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Crime prevention in Colombia: A pilot study

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ABSTRACT

A need to develop effective crime prevention strategies has been recognised throughout history. Due to the financial constraints of criminal justice systems, there are major global efforts to ensure that the strategies employed are highly cost-effective, rational, and evidence-based. To aid such efforts, this study explores the impact of a collaborative, community-oriented crime prevention initiative in Colombia. Empirically, it is based on pre- and post-intervention views of police officers and citizens (assessed by questionnaires) in areas covered by the initiative and control areas, complemented with focus group interviews and crime statistics. The police officers appreciated the greater autonomy provided by the approach and associated changes in organisational culture. The citizens had substantial trust in the police, despite high perceptions of general disorder and personal fear of crime. The preliminary findings indicate that the approach has had some promising effects, but several aspects require more attention.

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Crime prevention; problem-oriented policing; police visibility; hot spots; autonomy

Introduction

Needs for effective crime prevention strategies have been globally recognised throughout history (Moss, 2009). State actors (politicians, policy-makers and practitioners such as the police) are key agents in their formulation and implementation. However, citizens also play an important role. The main goals for all the actors are to minimise crime rates and maximise safety, however crime problems are complex and constantly changing (Tilley, 2009). Moreover, its prevention is costly and all criminal justice systems globally face financial constraints (despite wide variations in resources), so there are major efforts to develop highly cost-effective, evidence-based, scientifically verified strategies (Farrington, 2003). Ideally, the approach should be based on lessons learned from randomised control trials, but they are difficult to implement in practice for several reasons. For example, obtaining sufficient participants is difficult and rigorous blinding is problematic in crime prevention studies (Tilley, 2009). Experimental manipulation also involves several steps that can be difficult to implement, so other approaches to test strategies have been applied, such as quasi-experimental approaches with relaxation of participants' random assignment to groups (Braga & Weisburd, 2010).

A crime prevention initiative in Colombia is applying a design that incorporates a combination of elements from existing policing models with adaptations tailored to the local context and feasibility constraints. It is part of a larger collaborative project between the Swedish and Colombian national police (Policia Nacional de Colombia, PNC) intended to support the PNC's transformation and modernisation, including increasing closeness to citizens and a shift towards more civil nature. This paper presents a study of a pilot project of the initiative.

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Purposes and structure of the study

Purposes of the pilot study were to gauge the initiative's impact by assessing police officers' and citizens' opinions (as measured with questionnaires and expressed in focus groups), and changes in crime trends, then identify effective measures for inclusion in a larger-scale crime prevention program. More specifically, we addressed the following questions.

- (a) What changes in police work induced by the intervention did police officers perceive?
- (b) How did it affect police-community relations?
- (c) How did it affect subjective and objective measures such as perceptions of safety and reported crime?
- (d) What lessons can be learned for application on broader scales and in other contexts?

The rest of the paper is structured as follows. The next section summarises theory and findings regarding police organisations' approaches for tackling crime. The following sections describe the Colombian context and the crime prevention initiative. The design and methodology of the empirical investigation are then presented, followed by the results. Lastly, conclusions and suggestions for future studies are presented.

Models of policing and crime prevention

The optimal policing approaches to minimise crime have been intensely discussed in academic literature. A major distinction is between reactive policing (the standard model) and more proactive policing approaches (Weisburd & Eck, 2004). The standard model involves the use of generic strategies to combat crime, randomly distributed patrols within the community, rapid response to calls, and/or intensive enforcement without much consideration of the situation and context. Other models include efforts to develop close relations with the community and engage its members in solutions (community policing), concentration on specific areas with high criminal activity (hot-spot policing) and focusing on root of problems (problem-oriented policing) (Weisburd & Eck, 2004). Each model rests on different assumptions regarding key factors.

In the community policing approach, citizens' perceptions are regarded as important factors, due to the assumed importance of legitimacy, public support for the police to do a good job, and procedural justice (Donner et al., 2015). In practice, it may involve activities such as regular police-community meetings, foot patrols, and neighbourhood watch schemes. The underlying assumptions have been tested in various studies. For example, Hawdon et al. (2003) investigated associations between variables intended to represent aspects of community policing (such as informal contacts between police and citizens) and outcomes such as police effectiveness and trust in the police (an element of procedural justice) in South Carolina. They found that relations between police and citizens were more complex than the model suggests: community policing tactics facilitated the service element of police work and reduced tensions between the police and citizens, but did not increase police legitimacy. Moreover, they found that community policing tactics were related to police visibility, with a correlation coefficient of .483 ($p < .001$), which increased the citizens' perceptions of police effectiveness in controlling crime and trustworthiness (Hawdon et al., 2003). Other studies have clearly shown that community policing plays a role in improving citizens' attitudes towards the police and seeing police as having legitimate authority, but there is less clear evidence that it improves police officers' job satisfaction or reduces crime (Crowl, 2017).

The assumptions underlying the hot-spot policing model are based on place-based research in criminology and notions of crime and place rooted in social disorganisation theory. A key observation is that crime is concentrated in specific areas of cities and not evenly distributed (Shaw, 1969). Thus, the fundamental idea is that focusing on specific places (hot spots) and small geographic units such as street blocks or addresses can be more effective than focusing on criminal

offenders, as in the standard model (Shaw, 1969; Bursik, 1988; Weisburd et al., 2009). Police visibility also has recognised importance, in accordance with the classical criminological idea that humans are rational and apply “hedonistic calculus” when contemplating commission of crimes. Thus, considering that criminals apply the same cognitive strategies at such times as when making other decisions may be highly valuable (Cornish & Clarke, 2014). Empirical support for this rational choice concept includes findings that crimes are more frequent in the absence of guardians, and guardians’ visibility is important for reducing crime rates (Walsh & Jorgensen, 2018). Moreover, the hot-spot policing model, focusing on micro-spatial level of analysis and intervention, has shown promising results in crime prevention initiatives. Various types of crime are not randomly distributed, and considering their spatio-temporal concentration is valuable (L. W. Sherman et al., 1989; Ratcliffe, 2004). The model’s effectiveness for preventing crime has also been supported by reviews of studies with randomised control trial and quasi-experimental designs (Braga, 2005; Braga et al., 2019).

However, although overall results support the hot-spot policing model, the findings provide little information about the optimal police practices for specific types of crime or the duration of effects (Weisburd & Telep, 2014). In one of few documented examples of hot-spot policing interventions in Latin America, the PADO project involving 525 police officers in Montevideo (Uruguay) reduced the frequency of targeted crime (robbery) by 23% (Chainey, et al., 2021). Potentially important factors mentioned by the cited authors included police motivation, since police officers assigned to the PADO unit received a financial bonus, and how they operated in selected hot spots, since particular attention was paid to coordination (Chainey, et al., 2021). In another interventional study in the Colombian city Medellín, hot-spot policing had most impact on car thefts, and improved security perceptions (Collazos et al., 2021). The study, which focused more on ways to define geographic hot spots than on crime prevention strategies of the police *per se*, also concluded that contextual factors (e.g., the extent of control by criminal organisations and the police-to-population ratio) influence the outcomes and more research is needed. Thus, as most studies of such initiatives have focused on Anglo-Saxon or Western police organisations and communities, more investigations of their efficacy in other contexts are required.

The problem-oriented policing (POP) approach focuses on resolving rather than merely reacting to police-related problems by identifying ways to change conditions that foster recurring crime problems (Goldstein, 1979). It may involve various elements and have various goals, but effectiveness in reaching targeted goals is always a key criterion. Generally, police officers are not the only actors in POP initiatives (Tilley, 2009), others may include shop owners, restaurant owners or taxi-companies when addressing robberies. The POP approach is based on four practical steps: scanning, analysis, response and assessment (SARA). Initially, the background to a problem is thoroughly scanned. At this stage the participants identify potential problems and harms – they may develop some hypotheses that they later investigate but they do not discuss possible solutions at this stage. All obtained information is then analysed to formulate responses, often involving action by all partners in collaboration with the police. The final step is documented assessment of the whole process from problem identification to responses, their effects, and possible modifications of the approach to enhance future responses (Clarke & Eck, 2003). Thus, POP is a straightforward approach that can be conveniently divided into four practical steps, even if they are not entirely linear, and several studies have reported successful POP initiatives (Weisburd et al., 2010; Taylor et al., 2011).

However, several problematic aspects of the approach have been noted. For example, scanning and understanding problems are often more complex steps than they may seem because crimes and associated factors constantly change (Tilley, 2009). In addition, partnerships require trust between the actors, which might not be established, responsibilities may be poorly assigned, and noted problems may be neglected or played down (*ibid.*). Other practical obstacles lie in the process of identifying problems that are amenable to preventive intervention by police and/or other participants (Braga, 2010).

Although the models have been presented as different approaches there are substantial overlaps, and they may be referred to as strategies, models or approaches in the literature (Cordner & Biebel, 2005). However, categorisation facilitates broad consideration of possible ways of organising police work, and differences between them. For instance, if the police need support from the citizens, as in community policing, how does this differ from the collaboration with different actors in POP? One difference is that good relations with citizens generally are cherished in community policing to maximise numbers of citizens willing to act as witnesses and support the police by providing information when problems arise in the community. In contrast, POP focuses on more specific collaboration, targeting specific actors with high apparent potential to help solve identified crime problems.

In practice, other aspects may also need attention, including the compatibility of the basis for any model of policing with the existing organisational culture. Important factors here include the implicit guidelines for police officers' actions in specific situations, and organisational influence through aspects such as selection, training and directions regarding how police work should be carried out. Contemporary discussions of police work address not only what police forces do to reduce crime, but also how they do it, recognising the importance of police legitimacy (MacVean & Neyroud, 2012). Here, procedural justice research has contributed on how citizens' perceptions of fairness play a significant role to maintain a good police-citizen relation (Tyler, 2003). At the individual level, policing is a complex task where several abilities are often considered necessary and they have to fit the organisational culture even if some competences are seen as universal (Inzunza, 2016). When a new strategy is applied, it is valuable to see how the individual's autonomy relates to the organisation especially if a different type of responsibility is required from a police officer. Using the two concepts of organisational professionalism and occupational professionalism, De Maillard and Savage (2021) discuss how organisational pressure on individuals can be counterproductive in endeavours such as police investigation. If the organisation has a strong focus on quantitative dimensions when measuring success such as clear-up rates and impose too much control in police officers' daily work, the professionals' expertise may be reduced. Moreover, when implementing a strategy such as POP it is important to consider responsibility more broadly, recognising that reducing crime is a responsibility not solely of the police but also of other actors within society.

Informal social control, as expressed in concepts of collective efficacy and mobilisation of citizens to support complex aspects of police work, is another important element of various models (Kubrin & Weitzer, 2003). Collective efficacy has been defined as *the mutual trust together with the willingness to intervene for the common good of the neighbourhood* (Sampson et al., 1997). Previous studies about the ability of neighbourhoods to exercise social control have shown that if expected factors related to high offending such as disadvantage or low residential stability are present in a neighbourhood but also trust and closeness between citizens, citizens tend to experience lower rates of violence than the expected ones (Sutton et al., 2008). A key factor of collective efficacy is the propensity of a neighbourhood community to act in a given situation, for instance, when a youngster is disrespectful to an elderly citizen. In high crime areas some pertinent activities may be difficult or dangerous for citizens, but attempts to foster social cohesion (a closely related construct) may be helpful (Kubrin & Weitzer, 2003; Rhineberger-Dunn & Carlson, 2009).

Police-community relations are key elements of the pilot project considered here, thus it is important to consider how they can be measured and how they may be affected by an intervention such as hot-spot policing.

Background to the current study

The Colombian police in context

The PNC was created in 1891 and is of civil nature, not part of the military forces, according to the constitution of 1991. It is responsible for public security with national jurisdiction and no regional or local divisions (Vásquez, 2013). The PNC has also been described as being distanced from

military and political parties, with its own interests and aims (ibid.). There are approximately 160,000 police officers (www.policia.gov.co) under the Ministry of Defence, ranked hierarchically according to a military model (ibid.). This can be seen as a legacy of many years of internal conflict and joint efforts of police and military forces to combat highly organised criminals such as drug cartels (Giménez-Santana et al., 2018).

Regarding everyday crime, problems with urban crimes prompted an initiative in 2010 called the Plan Nacional de Vigilancia Comunitaria por Cuadrantes (García et al., 2013). This plan combines ideas from community policing and POP, aiming to change routine police practices and improve closeness to the citizens (García et al., 2013). The initiative is ambitious, and there are clear needs to evaluate its progress and identify further ways to develop the police and enhance operational strategies, for example, in practical crime prevention and measurement of results.

Pilot project

The crime prevention project reported here is part of the mentioned collaborative initiative between the Swedish and Colombian police with the aim to find ways of applying strategies to reduce crime and establish closer contacts with citizens. The researchers held several meetings with representatives of both forces regarding crime prevention in Colombia and types of crime that the citizens generally regarded as most problematic. It was concluded that preventing personal robbery should be prioritised because it was a highly ranked problem. Another discussion concerned the lack of visibility of the police, who were mainly involved in reactive policing before the initiative. In several meetings recent data were presented showing concentrations of different modalities of robbery in time and place, and these crimes' recurrence. The meetings resulted in decisions to implement a 15-minute random hot-spot policing strategy (Telep et al., 2014). A hot-spot strategy was not totally new, but the idea of randomly visiting hot spots for 15 minutes was novel in Colombia.

Visibility of police officers to the citizens and correct information about the local problems were regarded as equally important to more focused policing. Thus, important elements to consider were the appropriate community-oriented /POP-type activities in the 15-minute visits to hot spots, and the communication and collection of information from key actors in them. The police officers generally reached the hot spot areas by motorcycle, the most common form of transportation in these areas, although some could use a car and then patrol the areas by foot. The research team had several discussions on the importance of tailoring responses to the contexts since the modus operandi for specific crimes could be very different. The national structure of the police was valuable here. Police officers worked three 8-hour shifts and were assigned to the 15-min hot-spot policing when they were not engaged in other activities. The number of police officers could be affected by vacations, or other such factors. The 15-minute approach also required regular tactical meetings since police officers could raise questions about issues such as the importance of keeping to the schedule. Fifteen minutes was treated as an approximate time for visits, which should be extended if an officer was having an informative conversation with a local actor, for example, or curtailed if an urgent situation requiring police assistance arose elsewhere. In collaboration, we decided to focus mainly on police performance to investigate the feasibility of implementing envisaged strategies in Colombian contexts. This also required evaluation in a pilot study to learn more about difficulties and possibilities of applying them on larger scales.

Representatives from the selected pilot areas in Colombia had several meetings with representatives of Swedish police who were applying the approach in rural and urban areas with high crime rates in Sweden. In these meetings the research team described the POP methodology and the importance of both collaborating with other actors in the society and increasing closeness to the citizens. Other discussions concerned the problems to focus upon, and the difference between social and situational crime prevention (Lab, 2019). There is a tendency to focus on root causes of crime when trying to develop responses to problems, which may be far beyond the scope of conventional policing (Braga, 2010; Sidebottom et al., 2020). In this respect, the research team and Swedish police

officers were intrigued to hear that in Colombia police are not only responsible for tackling crime but also for fostering “convivencia” (harmonious coexistence), through activities that improve public order among citizens, such as discouraging alcohol consumption in public and promoting good relations among neighbours.

The research team also noted that the Colombian police had a hierarchal structure that could be an obstacle, although we considered the organisation to be very dynamic and thus open to change. We therefore pointed out the importance of listening to the opinions of local police officers, who knew their areas very well, when deciding how to choose hot spots, in combination with other factors, such as crime statistics and citizens’ perceptions of problems in their neighbourhoods.

These meetings provided valuable mutual understanding of what could be done differently during the pilot project, in which regular visits were conducted to detect problems when implementing the new strategy and possible solutions. For instance, we noted that officers are quite often relocated within the organisation for various reasons. A short introduction kit as a text folder was developed and made available in each station so key POP content could be presented to new police officers who had been relocated in addition to holding regular meetings in which Swedish police officers gave presentations and engaged in discussions. Text in the folder presented several strategic steps for reducing crime in collaboration with other actors and references to Felson’s crime triangle (Sutton et al., 2008). Focusing on particular street segments (which are 90 m long in Medellín, on average) can be important to establish and maintain responsibility (Collazos et al., 2021). However, there was notable variation in identified hot spots in this pilot project. They could be small street segments in some cases and small clusters of streets in others, depending on how the local police defined the problems and how they could work most effectively. There were also differences between urban and rural environments. The final decisions were made by the local police officers in collaboration with crime analysts.

To summarise, hot-spot policing was implemented in the pilot project (from the start of February until the end of September 2019) after several seminars with the police officers involved about optimal ways to work in hot spots, in accordance with the POP approach and SARA model (Sidebottom et al., 2020). The scanning element involved gathering information about types of problem that should be prioritised from several sources. The analyses focused on understanding the problems in more detail and potential responses, considering practical matters, such as working with national police, and associated requirements such as coordination of officers working in different districts. It should also be mentioned that tactically much of the police work was similar to previous ways of doing the job. A difference was an emphasis on the importance of seeking solutions with other actors outside the police when possible, maintaining and improving police-community relations with a strong focus on police visibility, and collecting information regarding the local crime situation. According to previous studies and experience of the Colombian policing context, various projects are often initiated, but seldom assessed to learn from them, which is a crucial step in SARA-based POP (Braga, 2010). The rest of this paper is devoted to this crucial, but often neglected phase.

Data and methods

Design

Based on best practice recommendations from prior studies, the present study was designed to evaluate both the process and impact of the crime prevention project (Tilley, 2009; Braga, 2010; Lab, 2019), applying an explorative approach, focused on policing. However, it was not possible to follow all the recommendations due to financial, organisational and practical constraints. Most importantly, the 8-month trial period (February to September 2019) was shorter than the period advocated by the research team, and responsibilities associated with previous ways of working were not reduced or paused (as recommended) in all participating stations. The pilot project was

implemented in two stations in urban areas (Medellin and Villavicencio) and three in rural areas (Santa Fe de Antioquia, Puerto López and Villa de Leyva). The two urban stations had control areas assigned within the same city. The main aim was to elucidate effects of implementing the selected strategy in an organisation with a different way of conducting police work, often as the only organisation combating crime or other social problems. We used a questionnaire to investigate the police officers' perceptions of several elements at both the beginning (T1, February 2019) and end (T2, September 2019) of the pilot project, and obtained complementary information from focus groups half-way through it. We also investigated perceptions of citizens in the stations' neighbourhoods about the police's way of work and changes during the pilot period using pre- and post-questionnaires that were available via a web-link for 3 weeks. The information citizens provided through the questionnaires was also complemented with focus group interviews with social leaders from the neighbourhoods.

The main objectives of arranging focus groups of police officers and citizens were to explore the general progress of the initiative, their understandings of key concepts and constructs used in the questionnaires (see Appendix 1, Table 1), and the correspondence between these understandings and intended meanings. Another objective (highly relevant for validity) was to identify pertinent information that may not have reached the project group or other potentially important issues. Available data on different modalities of robbery in study and control areas were also scrutinised to assess effects of the initiative.

Procedure

Links to web-based questionnaires were given to police officers at meetings in which information about the project and aims of the study were presented both orally and in a letter. They were informed that participation was voluntary, confidentiality was guaranteed as participants would be anonymous to the researchers and collected data would be pooled at group level. The questionnaire (used at both T1 and T2) included items concerning aspects of police work such as perceived effectiveness of the police organisation in crime prevention, autonomy as a police officer, respondents' own performance as police officers, and work culture in their stations (Appendix 1, Table 1). The main objective of the focus group interviews was to obtain richer understanding of the officers' views of crime prevention. These interviews also covered definitions of constructs such as autonomy, and complex findings from the first round of the questionnaire requiring clarification.

The citizens' questionnaires were also web-based, completely anonymous and distributed in meetings with community representatives in each local area. These neighbourhood/city meetings were often organised by the police or community representatives when some form of information was shared. The first part of the questionnaire included questions concerning the citizen's background and one question to check that s/he resided in the neighbourhood to ensure that s/he could provide information relevant for the area. Other parts concerned their perceptions of disorder and crime, as well as their opinions about police service and police activity (Appendix, Table 1). The T2 questionnaire also asked if the respondent had completed the first questionnaire, to identify respondents who could provide the most precise possible indications of shifts in opinions associated with the initiative. We held focus groups with similar objectives to those with the police officers, to identify potential problems with the project's implementation and potential clarification of complex findings from analysis of data collected in T1.

Participants

All police officers in each station assigned to the pilot project were invited to participate in the study, and were provided with information about the study by the police organisation. There were 257 participating police officers at the baseline point T1, and a smaller number (126) at the post-intervention point T2, for several reasons, including transfers of some T1 participants to different

districts and police stations. Data were analysed at group level (urban, rural, and control). Of the T1 participants, 112 were allocated to an urban pilot group and 76 to a control group who applied the new and previously standard approaches, respectively. The remaining 69 participants were allocated to a pilot group of police officers working in smaller villages and rural areas who were exposed to the intervention but without a corresponding control group. Corresponding numbers in the urban pilot, control and rural pilot groups at T2 were 47, 31 and 48, respectively. To summarise, 112 participating police officers had been assigned to the intervention in the urban treatment areas at T1 and 47 had been exposed to it at T2. Corresponding numbers in control groups, not exposed to the intervention, were 76 and 31, respectively. In addition, 69 had been assigned to the intervention in the rural treatment areas at T1 and 48 had been exposed to it at T2. The mid-term focus group consisted of 4–6 police officers from each of the intervention areas.

Information was collected from citizens in each pilot, control and rural pilot area at both the baseline T1 and post-intervention T2 timepoints. A goal was to obtain approximately 200 participants from each area. At T1 there were approximately 1800 participating in total: 664, 432 and 697 representing communities in the urban pilot, control and rural pilot areas, respectively. Corresponding numbers at T2 were 420, 455 and 613, respectively. Participants in the citizen focus groups included social leaders and citizens with interests in the neighbourhood, such as owning a store or active involvement in local events. Numbers of participants differed between areas, but were generally 8–10 from each area.

Measures

Examples of items used for each measure in the police and citizen questionnaires and descriptive statistics can be found in the Appendix [Tables 1 and 2](#). More information can be obtained from the authors on request.

Police officers

The questionnaire used to probe police officers' views was based on instruments previously used to explore police work and strategies, with adaptation to meet length constraints and tailoring to the local context, following recommendations by Van de Vijver and Hambleton (1996). An expert with a Colombian police background recruited to the project group provided valuable information in the process of contextual adaptation.

Perceptions of performance at the participants' stations were measured with 10 items inviting Likert-type responses with scales from 1 (low) to 5 (high) developed to evaluate central functions in a police station (Wycoff & Skogan, 1996). Some questions/items concerned assignments such as dealing with insecurity in the neighbourhood and developing good relations with the citizens, while others concerned matters such as response times and crime prevention.

Autonomy was measured as a construct that is strongly related to ways of working that are important elements of community- and problem-oriented policing. It is assumed to provide more freedom and prospects for personal growth in the job, together with stronger senses of identity and responsibility for assigned tasks than in traditional policing (Skogan & Wycoff, 1994). Autonomy is also related to perceived levels of discretion and independence (Lurigio & Skogan, 1994). Five Likert-type items were used to gauge it.

Items regarding respondents' opinions about work performance were adapted from the QPSNordic questionnaire, developed to measure psychological and social factors in work environments (Dallner et al., 2000). Five items covered respondents' perceptions of their mastery in work, and rating of their own performance as a police officer. To cover the context, the culture in the participating police officers' workplaces, we included another four items on organisational culture adapted from the QPSNordic questionnaire (again in 5-point Likert scale format).

Citizens

Citizens' views were investigated by items concerning perceptions of disorder problems (general), fear of crime (personal) and social cohesion in their neighbourhoods, and the police service (McKee, 2001). Items concerning perceptions of the police service covered opinions about the police in general and police in the participants' neighbourhoods. Items concerning general opinions about the police covered perceptions of whether they had the required competence and (if so) applied it when using force based on the process-based model of regulation (Tyler & Wakslak, 2004; Nix et al., 2015). Local opinions about the police service covered areas such as communication, knowledge, fairness, police reliability and responsiveness (Rosenbaum et al., 2007). All items invited 5-point Likert-type answers, ranging from 1 (low) to 5 (high) for social cohesion or opinions of the police.

Crime data

We obtained data on reported crimes in the two pilot areas with corresponding controls during the 8 months of the pilot period in 2019 and the same period in 2018 to compare seasonal activity in corresponding seasons. The data included were all documented statistics on robbery of person in the focal areas, identified as the key issue. We classified these crimes as robberies with no weapon, with a knife, or with a gun.

Analyses

A key objective of this pilot study was to develop measures that could be used in the next step of the project. For this we used an index of police performance (PI), obtained by summing scores for the items probing police officers' perceptions of central functions in a police station, or citizens' views of the police service. The reliability of the index was assessed using Cronbach's alpha coefficient. All measures obtained from the questionnaires regarding theoretical constructs used with the police officers and citizens were also evaluated with latent variable methodology. For this, we applied confirmatory factor analysis (CFA) to confirm the validity of the items (and their dimensionality), where most had been validated in previous studies in other contexts. First, the data were prepared for robust maximum likelihood (MLR) analysis with Mplus software, then the fit of models of each construct listed above was assessed with four statistics. These were chi-square, the comparative fit index (CFI), root mean square of error approximation (RMSEA), and standardised root mean residual (SRMR), with thresholds for an acceptable fit of $p < 0.05$, > 0.90 (preferably ≥ 0.95), < 0.08 , and < 0.08 , respectively (Hu & Bentler, 1999; Brown, 2006). The combination of different fit indexes provided an overall indication of how well the unidimensional or two-dimensional models fitted the data. The measures' reliability was assessed by calculating Cronbach's alpha coefficients.

Following the CFA, between-group differences in indices of the constructs were investigated by analysis of variance (ANOVA) with Dunnett's *post hoc* test (significance threshold: $p < 0.05$), which allows multiple comparison of means to a control mean (Field, 2009). All statistical analyses were conducted with SPSS version 27 (IBM, NY). As we were mainly interested here in differences between the groups we mostly report results of the Dunnett's test.

In the focus groups we used Mentimeter, a web-based real-time tool that allows respondents to write answers to questions individually for group discussion without having to reveal who posed the questions (Mentimeter, 2019). We presented several predetermined questions to the participants, but also exploited the capacity of focus groups to interactively explore other relevant topics (Kleiber, 2004). In the focus groups with citizens the Mentimeter tool was used when possible, but in some cases, participants were more interested in expressing their opinions regarding other topics than discussing predetermined questions. An alternative approach that could potentially have provided valuable data and reduced some forms of potential bias would have been to use individual interviews.

Crime data were analysed by repeated measures analysis of variance (ANOVA) with a within-subjects factor and between-subjects factor to explore patterns in the variations between the study period (in 2019) and preceding year, between the study and control areas, and possible interactions. The ANOVA results are presented with corresponding graphs to visualise detected patterns.

Results

This section presents findings obtained from the questionnaires, focus groups and crime statistics regarding the research questions, particularly changes perceived by police officers regarding aspects of their work linked to the intervention, citizens' perceptions of police-community relations, and the intervention's effects on the crime level. Examples of items used for each measure in the police and citizen questionnaires can be found in the Appendix, Table 1. Information about references in the figures is also presented in Table 1. Other findings will be presented in future studies.

Results from police officers' questionnaires and focus groups

An initial test indicated that the 10-item performance index (PI) used to assess participating police officers' views of performance in their stations had a reliability of Cronbach's $\alpha = 0.93$. The validity and reliability of measures of constructs applied in the study were then assessed to develop indexes used in further analyses.

Autonomy (AU) was measured with a scale based on five items (Figure 1) showing acceptable fit to the data and reliability in the focal context ($n = 256$): $\chi^2 (5) = 12.36, p < 0.05$; CFI = 0.97; RMSEA = 0.076, 90% CI [0.02, 0.13]; SRMR = 0.03; Cronbach's $\alpha = 0.84$.

Measurement of mastery at work (MW) was measured with five items showing acceptable fit to the data: $\chi^2 (5) = 5.89, p = \text{NS}$; CFI = 0.99; RMSEA = 0.026, 90% CI [0.00, 0.094]; SRMR = 0.02; Cronbach's $\alpha = 0.80$.

Organizational culture (OC) was measured with four items also showing acceptable fit to the data: $\chi^2 (2) = 0.20, p = \text{NS}$; CFI = 1; RMSEA = 0.000, 90% CI [0.00, 0.05]; SRMR = 0.01; Cronbach's $\alpha = 0.77$.

Differences between the urban pilot, rural pilot and control groups in these constructs at T1 and T2 were explored by one-way ANOVA with two-sided Dunnett's *post hoc* tests (to account for possible between-group differences at baseline). The ANOVA indicated significant between-group differences in AU at T1: $F (2, 254) = 4.58, p < 0.05$. Dunnett's test revealed that AU was significantly

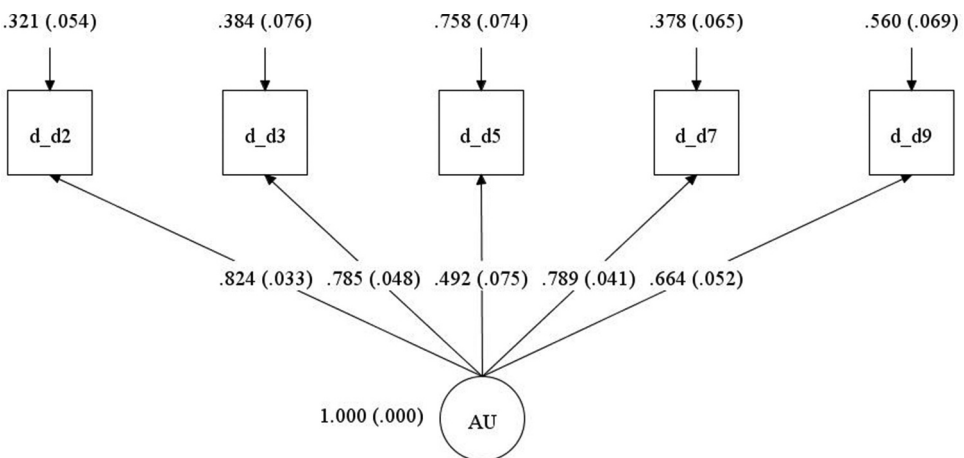


Figure 1. Standardised estimates for the five-item measure of autonomy.

higher for the control group ($M = 15.47$, $SD = 5.11$, $p < 0.05$), than the urban pilot group ($M = 13.67$, $SD = 4.71$), but not the rural pilot group ($M = 15.46$, $SD = 4.29$), at T1. There were no significant differences in MW or OC between the control group and either pilot group. PI was significantly lower for the urban pilot group ($M = 36.20$, $SD = 7.44$, $p < 0.01$), but not the rural pilot group ($M = 38.07$, $SD = 6.60$), than the control group ($M = 40.08$, $SD = 6.74$).

Differences at T2 were particularly interesting since we detected some significant between-group differences at T1, but we expected the pilot groups to have higher means than the control group for these constructs at T2, so the Dunnett's tests applied to the T2 data were one-sided. Accordingly, the urban study group had significantly higher AU ($M = 15.77$, $SD = 4.69$, $p < 0.05$) than the control group ($M = 13.64$, $SD = 3.86$), but not the rural pilot group ($M = 15.47$, $SD = 4.33$). There were no significant between-group differences in MW. The OC scores of the urban pilot group ($M = 13.43$, $SD = 3.00$) and rural pilot group ($M = 12.46$, $SD = 3.05$) were significantly ($p < 0.05$) and non-significantly higher than that of the control group (11.45 , $SD = 3.57$), respectively. There were no significant between-group differences in PI. Thus, the significant difference in this construct between the pilot and control groups at T1 had disappeared at T2.

The focus group interviews with the police officers showed that most constructs were perceived as intended. For example, when asked to define what autonomy meant to them in their context one said, "In each shift, we're aware of the hot spots and don't need to wait for 'them' to tell us when to visit the spots, it's up to us." This clearly shows that the officer felt that s/he had considerable freedom to act, and responsibility for her/his actions, in stark contrast to the micro-management via direct orders by higher-ranking officers ["them"] in the hierarchal organisation characterising traditional practices. Another comment exemplifying autonomy in this context is, "In the pilot project we can really move with more freedom to do the job we want." Regarding relations with the citizens, we recorded comments such as "In these areas we've met citizens that we can share ideas with and see the police as their friends." Some also expressed improvements in their observations of crime in the field, e.g., "Security has improved with our presence, with reductions in theft and other crimes in the neighborhood." However, more critical views were also expressed, for example, "Crime is not falling quickly," "Our activities in the neighborhood have not made the problem disappear or go elsewhere." Others also noted a potential problem of prioritising hot spots: "Neglecting other areas may simply cause shifts in criminal behavior." Some mentioned obstacles hindering implementation of the hot spot methodology were associated with other organisational demands, including activities involved in the regular way of working in some of the pilot districts that took time and effort. The time spent on documentation was also seen as a problem.

Results from citizens' questionnaires and focus groups

Citizens' expressed perceptions of general disorder (GD) in their neighbourhood were related to their perceptions of personal fear of crime (PFC), providing a two-dimensional model of disorder or security. This model, based on seven items (see Appendix), showed acceptable fit to the data ($n = 1795$): $\chi^2(13) = 91.28$, $p < 0.01$; CFI = 0.97; RMSEA = 0.06 90%, CI [0.05, 0.07]; SRMR = 0.03. Cronbach's α coefficients for the GD and PFC dimensions were 0.81 and 0.91, respectively (Figure 2).

Two dimensions of opinions of the police were also explored: opinions of police in general (PG) and associated opinions of the local police (LP). The model based on 15 items showed acceptable fit to the data ($n = 1795$): $\chi^2(89) = 1086.74$, $p < 0.01$; CFI = 0.91; RMSEA = 0.079, 90% CI [0.08, 0.08]; SRMR = 0.04; with Cronbach's α values for opinions about the police in general and local police of 0.89 and 0.97, respectively.

The 4-item measure of social cohesion (SC) in the citizens' neighbourhoods showed acceptable fit to the data in terms of three test indices ($n = 1795$): $\chi^2(2) = 35.90$, $p < 0.01$; CFI = 0.98; and SRMR = 0.01 but not RMSEA (0.097, 90% CI [0.07, 0.13]). The Cronbach's α coefficient for the measure (0.92) indicated adequate reliability.

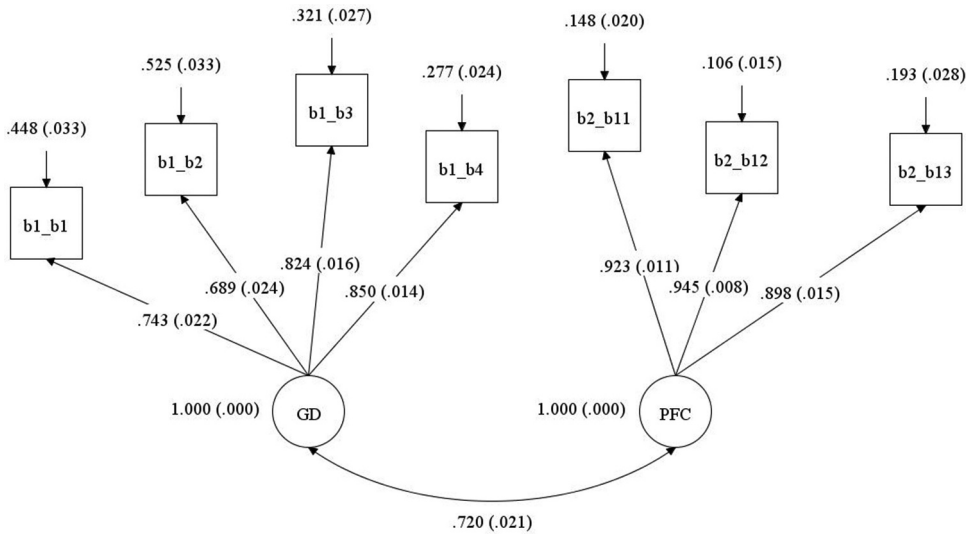


Figure 2. Standardised estimates for a two-dimensional model of disorder/security based on 4- and 3-item measures of general disorder (GD) and personal fear of crime (PFC), respectively.

Again, ANOVA with Dunnett's *post hoc* test was used to explore between-group differences in constructs. At T1, there were no significant between-group differences in GD. PFC was significantly lower for the rural pilot group ($M = 13.23$, $SD = 2.75$, $p < 0.05$), but not the urban pilot group ($M = 13.42$, $SD = 2.62$), than the control group ($M = 13.63$, $SD = 2.41$). PG was significantly higher for both the urban pilot group ($M = 12.76$, $SD = 2.50$, $p < 0.05$) and rural pilot group ($M = 12.70$, $SD = 2.62$, $p < 0.05$) than the control group ($M = 11.58$, $SD = 2.80$). LP was also significantly higher for the urban pilot group ($M = 47.99$, $SD = 12.34$, $p < 0.05$) and rural pilot group ($M = 52.17$, $SD = 9.24$, $p < 0.05$) than the control group ($M = 42.08$, $SD = 11.69$). Similarly, SC was significantly lower for the control group (11.31 , $SD = 5.30$) than both the urban pilot group ($M = 13.80$, $SD = 5.37$, $p < 0.05$) and rural pilot group ($M = 14.52$, $SD = 4.02$, $p < 0.05$).

Differences in the measures at T2 were also interesting as there were some significant differences at T1, but we expected lower values for citizens in the pilot areas for constructs such as GD and PFC (and higher values of trust in the police and SC). The results show that GD of both the urban pilot group ($M = 17.66$, $SD = 2.77$) and rural pilot group ($M = 16.91$, $SD = 3.20$) significantly differed ($p < 0.05$) from that of the control group ($M = 18.32$, $SD = 2.39$), being lower at T2 in the intervention areas. PFC was significantly higher for the control group ($M = 14.20$, $SD = 1.66$, $p < 0.05$) than the rural pilot group ($M = 13.21$, $SD = 2.60$), but not the urban pilot group ($M = 14.00$, $SD = 1.84$). Opinions of the police in general did not significantly differ between the groups, but the opinion of the local police was non-significantly lower for the urban pilot group ($M = 48.66$, $SD = 10.50$), and significantly higher for the rural pilot group ($M = 52.85$, $SD = 8.58$, $p < 0.05$) than for the control group ($M = 50.36$, $SD = 9.81$). It should be noted that opinions of local police of 39 respondents in the study group who had participated at T1 ($M = 53.23$, $SD = 9.52$) were significantly higher ($p < 0.05$) than those of the 23 participants in the control group who had participated at T1 ($M = 47.61$, $SD = 10.18$).

There were no significant between-group differences in SC, either for entire groups or for participants that participated at both T1 and T2.

The citizens' focus group interviews varied substantially. Some were highly structured and concluded with expressions of specific wishes for certain areas, such as more police officers or crime prevention equipment, e.g., surveillance cameras. Another expressed desire was for "better cooperation between the mayor and police" for "investment in cameras." We also obtained some

valuable findings regarding puzzling aspects of the results from the T1 questionnaires, e.g., relatively high trust in the police, despite high perceptions of general disorder and personal fear of crime. This was explained by citizens attributing many problems to flaws in the legal system. For example, they said that overcrowding in correctional facilities leads to people being arrested for an offence in the morning and out in the evening, with no legal consequences, in extreme cases. This could also lead to witnesses being afraid to provide information to the police as it could have negative consequences for them. They considered the project to be a valuable effort, and wanted more of such crime prevention initiatives.

Results from crime statistics

To assess effects of the intervention on crime levels, we compared data on frequencies of crimes in the urban pilot areas and control areas in Medellin and Villavicencio. The data on robberies of a person showed that the reported crimes during the pilot period had increased overall in the studied areas. Comparison of data on specific modalities of robbery showed that this was due to increases in robberies without a weapon or with a knife, while robberies with guns had declined. The ANOVA revealed a significant between-group interaction in robberies without a weapon $F(1, 14) = 13.88, p < 0.05$ indicating that robberies without weapon had increased significantly more in the control area compared to the study area, also seen in the profile plot (Figure 3).

The ANOVA revealed no significant between-group interaction in robberies with knives during the same period in 2018 and 2019. Moreover, a significant decline was detected in robberies with a gun in both study area and control areas, with no significant between-group interaction.

In Villavicencio we detected a small difference in robberies without a weapon, indicating that crimes had increased more in the control area than in the study area but there was no significant between-group interaction. The frequency of robberies with a knife decreased in the study area and increased in the control area (Figure 4), with no significant between-group interaction according to the ANOVA. There were no significant changes in frequencies of robbery with a gun between the focal periods in 2018 and 2019.

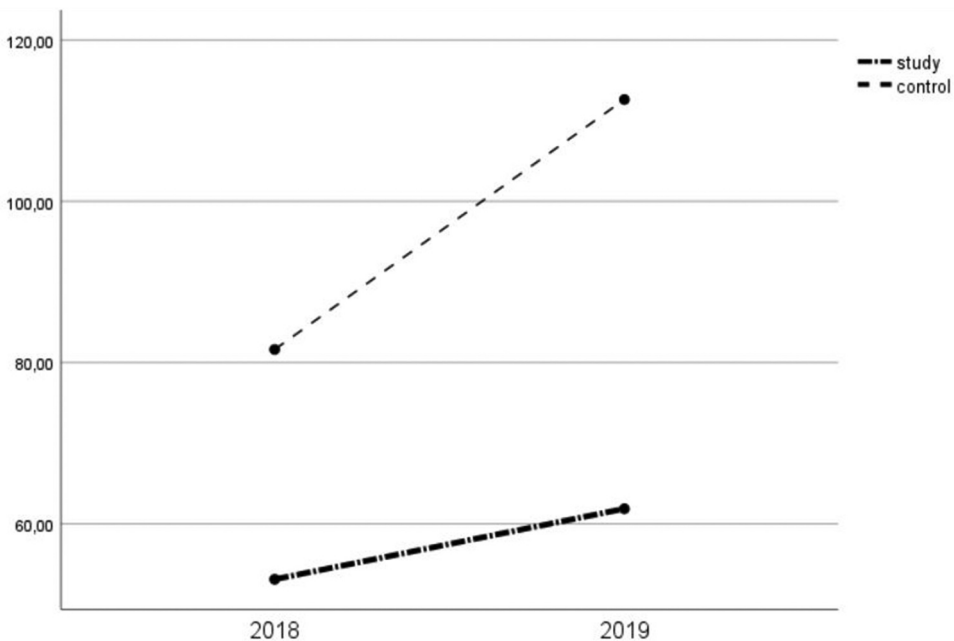


Figure 3. Profile plot representing the mean of reported robberies without weapon 2018 and 2019 from study and control area in Medellin during the pilot period.

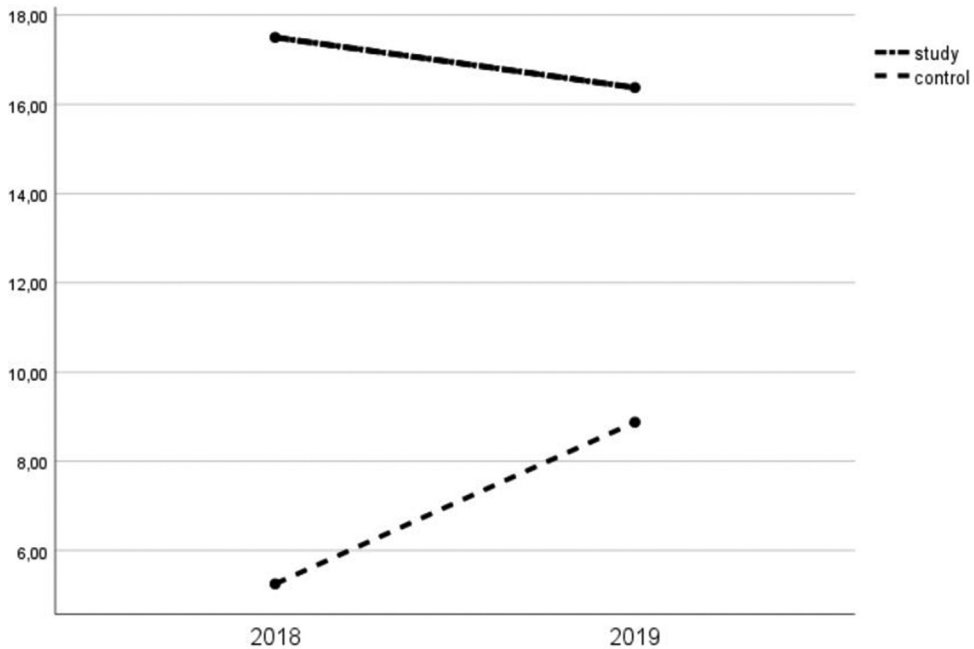


Figure 4. Profile plot representing the mean of reported robberies with knife 2018 and 2019 from pilot and control area in Villavicencio during the pilot period.

Discussion and conclusions

Findings from this study are valuable as the project is moving into a second phase, in which the activities and organisational arrangements have not been completely decided, but they will be extended to include more areas and police officers. Thus, it is clearly important to identify what seems to work and requirements for further development. The high GD (general disorder) and PFC (personal fear of crime) scores supported the project's focus on crimes against a person like robbery or assault rather than crimes generally. They also corroborate previous findings that reducing harm is important for citizens' subjective perceptions and feelings of security (L. Sherman et al., 2016). The results should also help efforts to identify types of robbery to prioritise in each context and develop tailored strategies for addressing them in collaboration with other potential actors (Tilley, 2009; Braga, 2010).

All the sources of data we tapped helped to obtain clearer understanding of appropriate crime prevention activities in the focal context. The data obtained from the police officers' questionnaires may be the most objective (despite being based on self-reports) as we used previously developed instruments and could rigorously evaluate the measures' validity and reliability. However, the same procedures were applied to the data collected from the citizens' questionnaires. The statistics on reported crimes were not regarded as completely objective, partly because limited numbers of police officers participated in the project, and areas they patrolled and may have influenced are difficult to define precisely. This is a previously noted problem (Lab, 2019). Moreover, offences can be classified in various ways, and although we compared statistics pertaining to crimes in the study period and the corresponding period in the previous year, we cannot check the validity of the data. Thus, some crimes may have been under-reported or wrongly classified (Tilley, 2009). When interpreting the data we focused mainly on the urban pilot and control groups as findings from the rural areas should be treated with caution, because they were most strongly affected by movement of police officers within the organisation. We tried to counter this problem by providing sufficient information at the stations, but updating substantial proportions of newly posted officers is difficult.

Data collected from the police officers strongly indicate that the developed constructs are appropriate in terms of both the measures' psychometric properties and their conceptualisation in the focal context. Thus, they enable exploration of the intervention's influence on police work and police officers' perceptions of associated changes (the first research question). A major change was in autonomy, as the Colombian police organisation is hierarchal, the officers' actions are strongly circumscribed by orders generally, and they have little opportunity to try unorthodox or contextually refined approaches. The self-reported autonomy of the urban pilot group was significantly lower than that of the control group at T1, but significantly higher at T2. This indication that POP methodology could be effectively implemented in the organisation is supported by the significant difference in organisational culture between these groups at T2. POP guidelines often state that in order to identify solutions, establish collaborations, and make contact with significant actors police officers require an open-minded approach, with substantial autonomy (Sidebottom et al., 2020). However, it is important to combine an autonomous approach with appropriate knowledge and training, to avoid potentially undesirable consequences such as selective enforcement (Crank, 2004). It is essential for the police officers to grasp organisational aims, without detailed control of practical decisions. When they described their activities, many police officers expressed positive opinions regarding the new way of working.

Several items contributing to the performance index addressed these relations, and scores for these items were significantly lower for the urban pilot group of officers than the control group at T1, but non-significantly higher at T2, indicating that the piloted approach was advantageous. These findings had mixed support from the data obtained from citizens, as there were no significant between-group differences in their opinions of the police in general. However, opinions of the police were non-significantly higher for the pilot groups than the control group, possibly due to differences in social cohesion in the respective areas (which was non-significantly lower in the urban pilot area than in the control area). Disorder (GD) was significantly lower in the urban pilot area at T2, possibly due to higher police visibility when using the 15 min hot spot approach (Walsh & Jorgensen, 2018). These findings indicate that further exploration of potentially confounding factors warrant attention (including reported flaws in the legal system). Differences in participants at T1 and T2 may also have contributed to some of the lack of significance, as we detected a significant increase in the opinion of the police of the sub-group who participated on both occasions. This highlights the value of including substantial numbers of participants who provide data at each collection point when evaluating constructs such as police performance. In our study, citizen participants were selected by convenience sampling due to financial and practical constraints, but the question about previous participation enabled identification of citizens who had participated previously and hence provided the most precise information on changes in perceptions.

The crime statistics provided further illumination of the trends, and importance of considering potential confounding factors, as they showed that numbers of reported crimes increased between T1 and T2, but significantly less in the urban pilot area than in the control area, particularly in Medellin. Thus, the initiative had promising results but clearly required further development. In Villavicencio there were signs that there were fewer robberies with a knife in the study area than in the control area. On the other hand, frequencies of robbery without a weapon increased in both the study and control areas in Villavicencio. Another valuable approach could be to study all types of crime in public space in comparison to robberies to observe differences in trends. The number of police officers involved also requires consideration since more were involved in the project in Medellin (86) than in Villavicencio (26). One conclusion from this is that implementation of a new strategy may require involvement of all police officers in a station or a district to maximise the impact. We intend to have the possibility to involve more police officers assigned to the same station in future studies when implementing new strategies. It is also important to consider the time required for personnel to adapt to new ways of working, because it will reduce the time and

engagement in other activities. Police organisations generally may want to work with several projects in their ambition to reduce crime, but it is equally important to take the time to adapt to new ways of working.

Concluding remarks

When measuring complex constructs it is essential to investigate the measures used to ensure they provide robust indications of relations or changes in applied constructs, particularly when attempting to develop models of complex social phenomena. Thus, several indicators were used when measuring each construct to obtain construct validity. The results showed that measures developed and applied in the study have sufficient validity and reliability.

The study also included several exploratory elements that provide valuable indications of organisational changes to tailor implementation of 15 minutes hot-spot methodology to specific Colombian contexts. The evaluation addressed police officers' perceptions of the new way of work with a different form of responsibility, manifested in the changes in perceived autonomy. Several obstacles were identified as requiring attention to improve its implementation, including more time for adaptation and establishment of routines for providing information to new personnel. A need to develop theoretical and practical knowledge of crime prevention in the organisation, including prioritisation in the training and education of future police officers, was also identified. Thus, future studies will include attempts to change organisational culture to illuminate their potential impact in future interventions.

Effects of the approach were mostly seen in citizens' perceptions of the police and changes in crime statistics. The results highlight the severity of personal robbery problems, and need to address them. These are recurrent problems, requiring mobilisation of multiple actors in the communities, not just the police, although adoption of hot-spots policing may be a valuable first step. Social cohesion and collective efficacy are important constructs for understanding citizens' perceptions of crime and how they may collectively maintain social order. Future work needs to identify key mechanisms of such processes in specific contexts and ways to enhance their efficacy. Other measures focusing on collective efficacy have been developed and adapted for use in the next phase of the project. Some problems may require appropriate adjustment of the legal system, notably the constraints of the legal system for handling arrested perpetrators. Possible solutions should be discussed, based on robust information regarding the problems. Addressing some aspects is beyond the scope of a study such as this, due to the time and both the nature of diversity of participating stakeholders required, but further attention to the type of crime preventive approach presented in this study may be highly valuable.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendix

Table A1. Examples of items and questions used in the questionnaires and focus group interviews.

Police officers' questionnaire

(How do you rate your station/work on a scale of 1–5 in terms of.)

Police performance index
 Effectiveness in handling non-criminal street activity
 Promoting good police- community relations.
 Prevention of crime.

Autonomy
 Creativity and innovation are rewarded (d_d2)
 Supervisors/team leaders are receptive to change (d_d3)
 I am satisfied with the degree of freedom that I am given in the course of my job (d_d9)

Mastery in work
 Are you satisfied with the quality of the work you do? (f_f1)
 Are you satisfied with your ability to solve problems at work? (f_f3)
 Are you satisfied with your ability to maintain a good relationship with your colleagues? (f_f4)

Organizational Culture
 Encouraging and supporting (g_g2)
 Relaxed and friendly (g_g4)
 Are police officers at your station encouraged to make improvements? (g_g7)

Citizens' questionnaire

General disorder
 How do you rate the amount of problems with damage to others' properties, third parties, damage to houses, or to people (b1_b1)
 How do you rate the level of problems with people being robbed in your sector? (b1_b4)

Personal fear of crime
 How worried are you that someone may try to rob you on the street? (b2_b11)
 How worried are you that someone may try to steal or damage your vehicle, motorcycle or bicycle? (b2_b13)

General opinions of police
 The police have the competence required to decide when to use force.
 The police know how much force to use to protect citizens.

Local police
 The police in my area treat citizens with dignity and respect.
 The police in my area are there when you need them.

Social cohesion
 I know the people who live in my neighbourhood
 People in my neighbourhood are united when solving security problems.

Protocol of the areas to discuss in focus group with police officers
 Is there a difference in autonomy associated with the new way of work?
 Are there differences in perceptions of crime prevention associated with the new way of work?

Protocol of the areas to discuss in focus group with social leaders
 How has the intervention affected public safety in your area, before and after?
 How has the intervention affected police officer activity in your area?

Note: Items translated from Spanish into English.

Table A2. Descriptive statistics at item level of selected questions used in the police and citizen questionnaires from this study, before and after the intervention.

| Item name | | | N (T1) | | Mean | SD (standard deviation) | | | | |
|--|-------|------|--------|-------|------|-------------------------|---------|------|-------|--|
| | | | N (T2) | | Mean | SD | | | | |
| Items from the autonomy factor, min 1 and max 5 (Figure 1) | | | | | | | | | | |
| | Urban | | | Rural | | | Control | | | |
| d_d2 | 112 | 2.50 | 1.23 | 69 | 3.01 | 1.27 | 76 | 2.87 | 1.37 | |
| | 47 | 2.66 | 1.22 | 48 | 2.81 | 1.28 | 31 | 2.23 | 1.26 | |
| d_d3 | 112 | 2.51 | 1.25 | 69 | 2.96 | 1.25 | 76 | 2.89 | 1.27 | |
| | 47 | 3.06 | 1.37 | 48 | 2.90 | 1.28 | 31 | 2.45 | 1.29 | |
| d_d9 | 112 | 2.89 | 1.24 | 69 | 3.10 | 1.23 | 76 | 3.12 | 1.20 | |
| | 47 | 3.13 | 1.28 | 48 | 3.17 | 1.10 | 31 | 2.65 | 1.11 | |
| Items from the organisational factor, min 1 and max 5 (Table 1) | | | | | | | | | | |
| | Urban | | | Rural | | | Control | | | |
| g_g2 | 112 | 3.38 | 1.09 | 69 | 3.43 | 1.08 | 76 | 3.70 | 1.10 | |
| | 47 | 3.79 | 0.86 | 48 | 3.44 | 0.87 | 31 | 3.19 | 1.17 | |
| g_g4 | 112 | 2.83 | 1.05 | 69 | 3.03 | 1.19 | 76 | 3.17 | 1.15 | |
| | 47 | 3.15 | 1.00 | 48 | 3.02 | 0.93 | 31 | 2.74 | 1.26 | |
| g_g7 | 112 | 2.52 | 1.30 | 69 | 3.14 | 1.26 | 76 | 2.74 | 1.32 | |
| | 47 | 2.79 | 1.32 | 48 | 2.75 | 1.30 | 31 | 2.35 | 1.25 | |
| Items from the general disorder factor, min 1 and max 5 (Figure 2) | | | | | | | | | | |
| b1_b1 | 664 | 4.24 | 1.04 | 697 | 4.15 | 1.05 | 432 | 4.01 | 0.95 | |
| | 420 | 4.39 | 0.88 | 613 | 4.27 | 0.92 | 455 | 4.53 | 0.75 | |
| b1_b4 | 664 | 4.25 | 1.05 | 697 | 4.16 | 1.06 | 432 | 4.16 | 0.930 | |
| | 420 | 4.48 | 0.79 | 613 | 4.27 | 0.98 | 455 | 4.63 | 0.73 | |
| Items from the personal fear of crime factor, min 1 and max 5 (Figure 2) | | | | | | | | | | |
| b2_b11 | 664 | 4.47 | 0.93 | 697 | 4.39 | 0.98 | 432 | 4.53 | 0.85 | |
| | 420 | 4.67 | 0.67 | 613 | 4.35 | 0.97 | 455 | 4.71 | 0.64 | |
| b2_b13 | 664 | 4.45 | 0.97 | 697 | 4.38 | 0.97 | 432 | 4.55 | 0.84 | |
| | 420 | 4.65 | 0.70 | 613 | 4.40 | 0.93 | 455 | 4.73 | 0.62 | |