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The Impact of Internal Displacement on Destination Communities: Evidence from the Colombian Conflict

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Abstract:
More than ten percent of the population of Colombia has been forced to migrate due to civil war. This study employs an enclave IV strategy, which exploits social distance between origin and destination locations, as well as conflict induced migration, to estimate the impact that the arrival of displaced individuals has on local residents. I compare the effects on four different subgroups of the population, partitioned by skill (low-skilled versus high-skilled) and by gender. The analysis suggests that a conflict-induced increase in population leads to a short-run negative impact on wages. Though the impact tends to dissipate over time, it persists for one group, low-skilled women. The arrival of internally displaced people also affects local access to public goods, I find a negative effect on access to piped water, and a positive effect on access to trash collection services.

Keywords: civil conflict; migration; labour markets; public goods

JEL codes: H41, J40, J61, O15, R23

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1 Introduction

The world is plagued by violence. Ongoing conflicts across the globe, in Iraq, Colombia, Nigeria, Libya, Mexico, Ukraine, Democratic Republic of Congo and Syria among others, and stories of migrants leaving these conflict zones, are often featured in the news. There are now over 50 million people around the world who have fled their homes as a result of armed conflict, the largest number since World War II (UNHCR, 2014). Over 38 million of these are internally displaced people who remain within the boundaries of their home countries (IDMC, 2015). In Colombia alone, more than six million people have been displaced by violence, over ten percent of the country's population. Although the direct impact that violence has on the lives of these victims is evident, the effects of displacement also extend to wider settings. As these forced migrants arrive in cities and towns, economic and political channels diffuse these effects among residents at the arriving locations. I study how the arrival of those displaced by violence between 1998 and 2005, a period which saw unprecedented levels of displacement in Colombia, affected destination communities by studying two important determinants of welfare: wages and access to public goods.

I build on previous work by Calderón-Mejía and Ibáñez (2015), who examine the impact of internal displacement on urban labour markets, and expand their analysis by looking at a wider range of receiving municipalities, allowing for longer-run effects, and studying a broader number of outcomes. To estimate the causal effects of interest I employ an instrumental variable strategy which uses migrant shares from the origin municipality to predict displacement to the destination. The instrument combines two factors, which are arguably independent of conditions at the destination, to predict migration flows after 1997: displacement driven by violence at the municipalities of origin, and shares of migrants from these origin municipalities who were living at the destination in 1993. The migration networks, or enclave, instrument has been commonly used in the immigration literature since Card (2001), but has not been previously used (to the best of my knowledge) to analyze internal migration in Colombia.

I frame the analysis within a spatial equilibrium model that outlines the mechanisms through which the welfare of residents at destination locations is affected with the arrival of forced migrants. Though the impact is initially concentrated in the receiving municipalities, out-migration from these tends to dissipate the effects over time. I find empirical support for the conceptual framework presented. Receiving municipalities are adversely affected in the short-run by a negative impact on wages, as in Calderón-Mejía and Ibáñez (2015). Over time, however, these effects tend to dissipate. I present evidence that labour reallocation may explain these observations, a result in line with Monras (2015)'s analysis of Mexican migration into the U.S. The effect on wages, however, persists for low-skilled women, suggesting that this group is particularly afflicted by the arrival of forced migrants. In addition, internal displacement has a positive impact on access to trash collection services, and a negative impact on access to piped water for local residents.

The paper is organized as follows. Section 2 reviews the relevant literature. Section 3 briefly outlines the background of civil conflict in Colombia. Section 4 presents the theoretical framework. The data and summary statistics are described in section 5. Section 6 outlines the empirical strategy. Section 7 presents the results and section 8 concludes.

2 Literature

The analysis I present contributes mainly to two important areas of study. First, there is a growing literature in economics on the causes and effects of civil war (Blattman and Miguel, 2010). Since 1960, twenty percent of countries have experienced civil conflicts lasting at least ten years, which highlights the importance of the issue for economic development and welfare. Second, the study contributes to a more traditional and extensive literature on immigration and labour markets.

Studies on internal displacement which examine how those displaced are affected include Kondylis (2010), who finds that displaced men in Bosnia are more likely to be unemployed, while displaced women are less likely to be in the workforce, as well as various studies on internal displacement in Colombia. Silva Arias and Sarmiento Espinel (2013) find that internally displaced people are around 6 percentage points more likely to be unemployed than other migrants, with the impact considerably mitigated by higher levels of education. Ibáñez and Vélez (2008) find that internally displaced people suffer welfare losses equivalent to 37% of their lifetime consumption, while Ibáñez and Moya (2010) find that only 25% of displaced households recover the asset losses generated by displacement. Calderón, Ibáñez and Gáfaro (2011) report that displaced women are more competitive in labour markets relative to displaced men, suggesting that the labour market effects for local residents may differ by gender.

Studies that analyze the impact that internal displacement has on host (destination) communities include Alix-Garcia and Saah (2010), who find that food prices in Tanzania increased following refugee inflows from Burundi and Rwanda in the 1990s, but that the impact is mitigated by food aid, and that while wealth effects are positive for rural inhabitants close to refugee camps, they are negative for those in urban areas. Baez (2011), studying the same conflict, finds worsening health outcomes for children in Tanzanian regions with larger number of refugees. Maystadt and Verwimp (2014) find that the presence of refugees in Tanzania led to increased household consumption, though the impact differs widely by occupation, while Maystadt and Duranton (2014) suggest that refugee induced road construction may have led to permanent welfare gains through a reduction in transportation costs. Alix-Garcia and Bartlett (2015) find that high-skilled employment is higher in a Darfurian city affected by displacement compared to a similar neighbouring city which was unaffected, as the arrival of internally displaced people generates a positive demand driven shock for these workers. Ruiz and Vargas-Silva (2013) conclude that the evidence regarding the impact of forced migrants on destination communities is mixed, and emphasize Maystadt and Verwimp (2014)'s view that there tend to be both winners and losers in the host communities.

It should be highlighted that while both the Tanzanian refugees and those displaced in Darfur were mostly localized in large camps, internally displaced people in Colombia are located all throughout the country. Studying the impact of displacement on Colombian labour markets, Bozzoli, Brück and Wald (2013) find that self-employment is lower in origin municipalities of displacement, and higher in destination municipalities, while Peña (2014) highlights the ability of labour markets to absorb forced migrants with negligible impacts on the employment outcomes of the native population. Calderón-Mejía and Ibáñez (2015) find that internal displacement has a large negative impact on wages in the informal sector of destination cities, and that it increases the probability of native workers working in the informal sector. Taken together, these studies suggest that informal sectors in Colombian labour markets seem to easily absorb the inflow of forced migrants, but that wages in destination communities are likely to be affected as a result. The short-run estimates I report support these conclusions.

The paper also contributes to the broader debate on the effects of immigration on labour markets. Several studies have found that such effects tend to be small (see for instance Card (2005, 2009); Friedberg (2001); Ottaviano and Peri (2012); Peri and Yasenov (2015)), suggesting that immigrant workers and native workers are imperfect substitutes. Others, however, argue that the effects can be large and are usually concentrated among young or poorly educated workers, who generally compete with (low-skilled) immigrants for jobs (see Borjas (2003, 2006, 2015); Smith (2012)). Internally displaced people within Colombia are however more likely to be similar to Colombian urban residents than, for instance, Cuban immigrants are to U.S. residents. I study how forced migrants may differentially affect natives depending on their relative skill levels. I present evidence for the case of Colombia consistent with Monras (2015)'s study of Mexican immigration to the U.S, which finds a large negative short-run impact on wages, and stresses how labour reallocation dissipates these impacts in the long-run.

Though not many studies have analyzed how the arrival of displaced individuals affects the provision of public goods of local residents, these unexplored impacts may have important implications for the welfare of receiving locations given the large magnitude of displacement in Colombia. Forero (2003) highlights the public policy tension that arises between a focus of guaranteeing full compensation to victims of the civil conflict, and one which solely seeks to satisfy their basic needs within a conventional social assistance framework. Bohada (2010) suggests that the arrival of internally displaced people has positive effects for the provision of public goods in receiving neighbourhoods in the Colombian city of Pasto, through increased government spending on health and educational facilities. Neighbourhoods where these migrants arrive seem to become more visible in the eyes of policymakers, and may therefore capture larger investments from the federal government or international organizations. I explore whether such investments crowd out public funding in other neighbourhoods or whether access to these services increases overall by studying impacts at the municipal level.

3 Background

It is not uncommon for countries to undergo civil wars and internal conflict throughout the process of economic development. Since 1958 an estimated 220,000 people have died in Colombia, over 80% of whom were civilians, due to one of the longest ongoing civil conflicts in the world (CNMH, 2013).

In the 1960s, the emergence of left-wing guerrilla groups ended a transition from violence between political parties to one of a subversive nature. The Revolutionary Armed Forces of Colombia (FARC) and the National Liberation Army (ELN), both founded in 1964, continue to play leading roles in the civil war today. It was not until the 1980s, however, that these guerrilla groups started an aggressive geographic expansion of their activities throughout the country. Sánchez Torres and Díaz (2005) document this expansion and highlight both the substantial increase in the number of attacks from these groups, and the widening of their geographic reach. Their operations are mainly funded through kidnappings, extortion, trade of illegal drugs, and as of more recent, illegal mining. Various attempts of peace negotiations between these guerilla groups and the Colombian government have yet to yield any lasting results. The most recent round of negotiations with FARC are currently ongoing.

In the 1980s, the increasing threat from guerillas and the inability of the government to ensure safety across the country led many landowners to sponsor local militia forces. These right-wing groups merged and founded the United Self-Defense Forces of Colombia (AUC) in 1997, a counter-insurgency paramilitary

group with the objective of combating the FARC and ELN. Funded principally by narcotraffickers and other private interests, the AUC were widely condemned of human rights abuses, including massacres, torture, and assassinations. After negotiations with the government of Álvaro Uribe Vélez, most AUC members demobilized between 2004 and 2006. Some remain active today as part of smaller militia and criminal groups.

The Colombian military is one of the largest in Latin America and has often received funding and support from the United States government as part of their 'war on drugs' campaign. After an unsuccessful attempt at negotiations with the FARC broke down in 2002, Álvaro Uribe Vélez was elected president running on a platform of aggressive military intervention against the rebel insurgencies. During his eight year mandate (having been re-elected in 2006), the army intensified its efforts of combating the guerilla groups and recovered a substantial share of the country's territory that was under FARC and ELN control.

All of these groups, including the Colombian military, have been accused of human rights violations. The multi-party nature of the conflict and its intensity has resulted in civilians being victims of cross-fire, threats, kidnappings, massacres, bombings, forced recruitment of minors, and extortion. Civilians are targeted and persecuted as a deliberate strategy of war, often accused of aiding enemy groups, whoever these are. Millions of peasants and farmers have opted for fleeing conflict zones to ensure their and their family's safety. These internally displaced people leave their hometowns and often arrive at cities or large towns.

Though the experiences of millions of victims of displacement are undoubtedly unique, many share common traits. Two specific settlement approaches are frequent when arriving at their destinations: *nuclear settlements*, in which vacant lots, often in the peripheries of cities, are 'invaded' by groups of displaced individuals to raise huts and shelters in which to live; and *dispersed settlement*, finding accommodation in the homes of family or friends who reside there (Naranjo, 2004). Internally displaced people are likely to become part of the informal economy of the municipalities where they arrive, often as construction workers, maids, or selling food items or other cheap goods on the streets. Ibáñez (2008) highlights two important facts regarding the issue: first, internal displacement is unequivocally a consequence of violence, and those displaced differ substantially from other types of internal migrants; second, though access to public services is higher for displaced people in the urban areas where they settle, their incomes and consumption patterns are severely negatively affected, and they often find themselves in vulnerable conditions worse than those of other poor urban residents.

Although public policy has varied across time and governments, since 1997[1] it has generally been shaped by the belief that the displaced population, having had their constitutional rights violated, should be compensated through public programs of 'positive discrimination' (Ibáñez and Moya, 2007). The availability of government resources has however resulted insufficient in meeting the demand for assistance from the victimized population (Pérez Ortiz, 2001). Furthermore, given these fiscal and administrative limitations, the 'positive discrimination' focus may also indirectly result in the worsening of public services for the non-victimized population.

[1] Law 387 of 1997 established policies aimed at assisting victims of and preventing forced displacement.

4 Conceptual Framework

To investigate how the welfare of native residents of destination cities is affected by internal displacement, I present a spatial equilibrium framework in the spirit of Moretti (2011), generalized and extended to include violent conflict v as a determinant of well-being. The economy consists of a set of locations J, each producing a single tradable good. Each individual i of type k (which defines their skill and gender) is mobile and chooses location j to maximize their indirect expected utility U_{kij}, given by:

$$U_{kij} = V_{kj}(w_{kj}, r_j, a_j) + \varepsilon_{kij}$$

where $w_{kj}(N_{kj}, v_j)$ is the wage in location j for type k, $r_j(N_j, v_j)$ is the cost of housing (of which each worker demands one unit) and $a_j(N_j, v_j)$ is a measure of the local amenities captured by the individual. Finally, $\varepsilon_{kij}(s_{ij}, v_j)$ is an idiosyncratic component for i's individual preference for location j, where s represents social capital and positively affects idiosyncratic utility ($\frac{\partial \varepsilon_{kij}}{\partial s_{kij}} > 0$). V is increasing in w and a ($\frac{\partial V_{kj}}{\partial w_{kj}} > 0$, $\frac{\partial V_{kj}}{\partial a_j} > 0$), and decreasing in r ($\frac{\partial V_{kj}}{\partial r_j} < 0$).

The components of individuals' welfare are themselves in turn functions of N_j, the number of residents of type k at location j, and v_j, the level of violence at location j. In particular, wages are negatively related to population ($\frac{\partial w_{kj}}{\partial N_{kj}} < 0$, the labor demand curve is downward sloping), the cost of housing is increasing with population ($\frac{\partial r_j}{\partial N_j} > 0$) and the relationship between amenities and N is ambiguous, due to the possibility of either congestion in amenities (as in Dinkelman and Schulhofer-Wohl (2015)) or of increased access to resources due to political responses (as suggested by Bohada (2010)).

Wages, amenities and individual's preferences for a specific location are negatively affected by violence ($\frac{\partial w_{jk}}{\partial v_j} < 0$, $\frac{\partial a_j}{\partial v_j} < 0$, $\frac{\partial \varepsilon_{kij}}{\partial v_j} < 0$, $\forall k, i$). Violence makes individuals and firms less productive, destroys amenities, and also affects individuals directly. The cost of housing is positively affected by violence ($\frac{\partial r_j}{\partial v_j} > 0$), through destruction of the stock of housing.[2] Violence therefore unambiguously affects utility U negatively ($\frac{\partial U_{kij}}{\partial v_j} < 0$, $\forall k, i$).

4.1 Effect of civil conflict on migration and impact at destination

Assume now three locations, R, T and C. I now consider the impact that civil conflict in location R can have on C's and T's residents through internal displacement, and I differentiate short-run and long-run effects. Assume (without loss of generality) that the social distance between R and T is smaller than that between R and C. In this general framework this assumption is defined through the idiosyncratic preferences of individuals: those having higher social capital in R, have higher social capital in T than in C. That is, if $s_{kiR} > s_{kiT}$, then $s_{kiT} > s_{kiC}$.

Suppose now that the level of violence in R, v_R, increases as a result of civil conflict. As outlined above, an increase in v_R will negatively affect the utility that individuals receive from locating at R, U_{kiR}, decreases. This reduction in the utility received from R results in out-migration from location R. Displaced individuals from R relocate to T in the short-run. The arrival of migrants in location T (an increase in N_T)

[2] Note however, that the overall effect on the cost of housing is likely to be negative as violence induces out-migration, therefore reducing the demand for housing.

affects the utility of T's residents, U_{kiT}, through three specific mechanisms: i) a change in wages w_{kT}; ii) a change in the availability of amenities a_T; and a change in the cost of housing r_T.[3]

Furthermore, if U_{kiT} is negatively affected by the arrival of displaced individuals, then the residents of T may in turn out-migrate to location C, therefore affecting U_{kiC} through an increase in N_C. Thus we can expect the impact of displacement on T to be mitigated by out-migration in the longer-run (as N_T decreases). It should thus be noted that the welfare impact of internal displacement is mitigated with more than two locations, firstly because the number of forced migrants arriving at each location is reduced, and in addition native residents of a location affected by the arrival of migrants may in turn choose themselves to move to a third location.

These effects will be evaluated empirically in the following sections. I estimate the welfare impact of internal displacement on native workers by analyzing the effect that the arrival of migrants has on their utility through two of the channels outlined: wages and the availability of local amenities. In particular, I aim to find estimates of $\frac{\partial w_{kj}}{\partial N_j}$ and $\frac{\partial a_j}{\partial N_j}$.[4] I partially estimate the impact on amenities by looking at the provision of public goods.

5 Data and Summary Statistics

The main sources of data used are: a labour survey carried out by the National Administrative Department of Statistics (DANE), a government entity in charge of the collection and diffusion of Colombia's official statistics; the Colombian censuses of 1993 and 2005, also collected by the DANE; and the Unique Registry for Displaced Population (RUPD) maintained by the non-profit organization Acción Social.[5]

The survey used is the National Household Survey (ECH) for the years 1998 to 2004, a repeated cross-section collected quarterly by the DANE throughout the country (267 municipalities). The ECH includes data on wages as well as employment and schooling status. Unfortunately, these surveys do not allow for the consistent identification of displaced households, thus I assume that displaced households do not enter the sampling frame the year after their arrival.[6] The sample is restricted to individuals between 15 and 70. The log of real wages are winsorized at the 1% level. Table 1 summarizes statistics for individuals in the ECH survey by education (less than secondary and secondary and above).

The Colombian censuses of 1993 and 2005 were accessed through the Integrated Public Use Microdata Series (IPUMS, 2014). Although the census covers the entire population of the country, the public use version covers ten percent of the population (over four million observations) across 533 municipalities (merged to be larger than 10,000) located in 31 different departments (a political division equivalent to states or provinces). The 2005 census includes detailed questions on migration, in particular, it asks people whether they have moved in the previous five years, and what the reasons were for such move. I classify as internally displaced those who list "violence or insecurity" as their reason for moving.

Household skill groups, which are pivotal to the analysis, are defined such that high-skilled households are those in which all adult members have secondary education or above. This definition provides groups

[3] Although wages are affected differentially by migration from households of different types, all households share the same amenities and rental markets.

[4] The model assumes that individuals of all types share rental and amenities markets, but this assumption will be evaluated empirically in section 7.

[5] Accessed through the Integrated System for Humanitarian Information for Colombia (SIDIH).

[6] The ECH's module on migration was only carried out during the first quarter of the year and was unavailable to the public at the time of this analysis.

with a roughly balanced number of households. Table 2 summarizes statistics for native households in the census (those who have not moved in the previous five years) by skill groups, as well as by IDP status. We can observe that internally displaced people are on average younger, have larger families and are more likely to belong to an ethnic minority. Their education level is on average lower than that of the native population.[7] As expected, high-skilled households are more likely to have children in school, and have higher access to water and electricity than low-skilled households. Unsurprisingly, displaced households in the census fare poorly by all these metrics, for the most part worse than low-skilled households. In addition, summary statistics of a wealth index created using household assets and dwelling characteristics is also reported.

Over 700,000 people were registered as displaced during the period of study. The independent variable of interest is built using data from the RUPD, a unique registry which documents the number of internally displaced people both arriving at and leaving from Colombian municipalities.[8] Note however that these are two separate counts, and there is no matching between the origin and destination of the migrants in the data. I exploit both of these data records in my empirical strategy outlined below. Various municipality controls are also added and constructed using the 1993 census. I summarize these as well as the dependent variables in Table 3. Figure 1 shows the number of forced migrants arriving in Colombia's 13 largest cities between 1997 and 2011, as well as the total number of displaced people flowing outwardly from all municipalities. In addition, Figure 2 maps the number of internally displaced people arriving at Colombian municipalities for the period preceding the census (2000-2004).

6 Empirical Strategy

Displacement due to violence presents a natural experiment to analyze important migration related issues. The flow of internally displaced people arriving at destination cities as a share of the local population provides plausibly exogenous variation in the supply of labour and the demand for public resources. The analysis will explore the impact of internal displacement separately for low-skilled and high-skilled individuals, as well as by gender. The sample is thus partitioned and all of the regressions are separately run on each of these groups, allowing for heterogeneous impacts of the covariates, by skill and gender group, on the outcomes of interest.

6.1 Short-run effects

The short-run analysis focuses on the impact of displacement on wages, using the ECH survey. The impact of forced migration on individual wages at the destination location is estimated using the following equation:

$$y_{imt} = \alpha + \beta d_{mt-1} + \lambda_i X_{imt} + \lambda_m X_{mt} + \gamma_t + \delta_m + \delta_m T + \varepsilon_{imt}$$

where y_{imt} is the log of wages for individual i in municipality m at time t. The inflow of internally displaced people for each one hundred people is represented by d_{mt}, that is:

$$d_{mt} = \frac{100}{pop_{mt}} \times f_{mt}$$

[7] Silva Arias and Guataquí Roa (2008) and Ibáñez (2008) also highlight the relatively low educational attainment of internally displaced people.

[8] Displacement is known to be underreported in the census, see Silva Arias and Sarmiento Espinel (2013) for a discussion of how these two sources compare.

where f_{mt} is the total number of forced migrants arriving at municipality m at time t. The vector X_i includes individual controls (education, potential experience and its square, gender and marital status), and X_{mt} includes the log of total population. I include municipality fixed effects, year fixed effects, and municipality specific linear time trends. Note that β constitutes the parameter of interest, which estimates the impact of the arrival of forced migrants at time $t-1$ on wages at time t. The model is estimated in two steps, first regressing wages on the individual covariates and averaging the residuals at the municipal-year level, and then regressing these average wage residuals on the municipal and time varying regressors (including displacement).

6.2 Long-run effects

An alternate specification which captures long-run effects is also studied:

$$y_{im} = \alpha + \beta d_m + \lambda_i X_{im} + \lambda_m X_m + \delta_{D_m} + \varepsilon_{im}$$

where y_{im} is the outcome of interest, X_{im} is a vector of household and individual controls (various demographic characteristics including household size, proportion of female members, gender of household head, education of household head, number of children, number of adults, proportion of adults at different levels of education, among others), X_m is a long vector of municipality level controls (which include population, longitude, latitude, altitude, share urban population, share of population who are worker migrants - that is, they list "work" in the census as the reason for migration - as well as the mean of various outcomes in 1993 - including for most cases $\bar{y}_{1993m}$[9]), and δ_{D_m} are department fixed effects (where municipality m is located in department D_m). These department fixed effects capture variation at the department level which could affect both the probability of internal displacement and other outcomes of interest. Capturing the homogeneity of outcomes within departments is important given the possibility of spatial correlation (as highlighted by Figure 2). Finally, the inflow of internally displaced people in the previous five years for each one hundred people is represented by d_m, that is:

$$d_m = \frac{100}{pop_m} \times f_m$$

where f_m is the total number of forced migrants arriving at municipality m in the previous five years, and pop_m is the population of the municipality. The long-run analysis is done for wages using the 2004 ECH sample, and for other outcomes of interest using the 2005 census. Since the census includes detailed migration information, the sample of analysis selected in this case includes only native residents at the destination municipalities, defined as those who lived in the same municipality 5 years prior to the census.

6.3 Enclave IV

As argued by previous work, displacement is driven by episodes of violence (See Ibáñez (2008), and Calderón-Mejía and Ibáñez (2015)) and the timing of these expulsions is thus likely independent of outcomes at receiving locations. The forced migrants' choice of location may however be affected by, or correlated with, certain city characteristics. For instance, if labour market conditions are relatively favourable at a specific city at the time of departure, it is likely to attract more migrants. More specifically, the number

[9]The average level of y at municipality m in 1993, including access to schooling, access to water supply and trash collection services, unemployment, share employed in agriculture, among others.

of internally displaced people arriving, f_{mt}, could be correlated with ε_{imt}. To overcome this concern, I employ the migration networks, or enclave, instrument commonly used in the immigration literature (see Card (2001), or more recently, Monras (2015) and Lafortune, Tessada and Lewis (2014)).

Patterns of migration are often determined by past migration waves, and internally displaced people often arrive at the homes of relatives or friends (Naranjo, 2004). I define the instrument using the 1993 census. It is defined as:

$$dIV_{mt} = \frac{100}{pop_{mt}} \times (\sum_j e_{jt} \times s_{mj1993})$$

where e_{jt} is the total number of expulsions from municipality j at time t, and s_{mj1993} is the share of migrants from municipality j who lived in municipality m in 1993.[10] The instrument depends on migration decisions which took place prior to 1993, and is thus potentially uncorrelated with outcomes during the period of study, conditional on a wide range of past municipal controls. [11]

The empirical strategies presented use variation in the arrival of forced migrants across time in the ECH survey to identify the short-run effects of internal displacement, an analysis similar to that of Calderón-Mejía and Ibáñez (2015). On the other hand, the analysis exploits variation across municipalities to identify the longer term impact of internal displacement, with t defined in the instrument as the period five years prior. This second strategy, IV with a wide set of controls, is similar to that in Duranton (2014)'s analysis of agglomeration effects in Colombia.

6.4 Out-migration

The long-run analysis I have presented uses migration information from the census to identify non-movers since, as predicted by the framework presented in section 4, a negative welfare impact to the residents of certain location will result in out-migration from it (it is such a shock that leads to internal displacement in the first place). As forced migrants arrive at their destinations they affect the welfare of local residents through various outcomes, if such an impact is negative overall, it would in turn also result in migration away from these receiving locations. Such process of labour reallocation has been documented in studies of immigration into the U.S, but has not, to the best of my knowledge, been studied for the case of Colombia. I use migration information from the census to examine such a possibility through the following short-run specification:

$$y_{mt} = \alpha + \beta d_{mt-1} + \lambda y_{mt-1} + \gamma_m + \delta_m + \varepsilon_{mt}$$

where y_{mt} is the rate of out-migration defined as $y_{mt} = (n_{mt}/pop_{m2000}) * 100$, n_{mt} is the number of people who moved away from municipality m at time t by relevant group (by skill or gender), and pop_{m2000} is the estimated relevant population of m in the year 2000 (by skill or gender group); d_{mt-1} is the number of internally displaced people arriving at m at time $t-1$ as previously defined; I also include municipality and time fixed effects. The out-migration rates are defined for the subpopulations of low-skilled and high-skilled households by gender of the head. I include a lagged dependent variable as a control variable as violence shocks could be correlated across space and time, such that d_{mt-1} could be potentially correlated with y_{mt-1}.

[10] Migrants in these case are defined as people who were born in j but did not live there in 1993. Note that $\sum_m s_{mj1993} = 1$ for each j.

[11] Though some displacement due to violence had already taken place by 1993, the 1985 census (Colombia's previous census) does not include information on migrant's place of birth, thus the instrument cannot be constructed using earlier dates.

Finally, I study long-run effects on out-migration through the following specification:

$$y_{m2005-2000} = \alpha + \beta d_m + \lambda y_{m2000-birth} + \lambda_m X_m + \delta_{D_m} + \varepsilon_m$$

where $y_{m2005-2000} = (n_{m2005-2000}/pop_{m2000}) * 100$, $n_{m2005-2000}$ is the number of people who moved away from municipality between 2000 and 2005, and pop_{m2000} is defined as above. In addition, I control for previous rates of out-migration using $y_{m2000-birth} = (n_{m2000-birth}/pop_{m2000}) * 100$, where $n_{m2000-birth}$ are the number of people born in m who lived elsewhere in 2000.[12]

As before, the enclave instrument is used to predict displacement (d_{mt} and d_m) in both the short-run and long-run out-migration specifications.

7 Results

7.1 First stage

I first present estimates from regressing the number of internally displaced people as a share of the population of the destination location on the constructed instrument. The first stage estimates for the ECH surveys are presented in Table 4, and those for the census are presented in Table 5. As observed, the enclave instrument is a good predictor of arrivals at the destination municipalities, both in the short-run and in the long-run, and for both the low-skilled and the high-skilled household samples separately. Note that running the first stage regressions separately for low-skilled and high-skilled households does not alter the sample of municipalities[13], only the relative weights that each municipality receives depending on their skill composition. It is thus not surprising that the first stage coefficients are very similar across specifications.

7.2 Impact on labour markets

7.2.1 Short-run effect on wages

Table 6 shows the results from the short-run analysis, which includes municipal fixed effects, year fixed effects and municipal specific linear trends, with the log of real wages as the outcome of interest, winsorized at the 1 and 99 percentiles. Both the OLS and the IV estimates suggest that displacement has a negative effect on local wages. The IV estimates are larger in magnitude indicating that the OLS estimates may be biased possibly due to the selection of more favourable municipalities by those displaced, as discussed above. The IV estimate for all households (column 4) indicates that a one percent conflict induced increase in population leads to a 1.4 percent reduction in wages the following year. Though the coefficient estimate is larger in magnitude for low-skilled households, it is not precisely estimated.

Table 7 further partitions the sample by both gender and skill. The IV estimates suggest that the impact of displacement on local wages is larger for women than for men, consistent with Calderón, Ibáñez and Gáfaro (2011)'s observation that displaced women may be more competitive in urban labour markets than displaced men[14]. A one percent increase in population due to displacement leads to a 2.2 percent reduction

[12] This control was chosen given data limitations from the census. Data is available for municipality of residence five years prior (in 2000) and municipality of birth.

[13] With the exception of one municipality which does not contain any high-skilled households in the ECH sample.

[14] Note that the ECH sample consists of 267 large municipalities.

of wages for low-skilled women (column 7) and a 1.7 percent reduction in wages for high-skilled women (column 8). The effect is smallest for high-skilled men, leading to a wage reduction of 0.7 percent, not statistically significant (column 6).

The estimates presented are relatively large compared to previous work on labour markets and migration.[15] The large magnitude may be partly attributed to the fact that the dependent variable is defined as a share of *total* population, whereas previous literature defines it as a share of the relevant population (ie. skill group or occupational group). Because of data limitations, a direct comparison is not feasible. Note however that the short-run estimates from this section use a similar dataset and approach to Calderón-Mejía and Ibáñez (2015) and support the conclusions of that study.

7.2.2 Long-run effect on wages (and on wealth index)

Tables 8 shows the results of the long-run analysis, which includes department fixed effects and a long vector of municipal controls, on the log of real wages. The OLS estimates suggest that displacement is associated with higher local wages at the end of the five year period, a one percent conflict induced increase in population between 1999 to 2003, is associated with wages which are roughly 0.4 percent higher in 2004 (columns 1-3). The IV estimates suggest that the effect is not statistically significant. Table 9 repeats the analysis by skill and gender groups. The OLS estimates again suggest a positive association between displacement and wages. The IV estimates suggest that the long-run effect on wages is negative and statistically significant for low-skilled women, and not different from zero for the remaining groups. The estimates indicate that a one percent increase in population between 1999 and 2003 leads to a decrease in wages of about 1.6 percent in 2004.

A large and persistent impact on wages may have a measurable effect on the accumulation of wealth over a long period of time. Though information on wages is not available from the census, the impact of internal displacement on household income at receiving communities may be indirectly estimated by looking at asset ownership (as in Alix-Garcia and Saah (2010)) or other indicators of wealth. I create an index of household wealth through principal component analysis using dwelling characteristics (number of rooms, types of walls and floors, indicators for kitchen and toilet) and asset ownership (television, radio, refrigerator, water heater, computer, washer, phone, car), and estimate the long-run impact of internal displacement on this index. The results from this analysis are presented in Tables 10 and 11. The estimates indicate that internal displacement has no statistically significant long-run effects on the wealth of local residents over the period of study. It should be noted however that, though statistically insignificant, the magnitude of the effect is largest again for low-skilled women (Table 11, column 3).

Though the initial impact on wages for most groups was negative and significant in the short-run, the effect tends to dissipate or disappear in the longer run. This result appears surprising given the relatively large short-run impact found on household wages but is congruent with previous studies of immigration into the U.S, which have stressed labour reallocation as a likely explanation for these (or the absence of) findings (see for instance Borjas (2006), or Monras (2015)). I evaluate the impact of displacement on out-migration below. However, the effect persists for low-skilled women even in the long-run analysis. In terms of wage impacts, low-skilled women are disproportionately affected by incoming displacement

[15] With the exception perhaps of Calderón-Mejía and Ibáñez (2015), who find that a 10 percent increase in the refugee share leads to a decrease in wages in the informal sector of 2.3 percent. Such an increase in the total refugee share, at a mean of roughly 3 percent in their sample, represents a population increase of about 0.3 percent. The comparable estimate would then suggest that a 1 leads to a decrease in wages in the informal sector of about 7.6 percent.

relative to other groups. The short-run effect is largest for them and the effect seems to persist over the five year period of analysis.

7.3 Long-run impact on public goods

I now estimate the impact of internal displacement on access to water, electricity and trash collection services using data from the 2005 census. The expected effect on local households could be negative, due to congestion of public resources, or positive, perhaps due to increased visibility and transfers from the federal government or NGOs (as in Bohada (2010)). The estimates of the analysis are presented in Tables 12-17. Tables 12 and 13 show that the impact of displacement on access to electricity is not statistically significant for any of the specifications. Tables 14 and 15 suggest that the arrival of internally displaced individuals leads to decreased access to piped water, and that the effect is particularly concentrated among high-skilled households. A one percent increase in population due to displacement leads to a 0.7 percent decrease in access to piped water for high-skilled households (Table 14, column 6). Tables 16 and 17 show that the arrival of internal displacement has a positive impact on access to trash collection services for receiving municipalities. On average, a one percent increase in population has an effect on trash collection services of between 0.6 percent for low-skilled households (Table 16, column 5) and 1 percent for high-skilled households (Table 16, column 6).

The analysis suggests that municipalities which receive larger numbers of displaced people tend to have increased access to trash collection services and reduced access to piped water relative to those which received less migrants. It should be noted that water services are usually provided by public companies, electricity in many municipalities is provided through public-private partnerships, and trash collection is sometimes outsourced by the municipal government to private companies. One possible explanation for the pattern observed is that expanding access to piped water may face more capital constraints than increasing access to trash collection, a labour intensive good which may be more easily provided given the supply shock to low-skilled labour that is the arrival of forced migrants. Municipal governments aware of these changes in relative costs may optimally shift resources away from the capital intensive public good (piped water) and towards the labour intensive public good (trash collection) in order to attain a welfare maximizing policy objective. This shift in the allocation of public goods seems to persist over the 5 year period of the analysis, despite the fact that the effect on wages dissipates for the most part. An exploration of the exact mechanisms through which these effects arise is outside of the scope of the paper.

7.4 Out-migration

Table 18 reports the results from the short-run analysis of the effect of displacement on out-migration. Following an inflow of forced migrants, we expect local residents who are negatively affected by the shock to migrate. The coefficients are all positive, suggesting that the arrival of internally displaced people has a negative impact on the welfare of local residents, therefore inducing out-migration. The IV estimates indicate that a one percent increment in population increases the rate of out-migration by about 0.2 to 0.3 people per 100 initial residents. The effect is largest for high-skilled women, and smallest for low-skilled women. The results from the long-run specification, which captures the cumulative effect of arrivals from 2000 to 2004 on the rate of out-migration during the same period, is presented in Table 19. Though the coefficients remain positive, they become statistically insignificant and smaller, except for high-skilled

women. The instrument also becomes weaker likely because the sample size decreases and there is no longer variation across time.

With the theoretical framework presented in mind, the effects from this section capture two distinct effects. As internally displaced people arrive at their destination, they affect the welfare of residents through various mechanisms, however, only those for whom the effect is large enough such that their optimal choice of location changes, will move. Thus, people who out-migrate are either those for whom the impact of displacement is large, or those who are close to marginal in their location decision to begin with. Mobility plays an important role in this. If, for instance, low-skilled women are less mobile (ie. they are not marginal in their location decision), then even a large negative effect may not be enough to induce them to move, and they are likely to suffer both short-run and long-run consequences from the arrival of new residents. Groups that are more mobile are better able to cope with the impact of displacement by migrating themselves.

7.5 Robustness checks

7.5.1 Effect on wages

The main regressions on wages are repeated in this section after restricting the sample in various ways. Table 20 restricts the sample depending on whether the municipality is one of the largest 13 Colombian cities, which were part of the Calderón-Mejía and Ibáñez (2015) study. Columns 1-3 restrict the sample to just these cities, the instrument becomes weak and the results insignificant. The enclave instrument does not seem to be a good predictor of migration to these large cities. Columns 4-6 report the results of excluding these cities from the analysis. The coefficients remain negative and close in magnitude to those previously found, suggesting that the cities are not driving the results.

The ECH surveys are not representative at the municipality level and the sample is small for some of these municipalities. Table 21 and 22 restrict the sample of municipalities depending on the size of the survey. Table 21, columns 1-3 and 4-6, excludes municipalities for which the sample size represents less than five percent and ten percent of the total population, respectively. Though the instrument becomes weaker, the effect remains negative and fairly large. Table 22 restricts the sample depending on the total number of individuals surveyed at the municipality. Columns 1-3 and 4-5, omit municipalities with less than 50 and less than 100 individuals in the sample, respectively. Again, the results remain negative and large. The results are particularly large for columns 4-6, suggesting that the main estimates may be attenuated if measurement error is large in municipalities with small samples.

Tables 23-25 restrict the years of the analysis. Across specifications the results remain negative and mostly significant. The analysis indicates that the results seem to be particularly large for the later period of study, in particular after 1999 (table 23, columns 1-3).

The short-run estimates on wages assume that internally displaced people arriving at a municipality do not enter the sampling frame the following year. I bound the estimates for the impact on wages considering the possibility of them entering the sample and two extreme case scenarios: they all enter the bottom of the wage distribution, or they all enter the top. The sample is restricted such that if the share of IDP arriving at a municipality make up x percent of the population, then the bottom or the top x percent of the wage earners are removed from that municipality. These bounded estimates are presented in Table 26. Columns 1-3 show the lower bound effect, which is negative but close to zero, and columns 4-6 show the upper

bound impact, negative, relatively large and statistically significant.

7.5.2 Long-run estimates

This section reports on robustness checks performed for the public goods analysis using the census. The main findings, an increase in the availability of trash collection services, and a decrease in access to piped water, are evaluated through various alternative specifications.

The results are presented in Tables 27 through 30. Tables 27 and 29 for low-skilled households, and tables 28 and 30 for high-skilled ones. Column 1 shows the results from the preferred specification of the analysis (presented in the sections above) for comparison. Column 2 restricts the analysis to urban households. The analysis is run on subsamples of the municipalities, excluding the 13 largest cities (from the DANE surveys, column 3), and excluding the top 5% receiving municipalities (column 4), and the top 5% municipalities with the most expulsions (columns 5). Column 6 uses an alternative measure of the migration rate defined as:

$$d_{ct} = \frac{100}{pop_{c1993}} \times m_{ct}$$

given the concern that pop_{ct} is affected by internal displacement. Column 7 controls for the number of expulsions (e_{ct}) that the municipality experienced, as a proxy for levels of violence in these locations which could also affect the outcomes of interest. Column 8 uses net displacement as a share of the population (total arrivals - total expulsions) as the dependent variable.

Excluding the municipalities with the most arrivals (column 3), makes the instrument considerably weaker and the estimates more imprecise. The coefficient for water access on low-skilled households becomes positive and insignificant under this specification (Table 27). It may be the case that the effect on piped water is especially concentrated in municipalities with a large number of arrivals. However, the coefficient for high-skilled households remains large and negative (Table 28), and not significantly different from the other estimates, though imprecise.

For the most part, the results for public goods are fairly robust to these alternative specifications. Local residents experience a reduction in access to piped water and an increase in access to trash collection following an inflow of internally displaced people.

8 Conclusion

The impact that forced migration has on receiving cities is broad and multidimensional. In this paper I present a spatial equilibrium model to illustrate the mechanisms by which civil conflict induces displacement and how displacement in turn affects residents at receiving locations. I estimate the magnitude of these effects using an enclave instrument constructed with reference to previous migration studies. The instrument exploits displacement driven by violence and past waves of migrants to predict the location decision of displaced individuals.

This paper presents evidence of internal displacement having a large short-run impact on local wages across Colombian municipalities. The labour supply shock is absorbed through an initial reduction of wages, not surprising given that most displaced individuals work in the informal sector where minimum wages do not bind. More interestingly, these effects seem to dissipate in the longer-run analysis. Labour reallocation may play an important role in dissipating these negative effects, as indicated by the fact that

following inflows of forced migrants, out-migration of local residents increases. This result is congruent with Monras (2015)'s recent study of Mexican immigrants in the U.S.

The negative impact on wages, however, persists in the long-run for low-skilled women. Low-skilled women may be less mobile, as suggested by the fact that they react the least in the short-run to the arrival of displaced people, in terms of their out-migration rates. This low mobility, coupled with the fact that internally displaced women adapt well to new labour markets (Calderón, Ibáñez and Gáfaro, 2011), make low-skilled local women most vulnerable to the arrival of displaced individuals, both in the short-run and in the long-run.

The arrival of internally displaced people also results in higher access to trash collection services and reduced access to piped water for local residents. Future work studying the process of public resource allocation at the municipal level could help explain the underlying incentives driving these patterns. In particular, such work could investigate how local governments choose to provide public services which vary in their labour-capital intensity following changes to relative costs, induced in this case by a labour supply shock.

Conflict-induced population displacement will have impacts on other amenities related to the well-being of residents at destination cities, yet not explicitly studied in the empirical analysis presented. Road congestion, pollution and crime are important factors likely to be affected by the arrival of large numbers of forced migrants, and it is not clear if the impact on these outcomes is homogenous across skill and gender groups. Finally, the impact of displacement on housing costs may be more clearly studied with alternative datasets. These issues remain important avenues for future research.

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Table 1: Individual Summary Statistics (ECH Survey)

	(1) Full Sample		(2) <Secondary		(3) Secondary+	
	mean	sd	mean	sd	mean	sd
Male	0.63	0.48	0.67	0.47	0.54	0.50
Years of education	7.25	4.63	4.55	2.69	12.7	2.39
Age	36.9	12.9	38.4	13.7	34.1	10.5
Married (or civil union)	0.58	0.49	0.60	0.49	0.54	0.50
Urban	0.70	0.46	0.60	0.49	0.90	0.30
(Log of) Real wages	11.9	1.00	11.6	0.93	12.4	0.90
Observations	937964		535821		402143	

Notes: The table reports the weighted average of the individual characteristics in the ECH sample, for all years (1997-2004), using the survey weights. Column (2) summarizes variables for individuals with less than secondary school completed, and column (3) for those who have completed secondary school or above.

Table 2: Household Summary Statistics (2005 Census)

	(1) Full Sample		(2) Low-Skilled		(3) High-Skilled		(4) IDP	
	mean	sd	mean	sd	mean	sd	mean	sd
Household characteristics:								
% Children in School	0.91	0.26	0.88	0.30	0.96	0.18	0.83	0.35
Electricity (0/1)	0.94	0.24	0.91	0.29	0.99	0.12	0.87	0.34
Water Supply (0/1)	0.83	0.38	0.75	0.43	0.94	0.24	0.74	0.44
Trash Collection (0/1)	0.75	0.43	0.64	0.48	0.93	0.25	0.70	0.46
Wealth index	-0.064	2.06	-0.79	1.93	1.06	1.71	-1.08	1.92
Household education (share adults):								
literate	0.93	0.20	0.89	0.24	1.00	0.058	0.90	0.23
with less than primary	0.069	0.20	0.11	0.24	0	0	0.093	0.22
with primary	0.35	0.37	0.57	0.31	0	0	0.46	0.39
with secondary	0.44	0.38	0.27	0.27	0.70	0.38	0.35	0.37
with tertiary	0.15	0.29	0.042	0.13	0.30	0.38	0.097	0.25
Household composition:								
% male	0.48	0.20	0.49	0.19	0.46	0.21	0.48	0.20
senior (65+)	0.14	0.42	0.15	0.41	0.14	0.42	0.100	0.35
adult (25-65)	2.03	0.87	2.16	0.93	1.84	0.72	1.90	0.81
young adult (15-24)	0.61	0.88	0.71	0.95	0.45	0.72	0.67	0.93
children (5-14)	1.72	0.92	1.84	1.00	1.53	0.74	1.94	1.08
babies (0-4)	0.54	0.78	0.62	0.86	0.41	0.64	0.71	0.88
HH age (average)	24.6	7.46	24.8	7.62	24.4	7.20	22.4	6.93
Observations	401155		287818		113337		6437	

Notes: The table reports the weighted average of household characteristics by skill group from the 2005 census. High skilled households are defined as those in which all adult members (of working ages 16-65) have secondary education or above. Columns 1-3 include only non-movers, defined as people who lived in the same municipality five years prior. Column (4) reports statistics for self-identified IDP households in the census.

Table 3: Municipality Summary Statistics

	(1) All municipalities	
	mean	sd
IDP arriving between 2000-2004 (per 100 population)	4.78	7.84
Share urban	0.50	0.24
Population	76968.9	333095.2
1993 Census characteristics:		
Unclassified workers	0.23	0.097
Unemployed	0.034	0.027
Unpaid family worker	0.041	0.038
Self-employed	0.34	0.10
Male	0.51	0.021
Age	25.2	2.04
Migrants	0.35	0.17
Agricultural worker	0.14	0.073
Racial minority	0.039	0.15
Number of rooms	3.33	0.43
Dirt floor	0.24	0.20
School years	4.55	1.09
Kids in school	0.46	0.071
Wealth index	-0.67	0.85
Electricity	0.74	0.23
Water Supply	0.63	0.23
Trash collection	0.34	0.25
Population 1993	71901.5	276034.5
Additional controls:		
Population 1985	40958.3	102983.4
(Log of) Total area	6.53	1.14
Avg. Precipitation	3767.0	3210.9
Soil aptitude index	2.79	1.12
Erosion index	1.90	0.91
Latitude	-75.0	1.41
Longitude	5.79	2.62
Altitude	1072.1	856.9
Observations	518	

Notes: The table reports the mean and standard deviation of variables used as controls at the municipal level, from the 2005 and 1993 census.

Figure 1: Internal Displacement in Colombia per Year

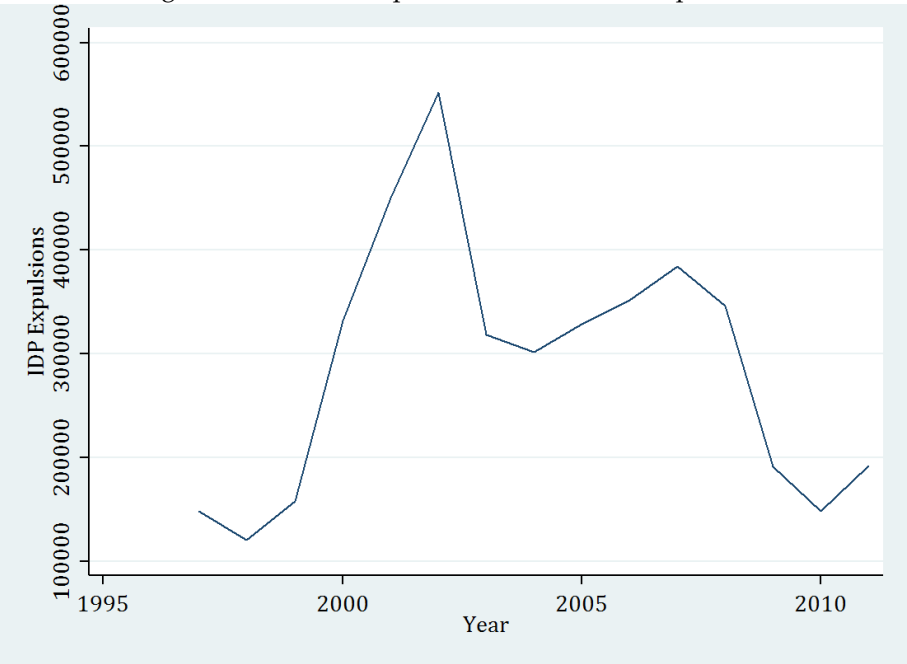

Figure 2: Number of IDP arrivals (2000-2004) per 100 population

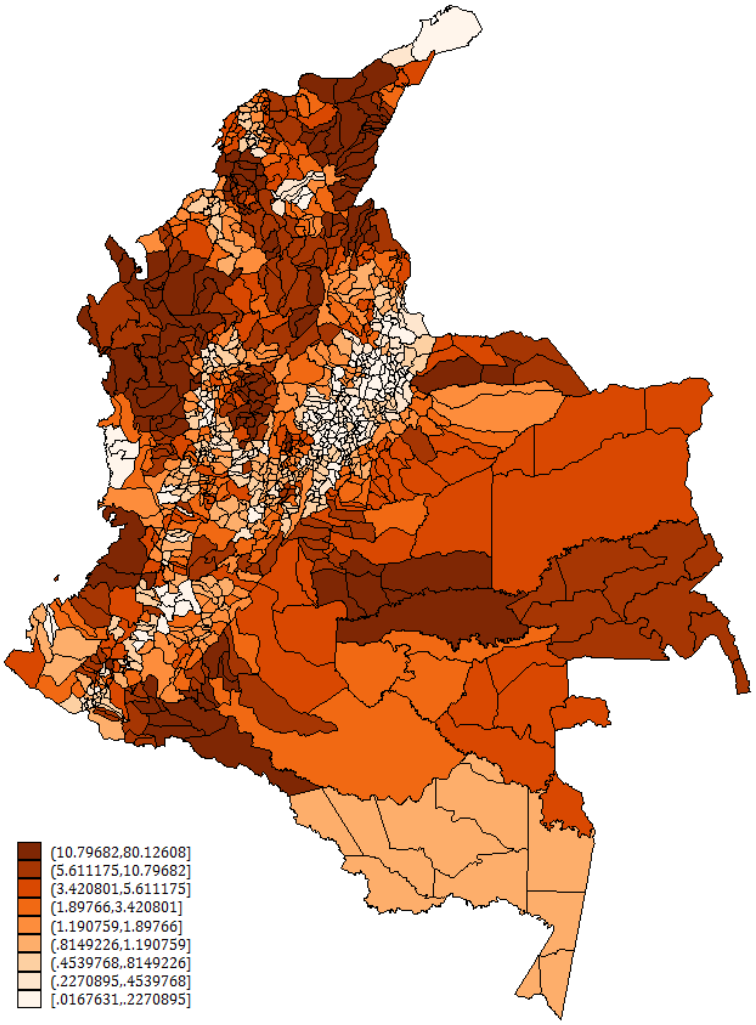

Table 4: IV First Stage (ECH Sample)

	(1)	(2)	(3)	(4)	(5)	(6)
Enclave IV (t-1)	1.309***	1.331***	1.280***			
	(0.224)	(0.226)	(0.221)			
Enclave IV (1999-2003)				0.851***	0.839***	0.861***
				(0.158)	(0.161)	(0.149)
N	874574	490514	384060	208153	112489	95664
N-clusters	267	267	266	285	285	283
Skills	All	Low-skilled	High-skilled	All	Low-skilled	High-skilled
Specification	Short-run	Short-run	Short-run	Long-run	Long-run	Long-run
Municipal F.E.	Yes	Yes	Yes	No	No	No
Municipal Trends	Yes	Yes	Yes	No	No	No
Department F.E.	No	No	No	Yes	Yes	Yes
Municipal Controls	No	No	No	Yes	Yes	Yes

Notes: The table reports the first stage estimates from regressing the number of IDP arrivals on predicted arrivals using the enclave instrument. The short-run specification in columns 1-3 includes years 1997-2004. The long-run specification in columns 4-6 uses only 2004. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 5: IV First Stage (2005 Census)

	(1)	(2)	(3)
Enclave IV (2000-2004)	0.654***	0.637***	0.672***
	(0.134)	(0.139)	(0.125)
N	851964	573077	278887
N-clusters	517	517	517
Skills	All	Low-Skilled	High-Skilled
Specification	Long-run	Long-run	Long-run
Department F.E.	Yes	Yes	Yes
Municipal Controls	Yes	Yes	Yes

Notes: The table reports the first stage estimates from regressing the number of IDP arrivals on predicted arrivals using the enclave instrument, using the 2005 Census. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 6: Short-run effect on wages

	(1) OLS	(2) OLS	(3) OLS	(4) IV	(5) IV	(6) IV
Share of displaced (t-1)	-0.00328	-0.00216	-0.00663*	-0.0142*	-0.0151	-0.0115**
	(0.00404)	(0.00479)	(0.00376)	(0.00848)	(0.0103)	(0.00528)
N	874893	490798	384095	874574	490514	384060
N-clusters	268	268	267	267	267	266
F first stage				34.15	34.54	33.50
Skills	All	Low-skilled	High-skilled	All	Low-skilled	High-skilled
Specification	Short-run	Short-run	Short-run	Short-run	Short-run	Short-run
Municipal F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Municipal Trends	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressing the number of IDP arriving at $t-1$ as a share of the total population, on the log of real wages for individuals in the ECH survey (1996-2004) at time t. All specifications include individual controls (gender, education, potential experience), municipal fixed effects, year fixed effects and municipal specific linear trends. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 7: Short-run effect on wages (by gender and skill)

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) IV	(6) IV	(7) IV	(8) IV
Share of displaced (t-1)	0.000477	-0.00489	-0.00761	-0.00865	-0.0122	-0.00789	-0.0219**	-0.0170***
	(0.00532)	(0.00606)	(0.00529)	(0.00532)	(0.0108)	(0.0104)	(0.0109)	(0.00539)
N	303861	204238	186937	179857	303713	204214	186801	179846
N-clusters	268	266	268	266	267	265	267	265
F first stage					35.25	30.05	32.45	35.66
Skills	Low-skilled	High-skilled	Low-skilled	High-skilled	Low-skilled	High-skilled	Low-skilled	High-skilled
Gender	Male	Male	Female	Female	Male	Male	Female	Female
Specification	Short-run	Short-run	Short-run	Short-run	Short-run	Short-run	Short-run	Short-run
Municipal F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipal Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressing the number of IDP arriving at $t-1$ as a share of the total population, on the log of real wages for individuals in the ECH survey (1996-2004) at time t. All specifications include individual controls (education, potential experience), municipal fixed effects, year fixed effects and municipal specific linear trends. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 8: Long-run effect on wages

	(1) OLS	(2) OLS	(3) OLS	(4) IV	(5) IV	(6) IV
Share of displaced (1999-2003)	0.00362*	0.00380*	0.00419**	0.00218	0.00188	0.00656
	(0.00190)	(0.00229)	(0.00202)	(0.00402)	(0.00446)	(0.00556)
N	208153	112489	95664	208153	112489	95664
N-clusters	285	285	283	285	285	283
F first stage				28.80	26.79	33.70
Skills	All	Low-skilled	High-skilled	All	Low-skilled	High-skilled
Specification	Long-run	Long-run	Long-run	Long-run	Long-run	Long-run
Department F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Municipal Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressing the number of IDP arriving between 1999-2003 as a share of the total population, on the log of real wages for individuals in the ECH survey in 2004. All specifications include individual controls (gender, education, potential experience), department fixed effects, and municipal controls. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 9: Long-run effect on wages (by gender and skill)

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) IV	(6) IV	(7) IV	(8) IV
Share of displaced (1999-2003)	0.00476**	0.00284	0.0000904	0.00600**	0.00643	0.00475	-0.0166**	0.00601
	(0.00231)	(0.00278)	(0.00459)	(0.00291)	(0.00470)	(0.00579)	(0.00774)	(0.00676)
N	71002	50951	41487	44713	71002	50951	41487	44713
N-clusters	285	283	285	282	285	283	285	282
F first stage					27.52	32.84	25.76	34.92
Skills	Low-skilled	High-skilled	Low-skilled	High-skilled	Low-skilled	High-skilled	Low-skilled	High-skilled
Gender	Male	Male	Female	Female	Male	Male	Female	Female
Specification	Long-run	Long-run	Long-run	Long-run	Long-run	Long-run	Long-run	Long-run
Department F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipal Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressing the number of IDP arriving between 1999-2003 as a share of the total population, on the log of real wages for individuals in the ECH survey in 2004. All specifications include individual controls (education, potential experience), department fixed effects, and municipal controls. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 10: Long-run effect on wealth index

	(1) OLS	(2) OLS	(3) OLS	(4) IV	(5) IV	(6) IV
Share of displaced (2000-2004)	-0.00209	-0.00371**	0.00143	-0.0000947	-0.00103	-0.000474
	(0.00161)	(0.00164)	(0.00204)	(0.00562)	(0.00588)	(0.00575)
N	819362	552247	267115	819362	552247	267115
N-clusters	517	517	517	517	517	517
Skills	All	Low-Skilled	High-Skilled	All	Low-Skilled	High-Skilled
Specification	Long-run	Long-run	Long-run	Long-run	Long-run	Long-run
Department F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Municipal Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressing the number of IDP arriving between 2000-2004 as a share of the total population, on the wealth index for households in the 2005 Census. All specifications include household head individual controls (gender, education, age), household controls (composition and education), department fixed effects, and municipal controls. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 11: Long-run effect on wealth index (by gender and skills)

	(1)	(2)	(3)	(4)
Share of displaced (2000-2004)	-0.000181	-0.000757	-0.00442	-0.000721
	(0.00651)	(0.00654)	(0.00532)	(0.00570)
N	420542	179953	131705	87162
N-clusters	517	517	517	517
F first stage	19.75	30.13	23.45	30.05
Skills	Low-Skilled	High-Skilled	Low-Skilled	High-Skilled
Household head gender	Male	Male	Female	Female
Department F.E.	Yes	Yes	Yes	Yes
Municipal Controls	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressing the number of IDP arriving between 2000-2004 as a share of the total population, on the wealth index for households in the 2005 Census, by gender of the household head. All specifications include household head individual controls (education, age), household controls (composition and education), department fixed effects, and municipal controls. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 12: Long-run effect on access to electricity

	(1) OLS	(2) OLS	(3) OLS	(4) IV	(5) IV	(6) IV
Share of displaced (2000-2004)	0.000296	0.000231	0.000184	0.000803	0.000598	-0.000747
	(0.000339)	(0.000385)	(0.000318)	(0.00167)	(0.00151)	(0.00164)
N	851964	573077	278887	851964	573077	278887
N-clusters	517	517	517	517	517	517
Skills	All	Low-Skilled	High-Skilled	All	Low-Skilled	High-Skilled
Specification	Long-run	Long-run	Long-run	Long-run	Long-run	Long-run
Department F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Municipal Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressing the number of IDP arriving between 2000-2004 as a share of the total population, on access to electricity for households in the 2005 Census. All specifications include household head individual controls (gender, education, age), household controls (composition and education), department fixed effects, and municipal controls. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 13: Long-run effect on access to electricity (by gender and skills)

	(1) IV	(2) IV	(3) IV	(4) IV
Share of displaced (2000-2004)	0.000753	-0.00115	0.000796	-0.000216
	(0.00162)	(0.00219)	(0.00150)	(0.00147)
N	435198	187493	137879	91394
N-clusters	517	517	517	517
Skills	Low-Skilled	High-Skilled	Low-Skilled	High-Skilled
Household head gender	Male	Male	Female	Female
Department F.E.	Yes	Yes	Yes	Yes
Municipal Controls	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressing the number of IDP arriving between 2000-2004 as a share of the total population, on access to electricity for households in the 2005 Census, by gender of the household head. All specifications include household head individual controls (education, age), household controls (composition and education), department fixed effects, and municipal controls. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 14: Long-run effect on access to piped water

	(1) OLS	(2) OLS	(3) OLS	(4) IV	(5) IV	(6) IV
Share of displaced (2000-2004)	-0.00237**	-0.00234**	-0.00260*	-0.00295	-0.00332	-0.00759***
	(0.00103)	(0.000989)	(0.00138)	(0.00301)	(0.00263)	(0.00241)
N	851964	573077	278887	851964	573077	278887
N-clusters	517	517	517	517	517	517
Skills	All	Low-Skilled	High-Skilled	All	Low-Skilled	High-Skilled
Specification	Long-run	Long-run	Long-run	Long-run	Long-run	Long-run
Department F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Municipal Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressing the number of IDP arriving between 2000-2004 as a share of the total population, on access to piped water for households in the 2005 Census. All specifications include household head individual controls (gender, education, age), household controls (composition and education), department fixed effects, and municipal controls. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 15: Long-run effect on access to piped water (by gender and skills)

	(1) IV	(2) IV	(3) IV	(4) IV
Share of displaced (2000-2004)	-0.00255	-0.00627***	-0.00381	-0.00859***
	(0.00281)	(0.00240)	(0.00271)	(0.00249)
N	435198	187493	137879	91394
N-clusters	517	517	517	517
Skills	Low-Skilled	High-Skilled	Low-Skilled	High-Skilled
Household head gender	Male	Male	Female	Female
Department F.E.	Yes	Yes	Yes	Yes
Municipal Controls	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressing the number of IDP arriving between 2000-2004 as a share of the total population, on access to piped water for households in the 2005 Census, by gender of the household head. All specifications include household head individual controls (education, age), household controls (composition and education), department fixed effects, and municipal controls. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 16: Long-run effect on access to trash collection service

	(1) OLS	(2) OLS	(3) OLS	(4) IV	(5) IV	(6) IV
Share of displaced (2000-2004)	0.00108	0.000525	0.00246**	0.00836***	0.00602**	0.0105***
	(0.000704)	(0.000623)	(0.00104)	(0.00286)	(0.00296)	(0.00307)
N	851964	573077	278887	851964	573077	278887
N-clusters	517	517	517	517	517	517
Skills	All	Low-Skilled	High-Skilled	All	Low-Skilled	High-Skilled
Specification	Long-run	Long-run	Long-run	Long-run	Long-run	Long-run
Department F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Municipal Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressing the number of IDP arriving between 2000-2004 as a share of the total population, on access to trash collection services for households in the 2005 Census. All specifications include household head individual controls (gender, education, age), household controls (composition and education), department fixed effects, and municipal controls. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 17: Long-run effect on access to trash collection service (by gender and skills)

	(1) IV	(2) IV	(3) IV	(4) IV
Share of displaced (2000-2004)	0.00599**	0.0117***	0.00707**	0.00900***
	(0.00273)	(0.00325)	(0.00284)	(0.00295)
N	435198	187493	137879	91394
N-clusters	517	517	517	517
Skills	Low-Skilled	High-Skilled	Low-Skilled	High-Skilled
Household head gender	Male	Male	Female	Female
Department F.E.	Yes	Yes	Yes	Yes
Municipal Controls	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressing the number of IDP arriving between 2000-2004 as a share of the total population, on access to trash collection services for households in the 2005 Census, by gender of the household head. All specifications include household head individual controls (education, age), household controls (composition and education), department fixed effects, and municipal controls. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 18: Impact on the rate of out-migration

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) IV	(6) IV	(7) IV	(8) IV
Share of displaced (t-1)	0.0327**	0.0512	0.0150	0.0553	0.282***	0.296*	0.226***	0.321*
	(0.0152)	(0.0443)	(0.0174)	(0.0447)	(0.0768)	(0.161)	(0.0814)	(0.180)
N	2660	2660	2660	2660	2645	2645	2645	2645
N-clusters	532	532	532	532	529	529	529	529
Skills	Low-skilled	High-skilled	Low-skilled	High-skilled	Low-skilled	High-skilled	Low-skilled	High-skilled
Gender	Male	Male	Female	Female	Male	Male	Female	Female
F first stage					19.969	20.192	19.351	20.197

Notes: The table reports estimates from regressing the number of IDP arriving at time $t-1$ as a share of the total population, on the rate of out-migration at time t. All specifications include municipality fixed effects, year fixed effects and the out-migration rate at time $t-1$ as a control. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 19: Impact on the rate of out-migration: Long-run

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) IV	(6) IV	(7) IV	(8) IV
Share of displaced (2000-2004)	0.0552	0.0359	0.0624*	0.115***	0.0880	0.165	0.140	0.297**
	(0.0350)	(0.0690)	(0.0348)	(0.0397)	(0.111)	(0.168)	(0.101)	(0.118)
N	516	516	516	516	516	516	516	516
Skills	Low-skilled	High-skilled	Low-skilled	High-skilled	Low-skilled	High-skilled	Low-skilled	High-skilled
Gender	Male	Male	Female	Female	Male	Male	Female	Female
F first stage					11.257	11.926	11.232	11.732

Notes: The table reports estimates from regressing the number of IDP arriving between 2000-2004 as a share of the total population, on the rate of out-migration during the same period. All specifications include department fixed effects, municipal controls and the out-migration rate before 2000 (from birth) as a control. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown *p<0.10, **p<0.05, ***p<0.01.

Table 20: Sample restrictions (by city)

	(1)	(2)	(3)	(4)	(5)	(6)
Share of displaced (t-1)	0.0231	0.0186	-0.0101	-0.0163*	-0.0159	-0.0151**
	(0.0894)	(0.125)	(0.0678)	(0.00844)	(0.00972)	(0.00603)
N	605977	310949	295028	268597	179565	89032
N_clust	13	13	13	254	254	253
F_firststage	4.105	2.579	7.138	50.66	47.69	56.21
Skills	All	Low-Skilled	High-Skilled	All	Low-Skilled	High-Skilled
Sample	Cities Only	Cities Only	Cities Only	No Cities	No Cities	No Cities

Notes: The table reports the estimates from regressing the share of IDP arriving on the log of real wages from the DANE sample using the short-run specification. All specifications include municipality fixed effects, municipality specific trends, individual controls (gender, marital status, education, experience, rural). Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown below *p<0.10, ** p<0.05, ***p<0.01.

Table 21: Sample restrictions (by cell sample size)

	(1)	(2)	(3)	(4)	(5)	(6)
Share of displaced (t-1)	-0.0152	-0.0155	-0.0129**	-0.0297*	-0.0327	-0.0129
	(0.00938)	(0.0111)	(0.00574)	(0.0171)	(0.0222)	(0.00974)
N	786796	439763	347033	539092	299946	239146
N_clust	217	217	217	162	162	162
F_firststage	30.33	30.79	29.40	11.22	9.385	15.57
Skills	All	Low-Skilled	High-Skilled	All	Low-Skilled	High-Skilled
Sample	Sample>0.05	Sample>0.05	Sample>0.05	Sample>0.1	Sample>0.1	Sample>0.1

Notes: The table reports the estimates from regressing the share of IDP arriving on the log of real wages from the DANE sample using the short-run specification. All specifications include municipality fixed effects, municipality specific trends, individual controls (gender, marital status, education, experience, rural). Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown below *p<0.10, ** p<0.05, ***p<0.01.

Table 22: Sample restrictions (by cell sample size)

	(1)	(2)	(3)	(4)	(5)	(6)
Share of displaced (t-1)	-0.0125	-0.0116	-0.0131**	-0.0363**	-0.0368*	-0.0317***
	(0.00807)	(0.00932)	(0.00577)	(0.0161)	(0.0208)	(0.0117)
N	868618	485900	382718	847500	469505	377995
N_clust	255	255	255	228	228	228
F_firststage	34.71	34.58	34.18	20.73	21.05	19.13
Skills	All	Low-Skilled	High-Skilled	All	Low-Skilled	High-Skilled
Sample	Sample>50	Sample>50	Sample>50	Sample>100	Sample>100	Sample>100

Notes: The table reports the estimates from regressing the share of IDP arriving on the log of real wages from the DANE sample using the short-run specification. All specifications include municipality fixed effects, municipality specific trends, individual controls (gender, marital status, education, experience, rural). Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown below *p<0.10, ** p<0.05, ***p<0.01.

Table 23: Sample restrictions (by year)

	(1)	(2)	(3)	(4)	(5)	(6)
Share of displaced (t-1)	-0.0506***	-0.0569**	-0.0343***	-0.0330**	-0.0372**	-0.0229**
	(0.0193)	(0.0239)	(0.0122)	(0.0138)	(0.0177)	(0.0105)
N	833786	463868	369918	790402	434735	355667
N_clust	265	265	264	264	264	263
F_firststage	20.17	20.31	19.55	26.08	25.98	26.06
Skills	All	Low-Skilled	High-Skilled	All	Low-Skilled	High-Skilled
Sample	1999+	1999+	1999+	2000+	2000+	2000+

Notes: The table reports the estimates from regressing the share of IDP arriving on the log of real wages from the DANE sample using the short-run specification. All specifications include municipality fixed effects, municipality specific trends, individual controls (gender, marital status, education, experience, rural). Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown below *p<0.10, ** p<0.05, ***p<0.01.

Table 24: Sample restrictions (by year)

	(1)	(2)	(3)	(4)	(5)	(6)
Share of displaced (t-1)	-0.0207*	-0.0211	-0.0170**	-0.0137*	-0.0142	-0.00965**
	(0.0124)	(0.0138)	(0.00736)	(0.00768)	(0.00915)	(0.00448)
N	672571	383043	289528	484418	281894	202524
N_clust	264	264	263	207	207	207
F_firststage	31.52	35.83	24.84	47.55	53.06	34.12
Skills	All	Low-Skilled	High-Skilled	All	Low-Skilled	High-Skilled
Sample	<2004	<2004	<2004	<2003	<2003	<2003

Notes: The table reports the estimates from regressing the share of IDP arriving on the log of real wages from the DANE sample using the short-run specification. All specifications include municipality fixed effects, municipality specific trends, individual controls (gender, marital status, education, experience, rural). Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown below *p<0.10, ** p<0.05, ***p<0.01.

Table 25: Year groups

	(1)	(2)	(3)	(4)	(5)	(6)
Share of displaced (t-1)	-0.0107*	-0.00910	-0.0108***	-0.0158	-0.0221*	-0.0145
	(0.00647)	(0.00772)	(0.00417)	(0.0139)	(0.0131)	(0.0182)
N	305796	184861	120935	748643	341398	407245
N-clusters	189	189	189	264	261	264
F first stage	99.36	92.62	108.6	23.42	26.87	22.31
Skills	All	Low-Skilled	High-Skilled	All	Low-Skilled	High-Skilled
Years	98-01	98-01	98-01	01-04	01-04	01-04

Notes: The table reports the estimates from regressing the share of IDP arriving on the log of real wages from the DANE sample using the short-run specification. All specifications include municipality fixed effects, municipality specific trends, individual controls (gender, marital status, education, experience, rural). Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown below *p<0.10, ** p<0.05, ***p<0.01.

Table 26: Bounds

	(1)	(2)	(3)	(4)	(5)	(6)
Share of displaced (t-1)	-0.00498	-0.00238	-0.00649	-0.0233**	-0.0196	-0.0360***
	(0.00748)	(0.00901)	(0.00549)	(0.0117)	(0.0124)	(0.00695)
N	867695	485094	382601	866317	489247	377070
N_clust	267	267	266	267	267	265
F_firststage	34.15	30.73	32.64	31.15	32.15	30.27
Skills	All	Low-Skilled	High-Skilled	All		
Bound	Low	Low	Low	High	High	High

Notes: The table reports the estimates from regressing the share of IDP arriving on the log of real wages from the DANE sample using the short-run specification. All specifications include municipality fixed effects, municipality specific trends, individual controls (gender, marital status, education, experience, rural). Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown below *p<0.10, ** p<0.05, ***p<0.01.

Table 27: Robustness checks, impact on piped water access: Low-skilled

	(1) IV	(2) IV	(3) IV	(4) IV	(5) IV	(6) IV	(7) IV	(8) IV
Share of displaced (2000-2004)	-0.00308	-0.00507*	0.00206	-0.00391	-0.00511*		-0.00404	
	(0.00262)	(0.00259)	(0.00507)	(0.00273)	(0.00285)		(0.00315)	
Share of disp. (2000-2004) relative to 1993 pop						-0.00406		
						(0.00277)		
Net displacement								-0.00312
								(0.00267)
N	573077	282082	551865	553432	505159	573077	573077	573077
N-clusters	517	517	492	492	504	517	517	517
Excluded	None	Urban	Most arrivals	Most expulsions	13 cities			
Alternative						Pop share	Control expulsions	Net displacement
F first stage	20.869	23.344	17.141	21.073	19.029	13.613	12.890	20.195
Skills	Low-skilled	Low-skilled	Low-skilled	Low-skilled	Low-skilled	Low-skilled	Low-skilled	Low-skilled

The table reports estimates from regressing the number of IDP arriving in the previous five years as a share of the total population, on local access to piped water. All regressions use the preferred specification: include individual and household controls (education and demographic characteristics), municipal controls, geographic controls (altitude, longitude, latitude, avg. precipitation, soil erosion), and past outcome controls calculated from the 1993 census (education level, share agricultural workers, share of households with electricity, water supply, trash collection, kids in school, etc). See section 7.5 for details on robustness checks. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown below *p<0.10, ** p<0.05, ***p<0.01.

Table 28: Robustness checks, impact on piped water access: High-skilled

	(1) IV	(2) IV	(3) IV	(4) IV	(5) IV	(6) IV	(7) IV	(8) IV
Share of displaced (2000-2004)	-0.00749***	-0.00704***	-0.00906	-0.00665***	-0.00733***		-0.00896***	
	(0.00246)	(0.00247)	(0.00611)	(0.00241)	(0.00241)		(0.00282)	
Share of disp. (2000-2004) relative to 1993 pop						-0.00628***		
						(0.00230)		
Net displacement								-0.00761***
								(0.00244)
N	278887	235611	271389	273450	180541	278887	278887	278887
N-clusters	517	517	492	492	504	517	517	517
Excluded	None	Urban	Most arrivals	Most expulsions	13 cities			
Alternative						Pop share	Control expulsions	Net displacement
F first stage	28.719	32.305	14.004	31.196	29.919	26.864	20.546	28.062
Skills	High-skilled	High-skilled	High-skilled	High-skilled	High-skilled	High-skilled	High-skilled	High-skilled

The table reports estimates from regressing the number of IDP arriving in the previous five years as a share of the total population, on local access to piped water. All regressions use the preferred specification: include individual and household controls (education and demographic characteristics), municipal controls, geographic controls (altitude, longitude, latitude, avg. precipitation, soil erosion), and past outcome controls calculated from the 1993 census (education level, share agricultural workers, share of households with electricity, water supply, trash collection, kids in school, etc). See section 7.5 for details on robustness checks. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown below *p<0.10, ** p<0.05, ***p<0.01.

Table 29: Robustness checks, impact on trash collection access: Low-skilled

	(1) IV	(2) IV	(3) IV	(4) IV	(5) IV	(6) IV	(7) IV	(8) IV
Share of displaced (2000-2004)	0.00614**	0.0102***	0.0158***	0.00523*	0.00617**		0.00644*	
	(0.00272)	(0.00352)	(0.00556)	(0.00268)	(0.00309)		(0.00333)	
Share of disp. (2000-2004) relative to 1993 pop						0.00763***		
						(0.00272)		
Net displacement								0.00624**
								(0.00276)
N	573077	282082	551865	553432	505159	573077	573077	573077
N-clusters	517	517	492	492	504	517	517	517
Excluded	None	Urban	Most arrivals	Most expulsions	13 cities			
Alternative						Pop share	Control expulsions	Net displacement
F first stage	20.869	23.344	17.141	21.073	19.029	13.613	12.890	20.195
Skills	Low-skilled	Low-skilled	Low-skilled	Low-skilled	Low-skilled	Low-skilled	Low-skilled	Low-skilled

The table reports estimates from regressing the number of IDP arriving in the previous five years as a share of the total population, on local access to piped water. All regressions use the preferred specification: include individual and household controls (education and demographic characteristics), municipal controls, geographic controls (altitude, longitude, latitude, avg. precipitation, soil erosion), and past outcome controls calculated from the 1993 census (education level, share agricultural workers, share of households with electricity, water supply, trash collection, kids in school, etc). See section 7.5 for details on robustness checks. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown below *p<0.10, ** p<0.05, ***p<0.01.

Table 30: Robustness checks, impact on trash collection access: High-skilled

	(1) IV	(2) IV	(3) IV	(4) IV	(5) IV	(6) IV	(7) IV	(8) IV
Share of displaced (2000-2004)	0.0105***	0.0101***	0.0246***	0.00942***	0.0109***		0.0109***	
	(0.00304)	(0.00339)	(0.00826)	(0.00297)	(0.00335)		(0.00354)	
Share of disp. (2000-2004) relative to 1993 pop						0.0102***		
						(0.00251)		
Net displacement								0.0106***
								(0.00312)
N	278887	235611	271389	273450	180541	278887	278887	278887
N-clusters	517	517	492	492	504	517	517	517
Excluded	None	Urban	Most arrivals	Most expulsions	13 cities			
Alternative						Pop share	Control expulsions	Net displacement
F first stage	28.719	32.305	14.004	31.196	29.919	26.864	20.546	28.062
Skills	High-skilled	High-skilled	High-skilled	High-skilled	High-skilled	High-skilled	High-skilled	High-skilled

The table reports estimates from regressing the number of IDP arriving in the previous five years as a share of the total population, on local access to piped water. All regressions use the preferred specification: include individual and household controls (education and demographic characteristics), municipal controls, geographic controls (altitude, longitude, latitude, avg. precipitation, soil erosion), and past outcome controls calculated from the 1993 census (education level, share agricultural workers, share of households with electricity, water supply, trash collection, kids in school, etc). See section 7.5 for details on robustness checks. Clustered standard errors at the municipal level are reported in parenthesis. Significance levels shown below *p<0.10, ** p<0.05, ***p<0.01.