Household Composition and Longitudinal Health Outcomes for Older Mexican Return Migrants

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Abstract

Mexican return migrant population is increasing, yet our knowledge about their lives after resettlement in Mexico remains fragmentary. Using 2001–2012 longitudinal data from the Mexican Health and Aging Study, we investigate difference in household composition for older migrants who returned from the United States compared to nonmigrants. Furthermore, we fit a Cox proportional hazards model to assess the relationship between household composition and health and functional trajectories of return migrants and nonmigrants. The results indicate that return migrants with long duration of U.S. stay have different household composition than nonmigrants or short-term migrants: On average, they have smaller household size, including fewer females who may be available to offer assistance to older adults. Presence of middle-age females in the household has positive effects on

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health and functional trajectories. We highlight implications of this research for policy makers in Mexico and the United States.

Keywords

Introduction

Between 2005 and 2010, approximately 1.4 million people moved from the United States to Mexico—over a million of whom were Mexico-born return migrants—and the net migration flow between the two countries fell to zero (Passel, D'Vera, & Gonzalez-Barrera, 2012). Consequently, a growing proportion of older Mexican residents are return migrants who worked and resided in the United States (Aguila & Zissimopoulos, 2013). This shift from previous migration trends has potentially important implications on support systems in both countries, especially in the context of circular migration between the United States and Mexico.

To illustrate the extent of circular migration, 14.1% of Mexican migrants who lived in the United States in 2005 but returned to Mexico by the time of the 2010 population census reported an additional move to the United States in the interim period (Masferrer & Roberts, 2012). And circular migration was even higher prior to the increase of U.S. border enforcement in recent years that discouraged undocumented migrants from frequent moves between the two countries (Montes de Oca, Ramirez García, Sáenz, & Guillén, 2011).

Upon their return to Mexico, return migrants face serious challenges. Only 6.5% of return migrants who spent at least 1 year residing in the United States receive social security benefits, and they are also less likely to receive pensions from Mexico or have health insurance (Aguila & Zissimopoulos, 2013). Therefore, they may have to rely disproportionately on health-relevant support from family members (de Vos, Solís, & Montes de Oca, 2004). However, family-support systems may be less available, since many Mexican migrants experience marriage instability and union dissolution related to their absence (Frank & Wildsmith, 2005).

In this context, the present study investigates what difference, if any, migration to and from the United States makes in household composition for older Mexican return migrants compared to nonmigrants given the variability

in duration of migration and timing of return to Mexico. A focus of this study is on adult (aged 21–60) coresident family members other than spouses or partners,[1] an overwhelming majority of whom are adult children of respondents. This approach is supported by prior research which shows that coresidence may be a form of family caregiving (Peek, Coward, & Peek, 2000). Moreover, family caregiving to older persons is primarily provided by adult children (Silverstein & Giarrusso, 2010), in particular adult daughters (Silverstein, Gans, & Yang, 2006), and consistent with the norms of filial responsibility and gendered division of labor in the family that is characteristic of societies with strong traditional cultural expectations such as Mexico (Mendez-Luck, Kennedy, & Wallace, 2009; Robles Silva, 2001). Furthermore, the study assesses the relationship between household composition and health status, including mortality risk, as prior research suggests that the availability of household members may be associated with better health outcomes and vice versa (Bisschop et al., 2003; Silverstein, Cong, & Li, 2006).

Background

Mexico is aging rapidly. Projections show that by 2040, the size of the population aged 65 and older will more than triple from its current level, reaching over 22 million individuals (Aguila, Díaz, Fu, Kapteyn, & Pierson, 2011). This rapid demographic transition is coupled with an equally swift epidemiologic transition, marked by a decrease in the prevalence of infectious diseases and an increase in the prevalence of chronic health conditions, such as heart disease, cancer, diabetes, or respiratory disease, as the main causes of death among older Mexicans (Wong & Palloni, 2009). However, as with most Latin American countries, the epidemiologic transition in Mexico is geographically uneven, and the differences among states/regions in the country and between more urban and rural areas are mainly due to lags in economic development and related high inequality (Stevens et al., 2008).

Thus, while the demographic and epidemiologic profiles of the Mexican population are increasingly similar to those of developed countries, its socioeconomic profile is still markedly different. Poverty rates among older persons in Mexico are high—one in four among the population aged 65 and older, including close to one in three among those aged 75 and older (Organisation for Economic Co-operation and Development, 2011). Furthermore, the system of social security in Mexico has been traditionally limited to workers in the formal sector, with less than half of the adults enjoying pension and health care coverage through institutions such as Instituto Mexicano del Seguro Social and Instituto de Seguridad y Servicios Sociales de los Trabajadores del

Estado (Aguila et al., 2011). Only in recent years has the health insurance coverage increased due to the expansion of the *Seguro Popular de Salud* (henceforth *Seguro Popular*) program that covers about 53 million people as of 2013 and has the ultimate goal of covering all individuals without alternative access to health insurance (Grogger, Arnold, León, & Ome, 2015). As of 2012, however, only 7% of the total population affiliated with *Seguro Popular* was 60 years and older (Gutiérrez et al., 2012), increasing to 9.6% in 2013 (Instituto Nacional de Estadística, Geografía e Informática, 2014).

In this context, it is important to study the fast-growing, return migrant population in Mexico as our knowledge about their demographic, socioeconomic, and health profiles, and the process of resettlement in Mexico remains fragmentary. Some research suggests that return migrants may suffer a higher burden of disease, in particular chronic conditions, and with it related functional limitations compared to nonmigrant Mexicans (Angel, Angel, & Hill, 2008). They also have higher prevalence of obesity and are more likely to suffer from emotional or psychiatric disorders as well as to smoke, in contrast with their early-life health profile that was favorable compared to nonmigrants (Ullmann, Goldman, & Massey, 2011). However, research finds no difference between return migrants and nonmigrants in self-rated health (Goldman et al., 2014; Ullmann et al., 2011). Moreover, it has been documented that Mexican immigrants in the United States in poor health are more likely to return to Mexico (Bostean, 2013; Crimmins, Soldo, Ki Kim, & Alley, 2005; Palloni & Arias, 2004). However, the difference in health between continued migrants and return migrants is not observed for persons with long (i.e., 15 years and over) duration of U.S. stay (Riosmena, Wong, & Palloni, 2013). Further compounding an already complex relationship between migration and health is the fact that it is importantly shaped by the political and socioeconomic contexts of the period of migration in addition to individual traits such as age and health at migration or subsequent migration experience (Montes de Oca et al., 2011).

Recent research comparing family members of Mexican migrants with other nonmigrating families has reported higher risk of migrant marital dissolution, emotional strain due to cutoff from their families, and problems in reestablishing intergenerational relationships and social roles within support systems (Frank & Wildsmith, 2005). This has likely become an increasingly important issue over the last several decades as ever stricter U.S. border enforcement curbed circular migration of undocumented migrants, isolating them from their families and communities (Montes de Oca et al., 2011). The weakening of family ties, then, may result in less family support in later life for Mexican return migrants, and this could particularly affect those with longer duration of stay in the United States. On the other hand, return migrants

may fare better than nonmigrants in other respects; they may have more money to exchange for personal assistance as a consequence of having worked in the United States (Wong & Gonzalez-Gonzalez, 2010), and they are also more likely to have family members, especially children, who live in the United States and who provide them with financial support (Antman, 2012).

A difficult conceptual problem that persists in the field of family social network research concerns whether the availability of family members reflects the responses to the acute health care needs of older individuals (e.g., in the final year of life) or whether it promotes health maintenance and reduces the need for intensive health care-related services. These relationships are supported in previous research and are intuitively complementary rather than inconsistent. Research in Europe (Kriegsman, Van Eijk, Penninx, Deeg, & Boeke, 1997) finds that older persons who receive family support show better physical functioning. The presence of partners is associated with slower declines in physical functioning among older individuals not already suffering from chronic diseases, while the size of the social network, and in particular the presence of daughters, has positive health effects for older people in poor health (Bisschop et al., 2003). The quality and quantity of social relationships, especially immediate family, and the related availability of informal caregiving and emotional support are associated with lower mortality risk (Holt-Lunstad, Smith, & Layton, 2010; Temkin-Greener et al., 2004).

Evidence from China, a country that has experienced strong migration from rural to urban areas and profound related changes in the traditional multigenerational-family household and relationships also suggests that the traditional family-provided instrumental support may have health-protective effects (Cong & Silverstein, 2008; Silverstein, Cong, et al., 2006). Traditional cultural expectations of filial care for frail older parents—overwhelmingly provided by daughters—are similarly strong in the context of Mexico (Mendez-Luck et al., 2009).

To address these issues pertinent to the research on aging and health in the binational U.S.–Mexican context, this study compares household profiles for return migrants and nonmigrants in Mexico and explores temporal patterns of association of household composition with health and functional status, chronic disease onset, and death. Previous research in Mexico finds only time support to be associated with the changes in recipients' health, in particular increases in limitations with activities of daily living (ADL) and instrumental activities of daily living (IADL), whereas no such association is observed for financial support (Wong & Higgins, 2007). Therefore, the focus of this study is on nonfinancial support. Based on the available evidence from previous research, we propose two main research hypotheses:

(1) Return migrants, in particular those with long duration of stay outside of Mexico, have different household composition than nonmigrants, which is reflected in their marital status—with a higher proportion of divorced and separated and a lower proportion of currently married individuals—as well as in fewer coresident persons other than a spouse; and

(2) Controlling for initial health and functional status as well as demographic and socioeconomic characteristics, the presence of middle-age females other than spouse in the household is associated with better health and functional trajectories and lower mortality risk for return migrants and nonmigrants.

Data and Method

Data

The Mexican Health and Aging Study (MHAS) is a longitudinal study of health and aging in Mexico, consisting of a nationally representative sample of persons aged 50 and older at the baseline in 2001 (Wong & Espinoza, 2004). States with high rates of migration to the United States were oversampled at a ratio of 1.7–1. Spouses (or partners) of sampled persons were interviewed regardless of their age. Persons interviewed in 2001 were reinterviewed in 2003 and in 2012.[2] Proxy interviews with informants (usually spouses, children, or grandchildren with detailed knowledge of the respondent) were administered when health conditions imposed limitations or in cases of temporary absence of the selected respondent. For the 2003 and 2012 waves, if an earlier respondent had died, a special interview was sought with a next of kin.[3]

The analytic sample for this article consists of the 2001 sample of individuals aged 50 years or older who were reinterviewed at subsequent waves, yielding a sample of 13,440 individuals. This total includes 528 individuals who died between 2001 and 2003 and 2,671 individuals who died between 2003 and 2012.

Variables

To examine differences in the household composition, we construct an indicator variable showing the presence of a person aged 21–60 in the respondent's home but excluding the respondent's spouse or partner. Due to the predominance of female household members as caregivers, in particular adult daughters (Brandt, Haberkern, & Szydlik, 2009) and daughters-in-law (Cong

& Silverstein, 2008), we stratify this variable by gender to explore differences in the presence of female persons other than the respondent's spouse.

To explore the possible differentiated impact of household composition on health, we define five outcome variables: (1) onset of any ADLs and (2) IADLs, (3) onset of mobility disability, (4) any chronic health conditions, and (5) death. The first three outcome variables measure functional limitations. ADL limitation is a dummy variable indicating difficulty with at least one of the following activities: bathing, using the toilet, getting in or out of bed, walking, or eating. IADL limitation variable is an indicator of difficulty with at least one of these activities: preparing meals, shopping, taking medications, or handling one's own money. Onset of mobility limitation is measured as a dummy variable indicating difficulty with at least one of the following activities: walking up and down one flight of stairs, walking several blocks, and lifting objects over 5 kg. Onset of chronic health conditions is measured with a dummy variable indicating the acquiring of at least one of the following chronic diseases in the follow-up period: high blood pressure, diabetes, cancer, respiratory illness, heart attack, stroke, and arthritis or rheumatism. We include a dummy variable indicating that the respondent died in the follow-up period as the final health outcome variable.

The main predictor of interest in the model of presence of household members other than spouse is respondents' migration status, which has the following categories: nonmigrant (reference category), short-term return migrant (up to 1 year of migration experience), medium-term return migrant (2–10 years of migration), and long-term return migrant (over 10 years of migration). The decision to distinguish return migrants by duration of prior migration is driven both by the preliminary analyses of the data and by a similar approach used in the relevant literature. For example, Aguila and Zissimopoulos (2013) consider return migrants with short-term duration of migration those who stayed in the United States up to 1 year; Riosmena, Wong, and Palloni (2013) use 15 years as a cutoff point to distinguish return migrants with substantial U.S. experience, whereas Frank and Wildsmith (2005) distinguish between individuals with above and below average migration experience, which is somewhat over 5 years in their sample. For the subsample of return migrants, the main predictors of interest are two categorical variables: duration of U.S. stay (1 year, 2–10 years, and 11 years and over) and timing of last return from the United States (prior to 1960, 1960–1969, 1970–1979, 1980–1989, and 1990–2001). The main predictor of interest in the models of health outcomes is presence of persons aged 21–60 other than the spouse in the respondents' households. This is a categorical variable that distinguishes between females aged 21–40 and 41–60 and males aged 21–40

and 41–60, with the reference group being no household members aged 21–60 other than spouse.

Models also include control variables for sociodemographic characteristics including sex, age, marital status (single, separated or divorced, married, and widowed), and an indicator for the lack of formal education. Furthermore, they include a control for financial assets, a variable defined as quartiles of total net worth and derived from the MHAS variable indicating total net worth, which includes assets such as business income, real estate, salary, vehicles, and others, minus debts. The model of potential caregivers in the household also includes a dummy variable indicating if the respondent lives in a locality of 100,000 people or more. Controlling for the type of locality where the respondent resides is important in the context of family size and composition, since prior research provides evidence that rural households are generally larger in size (Bouillon, Legovini, & Lustig, 2003), and families in rural areas have more children and are somewhat more likely to live in extended households (Wong, Espinoza, & Palloni, 2007). To capture the effect of past working conditions on present health and disability, we include farm or ranch work history as a dummy variable in the models of health outcomes, indicating if by 2001 the respondent ever worked on a farm or ranch.

Analytic Strategy

The analysis begins with an overview of differences in migration experience—length of stay in the United States and timing of return to Mexico—for return migrants (Figure 1). This is followed by a comparison of demographic and socioeconomic characteristics of return migrants and nonmigrants in Mexico (Table 1), their household composition (Table 2), and presence of females aged 21–60 in the household by their relationship to the household respondent (Table 3). Tables 1–3 present weighted percentages, adjusted for age and sex.

To assess the availability of females in households of older return migrants and nonmigrants, we fit logistic regression models (Table 4). For the sample of return migrants, we pay particular attention to possible differences by length of stay in the United States and the timing of return to Mexico. We use Cox proportional hazards model to examine the age of onset for the outcomes shown in Table 5; only those individuals without ADLs, IADLs, mobility limitation, or chronic health conditions in 2001 were included in each respective model, limiting the sample accordingly. All models are weighted using individual-level weights from 2001. Since indicators
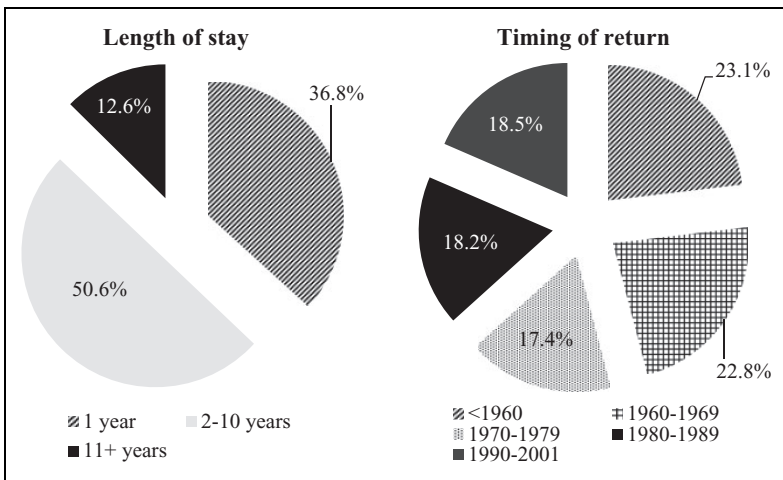
Figure 1. Return migrants by length of stay in the United States and timing of return to Mexico (in years), 2001. Data from MHAS, 2001 wave; authors' calculations.

for the survey's primary sampling units are not publicly available, the unit of clustering used for the design adjustment is that of the household.

Results

Descriptive Analysis

The MHAS sample of return migrants is a highly heterogeneous group, both with respect to the duration of U.S. migration and timing of return to Mexico as depicted in Figure 1. Over a third of return migrants stayed in the United States for 1 year or less, and about half of them reported living in the United States 2–10 years. Long-term migrants make up the remaining 13% of all return migrants. As far as the timing of return to Mexico, return migrants in the sample are fairly evenly distributed across the second half of the 20th century.

Mexico's return migrant population aged 50 and older has a different demographic and socioeconomic profile than nonmigrant Mexicans (Table 1). Return migrants are overwhelmingly (about 78%) males, whereas majority of nonmigrants are females. The difference is particularly large for short-term return migrants and somewhat more moderate for long-term migrants. Return migrants are also on average approximately 2 years older than nonmigrants, with the difference close to 4 years for long-term migrants.

Table 1. Sample Characteristics[a,b] of Mexicans 50 Years and Older by Migrant Status, 2001.

Variable	Nonmigrants	Return Migrants (By Duration of Migration)			
		Any	1 Year	2–10 Years	11+ Years
Male	43.2	77.8***	82.6***	76.1***	70.8***
Female	56.8	22.2***	17.4***	23.9***	29.2***
Mean age (in years)	62.6	64.5***	64.3**	64.2**	66.4***
Marital status					
Single	4.4	5.1	5.7	4.8	4.9
Married	68	62.6*	68.9	60.8†	52.6*
Divorced or separated	9	12.4†	7.5	13†	23.5**
Widowed	18.6	19.9	17.8	21.4	19
No education	31.3	26.6†	33.2	23.7*	20.4†
Financial assets[c]					
First quartile	25	18.6**	21.8	15.2**	24.4
Second quartile	25.1	24.9	24.9	28.2	10.5***
Third quartile	24.8	26.8	28	25	31
Fourth quartile	25.1	29.8†	25.4	31.6†	34.1
More urban	45.3	48.6	43	51.5	52
Farm or ranch work history	22.2	25.3†	30.2**	22.5	23.5
Any ADL deficit	10.4	12.2	10.5	13.7	10.8
Any IADL deficit	8.6	5.6*	5.8	5.2*	6.8
Any mobility deficit	38.5	39.3	42	39.3	30.6
Any chronic health condition[d]	56.3	55.9	52.3	57.1	60.6
Sample size (N)	11,856	1,584	617	773	194

Note. Data from MHAS, 2001 wave; authors' calculations. IADL = instrumental activities of daily living; ADL = activities of daily living.
[a]All data except sample size and age in weighted percentages; age values are weighted means. All percentages (except for sex) are age-sex adjusted. [b]Data for health measures are age-sex adjusted percentages of those with the condition. [c]Financial assets are those of selected respondent and spouse (if any) combined. [d]Chronic health conditions are high blood pressure, diabetes, cancer, respiratory disease, heart attack, stroke, and arthritis or rheumatism.
†$p < .1$.
*$p < .05$. **$p < .01$. ***$p < .001$.

Age- and sex-adjusted results suggest Mexico's return migrants are less likely to be married and more likely to be divorced or separated. The difference is particularly pronounced for long-term migrants and much less so for medium-term migrants, while we find no difference for short-term migrants. Overall, fewer

Table 2. Composition of Households of Mexicans 50 Years and Older by Migrant Status, 2001.[a]

| Household Composition | Nonmigrants[b] | Return Migrants (By Duration of Migration)[c] | | | |
		Any	1 Year	2–10 Years	11+ Years
No household members except selected respondent and spouse (if any)	23.9	28.9*	27.4	27	41**
Household has nonspouse female members in age-group (in years)[d]					
0–20	35.9	34.7	37.1	34.5	28
21–40	37.4	34.2	36.3	35.7	21.7***
41–60	8.1	4.4***	5.2	4**	3.9*
>60	4.1	2.1**	1.8*	2.3	2.5
Household has nonspouse male members in age-group (in years)[d]					
0–20	38.3	35.8	39.6	34.2	31.2
21–40	37.1	31.4**	32.6	33.2	20***
41–60	6.5	4.9†	5	4.8	4.9
>60	2.1	1.9	1.3	2.7	–
Sample size (*N*)	8,189	1,505	586	735	184

Note. Data from MHAS, 2001 wave; authors' calculations.
[a]All data except sample size in weighted percentages of households. [b]Households with both selected respondent and spouse not ever having been a migrant. [c]Households with selected respondent or spouse having been a migrant. [d]One or more members in specified age-group, not including selected respondent or spouse.
†$p < .1$.
*$p < .05$. **$p < .01$. ***$p < .001$.

return migrants lack any formal education, and they have somewhat more financial resources,[4] but these findings do not apply to short-term return migrants. A larger proportion of return migrants has farm or ranch work history, but this difference is almost fully accounted for by short-term return migrants. The health profiles of migrants and nonmigrants are broadly similar and any observed differences do not appear to follow a clear pattern by duration of previous migration.

Table 2 examines household composition characteristics for older Mexican return migrants and nonmigrants. The key finding is that nonmigrants are more likely than migrants to have household members other than spouses. The difference is particularly pronounced for long-term return migrants, 41% of whom live in households with no additional members except the spouse; this proportion is 17% points higher than for nonmigrants. These results are further supported by findings from the supplementary analysis, which show

Table 3. Females[a] Aged 21–60 Years in Households by Relationship to the MHAS Household Respondent, 2001.

Relationship to Respondent	Nonmigrants[b]	Return Migrants (By Duration of Migration)[c]			
		Any	1 Year	2–10 Years	11+ Years
Daughter	32.7	29.6	30.6	31.8	17.5***
Daughter-in-law	8.7	7.2	8.5	6.1	7.8
Sister or sister-in-law	1.3	0.8	1.3	0.6	0.5
Granddaughter	2.2	1.2*	1.3	1.2	0.5†
Other female relative	1.2	0.6†	0.3*	0.9	0.0
Unrelated female	0.7	0.8	0.4	1.2	0.3
Any of above	43.1	37.4*	40.7	38.1	24.7***
Sample size (N)	8,189	1,505	586	735	184

Note. Data from MHAS, 2001 wave; authors' calculations.
[a]All data except sample size in weighted percentages of households. "Daughter," and so on, indicates one or more daughters. "Any of above" does not equal the sum of percentages above since households may belong to multiple categories. [b]Households with both selected respondent and spouse not ever having been a migrant. [c]Households with selected respondent or spouse having been a migrant.
†*p* < .1.
*p < .05. ***p < .001.

that nonmigrants' households have on average 2.4 household members, not counting the respondent and her or his spouse, whereas return migrants' households have around 2.1 additional members and long-term migrants' households only 1.5 additional members.

Due to the presumed key role of adult females as providers of informal practical support to older household members (Silverstein & Giarrusso, 2010), it is important to examine their relationship to the household respondent/head, which is presented in Table 3. Almost 76% of nonmigrants' households with potential female caregivers aged 21–60 have daughters, and around 20% have daughters-in-law. Among return migrants' households, the results vary between 71% and 83% for daughters and 16% and 32% for daughters-in-law, depending on the duration of U.S. migration. This is consistent with the expected social role of daughters and daughters-in-law as providers of assistance to frail older parents (Cong & Silverstein, 2008; Silverstein, Gans, et al., 2006).

Inferential Analysis

The descriptive results provide support to the notion that Mexico's return migrants, especially those with longer duration of stay in the United States,

Table 4. Logistic Regression Models for Nonspouse Household Members Aged 21–60 in Households of Mexicans 50 Years and Older by Migrant Status.

Variable	Additional Household Member (Either Sex)			Additional Household Member (Female)		
	All	Nonmigrants	Return Migrants	All	Nonmigrants	Return Migrants
Migrant (ref. nonmigrant)						
Short term (1 year)	0.95 [0.73, 1.23]			1.00 [0.76, 1.30]		
Medium term (2–10 years)	0.82 [0.63, 1.06]			0.84 [0.64, 1.11]		
Long term (11+ years)	0.48 [0.30, 0.77]**	1.08 [0.96, 1.21]	1.46 [0.96, 2.21]†	0.48 [0.30, 0.76]**	1.12 [1.00, 1.25]*	1.42 [0.93, 2.17]
Female (ref. male)	1.10 [0.98, 1.23]			1.13 [1.02, 1.25]*		
Age (in years; ref. 50–54)						
55–59	1.27 [1.03, 1.56]*	1.32 [1.06, 1.64]*	0.76 [0.45, 1.31]	1.19 [0.97, 1.45]†	1.20 [0.97, 1.49]†	0.96 [0.55, 1.65]
60–64	1.11 [0.88, 1.39]	1.07 [0.84, 1.35]	1.32 [0.77, 2.27]	1.07 [0.86, 1.33]	1.04 [0.82, 1.31]	1.17 [0.66, 2.08]
65–69	0.83 [0.65, 1.06]	0.82 [0.63, 1.06]	0.86 [0.47, 1.57]	1.10 [0.87, 1.41]	1.16 [0.89, 1.50]	0.70 [0.38, 1.30]
70–79	0.75 [0.59, 0.95]*	0.71 [0.55, 0.92]**	0.97 [0.56, 1.67]	0.94 [0.74, 1.20]	0.97 [0.75, 1.26]	0.64 [0.36, 1.13]
80+	0.55 [0.38, 0.78]**	0.52 [0.35, 0.77]**	0.69 [0.32, 1.46]	0.80 [0.57, 1.14]	0.79 [0.54, 1.15]	0.74 [0.35, 1.60]
Marital status (ref. married)						
Single	0.71 [0.50, 1.00]*	0.73 [0.50, 1.05]†	0.55 [0.21, 1.46]	0.99 [0.69, 1.40]	0.98 [0.67, 1.42]	0.93 [0.36, 2.40]
Divorced or separated	0.92 [0.69, 1.22]	1.04 [0.76, 1.41]	0.23 [0.13, 0.41]***	1.19 [0.91, 1.55]	1.29 [0.96, 1.72]†	0.45 [0.25, 0.81]**
Widowed	1.89 [1.49, 2.39]***	1.98 [1.53, 2.55]***	1.19 [0.69, 2.06]	1.73 [1.40, 2.14]***	1.76 [1.41, 2.21]***	1.37 [0.83, 2.26]
No education	1.05 [0.88, 1.24]	1.04 [0.87, 1.25]	1.05 [0.73, 1.51]	1.04 [0.88, 1.23]	1.06 [0.89, 1.27]	0.83 [0.57, 1.21]
Financial assets (ref. first quartile)						
Second quartile	1.18 [0.94, 1.49]	1.19 [0.93, 1.51]	1.09 [0.65, 1.84]	1.18 [0.94, 1.48]	1.20 [0.95, 1.53]	0.94 [0.56, 1.56]
Third quartile	1.22 [0.96, 1.54]	1.24 [0.96, 1.59]	1.11 [0.67, 1.86]	1.12 [0.89, 1.41]	1.10 [0.86, 1.41]	1.17 [0.72, 1.91]
Fourth quartile	0.99 [0.78, 1.26]	0.99 [0.77, 1.27]	0.98 [0.58, 1.67]	0.98 [0.78, 1.24]	0.99 [0.78, 1.26]	0.82 [0.49, 1.39]

(continued)

358

Table 4. (continued)

Variable	Additional Household Member (Either Sex)			Additional Household Member (Female)		
	All	Nonmigrants	Return Migrants	All	Nonmigrants	Return Migrants
Urban	1.46 [1.24, 1.72]***	1.40 [1.17, 1.67]***	2.08 [1.49, 2.90]***	1.42 [1.21, 1.67]***	1.44 [1.21, 1.71]***	1.34 [0.95, 1.90]†
Years in the United States (ref. 1)						
2–10			0.86 [0.61, 1.22]			0.84 [0.59, 1.20]
11+			0.55 [0.33, 0.91]*			0.56 [0.32, 0.98]*
Last resided in the United States. (ref. < 1960)[a]						
1960–1969			0.97 [0.54, 1.74]			0.78 [0.42, 1.44]
1970–1979			0.81 [0.38, 1.70]			0.55 [0.27, 1.14]
1980–1989			0.79 [0.43, 1.46]			0.71 [0.38, 1.32]
1990–2001			0.67 [0.35, 1.25]			0.60 [0.32, 1.14]
Sample size (N)	13,440	11,856	1,584	13,440	11,856	1,584

Note. Data from MHAS, 2001 wave; authors' calculations.

[a]Includes missing flag (not shown in the table) for 531 observations with missing information on the time last resided in the United States. The estimated coefficient for missing observations is similar to 1990–2001 category.

†p < .1.

*p < .05. **p < .01. ***p < .001.

359

Table 5. Cox Proportional Hazards Models for the Age of Onset of Any Functional Limitations, Chronic Health Conditions, and Death for Mexicans 50 Years and Older,[1] 2001–2012.

Variable	Any ADL Limitation	Any IADL Limitation	Any Mobility Limitation	Any Chronic Health Condition[2]	Death
Migrant (ref. nonmigrant)					
Short term (1 year)	1.04 [0.78, 1.39]	0.77 [0.52, 1.17]	0.79 [0.59, 1.05]	1.11 [0.84, 1.46]	1.06 [0.89, 1.27]
Medium term (2–10 years)	0.98 [0.72, 1.34]	0.79 [0.49, 1.28]	0.90 [0.68, 1.20]	1.00 [0.77, 1.30]	0.83 [0.68, 1.02]†
Long term (11+ years)	1.09 [0.71, 1.65]	0.69 [0.39, 1.20]	1.24 [0.76, 2.04]	1.57 [1.03, 2.41]*	1.07 [0.84, 1.36]
Female (ref. male)	1.58 [1.32, 1.87]***	1.73 [1.35, 2.20]***	1.69 [1.49, 1.93]***	1.38 [1.18, 1.62]***	0.75 [0.66, 0.86]***
Marital status (ref. married)					
Single	0.96 [0.58, 1.60]	0.92 [0.42, 2.03]	1.19 [0.87, 1.62]	0.79 [0.56, 1.12]	1.12 [0.83, 1.51]
Divorced or separated	0.91 [0.69, 1.21]	0.86 [0.59, 1.24]	0.97 [0.77, 1.23]	0.68 [0.47, 1.00]*	1.12 [0.89, 1.40]
Widowed	0.71 [0.59, 0.86]***	0.90 [0.68, 1.19]	0.82 [0.68, 0.98]*	0.73 [0.58, 0.91]**	0.88 [0.75, 1.02]†
Additional nonspouse household members (aged 21–60; ref. none)[3]					
Female, 21–40	1.09 [0.95, 1.25]	1.04 [0.84, 1.29]	1.00 [0.88, 1.14]	0.88 [0.76, 1.01]†	1.00 [0.88, 1.14]
Female, 41–60	0.75 [0.59, 0.94]*	0.63 [0.47, 0.84]**	0.89 [0.69, 1.14]	0.61 [0.44, 0.84]**	0.93 [0.80, 1.08]
Male, 21–40	0.95 [0.81, 1.10]	1.12 [0.90, 1.39]	0.97 [0.86, 1.11]	0.97 [0.83, 1.12]	1.16 [1.01, 1.32]*
Male, 41–60	0.89 [0.69, 1.15]	0.91 [0.69, 1.20]	0.96 [0.77, 1.20]	0.76 [0.56, 1.01]†	1.09 [0.92, 1.30]

(continued)

Table 5. (continued)

Variable	Any ADL Limitation	Any IADL Limitation	Any Mobility Limitation	Any Chronic Health Condition[2]	Death
No education	1.00 [0.86, 1.16]	1.09 [0.90, 1.32]	1.16 [1.01, 1.34]*	0.95 [0.81, 1.12]	0.90 [0.79, 1.03]
Financial assets (ref. first quartile)					
Second quartile	0.86 [0.70, 1.05]	0.97 [0.74, 1.28]	0.83 [0.70, 0.99]*	1.06 [0.86, 1.30]	1.05 [0.88, 1.26]
Third quartile	0.87 [0.71, 1.07]	0.96 [0.72, 1.29]	0.85 [0.71, 1.02]†	0.89 [0.72, 1.10]	1.00 [0.85, 1.16]
Fourth quartile	0.79 [0.64, 0.98]*	0.69 [0.52, 0.91]**	0.82 [0.69, 0.98]*	0.91 [0.75, 1.11]	0.98 [0.83, 1.15]
Farm or ranch work history	1.22 [1.00, 1.48]*	1.20 [0.91, 1.58]	1.34 [1.14, 1.58]***	0.87 [0.73, 1.03]	0.76 [0.65, 0.88]***
Sample size (N)	10,311	10,493	7,042	5,221	13,401

Note. Data from MHAS, 2001–2012 waves; authors' calculations. IADL = instrumental activities of daily living; ADL = activities of daily living.
[a]Analysis sample consists of those persons without the condition in 2001. [b]Chronic health conditions are high blood pressure, diabetes, cancer, respiratory disease, heart attack, stroke, and arthritis or rheumatism. [c]One or more members in specified age-group, not including selected respondent or spouse.
†*p* < .1.
**p* < .05. ***p* < .01. ****p* < .001.

361

experience more disrupted family ties and, relatedly, have fewer potentially available middle-age caregivers in their households. This may affect negatively their health compared to nonmigrants given that the evidence from prior literature (Mendez-Luck et al., 2009; Schmid, Brandt, & Haberkern, 2012) suggests that potential caregivers in the household, and in particular female caregivers, may have protective effect across multiple health outcomes. With this in mind, it is important to determine the true extent to which migration experience affects household composition, especially the presence of nonspouse middle-age females in the household, and the key characteristics of nonmigrants and return migrants that are related to it (Table 4).

The key finding is that being a return migrant with over 10 years of U.S. migration experience is associated with substantially lower odds of having a person aged 21–60 other than spouse in the household (odds ratio [OR] = 0.48). Odds are also lower for older respondents, especially those aged 70 and beyond, compared to younger respondents, yet higher for widowers and persons living in urban areas. Comparing the results of the models stratified by migration status, the association of older age with lower odds and widowhood with higher odds of having a nonspouse middle-age person in the household is confirmed only for nonmigrants. Among return migrants, there is a strong association of divorce and separation with the lower likelihood of having a middle-age person other than spouse in the household ([OR] = 0.23). The results also confirm that the length of U.S. stay is among the key determinants of the presence of nonspouse household members; the odds are 45% lower for long-term than for short-term return migrants. The results for the timing of return to Mexico suggest that more recent returnees have fewer nonspouse persons in their households, but the estimates are not statistically significant.

The results for females largely mirror those of the larger sample of adult nonspouse household members. However, an important difference is that the oldest respondents (aged 70 and older) are not less likely than the youngest ones (aged 50–54) to have middle-age females in their households. Moreover, the effect of being a female is statistically significantly correlated with higher odds of having another female living in the household, and the estimate for the timing of return to Mexico is marginally significant for the most recent return migrants (1990–2001).

While previous analysis shows important differences in the household composition of return migrants and nonmigrants, it remains unclear if and to what extent they translate into different health trajectories. To answer this question, we fit a Cox proportional hazards model for the age of onset of any

ADL limitations, IADL limitations, mobility deficits, chronic health conditions, and death (Table 5).

Once demographic and socioeconomic factors are controlled for, migrant status is largely not an important predictor of health. One exception is chronic health conditions as long-term return migrants have 57% higher risk of reporting such conditions compared to nonmigrants. The presence of nonspouse female household members aged 41–60 is associated with a lower risk of onset of any ADLs (hazard ratio [HR] = 0.75), IADLs (HR = 0.63), and chronic health conditions (HR = 0.61), as well as with a lower risk of onset of any mobility deficits or death, albeit the estimates for the last two outcomes are not statistically significant. Having a male household member, other than the spouse, in the same age-group is similarly related to better health outcomes, but the magnitudes of the effects are smaller and not statistically significant, except for chronic health conditions where the estimated coefficient (HR = 0.76) is marginally significant. No such health-protective effect is found for the younger group (aged 21–40) of nonspouse household members of either sex, and in fact the presence of younger males in the household is associated with a slightly elevated risk of death.[5] Among control variables, sex appears to be the key determinant of health trajectories, with females facing between one third and three fourths higher risk than males of onset of any ADLs, IADLs, mobility deficits, or chronic health conditions, but in contrast, they have almost one fourth lower risk of death. Widowed persons have better health trajectories across various outcomes and, in particular, with respect to the onset of any ADLs, mobility deficits, and chronic health conditions. Similarly, persons in the top quartile by financial assets enjoy better health than persons in the bottom quartile, and persons lacking formal education have a higher risk of mobility limitations. Finally, individuals with a farm/ranch work history have an elevated risk of onset of ADL or mobility limitations, yet enjoy a somewhat lower risk of dying.[6]

Discussion

This study set out to examine whether migration to the United States affects household composition for older return migrants in Mexico compared to the population with no international migration history. Moreover, it aimed to explore associations between the household composition and health trajectories of older persons in Mexico. The results indicate that long duration of migration is associated with higher proportion of divorce and separation and fewer nonspouse persons in the household, which may reduce the potential for providing assistance to return migrants. These findings support the

first research hypothesis and are consistent with prior research that finds family size to be an important determinant of support provision to older adults (e.g., Zimmer & Kwong, 2003).

Cox proportional hazards model results also provide partial support for the second research hypothesis that the presence of middle-age females other than spouse in the household has positive effects on health and functional trajectories. A significantly lower risk of onset of ADL and IADL limitations as well as chronic health conditions is observed for respondents with nonspouse female household members aged 41–60, but no such protective effect is found for the presence of younger (aged 21–40) adult females in the household who are likely childbearing and childrearing.

This study extends previous research on Mexican migrant population in multiple ways. It is among the few studies to focus on return migrants, and it provides a nuanced analysis of the demographic and socioeconomic characteristics of this unique subgroup of Mexico's migrant population. Building on previous research (e.g., Frank & Wildsmith, 2005), it examines the marital status and household composition of return migrants. Furthermore, it distinguishes migrants by length of their U.S. stay and timing of return to Mexico, documenting an association between the duration of migration and the presence of nonspouse persons in the household. However, it remains unknown whether the observed differences in marital status and household composition between return migrants with long duration of U.S. stay and others can be attributed to their migration experience or if there are other factors such as self-selection that could at least partly account for the differences.

The present study is also the first one to use longitudinal MHAS data spanning 2001–2012 period to explore the link between health outcomes and the availability of nonspouse persons in the household. While prior research clearly established the association between the provision of time support and health (Wong & Higgins, 2007), it was possible to show with data from the third wave in 2012 that older adults with coresident nonspouse adult females in the household have better health outcomes over more than a decade. These results are consistent with previous findings from the Netherlands, showing that the availability of adult nonspousal family support may be protective with respect to the health and functioning of older adults (Bisschop et al., 2003; Kriegsman et al., 1997).

Limitations of the Study

There are several limitations of this research stemming from the use of the MHAS data and largely common across the family of related surveys in other

countries, such as the Health and Retirement Study in the United States. First, MHAS collects information about health-related nonfinancial support receipt only for individuals who indicated that they already experienced health problems such as ADL or IADL limitations. Given that our focus is on health outcomes for older adults who are initially without functional limitations, this prevents us from using the direct measure of health-related support provided by adult nonspouse female household members. Therefore, to examine whether their support to older persons without functional limitations has health-protective effects over the study periods, we relied on a broadly supported assumption about sex-linked role behaviors for provision of practical assistance to older adults (e.g., Brandt et al., 2009; Mendez-Luck et al., 2009; Silverstein, Gans, et al., 2006). While our measure may not precisely capture the magnitude of the relationship of support and health, it may still accurately indicate its direction.

One possible alternative to this approach is to use information on the provision of nonfinancial assistance from children and grandchildren that is not necessarily associated with the health maintenance of their older parents, such as household chores, errands, and transportation. However, this does not solve the issue of lacking information on the provision of health-related support and is limited to children and grandchildren only, whereas our research focuses on all coresident persons, in particular females, other than spouses. To explore this alternative approach, we tested the relationship of health and functional measures with the provision of nonfinancial assistance from children and grandchildren and found the results to be broadly similar to those presented in this article.

A further limitation in our study is the focus on household composition, since this may result in underestimating the availability of family assistance to the extent that family members live in close proximity but do not share the same household. Given that (return) migrants' children are more likely to migrate themselves (Wong & Gonzalez-Gonzalez, 2010), nonmigrants may have more adult children living closer to them (e.g., in the same house but separate household; in the same neighborhood; or in the same village, town, or city). This could result in a systematic underestimation of the difference in potential family support availability between return migrants and nonmigrants. Small number of observation points coupled with unequal timing between the MHAS study waves, in particular the lengthy period between the 2003 and 2012 waves, represent another limitation. Furthermore, while MHAS oversamples return migrants, their number in the sample is still relatively small, especially if the focus is on return migrants with long durations of U.S. stay.

In the context of these limitations, we can identify potentially important directions for future research. In particular, future studies should expand on our approach to explore the links between the different types of social and instrumental supports provided by respondents' broader social network and the health trajectories of older persons. Moreover, given that previous research suggests that the provision of family support may follow a nonlinear pattern with age (Mudrazija, 2014), future research should also explore more complex types of intertemporal relationships between migration experience and support, specifically financial, in-kind, and nonfinancial support availability from family members.

Finally, some potentially important findings cannot be fully explained without richer data than currently available. For example, results suggest that widowed persons are almost twice as likely to have an adult person other than spouse in the household compared to married persons, and their risk of experiencing negative health outcomes is consistently lower than for married persons. Widowed persons may also benefit from assistance provided by their family and friends (Hewitt, Turrell, & Giskes, 2012; Maulik, Eaton, & Bradshaw, 2011) as well as from the decreased strain of the care burden of their spouses, now deceased, given evidence of the negative effects of caregiving for the physical and mental health of caregivers (Bevans & Sternberg, 2012; Garlo, O'Leary, Van Ness, & Fried, 2010; Haley, Roth, Howard, & Safford, 2010). To distinguish the effects of these different factors, however, would require additional information that is not available in the survey.

Similarly, the results show that return migrants have broadly similar health and functional profiles to nonmigrants, and their health trajectories are largely similar once differences in their demographic and socioeconomic profiles are accounted for. However, without retrospective data on health and functional status, it is not possible to know whether return migrants' health and functional profiles were similar to nonmigrants' profiles across the life course, which is tentatively supported by the finding that better health is at most a weak predictor of U.S. migration (Rubalcava, Teruel, Thomas, & Goldman, 2008), or whether return migrants enjoyed a health advantage at the time of their migration to the United States, suggesting their health deteriorated faster than nonmigrants' health during their stay in the United States (Angel et al., 2008; Crimmins et al., 2005; Wong & Gonzalez-Gonzalez, 2010).

Policy Implications

These limitations notwithstanding, the present study provides important new information about the health and functional trajectories of Mexico's return

migrant population in the context of differences in marital status and house-hold composition. While in recent years Mexico has advanced social protection for vulnerable populations, including older adults, by offering health insurance to all citizens without previous access to other public insurance options (the *Seguro Popular* program)[7] and providing modest social pensions to older persons regardless of their work history (such as the *70 y más* program),[8] family-provided caregiving remains a critical element of health-related support for older persons. However, older return migrants, especially those who lived in the United States for a long time, have fewer household members available to rely on for assistance than nonmigrants.

This issue may be further exacerbated by the recent change in the geography of return migration as an increasing number of migrants do not return to the place in Mexico they emigrated from (Masferrer & Roberts, 2012), which decreases the access to family and a larger social network. In this context, policy makers in Mexico should consider ways in which the comparatively limited informal support network of older return migrants could be most effectively taken into account in the planning of future policies to support older adults. In addition, current migrant programs such as *Programa Paisano*, coordinated by the National Migration Institute, could increase their efforts to support return migrants who may want to affiliate to *Seguro Popular* and obtain a noncontributory pension. These programs could be used to ensure that possible issues stemming from affiliation requirements for different social programs, such as lacking official Mexican documentation at the moment, would not adversely impact return migrants' chances of gaining access to programs that they otherwise qualify for. Such efforts could ameliorate some of the negative impacts of long stays outside the country. U.S. policy makers should also explore options to support health maintenance of Mexico's return migrants, especially those with continuous legal and/or family ties with the United States, as the adequacy of their old-age health care diminishes the risk they would ultimately rely on the U.S. health care system for intensive (and expensive) care.

Beyond the issue of international migration and weakened family ties, policy makers in both countries should consider other factors affecting the receipt of informal care and support by family members. Current trends suggest smaller families, continuing internal and international migration, and fewer potential caregivers available for home assistance due to expanded labor market participation. Mexico and the United States need comprehensive health maintenance strategies to support older adults with and without access to health care, with self-care management support for those with chronic illnesses, and through assistance with daily activities for the

disabled. Implementation of these programs should be accompanied by support for informal caregivers who shoulder most of the burden of older adults' care.

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Declaration of Conflicting Interests

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Notes

1. In the rest of the manuscript, we refer to these persons simply as nonspouse persons or persons other than spouses, but we always refer to both spouses and partners.
2. An additional sample was included in 2012, but those persons were not included in the analyses for this study.
3. Detailed information on the Mexican Health and Aging Study (MHAS) design, sampling procedures, and data collection can be found in the MHAS documentation available at http://www.mhasweb.org/DataDocumentationNew.aspx#
4. Supplementary analysis shows that total financial assets of an average return migrant in the sample are over 140,000 pesos larger than the assets of an average nonmigrant person (i.e., 482,776 pesos for return migrants compared to 339,771 pesos for nonmigrants).
5. The positive association of the presence of younger males in the household with a somewhat higher risk of death may be partly due to the fact that adult sons generally provide less instrumental support to parents than adult daughters (Silverstein, Gans, et al., 2006) while, at this age, adult children are still mostly net recipients of transfers from parents (Mudrazija, 2014), which may strain parental resources. Even when adult sons provide care to parents, this may negatively affect parents' health inasmuch as such support does not correspond with the cultural norms and

expectations of family caregiving and preferred caregivers (Cong & Silverstein, 2008).

6. These findings may simultaneously reflect the history of physically demanding labor that increases the risk of functional limitations and selective survival that could account for the lower risk of dying.

7. While currently expanding, *Seguro Popular* has only had limited impact as to date: Roughly 9% of adults 60 years and older are affiliated to it, and close to 17% still have no insurance (Instituto Nacional de Estadística, Geografía e Informática, 2014).

8. This program provides a monthly stipend for rural Mexicans aged 70 and older and the noncontributory pensions for those with no access to a pension by any of the social security institutions.

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