

An Institutional Perspective to Understand Latin America's High Levels of Homicide

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Numerous studies have suggested that socio-economic structural factors offer the main reasons for international variations in homicide levels—where socio-economic conditions are better, lower levels of homicide are observed. In countries in Latin America, social and economic conditions have improved, yet high levels of homicide have remained. In this article, we examine a new line of reasoning, hypothesizing that the effectiveness of institutions (such as government justice agencies and the police) and poor controls for corruption are key factors for explaining the high levels of homicide in Latin America. We apply a random effects panel regression using a sample of 54 countries from Latin America and other parts of the world, and data for a 13-year period (2005–2017). We examine the relationships between homicide, government effectiveness, corruption and several structural variables to determine if the relationships between these variables are more apparent for countries in the Latin American region. We find that structural factors play less of a role in explaining the international variation in homicide levels, and that government effectiveness and corruption are significantly related to the high levels of homicide experienced in the Latin America region.

KEY WORDS: homicide, government effectiveness, corruption, institutions

INTRODUCTION

Latin America consistently records the highest number and rates of homicide of any region in the world (Oberwittler 2019). Homicide rates for the region in 2017 were 17.2 per 100,000 population, 11 points higher than the global average of 6.1 (UNODC 2019). High homicide levels in Latin America undermine economic and social stability (Bergman 2018) and have significant financial consequences, equivalent to about 3.5 per cent of the Gross Domestic Product of the region (Jaitman 2015). The homicide problem is also an increasing one. The proportion of homicides across the world that occur in Latin America increased from 29 per cent in 2000 to 39 per cent in 2017 (Alvarado and Muggah 2018), and although occasional decreases in homicide have been experienced, these have not been sustained (Bergman 2018; Oberwittler

2019; van Dijk, Nieuwbeerta and Joudo Larsen 2022). These trends in homicide go against the overall decreases in crime (and homicides) experienced in other regions of the world (van Dijk et al. 2022) and have led to questioning, what is it about life in Latin America that explains the high levels of homicide.

Most studies that have attempted to explain the high levels of homicide in Latin America have focused on the influence of social and economic structural factors such as inequality, poverty, unemployment, poor levels of education and low average income.¹ These studies draw from the viewpoint of violence being considered as a symptom of a country's early stages of development that could be *cured* with economic growth and improvements in social conditions (Chioda 2017). Under this logic, crime and violence are the result of a chaotic social order caused by economic disparities and poor social relations (Cruz, 2016). As social development improves and modernization takes place, homicidal dispositions become pacified. Many regions of the world have experienced improvements in income, education, health and standards of living, with these improvements coinciding with decreases in homicide (Oberwittler 2019). In the Latin America region, citizens have likewise become healthier and better-educated (Jaitman and Machin 2016; World Bank 2019), inequality has reduced (Bergman 2018), and improvements in economic well-being and income distribution have been experienced (Fajnzylber et al. 2002; Ocampo and Vallejo 2012). However, high levels of homicide remain. Although there are differences in homicide levels in countries in Latin America (such as Chile, where homicide rates are below the global average), the overall trend has been for levels of homicide to persist, and in several cases for homicide levels to increase. We discuss country heterogeneity and the consistency of the patterns that are observed in a later section.

Studies that have examined social and economic structural factors and the influence of development on homicide in Latin America have provided valuable insights but have failed to offer consistent explanations for the region's high levels of homicide (Chainey et al. 2021; van Dijk et al. 2022). In recent years, researchers have begun to consider the influence of the roles performed by government institutions on the high levels of crime and violence in Latin America. This has included examining whether institutional legitimacy, governance, political stability and democracy have an impact on levels of crime (Lafree and Tseloni 2006; De Boer and Bosetti 2015; Chainey et al. 2021; van Dijk et al. 2022), if the number of personnel working within the security and justice sector has an influence on levels of violence (Soares and Naritomi 2010), and if effective governance structures decrease interpersonal violence (Neumayer 2003). These new areas of enquiry follow what Stamatel (2009: 17) recommended as the need to examine patterns of violence in relation to 'regime types, efficacy and legitimacy of governments' and 'the role of the state in maintaining law and order'.

In the next section, we provide a concise review of research findings about the relationship between socio-economic structural factors and homicides, and illustrate that these explanations are not consistent to Latin America. We then introduce how the role performed by governments can have an influence on homicide levels and the theoretical principles that support this. We then describe the panel regression analysis, we conduct to examine the relationship between homicide, government effectiveness (GE) and corruption, while controlling for structural conditions. After presenting the results from the analysis, we discuss the findings, limitations and provide conclusions.

THE SOCIO-ECONOMIC STRUCTURAL VARIABLES THAT EXPLAIN VARIATIONS IN HOMICIDE

Violence is a phenomenon with multiple causes in which different factors generate or facilitate the act (Apraxine et al. 2012; Oberwittler 2019). To date, the focus for examining variations in

1 References to these findings are provided in the next section when they are reviewed in more detail.

the levels of homicide has been on how homicide levels are related to socio-economic structural factors (Neapolitan 1994). Drawing predominantly on strain theory (McCall and Nieuwebeerta 2007), these factors associate crime and violence with a chaotic social order resulting from economic disparities and transforming norms and values (Cruz 2016). These disparities generate resentment, feelings of frustration and the inability to accumulate assets, which in turn lead to higher levels of violence (Chamlin and Cochran 2006; Jacobs and Richardson 2008).

Inequality (both social and economic) has been suggested by many researchers as being a key explanatory factor for variations in homicides (Bourguignon et al. 2003; Fajnzylber et al. 2002; Imbusch et al. 2011; Pratt and Godsey 2003; Nadanovsky and Cunha-Cruz 2009; Trent and Pridemore 2012). For example, in a cross-national study, LaFree (1999) found that economic inequality was the most consistent predictor of violence, identifying a significant negative relationship between homicide and economic development. With specific regards to Latin America, Nadanovsky and Cunha-Cruz (2009) suggested that income inequality was a key influencing factor to the high homicide rates experienced in the region. Other studies have, however, questioned the universal international relationship between inequality and homicide (Messner 1982; Neumayer 2003), and, in particular, in Latin America (Koonings and Kruijt 2015; Rennó Santos et al. 2018), with these studies suggesting that the relationship is inconclusive (Vilalta Perdomo et al. 2016; Bergman 2018).

Education is another factor commonly associated with crime and violence. Researchers have found that an increase in school attendance can reduce crime (Rivera 2016) and that schooling significantly reduces the probability of incarceration and arrest (Lochner and Moretti 2004). Furthermore, Machin, Marie and Vujić (2011) suggested that improving education can act as a key policy tool in efforts to reduce crime and Muggah (2017) showed that the non-completion of school, especially secondary education, is strongly correlated with delinquency. However, other studies have shown weaknesses between the education and crime relationship, especially for homicide. For example, Heinemann and Verner (2006) showed that the average number of years of schooling was not related to international variations of homicide.

Other homicide research has suggested that poverty is a key variable that explains the variation in homicide rates across the world (Hsieh and Pugh 1993; Pridemore 2008; Lappi-Seppälä and Lehti 2014; Pare and Felson 2014). For example, Pridemore (2008) concluded that the positive relationship between poverty and homicide is a consistent finding across time periods, units of analysis, measures of poverty and cross-sectional and longitudinal analyses. However, other studies have questioned whether the relationship between poverty and homicide is universal across all regions of the world, and that poverty may only be an influencing factor on homicide levels in countries with low rates of homicide (Rennó Santos et al. 2018).

These and other variables such as unemployment, and urban segregation, and facilitating factors such as drugs and alcohol consumption, and easy access to firearms, have been considered as variables that increase the levels of violence (Briceño-León et al. 2008), but findings to date about these variables have also not been consistent.

THE ROLE OF GOVERNMENT INSTITUTIONS AND THEIR IMPACT ON CRIME

A factor that researchers have begun to consider in the study of crime is the importance of governance and the roles performed by government institutions (Stamatel 2009; Bergman 2018; van Dijk et al. 2022). For example, Tebaldi and Alda (2017) argued that government institutions can directly affect the incidence of violence because of their role in law setting and the enforcement of these laws. Government institutions also play the key role in setting policy, developing strategies and implementing programs to prevent violence; therefore, it is logical to consider

that the effectiveness of these institutions influences the violence that is observed (Alda 2017). De Boer and Bosetti (2015) have additionally argued that if government authorities cannot establish and consolidate institutional legitimacy and authority, they can struggle to prevent and reduce homicide. This has led to the suggestion that factors associated with governance and institutional capacity should be included in models that examine reasons for the international variation in homicides (Eisner and Nivette 2013).

Political science research about institutions has also begun to examine how issues of institutional strength, legitimacy and effectiveness influence the expectations of individuals and shape their behaviours (Lafree and Tseloni 2006; Levitsky and Murillo 2009; De Boer and Bosetti 2015). Additionally, a wide body of other research has shown that individuals are influenced by feelings related to trust and legitimacy towards institutions (Eisner and Nivette 2013; Tankebe 2013; Bradford et al. 2017; Kyprianides et al. 2021), including how legitimacy is negatively related to homicide (Eisner and Nivette 2013; Dawson 2017). Legitimacy is the public acceptance of the right of the criminal justice system to wield power and define behaviour (Bottoms and Tankebe 2012; Hough et al. 2013). According to Beetham (1991: 11) legitimacy 'matters because of the difference it makes to people's attitudes and behaviour. To the extent that people acknowledge power as rightful, as validly acquired and properly exercised, they will feel a corresponding obligation to obey and support it without having to be bribed or coerced into doing so'. As such, for institutions to be considered legitimate, they need to meet certain standards of effectiveness, fairness and accountability (Hough et al. 2013). Therefore, ineffective institutions are more likely to be considered as legitimate and, in turn, may influence the levels of crime that are experienced. Additionally, when government institutions are passive in their role in tackling crime, this can create scepticism in the institution's ability to combat crime, which in turn can erode trust in the institution and a perception that the commission of crime goes unpunished. From an offending viewpoint, if the risk of punishment is minimal, more crime is likely to be committed (Piquero and Rengert 1999).

In sum, a primary mechanism that is likely to influence levels of homicide is associated with the roles performed by public institutions in their attempts to tackle crime. Also, normative compliance with the law is more likely when people feel a moral obligation or commitment to follow the rule of law, fostered by institutions they feel are legitimate, effective and trustworthy (Hough et al. 2010; Beetham 1991). When institutions are perceived to be illegitimate and ineffective, people withdraw their support, contributing to weakened formal and informal control mechanisms (Tuttle 2019), and as Chainey et al. (2021: 18) note, 'if government authorities are ineffective in providing adequate services that offer security to citizens, it can create a void in which criminal activity has the potential to thrive'.

The current research examines if a relationship exists between the effectiveness of a country's institutions and the country's level of homicide, with particular attention to examining this relationship in Latin America. We add to the literature by conducting a panel regression analysis using 13 years of data for an international sample. We suggest that institutional ineffectiveness is more extreme in the Latin American region than in most other regions across the world,² and hypothesize that this is a particularly important factor for explaining the high levels of homicide that are experienced in the region.

Another factor associated to governance and institutional effectiveness is corruption. Corruption is not traditionally thought of as a violence and security issue; however, some studies have shown that a low level of corruption is important to maintaining a peaceful society, high levels of corruption damage the legitimacy of government institutions and have an undermining effect on efforts to address crime (Azaola 2009; Chainey et al. 2021). As Oberwittler (2019:

2 We note that issues of institutional effectiveness are also likely to be present in many African and Asian countries and discuss this further in a later section.

32) notes ‘it seems surprising that corruption has rarely been tested as a predictor of homicide, considering the role of corruption in shady business practices and dysfunctional governance’. In Latin America, levels of corruption are high. We hence also argue that institutions that are ineffective in controlling for corruption are likely to experience higher levels of homicide because of the undermining effect that corruption can have in the operation of good governance, public policy and practice. In the context of the commission of homicide, corruption can weaken the provision of government services for controlling crime, reduces the legitimacy of the justice system and leads offenders to believe that criminal behaviour (including homicide) will go unpunished. We hence hypothesize there is a significant negative relationship between the control of corruption and the level of homicide, with this relationship being particularly apparent in countries in Latin America. In short, we argue that the effectiveness of institutions and control of corruption have consequences on the legitimacy and stability of authority, and that in turn can influence levels of crime—which in its most extreme violent form results in homicide. We hypothesize that countries with lower levels of institutional effectiveness experience higher levels of homicide; countries with lower levels of control for corruption experience higher levels of homicide, and the relationships between homicide, institutional effectiveness and corruption are particularly evident for countries in Latin America.

DATA AND METHODS

One of the most important aims of cross-national research on homicide has been to examine the factors that influence levels of homicide and if differences are apparent between countries and regions of the world (Lappi-Seppälä and Lehti 2014). In the current study, we examine if there are certain unique characteristics to the Latin American region that explains the regions’ high homicide levels—in particular, if institutional effectiveness and corruption are related to homicide levels, and if the influence of these factors are particularly evident in Latin America.

To date, most studies that have examined if a relationship exists between homicide and institutional effectiveness have used ordinary least squares (OLS) regression (e.g. Azaola 2009; Chainey et al. 2021). These studies have been useful in indicating that such a relationship is apparent but have only done so for a single cross-sectional examination of relationships. The current study builds on this previous research by conducting a panel regression. Panel regression takes explicit account of individual-specific heterogeneity by combining data in two dimensions—cross-section and time series. In doing so, observations of multiple phenomena over multiple time periods can be examined, delivering more data variance, less collinearity and more degrees of freedom. Further, panel regression enables the detection and measurement of effects which cannot be observed in either cross-section or time-series regression analysis. Moreover, panel regression enables the study of more complicated behavioural models. In short, panel regression models have long been considered good designs for the study of causation (Campbell and Stanley 1963; Worrall 2005).

The three most common techniques used for panel data analysis are pooled OLS estimation, fixed effects and random effects. Pooled OLS estimation was discarded as a method for the current study because it is an OLS technique applied to panel data and, therefore, all individually specific effects are ignored. Consequently, many basic assumptions, such as orthogonality of the error term, are violated. Since the early 2000s, longitudinal designs using fixed and random effects models have become widespread (Oberwittler 2019), and are both considered to be appropriate methods to use when working with panel and cross-sectional time-series data (Borenstein et al. 2010). For the current study, a random effects model was used because of the advantage this model has in allowing the true effect sizes to differ across the data sample. In contrast, a fixed-effects model would remove any country differences and focus on explaining

changes over time of homicide rates in relation to time-variant predictors. The data sample used in the current study consists of countries for which there is a large variation in the values of the variables that are used, which in turn may impede a comprehensive understanding of country effects on homicide. Random effects models simultaneously evaluate between, and within, country effects, and hence were more appropriate for the analysis of our data sample (Oshio, Taku, Hirano and Saeed 2018; Tuttle 2019).

The study used a 54-country data sample, using data for a 13-year period—2005 to 2017.³ 24 countries were from Latin America. A sample of this type meant we could examine international consistency in the findings and then examine any differences in findings between Latin American and non-Latin American countries. The 30 non-Latin American countries were primarily chosen because of their regular inclusion in cross-national studies on changes in crime and because of the findings these studies have generated about the influence of structural conditions on variations in homicides (Farrell et al. 2011; van Dijk et al. 2022). A second matter we needed to consider was data availability, with the inclusion of the countries in the non-Latin American data pool being chosen because of data being available for each of the dependent and independent variables for each country and for each year between 2005 and 2017. Most of this 30-country data pool consisted of advanced industrialized countries such as the United States and Germany (see Annex 1 for a full list of countries). We had considered the inclusion of countries from Africa and Asia, but the lack of data for each variable and for each year limited their inclusion.

The dependent variable was the country homicide rate, expressed as the number of homicides per 100,000 population. Data on homicide rates for all countries were obtained from the Homicide Monitor of the Igarape Institute (2019), and are reliable for cross-national study (Nivette 2011; Oberwittler 2019). The data did not include homicides that were the result of an armed conflict. Although the homicide data consisted of a full range of homicide rates (from low, to medium, to high homicide rate countries), a regional difference was observed for the homicide rates for countries in Latin America and the other countries included in the data sample. This was to be expected because of the observations of high levels of homicide in Latin America that we have commented on in previous sections. Natural log transformations were applied to the homicide data to address skewness across the data sample—a common requirement for multivariate models that use homicide rates (Messner 1982; LaFree and Tseloni 2006).

Data for seven explanatory variables were obtained for each country and for each year between 2005 and 2017: government effectiveness, control for corruption, inequality, unemployment, poverty, educational attainment and urban population. Data on GE was sourced from the World Governance Indicator (WGI) project of the World Bank (2019). The WGI dataset was chosen because it is considered to be a reliable and comprehensive dataset for examining cross-national variations of governance and has been used in previous studies to examine the relationship between crime and institutional effectiveness (Nivette and Eisner 2013; Chainey et al. 2021; van Dijk et al. 2022). GE is defined as ‘perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies’. The measure is presented as a standardized score ranging from -2.5 to 2.5 , with a mean of zero and a standard deviation of one. Lower scores represent lower levels of GE and higher scores represent higher levels of GE.

Previous studies that have examined corruption control and its relationship with crime have used the measure for this variable that is also recorded in the WGI dataset. The WGI data on

³ At the time of the study, data for 2018 and 2019 was not complete for all countries included in the sample, hence our decision to use data to 2017.

corruption control are created from a number of the same sources as the data for GE and have been shown to be strongly correlated to each other (Chainey et al. 2021). The current study uses data from the Corruption Perception Index (CPI) of Transparency International (TI) to address any correlation with GE and so that both variables could be included in the same model. The CPI is a widely used reliable measure of corruption (Haggard, and Tiede 2011), constructed using data from surveys and assessments of corruption. The CPI uses a scale of 0 to 100, where 0 is highly corrupt and 100 is not corrupt. CPI data were obtained for all 54 countries from 2012 to 2017. CPI data from 2005 to 2011 could not be used because these data were constructed using a different method and the magnitude of the scores for each country was different to that generated after the revision of the CPI in 2012. We discuss this limitation in a later section.

Variables for inequality, poverty, unemployment and educational attainment were included in the analysis because of their use in previous studies as structural factors for examining their relationship with homicide. The Gini index was used as the measure of inequality because of its common use in studies for examining variations in violence (Neumayer 2003; Koepfel et al. 2015). For a small number of countries, the Gini index was not available for certain years. As inequality is considered to be a slowly changing phenomenon (Messner et al. 2002), for the cases where data were not available, data for nearest year was used (following the suggestion of Nivette and Eisner 2013). In the absence of a single direct measure of poverty for each country and for each year, GDP per capita (in US dollars) sourced from the World Bank (2019) was used as a proxy measure of poverty (and as used by Lappi-Seppälä and Lehti 2014). Data for unemployment was obtained from the International Labour Organization, ILOSTAT database (2019). Unemployment refers to the proportion of the labour force that is without work but available for and seeking employment. The education index of the Human Development Index (HDI) (2019) was selected as the measure of education level in each country. The education index is constructed by combining average adult years of schooling with expected years of schooling for children. Finally, since homicide is considered to predominantly be an urban phenomenon (Neumayer 2003; Baumer and Wolff 2014), we included a measure of urban population as a variable for analysis. The urban population variable, sourced from the World Bank (2019), was a measure of a country's population living in urban areas.

Five different models were run independently to examine the relationship between homicide and the independent variables. The first set of models would allow us to examine consistency in the findings across the entire data sample. The second set of models would allow us to examine if any findings were unique to the Latin American region. An issue we had to initially consider was that data on control for corruption were only available for 2012–2017. To address this, the first set of models consisted of three separate models: a model that only included GE (Model 1); a model that only included CPI (Model 2), and a model that included both variables (Model 3). The second set of models consisted of Model 4 that included only Latin American countries, and Model 5 that included only non-Latin American countries. Model 4 and Model 5 included both the GE and CPI variables. All models included the variables for inequality, poverty, unemployment, education and the urban population.

Independent variables are sometimes correlated with one another, particularly variables that measure structural conditions (Pridemore and Trent 2010). This can create issues of multicollinearity in regression models and can lead to the generation of misleading results. Before each model was run, the analysis began by constructing a correlation matrix of all independent variables to identify those variables that were correlated. High correlations, however, are not in themselves indicative of multicollinearity (Eisner and Nivette 2012), so for each model we applied a variance inflation factor (VIF) test to measure for multicollinearity. A high VIF indicates that the associated independent variable is highly collinear with the other variables in the model. If the VIF for a variable exceeds four, it warrants further investigation, while exceeding

ten suggests that a serious issue of multicollinearity is present and requires addressing (Paul 2006; Champion and Hartley 2010).

RESULTS

Table 1 shows the univariate statistics for the variables used in the analysis. The statistics reveal considerable variation in homicide rates for the 54-country data sample, ranging from a low of 0.1 per 100,000 population in Greece (2006) to a high of 103 per 100,000 population in El Salvador (2015), with a mean of 11.3. Large variations were observed in most of the other variables (e.g. the CPI varied from 17 in Venezuela (2015 and 2016) to 92 in Denmark (2014)). The small differences in *N* (from a maximum of 702 for each variable) were because of data not being available for all variables for each year for all countries. Recall that the data for CPI was for 2012–2017 hence the lower *N* for this variable.

As a preliminary test, a correlation matrix was prepared across all countries and variables. The correlation matrix (see Table 2) showed that all variables were significantly correlated with homicides ($p < 0.01$). As was expected, GE ($-.54$; $p < 0.01$) and CPI ($-.52$; $p < 0.01$) were found to be negatively correlated with homicides, indicating that lower levels of GE and control of corruption were associated with higher levels of homicide. The Gini index, also as

Table 1. Descriptive statistics for each variable

Statistic	<i>N</i>	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Homicide rate	701	11.3	16.8	0.1	1.1	13.1	103.0
GE	702	0.5	0.9	-1.4	-0.3	1.5	2.4
CPI	318	53.4	20.7	17.0	36.0	73.0	92.0
Education	702	0.7	0.1	0.4	0.7	0.9	0.9
Gini Index	646	38.3	9.0	23.7	31.1	45.9	59.5
Unemployment	702	7.9	4.9	1.6	4.8	9.1	31.1
GDP per capita	699	22,347.8	21,345.5	1,034.3	5,643.6	40,636.8	103,059.2
Urban	702	69.9	14.6	26.4	57.9	80.6	98.0

Table 2. Correlation matrix of independent variables and their global relationship with homicide.

Variable	Homicide rate	GE	CPI	Education	Gini	Unemployment	GDP capita
Homicide rate							
GE	-.54**						
CPI	-.52**	.95**					
Education	-.64**	.81**	.79**				
Inequality	.58**	-.69**	-.64**	-.78**			
Unemployment	-.13**	-.05	-.03	.02	-.20**		
GDP capita	-.45**	.86**	.85**	.73**	-.62**	-.14**	
Urban	-.24**	.43**	.45**	.42**	-.11**	-.20**	.43**

Note: * $p < 0.05$. ** $p < 0.01$.

expected, was positively associated with homicides (.58; $p < 0.01$). Education ($-.64$; $p < 0.01$), poverty ($-.45$; $p < 0.01$), unemployment ($-.13$; $p < 0.01$) and urban population ($-.24$; $p < 0.01$) were all negatively correlated with homicides. These results for education and poverty were as expected, i.e. lower levels of education and GDP per capita were associated with higher levels of homicides. However, the results suggest that lower levels of unemployment and lower levels of urban population were associated with higher levels of homicides. These findings for unemployment and urban population contrast with other research findings that have suggested a positive relationship between these variables and homicide. However, what is consistent with previous work is that the coefficient values for unemployment and urban population were small. GE and control of corruption were significantly correlated with all other variables except for unemployment. In addition, many of the other independent variables were correlated with each other. These potential issues of multicollinearity were examined in each panel regression model.

The VIF for each variable in model 1 was no greater than 1.3 suggesting that multicollinearity was not present in the model. In model 1, all variables except urban population were statistically significant (see Table 3). GE was correlated with homicides in the expected direction

Table 3. Panel regression results for Models 1, 2 and 3 (examination of full sample)

Results	<i>Dependent variable:</i>		
	Logged homicide rate		
	(1)	(2)	(3)
Government effectiveness	-0.685*** (0.076)		-0.532*** (0.118)
Control for corruption		-0.028*** (0.005)	-0.017*** (0.005)
Gini index (inequality)	0.019*** (0.006)	0.079*** (0.011)	0.074*** (0.011)
Education	1.272*** (0.401)	-0.377 (0.770)	0.371 (0.762)
Unemployment	-0.010** (0.004)	0.005 (0.009)	0.004 (0.008)
GDP per capita (poverty)	-0.00001** (0.00000)	0.00000 (0.00000)	0.00001* (0.00000)
Urban population	0.004 (0.006)	0.011 (0.008)	0.013* (0.008)
Constant	-0.153 (0.628)	-0.965 (0.920)	-1.843** (0.920)
Observations	642	288	288
R ²	0.205	0.354	0.389
Adjusted R ²	0.197	0.340	0.373
F statistic	163.685***	153.910***	178.072***

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

($r = -0.685, p < 0.01$). Inequality (measured using the Gini Index) ($r = 0.019, p < 0.01$) and education ($r = 1.272, p < 0.01$) were significantly positively correlated to homicide. GDP per capita and unemployment were significantly negatively correlated to homicide ($p < 0.05$), suggesting that a decrease in these two variables would increase the homicide rate.

The VIF for each variable in model 2 was no greater than 1.6 suggesting that multicollinearity was not present in this second model. In model 2, control of corruption was significant and in the expected direction ($r = -0.028, p < 0.01$). The Gini Index was also significant ($r = 0.079, p < 0.01$); however, all the other variables in model 2 were not significant.

The VIF for each variable in model 3, that included both GE and control of corruption alongside the other independent variables, was no greater than 2.0 suggesting that multicollinearity was not present. The model 3 results show that both GE ($r = -0.532, p < 0.01$) and control of corruption ($r = -0.017, p < 0.01$) were significant (and in the expected direction). Inequality ($r = 0.074, p < 0.01$) was the only other variable that was significant in model 3. Model 3 also recorded the highest adjusted R^2 of 0.373 and the lowest AIC value suggesting that model 3 was the better of the three models.⁴

Model 4 included only Latin American countries whereas model 5 included only the other countries from the sample (see Table 4). The VIF for each variable in model 4 was no greater than 1.9 suggesting that multicollinearity was not present in the model. In model 4, GE was significant ($r = -0.266, p < 0.1$) and control of corruption was significant ($r = -0.017, p < 0.01$), in both cases in the expected direction. The results indicate that a 0.1 unit increase in GE (recall, homicide rate is logged and GE range is between -2.5 and 2.5) could lead to a 2.3% decrease in mean homicide rates in Latin America, while a one-unit increase in control of corruption (recall, CPI range is between 0 and 100) could lead to a 1.7% decrease in homicide rates. Using the mean homicide rate for 2017 for the Latin American countries of 21.07 per 100,000 population as an example, these results indicate that if a 0.1 unit increase in GE occurred in Latin America in 2018, this could have led to a decrease in homicides from 21.07 to 20.58 per 100,000 population (i.e. a mean decrease of 0.49 per 100,000 population in homicides across the region). Similarly, a one-unit increase in CPI across the Latin America region in 2018 could have resulted in an additional decrease in homicides of 0.36 per 100,000 population. Therefore, combined, the changes in GE and CPI could represent a 0.85 per 100,000 population decrease in homicides, equivalent to 5,807 fewer homicides in Latin America in 2018 (based on 144,415 homicides in the region in 2017). Inequality ($r = 0.052, p < 0.01$) and education ($r = 2.957, p < 0.01$) were also significantly correlated to homicide.

The VIF for each variable in model 5 was no greater than 1.5 suggesting that multicollinearity was not present in the model. In model 5, GE was the only significant variable ($r = -0.576, p < 0.01$) and in the expected direction.⁵ This result indicates that a 0.1 unit increase in GE could lead to a 4.4% decrease in mean homicide rates in the non-Latin America subset of countries. Noting that homicide rates were much lower in this subset of countries, using the mean homicide rate for 2017 for these countries of 1.3 per 100,000 population as an example, these results indicate that if a 0.1 unit increase in GE occurred in 2018, this could have led to a decrease in homicides from 1.3 to 1.24 per 100,000 population. All other variables in model 5, including control for corruption, were not significantly related to homicides.

DISCUSSION

Over the last decade, countries in Latin America have made considerable improvements in their economic and social conditions. This includes improvements in inequality and decreases

⁴ In panel regression, adjusted R^2 values do not tend to be high (i.e. greater than 0.8) because of heterogeneity in the cross sections of data.

⁵ We note that this coefficient value for GE was greater for non-Latin American countries than Latin American countries and return to this in the Discussion section.

Table 4. Panel regression results for models 4 (only Latin American countries) and 5 (the non-Latin American countries)

Results	Dependent variable:	
	Logged homicide rate	
	(4)	(5)
Government effectiveness	-0.266* (0.149)	-0.576*** (0.183)
Control for corruption	-0.017*** (0.006)	0.006 (0.010)
Gini index (inequality)	0.052*** (0.020)	0.023 (0.017)
Education	2.957*** (0.963)	0.587 (1.267)
Unemployment	0.005 (0.008)	-0.007 (0.023)
GDP per capita	0.00001* (0.00000)	-0.00003 (0.00002)
Urban population	0.008 (0.009)	-0.004 (0.014)
Constant	-3.406*** (1.091)	1.569 (1.508)
Observations	179	109
R ²	0.222	0.194
Adjusted R ²	0.190	0.139
F statistic	48.761***	23.834***

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

in poverty (ECLAC 2015; Kassab and Rosen 2018). However, over this same period, the levels of homicides have increased. This has raised doubts about the extent to which structural factors provide explanatory reasoning for the high levels of homicides that are experienced in Latin America. Therefore, the examination of other and perhaps more contextually specific factors that may be associated with homicides (and with crime more generally) is needed for explaining the high levels of homicides in the region. These factors include those that are related to the institutional capabilities of governments, and the possible influence that corruption within institutions has on levels of homicide.

The results from the current study show that homicide rates were higher in countries that had lower levels of GE and were higher in countries where there were poorer controls of corruption. The results also showed that most structural variables (such as poverty and unemployment) were not significant when the institutional variables of GE and controls of corruption were included in the models. When only non-Latin American countries were included in the models, only government effectiveness, and not control for corruption, was a significant predictor

of homicides. When only Latin American countries were included in the models, the institutional variables of GE and control for corruption were significantly related to homicide levels. Collectively, these results suggest that GE seems to be a significant variable that explains the variation in homicides rates for many countries across the world. In Latin American countries, in addition to GE being a variable of significance for explaining variations in homicide, the control of corruption also appears to be a particular institutional factor that is related to the high levels of homicide in the region. The magnitude of potential decreases that could be achieved through improvements in GE and corruption control in the Latin America region is not insignificant. Based on the results from the model that included only Latin American countries (model 4), a realistic mean 0.1 unit annual improvement in GE and a mean one-unit annual improvement in corruption control across the region could see annual homicide rates reduce in the immediate years after 2017 by approximately 0.85 homicides per 100,000 population per year (e.g. from a mean of 21.07 in 2017 to a mean of 20.22 in 2018). As reported in the results section, this decrease is equivalent to 5,807 fewer homicides in 2018. A single cost of homicide estimate for Latin America does not currently exist, so it was not possible to equate this potential decrease in homicide in financial terms. Also, it was beyond the scope of the current research to estimate the cost of investment that is required to make improvements in GE and control of corruption, but we recommend this as a topic for future research to assist effective cost-benefit analysis of homicide reduction policies.

The results from the analysis are illustrated further in Figure 1, showing values for GE and control of corruption in 2017 separately for Latin American countries and for the other countries included in the data sample. The sizes of the symbols for each country represent the homicide rate for each country in 2017. Although a consistent pattern between GE and control of corruption is observed for both sets of countries, two other observations are noticeable. First,

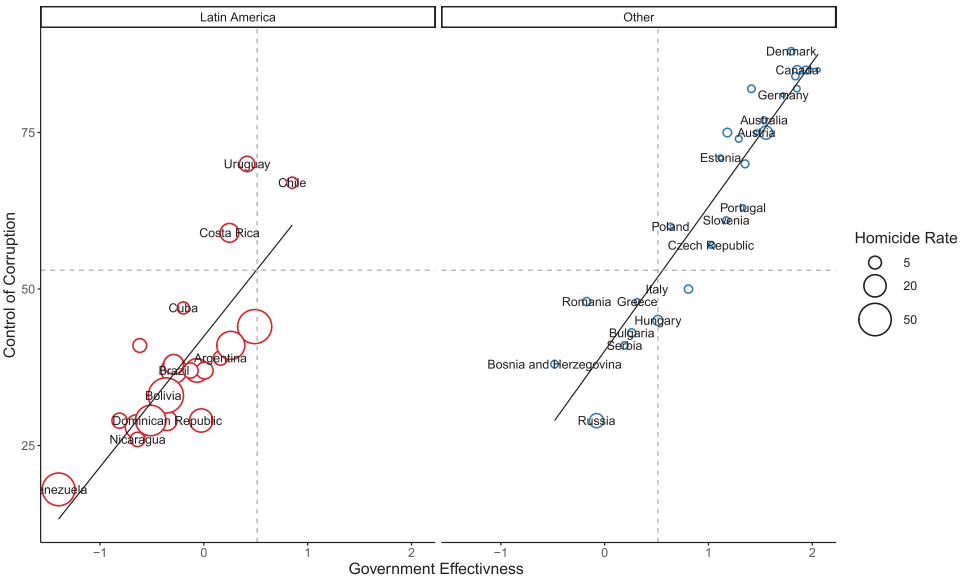


Fig. 1 GE, control of corruption and homicide rates (2017).

Source: own elaboration with data from the World Bank, TI and Homicide Monitor (2017)

Note: the dashed line at $y = 53$ represents the average for CPI, whereas the dashed line at $x = 0.513$ represents the average GE of the data sample.

most Latin American countries have negative values for GE and lower values for corruption control, emphasizing the weakness in these factors of institutional capability in the region. Second, that the size of the symbols that represent the level of homicides are larger for countries in Latin America than they are for the countries in the other set of countries. These observations highlight that the ineffectiveness of governments in Latin American countries and the undermining influence of corruption are two variables that appear to be particularly apparent in explaining the high levels of homicide that are experienced in the region.

Since the 1970s, several studies have shown that countries that have higher levels of income inequality tend to have higher levels of homicide (e.g. [Chamlin and Cochran 2006](#)). The results from the current research support this argument for homicide in Latin America but not for homicide in the other subset of countries. Although some differences exist within the region, such as in Panama where there are high levels of inequality but low levels of homicide, the overall pattern was one of significant consistency. In more developed countries and where homicide levels on average are low, the results suggest that inequality is not a significant factor for explaining contemporary variations in homicide levels.

With regard to poverty, [Pridemore \(2008\)](#) had concluded that the positive relationship between poverty and homicide is the most consistent finding in the literature. The results from the current study do not support Pridemore's argument. Poverty was only significant in model 1 (that included government effectiveness) and was not significant in either of the two models when control of corruption was included. We do note, however, and as argued by [Kliksberg \(2008\)](#), that inequality and poverty feed off each other, suggesting that the measurement of one variable may reduce the impact of the other if both are included in the same model. This may have been the case in the models we constructed.

Education was only significant in model 1 and model 4. In both these models, the variable for corruption was not included. Also, education was significant when only Latin American countries were included (model 4), but was not significant for the other countries in the data sample (model 5). This result suggests that efforts that are oriented to improving education levels in Latin America could be of benefit for reducing homicides. A relationship between education and corruption would need further study to examine if the two are linked in some way. Unemployment was only significant in model 1 and urban population was only significant in model 3. Collectively, the findings from the current study suggest that some structural variables have an influence on contemporary levels of homicides in many countries of the world and others do not. In Latin America, inequality and education appear to continue to have an influence on homicide levels.

The finding that GE was a significant negative predictor of homicide levels confirms our hypothesis that the effective functioning of institutions can have an influence on the levels of homicide that a country experiences. However, although the relationship between GE and variations in homicides was significant for both Latin American countries and non-Latin American countries, the coefficient value of GE was greater for non-Latin American countries. This finding may be because GE was the only variable that was significant in model 5, but does illustrate in modern times that continual improvements in GE may be one of the key factors that can sustain low levels of homicides in these countries (see [Figure 2](#)).

From a theoretical perspective, the findings from the current study indicate that if institutions are perceived as ineffective, people may withdraw their support for these institutions, contributing to weakened formal and informal control mechanisms. Further, as stated in a previous section, for institutions to be considered legitimate, they need to meet certain standards of effectiveness and fairness ([Hough et al. 2013](#)). Also, when a government enforces its rules in a stable and fair way, citizens can assume that others will follow these rules and that this behaviour will endure. However, ineffective institutions can foster the idea that everyone is not under the

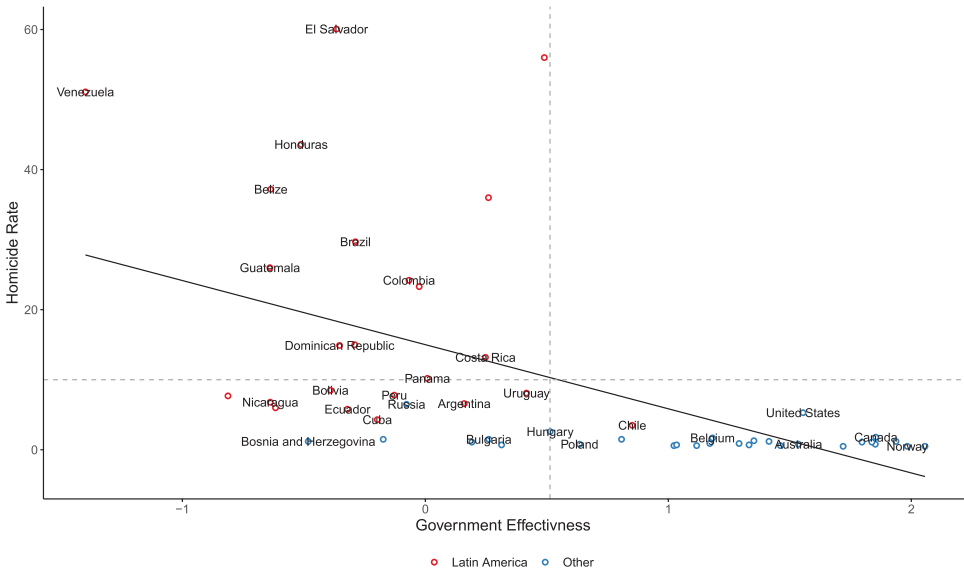


Fig. 2 GE and Homicide Rates (2017).

Source: own elaboration with data from Homicide Monitor and World Bank.

Note: dashed line at $y = 10$ represents the average homicide rate, whereas the dashed line at $x = 0.513$ represents the average GE of the data sample.

same set of rules, which may then incentivize others to avoid abiding by those rules. In sum, GE can have an influential effect on citizens' expectations and behaviour, which in its most violent form can be displayed in acts of homicide.

Corruption also can have a damaging effect on the public's perception of governing institutions, and therefore can influence how people behave towards these institutions. Legitimacy is affected by the extent to which justice institutions operate according to moral standards (Beetham 1991), which corrupt institutions are unlikely to have. Moreover, corruption erodes the functioning of the state and its ability to perform its most basic services, such as providing security and resolving conflicts between people. If citizens perceive that certain people may escape the law, they may engage in extra-legal activities by understanding that the law and rules do not equally apply to the whole population.

It seems odd that corruption has rarely been tested as a predictor of homicide (Oberwittler 2019), considering the role of corruption in dysfunctional governance and its impact in citizens expectations. The feeling of trust in government and the officials who run it is fundamental to a peaceful society (Roth 2012), and hence reducing corruption would seem to be necessary to reduce crime. The results from the current study show that control of corruption was a significant negative predictor of homicide levels in Latin America and not in the other subset of countries, suggesting that the issue of corruption and its relationship with homicide is, perhaps, a unique characteristic of countries in Latin America. Although some differences exist within the region, such as in Bolivia and Paraguay, where levels of corruption are high, but homicides rates are similar to the global average, the overall pattern of a relationship between control for corruption and homicide levels was one of significant consistency (see Figure 3).

As noted previously, there is a strong relationship between GE and control for corruption. Efforts were made in the current study to address issues of multicollinearity by using different data sources for GE and for control for corruption. Test results also showed no issues of

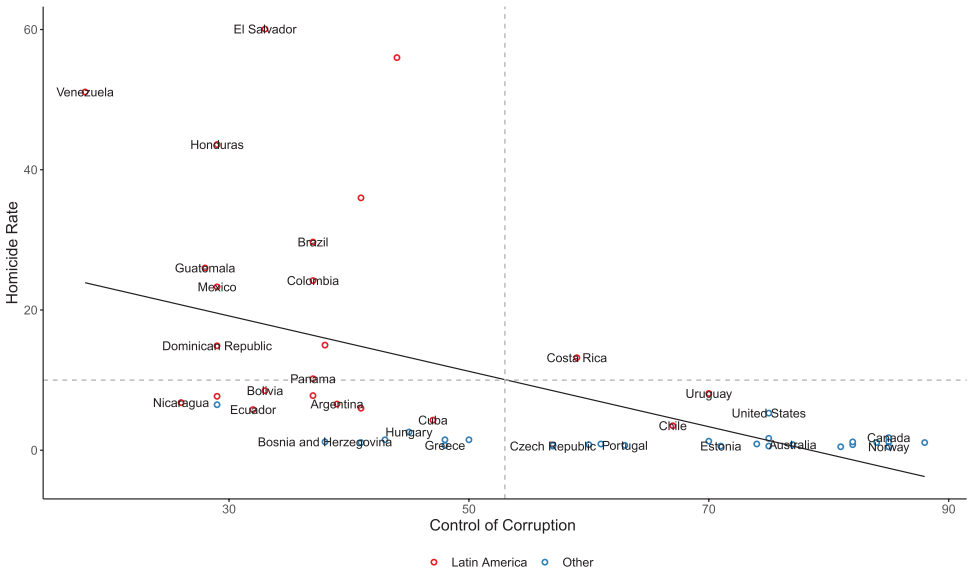


Fig. 3 Control of Corruption and Homicide Rates (2017).

Source: own elaboration with data from Homicide Monitor and Transparency Interaccional (2017).

Note: dashed line at $y = 10$ represents the average homicide rate, whereas dashed line at $x = 53$ represents the average CPI of the data sample.

multicollinearity were present. However, the causality and order of these two dimensions of governance remains unexamined. The strong correlation between the two variables indicates that a change in one variable is likely to affect the other. Such as, if levels of corruption increased, this would likely lead to a decrease in government effectiveness, which, in turn, could lead to increases in the levels of homicide. Similarly, a decrease in a government's effectiveness could provide more opportunities for corruption, which in turn could result in an increase in homicides. It would be logical, therefore, to suggest that the weakening of one variable would weaken the other, and therefore hamper the overall functioning of institutions.

In terms of the implications for policies in homicide reduction, policy that involves investments in improving the effectiveness of governments for the purpose of reducing homicides would also need to know if these improvements would automatically result in improvements in corruption control, or if improvements in both GE and corruption control were required simultaneously to reduce homicides. What does appear to be apparent is that in the Latin American region, homicide reduction strategies that do not address the issue of corruption and fail to improve the effectiveness of governments are unlikely to succeed.

LIMITATIONS AND FURTHER RESEARCH

Although the current study provides several useful findings, there were limitations with the research. Cross-national designs are susceptible to the problem of omitted variable bias: unmeasured country variables could be confounded with the homicide rate, rendering its associations with predictors spurious. Associations found in cross-national models can, in general, not be interpreted as causal, as effects could work in both directions. Another common challenge with cross-national analysis is the sample size and the quantity and quality of data. Increasing sample size is a difficult task in cross-national research, where the data required to test a hypothesis

may only be available for a small number of countries. This was particularly the case with the variable for corruption, where the sample size was lower than for all other variables because of the change in the calculation of the CPI in 2012. Additionally, the full 54-country data sample consisted of mainly advanced industrialized countries and Latin American countries, and as such the findings are not generalizable to every region in the world. Further research should reproduce the current study when data are available by including countries that represent all the regions of the world to examine if other regional differences exist between contemporary levels of homicide, institutional factors and structural conditions. In particular, we recommend the study to be replicated for countries in Africa and Asia to determine if the relationships we observe between homicide, GE and corruption are apparent in these two regions. We also recommend further research that examines whether the relationships between homicide and the independent variables we test are consistent for groupings of countries with different levels of homicide. Additionally, we recommend further research, that examines if the relationships we observed continued to be apparent during and after the COVID-19 pandemic. Also, previous studies have shown a relationship between homicide levels and certain socio-demographic factors, such as the density of the young male population (Chioda 2017; UNODC 2019). We recommend further research that examines whether the results generated from the current study change if socio-demographic factors are included, such as those on age and gender, and racial composition.

The current study only examined the relationship between homicide, GE and controls of corruption. Future research should examine if the findings from the current study are also apparent for other types of crime, in particular other types of violence (such as domestic violence and robbery), and crimes against property (e.g. thefts from residential and commercial properties). Also, the current study focused on examining macro-level relationships that may not necessarily translate directly to micro-level social, economic and governance relationships. We encourage further research that links macro-level explanations of crime to micro-level mechanisms.

The institutional variables that were used in the current study were constructed from a compilation of perception data from sources such as non-governmental organizations, entities from the public and private sectors, surveys and the opinion of experts. The main issue in the use of perception data is its subjectivity, and the extent to which these perceptions adequately capture reality. This issue can lead to systematic biases in perceptions data. The source of this bias can originate from the different perceptions of respondents under one sole underlying reality, the ideological, political or cultural orientation of the source, and recent economic and social performance of a country. Kaufmann et al. (2010) have examined these concerns by comparing the responses of different types of respondents and different types of sources on the same topic, and found no significant differences existed. We do, however, encourage further research that examines the extent to which specific political or societal events in certain countries influences the perception of GE and corruption. This would be particularly useful for considering reasons for outliers in studies similar to the current study's design.

While the concept of assessing perceptions comes with its own pitfalls, it is the best method available, given the difficulty of assessing governance itself and specifically more complex issues within the context of governance, like corruption and GE (Jong-Sung and Khagram 2005). Moreover, in the area of governance, perceptions matter because government entities design their policies and evaluate policy impact on citizens' impressions, attitudes feelings and views depending on their perception towards those institutions. This is also true for social dynamics such as corruption, where citizens are both involved and affected. Therefore, measures of perception are important because people base their decisions on their environment and surroundings. Finally, there are few alternatives than perception data on matters such as corruption because of its hidden nature and on governance because 'fact' measures or statistics do not necessarily

portray the real context of governance. Therefore, confidence can be placed in the use of data about perceptions of corruption and GE when generated from reliable sources such as the World Bank and TI (Haggard, and Tiede 2011; Nivette and Eisner 2013; van Dijk et al. 2022).

CONCLUSIONS

Socio-economic structural factors, such as poverty, education and inequality have long been cited as factors that influence levels of homicide. These structural factors are considered to be linked to the concept that high levels of crime, and in particular violence, can be cured with economic growth and social development. This does not appear to be apparent in the Latin American region where socio-economic conditions have improved, but high levels of homicide have remained. Several scholars have begun to suggest that the effectiveness of government institutions is related to the levels of crime that a country experiences and may be a factor that explains why high levels of crime persist in certain parts of the world. The findings presented in the current article indicate that, internationally, countries that are not able to maintain accountable and effective governance and address issues of corruption are likely to experience higher levels of homicide. This factor associated with government institutions was particularly apparent for Latin American countries when compared to a sample of other countries across the world. In addition to factors associated with governance in the Latin American region, inequality and education were found to be related to contemporary levels of homicide, but conditions associated with poverty, unemployment and the urban population were not. The findings also showed that for a subset of non-Latin American countries where homicide levels were low, socio-economic conditions may no longer be related to contemporary levels of homicide, and instead it is continual improvement in GE that may be key to sustaining low levels of violence in these areas.

These findings have important implications for policy makers and practitioners involved in public safety because they indicate that the capacity of governments does matter. Evidence about what works to reduce homicides, particularly in countries with high levels of homicide, is becoming increasingly available. Investments in governments that improves their capacity and capability to reduce crime, while also investing in ways to improve controls against corruption are likely to be the types of programs that succeed in reducing the persistently high levels of homicide that exist in Latin America. Furthermore, although a theory of violence that is relevant to Latin America should consider social and economic factors that are present in the region, this theory would be incomplete if it failed to incorporate an institutional perspective in its framework.

ANNEX 1 COUNTRIES INCLUDED IN THE STUDY

Country		
Argentina	El Salvador	Paraguay
Australia	Estonia	Peru
Austria	Finland	Poland
Belgium	France	Portugal
Belize	Germany	Romania
Bolivia	Greece	Russia
Bosnia and Herzegovina	Guatemala	Serbia
Brazil	Guyana	Slovakia
Bulgaria	Honduras	Slovenia

Country		
Canada	Hungary	Spain
Chile	Ireland	Suriname
Colombia	Italy	Sweden
Costa Rica	Jamaica	Switzerland
Cuba	Mexico	Trinidad and Tobago
Czech Republic	Netherlands	United Kingdom
Denmark	Nicaragua	United States
Dominican Republic	Norway	Uruguay
Ecuador	Panama	Venezuela

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