

# Determinants of Return Migration to Mexico Among Mexicans in the United States

J. Cristobal Ruiz-Tagle<sup>\*</sup>      Rebeca Wong<sup>†</sup>

## 1.- Introduction

The wellbeing of the U.S. population will increasingly reflect the characteristics of the immigrants that enter the country, in particular, those from Mexico who are a major share of the total adult immigrant population. As a consequence, the characteristics of those immigrants who age in the U.S. will be largely the result of the attributes of those who migrate from Mexico to the U.S. and of those who remain in the U.S. Despite its importance, we know little about the selection process that determines the return of Mexican immigrants from the US. This paper fills the void in the literature by describing the attributes of the returning migrants compared to the ones who stay in the U.S.

This paper recovers the migration history of individuals aged 16 years and older, using data from the 2000 US Census (1% sample) and the 1997 Mexican Survey on Demographic Dynamics, ENADID (*Encuesta Nacional de Dinamica Demográfica*). We describe major traits: age, gender, and educational achievement of both Mexican migrants in the U.S. and return migrants in Mexico. We pay particular attention to the time spent in the U.S. as a variable capturing unobserved characteristics such as family and work networks, command of the English language and other factors that reflect the process of settlement in the U.S. In addition, the analysis is presented for persons aged 65 and older, in an effort to describe the selection process of migrants who stay until the retirement age and are potentially eligible for old-age benefits in the U.S.

---

<sup>\*</sup> Maryland Population Research Center, University of Maryland, College Park. [jruiz-tagle@arec.umd.edu](mailto:jruiz-tagle@arec.umd.edu).

<sup>†</sup> WHO/Pan American Health Organization, Collaborating Center on Aging and Health, University of Texas Medical Branch. [rewong@utmb.edu](mailto:rewong@utmb.edu)

## 2.- Data and Methods

The data comes from the 1% Sample of the 2000 U.S. Census and from the 1997 ENADID in Mexico. The 1% U.S. Census sample was obtained from the IPUMS website.<sup>‡</sup> It contains information on 2,167,785 individuals aged 16 and older. Of these, 370,044 were aged 65 and older. The Mexican data comes from a household survey on the population dynamics of Mexicans (ENADID 1997). The survey included 73,412 households, with representative sample in each of the 32 states of Mexico. From these households, there were 178,497 individuals aged 16 and older, and 9,946 individuals aged 65 or older. These two data sets are especially appropriate for the purposes of this paper, because they contain information on the international migration over the life of each individual in the household. In the U.S. census, the question on country of birth is used to classify a person as born-in-Mexico. In the Mexican ENADID survey, we use the question on whether each household resident has ever lived in the U.S. to classify the household members as return migrants from the U.S.<sup>§</sup>

Using the data sets from the two countries, we construct common variables that are possible covariates of return migration, as follows: age, sex, education, number of children younger than 5 years old, number of children aged 5 or older, number of household members, marital status, and duration of stay. In addition, we included a variable that has been shown to be related to U.S. migration by Mexicans and that captures exposure to the “bracero” program, defined as the number of years of prime-age for migration that the individual spent during the 1942-1964 period. Table A-1 in the Annex presents a detailed definition of the variables for Mexico and the U.S. data sources.

---

<sup>‡</sup> Source: <http://usa.ipums.org/usa/>

<sup>§</sup> It is worth noting that while the 2000 Mexican census data is also available, the census did not ask for migration to the U.S. over an individual’s life course, and rather asked only about migration over the five years prior to the interview.

We use weighted descriptive statistics to characterize the patterns of return migration, according to main socioeconomic attributes and duration of stay. We then use a proportional hazard multivariate regression model to examine the covariates of return migration.

The multivariate analysis uses a hazard function that accounts for the fact that individuals that have longer migration durations are exposed for a longer period of time to the ‘risk’ of return migration back to Mexico. In addition, these individuals are likely to have systematic unobserved characteristics (such as friends and family networks) that are thought to be positively correlated with migration duration. Given the nature of migration duration (measured in years) we use a discrete time hazards model, and to account for covariates that can further explain the return migration (sex, age, marital status, etc.) we use a proportional hazard model. Furthermore, we assume a Weibull distribution for migration duration in the baseline hazard. In sum, we use a model of discrete time proportional hazard with a Weibull baseline hazard.

### **3.- Findings**

We first obtain the distribution of the population according to migration status in Mexico and the U.S., shown in Table 1. The distribution reflects a greater representation of Mexicans in the younger cohorts living in the U.S. compared to the older cohorts. The third row in Table 1 shows that 0.3 % of those 16 years old and older surveyed in Mexico report that they have ever lived in the U.S. Likewise, of those 16 years old and older surveyed in the U.S. 0.3 % report that they were born in Mexico (we refer to these groups as “migrants” hereafter). Conversely, when looking at those that are 65 years old and older, 0.7 % of Mexicans report that have lived in the U.S. whereas less than 1 % of those surveyed in the U.S. report that they were born in Mexico. This age distribution indicates that the distribution of Mexican migrants (particularly those who stay in the U.S.) varies largely with age.<sup>\*\*</sup> In addition, this indicates that if all current residents of the U.S. were

---

<sup>\*\*</sup> As we will see later, the distribution of Mexican migrants varies substantively with time living in the U.S. and a positive correlation is expected between age and time in the U.S. (see graph A1 in the Annex).

to remain and not return to Mexico, the future elderly of the U.S. will include a larger share of Mexico-born individuals than it does now.

*Table 1. Population in Mexico and U.S. by migration status and age*

	All 16 years old and more				65 years old and more			
	Mexico		U.S.		Mexico		U.S.	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Never migrated	120,443	84.6	1,198,016	72.1	6,283	76.7	198,057	64.6
Internal migrant	49,490	15.1	691,323	25.3	3,015	22.6	138,485	33.7
Lived in the U.S. (*) / Born in Mexico(**)	7,995	0.3	79,387	0.3	608	0.7	3,781	0.0
Travels daily or weekly to work in the U.S. (*)	409	0.0	---	---	31	0.0	---	---
Migrated to other countries(*)/ Born in other countries(**)	160	0.0	199,059	2.2	9	0.0	29,721	1.6
Total	178,497	100.0	2,167,785	100.0	9,946	100.0	370,044	100.0

(\*) Survey ENADID México (1997); (\*\*) US Census 2000 (sample 1%). Percentajes are weighted by expansion factors.

Source: US census (1% sample) and survey ENADID for Mexico

Next, we compare the gender distribution of the migrants compared to that of the total population. Table 2 shows that whereas the proportion of males and females aged 16 and older is roughly the same in both countries (slightly more than 51 % of females), there are notorious differences in the migrant population. Among Mexican residents who are return migrants, over three-quarters (75.3 %) are males compared to only 55.7 % among the Mexican immigrants in the U.S. Thus it appears that a larger share of males returns to Mexico after stays in the U.S., whereas there is more balance in gender composition among the Mexican population that stay in the U.S.

These patterns by gender seem apparent also for the older cohorts. For all individuals aged 65 and older, about one-half of Mexican residents (49.9 %) are male compared to 41.2 % of Mexican migrants living in the U.S. Among the migrant population, a larger percentage of those Mexicans that lived in the U.S. are male (82.2 %), compared to only 42.8 % of Mexican immigrants living in the U.S.

*Table 2. Migrant population in Mexico and U.S. by sex and age*

		All 16 years old and more				65 years old and more			
		Mexico		U.S.		Mexico		U.S.	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%
Lived in the U.S. (*)/	Men	6,119	75.3	44,202	55.7	505	82.2	1,659	42.8
Born in Mexico(**)	Women	1,876	24.7	35,185	44.3	103	17.8	2,122	57.2
Total (all migration	Men	86,837	48.6	1,042,785	48.4	5,016	49.9	153,563	41.2
groups)	Women	91,660	51.4	1,125,000	51.6	4,930	50.1	216,481	58.8

(\*) Survey ENADID México (1997); (\*\*) US Census 2000 (sample 1%).

Source: US census (1% sample) and survey ENADID for Mexico

The patterns by educational achievement indicate that those who stay in the U.S. are concentrated in the extremes of the educational distribution. Mexican immigrants that stayed in the U.S. have either very low levels of education (no schooling) or quite large levels of education (10 or more years of education) compared to those who returned. Table 3 shows that among migrants aged 16 years old and more, 10.1 % of Mexicans that stayed in the U.S. report no schooling compared to Mexicans that returned to Mexico (2.0 %). This would indicate that Mexicans staying in the U.S. are generally less educated than those returning to Mexico. However, among those that stayed in the U.S., a larger percentage of Mexicans have 10 or more years of schooling (46.5 %) compared to Mexicans that returned to Mexico (only 17.3 %). This pattern seems to hold also among those 65 years old and more, although the percentage of Mexicans with no schooling is significantly larger than the percentage of Mexicans with 10 or more years of schooling. The latter pattern illustrates the well documented shift towards higher educational achievement among young cohorts compared to the older ones in Mexico.

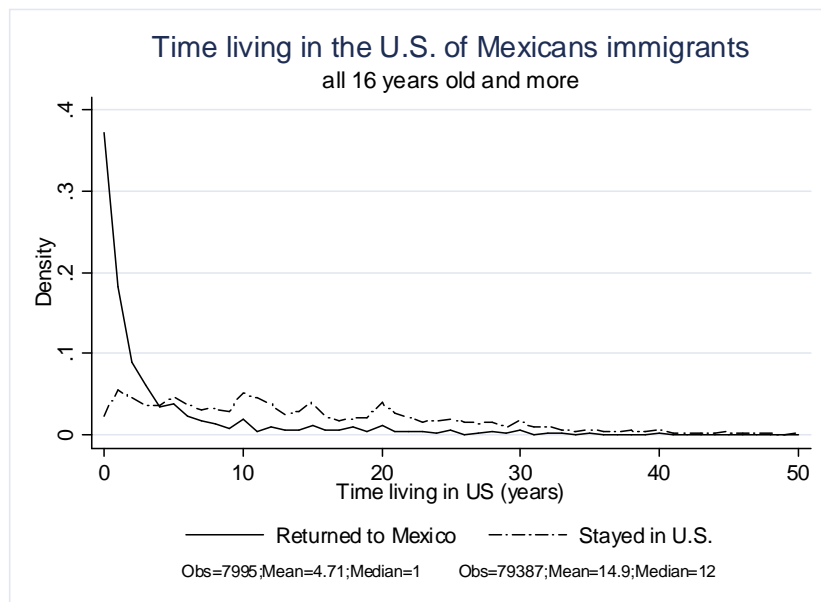
*Table 3. Migrant population in Mexico and U.S. by educational attainment and age*

	All 16 years old and more				65 years old and more			
	Mexicans that lived in the U.S.		Mexican born living in the U.S.		Mexicans that lived in the U.S.		Mexicans that lived in the U.S.	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
No schooling	170	2.0	8,302	10.1	61	10.6	1,174	30.5
1 to 4 years of schooling	2,204	26.5	5,220	6.2	350	55.6	662	16.8
5 to 9 years of schooling	4,263	54.3	29,543	37.1	157	26.7	1,127	30.7
10 or more years of schooling	1,358	17.3	36,322	46.5	40	7.1	818	22.0

Source: US census (1% sample) and survey ENADID for Mexico

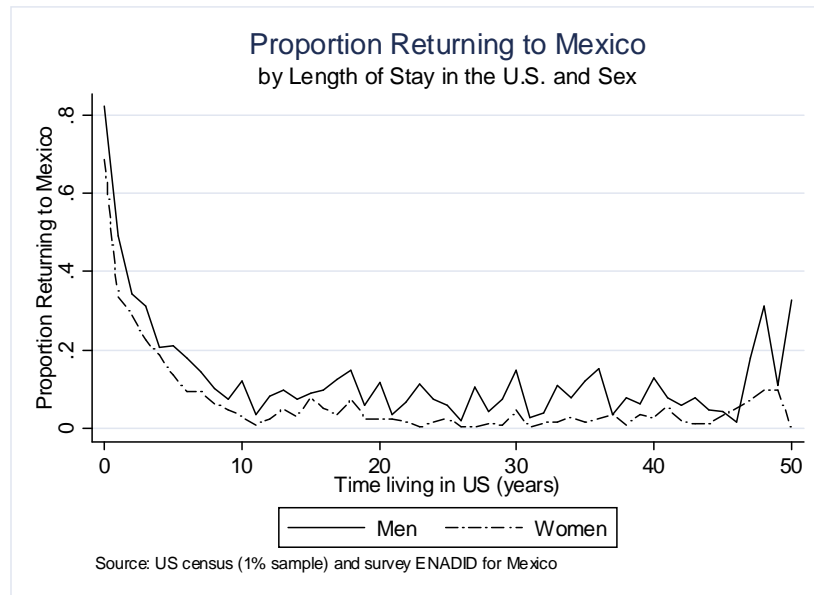
We next examine the duration of migration in both countries. The time spent in the U.S. varies considerably between the two groups, with Mexicans who lived in the U.S. and returned to Mexico reporting migration duration considerably shorter than those that stay in the U.S. (see Graph 1). For migrants aged 16 and older, the median migration duration of those that return is 1 year, the median migration duration of those that stay is 12 years (mean migration durations are 4.7 and 14.9 years, respectively).

*Graph 1*



We further examine the migration duration as it seems to be a key covariate of return migration. For each period of migration duration, we construct the proportion of individuals that returned to Mexico out of all individuals that ever migrated to the US (i.e., those who returned and those who stayed). Graph 2 presents this share for both men and women, plotted according to the length of duration. As expected, the proportion of return migration is decreasing with longer duration (particularly during the first years spent in the U.S.) and is always lower for women than for men. Also, it should be noted that while 57% of the sample in this group are men, women have mean duration that is 1.78 years longer than men (not shown in graph).

Graph 2



This negative relation between migration duration and proportion returning to Mexico seems to support the idea that unobserved components thought to be positively correlated with migration duration, such as family and other social networks developed while living in the U.S., play an important role on the propensity of Mexican migrants staying in the U.S. Furthermore, it is sensible to think (and the graph A1 in the annex shows it) that older individuals present longer migration duration, so it is important to disentangle whether age or migration duration (or both) help explaining return migration from the U.S. Furthermore other factors such as gender composition, age, and educational attainment appear to be associated with return migration. Therefore, we next explore the covariates of return migration with a multivariate perspective.

#### 4.- Multivariate Analysis: Proportional hazard model

For the estimation of the hazard function of returning, we include in the analysis only the observations of migrants in both countries. The baseline hazard component is captured by the variable “log of duration of migration” whereas the proportional component is captured by the rest of the covariates (sex, education, family composition, and years

under ‘bracero’ program). We also include dummy variables that control for the year of first migration to the U.S. The results are shown in Table 4. The parameter estimate associated with log of duration of migration is less than 2 which, under the Weibull distributional assumption of migration duration, means that the probability of returning to Mexico has an inverse relation with migration duration as shown in Graph 2.

The estimated effect of years under ‘bracero’ shows that Mexicans that migrated during the years of the temporary labor program were more likely to return to Mexico than otherwise. Furthermore, as shown in Graph 2, men were more likely to return to Mexico than women. Compared to single persons, those married and living *with* their spouses were more likely to return to Mexico, while migrants who were married and living *without* their spouses at the time of the survey were more likely to stay in the U.S.

Table 4. Proportional hazard of returning to Mexico

	beta	t-stat	beta	t-stat	beta	t-stat
log of duration of migration	-0.926**	(53.96)	-0.926**	(54.01)	-0.803**	(45.85)
years under 'bracero'			0.011**	(3.01)	0.036**	(6.73)
sex (men=1)					0.756**	(22.00)
married (spouse present) (a)					0.356**	(9.02)
married (spouse absent)					-0.196*	(2.24)
age					-0.054**	(7.49)
age squared					0.001**	(5.43)
1 to 4 years of schooling (b)					2.351**	(23.23)
5 to 9 years of schooling					1.771**	(17.95)
10 or more years of schooling					0.682**	(6.59)
N. of children less than 5 yrs.old					0.092**	(4.33)
N. of children more than 5 yrs.old					0.254**	(28.37)
N. of other members in the family					-0.206**	(21.34)
Observations	1.38e+08		1.38e+08		1.38e+08	

Notes: Robust z statistics in parentheses. \* significant at 5%; \*\* significant at 1%.

(a) reference is single/divorced/widowed. (b) reference is no schooling.

Expanded sample by expansion factors and the number of periods exposed to risk.

Dummies that control for year of first migration to the U.S. are not reported here.

Controlling for duration and other covariates, older individuals present a negative hazard of returning to Mexico. Compared to no-schooling, more education increases the probability of returning although at a decreasing rate; those with 1 to 4 years of schooling are the most likely to return followed by those with 5 to 9 years of schooling and those



with more than 10 years of schooling. Migrants with zero years of schooling are the most likely to stay in the U.S.

Family composition characteristics show that a higher number of children in the family is associated with higher probability of returning to Mexico (particularly children older than 5 years), whereas having large families (other than children) seem to have the opposite effect. This last finding seems to support the hypothesis that having family networks would increase the propensity to stay in the U.S.

#### **4.- Conclusions**

As the composition of the general U.S. population has changed during the last years towards an older population, it is also important to study how the migrant population living in the U.S. has changed in its composition. While the population of Mexicans living in the U.S. is aging too, it is of particular interest to study whether those migrants return to Mexico once they are old or remain in the U.S. (imposing a significant burden in social security expenditures).

Thus, in this study we looked at determinants of return migration of Mexicans living in the U.S. We found that the distribution of Mexican migrants in the U.S. varies with age, level of education, gender and time living in the U.S. The latter is of particular interest since we found that return migration presents negative duration dependence: those Mexican migrants that remain longer in the U.S. are less likely to return to Mexico as compared to those that remain for a longer period, who are more likely to return to Mexico.

In addition, we also described the effects of marital status, family composition and exposition to years under the policy 'bracero' and their effects on the probability of return migration. As data becomes available it is expected that there will be more studies on return migration that can further explain the determinants and characteristics of these migrants.

## Annex

*Table A1. Definition of Variables*

variable name	variable label
Never migrated	Individuals that never moved from the state where born
Internal migrant	Individuals that moved within their own country
Lived in the U.S.	Mexicans that lived in the U.S. and are back in Mexico at the time of survey
Born in Mexico	Mexicans living in the U.S. at the time of survey
Travels daily or weekly to work in the U.S.	Mexicans living in Mexico that travel daily or weekly to work to the U.S.
Migrated to other countries	Mexicans that lived in other country different from the U.S. and are back in
Born in other countries	Foreigners other than Mexicans living in the U.S. at the time of survey
Time living in the U.S. / duration of migration	Number of years spent in the U.S.
years under bracero	Number of years between the ages 18-40 that the person spent during Bracero
sex (men = 1)	Dummy variable equal to 1 if men
married (spouse present)	Dummy variable equal to 1 if individual is married and living with her/his spouse
married (spouse absent)	Dummy variable equal to 1 if individual is married and is not living with her/his
age	Individual's age
age squared	Individual's age squared
1 to 4 years of schooling	Dummy variable equal to 1 if individual has 1 to 4 years of education
5 to 9 years of schooling	Dummy variable equal to 1 if individual has 5 to 9 years of education
10 or more years of schooling	Dummy variable equal to 1 if individual has 10 or more years of education
N. of children less than 5yrs. old	Number of own children under age 5 in the household
N. of children more than 5yrs. old	Number of own children over age 5 in the household
N. of other family members in the household	Number of own family members in household other than children

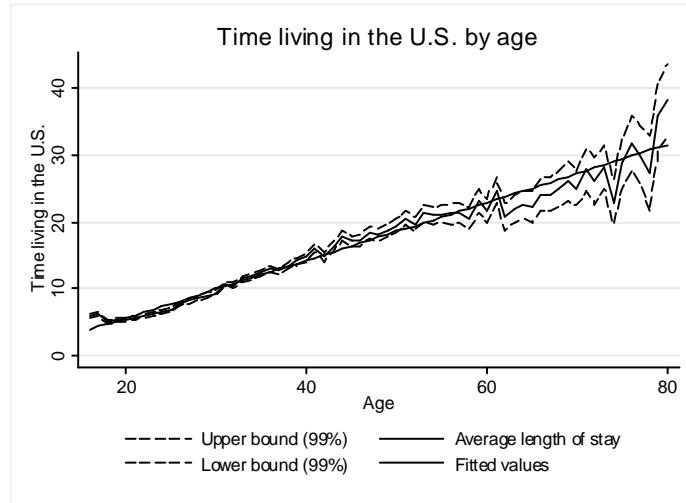
Source: US census (1% sample) and survey ENADID for Mexico.

*Table A2. Descriptive statistics of variables used in proportional hazard*

	Obs	Weight	Mean	Std. Dev.	Min	Max
dummy (=1 if return to Mexico)	87382	10284629	0.198	0.399	0	1
duration of migration	87382	10284629	12.723	11.771	0	90
years under 'bracero'	87382	10284629	1.019	3.574	0	23
sex (men=1)	87382	10284629	0.595	0.491	0	1
married (spouse present)	87382	10284629	0.574	0.495	0	1
married (spouse absent)	87382	10284629	0.075	0.264	0	1
age	87382	10284629	36.321	14.060	16	99
1 to 4 years of schooling	87382	10284629	0.102	0.303	0	1
5 to 9 years of schooling	87382	10284629	0.405	0.491	0	1
10 or more years of schooling	87382	10284629	0.407	0.491	0	1
N. of children less than 5 yrs.old	87382	10284629	0.346	0.653	0	7
N. of children more than 5 yrs.old	87382	10284629	1.217	1.519	0	11
N. of children more than 5 yrs.old	87382	10284629	3.014	2.204	1	21

Source: US census (1% sample) and survey ENADID for Mexico.

Graph A1.



Source: US census (1% sample) and survey ENADID for Mexico