Migration and Education Choices: How Low-Skilled Migration Shapes the Educational Attainment of Mexican Youth

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Abstract

This paper examines the impact of low-skilled migration on educational attainment in developing countries, specifically focusing on Mexico. While previous research has extensively studied brain drain (the migration of high-skilled workers to developed countries), this study delves into the lesser-discussed phenomenon of "brawn drain", which involves the migration of low-skilled workers to developed nations. The paper analyzes data from the Mexican Migration Project (1990-2017) to understand how the presence of low-skilled migrant elders in households affects the educational decisions of young individuals (ages 17 to 25) in high-migration communities. The results reveal a strong negative impact of family-level exposure to low-skilled U.S. migrants on Mexican youth, discouraging them from pursuing further education. The findings suggest that low-skilled migration can hinder human capital accumulation in origin developing countries. The study explores other factors, such as community-level influences and the presence of high-skilled individuals as role models, on educational outcomes. Overall, the paper contributes valuable insights to the understanding of how low-skilled migration affects human capital development in developing countries like Mexico.

1. Introduction

In the economic literature, the impact of high-skilled migrant workers from developing to developed countries (brain drain) on human capital accumulation in developing countries has been widely studied (Bhagwati and Hamada, 1974). This paper primarily focuses on the impact of low-skilled migration and its impact on human capital building in the context of a developing country. The migration of low-skilled and/or unskilled workers from developing countries to developed countries can encourage younger people in schools to choose migration over seeking more education. If the wage and benefits from low-skilled jobs in the destination country are sufficiently higher than the low-skilled wage in the origin country, then it incentivizes low-skilled migration. Between two countries, a developing and a developed country, migration is responsive to their wage differences, labor supply changes in the developed destination country and low cost of migration. U.S. – Mexico migration of workers, especially low-skilled workers has been found to be responsive to strong historical migration networks, and labor supply changes in the U.S (Hanson and McIntosh, 2010).

This paper shows that low-skilled migration between developing and developed countries can potentially reduce human capital accumulation in the developing country. Some of the earliest works that focus on human capital accumulation and migration address the issue of 'brain drain' - the transfer of high-skilled labor from developing to developed countries resulting in a smaller human capital stock in the origin developing countries (Bhagwati and Wilson, 1989). A strand of mostly theoretical literature argued that the possibility of migration to a higher wage developed country raises the return to education, thus leading to

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an increase in human capital formation, which can counter the negative effect of brain drain (Beine et al., 2001, 2008; Mountford, 1997, 2011; Fan and Stark, 2007; Stark and Wang, 2002; Stark et al., 1997; Grogger and Hanson, 2022). We focus on a migration channel that is not thoroughly discussed in the economic literature. Like brain drain, 'brawn drain', the migration of low-skilled workers can perpetually create a channel that works against the incentive of economic mobility through gaining more education. Some studies discuss the educational impact of immigration on the developed country natives. For example, using provincial data from Italy, Brunello et al. (2020) showed that the rise of low-skilled immigrants increased both the probability that young native high school graduates enroll in colleges and the probability that young natives with less than high school education stay out of further education or training.

Some empirical papers have found that low-skilled migration can have a positive or negative impact on human capital gains, as measured by high school education attainment, years of schooling, and other simple metrics. Hanson and Woodruff (2003) used Mexican data to demonstrate that children from migrant households complete significantly more schooling, especially girls from low-educated households. This suggests that emigration may help relax household credit constraints for education financing. Kandel and Kao (2001) showed that while remittances from labor migration enable better educational opportunities and overall child wellbeing, they also lead to stress due to parental absence, behavioral issues, and lower aspirations for university education. They find an overall positive correlation between U.S. migration and students' grades, suggesting that while migration boosts financial capacities to extend schooling and improve performance, it might also diminish the motivation to pursue higher education. The negative impact of parental migration on education is evident in Kanaiaupuni's (2000) study, which utilized data from Houston and San Diego and found that children of undocumented immigrants face increased poverty and health risks compared to those in legal households. This disadvantage persists even in mixed-status households. The research highlights this issue as a significant policy dilemma, contributing to health disparities and racial and ethnic inequality in the U.S., particularly impacting the growing Chicana/o and broader Latino populations. The literature on the economics of migration that attempts to identify channels that are responsible for educational outcomes of children in developing countries focuses on factors such as remittance and earnings of household members, which are transferred to the country of origin. Many studies find a positive relationship between remittance earnings and educational outcomes, such as school attendance and school completion. Bredl (2011) found that migration was associated with rising duties for children in the household and the loss of parental role models, besides declining educational attainment of children.

The United States and Mexico share a substantial border along which there is a significant amount of both documented and undocumented migration. Although issues surrounding the U.S.-Mexico migration are widely studied, few microeconomic studied tried to unearth the specific determinants of low-skilled migration, and its human capital impact. This paper attempts to understand how the household outcomes of low-skilled migration by older (above 25 years of age) members affect educational decisions of the younger members of the family, between the ages of 17 and 25). Chiquiar and Hanson (2005) show that average schooling of Mexican immigrants tends to be higher than non-migrants in Mexico, in high-migration communities with lower mean educational attainment, exposure to low-skilled migration of household members and community members can dissuade younger people from getting more education. Second, we analyze data of communities where low-skilled migration is highly concentrated with well-established migrant network. Migrant worker body is heterogeneous especially in a country like Mexico with substantial income inequality. World Bank (2023) provides data that shows GINI coefficient for Mexico 45.6, whereas that for the U.S. was 39.6. Moreover, in Mexico, low-skilled migration is generally concentrated in high-inequality and low-wealth communities (McKenzie and Raporport, 2007). Therefore, communities where low-skilled migration is concentrated deserve to be studied separately. Third, we

attempt at identifying channels through which low-skilled migration may have affected lower educational attainment decision of young household members, like remittance and saving decisions, exposure to high-skilled individuals in the community, etc.

Similar to this study, using data from the Mexican Migration Project (MMP), Orrenius and Zavodny (2005) show that low-skilled migrants who are undocumented, in many cases, are usually low-educated and from low-income backgrounds. They demonstrate an association between low-skilled undocumented migration and lower educational attainment within the same sample. Communities with high low-skilled migration concentration also experience inequality in education. In Mexico, a child who starts school at age 4 can expect to complete 12.8 years of schooling before turning eighteen (World Bank, 2020). The high-migration communities studied in this paper have a lower mean educational attainment of 6.366 years of schooling. It is likely that these communities are stuck in an equilibrium of low education and a high probability of migration.

This paper centers around the choice of college-age young individuals who are likely deciding between opting for low-skilled migration to the U.S., as the presence of low-skilled migrant elders and family networks in the U.S. motivates them to and gaining more years of schooling to enjoy long-run returns to schooling. Essentially, it is a choice between two types of consumption: one where the young individual goes to college and then enjoys returns to more schooling, and one where the young individual does not choose to bear the different costs of higher education and earns wages from low-skilled jobs in the U.S. Both options generate opportunities for two different levels of consumption. Young individuals who originally wanted to opt for higher education might opt for low-skilled migration instead, if the long-term earnings from low-skilled migration exceed the discounted earnings from high-skilled jobs, taking the psychic and other costs of college education into account. This channel can essentially lower human capital accumulation in the origin country. We observe this outcome in the context of U.S.-Mexico migration, where a large portion of Mexican migrants hold low-skilled jobs. Mexican migrants often have established networks in the U.S. Utilizing data from the Mexican Migration Project study (1989-2019), we investigate whether exposure to low-skilled migration at the family level (i.e., presence of household members older than 25 who worked low-skilled jobs in the U.S.) negatively affects the average years of schooling of younger household members who are older than 18 and younger than 25. We consider the age range of 18-25 to be the typical college-going age. We find a strong negative impact of family-level exposure to low-skilled U.S. migrants on Mexican youth using a pooled data model. This effect remains strong even after controlling for community-level low-skilled migration intensity (ratio of the number of low-skilled migrants to the number of low-skilled people in the community) and community-level average years of schooling (proxy for community human capital stock). The results suggest that low-skilled migration (brawn drain as opposed to brain drain) can dampen the human capital accumulation in developing origin countries like Mexico by encouraging younger students to opt for low-skilled migration instead of pursuing further education.

We contribute to the literature by discussing the effect of low-skilled migration from high-migration communities. If high income inequality translates into fewer opportunities for economic mobility, then there is less incentive for investing in one's education. Communities in Mexico that see high concentrations of migration, therefore, allow us to study why exposure to low-skilled migration perpetuates lower human capital gain in an environment with low incentives for education and high incentives for low-skilled work abroad. We show that the effect of low-skilled migration, like high-skilled migration, can also hurt human capital accumulation in origin countries. In addition, exposure to the low-skilled migration network is heterogeneous in that not all low-skilled migrant networks will use remittances to invest in education in the home country. If the expected utility from low-skilled migration dwarves the expected utility gain from

schooling, then investment in education may not be a significant outcome. Lastly, our paper shows that the effect of exposure of low-skilled migration on educational attainment is heterogeneous. We show that young individuals from households without low-skilled migrant elders may take up less education due to exposure to community-level low-skilled migrant elders. In addition, the effect of household-level low-skilled migration exposure is significant only for young males and not young females.

Sections 2, 3, and 4 of this paper provide a detailed examination of the key components of our study. Section 2 focuses on the data source, where we utilize the Mexican Migration Project study (1989-2019) to build our analytical sample. In Section 3, we present the empirical model that we will employ to estimate the effects of low-skilled migration exposure on the educational attainment of young individuals in migrant communities in Mexico. Moving to Section 4, we delve into the results obtained from our empirical analysis. We discuss the significant findings regarding the influence of low-skilled migrant elders on the average years of schooling among young household members. In addition, we explore the impact of community-level factors and the presence of high-skilled individuals as potential role models. Finally, Section 5 concludes the paper, summarizing our main findings and discussing their implications for human capital gain in migrant communities in Mexico.

2. Data

We use data from the Mexican Migration Project (MMP), which includes researchers from both Mexico and the U.S. The analytical sample draws data from years between 1999 and 2017. In the MMP, several communities in both countries were surveyed each year. The project primarily concentrated on communities that host large numbers of migrant households. The selected communities were surveyed only once, which limits the possibility of imposing a panel data structure on the analytical sample. The sample communities were diverse in economic characteristics; some of them are small agricultural towns, mid-sized towns, and metropolitan areas located primarily in the western part of Mexico, which sees a lot of out-migration into the U.S. In each community, representative households are randomly sampled into the survey.

Our analytical sample only includes individuals between the ages of 17 and 26. The typical age for a student completing 12 years of education is 18. A different cross-section of individuals is observed in each year between 1999 and 2017. Attending college can take 4 to 5 years. So, a regular student and even an irregular student would have enough time to complete school and also attend college. The survey data shows none of the young Mexican respondents from sampled households between the ages of 15 and 25 have migrated to the U.S. and held low-skilled jobs. Moreover, only 8 to 9% of that age group went to the U.S. at least once. About the same percentage of young individuals of this age group report holding any job. Therefore, the majority of them, 90%, have the potential to complete school and pursue higher education. However, the mean years of schooling of this age group are 9.12. If 90% of these young people are not working full time, and they are not completing school either, what does influence their decision not to get more education? We investigate if the exposure of household-level elder migrant members who held low-skilled jobs has a statistically significant impact on the mean years of schooling of this age group.

Table 1 discusses analytical sample means of the main independent variable of interest and the outcome of years of schooling. Means for each variable are also presented for two smaller samples, young individuals from households with at least one low-skilled migrant person, and without any low-skilled migrant person. The main independent variable is measured primarily as the number of elder (age ≥ 26), low-skilled migrant members who went to the U.S. and held low-skilled jobs. We use the ratio of the number of elder low-skilled migrant workers from the household to the total number of elders from the household.

Table 1 also shows that sample means vary depending on the presence of low-skilled migrant elders. Mean years of schooling are higher for young individuals from households without any low-skilled migrant elders. The total number of undocumented migrants is also much higher in these households. Land ownership and cultivation are also considerably higher in households without low-skilled migrant elders. Table A1 in Appendix A reveals that remittance size is slightly higher for households without low-skilled migrant members. A higher percentage of household heads from the sample of households without low-skilled migrant elders report saving and remitting for bearing educational expenditure of the household members.

In addition to the analytical samples, we can gain further insights from Figures 1 and 2. Both figures depict the State-Year average of schooling years and low-skilled migration exposure. In Figure 1, the state×year average number of low-skilled migrant elders in the household is shown, and in Figure 2, the state×year average share of low-skilled migrant elders in the household is depicted. Notably, for Michoacan and Zacatecas, the spikes in average years of schooling correspond with troughs in low-skilled migration exposure in Figure 1 and 2, and a similar pattern is observed for Jalisco and Guanajuato in Figure 2. These figures suggest that even at the state×year average level, low-skilled migration exposure have some correlation. It is important to note that Figures 1 and 2 use all available data from the Mexican Migration Project and are based on data that have been used to create the analytical sample for the regression analysis.

3. Empirical Model

The empirical model establishes the relationship between the variables of low-skilled migration exposure, and educational attainment of young Mexicans between the ages of 17 and 26 measured in years of schooling. The analytical sample is of pooled cross-sectional structure. The equation 1 shows that in year *t*, we observe a cross-section of individuals *i*, that experience exposure to low-skilled migration, LS_i, which impacts $Schooling_i$. We hypothesize that estimated $\beta_1$would have a positive sign.

$$Schooling_i = \beta_0 + \beta_1 LS_i + \boldsymbol{X_i'\Gamma} + e_i \quad (1)$$

Vector **X** includes a large number of covariates that would work as control variables. e_i is the error term with normal distribution. In the analysis, we use multiple controls for family network to see the robustness of the effect of low-skilled migration. Family network of migration can influence migration decisions in many different ways, the robust effect of low-skilled migration even after including family network controls means low-skilled migration has a high degree of influence on the young person's choice of education and employment distinct from family network effects. In the discussion of results, we also talk about how interactions between low-skilled migration exposure would and some other variables.

In Equation 1, β_1 measures the association between LS_i and $Schooling_i$. Estimating the causal impact of LS_i would require it to be an exogenous shock. Since LS_i is influenced by unobserved factors that also determine $Schooling_i$, we introduce interaction terms between LS_i and dummy variables for the years between 2006 and 2012 when the Secure Fence Act of 2006 were implemented along the U.S.-Mexico border. Feigenberg (2020) found that the erection of fence at the U.S.-Mexican border under the 2006 Secure Fence Act resulted in a decrease in migration from the municipalities right next to newly built fences and from its neighboring municipalities and even non-border municipalities. The findings also indicate that the construction prompted migrants to seek alternative crossing locations, discourages low-skilled migrants, and reduced the number of undocumented Mexicans residing in the United States. A statistically significant effect of the interaction term between LS_i and a dummy variable for the years between 2006 and 2012 could be interpreted as the effect of LS_i when migration cost increases. However, in this case the interaction term

would not capture the immediate effect of fencing at the border through LS_i, because between 2006 and 2012 other unobserved factors also must have affected the number of elders opting for low-skilled migration. Unobserved factors like the business cycle-driven demand of labor and other government policies being implemented between 2006 and 2012 coincide with the fencing policy implementation.

4. Results

Table 2 shows the baseline results. Exposure to low-skilled migrants is measured in terms of the number of low-skilled migrant elders from each household. The first equation shows a parsimonious specification with a dummy variable for sex (Female = 1), survey place control (U.S. = 1), and survey year dummy variables. The second column specification in Table 2 includes more independent variables as control variables. Educational attainment of the household head is the only variable that has a statistically significant effect on the young household members' mean years of schooling. A list of other control variable coefficient estimates, except for year dummies from Table 2, Column 2, is available in Table A2. In all following regression estimations, this set of control variables has been included. Table 3 presents the same results as Table 2 but using a different measure of exposure to low-skilled migrant elders, the share of low-skilled migrant elders in the household. This variable is simply the ratio of the number of low-skilled migrant elders from the household to the number of elders from the household. Again, elders are members of the households who are above the age of 25. Both in Table 1 and 2, we observe a highly significant effect of low-skilled migration exposure, as Table 1 shows that an almost 0.3-year drop in years of schooling if the number of low-skilled elders increases by just 1.

Table 4 includes two variables that capture the effect of community-level exposure to migration and community-level mean years of schooling. The effect of $(N.Low-skilled\ Migrant\ Elders)/(N.Elders)$ is not statistically significant. However, the effect of mean years of schooling has a statistically significant effect on the young person's years of schooling. Table 5 results have been produced by adding community × year dummy variables to the regression specifications of Table 2, the baseline results. The coefficient estimate remains almost the same even after the inclusion of community × year dummy variables.

We extend the baseline results with a slightly different model that estimates the effect of years of education on the probability of opting for low-skilled migration. This model is treated as a linear probability 2SLS model where years of schooling are being instrumented with the variables from the baseline model (Column 2, Table 2). The second stage includes three variables on the right-hand side of the equation other than years of schooling: the ratio of the number of low-skilled migrant elders to the number of elders in the community, mean years of schooling of the community, and a dummy variable identifying female respondents; the second stage regression does not include the first two community-level variables. The estimated results in Table 6 show that additional years of schooling lower the probability of opting for low-skilled migration by 0.6%. Although this probability is small, it shows that lower (higher) years of schooling instrumented by low-skilled migration is likely to increase (decrease) the probability of low-skilled migration by a young person[3].

The rest of this section is dedicated toward identifying channels through which low-skilled migration exposure affects a young person's educational choices. We look at some measures of wealth of the

[3] The definition of the variable of whether the young person opts for low-skilled migration is slightly different from that used to identify low-skilled migrant elders. Identifying low-skilled migrant elders depended on an additional condition that the elder had not completed 12 years of education.

households to see if they mollify the negative effect of low-skilled migration exposure. Greater wealth endowment of the household should shift the budget constraint outward in the problem of deciding between consumption through low-skilled migration and gaining more education. Tables 7 to 13 present estimated effect of interaction terms between one measure of household wealth and low-skilled migration exposure. Low-skilled migration exposure's interaction terms with the amount of cultivable land owned by the household members, the number of houses owned by household members, current remittance size (in 2019 prices), total earnings of household members from the last trip to the U.S. (in 2019 prices), amount of monthly remittance during the last trip to the U.S. (in 2019 prices), whether the household saves for educational expenditure, and whether the household receives remittance for educational expenditure, in Tables 8, 9, 10, 11, 12, and 13 respectively, do not have statistically significant effects on the young person's years of schooling. Although there is empirical evidence of parents' and household members' remittance earnings improving educational outcomes of younger members of the household (Borraz, 2005; Bredl, 2011), we do not see a similar effect here. The only wealth-related interaction term with low-skilled migration exposure that appears to have a significant effect is the amount of cultivable land owned by the household members. The marginal effect of cultivable land endowment of the household at different values of low-skilled migration exposure, based on the results in Column 2 of Table 7, has been presented in Table A4. These marginal effects do not make a lot of economic sense; most of them are small fractions of one additional year of schooling.

In our investigation, we explore whether the presence of high-skilled individuals in the community influences young individuals as role models. Table 14 presents our findings, indicating that the interaction term between the number of low-skilled migrant elders in the household and the number of high-skilled community members does not yield statistically significant effects on years of schooling. Similarly, the interaction term with the share of low-skilled migrant elders in the household also shows no significant impact. However, it is intriguing to note that the number of high-skilled community members has a statistically significant positive effect on years of schooling; it is likely that this effect does not counter the much stronger influence due to the presence of low-skilled migrant elders.

Table 15 and 16 show the impact of fencing policy implementation at the U.S.-Mexico border from 2006 to 2009 under the Secure Fence Act of 2006. The act initially required a 370-mile segment of fence from Calexico, California to Douglas, Arizona to be completed by May 30, 2008. However, the Consolidated Appropriations Act of December 26, 2007, gave the Secretary of DHS increased discretion in determining fencing locations. This legislation mandated the construction of a minimum of 700 miles of fencing where it would be most practical and effective, with either 370 miles or other mileage to be completed by December 31, 2008. The fence aimed to delay illegal entrants from blending into U.S. communities closest to fenced crossings (US Department of Homeland Security 2008). By April 2010, 282 miles of pedestrian fence and 227 miles of vehicle barriers had been constructed (Stana, 2010). I create a dummy variable labeled "Fencing years" for observations between the years of 2006 and 2009 and add it to our model. The identification of the effect of fencing depends on the assumption that, without fencing, mean years of schooling of the respondents would have remained the same. Fencing increases migration cost, and its empirical evidence can be found in Feigenberg (2022). Increased migration cost rearranges the budget constraint to consumption of individuals; increased cost of one type of consumption – low-skilled migration in the future would reduce the area under the budget constraint of a young person living in a migrant community. Table 15 shows that in "fencing years", years of schooling went down by one year compared to before fencing years (2000-2005). Years between 1999 and 2000 are skipped from this sample for estimating the effects related to fencing because in the nineties some major laws were enacted to limit undocumented migration from Mexico. Table 15 and 16 show that the effect of fencing between 2000 and 2009 is not statistically significant. The interaction terms between fencing and low-skilled migration also

do not have coefficients statistically indistinguishable from zero. Table 16 includes another measure of low-skilled migration, a binary variable that measures whether the household has at least one undocumented migrant (Column 2 and 3). Like low-skilled migration exposure, the presence of undocumented migrant workers also generates a negative effect on years of schooling. However, its interaction with "fencing years" does not have a statistically significant effect. Overall, fencing did not increase the cost of migration and had a positive effect on these communities experiencing a lot of migration.

The results in Tables 16 and 17 explore the heterogeneity in the effect of exposure to low-skilled migration. Table 16 presents the effect of community-level exposure to low-skilled migration and community-level exposure to undocumented migrants. Both variables simple measure the community×survey year specific number of low-skilled migrant elders (age≥26) and number of undocumented migrants, respectively. The samples on which the effect of these two variables is estimated and presented are based on whether respondents have low-skilled migration exposure at the household level. Columns 1 to 3 in Table 16 show the effect of community level low-skilled migration exposure and undocumented migration exposure on individuals who are from households without any low-skilled migrant elders; likewise, Columns 4 to 6 in show the estimated effect of these variables on individuals from households with at least one low-skilled migrant elder. The first three columns provide the more interesting results; community-level low-skilled migration and undocumented migration both are lower for individuals from households without any low-skilled migrant elders. In addition, these individuals although are not subject to low-skilled migration within the households, the effect of low-skilled migration from outside, within the community also evidently is harmful toward their educational attainment. Therefore, even in cases where low-skilled migration of elders and low-educational attainment decisions are not co-determined in some households, children from these households are influenced to take up less schooling due to being exposed to low-skilled migrant elders and undocumented migrants in the community.

Table 18 presents the effect of household-level low-skilled migration exposure and undocumented migration exposure on years of schooling of young male and female members separately. Previously, we have seen that female respondents get more education. Here we observe that low-skilled migration exposure in the household only has statistically significant effect for the male sample, though household level undocumented migration has negative statistically significant effect for both male and female respondents[4].

We attempt at separating the effect of parents being absent from a household due to U.S. migration from that of the presence of low-skilled migrant parents. A child's own parent being absent for a considerable period of time, maybe several years due to U.S. migration can mean lack of supervision the child needed from the parents. Coming from a migrant household can lower the educational attainment of the children (McKenzie and Rapoport, 2011). We simply do not find correlation between lower educational attainment of children and their parents' migration decision, we show that having a low-skilled migrant household head who completed return migration before the child was born, also can have significant negative impact on children's educational attainment. In many households in our sample, children do not experience parental absence due to migration to the U.S. but still are subject to low-skilled migration decision of the household members and thus opt for lower-educational attainment. Table 19 shows that the number of low-skilled U.S. migrant members in the household is negatively associated with young household members' schooling years (Column 1 and 2); when we restrict the sample by keep young household members whose parents' low-skilled U.S. migration was completed before s(he) was born, then we still see statistically significant

[4] The measure of the number of undocumented migrants in a household does not exclude counting young individuals below the age of 25. So, this measure of undocumented migration is likely leading to overestimation of its effect on years of schooling. However, this variable is not the main variable of interest and its estimated effect is included as supporting evidence.

negative impact of exposure of low-skilled migrant members. Imposing a further restriction on the sample – both household head and his/her spouse completed U.S. migration before the young member was born (Column 3 and 4 in Table 19), we see the effect is of exposure of low-skilled U.S. migrant members lose its statistical significance with the specification with necessary regressors. In summary, the results in Table 19 indicates that parental presence likely does not diminish the negative impact of low-skilled migration exposure, although this is not always robust.

In this study, we differentiate between the impact of parental absence due to U.S. migration and the influence of having low-skilled migrant parents on children's educational attainment. Interestingly, we discovered that children with a low-skilled migrant household head, who completed return migration before the child's birth, also exhibit a significant decline in educational achievement. In a restricted sample that only includes many households where children do not directly experience parental absence due to parental U.S. migration being complete before they are born, the children are still affected by the low-skilled migration exposure, leading them to opt for lower educational levels. For most of the children, the migrant household-head is the father. So, they experience fathers' past migration and other household members' present and past migration as low-skilled workers as a factor that causes their schooling years to decline.

As shown in Table 19, there is a negative association between the number of low-skilled U.S. migrant members in a household and the schooling years of young household members (Columns 1 and 2). This negative impact is for the sample of children whose household head – in most cases, the father - completed low-skilled U.S. migration before their birth. However, when we further narrow the sample to include only those children whose household head and household head's spouse -in most cases, the mother- both completed U.S. migration before the child was born (Columns 3 and 4 in Table 19), the negative impact of exposure to low-skilled migrant members loses statistical significance in specification (Column 4) with the necessary regressors. In summary, the results suggest that the mere presence of parents does not mitigate the adverse effects of exposure to low-skilled migration, though these findings are not consistently robust across all specifications.

5. Conclusion

In conclusion, this study investigates the impact of low-skilled migration on human capital accumulation in developing countries, with a focus on U.S.-Mexico migration. We find that exposure to low-skilled U.S. migrants in Mexican households has a significant negative effect on the average years of schooling of young household members (aged 18 to 25). This suggests that low-skilled migration can discourage young individuals from pursuing higher education, potentially reducing human capital accumulation in the origin country. We also explore the role of community-level factors and high-skilled individuals as potential role models for young individuals. While the presence of high-skilled community members has a positive effect on years of schooling, it does not appear to counteract the negative impact of low-skilled migrant elders. This indicates that the influence of low-skilled migrant elders on educational decisions is stronger than the positive role model effect of high-skilled individuals in the community.

Moreover, we investigate the impact of fencing policy implementation at the U.S.-Mexico border under the Secure Fence Act of 2006. While fencing is intended to delay illegal entrants, we find that it does not have a statistically significant effect on human capital accumulation in migrant communities. The interaction between fencing and low-skilled migration exposure does not yield significant results, suggesting that fencing did not increase the cost of migration significantly for young individuals in these communities.

Our study adds to the existing literature by shedding light on the potential "brawn drain" effect of low-skilled migration, which can perpetuate a cycle of low education and high migration in developing countries. Our results show that the decision to migrate for low-skilled work abroad can outweigh the incentive for investing in education, particularly in communities where migration is highly concentrated and economic inequality is high. While our results provide valuable insights, there are limitations to consider. The study focuses on Mexican migration to the U.S., and the findings may not be directly applicable to other developing countries. In addition, the effect of low-skilled migration exposure is infused with unobserved effects from factors like parental preferences toward higher education which we cannot disentangle from that of solely the presence of low-skilled migrant workers in the households. However, we do show that young individuals from households without low-skilled migrant elders may take up less education due to exposure to community-level low-skilled migrant elders. Lastly, our findings suggest that the presence of parents throughout a child's life does not entirely negate the impact of exposure to low-skilled U.S. migrant members within the household. For household heads, usually the father, who completed their U.S. migration before the respondent child is born; the household's history of low-skilled migration is still associated with a reduction in the child's educational attainment. Overall, our evidence implies that low-skilled migration can have a significant effect on educational attainment in developing countries.

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Table 1: Analytical Sample Means

	Full Sample	Households with low-skilled Migrant Elder(s)	Households without low-skilled Migrant Elder(s)
Years of Schooling (age ≥25)	9.12	8.89	10.07
	(3.52)	(3.47)	(3.52)
Years of Schooling (18 ≤ age ≤ 25)	9.19	8.89	10.07
	(3.52)	(3.34)	(3.52)
Years of Schooling – Household Head	6.24	4.29	6.56
	(4.28)	(3.04)	(4.37)
Number of Low-skilled Elders per Household	0.85	0.67	1.90
	(1.07)	(0.94)	(1.22)
Share of Low-skilled Migrant Elders HH	0.05	0.35	0
	(0.14)	(0.21)	(0)
Place of survey: Mexico = 1, U.S.A. = 0	0.98	0.95	0.98
	(0.12)	(0.19)	(0.10)
Household Head's Stage of Life:			
No children	0.01	0.003	0.01
	(0.93)	(0.058)	(0.09)
All children are teen	0.62	0.63	0.62
	(0.48)	(0.48)	(0.48)
All children are adults	0.28	0.31	0.03
	(0.45)	(0.46)	(0.45)
Female (18<age<25)	0.51	0.50	0.51
	(0.49)	(0.50)	(0.49)
Total number of trips to the U.S. by HH members	0.77	2.58	0.48
	(2.20)	(4.20)	(1.46)
Total number of undocumented migrants to the U.S. from the HH	0.72	2.20	0.47
	(1.30)	(1.90)	(0.98)
HH head is in civil and religious union with a partner	0.64	0.71	0.63
	(0.47)	(0.45)	(0.48)
HH size	5.08	5.35	5.05
	(2.22)	(2.47)	(2.18)
Number of HH members who work	2.40	2.56	2.37
	(1.39)	(1.59)	(1.36)
HH head's mother ever made trips to the U.S.	0.015	0.02	0.01
	(0.102)	(0.14)	(0.94)
HH head's father ever made trips to the U.S.	0.01	0.04	0.02
	(0.13)	(0.19)	(0.12)
Household owns at least one lot	0.05	0.03	0.06
	(0.70)	(0.49)	(0.74)
Household member(s) own(s) at least one business place	0.2	0.04	0.01
	(0.34)	(0.53)	(0.3)
Household member(a) own(s) at least one apartment	0.001	0	0.002
	(0.09)	(0)	(0.100)
Residence of young person (18<age<25) is made of brick and cement	0.44	0.44	0.47
	(0.49)	(0.49)	(0.49)
Total hectares of land owned by HH members	4.57	3.37	4.768
	(193.73)	(33.40)	(208.629)
Total hectares of land cultivated by HH members	4.87	3.37	4.77
	(381.42)	(33.41)	(208.629)
N	12382	1750	10632

Table 2: Baseline Regression – The Effect of the Number of Low-skilled Migrant Household Elders

	(1) School Yrs	(2) School Yrs
N. of low-skilled U.S. Migrant elders in HH	-0.727***	-0.270***
	(0.101)	(0.0767)
Female	0.282***	0.402***
	(0.0649)	(0.0632)
US Trips by HH members		-0.00899
		(0.0220)
HH Head: Educational attainment		0.327***
		(0.00956)
HH Size		0.00913
		(0.0241)
Total US Earnings		2.91e-08
		(4.48e-08)
Houses Owned		0.0615
		(0.0417)
Observations	12382	12382
Adjusted R^2	0.096	0.325

Standard errors in parentheses. Standard errors were clustered at community × survey year level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
N. = number, HH = household. Column 1 control variables: survey place control, survey year FE. Column 2 control variables: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 3: Baseline Regression – The Effect of the Share of Low-skilled Migrant Elders in the Household

	(1) School Yrs	(2) School Yrs
Share of Low-skilled Migrant Elders HH	-2.302***	-0.847***
	(0.342)	(0.237)
Female	0.292***	0.402***
	(0.0639)	(0.0629)
US Trips by HH members		-0.00881
		(0.0230)
HH Head: Educational attainment		0.328***
		(0.00961)
HH Size		0.00841
		(0.0242)
Total US Earnings		2.69e-08
		(4.46e-08)
Houses Owned		0.0582
		(0.0415)
Observations	12382	12382
Adjusted R^2	0.095	0.315

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Column 1 control variables: survey place control, survey year FE. Column 2 control variables: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 4: Baseline Regression – The Effect of the Share of Low-skilled Migrant Elders in the Household

	(1) School Yrs	(2) School Yrs
Share of Low-skilled Migrant Elders HH	-1.295***	-0.847***
	(0.262)	(0.237)
Female	0.300***	0.402***
	(0.0651)	(0.0629)
$\frac{N.Low-skilled\ Migrant\ Elders}{N.Elders}$ in Community	1.088	0.958
	(2.775)	(2.048)
US Trips by HH members		0.0119
		(0.0201)
HH Head: Educational attainment		0.286***
		(0.0103)
HH Size		0.0223
		(0.0239)
Total US Earnings		6.00e-08
		(4.11e-08)
Houses Owned		0.0366
		(0.0368)
Mean Community Years of Schooling	1.002***	0.562***
	(0.0431)	(0.0379)
Observations	12382	12382
Adjusted R^2	0.184	0.315

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Column 1 control variables: survey place control, survey year FE. Column 2 control variables: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 5: The Effect of the Share of Low-skilled Migrant Elders in the Household with Survey Year × Community FE

	(1) School Yrs	(2) School Yrs
Low-Skilled Migrant HH members	-0.407***	-0.202***
	(0.0783)	(0.0744)
Female	0.280***	0.386***
	(0.0654)	(0.0642)
US Trips by HH members		0.0276
		(0.0207)
HH Head: Educational attainment		0.285***
		(0.00981)
HH Size		0.0220
		(0.0245)
Total US Earnings		3.97e-08
		(4.65e-08)
Houses Owned		0.0546
		(0.0410)
Observations	12382	12382
Adjusted R^2	0.194	0.347

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Column 1 control variables: survey place control, survey year FE. Column 2 control variables: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 6: Secondary Effect of Exposure to Low-Skilled Migration

	(1) Opting for Low-skilled Migration	(2) Opting for Low-skilled Migration
School years completed	-0.0323***	-0.00696***
	(0.00847)	(0.00131)
Community- Ratio of N. Low-skilled Migrant Elders to N. of elders	1.132***	1.046***
	(0.177)	(0.163)
Mean Community Years of Schooling of the Community	0.0304***	0.00218
	(0.00917)	(0.00216)
Female	-0.0321***	-0.0392***
	(0.00593)	(0.00584)
Observations	12382	12382

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. **Column 1 control variables in the first stage**: survey place control, survey year FE. **Column 2 control variables in the first stage**: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 7: Exposure to Low-Skilled Migration × Cultivable Land in Hectares

	(1) School Yrs.	(2) School Yrs.
Low-Skilled Migrant HH elders	-0.277***	-0.206***
	(0.0772)	(0.0744)
Cultivable Land Hectares	0.0000585	0.0000276
	(0.000111)	(0.0000877)
Low-Skilled Migrant HH elders × Cultivable Land Hectares	0.00277***	0.00157**
	(0.000839)	(0.000700)
Female	0.399***	0.381***
	(0.0630)	(0.0641)
US Trips by HH members	-0.00971	0.0256
	(0.0220)	(0.0178)
HH Head: Educational attainment	0.327***	0.283***
	(0.00936)	(0.00944)
HH Size	0.00986	0.0228
	(0.0242)	(0.0245)
Total US Earnings	2.88e-08	4.22e-08
	(4.49e-08)	(4.64e-08)
Houses Owned	0.0621	0.0560
	(0.0417)	(0.0403)
N. of Low-skilled Migrants in the community		-1.402
		(2.806)
Observations	12382	12382
Adjusted R^2	0.315	0.348

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Column 1 control variables: survey place control, survey year FE. Column 2 control variables: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 8: Exposure to Low-Skilled Migration × House Ownership

	(1) School Yrs	(2) School Yrs
Low-Skilled Migrant HH elders	-0.263***	-0.187**
	(0.0799)	(0.0765)
Houses owned	0.0517	0.0498
	(0.0448)	(0.0433)
Low-Skilled Migrant HH elders × Houses owned	0.0252	0.00476
	(0.0264)	(0.0222)
Female	0.385***	0.366***
	(0.0601)	(0.0610)
US Trips by HH members	-0.0101	0.0193
	(0.0218)	(0.0175)
HH Head: Educational attainment	0.340***	0.298***
	(0.00946)	(0.00966)
HH Size	0.000745	0.0156
	(0.0241)	(0.0243)
Cultivable Land Hect.	0.0000639	0.0000345
	(0.000119)	(0.0000950)
Total US Earnings	3.42e-08	3.51e-08
	(4.49e-08)	(5.05e-08)
Community-Low-skilled Migrants		-3.939
		(2.743)
Observations	12382	12382
Adjusted R^2	0.325	0.355

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Column 1 control variables: survey place control, survey year FE. Column 2 control variables: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 9: Exposure to Low-Skilled Migration × Remittance Size

	(1) School Yrs	(2) School Yrs
#Low-skilled U.S. Migrant members	-0.707***	-0.174**
	(0.107)	(0.0748)
#Remittance size	0.0000715	0.000217
	(0.000194)	(0.000161)
#Low-skilled U.S. Migrant elders × Remittance size	-0.000179	-0.000285
	(0.000219)	(0.000179)
Female	0.282***	0.385***
	(0.0653)	(0.0655)
US Trips by HH members		0.0244
		(0.0180)
HH Head: Educational attainment		0.285***
		(0.00971)
HH Size		0.0221
		(0.0245)
Cultivable Land Hect.		0.0000341
		(0.0000924)
Houses owned		0.0568
		(0.0406)
Observations	12382	12382
Adjusted R^2	0.097	0.348

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Column 1 control variables: survey place control, survey year FE. Column 2 control variables: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 10: Exposure to Low-Skilled Migration × Earnings from last US migration

	(1) School Yrs	(2) School Yrs
#Low-skilled U.S. Migrant elders	-0.717***	-0.205***
	(0.102)	(0.0738)
#Earnings during last US migration	9.70e-08**	3.49e-08
	(4.08e-08)	(4.57e-08)
#Low-skilled U.S. Migrant elders × Earnings during last US migration	-0.00000212***	0.000000756
	(0.000000790)	(0.000000622)
Female	0.282***	0.385***
	(0.0649)	(0.0644)
US Trips by HH members		0.0255
		(0.0182)
HH Head: Educational attainment		0.284***
		(0.00982)
HH Size		0.0222
		(0.0243)
Cultivable Land Hect.		0.0000337
		(0.0000920)
Houses owned		0.0557
		(0.0402)
Observations	12382	12382
Adjusted R^2	0.097	0.347

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Column 1 control variables: survey place control, survey year FE. Column 2 control variables: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 11: Exposure to Low-Skilled Migration × Last US Migration Monthly Remittance

	(1) School Yrs	(2) School Yrs
#Low-skilled U.S. Migrant elders	-0.874***	-0.260**
	(0.130)	(0.102)
Last US Migration Monthly Remittance	-0.000305	0.0000544
	(0.000208)	(0.000230)
#Low-skilled U.S. Migrant elders × Last US Migration Monthly Remittance	0.000184	-0.000194
	(0.000238)	(0.000246)
Female	0.443***	0.600***
	(0.127)	(0.127)
US Trips by HH members		0.00785
		(0.0246)
HH Head: Educational attainment		0.225***
		(0.0259)
HH Size		-0.0309
		(0.0483)
Cultivable Land Hect.		0.00272***
		(0.000789)
Houses owned		0.147**
		(0.0622)
Observations	2437	2437
Adjusted R^2	0.169	0.372

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Column 1 control variables: survey place control, survey year FE. Column 2 control variables: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 12: Exposure to Low-Skilled Migration × Whether HH Saves for Educational Expenses

	(1) School Yrs	(2) School Yrs
#Low-skilled U.S. Migrant elders	-0.821***	-0.311***
	(0.127)	(0.106)
#Savings for education=1	-0.0394	-0.395
	(0.365)	(0.291)
#Savings for education=1 × Low-skilled U.S. Migrant elders	0.00880	0.150
	(0.347)	(0.344)
Female	0.425***	0.573***
	(0.118)	(0.114)
US Trips by HH members		0.0250
		(0.0243)
HH Head: Educational attainment		0.225***
		(0.0226)
HH Size		0.00801
		(0.0508)
Cultivable Land Hect.		0.00211***
		(0.000744)
Houses owned		0.0905
		(0.0792)
Observations	2951	2951
Adjusted R^2	0.159	0.361

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Column 1 control variables: survey place control, survey year FE. Column 2 control variables: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 13: Exposure to Low-Skilled Migration × Whether Migrant Worker(s) in HH Remits for Educational Expenses

	(1) School Yrs	(2) School Yrs
#Low-skilled U.S. Migrant elders	-0.842***	-0.307***
	(0.135)	(0.116)
#Education Remittance=1	-0.216	-0.258
	(0.255)	(0.189)
#Education Remittance=1 × Low-skilled U.S. Migrant elders	0.106	0.00313
	(0.242)	(0.221)
Female	0.426***	0.571***
	(0.118)	(0.113)
US Trips by HH members		0.0254
		(0.0238)
HH Head: Educational attainment		0.225***
		(0.0228)
Observations	2951	2951
Adjusted R^2	0.159	0.361

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Column 1 control variables: survey place control, survey year FE. Column 2 control variables: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 14: Exposure to Low-Skilled Migration × Exposure to High-Skilled Community Members

	(1) School Yrs	(2) School Yrs
#low-skilled U.S. Migrant elders in HH	-0.410***	
	(0.143)	
#high-skilled U.S. Migrant members in Community	0.0286***	0.0126***
	(0.00224)	(0.00166)
#low-skilled U.S. Migrant members in HH × Number of high-skilled members in Community	-0.00327	
	(0.00340)	
Female	0.292***	0.412***
	(0.0655)	(0.0637)
Share of Low-skilled Migrant Elders HH		-1.076***
		(0.211)
Share of Low-skilled Migrant Elders HH × Number of high-skilled members in Community		0.00552
		(0.00449)
Observations	12382	12382
Adjusted R^2	0.154	0.332

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Column 1 control variables: survey place control, survey year FE. Column 2 control variables: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 15: Exposure to Low-Skilled Migration × US-Mexico Border Fence Construction

	(1) School Yrs	(2) School Yrs
At least one household elder is a low-skilled migrant =1	-0.555***	
	(0.182)	
Fencing Year=1	1.329	1.200
	(2.591)	(2.656)
Fencing Years=1 × Low-Skilled Migrant HH elders	0.0794	
	(0.184)	
Trend	0.147***	0.147***
	(0.0293)	(0.0294)
HH Head: Educational attainment	0.327***	0.328***
	(0.00950)	(0.00954)
$\frac{N.Low-skilled\ Migrant\ Elders}{N.Elders}$ in household>0		-0.555***
		(0.182)
Fencing Years=1 × Share of Low-skilled Migrant Elders HH		0.0951
		(0.294)
Observations	6984	6984
Years considered	(2000-2012)	(2000-2012)
Adjusted R^2	0.333	0.332

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Control variables: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 16: Number of Undocumented Migrant HH members × US-Mexico Border Fence Construction (2006-09)

	(1) School Yrs	(2) School Yrs	(3) School Yrs
Fencing Years=1	8.814 (5.531)	8.221 (5.557)	1.051 (2.735)
Undocumented HH members	-0.371*** (0.0488)		
HH has at least 1 undocumented migrant member		-0.878*** (0.146)	-0.279*** (0.102)
Female	0.162* (0.0877)	0.174* (0.0875)	0.351*** (0.0817)
Fencing Years × HH has at least 1 undocumented migrant member		0.345 (0.305)	0.251 (0.198)
HH Head: Educational attainment			0.324*** (0.00948)
Trend	-0.952 (0.626)	-0.890 (0.628)	-0.0988 (0.313)
Houses Owned			0.0548 (0.0395)
Cultivable Land Hect.			0.0000661 (0.000116)
Observations	6984	6984	6984
Years considered	(2000-2012)	(2000-2012)	(2000-2012)
Adjusted R^2	0.102	0.102	0.317

Standard errors in parentheses. Standard errors were clustered at community × survey year level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
N. = number, HH = household. Controls for survey place and survey years were used to estimate results in Column 1 and Column 2. Control variables in Column 3 specification: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 17: Heterogeneity in the Effect of Exposure to Community-level low-skilled Migration

	(1) School Yrs	(2) School Yrs	(3) School Yrs	(4) School Yrs	(5) School Yrs	(6) School Yrs
Sample	HH has no low-skilled migrant elder	HH has no low-skilled migrant elder	HH has no low-skilled migrant elder	HH has at least one low-skilled migrant elder	HH has at least one low-skilled migrant elder	HH has at least one low-skilled migrant elder
Community-year level low-skilled exposure	-0.0110***			-0.0159**		
	(0.00301)			(0.00625)		
Community-Year number of Undocumented Migrants		-0.00103***			-0.000959***	
		(0.000269)			(0.000315)	
Fencing Years=1			0.670***			0.509
			(0.233)			(0.492)
Low-Skilled Migrant HH members				-0.115		
				(0.126)		
Observations	10632	10632	10632	1750	1750	1750
Adjusted R^2	0.319	0.092	0.317	0.282	0.189	0.276

Standard errors in parentheses. Standard errors were clustered at community × survey year level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
N. = number, HH = household. Controls for survey place and survey years were used to estimate results in Column 1 and Column 2. Control variables in Column 3 specification: survey place control, survey year FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 18: Heterogeneity in the Effect of Exposure to Community-level low-skilled Migration

	(1) School Yrs.	(2) School Yrs.	(3) School Yrs.	(4) School Yrs.	(5) School Yrs.	(6) School Yrs.
Sample	Male	Male	Male	Female	Female	Female
N. of Low-Skilled Migrant HH members	-0.359***			-0.0623		
	(0.0999)			(0.0810)		
1 if Number of undocumented Migrants from the HH > 1 (binary)		-0.561***			-0.293**	
		(0.129)			(0.126)	
Fencing Years=1			-0.132*			1.496***
			(0.0670)			(0.0611)
Observations	5999	5999	5999	6383	6383	6383
Adjusted R^2	0.355	0.190	0.353	0.345	0.200	0.345

Standard errors in parentheses. Standard errors were clustered at community × survey year level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Controls for survey place and survey years were used to estimate results in Column 1 and Column 2. Control variables in Column 3 specification: survey place control, survey year×Community FE, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Table 19: Parental Presence throughout Young Person's Lifetime

	(1) School Yrs	(2) School Yrs	(3) School Yrs	(4) School Yrs
N. of low-skilled U.S. Migrant members in HH	-0.435***	-0.190**	-0.419***	-0.148
	(0.0828)	(0.0778)	(0.0950)	(0.0938)
Female	0.407***	0.434***	0.402***	0.426***
	(0.0700)	(0.0672)	(0.0739)	(0.0710)
HH Head: Educational attainment		0.285***		0.291***
		(0.0105)		(0.0107)
Observations	10978	10978	9817	9817
Adjusted R^2	0.202	0.349	0.199	0.351
Sample	HH head return to U.S. before young person was born	HH head return to U.S. before young person was born	HH head and spouse return to U.S. before young person was born	HH head and spouse return to U.S. before young person was born

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

N. = number, HH = household. Controls for survey place and survey years were used to estimate results in Column 1 and Column 3. Control variables in Column 2 and Column 4 specifications: survey place control, Survey year dummies, community identity dummies, stages of lifecycle controls (1= no children, 2= all children under age 13, 3= some children teens, 4= all children teens, 5=all children adult), household head's educational attainment (years of schooling), total migration months of all household members during their last US migration, HH union controls (l=religious union, 2=civil union, 3= consensual union, 4=religious and civil union), number of working HH members, current home is built with brick and tile or brick and cement, total hectares of land owned by household members, total hectares of land cultivated by the household members, total number of months household members stayed in the US during their last US migration, remittance receipt sizes (0=none, 1=small, 2=intermediate, 3=substantial), binary variables: whether mother ever migrated to the US, whether father ever migrated to the US, whether household head owns any business place, whether household head owns any apartment, whether household head owns lots, whether respondent a US citizen.

Figures

Figure 1: State×Year Average Years of Schooling and State×Year Average Number of Low-skilled Migrant Elders in the Household

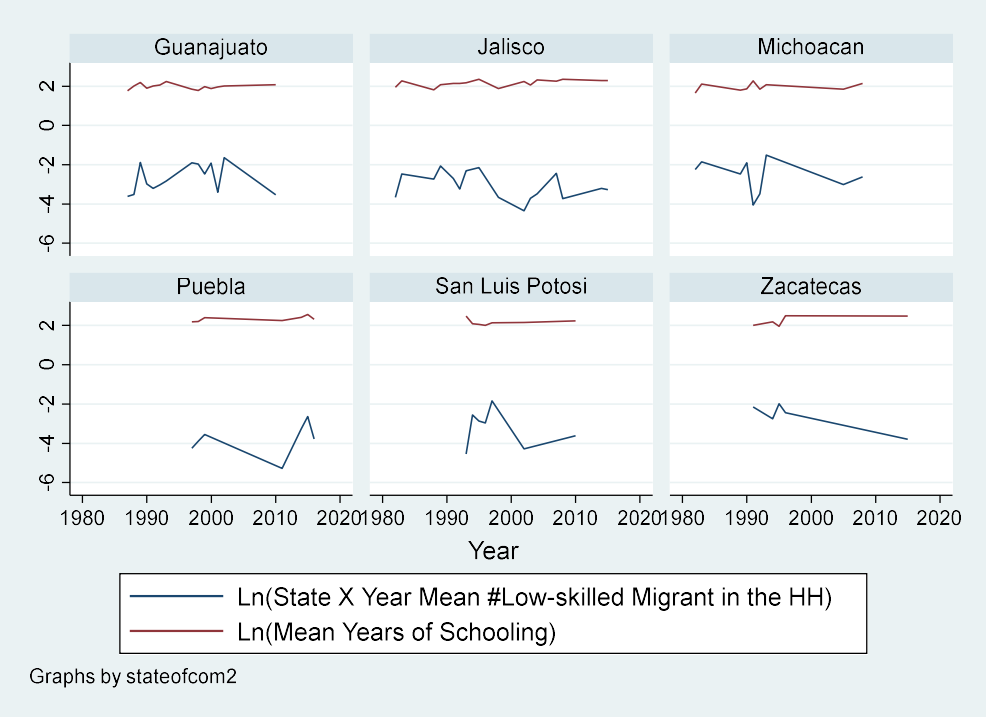
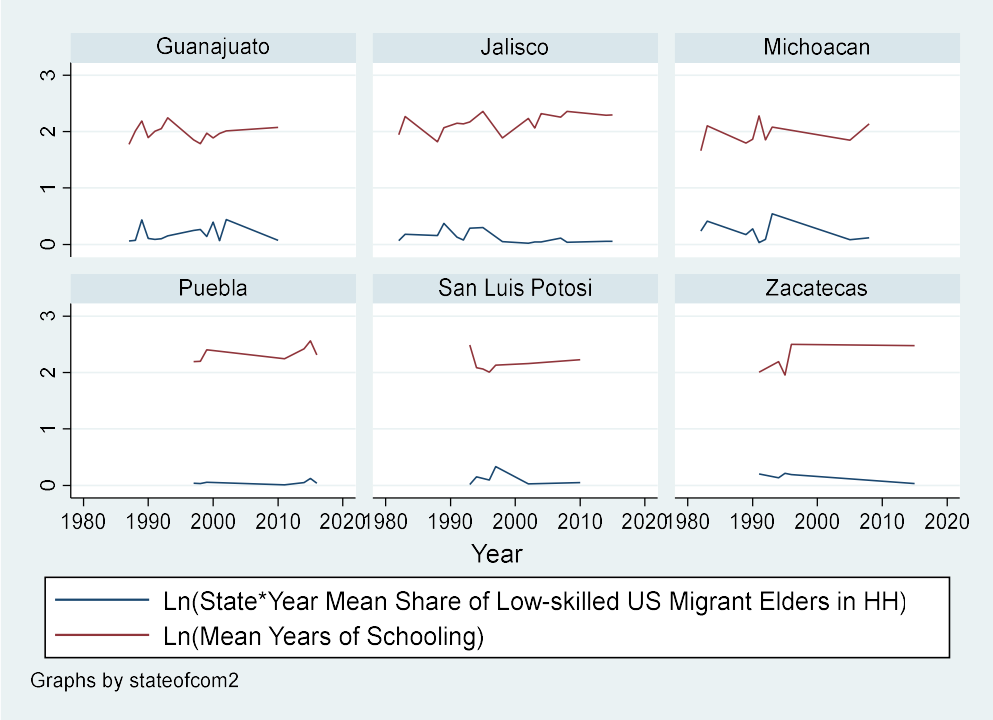


Figure 2: State×Year Average Years of Schooling and State×Year Average Share of Low-skilled Migrant Elders in the Household



Appendix A

Table A1: Analytical Sample Means of Additional Variables

	Full Sample	Households with low-skilled Migrant elder(s)	Households without low-skilled Migrant elder(s)
Total Earnings from last U.S. Migration by household members (monthly earning × months of migration)	5868.5 (269067.7)	6569.298 (64930.13)	5753.15 (289173.5)
Total duration of last U.S. Migration by household members (duration in months)	70.16 (175.0691)	216.04 (275.31)	46.15 (138.36)
Born in the U.S.	0.02 (0.168)	0.03 (0.168)	0.015 (0.122)
Number of houses household members own	0.18 (1.21)	0.34 (1.71)	0.15 (1.107)
Number of siblings of HH head living in the U.S.	0.42 (1.21)	0.70 (1.64)	0.37 (1.12)
Number of cousins of HH head living in the U.S.	2.61 (6.015)	4.27 (6.89)	2.34 (5.18)
Number of nephews/nieces of HH head living in the U.S.	2.61 (6.015)	4.27 (6.89)	2.34 (5.81)
Number of uncles and/or aunts of HH head living in the U.S.	0.39 (1.58)	0.53 (1.73)	0.36 (1.55)
N	12,382	10,632	1,750
Remittance size (inflation adjusted) from last U.S. migration of household head (USD)	347.57 (517.5618)	334.295 (582.34)	356.61 (468.37)
Remittance made by household head for educational purposes	0.23 (0.42)	0.21 (0.41)	0.24 (0.43)
Does the household head save for bearing educational expenses of the household members?	0.12 (0.33)	0.11 (0.31)	0.13 (0.33)
N	2951	2534	417

Table A2: Low-skilled Occupations

Source: APPENDIX D,

Agriculture, husbandry, forestry, and fisheries workers	(1), husbandry workers (2), individuals engaged in both agriculture and husbandry (3), forestry workers (4), hunters, gamesmen, trappers, and related roles (5), fishery or marine workers (6), individuals involved in activities associated with agricultural or marine products (7), foremen, overseers, and other control persons overseeing agricultural, husbandry, or fishery activities (8), as well as other agriculture, husbandry, forestry, and fishery workers (9).
Manufacturing/repair unskilled workers	Manufacturing/repair unskilled workers include the following categories: food, beverage, and tobacco production unskilled workers; mine, quarry, and well unskilled workers; textile and leather production unskilled workers (includes garment finishing work, e.g., sewing buttons); wood and paper production or printing unskilled workers (includes furniture production); metallurgical or automotive production or repair unskilled workers; ceramic, tile, glass, or other mineral production unskilled workers; construction unskilled workers; electrical equipment, electronics, and telecommunications installation and repair unskilled workers; chemical, petroleum, oil, and plastics production unskilled workers; other unskilled workers, including those in an unspecified industry (includes unspecified helpers or trainees).
Transportation workers	Industrial vehicle operators/drivers. (Examples: crane operators, tractor drivers, reapers, lawn mowers), operator of animal cart.
Domestic Services Workers	Domestic services workers; caregivers, rivers, gardeners, butler, and other service workers in private households, e.g. baby sitter.
Protection services workers	Security personnel; police officers; watchmen, firefighters.
Ambulatory workers	Ambulatory service workers encompassing food vendors, shoe shiners, car/windshield washers, and street performers. Other ambulatory workers, including self-employed day laborers. Ambulatory salespeople involved in selling toys, lottery tickets, household goods, paper, and other inedible items.
Personal services workers in establishments	Innkeepers, bartenders, waiters, and flight attendants. Launderers, pressers, and other clothes-cleaning service workers. Doormen, concierges, elevator operators, bellboys, cleaning workers, gardeners, movers, and dishwashers. Barbers, hair stylists, and similar professions. Workers in car rental and other movable rental establishments. Party planners, tour guides, event organizers, and caregivers in institutions (except nurses, see 113 and 122). Morticians, funeral home workers, and related roles. Other personal service workers, including parking lot attendants.

Table A3: Full Regression Result of Column 2 in Table 2.

Variables	School Yrs	Standard Errors
Low-Skilled Migrant HH members	-0.270***	(0.0767)
Place of survey=Mexico	0	(.)
Place of survey=United States of America	0.399	(0.340)
Male (base)	0	(.)
Female (base)	0.402***	(0.0632)
Household: Stage in life-cycle=no children	0	(.)
Household: Stage in life-cycle=all children under age 13	-1.025***	(0.299)
Household: Stage in life-cycle=some children teenagers	0.877***	(0.273)
Household: Stage in life-cycle=all children teenagers	0.621**	(0.292)
Household: Stage in life-cycle=all children adults	1.596***	(0.280)
US Trips by HH members	-0.00899	(0.0220)
HH Head: Educational attainment (years of schooling)	0.327***	(0.00956)
Union 1: Type of union=religious	0	(.)
Union 1: Type of union=civil	0.617**	(0.276)
Union 1: Type of union=consensual union	-0.00000502	(0.284)
Union 1: Type of union=religious and civil	0.767***	(0.252)
HH Size (number of household members)	0.00913	(0.0241)
Household: Number of workers	-0.172***	(0.0366)
HH head's mother ever made trips to the U.S.	0.0891	(0.379)
HH head's father ever made trips to the U.S.	-0.411	(0.271)
Number of lots owned	0.0764	(0.0461)
Number of business places owned by HH members	0.232*	(0.126)
Number of apartments acquired by HH	0.258	(0.273)
property type resident= made with tiles and brick or other material	0	(.)
property type resident=made with brick and cement	-0.916***	(0.0939)
Cultivable Land Hectares	0.0000691	(0.000118)
Total number of hectors cultivated by HH	0.000104***	(0.00000914)
Total US Earnings	2.91e-08	(4.48e-08)
Remittance size = no remittance	0	(.)
Remittance size = small	-0.153	(0.113)
Remittance size = intermediate	-0.0361	(0.201)
Remittance size = substantial	-0.268	(0.167)
Born in the Mexico	0	(.)
Born in the U.S.	-1.386***	(0.256)
Siblings-in-law: Number currently in U.S.	0.00969	(0.0332)
Nieces/nephews: Number currently in U.S.	0.0186***	(0.00653)
Cousins: Number currently in U.S.	0.0163**	(0.00792)
Uncles/aunts: Number currently in U.S.	-0.0351	(0.0272)
Houses Owned	0.0615	(0.0417)
Constant	7.390***	(0.608)
Observations	12382	
Adjusted R^2	0.316	

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4: Marginal Effect of Cultivable Land in Hectares at Different Levels of Exposure to Low-Skilled Migration

Based on the results in Column 2, Table 7

	Years of Schooling
Cultivable Land Hectares	
Number of low-skilled elders in household = 1	0.00160**
	(0.000691)
Number of low-skilled elders in household = 2	0.00317**
	(0.00139)
Number of low-skilled elders in household = 3	0.00473**
	(0.00209)
Number of low-skilled elders in household = 4	0.00630**
	(0.00279)
Number of low-skilled elders in household = 5	0.00787**
	(0.00349)
Number of low-skilled elders in household = 6	0.00944**
	(0.00419)
Number of low-skilled elders in household = 7	0.0110**
	(0.00488)
Number of low-skilled elders in household = 8	0.0126**
	(0.00558)
Number of low-skilled elders in household = 9	0.0141**
	(0.00628)
Number of low-skilled elders in household = 10	0.0157**
	(0.00698)
Observations	12382

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$