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Return Migration to Mexico: Does Health Matter?

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Abstract

We use data from three rounds of the Mexican Family Life Survey to examine whether migrants in the United States returning to Mexico in the period 2005–2012 have worse health than those remaining in the United States. Despite extensive interest by demographers in health-related selection, this has been a neglected area of study in the literature on U.S.-Mexico migration, and the few results to date have been contradictory and inconclusive. Using five self-reported health variables collected while migrants resided in the United States and subsequent migration history, we find direct evidence of higher probabilities of return migration for Mexican migrants in poor health as well as lower probabilities of return for migrants with improving health. These findings are robust to the inclusion of potential confounders reflecting the migrants' demographic characteristics, economic situation, family ties, and origin and destination characteristics. We anticipate that in the coming decade, health may become an even more salient issue in migrants' decisions about returning to Mexico, given the recent expansion in access to health insurance in Mexico.

Keywords

Return migration; Selection; Salmon bias; Health-related emigration; Mexico

Introduction

Despite relatively low socioeconomic status and poor access to health care, Latinos in the United States, especially Mexicans, have higher life expectancy than native-born whites. This phenomenon, known as the "Latino mortality paradox," has prompted observers to speculate that the disparity in longevity arises at least in part because a large proportion of the Latino population was born outside the United States and their health status and

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migration patterns are related. Two hypotheses have been proposed, each of which could result in the observed favorable mortality profile of Mexican immigrants. The first—the healthy migrant effect— stipulates that Mexican immigrants to the United States tend to be in better health than others because the immigrants have the strength, motivation, and resources to undertake a demanding move across the border. The second hypothesis—the "salmon bias"—contends that immigrants in poor or declining health are more likely than their robust counterparts to return to their home country, partly to obtain family support. Their deaths are thus recorded in their country of origin rather than the United States. Although social scientists and epidemiologists have examined both mechanisms among Mexican migrants, direct evidence in support of either one is scant and inconclusive.

The greatest hindrance to convincing research in this area has been the absence of adequate data, particularly on health status of migrants prior to moving to or from the United States or longitudinal follow-up of migrants. Earlier studies have relied largely on cross-sectional data, such as comparisons between native-born and foreign-born Mexicans in the United States or comparisons of Mexican (nonmigrant) residents with Mexican immigrants in the United States or with return migrants to Mexico (e.g., Abraido-Lanza et al. 1999; Jasso et al. 2004; Ullmann et al. 2011). Some of these studies have been limited to documented immigrants, particularly problematic for the analysis of migration streams to or from Mexico given that the majority of recent immigrants from Mexico are unauthorized (Passel and Cohn 2009).

There are, however, a few exceptions. Rubalcava and colleagues (2008) used longitudinal data from the Mexican Family Life Survey (MxFLS) to examine the healthy migrant effect by comparing the health of migrants before they move from Mexico to the United States with the health of nonmigrants. They found only weak evidence of positive health selection, which is restricted to particular demographic groups. This result stands in contrast to those of studies using cross-sectional binational data, which have suggested that Mexican migrants are indeed selected for better health (Barquera et al. 2008; Crimmins et al. 2005). In the case of return migration, Turra and Elo (2008) directly investigated the salmon bias for Latino immigrants, using individual longitudinal data from U.S. Social Security Administration files to compare the mortality experience of foreign-born and U.S.-born emigrants from the United States with their U.S. resident counterparts. They concluded that although evidence of a salmon bias exists, the magnitude is too small to account for the survival advantage of older Latinos. Van Hook and Zhang (2011) used longitudinal data from the 1996–2009 March Current Population Survey (CPS) and assumptions about internal migration, mortality, and attrition to assess selective emigration for foreign-born U.S. residents. They found no association between self-reported health status and return migration among Mexicans. The conclusions of these two papers are somewhat at odds, with the stronger support for health-related return migration of Mexicans found by Palloni and Arias (2004) and Riosmena et al. (2013) using cross-sectional data. Clearly, linkages between immigration and health are complex, demonstrating a critical need for evidence based on longitudinal data to determine whether health selection exists for both emigration from Mexico to the United States and for return migration to Mexico (Markides and Eschbach 2005; Razum 2006; Turra and Elo 2008).

In this article, we use data from three waves of the MxFLS to examine explicitly the association between the health status of Mexican immigrants in the United States and the likelihood that they return to Mexico. The MxFLS is a longitudinal data set that follows Mexican migrants to and from the United States, and also collects data on health and an extensive set of variables likely to be associated with health. Analysis of these data therefore can provide a clearer assessment of the determinants of return migration than earlier research, particularly for health status, which has been seriously neglected in prior studies of the migration process. From this point on, we refrain from using the phrase "salmon bias" because our focus is on the entire age distribution of Mexican migrants in the United States, not just the elderly as in the Turra and Elo (2008) study. We recognize that Mexican migrants in the United States—who have a median age of 37 (Passel et al. 2012)—are typically not returning to Mexico to die, as much of the salmon bias literature would suggest, but may be returning due to poor health or injury. Other researchers use the phrases "remigration bias" or "health selective remigration" instead (Norredam et al. 2014).

Background

In recent years, the annual number of Mexican immigrants to the United States has declined substantially because of changes in the Mexican and U.S. economies as well as U.S. militarization of the shared border (Gentsch and Massey 2011; Passel and Cohn 2009; Passel et al. 2012). Return migration to Mexico also increased in the 2000s compared with the 1990s (Passel et al. 2012), although it declined during the U.S. recession of 2007–2009 (Passel and Cohn 2009; Rendall et al. 2011; Van Hook and Zhang 2011).

The migration literature focuses primarily on the determinants of immigration and considerably less on factors affecting return migration or duration of stay in the host country (Durand 2006; Lindstrom 1996; Reyes 2004; Van Hook and Zhang 2011). One exception is Durand's (2006) typology of return migration, which includes (1) voluntary return; (2) "failed migration," referring to the inability to survive in the host country because of illness, disability, unemployment, or difficulty adapting to an often hard host country environment; and (3) forced repatriation through deportation. Immigrant departures from the United States through deportation have increased considerably in recent years; nonetheless, the majority of migrants decide themselves to return to Mexico (Passel et al. 2012).

In the U.S.-Mexican context, voluntary return migration has, historically, involved circular migrants who come to the United States intending to earn money for a house or business, to pay off debt, or to achieve some other goal (e.g., to obtain permanent residence or a certificate or skill) and then return to Mexico (Massey et al. 2002). Immigration to the United States can also be part of a household risk-management strategy in response to poor capital, credit, and insurance markets in Mexico (Massey et al. 2015; Stark 1991). In theory, the timing of return is a function of how long it takes to earn the needed capital (or achieve other goals). The amount of money that migrants hope to earn and what they plan to use it for depends on conditions in their places of origin (Lindstrom 1996; Massey et al. 2006). For example, Massey et al. (2006) reported that migrants from traditional migrant-sending areas typically seek funds for homes first and then businesses, whereas for migrants from newer sending regions, businesses are the first priority. Whether migrants come from traditional or

new sending regions also affects access to established social networks in the United States, which can facilitate longer stays because of greater social and financial support and links to friends and family in the United States and Mexico. The length of time that an immigrant needs to earn the target amount is influenced by his/her own human capital, including educational attainment and skills level, ability to speak English, age, and financial assets to survive periods of unemployment (Massey et al., 2015; Ravuri 2014; Reyes 2001, 2004; Van Hook and Zhang 2011). Return migration rates also differ by gender, perhaps because women find better employment opportunities and return for human capital in the U.S. labor market than men (Feliciano 2008). Labor market and economic conditions in migrants' destination region also affect the time required to earn the target capital. For example, the construction industry—a prime source of employment for Mexican migrants— was particularly hard hit during the U.S. financial crisis of 2007–2009 (Villareal 2014).

Despite an initial intention to return home, migrants' plans can change as they develop labor market, financial, social, and affective ties in the United States. Migrants who are particularly successful financially may be less likely to return. For example, several studies have shown that those who own homes in the United States have significantly lower chances of return migration (Massey et al. 2015; Ravuri 2014). Migrants with relationships, marriages, and children in the United States are also less likely to return (Massey et al. 2015). Changes in policy can also have an important effect: return migration patterns have been dramatically altered by militarization of the U.S.-Mexico border. Reyes (2001) and Massey et al. (2015) argued that this policy has created a bifurcated system in which undocumented migrants in the United States are now less likely to return to Mexico than in the past (given that reentry to the United States after departure is much more dangerous and risky), but documented migrants are more likely to return because they can move freely back and forth across the border.

Migrants' plans can also change because a significant health or other problem necessitates an early return to Mexico—an experience that Durand (2006) labels "failed migration." For example, a serious (physical or mental) illness or disabling injury often means significant time out of the labor force and requires medical care that is frequently inaccessible to immigrants (especially if undocumented) in the United States. Access to health care has increased in Mexico because of the advent of universal health care, further increasing the disparity in access between the two countries. The effects of universal health care in Mexico on return migration, if any, are likely to be greater in the future because its implementation in all areas of the country was completed only in 2012 (Knaul 2012). Nonetheless, it is reasonable to expect that migrants in poor health were more likely to return home because of family support, lower cost of living, and less-expensive, more-accessible health care, even before universal health care was implemented.

Direct evidence on the extent to which return migrants are in poorer health than those who stay in the United States is scarce because it requires measurement of migrant health and subsequent observation of whether these migrants return to Mexico. However, two studies have directly examined the link between health status and return migration in Europe. Both studies concluded that unhealthy migrants are *less* likely to return than those who are healthy. Using data from a large epidemiological survey and patient registers in Denmark,

Norredam et al. (2014) found that migrants with severe chronic disease are less likely to return to their countries of origin. Sander (2007) found that although self-rated health and return migration are not significantly associated for female migrants in Germany, male migrants who reported worse health status were less likely to leave Germany than their healthier counterparts. Part of the reason may be that migrants in both countries had access to high-quality health care, which may not have been as readily available in their home countries. In Denmark, in particular, this care was free. Furthermore, in the Norredam et al. (2014) study, one-third of migrants were refugees—who are much less likely to return home by definition—and labor migrants were excluded. Thus, the circumstances in the Danish study differ substantially from those of Mexican immigrants in the United States.

Two studies of internal rural to urban migration in China also examined health selectivity in return migration. Residency permits and other hurdles faced by labor migrants within China make the situation similar to labor migration from low- and middle-income countries to the United States and Europe. Lu and Qin (2014) found that excellent self-rated health significantly increases the chances of staying in the destination area, while deteriorating health increases the likelihood of returning home. In a survey of migrants and nonmigrants, Wang and Fan (2006) found that poor health is a reason for returning home for some migrants. However, far more common reasons include the need to take care of a family member at home and the difficulty of finding a job at the destination.

Data

This analysis is based on longitudinal data from the MxFLS, a nationally representative survey of the Mexican population (Rubalcava and Teruel 2006). Three waves of data have been collected to date: a baseline survey in 2002 of 35,677 individuals in 8,440 households and follow-up surveys in 2005–2006 (MxFLS-2) and 2009–2012 (MxFLS-3).

An innovative feature of the survey critical for this analysis is that the MxFLS attempted to follow all individuals from their household of origin, irrespective of destination. More than 90 % of respondents who migrated to the United States between Waves 1 and 2 were located and interviewed in the United States at the time of the second wave, albeit with a different and more concise questionnaire than those interviewed in Mexico (Rubalcava et al. 2008). In addition, the location of almost all these immigrants was obtained at Wave 3, either from the migrants themselves or from their families. An additional advantage of the MxFLS is the extensive information collected about the health status of respondents in the United States as well as other characteristics, such as socioeconomic status and household composition, which may confound the relationship between health and the probability of return migration.

The sample for this analysis comprises Mexican adults who lived in Mexico at Wave 1 (2002), moved to the United States between Waves 1 and 2 (i.e., 2002–2005), and resided in the United States at the time of Wave 2 (2005). We examine whether these migrants returned to Mexico between Waves 2 and 3. MxFLS defines adults as those aged 15 and older. Because information on the date of return for return migrants is not available, we define return migration to Mexico as living in Mexico as of the third wave. Migrants who moved back to Mexico after Wave 2 but then returned to the United States prior to Wave 3

are, therefore, not counted as return migrants. However, in light of the steep decline in migration from Mexico to the United States after 2005 (Passel et al. 2012; Villareal 2014), the number of such migrants is likely to be modest. Hence, we sometimes refer to the outcome variable as returning to Mexico by Wave 3.

In MxFLS-2, 854 respondents (2.5 % of the baseline sample) were living in the United States; 719 of these respondents were adults (ages 15 and older). Among this group, 25 were dropped from the sample: six who died by Wave 3, six with unknown location at Wave 3, and 13 who reported that their arrival in the United States was prior to the baseline survey. After elimination of these cases, the sample comprises 694 immigrants.

Among these 694 adult immigrants at Wave 2, 65 (9.4 %) refused to be interviewed, and an additional 69 (9.9 %) were interviewed by proxy, typically by relatives who lived either in the respondent's household in the United States or in Mexico. Because the analysis depends heavily on high-quality reports of the migrant's health status at Wave 2, we excluded proxy reports: that is, we included only those interviewed by phone or in person (N = 560, or 80.7 % of adult immigrants at Wave 2) in the sample. (Note that we do include proxy reports of a respondent's location at the time of Wave 3, as described later.) This restriction could be problematic if the likelihood of return migration differed by whether a migrant was interviewed at Wave 2. To examine this potential bias, we estimated a logistic model in which the probability of return migration was predicted by demographic characteristics (sex, age, and rural residence from the 2002 interview in Mexico) and whether the individual was interviewed in 2005. Because this model does not include data from the U.S. interviews, it was estimated for the full sample of adult migrants at Wave 2 (N = 694). The results indicate no association between being interviewed in 2005 and subsequent return to Mexico, mitigating concerns about selection bias in the sample of 560 migrants interviewed in the United States.

The frequency of missing data for the health and control variables ranges from 0.0 % to 2.9 %. Only 42 of the 560 interviewed migrants (7.5 %) lack information on any of the variables of interest; these respondents are excluded from the models, leaving a final analytic sample of 518 adults.

Variables

Outcome Variable

The outcome variable—whether migrants in the United States at Wave 2 resided in Mexico at Wave 3—is based on information on where the respondent was interviewed at Wave 3. For those not interviewed, we use additional information on (1) their location as reported by family members and (2) whether respondents were located but refused to be interviewed in the United States.

Health of Migrants

We focus the analysis on two overall measures of health asked of adult migrants in MxFLS-2: self-rated health at Wave 2 and perceived change in health since migration. The self-rated health question is worded as follows: "If you compare yourself with people of the

same age and sex, would you say that your health is (…)?" The second question assesses perceived change in health since migrating to the United States: "Comparing your health to just before you came to the United States, would you say your health now is (…)?" Although responses to self-reports of overall health may be affected by language of interview, extent of acculturation, personality, and other variables (Bzostek et al. 2007), individual assessments of *change* in health are considerably less likely to be biased by such factors. Because few respondents reported the extreme categories of "much better" or "much worse," we collapsed responses to both questions into three categories: "better," "same," and "worse," with "same" health as the reference category.

We consider three additional health outcomes related to major health events and mental well-being. These binary variables assess whether the respondent (1) had any severe health problem in the past year; (2) felt more tired or down than normal in the past four weeks; and (3) had a wish to die in the past four weeks.

Control Variables

Because the MxFLS oversampled rural areas, we include a dummy variable for rural residence at Wave 1 (locations with 2,500 or fewer residents) in all models. In addition, we control for several demographic, economic, household composition, and geographic measures that previous research suggests are related to return migration, as described in the Background section. The demographic variables include gender (male), age (linear), and years of schooling (linear). In exploratory models, we included quadratic terms for age and years of schooling, but neither proved significant.

Economic measures include sector of U.S. employment (construction, other sector, and unemployed (reference group)); assets (owns a house, owns no assets, or owns assets other than a house, which typically consist of vehicles, furniture, and electronic goods (reference group)); and a dummy variable for whether the migrant always or frequently speaks English (as opposed to sometimes, rarely, or never). To reflect social and family ties, we include two dummy variables pertaining to the location of the migrant's children: whether the migrant has children (age 12 or younger) in his/her U.S. household and whether the migrant has children of the same ages in his/her household in Mexico.[1] An additional three-category variable denotes whether the migrant has a spouse and if so the location of the migrant's spouse: in the U.S. household, in the Mexican household or somewhere else, or the migrant does not have a spouse (reference group).

Finally, we consider two geographical variables. Because of small sample sizes, we originally considered separate categories for the three states with the largest migrant populations (California, Texas, and Illinois), but we subsequently dropped the California variable because of its small coefficient. The results remained the same when we considered regional classifications for U.S. residence in lieu of the state categories. Another geographical variable is the region of origin in Mexico, based on the states sampled in the MxFLS: traditional migrant-sending states (Durango, Guanajuato, Jalisco, and Michoacán); newer migrant-sending states (Oaxaca and Puebla), and other states (reference group).

[1]Two percent of the analytic sample reports children in both places.

Variables denoting region of origin and rural residence are based on information collected in Wave 1; all other variables come from the U.S. and Mexico interviews in Wave 2.

Previous research suggests that documentation status has a significant impact on the probability of return migration (Massey et al. 2015). In MxFLS-2 interviews in the United States, only the first 100 migrants were asked directly about their documentation status at the time of their last entry into the United States. Because of the sensitivity of this question, MxFLS interviewers stopped asking the question for subsequent interviews and instead inferred documentation status from conversations during the interviews whenever possible. Approximately 79 % of the analytic sample was classified as undocumented at the time of the most recent arrival. In preliminary models, we included the documentation status variable. The coefficients indicated that undocumented migrants were considerably more likely to return home than their legal counterparts, but the coefficients were never statistically significant and had virtually no effect on the coefficients of the health variables. Because documentation status: (1) was not reported directly by the majority of respondents, (2) refers to the time of the migrants' last entry to the United States and not necessarily the respondent's actual status in 2005, and (3) is missing for 6 % of the analytic sample, the variable is not included in the models shown in this article.

Methods

We estimate a series of logistic regression models to assess whether the health status of migrants is associated with the likelihood that the sample members are in Mexico at Wave 3. For each of the two general health variables described earlier, we estimate two models: one with only basic control variables (age, sex, education, and rural area of residence in Mexico), and one with the full set of controls. For each of the subsequent three health variables, we estimate a model with the full set of controls. We explored estimating separate models for men and women, but the sample size for women (N = 196) was too small. Because the sample is clustered—the 518 adult migrants in our sample reside in 403 households—we include a random effect for household in all models. The estimates are computed in STATA 12 using the *xtlogit* command (StataCorp 2011).

Results

Descriptive statistics are presented in Table 1. About 45 % of adult migrants residing in the United States at Wave 2 were back in Mexico at Wave 3. About two-thirds of the migrants reported that their overall health is the same as before they left Mexico, and a slightly smaller proportion rated their health the same as their peers; for both variables, a higher proportion reported "better" than "worse" health. Six percent of migrants reported having had a wish to die in the past four weeks, but more than one-third reported having felt tired or down during this period. About 15 % of migrants reported having experienced a major health problem during the past year. The average age of the migrants is 27 years, the mean educational attainment is eight years, more than 60 % are male, and almost one-half emigrated from rural areas in Mexico. The descriptive statistics, shown separately for those who were in the United States at Wave 3 (stayers) and for return migrants, reveal poorer health outcomes for the return migrants for each of the five health-related variables. The

regression analyses presented later assess whether these differences persist in the presence of control variables.

Odds ratios (OR) of returning to Mexico between Waves 2 and 3 are presented in Table 2 for the two general health status outcomes: perceived change in health status, and self-rated health status relative to someone of the same age and sex. Despite the inclusion of a large number of potential confounders, the estimates for the health variables change little between the model with only demographic controls and the corresponding model with the full set of controls. As can be inferred from the finding that most of the economic, household composition, and geographic control variables are significantly associated with the probability of return migration, the lack of confounding arises because these variables are not strongly associated with the health status of the migrants.

The results for both health variables suggest a link between worse health and a higher likelihood of returning to Mexico, but the significant associations are at opposite ends of the rating scale. For perceived change in health status since emigration, respondents who reported that their health *improved* have a significantly and substantially lower likelihood of returning to Mexico than those reporting no change in health (OR = 0.33, $p < .05$, Model 2), whereas those reporting declining health have the same risk as those reporting no change. In contrast, for the self-rated health variable, those reporting *worse health* than their peers have more than six times the odds (OR = 6.09, $p < .05$, Model 4) of returning to Mexico as those reporting the same health, whereas those reporting better health have a similar risk as those reporting the same health.

Table 3 presents the odds ratios for logistic regression models, including the three additional health-related variables: whether the migrant experienced a serious health problem in the past year, whether the migrant felt more tired or down than normal in the past four weeks, and whether the migrant felt like he/she wanted to die during the past four weeks. These variables were included (one at a time) in a logistic regression model along with the full set of control variables. Although none of the three were significantly associated with return migration, all odds ratios were greater than 1, as expected, and were of sizable magnitude (between 1.4 and 2.1).

Consistent with previous theory and research, most of the control variables have strong and significant associations with return migration. In the models with only health and demographic characteristics (Models 1 and 3 in Table 2), the likelihood of return is much higher for men than women. Economic characteristics are associated with returning to Mexico in the expected direction: construction workers are more likely to return than the unemployed (although most of the *p* values for this variable in Table 2 and Table 3 just exceed .05), and English speakers are significantly less likely to do so compared with those who speak English infrequently or not at all. We explored several formulations of the assets variables, but none were significantly associated with the probability of return except ownership of a house in the United States in some of the models. As Ravuri (2014) and Massey et al. (2015) found, migrants who own a house are less likely to return than others. Family ties are also important: having children in the U.S. household is significantly associated with a lower likelihood of return, but having children in the Mexican household is

associated with a higher probability of return (the latter estimates are only marginally significant, $p < .10$). Migrants with a spouse in their Mexican household (or elsewhere) are much more likely to return than those with no spouse or a spouse in their U.S. household. In terms of geography, migrants in Texas are less likely to return than those in other states, perhaps because of well-established labor markets and social networks for migrants. Although difficult to determine from the MxFLS, a higher proportion of immigrants in Texas may have been undocumented and therefore less likely to return to Mexico because of concern about the riskiness of trying to reenter the United States at a later time. As in previous research, our results also show significant differences by region of origin in Mexico: specifically, migrants from newer origin states are significantly less likely to return to Mexico than those from traditional origin states (not shown) or from other states.

Values for rho (ρ), derived from the household random effect and presented at the bottom of Table 2 and Table 3, indicate a large intrahousehold correlation of the outcome: members of the same household are much more likely to return together to Mexico or stay together in the United States than persons selected at random from different households.

In preliminary analyses, we estimated models including the following variables, which the literature also suggests are related to migration: year of arrival (single years between 2002 and 2005, to provide an approximate control for duration in the United States); whether the migrant sends remittances (money or gifts) to someone in Mexico; monthly earnings in the United States during the month preceding the 2005 interview from their current job at the time (or from the last month of their most recent job); and reason for coming to the United States on the last trip (work, family or spouse, other). None of these variables were significant in the preliminary models or when added to the models shown in Table 2 and Table 3. In light of the relatively small sample size for analysis and the additional missing values for these variables, we excluded them from the models presented here.

Discussion

The central question in this analysis has been whether migrants returning from the United States to Mexico have worse health than those remaining in the United States. The simple answer is “yes.” Two self-reported measures of health—change in health since emigrating from Mexico, and self-rated health relative to others of the same age and sex—support health-related selection. In addition, three measures focusing on mental health and major recent health events provide consistent albeit not statistically significant results. The estimates are robust to the inclusion of potential confounders reflecting the migrants’ economic situation, family ties, and origin and destination characteristics. Although these results do not provide the basis for assessing the magnitude of health-selective return migration in accounting for the Latino paradox, this was not the objective of our analysis. Rather, our goal was to explore an issue that has received very little attention in the literature on U.S.-Mexico migration: whether Mexican immigrants in poor health are more likely to return to Mexico. We provide direct evidence from following migrants over time and space that migrant health is associated with return migration.

Unfortunately, we are unable to provide a deeper examination of the relation between health and return migration, for two reasons: MxFLS-2 does not provide information on the specific health issues faced by the migrants or on whether their return trips were voluntary. In light of the many stressors faced by Mexican migrants (particularly the undocumented), including risks of apprehension at the border, crossing the Sonoran desert and other harsh areas, deportation, lack of health care, lack of suitable housing and employment, and poverty more generally, their health status reports are likely to reflect both poor mental health (including depression and anxiety) and poor physical health (Cavazos-Rheg et al. 2007; Torres and Wallace 2013). Poor health reports may also be driven by the high rates of work-related injuries for occupations predominantly held by migrants and by poor enforcement of labor laws (Gleeson 2010; Loh and Richardson 2004; O'Connor et al. 2005; Orrenius and Zavodny 2009). Furthermore, chronic illnesses, such as diabetes and heart disease, which are prevalent across ethnic groups, may be exacerbated among Mexican immigrants because of poverty and poor access to health care (Ortega et al. 2007).

A remaining question is the extent to which migrants in poor health return to Mexico *because of* their health situation. Alternative explanations reflect indirect selection mechanisms. The association between poor health and return migration may result partly from higher deportation rates[2] among less-healthy migrants or from economic factors that are linked to health (e.g., loss of jobs in sectors associated with high injury rates, although our analysis included some controls for this mechanism). Moreover, we do not know whether migrants who return because of poor health do so primarily for the support and company of relatives, because of inability to function at a satisfactory level in the United States, or with the expectation of obtaining better and more affordable medical treatment in Mexico than the typically minimal care available to undocumented migrants in the United States.

As with any analysis of the determinants of migration streams, our estimates may be specific to the period of study. The period analyzed here, 2005–2012, witnessed a precipitous decline in migration from Mexico to the United States as well as rates of return migration that were higher than in the previous decade (Passel et al. 2012; Villareal 2014). Changes in the volume of migration may be accompanied by changes in the selectivity of migrants (Villareal 2014). In the next decade, the advent of universal health insurance in Mexico (Knaul et al. 2012) combined with continuing barriers to accessing health care for undocumented migrants in the United States may make health an even more salient issue in migrants' decisions about returning to Mexico.

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[2]As much as one-third of return migration during this period may be due to deportation (Passel et al. 2012).

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Table 1

Description of outcome and explanatory variables in the analytic sample (N = 518)

Variables	Full Sample % or Mean (SD)[a]	Stayers % or Mean (SD)[a]	Return Migrants % or Mean (SD)[a]
Outcome			
Return to Mexico	44.5	0.0	100.0
Health Variables			
Perceived change in health status			
Better	22.6	24.0	20.8
Same	66.2	65.2	67.5
Worse	11.2	10.8	11.7
Self-rated health status relative to same age and sex			
Better	33.1	36.5	28.9
Same	60.8	60.8	60.9
Worse	6.1	2.7	10.2
Severe health problems	14.5	12.6	16.8
Feel down, tired	38.4	36.8	40.3
Wish to die	6.4	5.7	7.2
Demographic Characteristics			
Male	60.7	54.8	68.1
Age (years)	27.3 (10.0)	26.7 (9.7)	28.1 (10.3)
Schooling (years)	8.1 (3.2)	8.6 (3.2)	7.5 (3.2)
Rural origin (2002)	47.3	53.3	39.9
Economic Characteristics			
Employment sector			
Not employed	25.9	27.8	23.7
Construction	20.3	16.4	25.1
Other sector	53.8	55.8	51.2
Speaks English	27.9	33.6	20.7
Assets			
No assets	14.1	12.0	16.9
House	4.4	7.9	0.2
Other assets	81.4	80.2	83.0
Family Structure			
Children 0–12 years in United States	22.9	29.0	15.2
Children 0–12 years in Mexico	12.6	6.8	19.8
Spouse location			
No spouse	46.1	47.7	44.0
Spouse in the United States	34.2	41.9	24.6
Spouse in Mexico or elsewhere	19.7	10.4	31.4
Geographic Characteristics			
State of residence in United States			

Variables	Full Sample % or Mean (SD)[a]	Stayers % or Mean (SD)[a]	Return Migrants % or Mean (SD)[a]
Texas	15.3	23.0	5.7
Illinois	5.3	5.2	5.3
Other	79.4	71.8	88.9
Region of origin in Mexico[b]			
Traditional migration states	49.8	50.4	49.1
Newer migration states	14.2	17.2	10.4
Other states	36.0	32.4	40.5
N	518	318	200

[a] Weighted by rural residence.

[b] Traditional migration states: Durango, Guanajuato, Jalisco, and Michoacán. Newer migration states: Oaxaca and Puebla. Other states: Baja California Sur, Coahuila, D.F., Estado de México, Morelos, Nuevo León, Sinaloa, Sonora, Veracruz, and Yucatán.

Table 2

Odds ratio from a logistic regression of return migration to Mexico for global health variables (N = 518)

	Model 1		Model 2		Model 3		Model 4	
	OR	***t* Statistic**	**OR**	***t* Statistic**	**OR**	***t* Statistic**	**OR**	***t* Statistic**
Health Variables								
Perceived change in health status (ref. = same)								
Better	0.39*	–2.33	0.33*	–2.33				
Worse	1.16	0.32	1.03	0.05				
Self-rated health status relative to same age and sex (ref. = same)								
Better					0.63	–1.31	0.68	–0.97
Worse					6.71**	2.62	6.09*	2.27
Demographic Characteristics								
Male	3.01**	3.25	0.98	–0.05	3.44**	3.42	1.09	0.19
Age (years)	1.03*	1.99	1.00	0.04	1.03	1.92	1.00	0.04
Schooling (years)	0.91	–1.75	0.92	–1.23	0.95	–0.98	0.97	–0.51
Rural origin (2002)	0.61	–1.34	0.53	–1.46	0.56	–1.47	0.48	–1.61
Economic Characteristics								
Employment sector (ref. = not employed)								
Construction			3.60	1.88			3.87	1.93
Other sector			1.27	0.46			1.26	0.43
Speaks English			0.26**	–2.76			0.23**	–2.89
Assets (ref. = other assets)								
No assets			1.90	1.30			1.64	0.99
House			0.04*	–2.03			0.05	–1.87
Family Structure								
Children 0 –12 years old in United States			0.29*	–2.13			0.30*	–2.04
Children 0 –12 years old in Mexico			3.34	1.82			3.90	1.96
Spouse location (ref. = no spouse)								
Spouse in United States			0.86	–0.29			0.76	–0.53
Spouse in Mexico or elsewhere			4.49*	2.48			3.98*	2.26

	Model 1		Model 2		Model 3		Model 4	
	OR	***t* Statistic**	**OR**	***t* Statistic**	**OR**	***t* Statistic**	**OR**	***t* Statistic**
Geographic Characteristics								
State of residence in United States (ref. = other states)								
Texas			0.23*	–2.24			0.24*	–2.16
Illinois			0.31	–1.56			0.32	–1.46
Region of origin in Mexico (2002) (ref. = other states) [a]								
Traditional migration states			0.45	–1.62			0.48	–1.47
Newer migration states			0.09**	–3.28			0.08**	–3.23
Rho (ρ)	0.56**		0.61**		0.59**		0.63**	

Note: All models include a random effect for the household.

[a] Traditional migration states: Durango, Guanajuato, Jalisco, and Michoacán. Newer migration states: Oaxaca and Puebla. Other states: Baja California Sur, Coahuila, D.F., Estado de México, Morelos, Nuevo León, Sinaloa, Sonora, Veracruz, and Yucatán.

* $p < .05$

** $p < .01$

Table 3

Odds ratio from a logistic regression of return migration to Mexico for severe health problems and mental well-being (N = 518)

	Model 5		Model 6		Model 7	
	OR	***t* Statistic**	**OR**	***t* Statistic**	**OR**	***t* Statistic**
Health Variables						
Severe health problems	1.86	1.20				
Feel down, tired			1.44	1.00		
Wish to die					2.07	1.09
Demographic Characteristics						
Male	1.01	0.02	1.07	0.15	1.10	0.21
Age (years)	0.99	–0.33	1.00	–0.08	1.00	–0.11
Schooling (years)	0.95	–0.81	0.96	–0.74	0.96	–0.73
Rural origin (2002)	0.54	–1.44	0.55	–1.42	0.56	–1.38
Economic Characteristics						
Employment sector (ref. = not employed)						
Construction	3.86*	2.02	3.53	1.91	3.42	1.89
Other sector	1.39	0.64	1.27	0.47	1.27	0.48
Speaks English	0.23**	–2.99	0.24**	–2.95	0.24**	–2.96
Assets (ref. = other assets)						
No assets	1.97	1.36	1.83	1.25	1.83	1.26
House	0.05	–1.95	0.05	–1.95	0.04*	–2.01
Family Structure						
Children 0–12 years old in United States	0.30*	–2.07	0.29*	–2.13	0.31*	–2.06
Children 0–12 years old in Mexico	3.20	1.77	2.97	1.68	2.97	1.71
Spouse location (ref. = no spouse)						
Spouse in United States	0.82	–0.40	0.80	–0.45	0.83	–0.38
Spouse in Mexico or elsewhere	4.48*	2.51	4.54*	2.55	4.74**	2.63
Geographic Characteristics						
State of residence in United States (ref. = other states)						
Texas	0.24*	–2.22	0.25*	–2.21	0.25*	–2.19

	Model 5		Model 6		Model 7	
	OR	***t* Statistic**	**OR**	***t* Statistic**	**OR**	***t* Statistic**
Illinois	0.33	–1.52	0.34	–1.48	0.37	–1.40
Region of origin in Mexico (2002) (ref. = other states) [a]						
Traditional migration states	0.45	–1.66	0.44	–1.70	0.44	–1.72
Newer migration states	0.08**	–3.30	0.09**	–3.29	0.09**	–3.33
Rho (ρ)	0.60**		0.60**		0.59**	

Note: All models include a random effect for the household.

[a]Traditional migration states: Durango, Guanajuato, Jalisco, and Michoacán. Newer migration states: Oaxaca and Puebla. Other States: Baja California Sur, Coahuila, D.F., Estado de México, Morelos, Nuevo León, Sinaloa, Sonora, Veracruz, and Yucatán.

*$p < .05$

**$p < .01$