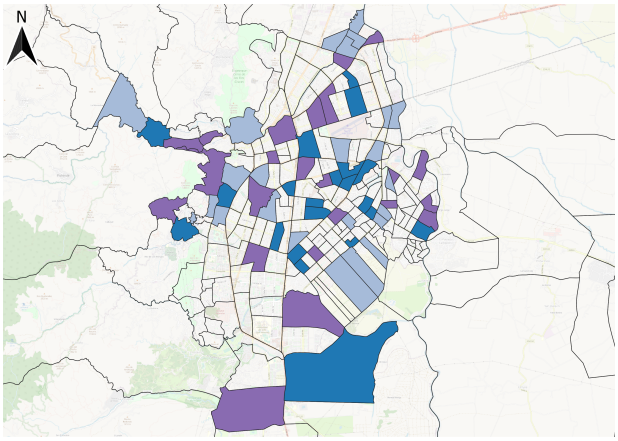
(a) *Barranquilla*



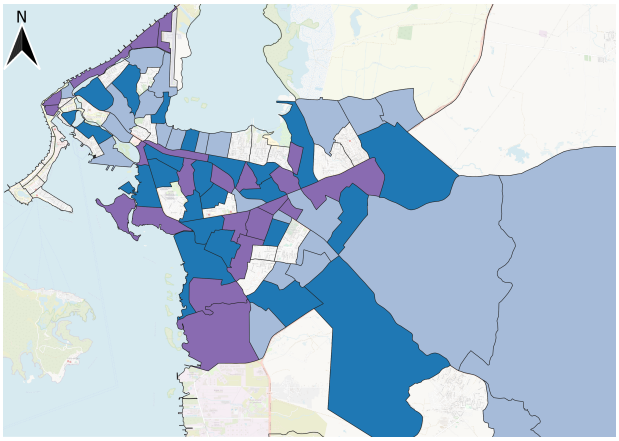
(b) *Bucaramanga*



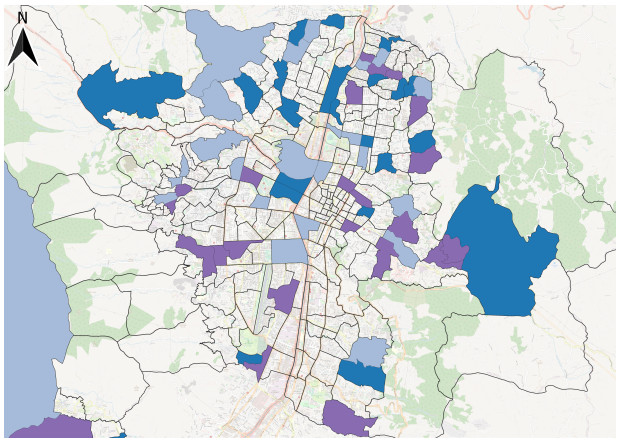
(c) *Cali*



(d) *Cartagena*



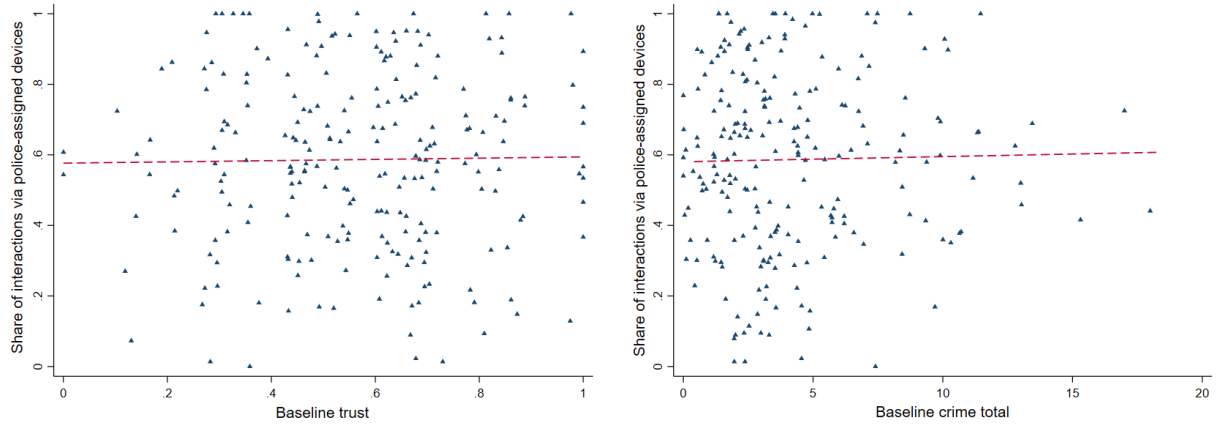
(e) *Medellín*



Notes: The figure depicts the final distribution of treatment assignments across cities. The dark blue shading denotes quadrants assigned to the core components of the COP Initiative, the light blue quadrants assigned to the core components of the COP Initiative and the information campaign, and the purple quadrants assigned to the control group. Non-shaded quadrants were not included in the experimental sample.

Figure B.6: Interaction of treatment officers vs. initial levels of trust and crime

(a) *Interactions by baseline trust* (b) *Interactions by baseline crime*



Notes: The figure shows the average share of interactions via police-assigned devices by baseline levels of baseline trust (a) and crime (b). The red dotted line indicates the fitted values.

Table B.1: Messages of the information campaign - COP Initiative

Greeting and listening is a simple formula that opens the door to establishing relationships of trust and credibility with the community and other institutions. Remember to use them.
Listening is essential to have a close encounter with the other and greeting is an expression of respect and affection. Both are important to fulfil our duties and obligations.
Greeting during the shift with a friendly disposition toward others facilitates a willingness to respond to the needs of the community.
A greeting is a way to project respect and attention for the other, addressing each other in a friendly and cordial way makes a difference and demonstrates a willingness to work and closeness to the community
By showing respect and tolerance towards other institutions, entities and organizations with which we relate, we work in co-responsibility and put our work ethic into practice.
We value the work they do every day for the safety and tranquility of citizens. Their effort is valuable for the institution and citizenship.
Listening attentively to our interlocutors is a sign of respect and a useful tool to provide solutions for coexistence and security.
Listening is to attend to and understand the needs of the community, guaranteeing an action that contributes to coexistence and security.
Listening is putting ourselves in the position of other institutions, understanding their interests and needs to provide them with the support they need.
When we are timely in our response to the needs of citizens, we act in coherence with our commitments, duties and obligations.
When we act in co-responsibility with the community, we strengthen relationships of trust, respect and admiration for our work.
Acting in co-responsibility with other people is the step towards building a prosperous and peaceful country.
Greeting and listening are ways to be coherent with the actions we carry out with the community, working together for coexistence and security.
Acting in our service in co-responsibility with other institutions leads to coherent behaviour between what is thought, said and done.
Cordially greeting the community is the beginning of a dialogue where respect and working together are the starting point for peaceful coexistence and security.
Having an attitude of service and offering a friendly greeting to other institutions and entities builds relationships where credibility and trust are the basis for working in co-responsibility.
Represent your institution by listening attentively to their needs, and understanding their observations to build plans that contribute to the coexistence and security of citizens.
Listen respectfully to the reality of other institutions to provide an efficient response to the needs expressed and thus, together, find solutions that will lead us to build a peaceful country.
Represent your institution acting jointly with the community in the prevention and construction of plans that improve the coexistence and security of all.
Acting in co-responsibility with other institutions and entities, we encourage integration and teamwork contributing to improving the country.
Greeting and listening are behaviours that we must practice daily to work together with the community and other institutions for the benefit of coexistence and security in our country.
By greeting people and demonstrating an attitude of service we can establish a dialogue where the community is integrated with the National Police, working together for the benefit of coexistence and security of citizens.
With a positive attitude and a cordial greeting to other institutions, respect and trust are generated to work in co-responsibility in the construction of the country.
Listening to the needs and contributions of the community, we work as a team to improve the coexistence and security of citizens.
Establishing dialogues based on kindness, respect and willingness with other institutions and entities facilitate the union of efforts to work together for the coexistence and security of the country.
Co-responsibility with the community is the key to acting together in the prevention and construction of coexistence and security for our country.
The integration between the National Police and other institutions allows us to act in the construction of a prosperous and peaceful country.
Remember to greet, listen and act with the community and other institutions to strengthen trust and credibility in our country.
By acting jointly with the community, we build preventive actions and are forceful in providing a service characterized by timeliness.
The National Police prepares daily so that the police service provided meets the expectations and needs of the community through a respectful and cordial greeting, listening as a starting point for understanding and acting consistently with the duties and commitments of the institution.
That greetings, listening and acting coherently will be the starting point for relationships based on respect and co-responsible work between the National Police and other institutions.
We are open to listening attentively to the needs and contributions that the community has to work together for coexistence and security.
The interrelation with other institutions is our strategic ally to build a prosperous and peaceful country, the direct sources of knowledge of the context, needs and expectations. In the National Police, we act consistently with our commitments, duties and obligations in a respectful, effective and close manner.

Notes: The messages were sent daily to patrolling officers within quadrants assigned to the second intervention arm (the core components of the COP Initiative plus the information campaign).

Table B.2: Index components

Procedural justice index	
	1. When the police carry out an intervention, they do so according to their responsibilities. 2. When the police carry out an intervention, the agents make clear their actions and explain the procedure. 3. Citizens can express themselves in the middle of a police procedure and ask for explanations. 4. Police treat all citizens equally, regardless of race, gender identity, or income level.
Effectiveness index	
	1. To what extent do you agree with the following statement? "When someone requests the help of the policemen of the quadrant, they arrive on time to attend to their request." 2. In a hypothetical scenario in which your cell phone is stolen on public transportation, without harming you, how willing would you be to make a formal complaint to the authorities? 3. In a hypothetical scenario in which someone in your community has their cell phone stolen on public transport, without harming them. How willing would that person be to make a formal complaint to the authorities?
Integrity index	
	1. How sure are you that a member of the police would be willing to receive a bribe, gift or favor in exchange for not applying a sanction or allowing an illegal act? 2. How sure are you that some members of the police would be "cooperating" with criminal actors to help them evade the law? 3. How sure are you that if a member of the police commits a disciplinary offense, s/he will be investigated and sentenced by the National Police? 4. How sure are you that a member of the police is in a store or restaurant in your neighborhood consuming some products and leaves without paying? 5. In any encounter between you and a member of the police, do you think you would be at risk of the police using excessive force?
Convergence of values index	
	1. In your opinion, how necessary is the police for the country to function properly? 2. According to what you have heard from your neighbors, how necessary do they consider the police to be for the country to function properly? 3. How much do your ideas of good and evil coincide with that of the members of the Colombian National Police? 4. How much do you think the ideas of good and evil of the people in your neighborhood coincide with that of the members of the Colombian National Police?

Table B.3: Baseline summary statistics and balance tests

Baseline covariate	Sample	Test of randomization balance					
		COP initiative		COP initiative + Information campaign		Combined treatments	
	mean	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A. Crimes (N=345)							
Reported property Crime (2012-2019)	5,119	-2,585*	1,444	-0,707	1,691	-1,640	1,408
Reported violent crime (2012-2019)	0,331	-0,190	0,199	-0,095	0,207	-0,142	0,187
Panel B. Street block characteristics (N=345)							
Count of units with residential use	50,297	5,305	6,302	1,532	6,287	3,406	5,504
Mixed-use unit count	0,669	-0,080	0,120	-0,214*	0,127	-0,148	0,106
Count of units with non-residential use	2,663	-0,048	0,577	0,040	0,519	-0,004	0,478
Housing counts	50,965	5,225	6,312	1,318	6,302	3,258	5,516
Household count	44,834	4,196	5,512	1,948	5,433	3,064	4,762
Panel C. Income (N=345)							
Count of households with electric power	43,206	4,014	5,397	1,680	5,259	2,839	4,639
Count of households at lowest income	7,209	1,133	1,643	0,130	1,605	0,628	1,420
Count of households at low income	11,773	1,082	2,650	-1,364	2,723	-0,149	2,305
Count of households at mid-low income	11,424	0,673	3,810	1,130	3,868	0,903	3,380
Count of households at mid-high income	7,456	-1,405	2,852	1,814	2,983	0,216	2,487
Count of households at high income	1,936	-1,794	1,142	-0,838	1,298	-1,313	1,112
Count of households at highest income	3,203	4,409	3,525	0,857	2,852	2,621	2,625
Panel D. Sociodemographic census data (N=345)							
Count of residents	138,849	15,506	15,774	8,129	16,067	11,793	13,829
Count of men	65,157	6,689	7,327	3,282	7,485	4,974	6,441
Count of women	73,692	8,817	8,496	4,847	8,639	6,819	7,433
Count of 0 - 9 years old	16,910	1,471	1,994	0,151	2,102	0,806	1,799
Count of 10 - 19 years old	19,631	2,275	2,073	0,962	2,235	1,614	1,866
Count of 20 - 29 years old	23,977	1,767	2,727	1,980	2,891	1,874	2,470
Count of 30 - 39 years old	21,305	2,076	2,896	0,285	2,906	1,174	2,566
Count of 40 - 49 years old	17,535	2,031	2,260	1,876	2,329	1,953	1,988
Count of 50 - 59 years old	17,105	1,803	2,328	0,847	2,223	1,322	1,946
Count of 60 - 69 years old	12,032	2,083	1,610	1,454	1,498	1,766	1,327
Count of 70 - 79 years old	6,616	1,717	0,968*	0,549	0,920	1,129	0,804
Count of 80 and over	3,738	0,285	0,561	0,025	0,543	0,154	0,466
Count of with up to primary school	25,738	2,647	3,441	-1,154	3,574	0,734	3,032
Count of with up to secondary school	17,340	3,689	5,356	7,908	5,356	5,813	4,652
Count of with up to undergraduate degree	34,907	5,128	5,794	5,797	6,152	5,465	5,225
Count of with up to postgraduate degrees	4,890	0,894	2,764	0,537	2,548	0,714	2,233
Count of with no education	2,733	-0,274	0,367	-0,474	0,403	-0,374	0,341
Panel E. Individual respondent characteristics (N=2,097)							
18-24 years old	0,121	-0,001	0,015	-0,005	0,016	-0,002	0,013
25-34 years old	0,170	-0,042**	0,017	-0,005	0,019	-0,024	0,015
35-44 years old	0,177	-0,026	0,018	-0,009	0,018	-0,018	0,016
45-54 years old	0,181	-0,007	0,019	-0,020	0,018	-0,006	0,016
55-64 years old	0,184	0,022	0,017	0,003	0,017	0,013	0,015
65-74 years old	0,121	0,023	0,014	0,037**	0,016	0,030**	0,013
75 and over	0,047	0,015*	0,009	-0,002	0,009	0,007	0,008
Panel F. Police characteristics (N=2,123)							
18-25 years old	0,078	-0,024*	0,014	-0,017	0,014	-0,021	0,013
26-40 years old	0,884	0,011	0,017	0,012	0,017	0,011	0,015
41 and over	0,038	0,014	0,010	0,006	0,009	0,010	0,008
0-10 years of experience	0,473	-0,018	0,025	-0,020	0,024	-0,019	0,021
11-20 years of experience	0,515	0,007	0,025	0,013	0,025	0,010	0,022
21 or more years of experience	0,012	0,011*	0,006	0,007	0,006	0,009	0,005

Notes: *** p<0.01, ** p<0.05, * p<0.1. Column (1) reports the sample mean. Columns (2)-(7) report the coefficients and standard errors from ordinary least squares regressions of each baseline covariate on three indicators: assignment to each intervention arm separately and assignment to either intervention arm, controlling for fixed effects reflecting our different randomization strata.

C ADDITIONAL ANALYSES

C.1 ROBUSTNESS

We study the robustness of our results on the main outcomes to different adjustments in the model specification and inference. We report the results in Table C.1. Panel A reports the results using covariates. To limit our discretion, we use the double lasso method proposed by Urminsky et al. (2019) to select covariates from the full choice set of baseline controls from Table B.3. The effects on citizen and police outcomes remain broadly the same, both in terms of magnitude and precision. Panel B reports the results using randomization inference p-values (Fisher 1935). The main advantage of randomization inference is that this approach is agnostic regarding the structure of spatial clusters, common to urban experiments (see e.g., Blattman et al. 2021; Blair and Weintraub 2023). The intent to treat effects on all our main outcomes remain statistically significant at conventional levels.

Table C.1: Robustness analyses

	Control mean (1)	ITT (2)	S.E. / RI p-value (3)	N (4)
Panel A. Including double lasso control variables				
Willingness-to-pay for policing services	0.469	0.031**	0.015	2,097
Public trust	0.562	0.034***	0.011	2,097
Trust in citizens	0.690	0.009	0.010	2,123
Second-order beliefs about citizens' public trust	0.633	-0.005	0.012	2,123
Panel B. Randomization inference p-values				
Willingness-to-pay for policing services	0.469	0.036***	0.000	2,097
Public trust	0.562	0.039***	0.000	2,097
Trust in citizens	0.690	0.013	0.391	2,123
Second-order beliefs about citizens' public trust	0.623	0.001	0.953	2,123

Notes: *** p<0.01, ** p<0.05, * p<0.1. The table displays three robustness analyses on specification and inference: inclusion of controls (panel A), estimating randomization inference p-values (panel B) and correcting p-values for multiple hypothesis testing (panel C). Column (1) presents the control mean, column (2) the intention to treat effect, column (3) reports standard errors (panel A), randomization inference p-values (panel B), and sharpened q-values (panel C). Column (4) reports the number of observations.

C.2 SPILLOVERS

Appendix Table C.2 reports spillover effects. We split the sample of control units by half—at the median distance, hence creating two groups: a spillover and a pure control group. Because

assuming the presence of spillovers leads to fuzzy clustering patterns, we estimate exact p-values using randomization inference. We see no evidence of either adverse or beneficial spillovers.

Table C.2: Spillover effects with randomization inference p-values

		COP Initiative		Spillovers		
	Mean	ITT	p-value	ITT	p-value	N
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Citizen survey						
Willigness-to-pay for policing services	0.469	0.054	0.045	-0.036	0.318	2,097
Public trust	0.562	0.022	0.280	0.035	0.200	2,097
Panel B. Police survey						
Trust in citizens	0.699	0.028	0.116	0.017	0.282	2,123
Second-order beliefs about citizens' public trust	0.699	0.028	0.116	0.017	0.282	2,123

Notes: *** p<0.01, ** p<0.05, * p<0.1. The table displays the spillover effects of the intervention. Column (1) presents the control mean, columns (2) and (4) the intention to treat effect and the spillover effects, columns (3) and (5) the corresponding p-values using randomization inference, and column (4) the number of observations.