



The Dark Figure of Crime in Latin America and the Caribbean

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Abstract

The dark figure of crime is the gap between crimes reported in victimization surveys and crimes registered in administrative police records. This paper quantifies the dark figure of gender-based violent crimes through a systematic comparison between official crime figures and victimization surveys in Latin America and the Caribbean over 2004–2014. We find that the dark figure of gender-based violent crimes is between 92 and 95% in comparison with a dark figure of between 63 and 80% in developed countries. This means that in the region, around 5 out of every 100 crimes are found in administrative police records. The dark figure of gender-based violent crimes is similar to that of extortion and kidnapping, but it is significantly greater than the dark figure of assaults and robberies of vehicles (65 and 52%, respectively). Our results show that the perception of corruption and the low confidence in the police are positively associated with the dark figure of crime through the channel of under-reporting and that the dark figure of gender-based violent crimes is greater in rural areas. These findings provide evidence of a potential bias in administrative police data and the need for policies aimed at reducing under-reporting, in particular for gender-based violent crimes.

Keywords Dark figure of crime · Gender-based violence · Reporting · Police · Victimization

JEL Classifications K42 · O10 · O17 · O57 · Z13

Introduction

Latin America and the Caribbean (LAC) is the most violent region in the world. Less than 9% of the world's population lives in the region; yet, 33% of recorded homicides worldwide occur there. The annual homicide rate in LAC of 24 per 100,000 population is more than three times the world average, six times greater than that of the USA, and 20 times greater than in the United Kingdom. This makes LAC one of the most dangerous places on the planet. In addition, LAC continues to be the only region where, on average, levels of violence are still high and have been increasing since 2005 (Jaitman 2017). These levels of violence are even more worrying for gender violence. Considering only non-partner sexual violence, the prevalence of violence against women in LAC is close to that observed in Africa (10.7% and 11.9%, respectively), and almost doubles that in Europe (5.2%) or

Southeast Asia (4.9%) (Jaitman 2017). Given this high incidence of violence, it is not surprising that the main concern of the population is crime, even more so than unemployment or the economic situation of countries in the region (Jaitman 2015).

The purpose of this article is to examine the phenomenon of the dark figure of crime for different types of crimes, with a special focus on gender-based violent offenses, in LAC. The dark figure (DF, hereafter) of crime refers to the crimes committed that are neither reported to the police, nor recorded in official police records even if reported. We approximate this figure by way of a systematic comparison between administrative crime records and victimization surveys for the period 2004–2014.

Understanding the DF of crime, especially of gender-based violent crimes, is on the one hand central for the design of public policies directed toward preventing crime and for the impact evaluation of those policies, especially in a context where crime is a daily concern for people. First, a high DF of crime impedes key actors from adequately understanding the crime problem, such as the critical areas where crimes occur, the time when crimes occur, which crimes are the most frequent, and the characteristics of the victims (Zakula 2015).

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Second, a lack of knowledge about the DF of crime can limit the capacity of the judicial system to deter crime, since the type of crime reported determines the actions by law enforcement, and under-reporting contributes to the inefficient allocation of resources of the judicial system. For example, one problem that arises as a result of not taking this gap into account is that crimes with low DF are over-represented in administrative records, while crimes with high DF are under-represented (Zakula 2015). As will be discussed later, this is mainly the case for gender-based violent crimes. Third, victims of crimes that were not reported to the police or recorded in administrative systems may not be eligible to access benefits in terms of the support and protection offered by public and private entities (Skogan 1977). Forth, a high DF of crime implies that many illegal actions will not end up in a legal process in the judiciary, and no sanction will be taken against the aggressors. This feeds the perception of impunity and ineffectiveness of justice. In the Becker framework of crime economics, an expected low cost of committing crimes increases the incentives to engage in criminal activities *vis-à-vis* legal activities.

Understanding the DF, on the other hand, is critical to close the knowledge gap in the analyses of criminality. For example, the DF of crime leads to under-estimate the true social costs of crime because private insurance premiums and the cost of compensation programs for victims are affected by the number and the nature of the incidents that do not appear in official estimates. In addition, inferences based on official statistics bias the true distribution of criminality towards certain types of victims or crimes (Skogan 1977). In summary, information on the volume and distribution of crime plays a central role both in the design of public policies as well as in the rigorous study of criminality.

To the best of our knowledge, there is scant knowledge on the levels of crimes not officially reported in LAC countries. The literature refers mostly to more targeted research or comparisons within countries rather than between countries, and most of the research focuses on advanced economies where the incidence of crime is relatively low (for example in countries studied such as Netherlands or Finland, homicide rates are between 44 and 17 times lower than in LAC). In contrast, studies that focus on developing countries or LAC countries are scarcer and do not focus on gender violence. For this reason, the present study is innovative in systemically and robustly quantifying the DF of different types of crimes in LAC countries and is novel in examining the principal determinants of the heterogeneity of DF among countries in the region using an original panel dataset.

The results of this study demonstrate that there is a large DF of gender-based violent crimes in the region. We find that this figure is greater than 70% for sexual crimes and domestic violence against women older than 15 years. We also find that there is some heterogeneity in this figure within countries

except for Chile and that there is a positive correlation between the DF of gender-based violent crimes and the percentage of people living in rural areas, which may be due to the greater barriers to reporting crime faced by rural women in comparison to urban women. Compared to other types of crimes, DF of gender-based violent crimes is relatively similar to the DF of extortion and kidnapping, while it is significantly greater than the DF of assaults and vehicle thefts, which ranges between 61 and 38%, respectively. This is in line with the economic theory of crime: the lower DF occurs in crimes for which there is a greatest benefit from reporting the incident in relation to its cost. Compared to developed countries, the DF of gender-based violent crimes is, on average, 30% higher in LAC, while the DF of all crimes is 70% higher in LAC. This suggests that the DF of sexual crimes is also a problem in developed countries. In terms of general crimes, our results indicate that the DF is heterogeneous in the region: the DF for South America and Central America is on average 30% higher than that of the Caribbean.

The DF can be attributed to under-reporting and under-recording. We find evidence that administrative records suffer under-reporting mainly. More precisely, women's under-reporting rate of gender-based violent crimes is 43% higher than that of men in 2012, while for robberies and general crimes, women's under-reporting rate is 9 and 5% higher than that of men.

Finally, using quantitative techniques and a panel of 14 countries between 2004 and 2014, we find that the perception of corruption, the low confidence in the police, the low income per capita, and the fewer number of police officers per population are positively correlated with the DF of crime. Our results also suggest that the rate of homicides is directly related to the DF of crime, which suggests that official statistics distort the true geographic profile of criminality because they are biased downward in areas with the greatest amount of crime. The estimates include fixed effects by year and subregion.

The DF of crime is a multi-dimensional phenomenon; regarding under-reporting, our results show that the authorities can take certain actions to increase the reporting rate in the short and medium term. These actions include public awareness campaigns about the importance of reporting as well as interventions that promote more transparent and efficient policing and that generate confidence among the population.

The next section of the paper describes the basic conceptual framework that guides our empirical analysis and reviews the literature relevant to this topic. “[Data Sources and Methodology](#)” details the data sources and the methodology used for the calculation of the DF of crime. “[The Dark Figure of Gender-Based Violent Crimes from a Comparative Perspective](#)” describes the DF of gender-based violent crimes from a comparative perspective, while “[Determinants of the Heterogeneity of Dark Figure of Crimes](#)” analyzes the main determinants of the DF. Finally, “[Conclusions](#)” presents the main conclusions.

Table 1 Dark figure for sexual crimes and domestic violence (in percent)

Country	Crime	DF ^a	Lower bound ^b	Upper bound	Period
Chile	Sexual crimes (women 15–65 years old)	98.40	98.26	98.52	2008, 2012
	Domestic violence (women 15–65 years old)	96.40	96.08	96.67	2008, 2012
Mexico	Sexual crimes (men and women 15–65 years old)	95.76	95.38	96.08	2010–2014
	Domestic violence (women 15 and older)	94.00	92.03	95.19	2011
Ecuador	Sexual crimes (women 15 and older)	76.90	69.30	81.48	2011
	Domestic violence (women 15 and older)	91.70	88.97	93.35	2011
Peru	Domestic and sexual violence (men and women 15 and older)	70.70	68.06	72.93	2010–2014
Trinidad and Tobago ^c	Sexual crimes (men and women 15 and older)	89.24	87.11	90.76	2014
	Domestic violence (men and women 15 and older)	99.32	99.18	99.41	2014

Source: Calculations by the authors based on the following sources:

Chile: Encuesta Nacional de Victimización por Violencia Intrafamiliar; Delitos Sexuales Subsecretaría de la Prevención del delito (administrative data)

Ecuador: Encuesta de Victimización Nacional; Informe Estadístico de la Unidad de Información Criminológica de la Dirección de Política Criminal de la Fiscalía General del Estado (2015)

Mexico: Encuesta Nacional sobre la Dinámica de las Relaciones en los Hogares (2011), Encuesta Nacional de Victimización y Percepción sobre Seguridad Pública (ENVIPE, 2011–2015), and Secretaría de Gobernación–Secretariado Ejecutivo del Sistema Nacional de Seguridad Pública (administrative data)

Peru: Encuesta Nacional de Programas Estratégicos in its Citizen Security module and the Instituto Nacional de Estadística e Informática de Perú (administrative data)

Trinidad and Tobago: National Crime & Victimization Survey; Trinidad and Tobago Police Service (administrative data)

^aDF is calculated as a simple average of the annual DF in each country for the years described in the last column of the table

^bThe lower and upper bound are the confidence interval for a 90% confidence level

^cAs we could not access the microdata of the victimization survey of Trinidad and Tobago, in order to approximate the cases of victimization reported only by women, we adjusted the victimization rate reported by both men and women by a factor equal to 72%, which is the proportion of cases of domestic violence reported by women according to the most recent studies (see for example, Pemberton and Joel (2018))

Conceptual Framework for the Determinants of the DF of Crime

The DF of crime can be explained by two main factors. The first refers to the rules of police departments in counting crimes. Not all crimes that are reported or discovered by the police are captured in crime statistics (under-recording); in some countries, such as Mexico, the incident is only included in the statistics if the police initiate a preliminary investigation. Other reasons why crimes that are reported might not be reflected in official statistics are processing errors, lack of response by the authorities, among other factors (Sozzo 2003). The second refers to what constitutes the principal origin of the DF of crime, namely, the decision of the victim not to report a crime (under-reporting) (Zakula 2015).

Various authors use a theoretical framework based on a cost-benefit analysis to explain the reasons why victims decide whether to report a crime (see, for example, Soares 2004 and Goudriaan 2005). Individuals report a crime because they expect some benefit—material or psychological—compared with the cost associated with reporting it. The nature of those benefits can vary widely. From a strictly material perspective, reporting a crime increases the probability of recovering stolen goods, or it can be a condition required to file an insurance claim or take some other type of legal action. Other benefits are more psychological in nature. For example, victims may report crimes

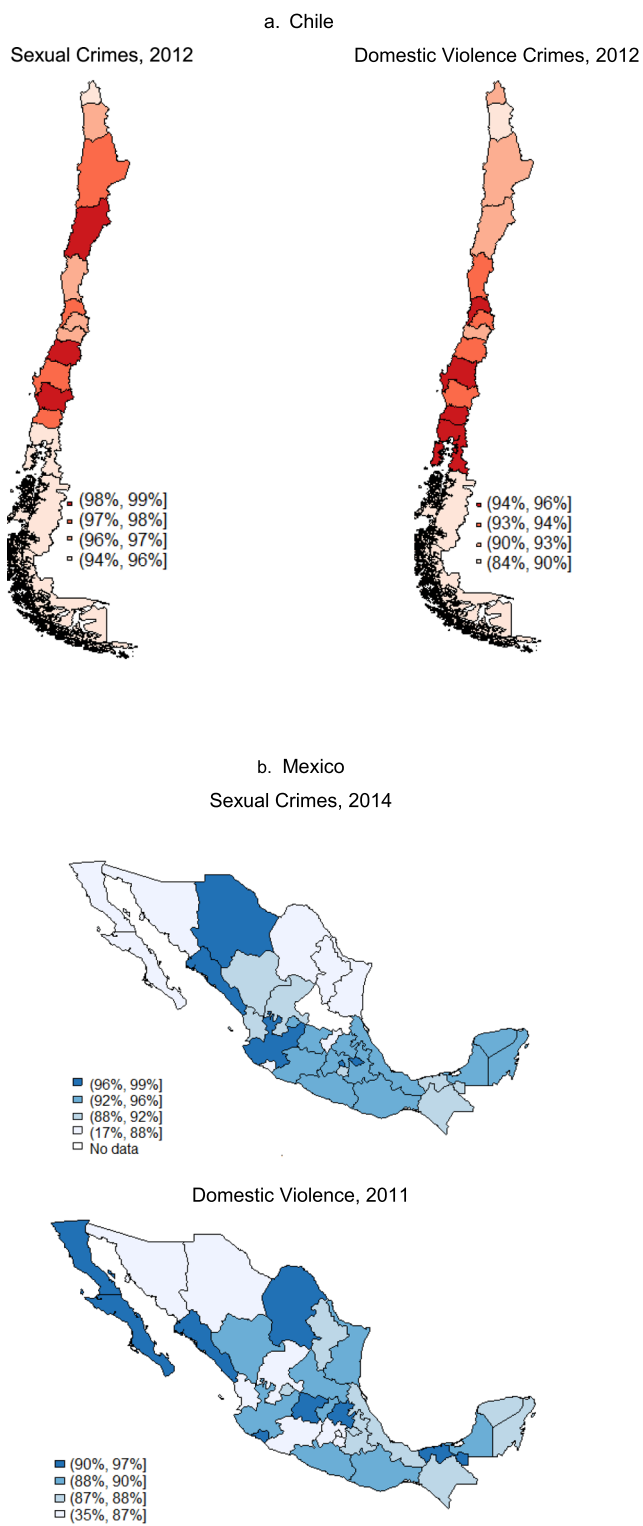
because they want justice and hope that the perpetrator will be punished or because they want to maintain cohesion in the community and try to prevent further incidents.

Costs generally refer to transaction costs involved in reporting, such as transport costs, the loss of time that could be devoted to other productive activities, among others. In this sense, a call center to report incidents, or the possibility of reporting an incident online, could reduce transaction costs associated with informing the police about a crime. Another cost can be the risk that the perpetrator might retaliate against the victim for reporting the incident to the police (Zakula 2015). This is very often the case for gender-based violent crimes (UNODC 2018).

Other factors that can influence the decision to report a crime to the police stem from cultural and social norms. For example, domestic violence is still not accepted as a crime in many cultures, which can contribute to a victim believing that it is not necessary to report such an incident (Zakula 2015). Over the past decade, several countries in the region have expanded laws to categorize domestic violence as a crime,¹ which has encouraged the reporting of such incidents.

Finally, institutional factors, such as democratic stability, perceived corruption, confidence in the efficiency of the

¹ Law 11.340 adopted in 2006 in Brazil and known as the “Maria da Penha Law” is an example of this type of legislation in the region.



◀ **Fig. 1** DF for sexual crimes and domestic violence by state or region. Source: calculations by the authors based on the following sources: *Chile*: Encuesta Nacional de Victimización por Violencia Intrafamiliar y Delitos Sexuales Subsecretaría de la Prevención del delito (administrative data). *Mexico*: Encuesta Nacional sobre la Dinámica de las Relaciones en los Hogares (2011), the Encuesta Nacional de Victimización y Percepción sobre Seguridad Pública (ENVIPE, 2011–2015), and the Secretaría de Gobernación–Secretariado Ejecutivo del Sistema Nacional de Seguridad Pública (administrative data). *Peru*: Encuesta Nacional de Programas Estratégicos in its Citizen Security module and the Instituto Nacional de Estadística e Informática de Perú (administrative data)

the disposition to report a crime (e.g., Bowles et al. 2009; Hart and Colavito 2011; Kaariainen and Siren 2011; Murphy and Barkworth 2014; Tarling and Morris 2010). Apart from those institutional factors, other studies show that certain socioeconomic characteristics of the victim such as GDP per capita, schooling level, and relationship with the perpetrator can influence the decision to report a crime. For instance, Soares and Naritomi (2010) show that per capita gross domestic product (GDP) accounts for a large part of the variability between countries in the percentage of reported crimes (see also Tolsma et al. 2012).

How much do official crime statistics and victimization statistics differ? Although many studies investigate the correlation between the results from both instruments, very few studies have made direct comparisons for disaggregated crimes, over time, or in developing countries. In general, the studies involve more detailed investigations or comparisons within countries rather than between countries. For example, Averdijk and Elffers (2012) examine the reciprocal validity between national victimization and administrative data in Amsterdam (Holland) identifying persons who participated in the survey and following up on their records in police data. The authors found that in 48% of the cases, respondents did not mention that they were victims of a crime, even though it appeared in the police records, and only 35% of victimization reported in the survey could be found in police records. Along these same lines, Smit et al. (Forthcoming) studied three aspects to evaluate the quality of surveys and police records: (1) if the survey response behavior was different between victims and non-victims, (2) if all the crimes mentioned in the victimization survey that were reported could be found in the police records, and (3) if all the crimes in the police records were in fact mentioned by the victim in the victimization survey. The authors found that there was a relative “over-reporting” in the victimization surveys of offenses such as robberies and crimes against public order, as compared with thefts.

Comparative evidence-based data between countries are scarce due to the lack of a systematic methodology among victimization studies in the countries and the availability of data (Zakula 2015). Soares (2004) and Soares and Naritomi (2010) analyze the phenomena of under-reporting across countries and find that the variation in the percentage of

authorities, and socioeconomic factors, can also play a role in the decision to report a crime. For example, Soares (2004) shows that the crime reporting rate is strongly associated with democratic stability, perceived corruption, and police presence. Other research shows a link between confidence in the authorities—above all, the police and the justice system—and

c. Peru

Sexual Crimes and Domestic Violence, 2013



Fig. 1 (continued)

reported crimes is mainly due to per capita income levels, institutional stability, police presence, and corruption, as mentioned earlier. Our study follows this line of analysis but, in contrast with the other studies, we focus on LAC. This makes it the first study that quantifies the dark figure in a systematic way and that analyzes the main reasons behind its heterogeneity between countries and types of crimes with a special focus on gender-based violence.

Data Sources and Methodology

One of the main objectives of criminal statistics is to estimate the total number of crimes committed for each type of crime. One possible source to make this calculation comes from police statistics. However, as mentioned earlier, many studies have pointed to the under-estimation of the number of crimes based on this source (Jaitman 2015; Sanguinetti et al. 2015). Another source comes from victimization surveys that interview people at random about their experiences with crime. Although this is potentially a better method of measurement, at least in the cases of crimes where there is a victim, it is not exempt from practical and methodological problems. These include the infrequency of victimization surveys and the small number of countries where they have been carried out, the selectivity of the sample, and the telescope effect, among others (for more details see Van Dijk et al. 2008).

Telescoping refers to incidents that occurred outside of the reference period but are reported to the interviewer. For example, telescoping occurs when in victimization surveys with a timeframe of the last 12 months, respondents place a victimization incident inside the reference period even though the incident actually took place before the last 12 months. Different studies have shown that telescoping effects can be significant. For instance, Genn (1976) estimated telescoping occurred in 40% of cases in London in a reference period of 12 months, whereas the size of the telescoping effect found by Schneider et al. (1978) in the US (Portland) and Van Dijk (1992) in the Netherlands (Utrecht) in the same period was much lower, namely, 11% and 12%, respectively. More recently, Averdijk and Elffers (2012) find that telescoping occurred in 28% of cases in the Netherlands (Amsterdam) in a reference period of 12 months.

In general, victimization surveys suggest a higher level of crime than that indicated by police records, and that difference is known as the “DF” of crime. The DF of crime in this study is defined as the percentage of criminal acts that do not appear in any official statistics—either because they were not reported to the authorities or because they were not recorded by them. This variable is constructed from three publicly available data sources: the regional LAPOP Survey, national victimization surveys, and administrative data provided by institutions in each country.²

The LAPOP Survey is one of the most important surveys in the region. It is conducted every 2 years and its sample is composed of approximately 1500 observations per country, with both urban and rural representation. One of the focus points of the study is the section entitled “Crime and the Rule of Law”, which addresses such topics as victimization, the connection with the justice system, perceptions of insecurity, and satisfaction with the police and other institutions (Table 6 in the Appendix shows the countries and periods included).

The LAPOP Survey has advantages compared with other regional studies in that it allows for distinguishing between different types of crime. Furthermore, the survey has been conducted frequently since 2004 up to the present (every 2 years), and most Latin American countries are part of the sample, particularly in the most recent rounds of the survey. Another source used for these types of studies is the International Crime Victims Survey (ICVS). However, the ICVS is conducted less frequently than the LAPOP Survey, once every 4 years (1989, 1992, 1996–1997, 2000–2001, 2004–2005, and 2010). Moreover, at the time of writing, microdata from the most recent round of the ICVS were not available. Finally, the ICVS includes few Latin American countries. These factors justify the decision to use the LAPOP Survey.

National victimization surveys, as opposed to regional surveys, are large-scale studies with samples of more than 5000

² In certain cases, administrative data was complemented with statistics published by the United Nations Office on Drugs and Crime (UNODC) on crime trends and the operation of judicial penal systems

Table 2 Dark figure of crime: Latin America and the Caribbean, 2005–2014 (in percent)

Type of crime	Number of countries	Average DF	Lower bound ^a	Upper bound	Standard deviation	Min	Max
Extortion	11	97.76	96.57	98.08	2.01	92.23	97.76
Kidnapping	8	97.90	96.70	98.19	0.67	97.41	97.90
Threats ^b	5	96.63	95.44	97.11	1.16	94.82	96.63
Robberies and thefts	27	88.83	87.63	90.41	7.61	71.52	88.83
Burglaries at home	18	82.81	81.61	85.25	10.39	63.75	82.81
Assaults	24	61.12	59.93	66.63	29.68	0.00	61.12
Vehicle thefts	22	37.37	36.17	46.24	29.13	0.00	38.02
Total crimes ^c	26	87.49	86.29	89.26	9.32	67.64	87.49

Sources: Authors' calculations based on data from the following sources:

Argentina: Encuesta de Victimización (LICIP) and the Sistema Nacional de Información Criminal – Ministerio de Justicia y Derechos Humanos (administrative data)

Chile: Encuesta Nacional Urbana de Seguridad Ciudadana de Chile (ENUSC)

Colombia: Encuesta de Convivencia y Seguridad Ciudadana, Departamento Administrativo Nacional de Estadística (DANE), Ministerio de Defensa Nacional e Instituto Nacional de Medicina Legal y Ciencia Forense (administrative data)

Costa Rica: Victimization module of the Encuesta Nacional de Hogares (2010, 2014), Secretaría de Unidad Análisis Criminal del Ministerio Judicial y Organismo de Investigación Judicial (administrative data)

Ecuador: Encuesta de Victimización Nacional, Informe Estadístico de la Unidad de Información Criminológica de la Dirección de Política Criminal de la Fiscalía General del Estado (2015)–Corte Suprema de Justicia (administrative data)

El Salvador: Encuesta “La percepción de la seguridad y la confianza en las instituciones públicas” (IUDOP 2013a, 2013b) and the Policía Nacional Civil de El Salvador (administrative data)

Mexico: Encuesta Nacional sobre Inseguridad (ENSI, 2005, 2008–2010); Encuesta Nacional de Victimización y Percepción sobre Seguridad Pública (ENVIPE, 2011–2015), and the Secretaría de Gobernación–Secretariado Ejecutivo del Sistema Nacional de Seguridad Pública (administrative data)

Peru: Encuesta Nacional de Programas Estratégicos in its Citizen Security module, and the Instituto Nacional de Estadística e Informática de Perú (administrative data)

Trinidad and Tobago: National Crime & Victimization Survey and the Trinidad and Tobago Police Service (administrative data)

^a The lower and upper bound are the confidence interval for a 90% confidence level

^b Data on victimization from threats were only available for Mexico for the 2010–2014 period. Although certain victimization surveys (such as the one for Costa Rica) include the crime of threats, given its low incidence rate, the corresponding microdata are presented in aggregate form under the category entitled “Other Crimes,” making its disaggregation impossible

^c Total crimes refers to the total number of any criminal act of which the person was a victim during the past 12 months according to the victimization survey and the total number of crimes reported in police records, excluding contraventions or faults

households per country. They tend to be more specific than regional surveys and therefore more precise, and their design allows for a more disaggregated analysis of victimization (Jaitman 2015; Sanguinetti et al. 2015). However, these surveys vary from country to country in aspects such as in the definitions of crimes, the periods covered, and the age range of the surveyed population, which makes comparisons between countries difficult (Table 8 in the Appendix presents a summary of the countries included in the analysis, the national victimization surveys used, the periods covered and their representativeness).³

³ In addition to these national initiatives, there is an effort in the region to develop a homologous methodology and a common questionnaire, with the aim of standardizing the measurement of victimization and generating comparable data. This effort is being spearheaded by various international organizations that developed the Latin American and Caribbean Victimization Survey (*Encuesta de Victimización en Latinoamérica y el Caribe - VICLAC*) for several countries in LAC. For more information, go to <https://cdeunodc.wordpress.com/2012/01/20/encuestas-de-victimizacion-en-latinoamerica/>

Finally, administrative data refer to incidents in official records, whose primary source is usually the national police. Statistics published by the UNODC were also used. These statistics are reported by the law enforcement and justice systems of the different countries (Table 9 in the Appendix describes the administrative records used).

In order to calculate the number of crimes suffered by individuals in the past 12 months according to national victimization surveys, a methodology based on an expansion of the crimes declared was used. This involved using the number of type j crimes that those surveyed in country k said that they suffered during the 12-month period prior to the survey carried out in year t . For crimes against persons, such as extortion, fraud, assault, etc., the expansion factor per person provided by the survey was used, while for crimes involving goods, such as robberies in homes and of vehicles, the expansion factor by household was used. The following equation shows the calculation of the expansion of those crimes via the victimization surveys:

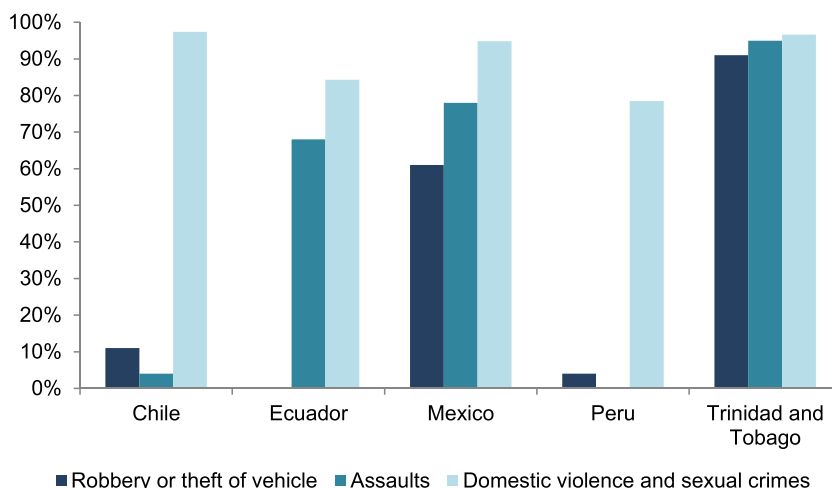


Fig. 2 Dark figure of crime in LAC countries, 2014 or latest year available (in percent). Sources: authors’ calculations based on data from the following sources: *Argentina*: Encuesta de Victimización (LICIP), Sistema Nacional de Información Criminal–Ministerio de Justicia y Derechos Humanos (administrative data). *Chile*: Encuesta Nacional Urbana de Seguridad Ciudadana de Chile (ENUSC), Encuesta Nacional de Victimización por Violencia Intrafamiliar y Delitos Sexuales Subsecretaría de la Prevención del delito, and Policía Nacional de Chile (administrative data). *Colombia*: Encuesta de Convivencia y Seguridad Ciudadana, Departamento Administrativo Nacional de Estadística (DANE), Ministerio de Defensa Nacional e Instituto Nacional de Medicina Legal y Ciencia Forense (administrative data). *Costa Rica*: Victimization module of the Encuesta Nacional de Hogares (2010, 2014); Secretaría de Unidad Análisis Criminal del Ministerio Judicial y Organismo de Investigación Judicial (administrative data). *Ecuador*: Encuesta de Victimización Nacional, Informe Estadístico de la Unidad

de Información Criminológica de la Dirección de Política Criminal de la Fiscalía General del Estado (2015) (administrative data). *El Salvador*: Encuesta “La percepción de la seguridad y la confianza en las instituciones públicas” (IUDOP, 2013a, 2013b) and the Policía Nacional Civil de El Salvador (administrative data). *Mexico*: Encuesta Nacional sobre Inseguridad (ENSI, 2005, 2008–2010), Encuesta Nacional de Victimización y Percepción sobre Seguridad Pública (ENVIPE, 2011–2015), and the Secretaría de Gobernación–Secretariado Ejecutivo del Sistema Nacional de Seguridad Pública (administrative data). *Peru*: Encuesta Nacional de Programas Estratégicos in its Citizen Security module, and the Instituto Nacional de Estadística e Informática de Perú (administrative data). *Trinidad and Tobago*: National Crime & Victimization Survey and the Trinidad and Tobago Police Service (administrative data). Note: The dotted line represents the average DF for general crimes in those countries

$$T_{kjt} = \frac{\sum_{i=1}^n x_{ij}y_{ij}f_p}{\widehat{Pob}_{kt}} \quad (1)$$

where T_{kjt} is the number of crimes of type j declared in the survey of country k in year t in proportion to the population covered by the survey, and which can be interpreted as the level of incidents detected. x_{ij} is equal to 1 if person i responded that he or she was the victim of crime j ; y_{ij} is the number of times that the person was a victim of this crime; f_p is the expansion factor per person or household, depending on which it corresponds to; and \widehat{Pob} is the estimated population represented by the survey.⁴ We adjusted T_{kjt} for those surveys which do not took into account the telescoping effect (see Table 8 in the Appendix) following the methodology suggested in Genn (1976), Schneider et al. (1978), Van Dijk (1992), and Averdijk and Elffers (2012).⁵

⁴ In accordance with international practices, the estimate for robberies of vehicles and robberies in homes are generated via the household expansion factor to address crimes in the household.

⁵ The adjustment consisted in applying a weighting to T_{kjt} by a factor representing the telescope effect reported in Genn (1976), Schneider et al. (1978), Van Dijk (1992) and Averdijk and Elffers (2012).

In order to calculate the number of crimes in administrative data, we consider crimes recorded in official entities. Specifically:

$$Z_{kjt} = \frac{\sum_{i=1}^n y_{ij}}{Pob_{kt}}, \quad (2)$$

where Z_{kjt} is the number of reports of crimes j that figure in the official statistics of country k in year t (y_{ij}) in proportion to the total population (Pob).

Therefore, the dark figure (DF, onwards) of crime j in country k in year t is calculated in the following manner:

$$DF_{kjt} = \left[1 - \left(\frac{Z_{kjt}}{T_{kjt}} \right) \right] \times 100.$$

In this paper, we concentrate on common crimes in both information sources and on crimes whose definitions are comparable across more than two countries. The crimes included are total crimes, threats, assaults, thefts, robberies, robberies in homes, robberies or thefts of vehicles, fraud, extortion, kidnapping, and gender-based violent crimes. In order to minimize problems of codification and categorization and ensure greater comparability, we have thoroughly examined the legal definition

Table 3 Dark figure for crime in developed countries and LAC, 2005–2014 (in percent)

Crime	USA	United Kingdom	Latin America and the Caribbean
Sexual crimes	62.69	79.8	89.96
Robberies	35.9	67.74	n.a.
Thefts	50.74	82.11	n.a.
Robberies and thefts	44.44	59.18	88.83
Vehicle thefts	n.a.	58.85	37.37
Burglaries at homes	42.2	43.82	82.83
Assaults	n.a.	59.02	61.12
Total crimes ^a	53.49	50.25	87.49

Sources: Calculations by the authors based on the following sources:

United Kingdom: Victimization survey for England and Wales and administrative data from the UK National Statistics Office

United States: National Victimization Survey and administrative data from the U.S. Bureau of Justice Statistics

Note: n.a. means that no data were available for these crimes because the survey or the administrative data did not provide this information

^a Total crimes refers to the total number of any criminal act of which the person was a victim during the past 12 months according to the victimization survey and the total number of crimes reported in police records, excluding contraventions or faults

of the different type of crimes in each country. Table 10 in Appendix presents the definition of each crime according to the source.

In interpreting the DF of crime, it is important to consider the following caveats. First, in order to have a category that allows including a large number of countries over time, the crimes of robbery and theft of persons, homes, and motorized vehicles were grouped in the same category, without differentiating as to whether they involved violence, the use of force or weapons. Second, although it is hoped that this does not introduce significant differences, it is important to clarify that victimization surveys represent a reference population older than 15 or 18 years of age,⁶ while administrative data refer to incidents reported by the entire population, including victims younger than 15 or 18 years of age. Third, most victimization surveys are representative of national urban populations, while official crime statistics represent the number of crimes in both rural and urban areas, making it impossible to differentiate between the two (see Table 8 in the Appendix for more details). This does not pose a significant problem for our calculations because 80% of the population in the region lives in urban areas and most crimes occur in cities.

The Dark Figure of Gender-Based Violent Crimes from a Comparative Perspective

This section describes the DF of gender-based violent crimes through the use of national victimization surveys in nine

countries in LAC and then contextualizes it with the DF of other crimes in both the region and developed countries.

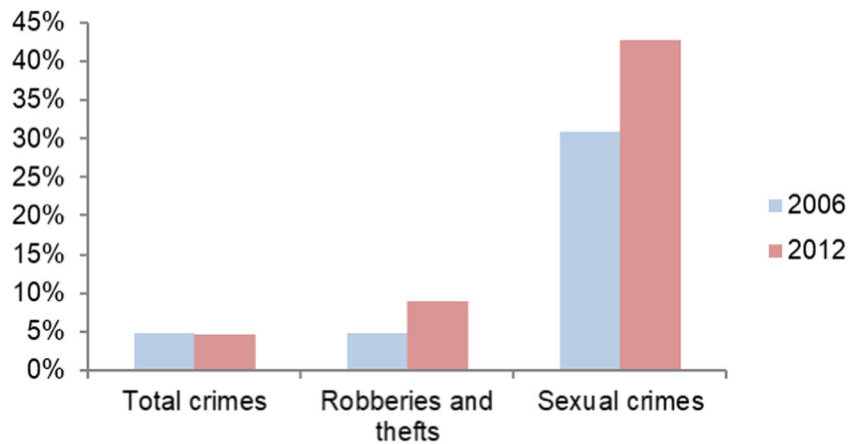
We estimate the DF for sexual crimes and domestic violence against women. The DF of this type of crime is more difficult to estimate due to the lack of official statistics and victimization surveys that address this topic (OEA 2011). Their “invisibility” in official statistics implies that, in the region, there is only a partial view of the dimension of the problem (UNODC 2010).

At the time of writing, the only countries that provide data on these incidents from both surveys and administrative records on a relatively frequent basis are Chile, Mexico, Peru, Trinidad and Tobago, and Ecuador. On the one hand, there is Chile and Ecuador, which conducted national victimization surveys regarding sexual crimes and domestic violence against women 15–65 years old (in the case of Chile⁷) and older than 15 years of age (in the case of Ecuador). Mexico examines domestic violence of women older than 15 years of age in one special survey and examines sexual crimes in its main victimization survey (ENVIPE), but in this latter case, both men and women are covered. The same happens in Peru and Trinidad and Tobago, where victimization surveys on sexual crimes and domestic violence included a broader reference population of men and women. As we had access to microdata of Mexico’s and Peru’s survey, we were able to capture only women victimization, but as

⁶ For more details on the limitations of victimization surveys in Latin America, see Jaitman (2015).

⁷ It is important to mention that the surveys conducted in Chile in 2008 and 2012 have certain methodological differences that make comparisons difficult. For example, the population in the 2008 survey is comprised of women between the ages of 15 and 59 years old and between 15 and 65 years old in the 2012 survey. In addition, there is a difference in the sample framework in the surveys: the 2008 survey includes urban and rural areas, while the 2012 survey is conducted in households in urban areas and communes with populations larger than 30,000 inhabitants. Finally, the 2012 survey did not include older adults. For these reasons, the results should be interpreted with caution.

Fig. 3 Variation rate in the under-reporting rate between women and men in LAC. Source: Lapop, 2006 and 2012



we could not access the microdata of Trinidad and Tobago’s survey, we adjusted the victimization rate reported by both men

Table 4 Dark figure of crime in South America, Central America, and the Caribbean, 2004–2014 (in percent)

Region ^a	DF of total crimes	Lower bound ^b	Upper bound
LAC	83.10	82.37	83.77
South America	88.30	87.80	88.76
Central America	94.80	94.58	95.01
Caribbean	62.30	60.68	63.79

Sources: Calculations by the authors based on the following sources: Latin American Public Opinion Project (LAPOP) Survey;

Administrative data: *The Bahamas*: Royal Bahamas Police Force; *Barbados*: Royal Barbados Police Force; *Jamaica*: Jamaica Constabulary Force’s (JCF) Statistics and Data Management Unit; *Suriname*: Korps Politie (National Police) and the Dienst Criminele Informatie Voorziening; *Dominican Republic*: Oficina Nacional de Estadísticas; *Argentina*: Sistema Nacional de Información Criminal–Ministerio de Justicia y Derechos Humanos, Ministerio de Seguridad; *Brazil*: Anuário Brasileiro de Segurança Pública (Fórum Brasileiro de Segurança Pública); *Bolivia*: Observatorio Nacional de Seguridad Ciudadana, based on data from the Comando General de la Policía Boliviana; *Chile*: Subsecretaría de la Prevención del Delito and the Policía Nacional de Chile; *Colombia*: Departamento Administrativo Nacional de Estadística (DANE), Ministerio de Defensa Nacional, and the Instituto Nacional de Medicina Legal y Ciencia Forense; *Costa Rica*: Secretaría de Unidad Análisis Criminal del Ministerio Judicial y Organismo de Investigación Judicial; *Ecuador*: Informe Estadístico de la Unidad de Información Criminológica de la Dirección de Política Criminal de la Fiscalía General del Estado (2015);

El Salvador: Policía Nacional Civil; *Guatemala*: UNCS; *Mexico*: Secretaría de Gobernación – Secretariado Ejecutivo del Sistema Nacional de Seguridad Pública; *Paraguay*: UNCS; *Peru*: Instituto Nacional de Estadística e Informática; *Trinidad and Tobago*: Trinidad and Tobago Police Service; and *Uruguay*: Policía Nacional

^a South America is composed of Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, and Uruguay; Central America is composed of Costa Rica, El Salvador, Honduras, Guatemala, Mexico, and the Dominican Republic; and the Caribbean is composed of The Bahamas, Barbados, Jamaica, Suriname, and Trinidad and Tobago

^b The lower and upper bound are the confidence interval for a 90% confidence level

and women by a factor equal to 72%, which is the proportion of cases of domestic violence reported by women according to most recent studies (see for example, Pemberton and Joel 2018).

Table 1 shows the DF of domestic violence and sexual crimes against women for different periods. Note that a DF nearly 100% indicates that there is a large difference between reports that are recorded and the number of incidents according to victimization surveys. In other words, the gap between official statistics and victimization statistics is very large. A DF around zero indicates that the number of recorded incidents is almost the same as the number of incidents reported in victimization surveys, in which case the gap between the two sources is practically zero. The table shows that the average DF of sexual crimes and domestic violence against women older than 15 years of age is greater than 70%, which indicates that at most only 30% of the crimes committed are reported and effectively recorded by the police. The situation is particularly alarming in Chile and Trinidad and Tobago, where DF is even greater. In order to contextualize these values, Table 13 in the Appendix shows the crime rate of sexual and domestic values according to victimization surveys and administrative records for the countries reported in Table 1.

These figures take on considerable importance when considering that victimization surveys may under-estimate actual victimization of this type of crime because, in many cases, victims are reluctant to share their experiences with the interviewer. This can be due to the perpetrator and the victim knowing one another,⁸ or because the victims might feel guilty about what happened, among other reasons. Criminologists have defined a specific type of victimization, called secondary victimization, as victimization that occurs not as a direct result of the criminal act but rather through the responses of institutions and persons with whom the victim has contact. Therefore, it is also probable

⁸ According to the results of the International Crime Victims Survey of 30 countries, the perpetrators were known by the victim in nearly half of the incidents described as offensive behavior and sexual aggression as well as incidents of assaults and threats. This confirms that the stereotype of the perpetrator as someone who is not known is often false (UNODC 2010).

Table 5 Results of the estimation

	(1)
<i>corruption</i>	0.0015*** (0.000)
<i>pol_conf</i>	-0.0019** (0.001)
$\ln(\text{police})$	-0.0373*** (0.011)
<i>homicides</i>	0.001*** (0.000)
<i>GDP per capita</i>	-0.009*** (0.001)
Constant	4.684*** (0.083)
Observations	60
R^2	0.809
Includes fixed effects by year	Yes
Includes fixed effects by region	Yes

Note: Robust standard errors in parentheses. The dependent variable is the natural logarithm of the DF of crime (in general). The independent variables are the percentage of persons who perceive that corruption is very common or common in the country, the percentage of persons who consider the national police to be very trustworthy, the natural logarithm of the number of police officers in proportion to the population, and GDP per capita in thousands of current US dollars. Fixed effects are included for the year and region

***Significance at the 1% level

**At the 5% level

*At the 10% level

that persons who suffer secondary victimization will tend not to speak of their experiences with interviewers for fear that this will only cause more blame and victimization (UNODC 2010).

Figure 1 shows the regional distribution of the DF of domestic violence and sexual crimes for Chile, Mexico, and Peru—the only countries that provide information disaggregated at a sub-national level—for the last available year. Light colors represent lower DF while darker colors identify the states or provinces with the higher DF. In line with Table 1, the DF is very high among regions, especially for Chile. In particular, the South and Central regions of Chile experience higher DF compared to other regions of the country. Atacama, La Araucanía, and Maule have the highest DF of sexual crimes reaching percentages above 98%. Meanwhile Valparaíso, Biobío, Los Lagos stand out for their high DF of domestic violence with percentages above 96%.

In the case of Mexico, the highest DF of sexual crimes concentrates in the northeast and center south of the country. The states of Chihuahua, Distrito Federal, Jalisco, and Tlaxcala have the highest DF exceeding 97%. In terms of domestic violence crimes, the DF are concentrated mainly in the west region as well as in the northeast region, being Colima the state with the highest DF in the country (98%).

Finally, in the case of Peru, the provinces of the eastern and central region experience the highest number of sexual crimes and domestic violence crimes. Amazonas, Huánuco, Puno, Loreto, Huancavelica, Pasco, and Apurímac stand out for their high DF, with percentages above 95%.

A common pattern among Chile, Mexico, and Peru is that there is a positive correlation between the DF of gender-based violent crimes and the percentage of people living in rural areas, especially in Mexico and Peru. This positive correlation may be explained because rural women face more barriers to reporting crime than urban women. First, in very isolated areas, attitudes toward gender-based violent crimes may appear relatively accepting, limiting their reporting of crime. Second, most residents of rural areas usually have some level of familiarity with others in the community, which translates into lack of anonymity and confidentiality reducing the chances of reporting the crime. Third, since rural populations often find themselves at great distances from social services and law enforcement, victims may find that it is too difficult to report the crime.

How does the DF of gender-based violent crimes compare with the DF of other types of crimes in the region? Table 2 shows that the DF varies widely among different types of crimes. In general terms, the DF of total crimes is on average 87%, i.e., only 13% of the crimes committed are reported or effectively recorded by the police. The largest DF is for crimes of extortion and kidnapping, at 98%, which means that only 2% of all extortions end up being recorded by the corresponding authorities. This is followed by threats, with a DF of 97%. On average, the DF of robberies and thefts is 89%, while the DF of burglaries is 83%. Finally, assaults and vehicle thefts are the crimes with the lowest DF, namely, 61 and 37%, respectively; this means that 39 and 63% of the cases are effectively reported to and recorded by the police. (Table 14 in the Appendix shows the dark figure by type of crime and country in each year).

In comparison with Table 1, it can be seen that, with the exception of Ecuador and Peru, the DF of gender-based violent crimes is significantly greater than the average DF of assaults and robberies of vehicles in LAC countries. The conceptual framework of “[Conceptual Framework for the Determinants of the DF of Crime](#)” helps to interpret these results. The lower DF occurs in crimes for which there is a greatest benefit from reporting the incident in relation to its cost. This is the case of robberies of vehicle or in homes, which have a greater incentive to report the incident in order to be reimbursed by their insurance, as opposed to other types of crimes. In contrast, the largest DF occurs in gender-based violent crimes, extortion, kidnapping, and threats for which there is a higher cost in terms of the expected benefits for the victims to report the incident. This could be due to such factors as high transaction costs implied by the report (processes that are slow, complex, and have little probability of success), or little confidence in the institutions involved or in the effectiveness of both the police as well as the courts, among others.

Figure 2 shows the DF of robbery and theft of vehicles, assaults, and gender-based violent crimes for LAC countries in 2014—or the latest year available. As can be seen, the greatest difference between DF of gender-based violent crimes and DF of robbery and theft of vehicles or assaults happens in Chile and Peru, whereas Trinidad and Tobago presents a relatively high DF of crime regardless of the type of crime.

How does the DF of gender-based violent crimes in LAC compare with the DF in developed countries? Table 3 shows the DF of different types of crimes for USA, United Kingdom, and the LAC region for the period 2005–2014. The DF of crime in general (defined as the sum of all types of crimes) in these developed countries is approximately 40% lower than that for LAC; in other words, in the former countries, almost one of every two crimes are reported and recorded by the police, while in LAC, that ratio is almost one in ten. The DF of burglaries in the USA and the United Kingdom are less than half that of LAC. Regarding sexual crimes, the DF in LAC is 43% and 13% higher than that of the USA and UK, respectively. Note that the DF of sexual crimes is around average in the case of LAC, whereas it is well above average in the other countries. This suggests that the DF of sexual crimes is also a problem in developed countries. Finally, as expected, the smallest difference between the DF of these developed countries and LAC is for robberies of vehicles.

As mentioned in “[Conceptual Framework for the Determinants of the DF of Crime](#)”, the DF can be attributed to under-reporting and under-recording.⁹ We find that, on average, the under-reporting rate of gender-based violent crimes for the last available year is 71%, i.e., the DF of this type of crime is mainly explained by the decision of the victim not to report it. This also happens in most crimes; in particular, under-reporting for robberies and thefts, robberies in homes, assaults, extortion, and fraud ranges from 66 to 98%, while for robberies of vehicles, it is near 17% (see, for example, Zakula 2015).¹⁰

How does under-reporting vary between men and women? Figure 3 shows the variation rate in under-reporting between women and men for total crimes, gender-based violent crimes, and robberies in 2006 and 2012, which is the latest data available. As can be seen, the greatest difference occurs in sexual crimes, that is, women’s under-reporting rate was 31 and 43% higher than that of men in 2006 and 2012, respectively. In contrast, the difference in the under-reporting rate between women and men is considerably lower in the case of robberies and thefts, being 5 and 9% higher for women than men in 2006 and 2012, respectively. Finally, looking at crime in general, we can see that the under-reporting rate is only 5% higher for women than men in both years.

⁹ Under-reporting is calculated as the complement of the reporting rate reported in victimization surveys (i.e., 100% minus the reporting rate). Whereas under-recording is calculated as the complement of the ratio between the number of reported cases in police records and the number of reported cases in victimization surveys for each country.

¹⁰ Under-reporting and under-recording are calculated for Chile, Colombia, Mexico, and Peru, in 2014 or the latest year available.

Determinants of the Heterogeneity of Dark Figure of Crimes

The previous section described the DF of different types of crime through the use of national victimization surveys in nine countries in LAC. This section focuses on the DF on general crimes through the use of the regional Latin American Public Opinion Project (LAPOP) as a robustness check, and then explores the determinants of this DF of crime.

The LAPOP survey has an advantage over national victimization surveys in that it is conducted more regularly (every 2 years since 2004) and it uses standard definitions and methodologies that guarantee greater comparability between crimes over time and between countries. However, the size of the sample of this survey is smaller than that of national victimization surveys, and it is important to note that the LAPOP survey is not designed for a disaggregated analysis of victimization, but rather only to provide general figures on victimization and the perception of insecurity. Specifically, the LAPOP survey includes a sample of approximately 1500 households per country (while national surveys include more than 5000 households), and the sample error is around $\pm 2.5\%$. The survey covers a reference population older than 18 years of age and only one respondent is interviewed per household. Thus, the statistical unit of observation is the household. The sampling method used is stratified multistage cluster sampling and the survey is representative at the urban and rural national level. The sample is stratified based on three factors: size of the municipalities, urban/rural areas, and regions. The stratified sampling ensures a greater reliability in the sample by reducing the variance of the estimates. Stratification also ensures the inclusion in the sample of the most important geographic regions in the country while requiring geographic sample dispersion. (Table 6 in the Appendix describes the countries included in the analysis and the period covered and Table 7 shows the questions regarding victimization).¹¹

Table 4 shows the DF of general crimes by subregion over the 2004–2014 period (values are adjusted by the telescoping effect). Note that the DF of crime using the LAPOP survey is very similar to that calculated using national surveys (see Table 2). In addition to this, the heterogeneity in this indicator between Central America, South America, and the Caribbean is noteworthy. The DF for South America and Central America is on average 50% greater than that for the Caribbean.

We have documented that the DF of crime in LAC is significantly high, regardless of which survey is used to measure it. One of the most important factors behind the DF of crime is the lack of reporting to the competent authorities. As was indicated in “[Conceptual Framework for the Determinants of the DF of Crime](#)”, it can be expected that police presence together with an

¹¹ In 2012, the survey adopted a new sample design to make the sample representative by municipality size for all countries, to enable the use of the municipality as a unit of analysis for multilevel statistical analysis

efficient and trustworthy justice system increases the expected benefits of reporting a crime and reduces the costs associated with reporting it. Another variable that can affect institutional efficiency is corruption. Corruption can reduce the gains derived from reporting a crime by imposing a type of “tax” on the good that is recovered (Soares 2004). In addition, it can reduce the effectiveness of the police and justice system because it can increase the probability that these institutions are associated with criminals and cause the public to lose confidence in them.

On the other hand, it can be expected that the greater the incidence of crime in an area, the less confidence the public has in the police or the justice system and the less the incentive to report a criminal incident. Certain macroeconomic variables related to the level of development of a society, such as GDP per capita, can also be related to the DF of crime. In particular, one can expect a positive relation between GDP per capita and the level of reporting of crimes.

This series of variables aims to capture the main factors that can affect the DF of crime. The following regression model is used to study this effect:

$$\begin{aligned} \ln(DF_{it}) = & \beta_0 + \beta_1 corruption_{it} + \beta_2 pol_conf_{it} \\ & + \beta_3 \ln(police_{it}) + \beta_4 homicides_{it} + \beta_5 GDP_{it} \\ & + \delta_j + \lambda_t + \varepsilon_{it} \end{aligned}$$

where $\ln(DF)$ represents the natural logarithm of the DF of (total) crime,¹² i indicates the country, and t the year (2004, 2006, 2008, 2012, 2014).¹³ Specifically, this variable indicates the percentage of crimes committed that are not recorded in the official statistics. The term *corruption* indicates the percentage of persons who perceive that corruption is common or very common in their country and *pol_conf* represents the percentage of persons in country i who consider the national police to be very trustworthy in year t , that is, those persons who assign a rating of 7 on a scale of 1 to 7 in terms of their confidence in the national police (where 1 represents no confidence and 7 represents great confidence). In addition, *police* is the number of police officers per 100,000 population (expressed in logarithms); *homicides* is the number of homicides per 100,000 population; and *GDP* is the gross domestic product per capita (expressed in thousands of current US dollars). Finally, δ_j , λ_t , and ε_{it} represent fixed effects by region (South America, Central America, and the Caribbean), fixed effects by year, and the error term, respectively. Tables 11 and 12 in the Appendix present the countries and variables included in the regression analysis respectively.

¹² The DF of total crime considers the total number of any criminal act of which the person was a victim during the past 12 months according to the victimization survey and the total number of crimes reported in police records, excluding contraventions or faults.

¹³ Tables 10 and 11 in Appendix list the countries included and the data sources, respectively.

The previous discussion implies that $\beta_1, \beta_4 \geq 0$, that is, that the DF of crime increases (or the gap between “actual” victimization and “official” crime records increases), while it is expected that $\beta_2, \beta_3, \beta_5 \leq 0$, that is, that the DF of crime declines (or the gap between “actual” victimization and “official” crime records declines).

Even though the size of the sample is relatively small, the inclusion of year fixed effects together with fixed effects by region makes the estimate more robust, given that it allows for taking into account the unobservable characteristics of each region that stay invariable over the long term and can be co-related with the exogenous variables, and it also allows for eliminating existing tendencies, such as changes in policies that affect the DF of crime in the different countries in an identical manner. Adding to this, endogeneity problems are difficult to arise in this case because it is improbable that the independent variables are caused by the DF of crime. However, the bias for omitted variables is always a concern. There can be country-specific characteristics, correlated both with left- and right-hand-side variables, that can be behind results that we may be tempted to interpret as causal. Therefore, the findings should be analyzed with caution.

Table 5 presents the results of the estimation; robust standard errors are in parentheses. The results show that the greater the perception of corruption in the country, the greater the DF of crime. In particular, an increase in 10 percentage points in the number of persons who perceive corruption as common or very common in their country is associated with a 1.5% increase in the DF of crime. This result is in line with the findings of Soares (2004).

On the other hand, confidence in the police force, as expected, is negatively correlated with the DF of crime. It is observed that an increase by 10 percentage points in the number of persons who perceive the police as very trustworthy (giving them a rating of 7 on a scale of 1 to 7) is associated with a 2% reduction in the DF of crime. Our results show that police presence is also negatively related with the DF of crime. As this explanatory variable is expressed in logarithm, the estimated coefficient can be interpreted as elasticity. An increase by 10% in the size of the police force (per 100,000 population) tends to reduce the DF of crime by 0.3%, keeping all other factors constant. This suggests that the effect of perceiving the police force as more trustworthy is considerably greater than the effect of an increase in the number of police officers (keeping the population constant) on the DF of crime.

For its part, the incidence of crime seems to be negatively related to the DF of crime. This suggests that the official data distort the true spatial profile of criminality, since these data tend to be under-estimated in areas where there is more crime. Finally, as expected, the results show that there is a negative and significant relation between the GDP per capita and the DF of crime. In particular, an increase of US\$1000 in GDP per capita reduces the DF of crime by 1%.¹⁴

¹⁴ These results are robust to different specifications that include inequality, the level of poverty, or the level of urbanization as independent variables. Please contact the authors for these estimations.

Conclusions

This article provides evidence that there is a great DF of gender-based violent crimes in the region, with a percentage that ranges between 70 and 99% on average for sexual crimes and domestic violence against women older than 15 years. This figure is somewhat heterogeneous within country, except for Chile where the DF tends to be high in all regions suggesting that it affects the entire territory in a similar way. We also find that there is a positive correlation between the DF and the percentage of people living in rural areas, which may be due to the greater barriers to reporting crime rural women face in comparison to urban women.

Our results show that the DF varies by type of crime. The DF of gender-based violent crimes is significantly greater than the DF of assaults and vehicles thefts, whose DF is 61 and 38%, respectively, while it is relatively similar to the DF of extortion and kidnapping. This is in line with the economic theory of crime: the lower DF occurs in crimes for which there is a greatest benefit from reporting the incident in relation to its cost. Compared with developed countries, we find that the DF of crime (in general) in these countries is approximately 40% lower than that for LAC, while the DF of gender-based violent crimes is, on average, 30% higher in LAC, suggesting that the DF of sexual crimes is also a problem in developed countries. We also find that the DF of crime (in general) is heterogeneous in LAC: the DF for South America and Central America is on average 50% higher than that of the Caribbean.

The DF can be attributed to under-reporting and under-recording. We find evidence that administrative records suffer under-reporting mainly. More precisely, women's under-reporting rate of gender-based violent crimes were 43% higher than that of men in 2012, while for robberies and general crimes, women's under-reporting rate was 9 and 5% higher than that of men.

Using quantitative techniques and original panel data, we find that the perception of corruption and confidence in the police are positively associated with the DF of crime, i.e., they tend to increase this figure through the channel of under-reporting. We also find the number of police per population and the level of homicides are directly related to the DF of crime; the latter suggests that official statistics distort the true geographic profile of criminality as there is a downward bias in areas where there is the greatest amount of crime.

Regarding under-reporting, these findings have many policy implications. Those interventions that promote more transparent and efficient policing and generate more confidence in the police could prompt more reporting of crimes to the authorities, which would contribute to a more precise diagnosis of crime in the short term. At the same time, in the medium and long term, reducing the DF of crime may contribute to a perception that the costs of committing crime are higher, as more cases would go to the courts, and potential criminals may be deterred. This in turn can contribute to reduce the high crime rates in the region as predicted by the crime economics framework. This is especially the case for gender-based

violence. Also, better quality data and greater availability of data would contribute to the design of better public policies and, above all, to more effective use of the scarce resources available to the police to prevent and reduce crime.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Appendix. Data Sources and Definitions

Table 6 LAPOP Survey

Country	Period	Coverage
Argentina	2008 and 2014	National (urban and rural)
Bahamas	2014	National (urban and rural)
Barbados	2014	National (urban and rural)
Brasil	2006–2014	National (urban and rural)
Bolivia	2006–2014	National (urban and rural)
Chile	2006–2014	National (urban and rural)
Colombia	2004–2014	National (urban and rural)
Costa Rica	2010–2014	National (urban and rural)
Ecuador	2004–2014	National (urban and rural)
El Salvador	2006–2014	National (urban and rural)
Jamaica	2006–2014	National (urban and rural)
Guatemala	2004–2014	National (urban and rural)
Honduras	2010–2014	National (urban and rural)
Mexico	2004–2014	National (urban and rural)
Paraguay	2010–2014	National (urban and rural)
Peru	2006–2014	National (urban and rural)
Dominican Republic	2004–2014	National (urban and rural)
Suriname	2010–2014	National (urban and rural)
Trinidad and Tobago	2008–2014	National (urban and rural)
Uruguay	2006–2014	National (urban and rural)

Table 7 LAPOP questions on victimization considered in this study

VIC1EXT. Now, changing the subject, have you been a victim of any type of crime in the past 12 months? That is, have you been a victim of robbery, burglary, assault, fraud, blackmail, extortion, violent threats or any other type of crime in the past 12 months?

- (1) Yes
- (2) No

VIC2. Thinking of the last crime of which you were a victim, from the list I am going to read to you, what kind of crime was it? [Read the options]

- (1) Unarmed robbery, no assault or physical threats
- (2) Unarmed robbery with assault or physical threats
- (3) Armed robbery
- (4) Assault but not robbery
- (5) Rape or sexual assault
- (6) Kidnapping
- (7) Vandalism
- (8) Burglary of your home (thieves got into your house while no one was there)
- (10) Extortion
- (11) [Do not read] Other
- (88) DK
- (98) DA
- (99) N/A (was not a victim)

Table 8 National Victimization Surveys

Country	Survey	Period	Coverage	Methodology	Sampling Error	Sample	Non-response adjustment	Telescoping
Argentina	Encuesta de Victimización (LICIP)	2008–2012	National, local	Probabilistic, stratified sampling	n.a.	1215	Yes	No
Chile	Encuesta Nacional Urbana de Seguridad Ciudadana de Chile (ENUSC)	2005–2012	National, local	Probabilistic, stratified and three-stage sampling	3.5%	23,180	Yes	No
	Encuesta Nacional de Victimización por Violencia Intrafamiliar y Delitos Sexuales	2008, 2012		Probabilistic, stratified and three-stage sampling	5%	3130	Yes	Yes
Colombia	Encuesta de Convivencia y Seguridad Ciudadana	2012–2013	National, local	Probabilistic, stratified and two-stage sampling	5%	29,315	Yes	Yes
Costa Rica	Módulo de victimización de la Encuesta Nacional de Hogares	2010, 2014	National, local	Probabilistic, stratified and two-stage sampling	n.a.	10,400	Yes	No
El Salvador	Encuesta “La percepción de la seguridad y la confianza en las instituciones públicas” (IUDOP)	2012, 2013	National, local	Multi-stage sampling	2%	2413	Yes	No
Ecuador	Encuesta de Victimización Nacional	2011, 2013	National	Probabilistic, three-stage sampling	10%–20%	120,048	Yes	Yes
Mexico	Encuesta Nacional sobre Inseguridad (ENSI)	2005, 2008–2010	National, local	Probabilistic, stratified and multi-stage sampling	3%	65,957	Yes	Yes
	Encuesta Nacional de Victimización y Percepción sobre Seguridad Pública (ENVIPE)	2011–2015	National, local	Probabilistic, stratified and three-stage sampling	4–5%	95,561	Yes	Yes
	Encuesta Nacional sobre la Dinámica de las Relaciones en los Hogares	2011	National	Probabilistic, stratified and two-stage sampling	15%	4000	Yes	Yes
Peru	Encuesta Nacional de Programas Estratégicos en su módulo de Seguridad Ciudadana	2011–2014	National, local	Probabilistic, stratified and two-stage sampling	5%	33,000	Yes	No
Trinidad and Tobago	Encuesta de Crimen y Percepción de Violencia	2007, 2015	National, local	Systematic stratified random sampling	10%	3235	Yes	No
United Kingdom	Crime Survey for England and Wales (CSEW)	2004–2014	National	Mixed design, according to three types of area, each type defined by the spatial density of its addresses.	2–3%	35,000	Yes	Yes
United States	National Crime Victimization Survey (NCVS)	2004–2014	National	Two-stage stratified sample	2–3%	135,000	Yes	Yes

Table 9 Administrative data

Country	Source	Period	Coverage
Argentina	Sistema Nacional de Información Criminal – Ministerio de Justicia y Derechos Humanos, Ministerio de Seguridad; and the UNODC	2008 and 2014	National (urban and rural)
Bahamas	Royal Bahamas Police Force	2014	National (urban and rural)
Barbados	Rotal Barbados Police Force	2014	National (urban and rural)
Brazil	Anuário Brasileiro de Segurança Pública (Fórum Brasileiro de Segurança Pública), y UNCS	2006–2014	National (urban and rural)
Bolivia	Observatorio Nacional de Seguridad Ciudadana based on data from the Comando General de la Policía Boliviana.	2005–2014	National (urban and rural)
Chile	Subsecretaría de la Prevención del delito y Policía Nacional de Chile	2005–2014	National (urban), regional, and by regions
Colombia	Departamento Administrativo Nacional de Estadística (DANE), Ministerio de Defensa Nacional e Instituto Nacional de Medicina Legal y Ciencia Forense	2004–2014	Nacional (urban and rural) and by cities
Costa Rica	Secretaría de Unidad Análisis Criminal del Ministerio Judicial y Organismo de Investigación Judicial.	2010–2014	Nacional (urban and rural) and by provinces
Ecuador	Informe Estadístico de la Unidad de Información Criminológica de la Dirección de Política Criminal de la Fiscalía General del Estado (2015); Sistema Regional de Indicadores Estandarizados de Conveniencia y Seguridad Ciudadana (Inter-American Development Bank); and the UNODC	2004–2014	National (urban and rural)
El Salvador	Policía Nacional Civil de El Salvador and the UNODC	2006–2014	National (urban and rural)
Jamaica	Jamaica Constabulary Force (JCF) Statistics and Data Management Unit	2006–2014	National (urban and rural)
Guatemala	UNODC	2004–2014	National (urban and rural)
Honduras	UNODC	2010–2014	National (urban and rural)
Mexico	Secretaría de Gobernación – Secretariado Ejecutivo del Sistema Nacional de Seguridad Pública	2004–2014	Reports by type of crime, national and by federated state
Paraguay	UNODC	2010–2014	National (urban and rural)
Peru	Instituto Nacional de Estadística e Informática de Perú	2006–2014	National (urban and rural)
Dominican Republic	Oficina Nacional de Estadística (ONE)	2004–2014	National (urban and rural)
Suriname	National Police (<i>Korps Politie Suriname y Dienst Criminele Informatie Voorziening</i>)	2010–2014	National (urban and rural)
Trinidad and Tobago	Trinidad and Tobago Police Service and UNODC	2008–2014	National (urban and rural)
Uruguay	Policía Nacional	2006–2014	National (urban and rural)

Table 10 Definition of types of crimes included in the analysis

Crime	Definition
Total crimes	The victimization surveys refer to any criminal act of which the person was a victim during the past 12 months. Administrative data refer to the total number of crimes reported, excluding contraventions or faults.
Threats	Both the victimization surveys as well as the administrative data refer to threats that are alarming in any location, such as the home, the street, at work, on public transportation, etc.
Assaults	Both information sources refer to this crime as physical aggression against someone's body, without involving robbery or an attack of a sexual nature. Some penal codes distinguish between aggravated assault and simple assault, depending on the seriousness of the attack, but in this study there is no such distinction as to the seriousness of the assault.
Thefts	In both data sources this crime consists of the illegitimate seizure of an object by someone to whom that object does not belong and that is carried out without violence or intimidation against a person.
Robberies and thefts	Given the difficulty in distinguishing between robberies and thefts in the victimization surveys and the administrative data, this category included all crimes that involve the illegitimate seizure of an object by someone to whom that object does not belong, through deception or through the use or not of force, or violence or intimidation against persons or property, and without distinguishing whether or not weapons were used.
Burglaries at home	Both data sources refer to entry into a home through the use of force, where the perpetrators steal objects that are within the home without the consent of the inhabitants of the home.
Vehicles thefts	In both the victimization surveys and the administrative data, this crime refers to stealing a complete motorized vehicle through the use of force (or not) or deception (in most cases it excludes robberies of parts of a vehicle).
Fraud	Both data sources refer to an act of economic deception with the intent of gaining a benefit, and as a result of which someone is harmed.
Extortion	In both data sources, this crime is easily identifiable in its category as consisting of obliging a person, through the use of violence or intimidation, to undertake or omit undertaking a transaction for profit and with the intention of producing financial harm or other harm to a victim.
Kidnapping	Both data sources refer to depriving someone of their liberty in an illicit manner with the aim of obtaining a ransom or compliance with other demands to the detriment of the person (s) kidnapped or third parties.
Sexual crimes	Illegal sexual contact that usually involves force upon a person without consent.
Domestic violence	All acts or omissions that generate violence against women carried out by household members or couples/ex-couples, excluding sexual crimes.

Table 11 Countries included in the regression analysis

Argentina	Costa Rica	Paraguay
Bolivia	Ecuador	Peru
Brazil	El Salvador	Trinidad and Tobago
Chile	Guatemala	Uruguay
Colombia	Mexico	

Table 12 Description of variables and data sources for the regression analysis

Variable	Description	Source
$\ln(y)$	Natural logarithm of the DF of total crime (in percent)	Calculations by the author based on official statistics and the reporting of crimes in the LAPOP Survey
<i>corruption</i>	Percentage of persons who perceive that corruption in their country is common or very common.	LAPOP Survey
<i>pol_conf</i>	Percentage of persons who have great confidence in the national police (that is, they assign a rating of 7 on a scale of 1 to 7, with 7 indicating great confidence)	LAPOP Survey
$\ln(\text{police})$	Natural logarithm of the number of police officers per 100,000 population	UNODC
<i>homicides</i>	Number of homicides per 100,000 population	UNODC
GDP per capita	GDP divided in thousands of current U.S. dollars divided by the population at the mid-way point of the year	World Bank database

Table 13 Crime rates (per 100,000 population) according to victimization surveys and administrative records. Sexual and domestic violence crimes

Country	Type of crime	Year	Reported rate in victimization surveys	Recorded rate in official records
Chile	Sexual crimes	2008	5680	79
		2012	5100	92
	Domestic violence	2008	13,925	557
		2012	15,410	513
Ecuador	Sexual crimes	2011	1490	340
	Domestic violence	2011	6582	544
Peru	Domestic and sexual violence	2010	1417	342
		2011	1480	390
		2012	1606	432
		2013	1346	422
Mexico	Sexual crimes	2014	1039	459
		2010	1243	56
		2011	991	59
		2012	1284	57
		2013	1245	55
Trinidad and Tobago	Domestic violence	2014	1098	54
		2011	9416	753
	Sexual crimes	2014	2198	286
		2014	4770	51

Table 14 Dark figure of crime by country and type of crime, 2005–2014

Crime	Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Assaults	Chile	9%	52%	44%	47%	48%	7%	39%	4%		
Assaults	Colombia								73%	73%	
Assaults	Ecuador						96%	68%			96%
Assaults	Costa Rica								59%	94%	
Assaults	El Salvador					28%	74%	70%	75%	74%	78%
Assaults	Mexico			13%	–7%						95%
Assaults	Trinidad and Tobago										
Burglaries at home	Chile	83%	82%	72%	72%	72%	64%	72%	68%		
Burglaries at home	Colombia								94%	94%	
Burglaries at home	Costa Rica						87%				88%
Burglaries at home	Mexico						91%	91%	92%	94%	94%
Burglaries at home	Trinidad and Tobago										84%
Extortion	Peru							97%	92%		
Extortion	El Salvador								99%	96%	
Extortion	Mexico				99%	99%	99%	99%	99%	99%	99%
Extortion	Mexico			99%	97%	97%	99%	99%	97%	97%	97%
Kidnapping	Mexico										94%
Robberies and thefts	Argentina				95%						
Robberies and thefts	Chile	86%	86%	82%	81%	78%	74%	74%	72%		
Robberies and thefts	Ecuador							97%			
Robberies and thefts	Peru							96%	95%	94%	
Robberies and thefts	Costa Rica						88%				96%
Robberies and thefts	El Salvador								96%	95%	
Robberies and thefts	Mexico			90%	92%	86%	91%	92%	94%	95%	95%
Robberies and thefts	Trinidad and Tobago										87%
Robberies and thefts	Argentina				87%						84%
Thefts	Chile	86%	86%	83%	81%	81%	79%	77%	75%		
Thefts	Colombia								97%	96%	
Thefts	Mexico							95%	97%	97%	
Threats	Argentina				91%						
Vehicle thefts	Chile	59%	64%	20%	15%	24%	20%	21%	11%		
Vehicle thefts	Colombia								28%	–7%	
Vehicle thefts	Peru							16%	4%	–4%	
Vehicle thefts	Costa Rica						35%				77%
Vehicle thefts	Mexico						31%	51%	57%	60%	61%
Vehicle thefts	Trinidad and Tobago										91%

Table 14 (continued)

Crime	Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total crimes	Argentina				88%						88%
Total crimes	Chile	82%	83%	79%	77%	75%	70%	72%	68%		
Total crimes	Colombia									88%	
Total crimes	Ecuador							91%	90%		
Total crimes	Peru							97%	97%	96%	
Total crimes	Costa Rica						88%				95%
Total crimes	El Salvador								97%	96%	
Total crimes	Mexico						94%	94%	95%	96%	
Total crimes	Trinidad and Tobago										77%

Sources: Authors' calculations based on data from the following sources:

Argentina: Encuesta de Victimización (LICIP) and the Sistema Nacional de Información Criminal—Ministerio de Justicia y Derechos Humanos (administrative data)

Chile: Encuesta Nacional Urbana de Seguridad Ciudadana de Chile (ENUSC)

Colombia: Encuesta de Convivencia y Seguridad Ciudadana, Departamento Administrativo Nacional de Estadística (DANE), Ministerio de Defensa Nacional e Instituto Nacional de Medicina Legal y Ciencia Forense (administrative data)

Costa Rica: Victimization module of the Encuesta Nacional de Hogares (2010, 2014), Secretaría de Unidad Análisis Criminal del Ministerio Judicial y Organismo de Investigación Judicial (administrative data)

Ecuador: Encuesta de Victimización Nacional, Informe Estadístico de la Unidad de Información Criminológica de la Dirección de Política Criminal de la Fiscalía General del Estado (2015)—Corte Suprema de Justicia (administrative data)

El Salvador: Encuesta “La percepción de la seguridad y la confianza en las instituciones públicas” (IUDOP 2013a, 2013b) and the Policía Nacional Civil de El Salvador (administrative data)

Mexico: Encuesta Nacional sobre Inseguridad (ENSI, 2005, 2008–2010); Encuesta Nacional de Victimización y Percepción sobre Seguridad Pública (ENVIPE, 2011–2015), and the Secretaría de Gobernación—Secretariado Ejecutivo del Sistema Nacional de Seguridad Pública (administrative data)

Peru: Encuesta Nacional de Programas Estratégicos in its Citizen Security module, and the Instituto Nacional de Estadística e Informática de Perú (administrative data)

Trinidad and Tobago: National Crime & Victimization Survey and the Trinidad and Tobago Police Service (administrative data)

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