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Mind the Gap: Bridging the Perception and Reality of Crime Rates with Information

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Abstract[*]

Gains from government crime-reducing programs are not always visible to the average citizen. The media overexpose crime events, but the absence of crime rarely makes the news, increasing the risk that citizen may have inaccurate perceptions of security. Through a survey experiment carried out in Bogota, Colombia, a city that experienced a substantial reduction in homicides over the last decade, as well as a noticeable drop in robberies, this paper tests the effect that communicating objective crime trends could have on such perceptions. The results show that information improves perceptions of safety and police effectiveness, and lowers distrust in the police. However, the information treatment is not able to impact those with biased priors, and tends to weaken over time. A more active and regular engagement with citizens regarding these trends is needed to bridge the gap between perception and reality.

JEL Codes: I38, R28
Keywords: Information, Beliefs, Perception, Crime

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Introduction

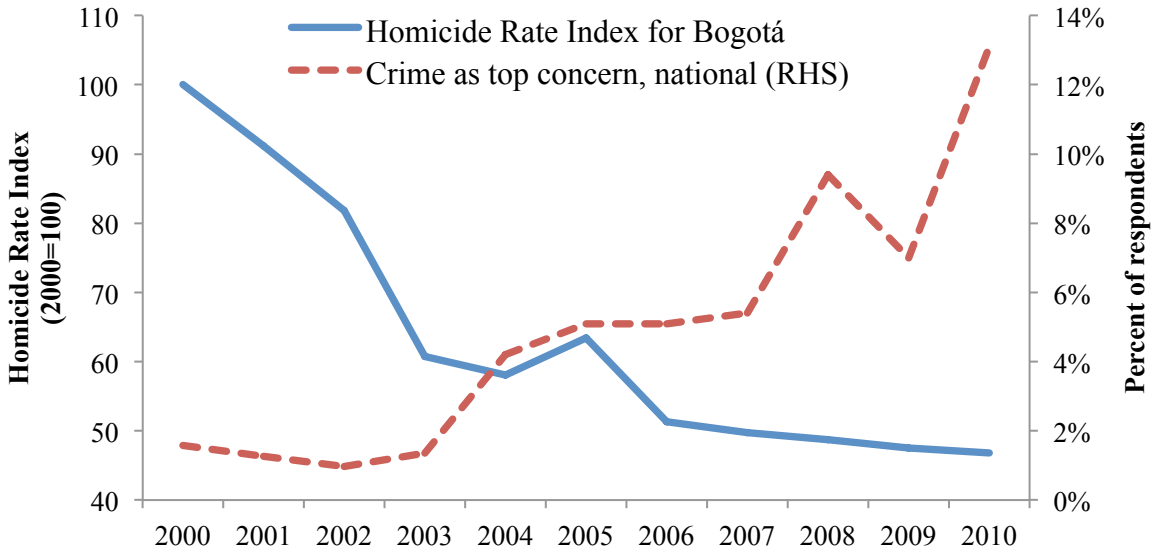
Crime and violence are major concerns in the Latin American and Caribbean (LAC) region. The region suffers from the highest homicide rate in the world, reaching over 25 deaths per 100,000 people in recent years, a figure that triples the global average (UNODC, 2012). Widespread common crime, which victimizes more than 10 percent of the population and 30 percent of firms,[1] is also a challenge for the region. Not surprisingly, crime and violence have climbed the ranks to showcase as the top concerns of citizens in public opinion surveys.

Colombia stands out as one of few countries in the LAC region where crime levels have actually decreased. Homicides dropped by half between 2001 and 2011, from 68 per 100,000 to 31 per 100,000, respectively, a unique achievement in a region where escalating homicides have been the norm. In particular, Bogota experienced an equally significant declining trend, with homicides decreasing from 38 to 18 per 100,000 by 2011. Over the last few years, there has also been a decline in victimization rates, which measure crimes such as robberies and burglaries.[2] Sizable investments to fight and prevent crime have accompanied these improvements.[3]

Despite the overall decline in crime rates, an increasing share of the population considers crime as the most important problem in the country (Figure 1a), suggesting a gap between reality and perception. Also, the recent drop in victimization rates has not led to a visible parallel drop in the share of the population that feels afraid in their neighborhood (Figure 1b), likely because it takes time for successful crime-reduction policies to be recognized by the average citizen. Perceived gains in crime prevention from government programs can also be dissipated in the myriad of negative news on crime events. For example, unusual and vivid events such as homicides are more often reported in mass media, which can lead to a biased perception that specific crimes are more common and frequent than they are in reality.

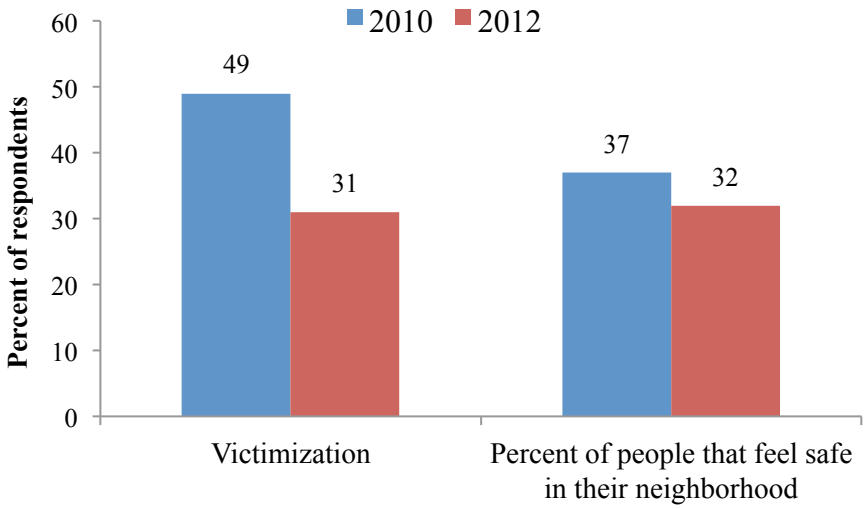
[1] Population victimization rates and firm victimization rates are authors' calculations based on World Gallup Poll (2007) and World Bank Enterprises Surveys (2010), respectively.
[2] These figures are based on the victimization survey of the Chamber of Commerce, Bogotá.
[3] In the late 1990s, Plan Colombia involved a massive injection of resources from the United States directed toward many projects, from military training to increased militarization of police in rural areas. Subsequent efforts were focused on reducing criminal activities in urban areas. More recently, the National Police implemented a local policing model called "Plan Cuadrantes," which targeted local crimes not affected by national trends.

Figure 1a. Homicide Rate in Bogota and Concern for Crime



Source: Latinobarómetro and National Police.

Figure 1b. Victimization Rate and Perception of Security



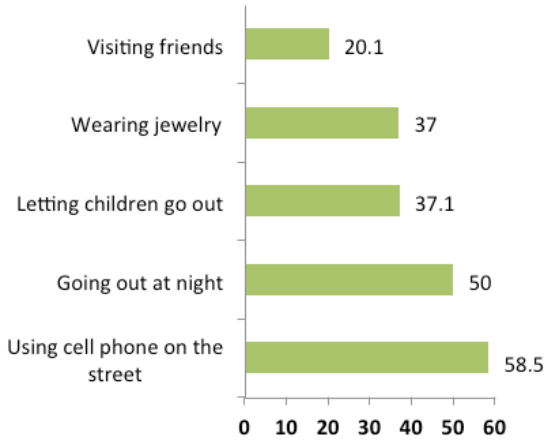
Source: CCB 2012.

Such disconnect between perception and reality can become an obstacle for policymakers and reduce overall welfare. Based on their incorrect perception of crime, people may change their regular activities and even take costly measures. The high incidence of these actions

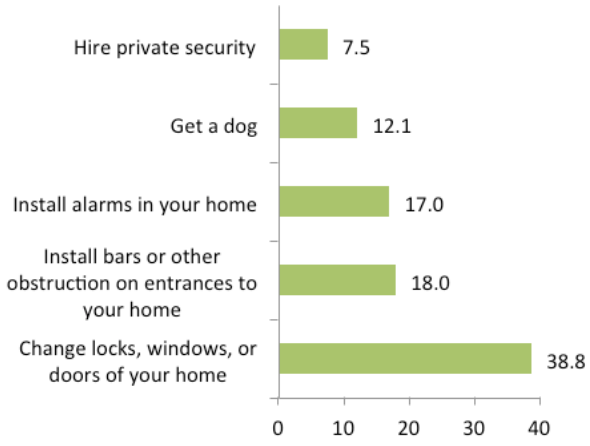
highlights the effects of fear of crime on overall welfare and quality of life (IDB, 2008; Vilalta, 2012). For example, out of fear of crime, close to 60 percent of the citizens surveyed in Bogota avoid using their cell phones in the street, and 50 percent do not go out at night. Moreover, some respondents said they have invested in safety measures, such as new locks, bars for their home entrances, and alarms systems (Figures 2a and 2b). Crime and a high fear of crime can also lead to suboptimal cooperation between citizens and public institutions. Fear of crime can undermine trust in the police, weaken social capital, and become an obstacle to development (Corbacho, Philipp, and Ruiz-Vega, 2012).

Figure 2. Fear of Crime, Daily Activities, and Investments in Security

Out of fear of crime did you stop doing any of the following?
(percentage of respondents)



Out of fear of crime did you …?
(percentage of respondents)



Source: Authors' elaboration based on the survey

This paper uses an experimental approach to test the power of information to affect citizens' perceptions of crime rates. In the context of a victimization survey, a random selection of citizens of Bogota received a flyer containing objective crime information, detailing the decrease in homicides and robberies in the city. The goal was to introduce exogenous variation in exposure to information and estimate its effect on the citizens' fear of crime and their attitudes towards the police. The results show that information can have a significant effect on perception, in this case increasing the share of people who feel safer by 30 percent, improving ratings of

police effectiveness in dealing with robberies by 5 percent, and reducing the share of people who distrust the police by 11 percent.

An increasing body of literature has documented the impact of information on a wide range of behaviors and attitudes.[4] In the area of criminology, experimental studies in developed countries have shown that the distribution of information booklets about crime and criminal justice has improved people's knowledge of the sentencing process and positively affected attitudes towards and confidence in the criminal justice system (Chapman, Mirrlees-Black, and Brawn, 2002; Salisbury, 2004; Singer and Cooper, 2008).[5] In particular, Quinton (2011) concludes that while being exposed to the data has made people more aware of the possibility of being a victim, it has not made them more worried about being a victim of crime. Despite these efforts to understand crime perception in developed countries, a huge knowledge gap remains for developing countries. To our knowledge, this is the first survey experiment to test the impact of information in the field of crime and perception of security in the LAC region.[6]

1. Crime Beliefs: A Brief Literature Review

The paradox of a city with less crime yet more citizens in fear of crime underlines the importance of understanding how crime beliefs have formed and how pessimistic attitudes (priors) regarding crime can be changed. According to social and experimental psychology, the formation of a specific belief can be influenced by how easily a person can recall the details of an event (e.g., victimization) (see Kahneman, 2002; Schwarz and Bless 2005; Schwarz et al., 1991; Tversky and Kahneman, 1973) or by his or her affective reaction (i.e., feelings) to the event without considering descriptive features. The formation of an uninformed opinion can also result from a combination of these mechanisms. Incorrect beliefs can be influenced by the extent of the "mental contamination," whereby a person ends with an inappropriate judgment, emotion,

[4] In the analysis of behavior, Duflo and Saez (2003) explore the causal impact of information on retirement decisions, Bertrand et al. (2010) focus on demand for banking credit, and Chong et al. (2011) estimate the causal impact of exposing information about corrupt candidates on voter turnout. Cruces, Pérez-Truglia, and Teta (2013) look at preferences for redistribution when reducing people's bias in regards to their relative position in the income distribution. Ortega Ronconi, and Sanguinetti (2012) explore how information about government performance affects one's willingness to pay taxes, and Castro and Scartascini (2013) find that tax compliance can increase by influencing taxpayers' beliefs regarding the levels of enforcement, equity, and fairness of the tax system.

[5] Wünsch and Hohl (2009) find a significant positive effect on people's confidence in the police.

[6] There has been some experimental work related to police corruption in Mexico (see Fried, Lagunes, and Venkataramani, 2010) and to police effectiveness in Colombia (see García, Mejía and Ortega, 2013). Outside the LAC region, see Banerjee et al. (2010) on the effects of police reform in India.

or behavior because of unconscious/uncontrollable mental processing (Wilson and Brekke, 1994).

It has been found that the ease with which an individual can retrieve a negative social experience influences his or her concept of "worry" and "fear" (Tversky and Kahneman, 1973, cited in Jackson and Gouseti, 2012).[7] For example, when people hold a vivid image of a crime, they judge its probability to happen again to be relatively high. They may exchange a structured question such as "how likely is it that you will become a victim of a crime?" for a relatively easier question such as "how easily can I imagine becoming a victim of crime?" (Tversky and Kahneman, 1973, cited in Jackson and Gouseti, 2012). Past victimization experience, exposure to news on crime, and interpersonal communication can increase the ease to recall a crime episode, leading the person to overestimate its incidence (Gonzalez and Wu, 1999).[8] The ease to which events can be remembered (heuristic process) dominates responses and makes people minimize their cognitive effort by reacting to information based on belief rather than reason.

There could also be asymmetries in the magnitude of the responses to perceived crime risks. For example, according to Jackson and Gouseti (2012: 5), "once individuals associate a risk with high personal consequence and low personal control, only a relatively small level of perceived likelihood is needed to elicit a strong emotional response." In contrast, showing people that crime has decreased might not generate as strong as an effect in the opposite direction. People who process the risk of crime in an affective (feeling) rather than in an analytical manner may be uninterested in the actual probability of crime, and thus less likely to feel better when exposed to objective information on their true vulnerability and the actual incidence of crime.

Another study (Schwarz and Bless, 2005: 3) observes that people "rarely retrieve all information that may be relevant to a judgment but truncate the search process as soon as 'enough' information has come to mind." This implies that temporarily accessible information—such as spectacular yet uncommon events covered in the news—can disproportionately influence the formation of one's beliefs. Conversely, when the positive features of an event (crime) are rather difficult to remember (e.g., feeling safe), the representation of the event tends to be negative (i.e., people believe crime is widespread).

[7] Schwarz (1998) finds that people are likely to base their judgments on accessibility than on a strategy of systematic processing.

[8] According to Folkes (1988: 13), "As a consequence, people erroneously believe that homicide occurs more than suicide, and that death occurs more from fire than from drowning. (…). When retrieval seems easy, the event will be judged probable; when retrieval seems difficult, the event will be judged improbable."

In summary, information about crime may shape people's emotional and cognitive perception of risk. However, while fear-inducing and vivid representations of crime events may elicit strong reactions, changing crime beliefs through limited exposure to "good news" may be challenging.

2. Survey Experiment: Design and Implementation issues

We implemented a survey experiment to test whether exposing citizens to objective information on crime can change their perceptions about crime, including fear of crime, trust in the police, and police effectiveness. The sample was selected through a three-step process. In the first step, we randomly selected 90 "cuadrantes" out of a pool of more than 1,000 (the sampling frame). Cuadrantes are administrative units consisting of blocks or neighborhoods created under "Plan Cuadrantes," a community-policing program that aims to bring together police and communities and to increase the accountability of policemen by assigning them to specific neighborhoods.[9] Second, we randomly selected blocks within each *cuadrante* in the sample, and finally we surveyed four households in each block.

The total sample for the survey consisted of 2,029 households. Since the distribution of crime and violence across cuadrantes is highly eschewed, and close to 70 percent of homicides occur in the last three deciles (Figure 3), we stratified the sample using homicide data to maximize variation in violence levels. We generated three strata of cuadrantes: low, medium, and high violence.[10] Within each stratum, simple random sampling was used to select cuadrantes. Thus, our sample consists of 30 cuadrantes per strata of violence (for a total of 90 as mentioned above). As shown by Table A2 in the Appendix, baseline characteristics (homicide, population, and robbery levels) are similar between selected cuadrantes and the rest of the cuadrante population.

[9] The "first" wave of crime-reducing actions in Colombia (starting in 2003) were mainly focused in rural area, in particular in distant cities where police, the army, and even the state were not present, or at least did not have a de facto presence. Cities benefited mainly from the reduction of organized crime networks. However, "urban" crimes such as robbery, assault, muggings, and burglaries did not decrease as substantially as homicides did in rural areas. Plan Cuadrantes reinforced citizen security in the cities, targeting crimes that were not highly affected by the national trend.

[10] The low violence group contained cuadrantes in deciles 1–6 of the homicide distribution (less than 6 homicides per 100,000 inhabitants), the middle group consisted of cuadrantes in deciles 7–9 of the homicide distribution (between 6 and 54 homicides per 100,000 inhabitants), and the high group included the most violent decile (more than 54 homicides per 100,000 inhabitants).

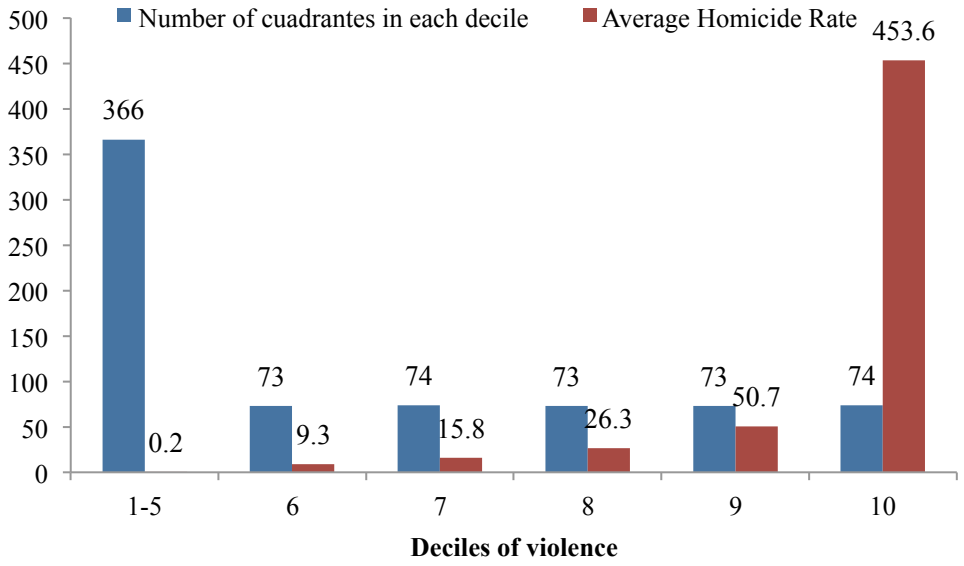
Between October and December 2012, we conducted face-to-face visits with the sample respondents, providing them with updated information on crime trends. These visits were followed by a telephone-based survey, conducted two to three weeks later. The survey was designed to test the causal impact of the information on the attitudes of the respondents about crime risk, police trustworthiness, and police effectiveness.

During the in-person visits, after collecting data on household demographics, victimization experience, crime reporting, crime avoiding activities, knowledge of crime trends in Bogota, and other relevant baseline data, we asked respondents to choose one of two identical envelopes, one of which included a flyer with objective crime information and the other of which was empty. The flyer presented two basic facts about Bogota: first, that homicide rates had dropped by half in the last decade; and second, that robberies had declined over the last two years (see Appendix A1). The flyer was created based on feedback from five focus group sessions conducted in Bogota and was designed to maximize chances that respondents read and understood the information.[11]

The data in the flyer were based on official crime statistics from the national police. Initially, one concern with the data was the significant underreporting of robberies.[12] However, we confirmed that the trends presented in the flyer were consistent with those reported in the victimization survey filed by the Bogota Chamber of Commerce since 2004, which in principle captures all victimization occurrences, including those not reported to the police. Another concern was related to the timing of our statistics and the survey itself. The flyer contained information current through the first half of 2012, but the fieldwork was carried out in the second half of the year. The concern was that a significant increase in the victimization rate between the first and second half of 2012 would have conflicted with the positive message contained in the flyer. However, based on the Bogota Chamber of Commerce survey, victimization rates indeed declined in the second half of the year, validating the information provided in the flyer.

[11] Participants agreed that their primary concerns were homicides and robberies at the city level (as opposed to the neighborhood or country level), and that basic facts in simple charts were easier to interpret.
[12] Homicide data does not suffer from the same underreporting caveats.

Figure 3. Distribution of Homicides in Bogota



Source: Colombia National Police.

The envelope with the flyer was chosen by approximately 4 out of every 10 respondents. As shown in Table A3 herein, randomization successfully created balance in observable characteristics across the treatment and control groups.[13] After the envelopes were chosen, we asked respondents several questions to determine their perceptions of safety and of police performance, including:

1. With respect to 2010, how safe do you feel in Bogota today? Possible answers were safer, the same, less safe, or don't know.
2. With respect to a decade ago, how safe do you feel in Bogota today? Possible answers were safer, the same, less safe, or don't know.
3. On a scale of 1 to 5 (with 1 being the worst rating and 5 the best), how do you rate the effectiveness of the police in preventing robberies?
4. On a scale of 1 to 5 (with 1 being the worst rating and 5 the best), how do you rate the effectiveness of the police in preventing homicides?
5. On a scale of 1 to 5 (with 1 being no trust at all and 5 a great deal), to what extent do you trust the police?

[13] The number of observations reported (1853) is smaller than the original sample (2029). We dropped 178 observations from the empirical analysis because a few interviewers did not follow the experiment's protocol in distributing the envelopes (e.g., in some cuadrantes the flyer was not selected at all). The number of observations seen in Table A2 herein reflects the trimmed sample.

3. Evidence

3.1 Baseline Results

Table 1 presents our baseline results, comparing the outcomes of the above questions in the treatment and control groups.[14] The first two columns show the proportion of respondents who said they felt safer today in comparison to different time periods; the middle two columns show average ratings of police effectiveness in preventing robberies and homicides; and the last column reports the share of respondents who assigned a score of 1 or 2—a proxy for the level of (dis)trust in the police—to the final question about trust.

The information treatment has an effect in the expected direction in all outcomes, but it is only statistically different from zero for the outcomes of feeling safe, police ratings in robberies, and (dis)trust in the police. Provided with no information, 8 percent of respondents in the control group said they felt safer today in comparison to 2010. Given the information treatment, 11 percent of respondents said they felt safer today. Thus, on average, the treatment increased the share of respondents who felt safer by 3 percentage points, an overall increase of 33 percent over the sample average. The information treatment also improved evaluations of police effectiveness in preventing robberies by one-tenth of a standard deviation (a relatively small effect).[15] Finally, the information treatment reduced the proportion of individuals who distrust the police by 4 percentage points, an overall reduction of 11 percent given a sample average of 37 percent.[16]

[14] Given the nature of our intervention, we present analysis based on the assignment to treatment (intent to treat, or ITT-estimates).

[15] The standardized effect size (Glass's delta) is obtained by dividing the treatment effect (0.12) by the standard deviation of the outcome in the control group (1.17).

[16] We do not find a similar effect when the dependent variable is defined as the share of people who trust the police (a score of 4 or 5 based on a scare of 1 to 5).

Table 1. Difference-of-means and Difference-of-proportions t-tests

	Percent of respondents that feel safer with respect to *2010*	Percent of respondents that feel safer with respect to *decade ago*	Police ratings in *robberies* (1–5 scale)	Police ratings in *homicides* (1–5 scale)	Percent of respondents who *distrust* the police
Control	0.08 (0.01)	0.17 (0.01)	2.67 (0.04)	2.54 (0.03)	0.39 (0.02)
Treatment	0.11 (0.01)	0.18 (0.01)	2.79 (0.04)	2.61 (0.04)	0.35 (0.02)
Difference	0.03** (0.01)	0.01 (0.02)	0.12** (0.05)	0.07 (0.05)	-0.04** (0.02)
N-Obs	1,833	1,797	1,853	1,853	1,853

Source: Authors' elaboration based on the survey.
Notes: Difference in means based on T-tests with unequal variances. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

3.2 Biased Perceptions of Insecurity

The previous analysis establishes that a simple information treatment can have a significant effect on perceptions of safety, trust in the police, and police performance. However, there could be significant biases among the respondents. In general, familiar information is usually easier to process than unfamiliar information. For those individuals who believe that crime is widespread, positive news may challenge these priors and be more difficult to absorb.

To measure the extent of bias, we asked respondents the following questions before providing the information treatment:

1. In comparison to 2010, do you think robberies today have increased, decreased, or stayed the same? Another possible answer was "don't know".
2. How many homicides do you think occur per day in Bogota? Possible answers were from 0 to 10 or "more than 10".
3. Out of 10 people, how many do you think have been a victim of crime in Bogota? Possible answers were from 0 to 10.

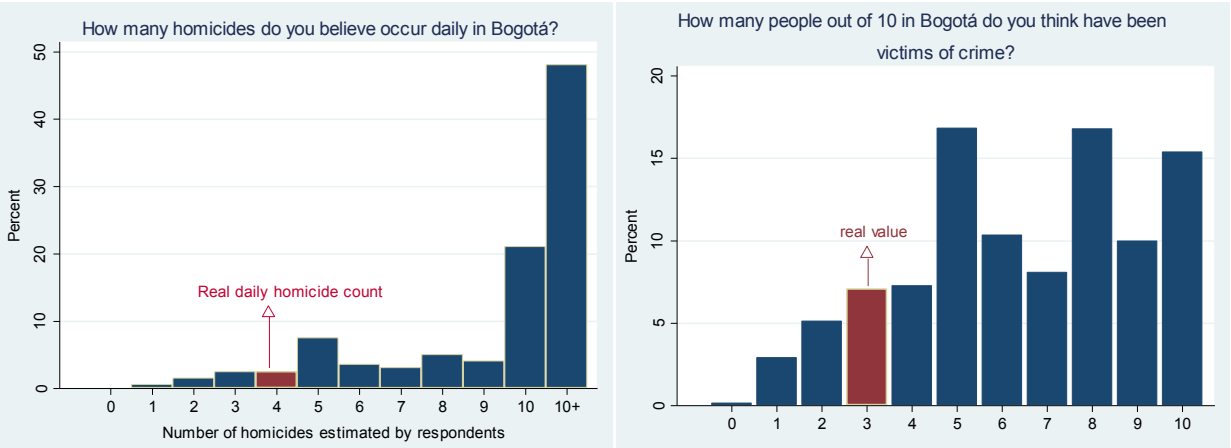
Table 2 presents the distribution of the perception of trends in robberies. Only 10 percent of respondents believed that robberies had decreased compared to 2010. In addition, as Figure 4 shows, the distribution of perception of homicides and overall victimization in Bogota is highly skewed towards the right, showing significant upward biases in perceptions. The figures include in red the actual number of homicides per day (four) and the current victimization rate (30 percent). These results suggest that respondents overestimate crime levels, leading to large biases measured as the difference between objective and subjective rates.

Table 2. Distribution of Perception of Robbery

	Responses	Percent of total responses
Increased	1,147	62.7
Decreased	190	10.4
Stayed the same	493	26.9

Source: Authors' elaboration based on the survey.

Figure 4. Distribution of Perceptions of Incidence of Homicide and Victimization



Source: Authors' elaboration based on the survey.

We then tested whether the information treatment had a differential impact depending on the extent of ex-ante biased perception. Table 3 shows conditional average treatment effects (CATE) for individuals with different perception of the trend in robberies. We focus on biases because, in principle, it should be easier to guess the trend in robberies than the exact number of homicides or victims. The effect is statistically significant only for those without who reported

that the number of robberies "stayed the same" over the given timeframe. No effect was found for respondents that thought that robberies had increased (the most biased). This suggests that the treatment is not able to correct biased or strongly ingrained perceptions, but rather operates among those with relatively uncertain views on crime trends. When encountered with information that challenged their previous beliefs, a significant share of participants dismissed it all together. These results are aligned with those in previous literature in psychology, where moods and source credibility reduce the amount of systematic processing of information and replace it with heuristic processing (Chaiken and Maheswaran, 1994; Schwarz and Clore, 1983).

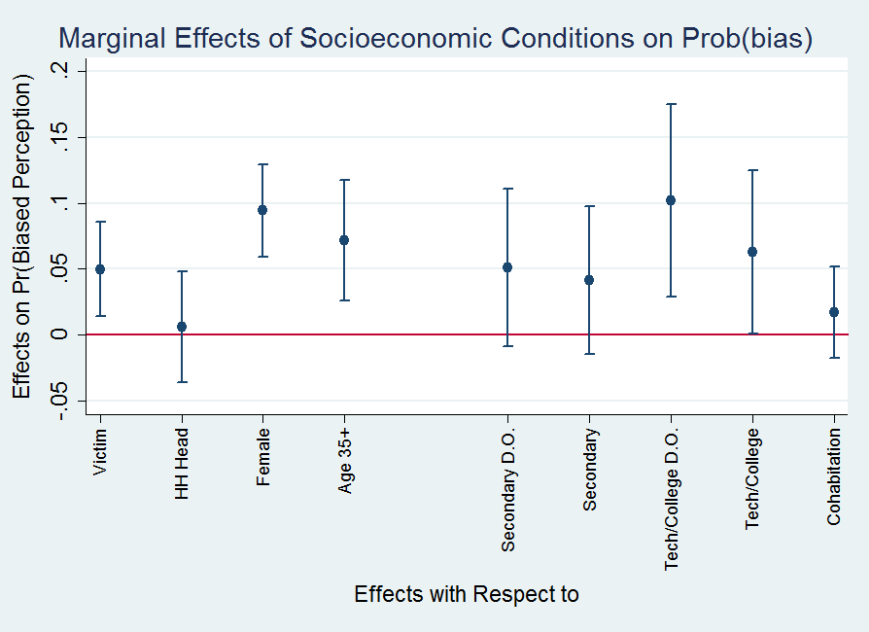
Table 3. Information Treatment Effect and Biased Priors about Robbery Trends (CATE)

	Percent of respondents that feel safer with respect to *2010*	Percent of respondents that feel safer with respect to a *decade ago*	*Police ratings robberies* (1–5 scale)	*Police ratings homicides* (1–5 scale)	Percent of respondents who *distrusts* the police
Perception of trend in robberies					
Decreased	0.07	0.03	0.17	0.15	-0.07
Stayed the same	0.07***	0.03	0.22**	0.14	-0.03
Increased	0.01	-0.01	0.06	0.02	0.14

Source: Authors' elaboration based on the survey.

To understand what determines biased perceptions of insecurity, we regressed a dummy variable bias (equal to 1 if the individual thought robberies had increased, 0 otherwise) on a number of socioeconomic covariates: victimization (a dummy equal to 1 if respondent or household member was a victim of crime during the previous 12 months); income level; whether the respondent is head of household; age; gender (equal to 1 for females); education level; whether the respondent lives alone or not; and errors clustered at the cuadrante level. Figure 5 illustrates the marginal effects for each of the covariates. Victimization, being female, and age are strong predictors of biased perceptions. This seems consistent with past findings that those who may feel less able to protect themselves—women and the elderly—are more likely to worry about crime (Jackson and Grey, 2010). However, by and large, younger individuals are more likely to be victims of crime, particularly violent crime.

Figure 5. Determinants of Biased Perceptions of Crime *(95% CI)*



Source: Authors' elaboration based on the survey.

3.3 Dealing with (one-sided) Noncompliance

The average treatment effects presented above are in fact intention-to-treat (ITT) effects, since they compare responses among individuals assigned to treatment and control. The ITT can be informative, as it summarizes the net impact of our intervention, but it overlooks the potential for noncompliance, in which individuals assigned to treatment do not comply or do not actually receive the treatment. In this particular case, it may be that respondents intended to receive treatment failed to read the information provided in the flyer or spent too little time doing so, thus invalidating the intended effects.

One way of dealing with noncompliance is to calculate the local average treatment effect (LATE)—that is, the average treatment effect among the particular subset of the respondents that effectively move from untreated to treated when assigned to the treatment condition (Gerber and Green, 2012). In other words, the LATE estimates the effect of the treatment only on those who actually complied or received the treatment. In our survey, interviewers were instructed to record the amount of time a respondent spent reading the flyer. In fact, about 52 percent of respondents in the treatment group spent less than a minute doing so. While the flyer only contained two

main points (the long-term decrease in homicides and short-term decrease in robberies in Bogota), both conveying the same message (decreasing crime rates), we still need to explore the possibility of noncompliance.

To estimate the LATE, we use an instrumental variables regression model, where the effect of treatment will be calculated based on the time spent reading the flyer. For this, we regress the outcome variables on measures of reading time instrumented by the random assignment of treatment. We define different thresholds for reading time. The results in Table 4 suggest that the treatment effects are stronger for those who spent more time reading the flyer. Reading the flyer for more than a minute increased the share of respondents who felt safer by 6 percentage points, increased police ratings by one-fifth of a standard deviation, and reduced distrust by 8 percentage points. These effects are twice as large as the ITT estimates reported above. Thus, one can assume that a longer exposure to objective data is effective in reducing the cognitive effort to arrive at a balanced judgment.

Table 4. Estimation of the LATE (2SLS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Feeling safer with respect to 2010				*Police rating in robberies (1–5 scale)*				*Distrust in police*			
Reading time >=30s	0.031**				0.123**				-0.043*			
	(0.0160)				(0.0600)				(0.0250)			
Reading time >=45s		0.037**				0.147**				-0.052*		
		(0.0190)				(0.0720)				(0.0300)		
Reading time >=60s			0.059**				0.233**				-0.082*	
			(0.0290)				(0.1140)				(0.0480)	
Reading time >=120s				0.073**				0.289**				-0.102*
				(0.0370)				(0.1410)				(0.0590)
Constant	0.081***	0.081***	0.081***	0.081***	2.674***	2.674***	2.674***	2.674***	0.391***	0.391***	0.391***	0.391***
	(0.0080)	(0.0080)	(0.0080)	(0.0080)	(0.0360)	(0.0360)	(0.0360)	(0.0360)	(0.0150)	(0.0150)	(0.0150)	(0.0150)
Observations	1,833	1,833	1,833	1,833	1,853	1,853	1,853	1,853	1,853	1,853	1,853	1,853

Source: Authors' elaboration based on the survey.
Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

3.4 The Effects of Information Over Time

As mentioned in the introduction to this paper, two to three weeks after the face-to-face interviews we tried reaching the respondents for a second time, using a telephone-based survey with a limited number of questions. We gathered follow-up information for 81 percent of the respondents in the original sample. To determine whether a sample selection problem was present, we estimated the probability of answering the phone survey by regressing a binary variable capturing participation in the second round (equal to 1 if the individual answered the telephone survey, and 0 otherwise) on the same number of socioeconomic covariates and cuadrante fixed effects as before. As shown in Table A4, there is no evidence of sample selection bias.

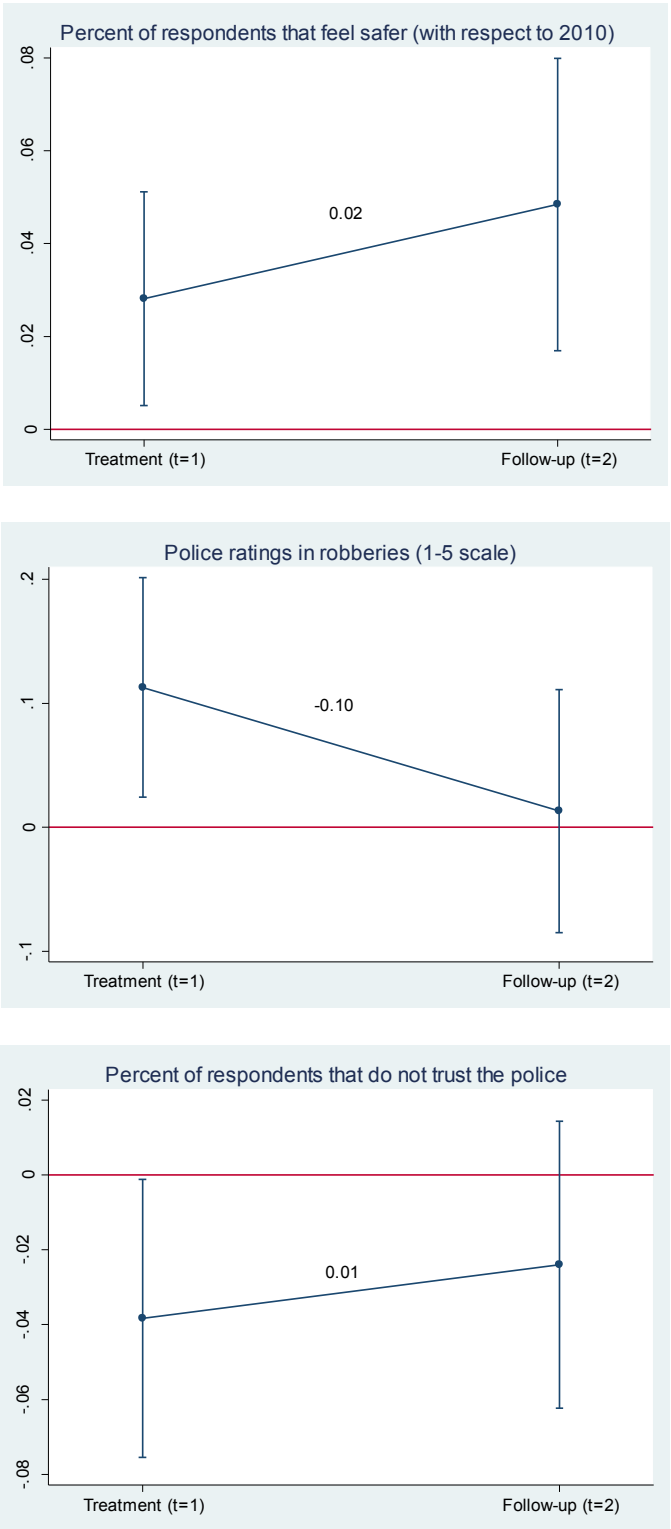
One of the advantages of the follow-up exercise is that, in contrast to much of the existing research that uses cross-sectional survey data, it allows us to estimate the duration of the treatment effects. To do this, we pool information from both surveys and structure the data in panel format. After two to three weeks, the proportion of people feeling safer increases from 3 to 5 percent (see Table 5). We do not find significant results for the outcomes on perception of the police (Figure 6). The follow-up survey also allows us to determine the respondents' perceptions of crime trends after treatment. It is noteworthy that the percentage of people who responded that robberies had decreased was 3 percentage points higher in the treatment than in the control group, increasing the odds of changing heuristic pathways, even if at the margin.

Table 5. Duration of Treatment Effects

	Percent that feel safer with respect to 2010	Percent who believe that robberies have decreased
Treatment	0.18	0.13
	(0.02)	(0.01)
Control	0.13	0.11
	(0.01)	(0.01)
Difference	0.05***	0.03*
	(0.02)	(0.02)

Source: Authors' elaboration based on the follow-up survey.
Notes: Difference in means based on T-tests with unequal variances.
Standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Figure 6. Summary of Treatment Effects by Survey Round *(95 percent CI)*



Source: Authors' elaboration based on the follow-up survey.

Conclusions

Positive improvements in citizen security rarely make it to the top of the news or social communication channels. Yet exaggerated displays of violent crime in the media or word of mouth stories of victimization episodes have rippled effects throughout society. This exposure to crime events can elicit strong emotional responses and make it easier for citizens to recall crime events, leading to the belief that crime is more frequent and widespread than in actuality, increasing citizens' perceptions of insecurity, fear of crime, and distrust in institutions.

We implemented a survey experiment in Bogota—one of few cities in Latin America with declining homicides and robberies in recent years—to test whether exposing citizens to objective information on crime trends was able to change perception. This can be considered a very light treatment compared to the amount of (negative) information with which citizens are bombarded on a daily basis through media outlets. More accurate information showing the decrease of overall levels of violence in Bogota could help the population to feel more safe and trusting, and in general to be more cooperative towards public institutions. Increased cooperation could inspire a host of positive behaviors, from reporting crime, to condemning corruption, to paying taxes. Closing the gap between perception and reality has the potential to impact the overall welfare of citizens.

We found that the dissemination of objective information on declining crime trends can improve perceptions of citizen security. The information treatment increased the share of people that feel safer by 30 percent, improved ratings of police effectiveness in dealing with robberies by 5 percent, and reduced the share of individuals who distrust the police by 11 percent. These effects are statistically significant for these three outcomes, although economically small for the police rating. Moreover, the improvement in perception was significantly stronger for those that spent more time reading the information, and in the case of the perception of safety, the effect even persisted over time. However, the information treatment seemed to have an effect only among the respondents with relatively uncertain views about crime trends, and not among those with strong biased priors.

The overall results suggest that, while informational campaigns hold a lot of promise, they may not be as effective in reaching those citizens with deep-rooted misconceptions about crime. In addition, the citizens' improved perceptions of the effectiveness of the police in dealing with crime tend to weaken over time, indicating that active engagement and communication is

needed to achieve lasting benefits. Information campaigns can also be seen as complements to government programs already in place, boosting confidence beyond what can be expected from security programs alone. However, for information to be effective, it has to be perceived as objective, credible, and transparent, and the intensity of interaction may need to be more frequent in terms of reporting positive trends about crime.

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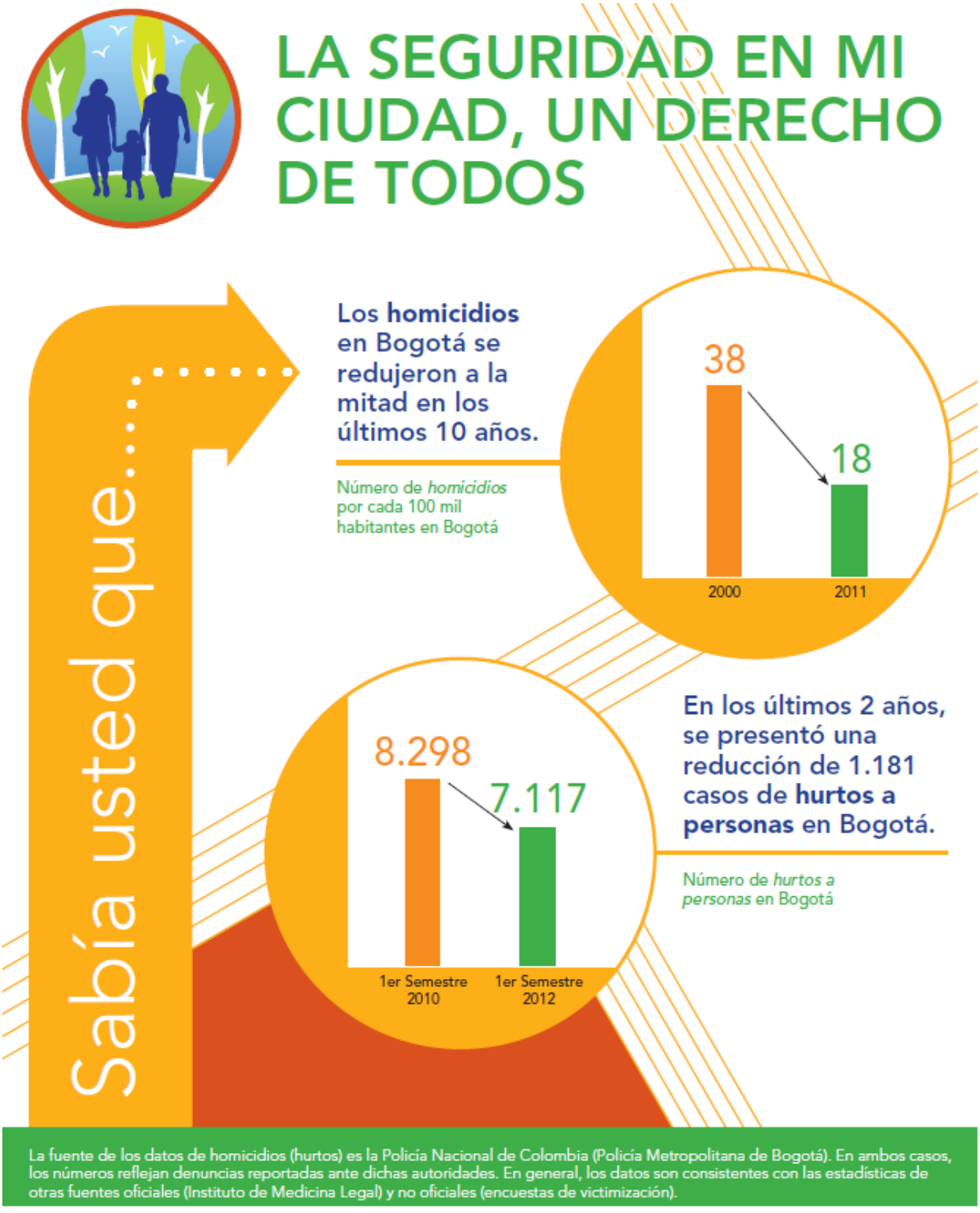
Appendix A1. Treatment: Pamphlet with Crime Information and Trends



Appendix A2. Randomization Check: Cuadrantes

	(1) Homicide rate	(2) Population	(3) Robbery rate
Sample	11.12 (36.63)	-799.0 (739.0)	-452.7 (605.4)
Constant	44.93*** (11.63)	8,092*** (244.1)	842.8*** (199.0)
Cuadrantes	893	733	759
R-squared	0.000	0.002	0.001

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Sample is a dummy variable equal to 1 if "cuadrante" is included in the survey (and 0 otherwise).

Appendix A3. Randomization Check: Baseline Household Characteristics

Variable	N	Mean	sd	Treatment	Control	t-value
Insecurity level	1853	2.056	0.776	2.040	2.068	-0.761
Media exposure	1853	2.968	1.559	3.040	2.916	1.696
Knowledge of "Cuadrantes" Program	1853	0.542	0.498	0.561	0.529	1.335
Victimization	1853	0.403	0.491	0.385	0.415	-1.287
Trust in public institutions	1853	2.237	0.792	2.255	2.225	0.815
Knowledge of police	1853	1.149	1.200	1.174	1.132	0.745
Homicide estimation	1853	9.200	2.576	9.226	9.181	0.366
Subjective trend in robberies	1832	0.627	0.484	0.639	0.619	0.887
Stopped "going out" out of fear	1853	4.202	18.194	3.665	4.590	-1.079
Victimization estimation	1853	6.445	2.573	6.561	6.361	1.646
Frequency of policing	1801	2.018	1.535	1.981	2.044	-0.851
Belonging to a government program	1853	0.146	0.353	0.147	0.145	0.124
Paying rent	1853	0.376	0.485	0.376	0.376	0.011
Not enrolled in retirement program	1853	0.670	0.470	0.662	0.676	-0.613
Age	1853	45.159	16.950	44.651	45.525	-1.095
Education	1853	6.223	2.320	6.249	6.204	0.407
Income Index (estrato)	1853	2.501	1.110	2.468	2.525	-1.087
HH assets	1853	6.749	2.075	6.834	6.687	1.501
Cohabitation	1853	0.604	0.489	0.594	0.612	-0.773
Head of household	1853	0.484	0.500	0.494	0.476	0.732

Appendix A4. Follow-up Survey: Probability of Selection Based on Covariates

	Prob(follow-up selection)
Treatment	-0.0475 (3.236)
Victim	0.0448 (3.051)
Income Index (estrato)	-0.0534 (3.634)
HH head	0.161 (10.98)
Gender	0.0893 (6.076)
Age	-0.000197 (0.0136)
Education	-0.0148 (1.009)
Cohabitation	-0.00629 (0.434)
Constant	0.782 (53.22)
Cuadrante FE	Yes
Observations	1,853

Source: Authors data.
Notes: Standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1