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Panic? Probing Angst over Immigration and Crime*

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Abstract

We examine empirically whether immigration affects crime in an emerging country, Ecuador. We exploit the fact that immigration flows of Venezuelans suddenly evolved from voluntary to forced, and occurred disproportionately along land borders. We use nationally representative administrative and survey data to precisely estimate an economically null effect of Venezuelan immigration on property and violent crime. We also show that natives are more likely to believe that immigration worsens the economy, despite clear evidence of negative labour market impact due to recent Venezuelan inflows. Results confirm that fears over immigration and crime are not necessarily supported by facts.

JEL classifications: F22, K42
Keywords: Immigration, Crime
Ecuador, Venezuela, Latin America

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1 Introduction

Among the many questions immigration raises, crime is one of the main concerns, often before negative labour market effects (Bell, 2019). Empirical evidence, though, is mixed. Most studies come from developed economies. They suggest that immigration is not associated with violent crime, and slightly increases property crime, because certain immigrant groups have limited labour market perspectives, just as underprivileged native groups.[1,2] A greater share of immigrants in the host country population is also thought to deteriorate natives' legal economic prospects, nudging them to engage in criminal activities. Studying possible crime responses to immigration is of particular interest because of the scant, mixed literature on the topic, and rising xenophobia. Believing that immigrants cause crime might in fact be explained by changes in crime perception and anti-immigrant sentiment alone, despite crime rates being constant, as a result of greater media coverage (Mastrorocco and Minale, 2018), and instrumentalised by populist political parties (e.g. Dustmann et al., 2019).

This paper examines whether immigration causes crime in an emerging Latin American country, Ecuador, before and after the massive inflows of Venezuelans since 2016. One way to assess this link empirically is to relate variation in crime to variation in immigration. This strategy, however, is problematic because immigrants' location choices are not accurately identified, and immigrants tend to sort into areas where they want to live and work. Such location decisions might be related to the same factors determining criminal activities. For instance, immigrants might settle in places with decreasing crime rates, if they find out low-crime areas, or if they move to areas with good employment prospects as well as low criminality. This would bias estimates of the causal effect of immigration on crime downward. Reversely, immigrants might relocate to areas with increasing

[1] See Butcher and Piehl (1998b, 2007), Butcher and Piehl (1998a) and Borjas et al. (2010) who present mixed findings for the United States (US) at the micro- and aggregate-level, respectively. Closer to our analysis, micro-level, quasi-experimental evidence from Italy (Bianchi et al., 2012), the US (Spenkuch, 2013), or the United Kingdom (UK) (Bell et al., 2013) reports null or small positive effects on property crime, and highlights the importance of immigrants' labour market opportunities to explain the possible effect of immigration on crime.

[2] The strong relationship between access to legal jobs and criminal behavior is emphasised when studying crime responses to undocumented immigration in Italy (Mastrobuoni and Pinotti, 2015; Pinotti, 2017; Fasani, 2018) and the US (Freedman et al., 2018).

crime rates, likely attracted by falling housing prices.

We address these issues by using nationally representative administrative and survey data in Ecuadorian cantons. Several features make this setting particularly suitable for estimating the causal effect of immigration on crime. Venezuelan immigration is one of the most important population movements in the recent history of Latin America. The number of Venezuelan immigrants in Ecuador has steadily increased. Only 24,600 Venezuelan immigrated to Ecuador in 1990; 28,999 in 2000; 34,373 in 2010. This inflow experienced a sharp acceleration since the 2016 Venezuelan economic and political crisis with 955,913 migrants entering Ecuador in 2018, in particular through land border-crossings, as evidenced by Table 1.[3] In addition, the nature of the Venezuelan immigration entering the country has evolved from a relatively voluntary immigration to a somewhat unexpected and forced immigration since Venezuela 2016 hyperinflation crisis. The change in the nature of these flows over time gives rise to a natural experiment in which some areas – those surrounding land border-crossing to the Ecuadorian territory – might be relatively more affected than others, located further from the borders. Importantly, there is cultural homogeneity between immigrant and native populations, with regard to language and colonial past, and, over the time period we study, Ecuador had a friendly policy towards forced immigration, in particular Venezuelan immigrants, allowing them to work legally. This ended in August 2019, when raising anti-immigrant sentiment prompted the government to implement strict visa requirements for Venezuelans. Last, crime is not endemic to Ecuador as they might be in other Latin American countries that have attracted media and academic attention as Venezuelans' hosts, such as Colombia. Neither does Ecuador have a known history of internal displacement that might render difficult a neat evaluation of Venezuelan immigration on criminal activities.

In practice, we examine crime patterns in Ecuador using temporal and geographic variation. Temporal variation relies on changes in the nature of Venezuelan immigration to Ecuador from voluntary to forced before and after the Venezuela 2016 hyperinflation crisis. Geographic variation relies on comparing cantons closer to and further from eight operating land entry-points along

[3] This led to an increase from 0.24 to 3.24% of the country population, and the country to declare a state of emergency in the provinces bordering Colombia in 2018.

the borders Ecuador shares with Colombia and Peru. Because most forced migration episodes are considered exogenous by both host and immigrant populations, they offer opportunities to identify causal relationships (Cortes, 2004; Becker and Ferrara, 2019). Since migrating is decided quickly – their departures are precipitate, less carefully planned – they might not have as much control over their destination choices as voluntary migrants. Forced migrants tend to move to destinations defined by proximity and security criteria rather than personal networks, while voluntary migrants tend to rely on contacts present in their places of origin and destination to decide when and where to leave. The time involuntary migrants expect to stay abroad is also uncertain. The probability to return home might be particularly low when leaving because of violence. Forced immigration, or displacement episodes thus make possible estimating the causal effect of immigration on host societies by using quasi-experimental methods, ranging from difference-in-differences (e.g. Tumen, 2016), spatial regression discontinuity design (e.g. Schumann, 2014) or instrumental variables (e.g. Morales, 2017). In addition, exploiting the fact that immigration flows of Venezuelans to Ecuador suddenly evolved from voluntary to forced, and occurred disproportionately through land border-crossings, to explore crime responses to immigration, ensures addressing methodological concerns recently raised by the prevalent shift-share instrumental variable approach used to identify the effect of immigration in destination countries (Jaeger et al., 2018; Borusyak et al., forthcoming).

We use administrative records on property and violent crime, deaths and hospitalisations from 2014 to 2018. As data on Venezuelan immigration are not available yearly at the canton level, we construct a yearly canton measure of *predicted* Venezuelan inflows as the total number of Venezeluans who entered Ecuador through the closest land border-crossing, weighted by the shortest travel distance between cantons and the closest land entry point. In line with existing works, we evidence a statistically significant higher incidence of property crime, and reduced violent crime, as a result of Venezuelan immigration flows. However, estimates do not appear economically meaningful, equivalent to a 0.17 percent of a standard deviation (SD) increase in property crime, and 0.75 percent of a SD decrease in homicide per 10,000 inhabitants. Results

hold to the inclusion of canton, year and province-year fixed-effects, as well as a large set of predetermined canton characteristics allowed to vary over time. Results might only be threatened by unobservable canton features related to distance to land border-crossings, before and after 2016. We address this concern by resorting to alternative, more traditional measures of immigration shocks, confirming baseline estimates. Findings are also robust to alternative crime measures – household survey crime victimization and feeling of safety. We supplement this analysis with survey data on anti-immigrant sentiment and political ideology. We show greater fears immigration might be detrimental to the economy among natives. This is likely explained by the fact that Ecuadorians view the economy as one of the main problems the country is facing, despite no clear negative labour market effect resulting from recent Venezuelan immigration waves. Results lead us to conclude that angst over immigration and crime is not supported by facts.

We are not the first to explore the immigration-crime relationship. For instance, Butcher and Piehl (1998b, 2007), Butcher and Piehl (1998a) and Borjas et al. (2010) present mixed findings for the United States (US) at the micro- and aggregate-level, respectively. Closer to our analysis, micro-level, quasi-experimental evidence from Italy (Bianchi et al., 2012), the United Kingdom (UK) (Bell et al., 2013) or the US (Spenkuch, 2013) reports null or small positive effects on property crime, and highlights the importance of immigrants' labour market opportunities to explain the possible effect of immigration on crime using instrumental variables based on past settlements *à la* Card (2001). The strong relationship between access to legal jobs and criminal behavior has been emphasised when studying crime responses to undocumented immigration in Italy (Mastrobuoni and Pinotti, 2015; Pinotti, 2017; Fasani, 2018) and the US (Freedman et al., 2018). The scarce developing country evidence indicates that, in Malaysia, immigration might even decrease crime, due to greater economic activity (Özden et al., 2017). Particularly relevant to our work, Knight and Tribin (2020) exploit geographical variation to borders, before and after the closure and reopening of the Colombian-Venezuelan border to assess whether Venezuelan immigration induced homicides in Colombia. They find that the recent episode of Venezuelan immigration increased homicides involving Venezuelan victims, with no evidence of a statistically

significant effect on homicides of Colombian nationals, nor a corresponding increase in arrests.

We contribute to this literature in several ways. Whether immigration causes crime, and alters perception of crime has not been analysed exhaustively in a unique context, in particular in developing economies. We provide a comprehensive empirical analysis of the link between immigration and crime using nationally representative administrative records on property and violent crime, as well as survey-based information on victimization, safety and anti-immigrant sentiment. There are few, if any, empirical studies on emerging Latin American countries such as Ecuador, despite alarming statistics. Results might be informative for other countries experiencing similar phenomena: developing countries – Colombia, Mexico, or Middle Eastern and North African (MENA) countries, such as Jordan or Lebanon,[4] – as well as more developed ones. While developed economies host relatively few immigrants, and have substantial capacity to absorb them, studying the interactions between immigration and crime in less developed countries, such as Ecuador, provide evidence on possible scenarii when unexpected, large immigration flows put to test the strength of host country institutions. By providing robust evidence on the relationship between immigration, crime, insecurity and anti-immigrant sentiment, findings will give the opportunity to balance facts against fears, and propose concrete recommendations to ensure an inclusive, socially sustainable development.

The paper proceeds as follows. Section 2 describes Venezuelan immigration to Ecuador in the recent past, and section 3, the data we use. The empirical approach is outlined in section 4. Section 5 reports our findings. The final section offers some concluding remarks.

[4] Colombia, for example, has experienced significant forced migration within the country in recent decades. The Venezuelan crisis induced Colombians living in Venezuela to return as well as large inflows of Venezuelans who, very often, only travel through Colombia to reach stronger economies, e.g. Ecuador or Chile. Although Mexico is often cited for its historic migration links with the US, it has recently seen the return of Mexican emigrants and massive inflows of Central American migrants fleeing crises in their native countries. Mexico, initially considered a country in transition for these immigrants, could eventually become their final destination, with the US preventing their entry. In the Middle East, Jordan, for instance, has been the destination of Egyptian workers since the late 1970s and early 1980s. It then received Iraqi fleeing the crisis of the early 2000s, and, since 2011, Syrian refugees.

2 Venezuelan immigration to Ecuador

Between the 1950s and up to the early 1980s, Venezuela was considered an economic miracle – a country with the largest domestic oil reserves, and a primary destination for Latin American and even European immigrants. Oil shocks and currency crises drove the country into unrest. The measures taken by Hugo Chávez, who became president in 1999, led to the collapse or nationalisation of many companies. A purge of the state-run oil industry excluded many workers, with political sympathizers with little expertise often taking their positions. The fall of Venezuela accelerated under President Nicolás Maduro, after Chávez's death in 2013. The mismanagement and corruption of his government, and his attempt to strengthen power, while oil prices fell, broke the nation.

As a result, wealthy Venezuelans and entrepreneurs have been fleeing their homelands for years to save their capital from expropriation and high inflation (Crasto and Alvarez, 2017), often landing in the US or Europe. In 2016 though, economic and political events – linked to the fall in oil price, and the refusal of the government to acknowledge the newly elected National Assembly – marked the beginning of the collapse of Venezuelan politics and economy, as evidenced by the exponential increase in its consumer price index (CPI) (Table 2). Those emigrating since 2016 are increasingly destitute and poorly educated; they escape desperate situations in Venezuela – food shortages, lack of public services, violent crime or political repression (National Public Radio, 2018).

While Venezuelans initially fled to border countries such as Colombia, Ecuador also experienced a sharp increase in the number of Venezuelan immigrants.[5] The number seeking refuge in Ecuador was very large relative compared to previous inflow trends. Table 1 presents the evolution of immigration to Ecuador over the recent past. It displays the number of Venezuelan and total immigration flows, and the proportion of Venezuelan over total immigration flows from 2014 to 2018. Inflows of Venezuelan immigrants increased from 119,763 in 2014 to 955,913 in 2018. This is equivalent to an increase from 4.24% in 2014 to 24.49% in 2018 relative to total inflows

[5] In 2018, Ecuador was the third-highest Latin American recipient of Venezuelan immigrants, after Colombia and Peru (Selee et al., 2019).

to Ecuador. Ecuador's relative economic stability and immigration-friendly environment attracted many. During this period, Venezuelans could legally enter Ecuador without visa nor passport, with only their national identity document (*cedula*) if they did not have a passport. Once there, they could obtain permanent residency if they met other requirements (Selee et al., 2019). This is a particularly interesting setting compared to previous studies since, *a priori*, Venezuelans were not legally denied work.

Moreover, the characteristics of Venezuelan inflows likely changed over time, as illustrated by their mode of entering Ecuador. Table 1 and Figure 1 show a clear change in how Venezuelans entered the country, with land border-crossings gradually becoming their first option. Since 2016, the proportion of Venezuelans immigrating through land has increased from less than 15% before 2016, to around 36% in 2016, 83% in 2017 and 95% in 2018. This contrasts with more than 85% of Venezuelans entering Ecuador via air before 2016, and only 23.08% to 41.19% from 2014 to 2018 for all immigrants entering the country by land. That the relative change in how Venezuelans crossed Ecuadorian borders coincides with the start of Venezuela's hyperinflation crisis suggests border-crossing types might proxy the sudden change of Venezuelan immigration to a forced nature.

Two broad conclusions follow from these descriptive statistics. First, immigration to Ecuador was rather even before Venezuela's 2016 hyperinflation crisis. Since then, inflows have been larger, and dominated by Venezuelans. Second, the composition of Venezuelan inflows before and after 2016 have changed, post-2016 inflows being increasingly more destitute, as suggested by a greater share of Venezuelans crossing the border by land, the cheapest means of entry. These successive flows of Venezuelan immigrants make it possible to analyse the causal effect of immigration on host communities due to a shift from a relatively voluntary immigration to a somewhat unexpected and forced immigration. The change in the nature of these flows since 2016 gives rise to a natural experiment in which some areas – those surrounding land entry points to the Ecuadorian territory – might be relatively more affected than others, located further from those border-crossings. In addition to geographic proximity to land border-crossings between host cantons, the nature and

composition of Venezuelan immigration itself is closely related to its timing. This gives a credible setting to uncover the causal effect of immigration on crime.

Importantly, these sudden inflows of Venezuelans have been accompanied by a rise in anti-Venezuelan sentiment in Ecuador with many locals worrying about their impact on crime (León Cabrera, 2019), although, paradoxically, robberies and homicides decreased since 2015, as Figure 2 indicates. Anti-Venezuelan sentiment – *venecofobia* – was evidenced by a series of attacks against Venezuelans across the country in January 2019, following the highly mediatic murder of an Ecuadorian woman by her Venezuelan boyfriend (The Guardian, 2019). This led the government to announce harsher immigration measures in February 2019, eventually implemented in August 2019. Venezuelans are now asked to provide a criminal record, apply for a visa before arrival, and present a valid passport to enter Ecuador. Evidence for Ecuador's rise in anti-Venezuelan sentiment is in fact present in other countries, such as Colombia, where Venezuelan immigration was found to shift votes from left- to right-wing candidates, partly explained by concerns on the economic effects of immigration (Rozo and Vargas, 2020).

3 Data

We combine various sources of publicly available information. Our main independent variable comes from administrative records on migrant inflows to Ecuador from 2014 to 2018, specifying nationality and border-crossings, provided by Ecuador' statistical agency, *Instituto Nacional de Estadística y Censos* (INEC). Ideally, we would observe accurately documented and undocumented immigration flows by origin country, yearly by canton. Unfortunately, we do not. We measure yearly canton exposure to Venezuelan immigration by exploiting the facts that (i) immigration to Ecuador was rather even before Venezuela 2016 hyperinflation crisis. Since then, inflows have been larger, and dominated by Venezuelans (Table 1); (ii) the composition of Venezuelan inflows before and after 2016 has changed. Post-2016 inflows are increasingly destitute, likely forced rather than voluntary, as illustrated by a greater share of Venezuelans

crossing the Ecuadorian border by land, the cheapest means of entry (Table 1, Figure 1); and (iii) travel distance from border-crossings to each Ecuadorian canton is a key determinant of forced immigrants (or displaced people)'s location decisions.

We construct $V_{c,p,t}$ as

$$V_{c,p,t} = \frac{VenezuelanInflows_{k,t}}{Distance_{c,p,k,t}} \tag{1}$$

Along the lines of recent articles exploiting distance to the border to estimate the causal effects of (forced) immigration on destination communities,[6] this variable is a function of (i) $VenezuelanInflows_{k,t}$, the total number of Venezuelans who entered Ecuador through the closest land border-crossing k in year t; and (ii) $Distance_{c,p,k,t}$, the shortest pairwise travel distance between the centroid of 218 Ecuadorian cantons c in province p and the closest land border-crossing k across the eight existing and operating at time t in Ecuador.[7] The resulting variable is continuous. Figure 4 presents the spatial distribution of the constructed measure of yearly Venezuelan inflows per 10,000 inhabitants per canton in 2014, 2016 and 2018. It shows that Venezuelan inflows substantially increased since 2016 onwards across Ecuador, in particular around areas with land border-crossings. Importantly, this index captures *predicted* inflows. We will assess the robustness of this variable by using alternative, more traditional measures of the Venezuelan immigration shock we study.

Our first dependent variables of interest come from criminal offences recorded per month and canton of occurrence by the police from January 2014 to December 2018 provided by the State

[6] See for instance Alix-Garcia and Saah (2010) and Maystadt and Duranton (2019) who exploit exogenous variation in the number of refugees and their location in specific parts of Tanzania to assess their impact on food price and natives' wellbeing, respectively; Jaupart (2018) who provides evidence on the impact of Haitian immigration on electoral outcomes in the Dominic Republic; Tumen (2019) who finds that Turkish children switch from public to private primary schools following an increase in Syrian pupils in public education; Beerli et al. (ming) who exploit distance to land borders to study the effects of reforms that granted cross-border workers freer access to Germany and Switzerland, respectively, on natives' labour market outcomes; and, particularly relevant to our work, Knight and Tribin (2020) who estimate the impacts of the post-2016 Venezuelan immigration on crime in Colombia exploiting distance to the Colombian-Venezuelan border, and, simultaneously, its closing and reopening by the Venezuelan government.

[7] Figure 3 presents existing entry and exit points throughout Ecuador over 2014-2018. Land borders are located in the North of the country, bordering Colombia, and in the South, bordering Peru.

Attorney Office (*Ministerio de Gobierno, Fiscalía General del Estado*). We calculate canton crime rates per 10,000 inhabitants using 2010 population data, the last available census year, by offence type. Offences are categorised as violent – homicides – or property crime – robbery, simple theft, motor vehicle theft, residential and non-residential burglary. We process information to construct a balanced panel of crime rates for 218 cantons, containing 1,090 year-canton observations over the 2014-2018 period.[8]

We similarly process information on death records and hospital discharges – hospital beds – indicating death and hospitalisation causes, cantons of death, patients' cantons of residence, year of death or hospitalisation, respectively. We construct a balanced canton-year panel of deaths by homicide and injury-related hospitalisations per 10,000 inhabitants from 2014 to 2018.[9]

Second, we use survey data informing on victimization, the *Encuesta Nacional de Empleo, Desempleo y Subempleo* (ENEMDU) and *Encuesta Nacional Multipróposito de Hogares* (ENMH), collected each December in 2014, 2015, 2016 and 2017, and 2018, respectively.[10] We construct a binary variable taking value 1 if a respondent has been victimized in the last 12 months; 0, otherwise.

Last, to assess whether the idea that immigration causes crime originates from fears, we use the AmericasBarometer surveys (Latin American Public Opinion Project, LAPOP), collected in 2014, 2016 and 2018. We proxy anti-immigrant sentiment by various binary variables taking value 1 if (i) migration is mentioned as one of the main problems Ecuador is facing; (ii) a respondent agrees immigrants are bad for the economy; or (iii) agrees immigrants should not benefit from social welfare; 0, otherwise. We also resort to information on crime victimization, feeling of safety, labour market outcomes, and political ideologies, as a 1-to-10 left-to-right political scale to assess whether immigration led to a shift in political behaviours.

Albeit survey data are nationally representative, they are not representative at the canton level. For

[8] We exclude six cantons: cantons listed as *zonas no delimitadas* – El Piedrero, Las Golondrinas and Manga del Cura – and cantons part of Ecuador's Galapagos Islands – San Cristobal, Isabela and Santa Cruz.

[9] Deaths by homicide and hospitalisations for injuries are defined as categories X85 to Y09 and S00 to T14 according to the International Statistical Classification of Diseases and Related Health Problems 10 (ICD-10), respectively.

[10] Note that these two surveys are complementary as they use identical sampling frames. Various modules originally included in the ENEMDU were transferred to the newly created ENMH in 2018.

this reason, they are processed at the respondent level, as pooled cross-sections. Sample weights are used to ensure estimates are nationally representative. In addition, various individual and household covariates – gender, ethnicity, age, education, location, marital and labour market status, education or household size – are controlled for.

4 Empirical strategy

The estimation exploits the variation in the number of Venezuelan immigrants across Ecuador over time, and the fact that they were likely present in specific parts of the country, around land border-crossings. Crime outcomes that occurred in canton c, province p, in year t, $Y_{c,p,t}$, depends on predicted Venezuelan inflows per 10,000 inhabitants, $V_{c,p,t}$, the total number of Venezuelans who entered Ecuador through the closest land border-crossing, interacted with the inverse distance to this closest land entry point from canton c:

$$Y_{c,p,t} = \beta V_{c,p,t} + \phi Distance_{c,p,k,t} + \sum_{j} \theta_j X_{c,p,2010} \cdot t + \delta_c + \gamma_t + \lambda_{p,t} + \epsilon_{c,p,t} \tag{2}$$

where $Distance_{c,p,k,t}$ measures the distance between each canton centroid and the closest land border-crossing; and $X_{c,p,2010}$ is a vector of predetermined canton characteristics such as the proportion of working-age residents, poverty, fertility, literacy and unemployment. δ_c and γ_t are canton and time fixed effects, respectively; $\lambda_{p,t}$, province-specific trends. $\epsilon_{c,p,t}$ denotes the error term.

Similarly, we estimate a series of linear probability models to measure the effect of immigration on survey respondent victimization, safety, and anti-immigrant sentiment:

$$Y_{i,c,p,t} = \beta V_{c,p,t} + \phi Distance_{c,p,k,t} + \sum_{l} \mu_l X_{i,c,p,t} + \delta_c + \gamma_t + \lambda_{p,t} + \epsilon_{i,c,p,t} \tag{3}$$

where $Y_{i,c,p,t}$ denotes alternative binary outcomes of individual i, leaving in canton c, province p, in year (wave) t; and $X_{i,c,p,t}$ is a vector of individual and household characteristics.

Our parameter of interest is β, the effect of an increase in predicted Venezuelan immigration flows on crime rates in canton c, province p, in year t. Given the context we study, V_{ct} is assumed to be exogenous by construction. Predicted immigration flows are correlated with actual immigration, but should not affect crime independently or through any other channel. Regressions will thus provide *reduced-form* estimates of the impact of the Venezuelan immigration on crime in Ecuador, and β is interpreted as intention-to-treat (ITT). These specifications include fixed effects by canton (δ_c) and year (γ_t), to account for time-invariant canton-specific characteristics, as well as for time-specific shocks that affected all cantons. We also include province-specific trends, $\lambda_{p,t}$, to account for time-varying confounders per province across years, and a series of interactions between predetermined canton features and year indicators, $\sum_j \theta_j X_{c,p,2010} \cdot t$. Pre-2016 characteristics might be related to immigrants' location choices and criminality, which would bias results. We tackle this possible source of endogeneity by including 2010 canton information on percentage of the population considered poor, 15-24 year-old, economically active, working in trade and transportation sectors, and fertility rate, allowed to differ by year. Robust standard errors are clustered at the canton level.

Consistency of the estimate of β requires that $V_{c,p,t}$ is strictly exogenous, that is, ideally, canton-level immigration flows would be well measured, and immigrants, 'randomly' allocated throughout Ecuador. Unfortunately, we do not observe yearly canton-level immigration flows; and immigrant allocation might be endogenous, potentially biasing estimates of the coefficient of interest. As mentioned, immigrants might settle in cantons with decreasing crime rates, if they find out low-crime areas, or if they move to areas with good employment prospects as well as low criminality. This would bias estimates of the causal effect of immigration on crime downward. Reversely, immigrants might relocate to areas with increasing crime rates, likely attracted by falling housing prices.[11] A concern might be that these trends systematically differ in canton covariates depending on their proximity to border-crossings, and that Venezuelans' location decision across Ecuador are

[11] In addition, crime tends to be under-reported. However, as this consists in our outcome variable, such measurement errors might only affect estimator efficiency. In this regard, survey-based victimization data might provide further insights on the occurrence of crime.

systematically related to underlying trends in criminality.

Given the context we study, $V_{c,p,t}$ is assumed to be exogenous by construction. Our identifying assumption relies on (i) the unexpected, sudden and large increase in Venezuelan inflows to Ecuador through land border-crossings from 2016 onwards, linked to Venezuela's 2016 economic and political crisis. Venezuelans entered Ecuador pushed by internal conflicts in their origin country, which is does not affect and, simultaneously, is not determined by crime in Ecuador; (ii) the existence of multiple border-crossings operating over our period of analysis; and (iii) the fact that the minimal distance between cantons and border-crossings affects criminality only through the immigrant-to-population ratio. Specifically, this identification strategy is based on the idea that travel distance from border-crossings to each potential Ecuadorian canton is a key determinant of immigrants' location decisions. The main threat to the validity of any distance-based variable is that areas close to a border-crossing systematically differ from those further away. We control for this by directly controlling for the travel distance between the closest land border-crossings and canton centroids. If there were a single border-crossing between Ecuador and the rest of the world, the estimation could no longer separately identify the impact of the immigration shock from the direct effect of distance from entry points. Instead, identification relies on the fact that there are multiple entry points between Ecuador and the rest of the world – and specifically its two border countries, Colombia and Peru – that vary over time across the country. The identifying assumption of this variable, once distance, year, canton and province-year fixed effects are included, is that the location of immigrants depends on the travel distance from various border-crossings, while other systematic trends including the direct impact of the civil unrest in Venezuela on criminality in Ecuador might depend, if any, on distance from entry points. Any remaining effects that might disproportionately influence criminality in high immigrant concentration cantons, such as policy changes or other (socio-)economic shocks, is controlled by the inclusion of distance to the nearest land border-crossing.

5 Results

5.1 Baseline

Baseline results for property and violent crime are presented in Panels A and B of Table 3, respectively. Panel C reports results for deaths by homicide based on administrative death records; and Panel D, hospitalisations for injury. Column (1) controls for canton and year fixed-effects; Column (2), canton distance to the closest land border-crossing; Column (3), province-year interactions; and Column (4), interactions with various predetermined (2010) canton covariates with year indicators. Column (5) presents Column (4) estimates with standardised dependent and immigration shock variables.

Columns (1)-(4), Panel A, Table 3, indicate that an increase of 1 Venezuelan per 10,000 inhabitants implies a 0.0001 increase in property crime per 10,000 inhabitants. The average Venezuelan inflows being 330.8367 per 10,000 inhabitants, an average increase in Venezuelan inflows implies a 0.03 increase in property crime per 10,000 inhabitants (330.84 x 0.0001). This estimate is robust to the inclusion of distance to the closest land border-crossing, canton, year and province-year fixed effects, as well as several 2010 canton covariates allowed to differ by year. Column (5), Table 3, indicates that a 1 standard deviation (SD) in Venezuelan inflows explains a 1.24 percentage point SD increase in the amount of robberies per 10,000 inhabitants. The mean Venezuelan inflow representing 13.76 percent of a SD (330.84/2403.71), a mean increase in Venezuelan inflows would result in 0.17 percent of a SD increase in property crime per 10,000 inhabitants (0.1376 x 0.0124). Such a positive property crime response to immigration is in line with existing evidence from developed economies (e.g. Bell et al., 2013). But, albeit statistically significant, the estimated impact of immigration on property crime is economically meaningless.

Similarly, the effect of Venezuelan inflows on violent crime – homicide per 10,000 inhabitants – is statistically significant, but economically null. Column (5), Panel B, Table 3, indicates that an average increase in Venezuelan inflows would induce a 0.75 percent of a SD decrease in homicide per 10,000 inhabitants (0.1376 x 0.0548). This is confirmed by Panel C, looking at deaths by

homicide as reported by administrative death records, as well as Panel D, presenting the effect of Venezuelan inflows on hospitalisations for injury per 10,000 inhabitants.

Table 4 explores whether there is heterogeneity in the estimated crime response to immigration by type of criminal activity. As for total property and violent crime, estimates, when precisely estimated, are economically insignificant. Interestingly, the coefficient estimate of the independent variable of interest is of opposite sign and greater magnitude, although insignificant, when restricting deaths by homicide to Venezuelan victims in Column (5), Panel B. Consistent with Knight and Tribin (2020) who show an increase in violent crime towards Venezuelans in Colombia, this estimate suggests that, if there is any increase in crime in response to Venezuelan immigration, Venezuelans, rather than Ecuadorians, might be more likely those victimized.

5.2 Robustness

To assess baseline estimate robustness, we use three alternative measures of Venezuelan inflows. First, predicted Venezuelan inflows are calculated as a variable function of (i) $VenezuelanInflows_{k,t}$, the total number of Venezuelans who entered Ecuador through entry point k in year t, summed across all operating entry points in year t; and (ii) $Distance_{c,k}$, the shortest pairwise travel distance between 218 Ecuadorian cantons c and these 28 entry points k (218 x 28 destination-entry point pairs), as in:

$$V_{average,c,p,t} = \sum_{k} \frac{VenezuelanInflows_{k,t}}{Distance_{c,k}} \tag{4}$$

Second, instead of predicted *inflows*, we calculate predicted *ratio*, as in:

$$V_{ratio,c,p,t} = \frac{VenezuelanInflows_{k,t}}{TotalInflows_{k,t}} \cdot \frac{1}{Distance_{c,k}} \tag{5}$$

Note that, when estimating specification (2), $V_{ratio,c,p,t}$ is expressed per 10,000 inhabitants.

Third, $predicted$ Venezuelan inflows are calculated by interacting Venezuela's yearly average variation change in consumer price index (CPI) (in percentage) and the share of Venezuelans

living in canton c in 2010 per 10,000 inhabitants. Akin to Card's (2001) shift-share, ethnic enclave instrument, the identifying assumption of this specification relies on the fact that immigrants tend to move disproportionately to areas where they possess networks in a context of voluntary migration. However, in the sudden, post-2016 Venezuelan immigration setting we study, Venezuelans might be more likely to locate close to border-crossings. The relationship with 2010 Venezuelan enclaves should thus be of opposite sign compared to the predicted Venezuelan inflows. This variable is expressed per 10,000 inhabitants, and constructed as:

$$Enclave_{c,p,t} = CPI_t \cdot V_{c,p,2010} \tag{6}$$

where CPI_t is Venezuela' consumer price index (CPI) yearly variation change, as defined in Table 2, and

$$V_{c,p,2010} = \frac{Venezuelan_{c,p,2010}}{Population_{c,p,2010}} \tag{7}$$

with $Venezuelan_{c,p,2010}$ the number of Venezuelan immigrants residing in canton c, province p, in 2010, the last census year, and $Population_{c,p,2010}$, the number of individuals residing in canton c, province p, in 2010.

Table 5 indicates that, as for baseline specifications, estimates, when statistically significant, are economically insignificant. In addition, coefficient estimate signs for enclaves' variables are opposite to those of predicted Venezuelan inflows, as expected by the nature of Venezuelan inflows to Ecuador in the recent past.

5.3 Victimization

We consider whether post-2016 Venezuelan inflows affected crime victimization. As detailed in section 3, we use nationally representative survey data, the ENEMDU and ENMH, collected in December in 2014, 2015, 2016 and 2017, and 2018, respectively. We construct a binary variable taking value 1 if a respondent has been victimized in the last 12 months; 0, otherwise. Surveys

report a wide range of respondents' characteristics, such as canton of residence, past migration and birth country. We assign Venezuelan inflows as previously, that is according to individual canton of residence, and control for several factors that might determine victimization – age, gender, education, urban or rural living area, housing tenure, number of children, marital status, ethnicity, employment or student status.

Table 6 presents estimates of specification (3) for native- and foreign-born in columns (1)-(3); Ecuadorians in columns (4), (6) and (8); and immigrants in columns (5), (7) and (9). Reassuringly, respondent-level results are in line with those from administrative records – none is economically meaningful – despite not being systematically precisely estimated.

5.4 Anti-immigration sentiment

We have presented strong evidence suggesting no clear crime response to immigration using nationally representative administrative and survey data, and various measures of the recent Venezuelan immigration shock in Ecuador. The idea that hosting immigrants increases crime is however prevalent in Ecuador, as evidenced in January 2019 when massive anti-Venezuelan riots took place across the country, after the murder of an Ecuadorian woman by her Venezuelan boyfriend, culminating in many Venezuelans being chased and assaulted (The Guardian, 2019). We now turn to natives' perception of immigration, in an attempt to assess whether fears, rather than facts, might explain the narrative around immigration and crime.

Table 7 presents nationally representative estimates using 2014, 2016 and 2018 AmericasBarometer surveys. We run specification (3) on various dependent variables. Anti-immigrant sentiment is measured by three distinct binary variables taking value 1 if a respondent agrees immigrants are bad for the economy in column (1); agrees immigrants should not benefit from social welfare in column (2); and migration is mentioned as one of the main problems Ecuador is facing in column (3); 0, otherwise. In addition, we resort to information on crime victimization in column (5), feeling of safety in their neighbourhood (6), whether respondents work at the time of the survey (7), and political ideologies, as a 1-to-10 left-to-right political scale

to assess whether immigration led to a shift in political behaviours in the two last columns. In column (8), the dependent variable is binary; it takes value 1 if a respondent identifies the most on the left (1), and 0, otherwise. Reversely in column (9), the dependent variable takes value 1 if a respondent identifies the most on the right, and 0, otherwise. As above, a wide set of respondents' features is included – age, gender, education, urban or rural living area, number of children less than 13 years old, marital status, ethnicity, student and employment status (except in column (7)). Venezuelan inflows are assigned by respondent canton of residence.

Column (1), Table 7, indicates that a 1 SD in Venezuelan inflows significantly explains a 1.28 percentage SD *increase* in the probability to believe immigrants are bad for the economy. The mean Venezuelan inflow representing 18.02 percent of a SD (31.3876/174.2211), a mean increase in Venezuelan inflows would result in 0.23 percentage point increase in this probability (0.1801x0.0128). In contrast, column (2) shows that a 1 SD in Venezuelan inflows significantly explains a 2.58 percentage SD *decrease* in the probability to believe immigrants should not receive social benefits, equivalent to a 0.46 percentage point decrease in this likelihood ((30.1186/168.0124)x(-0.0258)).

In line with the above results, columns (5) and (6) suggest that there is no link between Venezuelan immigration and having been victim of crime in the last 12 months, nor feeling unsafe in their neighbourhood, respectively. Column (7) shows that a 1 SD in Venezuelan inflows induces a 0.70 percentage SD *decrease* in the probability to work at the time of the survey, equivalent to a 0.18 percentage point decrease ((58.3656/226.5019)x(-0.0070)) – an extremely small magnitude.

Last, columns (8) and (9) point to a 0.18 percentage point decrease in the probability to identify politically as left-wing ((58.3656/226.5019)x(-0.0071)), close in magnitude to Rozo and Vargas's (2020) estimates, without a corresponding increase in switching to rightist ideologies *per se*.

To summarize, we precisely identify an increase in anti-immigration sentiment following post-2016 Venezuelan inflows, likely because of labour market concerns. The statistical significance of these estimates might lead to believe that immigration might have fueled natives' fears.

6 Conclusion

This article presents new evidence on the crime response to immigration in an emerging country, Ecuador, using a natural experiment to identify a causal link. We analyse whether crime rates are determined by unexpected, sudden and forced Venezuelan immigration. The importance, timing and characteristics of this wave offer a natural experiment to conduct an internally valid empirical analysis. Results are derived from various nationally representative data sources guaranteeing external validity. We provide precisely estimated, and close to null findings. Immigration has virtually no effect on crime victimization, feeling of safety, property or violent crime. We also show that natives tend to believe that immigrants worsen economic prospects as a result of the recent Venezuelan immigration, in spite of clear negative labour market effects. While the precise magnitudes of these results might not be valid beyond the study context, we believe they significantly contribute to the literature on immigration and crime. Whereas developed countries host relatively few immigrants, and have substantial capacity to absorb them, our results provide evidence on possible scenarii when unexpected, large immigration flows put to test the strength of host country institutions. At the very least, the absence of a causal crime effect of immigration suggests that the idea immigrants cause crime is likely explained by fears, rather than facts.

Figure 1: Share of Venezuelan inflows by cross-border types, Ecuador, 2014-2018

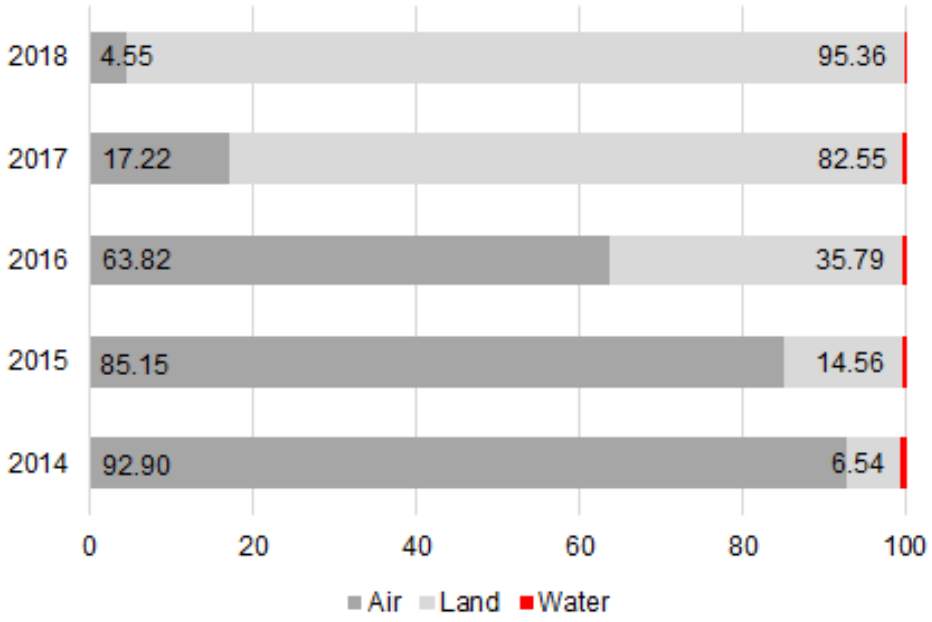

Figure 2: Crime, Ecuador, 2014-2018

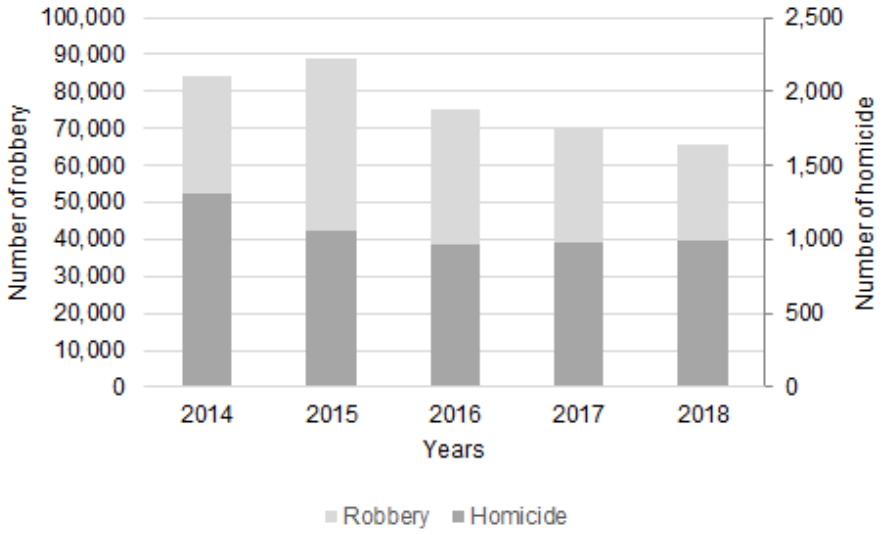

Figure 3: Map of entry and exit points, Ecuador, 2018

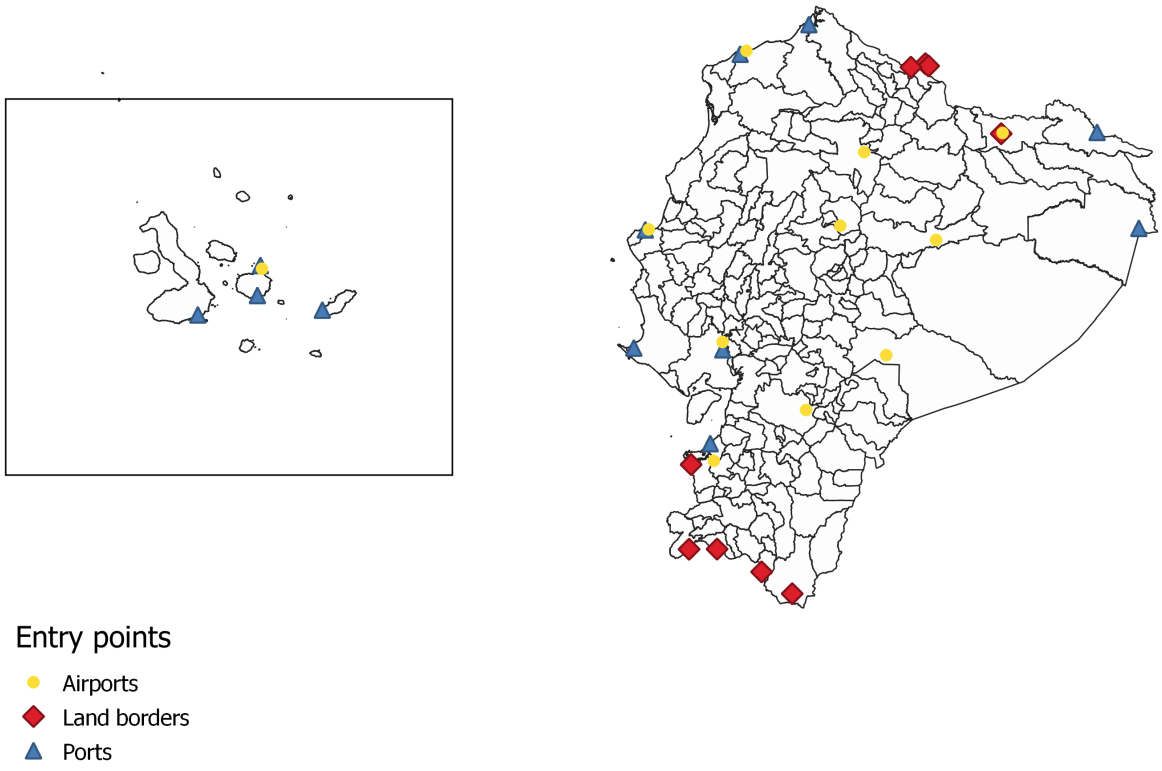

Figure 4: Predicted Venezuelan inflows per 10,000 inhabitants, in 2014 (left), 2016 (centre) and 2018 (right)

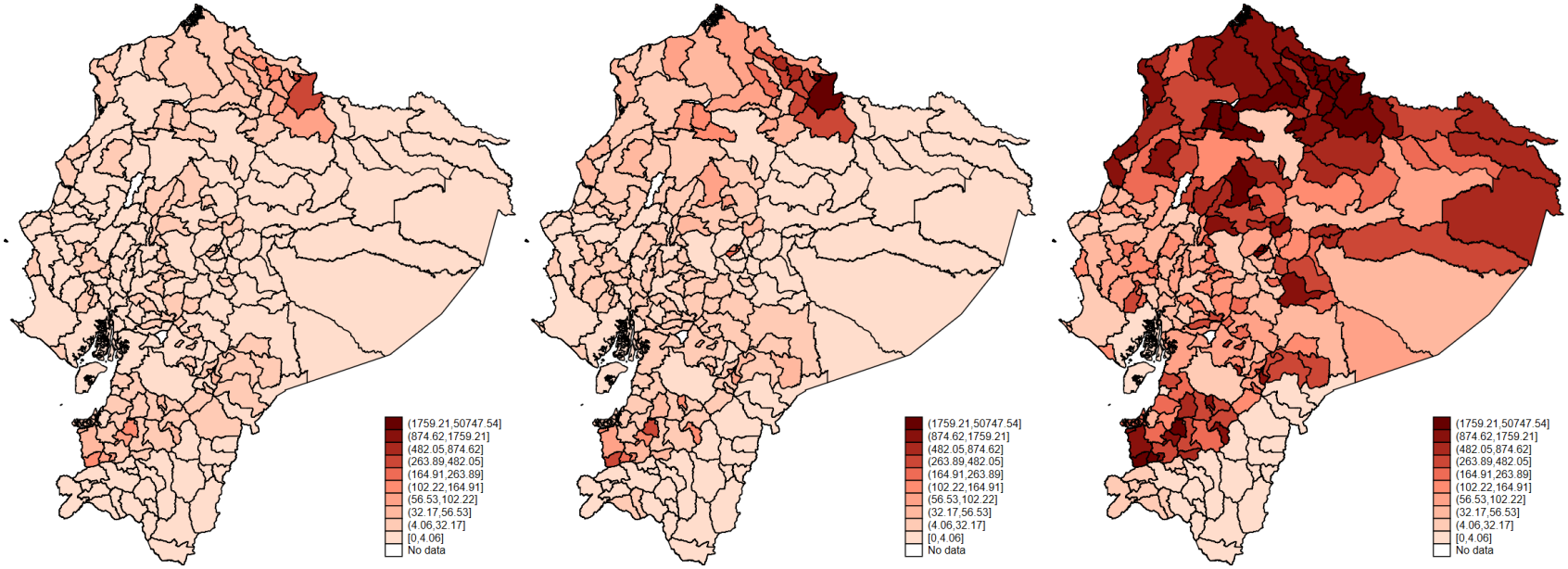

Table 1: Immigration flows, Ecuador, 2014-2018

Year	Immigration flows			Share of inflows by cross-border types					
			Venezuelan	Venezuelan inflows			All inflows		
	Venezuelan	Total	/Total	Air	Land	Water	Air	Land	Water
2014	119,763	2,826,666	0.0424	92.90	6.54	0.56	74.40	23.08	2.53
2015	105,512	2,907,396	0.0363	85.15	14.56	0.28	73.20	24.29	2.51
2016	102,614	2,911,860	0.0352	63.82	35.79	0.39	71.98	25.58	2.44
2017	287,954	3,114,555	0.0925	17.22	82.55	0.24	68.61	29.32	2.07
2018	955,913	3,903,107	0.2449	4.55	95.36	0.10	57.46	41.19	1.34

Source: Instituto Nacional de Estadística y Censos (INEC).

Table 2: Consumer price index (CPI), Venezuela, 2014-2018

Year	Yearly average	Yearly variation change
2014	658.68	62.16%
2015	1,460.53	121.72%
2016	5,184.14	254.95%
2017	27,896.76	438.12%
2018	18,265,146.45	65,373.99%

Notes: Basis December 2007 = 100.
Source: Banco Central de Venezuela (BCV) – *Instituto Nacional de Estadística* (INE).

Table 3: Baseline

	(1)	(2)	(3)	(4)	(5)
Panel A: Property crime					
V	0.0001***	0.0001***	0.0001*	0.0001*	0.0124*
	(0.0000)	(0.0000)	(0.0001)	(0.0001)	(0.0068)
Distance		0.0887	0.0626	0.0469	0.0021
		(0.0944)	(0.0853)	(0.0683)	(0.0031)
R-squared	0.9295	0.9295	0.9417	0.9496	0.9496
Mean DV	25.2063	25.0477	25.0477	25.0477	25.0477
	[22.1425]	[22.0657]	[22.0657]	[22.0657]	[22.0657]
Panel B: Violent crime					
V	-0.0000***	-0.0000***	-0.0000**	-0.0000*	-0.0548*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0281)
Distance		-0.0046	0.0101	0.0127	0.0138
		(0.0143)	(0.0205)	(0.0210)	(0.0228)
R-squared	0.5057	0.5058	0.5660	0.5828	0.5828
Mean DV	0.7142	0.7137	0.7137	0.7137	0.7137
	[0.9161]	[0.9180]	[0.9180]	[0.9180]	[0.9180]
Panel C: Death by homicide					
V	-0.0000	-0.0000	-0.0000*	-0.0000*	-0.0840*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0482)
Distance		-0.0011	0.0088	0.0109	0.0137
		(0.0135)	(0.0184)	(0.0186)	(0.0234)
R-squared	0.4186	0.4186	0.4726	0.5063	0.5063
Mean DV	0.6130	0.6130	0.6121	0.6121	0.6121
	[0.7930]	[0.7930]	[0.7947]	[0.7947]	[0.7947]
Panel D: Hospitalisation for injury					
V	-0.0010	-0.0010	-0.0011	-0.0011	-0.0986
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0634)
Distance		0.0637	0.1100	0.0793	0.0030
		(0.1641)	(0.1458)	(0.1426)	(0.0054)
R-squared	0.8485	0.8485	0.8779	0.8841	0.8841
Mean DV	51.5224	51.3884	51.3884	51.3884	51.3884
	[26.6378]	[26.6202]	[26.6202]	[26.6202]	[26.6202]
Observations	1,090	1,090	1,085	1,085	1,085
Mean V	329.4469	330.8367	330.8367	330.8367	330.8367
	[2398.273]	[2403.709]	[2403.709]	[2403.709]	[2403.709]
Canton	X	X	X	X	X
Year	X	X	X	X	X
Province x Year			X	X	X
2010 covariates x Year				X	X

Notes: Dependent variables (DV) and V are expressed per 10,000 inhabitants in level in columns (1)-(4), standardised in column (5). 2010 covariates include 2010 canton shares of poor, 15-24 year-old, economically active, trade sectors, transportation sectors, and fertility rate. Standard errors clustered at the canton level in brackets. Standard deviations in square brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Heterogeneity

	(1)	(2)	(3)	(4)	(5)
Panel A: Property crime					
	Robbery	Simple theft	Motor vehicle theft	Residential burglary	Non-residential burglary
V	0.0077	0.0172*	-0.0152	0.0121	0.0562***
	(0.0079)	(0.0090)	(0.0143)	(0.0106)	(0.0182)
R-squared	0.9486	0.9043	0.8783	0.8728	0.7869
Mean DV	7.0389	2.3529	4.5310	8.4214	2.7034
	[9.2652]	[3.6330]	[5.6689]	[7.0525]	[2.4945]
Panel B: Violent crime					
	Stabbing	Shooting	Female	Male	Venezuelan
V	-0.0763***	-0.0058	-0.0167	-0.0553**	0.1417
	(0.0203)	(0.0263)	(0.0233)	(0.0263)	(0.1469)
R-squared	0.4122	0.6927	0.2964	0.6184	0.3465
Mean DV	0.2313	0.3319	0.2948	1.1091	0.0009
	[0.4550]	[0.6293]	[0.7544]	[1.5303]	[0.0240]
Observations	1,085	1,085	1,085	1,085	1,085
Mean V	330.8367	330.8367	330.8367	330.8367	330.8367
	[2403.709]	[2403.709]	[2403.709]	[2403.709]	[2403.709]

Notes: Dependent variables (DV) and V are expressed per 10,000 inhabitants and standardised. Specifications include canton, year, province-year, 2010 canton variables-year fixed effects, as well as distance to the closest land border-crossing. Standard errors clustered at the canton level in brackets. Standard deviations in square brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Robustness

	(1)	(2)	(3)	(4)
Panel A: Property crime				
$V_{average}$	0.0107			1001.007
	(0.0087)			[2786.904]
V_{ratio}		0.0221		9.0897
		(0.0273)		[26.7114]
$V_{2010} * CPI$			-0.0000**	1.1785
			(0.0000)	[2.5385]
Mean DV	25.0477	25.0477	25.0477	
	[22.0657]	[22.0657]	[22.0657]	
R-squared	0.9496	0.9496	0.9498	
Panel B: Violent crime				
$V_{average}$	-0.0636*			1001.007
	(0.0356)			[2786.904]
V_{ratio}		-0.0637		9.0897
		(0.0691)		[26.7114]
$V_{2010} * CPI$			0.0000*	1.1785
			(0.0000)	[2.5385]
Mean DV	0.7137	0.7137	0.7137	
	[0.9180]	[0.9180]	[0.9180]	
R-squared	0.5829	0.5821	0.5823	
Panel C: Death by homicide				
$V_{average}$	-0.0864			1001.007
	(0.0588)			[2786.904]
V_{ratio}		-0.0935		9.0897
		(0.0633)		[26.7114]
$V_{2010} * CPI$			0.0000*	1.1785
			(0.0000)	[2.5385]
Mean DV	0.6121	0.6121	0.6121	
	[0.7947]	[0.7947]	[0.7947]	
R-squared	0.5058	0.5059	0.5045	
Panel D: Hospitalisation for injury				
$V_{average}$	-0.0762			1001.007
	(0.0812)			[2786.904]
V_{ratio}		0.0053		9.0897
		(0.0509)		[26.7114]
$V_{2010} * CPI$			0.0000	1.1785
			(0.0000)	[2.5385]
Mean DV	51.3884	51.3884	51.3884	
	[26.6202]	[26.6202]	[26.6202]	
R-squared	0.8821	0.8804	0.8804	
Observations	1,085	1,085	1,085	

Notes: Dependent variables (DV) and V are expressed per 10,000 inhabitants and standardised. Columns (1)-(3) present estimates from specification (2), with alternative indicators of Venezuelan immigration. Specifications include canton, year, province-year, 2010 canton variables-year fixed effects, as well as distance to the closest land border-crossing. Column (4) present means of the corresponding Venezuelan immigration variable. Standard errors clustered at the canton level in brackets. Standard deviations in square brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Victimization in last 12 months (ENEMDU, ENMH)

	Victimization					Property crime		Violent crime	
				Natives	Foreigners	Natives	Foreigners	Natives	Foreigners
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
V	0.0004	0.0008	0.0007	0.0008	0.0014	-0.0008**	0.0003	0.0003*	0.0001
	(0.0004)	(0.0009)	(0.0010)	(0.0010)	(0.0022)	(0.0003)	(0.0003)	(0.0002)	(0.0002)
Control variables	X	X	X	X	X	X	X	X	X
No migration		X	X	X	X	X	X	X	X
Birth continent			X						
R-squared	0.0255	0.0243	0.0245	0.0239	0.1104	0.0055	0.1245	0.0058	0.0579
Observations	293,272	95,452	94,566	91,769	3,663	87,210	3,487	91,764	3,663
Mean DV	0.0490	0.0545	0.0546	0.0546	0.0524	0.0019	0.0011	0.0029	0.0035
	[0.2158]	[0.2270]	[0.2272]	[0.2272]	[0.2230]	[0.04372]	[0.0339]	[0.0538]	[0.0595]
Mean V	53.5389	38.3149	38.5551	35.6380	105.2786	35.9754	104.2442	35.6397	105.2786
	[437.6396]	[333.9777]	[335.5036]	[310.9914]	[692.0711]	[310.6182]	[669.6019]	[310.9998]	[692.0711]

Notes: V is expressed per 10,000 inhabitants and standardized. Dependent variables (DV) are binary variables taking value 1 if a respondent was victimized in the last 12 months in columns (1)-(5); if a respondent was victim of property crime in columns (6)-(7), and victim of violent crime in columns (8)-(9); 0, otherwise. Control variables are age, gender, education (nine categories), urban (two categories), number of children, marital status (six categories), ethnicity (eight categories), student (two categories), employment status (two categories) and housing tenure (seven categories). Column (3) controls for continent of birth. All specifications include distance to the closest land border-crossing, canton, year and province-year fixed effects. The time period runs from 2014 to 2018 in columns (1); from 2014 to 2017 in columns (2)-(9). Standard errors clustered at the canton level in brackets. Standard deviations are in square brackets. Sample weights used; estimates nationally representative. *** p<0.01, ** p<0.05, * p<0.1.

Table 7: Anti-immigrant sentiment (AmericasBarometer)

	Immigrants are bad for the economy	Immigrants should not receive social welfare	Migration is a problem	Crime is a problem	Victim	Unsafe	Work	Extreme left	Extreme right
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
V	0.0128***	-0.0258***	-0.0016	0.0041	-0.0003	-0.0041	-0.0070*	-0.0071***	0.0017
	(0.0035)	(0.0046)	(0.0023)	(0.0029)	(0.0074)	(0.0109)	(0.0038)	(0.0022)	(0.0084)
Observations	3,096	3,359	4,386	4,401	4,391	4,378	4,401	4,401	4,401
R-squared	0.0900	0.1163	0.0413	0.1456	0.0652	0.1100	0.2738	0.0291	0.0545
Mean DV	0.6951	0.3194	0.0096	0.1461	0.2899	0.4566	0.4769	0.0793	0.0879
	[0.4604]	[0.4663]	[0.0974]	[0.3532]	[0.4536]	[0.4982]	[0.4995]	[0.2702]	[0.2832]
Mean V	31.3876	30.1186	58.3054	58.3656	57.9428	58.5215	58.3656	58.3656	58.3656
	[174.2211]	[168.0124]	[226.5968]	[226.5019]	[227.0703]	[227.0552]	[226.5019]	[226.5019]	[226.5019]

Notes: Dependent variables (DV) are binary variables. V is expressed per 10,000 inhabitants and standardised. Control variables are age, gender, years of education, urban (two categories), number of children less than 13 years old, marital status (seven categories), ethnicity (six categories), student (two categories) and employment status (two categories), except in column (6), in which employment status is excluded. Survey years are 2014, 2016 and 2018. Regressions include distance to the closest land border-crossing, canton, year and canton-year fixed effects. Standard errors clustered at the canton level are in brackets. Standard deviations are in square brackets. Estimation sample self-weighted for estimates to be nationally representative. *** p<0.01, ** p<0.05, * p<0.1.

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