A Multistate Life Table Approach to Understanding Migration To and From Mexico and the U.S. During Later Life

Alma Vega

RAND Corporation

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Abstract

Scientific research and popular media describe international retirement migration as increasingly common among older Americans and older Europeans. However, far less research examines this phenomenon among older Mexican immigrants in the U.S. The literature that does address this topic treats international migration as a singular occurrence and does not examine the possibility of circular migration between countries. Using a multistate life table approach, this study examines the probability of migration to and from Mexico during later life among older Mexican immigrants in the U.S. and Mexicans in Mexico with U.S. migration experience. Preliminary results suggest that for Mexican males aged 65 years and older with U.S. migration experience, the probability of migration from the U.S. to Mexico is higher than the probability of migration from Mexico to the U.S. In contrast, at all ages, this pattern is the opposite for females.

1   Introduction

Scientific research (Casado-Díaz, Kaiser, & Warnes, 2004; King, Warnes, & Williams, 1998; Percival, 2013; Sunil, Rojas, & Bradley, 2007) and popular media (Christie, 2006; Gray, 2014; Hawley, 2007) describe international retirement migration as increasingly common among older Americans and older Europeans. Prominent reasons why these two groups move abroad are lower cost-of-living, favorable climate and greater amenities available abroad (Sunil et al., 2007; Casado-Díaz et al., 2004).

However, far less research examines international retirement migration among older Mexicans, particularly those stationed in the U.S. upon reaching retirement age. Mexicans are the largest immigrant group in the U.S. (30%) (Grieco & Trevelyan, 2010) and their migration stream represents the largest migrant flow in the world (The World Bank, 2011).

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However, despite their rapid population growth and rapid aging (Administration on Aging, 2010), scant work has been done on the migration behavior of this population.

The migration patterns of this group hold important social and economic implications for the U.S. Hispanic immigrants consume disproportionately more Supplemental Security Income than older elderly groups (Smith & Edmonston, 1997) but are ineligible to collect these benefits, as well as Medicare, while abroad. International retirement migration may also call into question traditional measures of elderly well-being which often focus on financial and health measures and omit preferences regarding location of retirement. Whereas 38% of newly legalized Mexicans intend to retire in Mexico (Aguilera, 2004), little information exists as to how many actually do so.

Though not specific to older Mexicans, there is a sparse but vibrant literature on the reasons for international retirement migration. Litwak and Longino (1987) were among the first to present a theory on later-life migration distinct from that of working-age individuals. The authors posit that post-retirement moves generally occur for three reasons. The first takes places immediately after retirement in order to search for better amenities, the second involves moving closer to a caretaker after mild disability sets in and thirdly, a move to an institution to receive more intensive caretaking. While this theory is not specific to international retirement migration, it can conceivably apply to migration across international borders.

Empirical research suggests that this may, at least partially, be the case among older Americans and older Europeans. One group of older Americans who retired in Lake Chapala, Mexico (Sunil et al., 2007) and older Europeans who migrated from Northern to Southern Europe for retirement (Casado-Díaz et al., 2004) both migrated at relatively "young" old ages in order to take advantage of greater amenities at a lower cost abroad. However, there is no empirical evidence that these two groups subsequently cross borders at later ages to move closer to caregivers in the home country.

There is less information on whether older Mexican immigrants exhibit this pattern. The literature that does address this topic examines older Mexicans in Mexico who at some point returned from the U.S. and does not focus on those who returned to Mexico specifically during later life (Aguila & Zissimopoulos, 2008; Ruiz-Tagle & Wong, 2009).

This gap in the literature is important as older Mexican immigrants may have motivations for migrating abroad distinct from those of older Americans and Europeans. The former group often enters retirement age with circumstances unique to their status as U.S. immigrants. For example, elderly Hispanics often face truncated work histories which may impede on their ability to receive retirement benefits in either the destination or home country (Aguila & Zissimopoulos, 2008),[1] legal impediments to old-age support programs[2] and social networks scattered in two countries (Roberts, Frank, & Lozano-Ascencio, 1999).

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[1]Aguila and Zissimopoulos (2008) find that older Mexicans in Mexico with U..S. migration experience had lower rates of public insurance coverage than those who had not been to the U.S., suggesting their low rates of contributions to Social Security systems. The authors conjecture that this result may be attributable to truncated work histories.

[2]In order to qualify for U.S. Social Security benefits, immigrants must legally be present in the U.S. and have worked in the U.S. for at least 10 years.

Moreover, as noted by (Aguilera, 2004)

> "[T]ransnational migrants can simultaneously have obligations and commitments in their countries of origin and the United States. I predict the such transnational behavior will lead the immigrant to view Mexico as a possible retirement location (p. 344)."

In theory, older Mexican immigrants have incentives for both returning to Mexico and for reentering the U.S. Possible reasons for returning to Mexico include rejoining social networks left behind in the home country (Aguilera, 2004; Massey, 1987), land ownership in the home country (Aguilera, 2004; Durand, Kandel, Parrado, & Massey, 1996; Massey, 1987; Roberts et al., 1999), the desire to die in one's country of origin (Massey, 1987) and enjoying a lower cost of living during retirement (Sunil et al., 2007). On the other hand, compelling motives for reentering the destination country include proximity to children born in the destination country (Bolzman, 2013) and access to Medicare and Supplemental Security Income. As noted, these programs are only available to individuals in the United States.

The motivations underpinning migration may differ, however, based on gender. Studies find that the migration patterns of working-age Mexican women differ from those of men (Cerrutti & Massey, 2001; Kanaiaupuni, 2000) but few have examined whether this is the case for older Mexican immigrants. Research shows that older women from other cultures often migrate to care for young grandchildren (Baldassar, Baldock, & Wilding, 2007; Zhou, 2013), much more so than men (Baldassar et al., 2007).

Despite its salience, several factors have made studying international retirement migration a daunting challenge, not the least of which is the absence of adequate data. The ideal data source with which to answer these questions would contain all Mexican immigrants in Mexico who recently returned from the United States as well as all Mexican immigrants in the U.S. who recently arrived from Mexico. In the absence of this ideal, past researchers have relied on alternative data sources that, by themselves, are limited in documenting this phenomenon (Ibarraran & Lubotsky, 2007).

A second challenge in studying international retirement migration is methodological limitations. To date, most research on international retirement has treated this migration stream as a singular occurrence rather than a cyclical movement across borders (Sunil et al., 2007; Casado-Díaz et al., 2004; King et al., 1998; Aguila & Zissimopoulos, 2008). By design, this method does not capture subsequent return and unrealistically assumes that once settled, older migrants do not move. As noted by Cassarino (2004)

> "Return migration is part and parcel of a circular system of social and economic relationships (p. 262)."

This study addresses this gap in the literature by examining migration to and from Mexico and the U.S. during later life, and comparing these patterns to those described by Litwak and Longino (1987). It is among the few to zoom in on migration at older ages rather than treat age as a continuous variable in a model examining Mexican immigrants of all ages. In this way, this study contributes to an important demographic literature which has to date been limited, primarily, to older Americans and older Europeans.

2   Research questions

- What proportion of Mexicans immigrants in the U.S. return to Mexico and then re-enter the U.S. at older ages?

- Does the age profile of migration among older Mexican immigrants fall in line with Litwak and Longino's theory of retirement migration?

3   Methods

3.1   Data

As the ideal data with which to examine this issue is not available, I use a pooled sample from two data sources to recreate the population of interest, namely all Mexicans in Mexico who returned from the United States as well as all Mexican immigrants currently in the U.S.

Moreover, as the present study is concerned with the effect of U.S. migration experience on the country in which a migrant lives out her later years, I restrict the sample of individuals in Mexico to those who at some point returned from the U.S. These migrants have a better grasp of the advantages and risks of living in the U.S., and offer a clearer portrait of the retirement location preferences of immigrants than first-time migrants to the U.S.

I use the the 1997 National Survey of Demographic Dynamics (ENADID) to examine Mexicans in Mexico who returned from the U.S. and the 2000 Integrated Public-Use Microdata Series (IPUMS) for the U.S. (Minnesota Population Center, 2013)[3] to examine Mexican immigrants in the U.S. The ENADID is a nationally representative sample survey conducted by Mexico's National Institute of Statistics, Geography and Informatics (INEGI) in 1992, 1997, 2006 and 2009 and has been widely used by researchers to examine U.S.-Mexico migration (Bean, Corona, Tuirán, & Woodrow-Lafield, 1998; Hill & Wong, 2005; Marcelli & Cornelius, 2001; Massey & Zenteno, 2000). IPUMS U.S.A. consists of the 5% sample of the 2000 census harmonized by the Minnesota Population Center to facilitate cross-country comparisons. While IPUMS Mexico (2000) is temporally closer to IPUMS U.S.A. (2000) than the ENADID, it does not indicate whether migrants had previous U.S. migration experience.

The pooled sample consists of Mexican-born individuals aged 50 years and older in IPUMS USA who reported living in the U.S. five years prior (N=59,652) and all Mexicans in Mexico aged 50 years and older who reported having lived in the U.S. at some point (N=3,729) including those who returned from the U.S. within the previous five years (N=126).

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[3]Although the more recent 2010 IPUMS is available, the variables available in IPUMS Mexico do not enable me to pool with IPUMS USA.

3.2 Empirical strategy

As noted, an imperative limitation in understanding cyclical return migration is the absence of longitudinal data on migration to and from the U.S. While the Mexican Migration Project (MMP) documents migrants' last 25 trips to the U.S., this information is limited to household heads. Elderly migrants may be less likely to be household heads than their working-age counterparts and may, therefore, be insufficiently covered in this data.

Therefore, I use a multistate life table approach to explore this issue. A multistate life table enables one to calculate the probability of transitions from one state to another in situations where long-term longitudinal data is not available. For example, Palloni (2001) uses this method to calculate the age-specific probability of transitioning from living in a household with two married parents to a non-union household and vice versa throughout a child's life using only retrospective data from the previous five years. Whereas a traditional life table approach and many regression techniques only allow one to observe transitions from one state to another (often life to death), a multistate life table approach accounts for the fact that at each age, there can be more than one flow.

Figure 1 illustrates this idea. This figure conveys the notion that at any given point in time, Mexican immigrants with U.S. migration experience either currently reside in the U.S. or have already returned to Mexico. For the purposes of this analysis, it is reasonable to assume that Mexican-born individuals do not reside in other countries given the very low emigration rates to countries other than the U.S. As Hill and Wong (2005) note, "it is in essense correct to view the combination of the population of Mexico and the Mexico-born population of the United States as a closed system (p. 13)." Within any given time frame, these individuals can exit their current location by migrating from Mexico to the U.S., returning to Mexico from the U.S., or by dying in either the U.S. or Mexico. The rates at which these transitions are made is represented by $m^{U,M}$, $m^{M,U}$, $m^{U,D}$ and $m^{M,D}$, respectively.

While these quantities cannot be observed in any one data source, they can be estimated using information from both the ENADID and IPUMS U.S.A. Since both data sources indicate the country in which the respondent lived five years ago, it is possible to know the number of individuals who emigrated from each country as well as those who stayed, enabling one to generate migration rates. For example, the migration rate from the U.S. to Mexico between age x and $x+5$, $_5m_x^{U,M}$, is the number of Mexicans in the ENADID who indicated having lived in the U.S. five years prior, $_5I_x^{U,M}$, divided by the mid-period population of Mexicans in the U.S. five years prior, $_5I_x^U$.

$$_5m_x^{U,M} = \frac{_5I_x^{M,U}}{I_x^U} \tag{1}$$

Implicitly, $_5I_x^U$ is a composite of two groups: the numerator group, namely, individuals who lived in the U.S. five years ago but returned to Mexico, $_5I_x^{U,M}$, and individuals who stayed in the U.S., $_5I_x^{U,U}$. Having obtained $_5I_x^{M,U}$ from the ENADID, one can obtain $_5I_x^{U,U}$ from IPUMS U.S.A. These are identified as Mexicans currently living in the United States
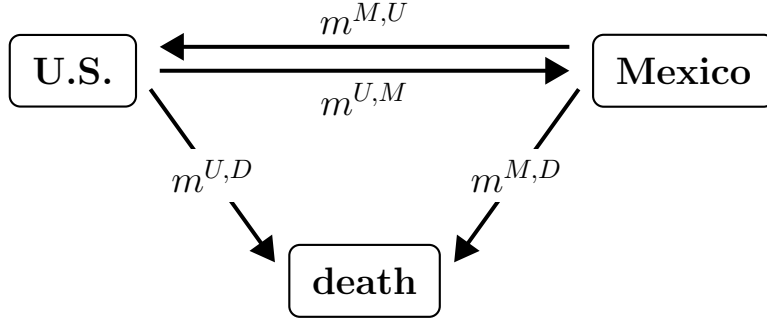
Figure 1: Probability of migration from Mexico to the U.S. and the U.S. to Mexico for Mexican immigrants aged 50 years and older

who indicated having lived in the U.S. five years prior. Combined, these two groups depict the population at risk of return migrating five years ago, namely those currently in the U.S. and those who returned to Mexico but lived in the U.S. five years prior. This supposition leads to the following equation:

$$_5m_x^{\text{U,M}} = \frac{_5I_x^{\text{U,M}}}{_5I_5^{\text{U,M}} +_5 I_x^{\text{U,U}}} \tag{2}$$

Migration rates from Mexico to the U.S. are calculated in a similar fashion. However, in this calculation, $_5I_x^{M,U}$, the numerator, is the number of individuals in the U.S. who reported having lived in Mexico five years ago. Moreover, only immigrants who are not first-time migrants are included in this total. These individuals are identified by a variable in IPUMS USA indicating the year in which the migrant first arrived to the U.S. If the migrant first arrived more than five years ago, it is assumed that her most recent entry into the United States was not her first since she lived in Mexico five years ago. Along similar lines, only individuals with previous U.S. migration experience are included in the denominator. These are individuals in Mexico who indicated having at some point returned from the U.S. in the ENADID.

Importantly, the ENADID pertains to the year 1997 whereas IPUMS U.S.A. refers to 2000. This temporal misalignment creates concern that the former does not contain the appropriate numerator for the latter. In other words, it is possible that migrants who emigrated from Mexico between 1992 and 1997, the period to which the ENADID refers, are different from those who emigrated between 1995 and 2000, the period to which IPUMS U.S.A. refers.

I account for this possibility by comparing the characteristics of the sample in the ENADID to that of a data source with the same reference period as IPUMS U.S.A., namely IPUMS Mexico (Minnesota Population Center, 2013). IPUMS Mexico is the 10.6% sample of the 2000 Mexican census who filled out the long-form questionnaire. As noted, it was not used in the final analysis since it does not identify whether migrants had ever been to the United States. However, it does capture individuals who reported living in the U.S.

five years prior (N=3,274) as does the ENADID. These individuals are compared to their counterparts in the ENADID (N=126) to determine the extent to which results may be sensitive to the data source. Rendall, Brownell, and Kups (2011) use a similar technique of comparing sample characteristics across data sources to validate the National Survey of Occupation and Employment (ENOE) against the ENADID.

Having assessed the suitability of the ENADID, I then create a matrix describing the rate at which individuals exit the U.S. to return to Mexico, $_5m_x^{U,M}$, and emigrate from Mexico to the U.S., $_5m_x^{M,U}$. I also incorporate the death rate of immigrants in the U.S., $_5m_x^{U,D}$, and that of immigrants who return to Mexico, $_5m_x^{M,D}$, between age x and $x+5$.

As it is not available from the data, I draw from the literature to obtain $_5m_x^{U,D}$ and $_5m_x^{M,D}$. For the former, I use the age- and sex-specific death rates for the Mexican-origin population in the U.S. in 2001 presented in Arias, Anderson, Kung, Murphy, and Kochanek (2003). Ten-year death rates are transformed into five-year deaths rates by fitting an exponential curve over the 10-year rates and using the resulting equation to predict corresponding 5-year rates.

I construct age-specific death rates for Mexicans with U.S. migration experience in Mexico under two scenarios. The first assumes that, as found by Turra and Elo (2008), Mexican immigrants in the U.S. who return to Mexico have higher mortality rates than those who remain. Specifically, the authors find that male Hispanic elderly immigrants who returned to their home countries had a mortality rate 15% than those who remained in the U.S. This number was 20% for females. Thus, in this first scenario, I inflate the mortality rates obtained in Arias, Anderson, Kung, Murphy, and Kochanek (2003) by these quantities to represent the mortality rates of Mexican immigrants who return migrated. Under the second scenario, it is assumed that migrants who recently returned from the United States had the same mortality rates as the general Mexican population. This scenario falls in line with evidence that emigrants from Mexico to the U.S. are just as healthy as those who remain (Rubalcava, Teruel, Thomas, & Goldman, 2008) or only suffer from different, nonetheless serious, illnesses (Ullmann, Goldman, & Massey, 2011). The mortality rates for this this scenario are drawn from ? (?).

The matrix for each age group can be represented by

$$_5\boldsymbol{M}_x = \begin{pmatrix} _5m_x^{U,M} +_5 m_x^{U,D} & -_5m_x^{M,U} & 0 \\ -_5m_x^{U,M} & _5m_x^{M,U} +_5 m_x^{M,D} & 0 \\ -_5m_x^{U,D} & -_5m_x^{M,D} & 0 \end{pmatrix} \tag{3}$$

The last column of the matrix is 0 as individuals have a 0% chance of transitioning from death to living in the U.S. or Mexico. Moreover, as multistate life table computations are usually expressed as rates of decrease, the diagonal elements of the matrix represent decrements into a state whereas the off-diagonal elements represent increments into a state.

Transition rates translate into migration probabilities via the following equation which imposes the assumption that the average person in the denominator lived through half of the five-year period:

$$_5\boldsymbol{Q}_x = (\boldsymbol{I} + 2.5{_5}\boldsymbol{M}_x)^{-1}(\boldsymbol{I} - 2.5{_5}\boldsymbol{M}_x) \tag{4}$$

where $\boldsymbol{I}$ is an identity matrix. $_5\boldsymbol{Q}_x$ can be rewritten as

$$_5\boldsymbol{Q}_x = \begin{pmatrix} _5q_x^{\text{U,U}} & -_5q_x^{\text{M,U}} & 0 \\ -_5q_x^{\text{U,M}} & _5q_x^{\text{M,M}} & 0 \\ -_5q_x^{\text{U,D}} & -_5q_x^{\text{M,D}} & 1 \end{pmatrix} \tag{5}$$

where $_5q_x^{\text{U,M}}$ represents the probability of migrating from the U.S. to Mexico between ages x and $x + 5$ and $_5q_x^{\text{M,U}}$ represents that probability of migrating from Mexico to the U.S. between these two ages. The diagonal elements of the matrix indicate the probability of remaining in the U.S., $_5q_x^{\text{U,U}}$, and remaining in Mexico, $_5q_x^{\text{M,M}}$ within this five-year period. A value of 1 in the third row of the third column represents the fact that an individual has a 100% probability of staying dead.

Using these probabilities, standard lifetable techniques are used to calculate the expected number of years one can expect a migrant to spend in Mexico and the U.S. conditional on her starting country (see Palloni (2001) for details).

This study contains notable limitations. The first is that in the absence of a natural experiment, it not possible to assess the effect of unobservables, thus barring a causal interpretation. Another limitation it that it assumes that age-specific rates will remain unchanged into the future. Given the vagaries of migration in the U.S., this assumption is tenuous albeit neutral. Yet another limitation is that this method does not account for migration to and from the U.S. within this five-year period. Rather, it only makes a statement about the probability that individuals who start out in one country end up in another country at the end of five years, without considering intervening transitions.

Despite these limitations, this study provides one of the few portraits of migration to and from the U.S. over the course of an older migrant's life.

4 Results

4.1 Descriptive statistics

A descriptive snapshot of both groups suggests that U.S. immigrants who return to Mexico are selected on various fronts. Table 1 displays weighted descriptive statistics of Mexicans in Mexico aged 50 years and older who at some point returned from the United States (within the previous five years and otherwise) and Mexican immigrants in the U.S. who lived in the U.S. five years prior. This table shows that return migrants currently in Mexico are heavily male (81.3%) compared to immigrants who remain in the U.S. (48.1%) and are generally older. Forty-three percent of return migrant males are 65 years and older compared to 27% of immigrants in the U.S. A similar pattern holds for women. Thirty-six percent of return migrant females are 65 years and older compared to 33% of Mexican immigrant women in the U.S. However, males and females differ in their marital status. Return migrant males

are more likely to be married or in a union (82.7%) than their counterparts in the U.S. (78.3%) whereas return migrant females are less likely to be married or in a union (39.5% vs. 54.4%). Substantial differences exist with regard to the educational distribution of both groups. Immigrants who remain in the U.S. are more educated than those who return. Only 38% of male immigrants in the U.S. (38% of females) received less a primary education compared to 74% (59%) of return migrants. Return migrants are also less likely to be retired than immigrants in the U.S. Only 30% of return migrant males and 64% of return migrant females are retired compared to 46% and 71% of immigrants in the U.S., respectively. In sum, this table depicts the typical return migrant from the U.S. to Mexico as an elderly married male with less than a primary education who is not yet retired.

Table 1: Weighted descriptive statistics of Mexicans in Mexico aged 50 years and older with U.S. migration experience and Mexican immigrants in the U.S.

	Return migrants		Immigrants in U.S.	
	Males (N=3,069)	Females (N=588)	Males (N=30,337)	Females (N=32,006)
Sex (%)	81.3	18.7	48.1	51.9
Age (%)				
50-54	19.8	24.8	34.7	30.2
55-59	18.6	22.2	22.7	20.9
60-64	18.1	16.9	15.0	15.8
65-69	14.1	11.8	10.2	11.3
70-74	13.7	9.3	7.3	8.8
75-79	8.3	7.2	5.1	5.9
80+	7.4	7.8	5.0	7.1
Total	100	100	100	100
Marital status (%)				
Married\In Union	82.7	39.5	78.3	54.4
Single\Widowed\Divorced	17.3	60.5	21.7	45.6
Total	100	100	100	100
Education (%)				
<Primary	73.5	58.9	37.5	38.0
Primary	19.8	30.1	37.6	37.7
High school	3.3	5.3	20.9	21.5
University or more	2.3	4.4	4.0	2.8
Total	98.8	98.8	100	100
Retired (%)	30.0	64.4	45.8	70.7

Notes: Some estimates do not add up to 100 due to missing values.
Source: Author's calculations using the 1997 Mexican National Survey of Demographic Dynamics (ENADID) and the 2000 Integrated Public-Use Microdata Series (IPUMS) for the U.S.

4.2   Validation of ENADID

Before examining the migration patterns of older Mexicans, it is important to consider the sensitivity of the results to the data source. As noted, it is possible that the results of the analysis hinge on the use of the ENADID, a sample survey conducted in 1997, versus IPUMS Mexico, a sample of the complete census enumeration conducted in 2000. A particularly salient threat is that return migrants, defined as migrants from the U.S. to Mexico, differ substantially in their magnitude and characteristics across data sources. This is an especially prominent concern given the much smaller sample in the ENADID compared to IPUMS Mexico.

At this point, it is important to reiterate that while IPUMS Mexico does not capture return migrants with *any* U.S. migration experience, it does, like the ENADID, indicate whether individuals returned from the U.S. within the previous five years. Thus, it is possible to compare individuals who reported having lived in the U.S. five years prior in the ENADID to those who did so in IPUMS Mexico. For the sake of clarity, these migrants will hereafter be referred to as five-year return migrants while those with any U.S. migration experience who did not return to Mexico within the previous five years will continued to be referred to simply as return migrants.

A closer look at details of each data source reveals that the temporal difference is actually less than three years. Data collection for the ENADID took place late in the year between September 8 and December 15 of 1997 while that of the census was early in 2000 on February 14. Thus, in practice, the period of data collection between both sources was closer to two years.

An empirical comparison of the sample characteristics of both data sources also connotes their similarity. Table 2 compares the characteristics of Mexicans in Mexico aged 50 years and older who indicated having lived in the U.S. five years prior as captured in the ENADID and IPUMS Mexico. This table reveals that the ENADID captures a greater number of return migrants. The weighted total number of five-year return migrants enumerated in the ENADID is 33,000 compared to 28,000 in IPUMS Mexico.

Despite this difference, the demographic characteristics of return migrants are similar across data sources. The sex distribution of return migrants identified in the ENADID comes to within 2 percentage points of matching that found in IPUMS Mexico. Both data sources suggest, therefore, that return migrants from the U.S. to Mexico are overwhelming male. This is not surprising as research on the migrant population of all ages come to a similar conclusion (Aguila & Zissimopoulos, 2008; Massey, 1987; Rendall et al., 2011). One of the only studies to find an opposite result comes from Van Hook and Zhang (2011) who find that among the 65 and older population, emigration from the U.S. is higher among females. Part of this is likely due to the fact that they look at the 65 and older population while the present study examines the 50 and older population. Both the ENADID and IPUMS Mexico also reveal similar age structures. The median age for return migrants in both data sources is 59 although the mean age differs by three years, i.e., 62.7 in the ENADID compared to 60.4 in IPUMS Mexico. This latter finding suggests that return migrants identified in the ENADID are slightly older than those in IPUMS Mexico, albeit not by a substantial amount.

The educational distributions are not as similar but are still quite close. The proportion of return migrants with less than a primary school education differs by only one percentage point across data sources (52.5% in the ENADID compared to 54% in IPUMS Mexico). Notable differences arise only at the upper half of the educational distribution, with six percentage points less return migrants having completed a primary school education in the ENADID (18%) compared to 24% in IPUMS Mexico. A similar difference persists among those with more than a primary school education. Six percentage points more return migrants indicated having completed more than a primary school education in the ENADID (29%) than in IPUMS Mexico (23%). Despite these differences, both data sources yield a similar educational profile of older migrants who return to Mexico from the U.S.: slightly more than half completed less than a primary school education and approximately 47% completed a primary education or more.

The marital status of return migrants is also not dramatically different in the ENADID compared to IPUMS Mexico. Although six percentage points less return migrants are married or in a union in the ENADID (64%) compared to IPUMS Mexico (70%), the proportion who are widowed is identical, 14%. There also exists only a couple percentage point difference between those who are separated and divorced (14% in the ENADID compared to 12% in IPUMS Mexico) and those who never married (8% in the ENADID compared to 5% in IPUMS Mexico). Despite relatively small numerical differences in the individual categories, both data sources reveal a similar pattern: most return migrants are married or in a union and between 31% and 36% are not.

The household composition found in the two data sources is also remarkably similar. The proportion of the sample composed of household heads fell within two percentage points in the ENADID (69%) and IPUMS Mexico (67%) while that of spouses and partners fell within one percentage point (19% in the ENADID compared to 18% in IPUMS Mexico). Similarly, the proportion of the sample who was classified as "other relative" and "non-relative" was nearly identical. Twelve percent of both samples identified as "other relatives" and only one percent identified as a "non-relative."

In sum, the results from this table suggest that although captured at two different points in time in two different data sources and constituted two different sample sizes, the five-year return migrants identified in the ENADID and IPUMS Mexico are quite similar and the final results should not turn on which survey is used to identify these migrants. As noted, the ENADID was chosen for the present analysis since, unlike IPUMS Mexico, it indicates which individuals had *ever* been to the U.S. rather than only those who returned from the U.S. within the previous five years.

4.3 The probability of migration across age

Litwak and Longino (1987) posit that elderly migration takes place shortly after retirement for amenity-related purposes. Older Mexican immigrants in the U.S. often have the option to retire either in the U.S. or in the home country to achieve this end. However, given Mexico's lower cost-of-living, it is reasonable to assume Mexican migrants in the U.S. would return to Mexico if they are in search of greater amenities. Such was the case for one

Table 2: Descriptive statistics of Mexicans in Mexico aged 50 years and older who reported having returned from the U.S. within the previous five years in the (1997) ENADID and the (2000) IPUMS Mexico

		ENADID (N=126)	IPUMS Mexico (N=3,274)
Weighted *N*		33,083	27,942
Sex			
	% Males	59.4	62.0
	% Females	40.6	37.9
Age			
	Median age	58.9	59.0
	Mean age	62.7	60.4
	% 65+	33.3	27.8
Marital status			
	% Married\in union	64.3	69.5
	% Separated\divorced	14.0	11.6
	% Never married	8.1	4.9
	% Widowed	13.6	13.8
Education			
	< Primary	52.5	53.8
	Primary	18.4	23.7
	> Primary	29.1	22.5
Relation to household head			
	% Household head	68.5	66.5
	% Spouse\partner	18.5	18.2
	% Child	0.8	2.9
	% Other relative	11.6	11.8
	% Non-relative	0.6	0.5
	% Unknown	0	0.1
Employment status			

Source: Author's calculations using the 1997 Mexican National Survey of Demographic Dynamics (ENADID) and the 2000 IPUMS Mexico.

group of older Americans in Mexico Sunil, Rojas, and Bradley (2007). Thus, I assume an amenity-related move would involve movement from the U.S. to Mexico rather than from Mexico to the U.S.

In contrast, the direction of a health-related move is less clear. On one hand, older individuals may prefer residence in the U.S. if they are in poorer health. Turra and Elo (2008) speculate that Medicare eligibility may explain the relatively high reentry rates back to the U.S. of migrants who initially migrate to other countries during later life.

On the other hand, migrants also have health-related incentives to migrate from the U.S. to Mexico during later life. In one USA Today article (Hawley, 2007), several Americans moved to Mexico to receive long-term institutional care because of its affordability compared to U.S. institutions. Such may also be the case for older Mexicans. Older Mexicans may also return migrate in order to receive care from non-working family members given Mexico's

lower female labor force participation than the U.S. (International Labour Organization, 2011).

Figure 2 suggests that the first component of Litwak and Longino's (1987) theory, that individuals move shortly after retirement, does not hold for either Mexican men or women in the U.S. The figure displays the probability of migration from the U.S. to Mexico and from Mexico to the U.S. for migrants with U.S. migration experience. This figure shows that for Mexican males in the U.S., the probability of migration from the U.S. to Mexico declines during the ages at which most individuals exit the labor force, namely ages 60-62, and instead peaks at ages 70-74. Females show a similar pattern. Their tendency to return to Mexico begins to increase several years after the age at which they are most likely to retire.

In contrast, the probability of migration from Mexico to the U.S. declines monotonically with age among individuals who at some point returned from the United States.

Before moving further, it is important to note the very small cell sizes for five-year return migrants from the U.S. to Mexico (N=126), particularly for women (N=49). For this reason, the results for this group in particular must be interpreted as suggestive but tentative.

A particularly interesting feature of this figure is the high proportion of women who reenter the U.S. at older ages. Although it declines with age, females in Mexico with previous U.S. migration experience have an especially high probability of reentering the U.S. (16% to 10%).

4.4   Expected number of years in the U.S. and Mexico

The previous section describes the propensity to migrate between countries during later life. It does not provide information on the *duration* of a migrant's residence in each country. Understanding the length of time a migrant spends abroad is key to estimating the cost of later-life migration to each country, its possible motivations, and the retirement location preferences of immigrants in the U.S.

Table 3 displays the expected number of years one can expect a migrant to spend in the U.S. and in Mexico conditional on her starting country using using two sets of mortality rates for immigrants in Mexico. The first panel pertains to males while the second pertains to females. Columns two through four display expected years in each country assuming immigrants in Mexico are less healthy than immigrants who remain in the U.S., while columns five through eight display these same numbers assuming immigrants in Mexico are just as healthy as the non-migrant population. This table reveals that older migrants can expect to live a greater proportion of their lives abroad than younger migrants. For example, under scenario one, a Mexican immigrant male between 50-54 years of age who is currently living in the the U.S. can expect to live in the U.S. almost 30 more years and spend only 3 years of the rest of his life in Mexico (column 2). Put another way, this migrant can expect to spend 90% of the rest of his life in the U.S. and only 10% in Mexico. In contrast, Mexican immigrant males who are in the U.S. at ages 80 years and older can expect to spend a much
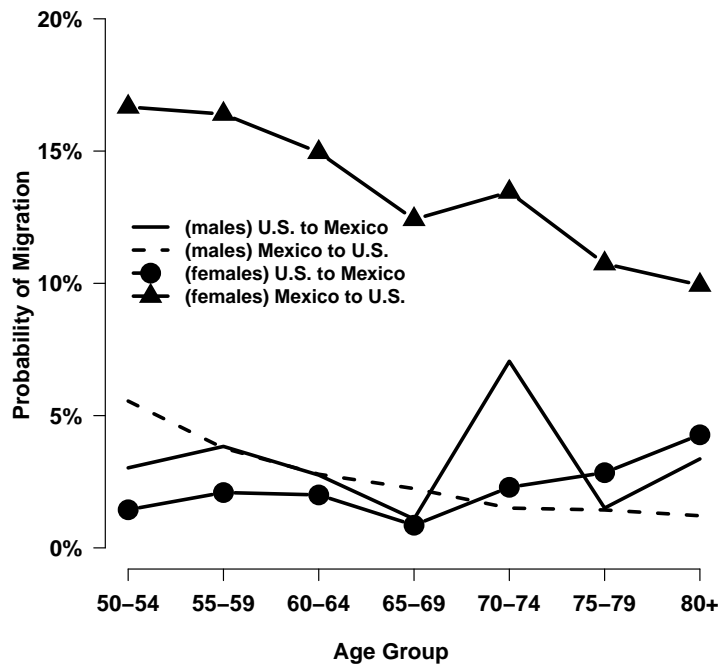
Figure 2: Probability of migration from Mexico to the U.S. and the U.S. to Mexico for Mexican immigrants aged 50 years and older

higher proportion of the rest of their lives in Mexico (18%). This patterns also holds for females although the differences across age groups are not as pronounced.

This table also reveals that different mortality rates have very little effect on the estimates.

As in figure 2, this pattern raises the possibility that health is an important incentive for migration for older Mexicans with U.S. migration experience. Given the greater prevalence of illness and disability at older ages, Mexican immigrants in the U.S. may return to Mexico if they do not have access to a caregiver in the U.S. during later life. In many countries, females are often the sole caretakers of aged parents (Baldassar et al., 2007). Given the lower female labor force participation in Mexico than the U.S (International Labour Organization, 2011), elderly immigrants in the U.S. may return to Mexico in search of a non-working caregiver. Roberts, Frank, and Lozano-Ascencio (1999) implicitly hint at this possibility in stating that "For Mexican migrants in the US, their community of origin may offer...a social support safety net for the elderly and for own retirement (p. 247)." This social support safety net may consist of a non-employed daughter who is available to provide care.

This results on this table also suggest that older females in Mexico with previous U.S. migration can expect to spend a much higher portion of their lives in the U.S. than their male counterparts. Mexican women aged 75 years and older who at some point returned from the U.S. can expect to live 57% of the remainder of their lives in the U.S. In contrast, this proportion is only 15% for males in the same age group. This pattern holds for every age group.

These differences bespeak divergent motivations for migrating for males and females. It is possible that the reasons which compel Mexican females to return to Mexico may be more temporary in nature than those for males. For example, older females often migrate internationally to care for young grandchildren (Zhou, 2013). These women may then reverse migrate once their grandchildren are grown. Kanaiaupuni (2000) encapsulates this idea in stating that "households may find men completing their migration careers as they near the end of the productive labor years, whereas women may be migrating for the first time to visit or help grown children and relatives living elsewhere (p. 1315)."

Table 3: Expected number of years (and proportion) to be spent in the U.S. and Mexico for immigrants who find themselves in either country at each age.

Males

Begin End Age	Mortality scenario 1				Mortality scenario 2			
	U.S.		Mexico		U.S.		Mexico	
	U.S.	Mexico	U.S.	Mexico	U.S.	Mexico	U.S.	Mexico
50-54	29.86 (90.08%)	3.29 (9.92%)	3.47 (10.53%)	29.49 (89.47%)	29.86 (90.13%)	3.27 (9.87%)	3.46 (10.57%)	29.27 (89.43%)
55-59	25.07 (88.59%)	3.23 (11.41%)	3.35 (11.91%)	24.77 (88.09%)	25.07 (88.65%)	3.21 (11.35%)	3.35 (11.97%)	24.61 (88.03%)
60-64	20.48 (87.19%)	3.01 (12.81%)	3.01 (12.92%)	20.32 (87.08%)	20.48 (87.26%)	2.99 (12.74%)	3.01 (12.99%)	20.2 (87.01%)
65-69	16.09 (85.85%)	2.65 (14.15%)	2.55 (13.68%)	16.07 (86.32%)	16.09 (85.93%)	2.63 (14.07%)	2.55 (13.76%)	15.98 (86.24%)
70-74	11.81 (84.16%)	2.22 (15.84%)	1.98 (14.21%)	11.96 (85.79%)	11.82 (84.25%)	2.21 (15.75%)	1.99 (14.31%)	11.9 (85.69%)
75-79	7.74 (82.58%)	1.63 (17.42%)	1.36 (14.65%)	7.95 (85.35%)	7.75 (82.69%)	1.62 (17.31%)	1.37 (14.77%)	7.93 (85.23%)
80+	3.84 (81.68%)	0.86 (18.32%)	0.71 (15.16%)	3.96 (84.84%)	3.84 (81.83%)	0.85 (18.17%)	0.71 (15.31%)	3.94 (84.69%)

Females

Begin End Age	Mortality scenario 1				Mortality scenario 2			
	U.S.		Mexico		U.S.		Mexico	
	U.S.	Mexico	U.S.	Mexico	U.S.	Mexico	U.S.	Mexico
50-54	31.56 (95.16%)	1.61 (4.84%)	13.01 (38.62%)	20.67 (61.38%)	31.56 (95.18%)	1.6 (4.82%)	12.95 (38.74%)	20.49 (61.26%)
55-59	26.74 (94.43%)	1.58 (5.57%)	12.63 (43.89%)	16.15 (56.11%)	26.73 (94.46%)	1.57 (5.54%)	12.59 (44.07%)	15.99 (55.93%)
60-64	22.03 (93.75%)	1.47 (6.25%)	11.52 (48.19%)	12.39 (51.81%)	22.03 (93.78%)	1.46 (6.22%)	11.5 (48.43%)	12.25 (51.57%)
65-69	17.46 (93.14%)	1.29 (6.86%)	9.86 (51.66%)	9.22 (48.34%)	17.46 (93.17%)	1.28 (6.83%)	9.86 (51.97%)	9.11 (48.03%)
70-74	12.98 (92.41%)	1.07 (7.59%)	7.79 (54.49%)	6.51 (45.51%)	12.98 (92.45%)	1.06 (7.55%)	7.8 (54.89%)	6.41 (45.11%)
75-79	8.57 (91.38%)	0.81 (8.62%)	5.41 (56.71%)	4.13 (43.29%)	8.58 (91.43%)	0.8 (8.57%)	5.43 (57.22%)	4.06 (42.78%)
80+	4.23 (90.08%)	0.47 (9.92%)	2.78 (58.26%)	1.99 (41.74%)	4.23 (90.14%)	0.46 (9.86%)	2.8 (58.98%)	1.95 (41.02%)

Notes: Underlying mortality rates for Mexican immigrants in the U.S. are drawn from Arias, Anderson, Kung, Murphy, and Kochanek (2003). Mortality rates for return migrants in Mexico under scenario 1 are obtained by inflating the mortality rates found in Arias, Anderson, Kung, Murphy, and Kochanek (2003) by 15% for males and 20% for females. These were the amounts of excess mortality found among return migrants in Turra and Elo (2008) compared to those who remained in the U.S. Under scenario 2, it is assumed that the mortality rates of return migrants in Mexico are the same as the general Mexican population. These mortality rates are drawn from ? (?).

5   Discussion

While once a nation of "young" immigrants (Daniels, 2002; Zolberg, 2006), the United States is now home to over 4.5 million immigrants aged 65 years and older, a group which is expected to grow as a share of the total elderly population (Population Reference Bureau, 2013). The location of their retirement holds concrete ramifications for Medicaid, Supplemental Security Income and other programs which immigrants heavily consume (Smith & Edmonston, 1997), as well as our general understanding of foreign-born aging in the United States. To date, data limitations have prevented a comprehensive analysis of migration during later life. Even less information exists as to whether this behavior is singular or circular.

Using a multi-state lifetable approach which leverages information from a cross-section of time, this study examines the probability of migration from the U.S. to Mexico and from Mexico to the U.S. for older Mexicans in Mexico with previous U.S. migration experience. By comparing this probability across age groups, this study attempts to understand whether older Mexican immigrants follow the pattern of retirement migration delineated by Litwak and Longino (1987). The authors hypothesize that individuals migrate shortly after retirement in search of greater amenities and subsequently at older ages for health-related reasons. Although they may only be interpreted as suggestive rather than causal, the results of the present study suggest that Mexican immigrants do not migrate for amenity-related purposes upon retiring. Rather, Mexican immigrant males migrate from the U.S. to Mexico at older ages, possibly for health-related reasons. In contrast, at each age, females have a much higher probability of migrating from Mexico to the U.S.

Although exploratory, the results from this analysis suggest that Mexican immigrants differ from older Northern Europeans and older Americans in their retirement location decisions. Unlike these two groups, the older Mexican males examined in this study migrated from the U.S. to Mexico later than the age at which most European and American elderly travel abroad in search of greater amenities. The misalignment of their age profile with the theoretical profile presented in Litwak and Longino (1987) evinces the need for retirement migration theories that consider the role of transnationalism. As noted by Aguilera (2004), "an international perspective is necessary to understand international migration choices (p. 343)." In line with this reasoning, older Mexican immigrants may be driven to migrate more so out of a combination of existing ties to the home country and circumstances surrounding their health rather than a quest for a more comfortable lifestyle. Major factors involved in the decisions of one group older retirement migrants from Italy and Spain were the proximity of children, the quality of health services, the cost of living, social life and friends and not feeling like a foreigner (Bolzman, 2013).

The results from this study lend support to the description of health as a key consideration in retirement migration decisions (Bolzman, 2013; Jasso, Massey, Rosenzweig, & Smith, 2004; Litwak & Longino, 1987; Wiseman, 1978). Older Mexican immigrant males were substantially more likely to migrate between the ages of 70-74, well past the age at which most individuals retire and an age considered by some to be the threshold for the onset of numerous diseases (Akushevich, Kravchenko, Ukraintseva, Arbeev, & Yashin, 2012).

At the same time, individuals in this age group may still be healthy enough to physically make the move abroad, physical incapacity being an impediment for return for one group of elderly migrants abroad (Bolzman, 2013).

According to Litwak and Longino's (1987) theory, it is possible that these migrants migrated from the U.S. to Mexico to address caregiving needs once their health began to decline. As previously discussed, these migrants may have had non-working family members available to care for them in Mexico given its lower female labor force participation (International Labour Organization, 2011) and recent anecdotal evidence describing Mexico as an affordable alternative to U.S. long-term care (Hawley, 2007). This possibility speaks to the increasingly important role of "transnational caregiving" in an era of longer life expectancy, fluid international borders, and longer work hours. With the rise of the dual-earner family in the U.S. (Waite & Nielsen, 2001), immigrants may turn to the home country to fulfill their caregiving needs. Baldock (2000) notes that "to focus on family relations in later life implies not only the study of connections and obligations between family members who live in close vicinity but also of the range of family interactions and caregiving that occurs across vast geographical distances (p. 221)."

Although the literature has substantiated the differing migration patterns of men and women (Cerrutti & Massey, 2001; Kanaiaupuni, 2000), this is among the few studies to explore these patters among older Mexicans with U.S. migration experience. The results of the present study suggest that at each age, Mexican women in Mexico who at some point returned from the U.S. are much more likely to migrate from Mexico to the U.S. than their male counterparts, suggesting a preference for retirement in the destination rather than home country. This gendered pattern falls in line with that of Bolzman (2013) which finds that among Italian immigrants in Switzerland, men were much more likely to prefer return migration than women. Given their higher life expectancy, the tendency for females to reenter the U.S. at older ages may hold important implications for Medicare, Supplemental Security Income and other programs from which immigrants heavily draw in the U.S. (Smith & Edmonston, 1997).

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