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Return Migration Among Latin American Elderly in the U.S.: A Study of its Magnitude,
Characteristics and Consequences

by

Alma Celina Vega

A dissertation submitted in partial satisfaction of the
requirements for the degree of

Doctor of Philosophy

in

Demography

in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA, BERKELEY

Committee in charge:
Professor Ronald Lee, Chair
Professor Kenneth Wachter
Professor William Satariano

Spring 2013

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Abstract

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Doctor of Philosophy in Demography

University of California, Berkeley

Professor Ronald Lee, Chair

The 1965 Immigration Act released a stream of immigration from Asia and Latin America that continues to shape the U.S. population composition. While some of these migrants promptly returned to their countries of origin, many spent many years in the U.S. and face retirement with truncated work histories, legal impediments to old-age support programs, and social networks scattered in two countries. This dissertation examines one issue in the aging process for Latin American immigrants, namely the location of their retirement. I examine the extent to which older immigrants return to their home countries during later life and whether retirement income plays a role in this decision.

A daunting challenge in studying this topic is data limitations. The migration literature notes numerous inconsistencies across data sources due to their different strengths and limitations. To address this issue, I do an in-depth examination of the magnitude and characteristics of return migration among older Mexican immigrants using multiple data sources to assess the consistency of the outcomes. In chapter 2, I discuss the rate of return migration among Mexican immigrants aged 50 years and their characteristics compared to their U.S.-residing counterparts using the Integrated Public-Use Microdata Series (IPUMS) for Mexico, the National Survey of Demographic Dynamics (ENADID), and the Mexican Health and Aging Survey (MHAS). I find that the five-year incidence of return migration from the U.S. to Mexico ranges from two percent when generated using IPUMS Mexico to six percent when using the MHAS. However, while the rate of return migration among this population is inconsistent across data sources, certain characteristics are not. All data sources suggest that return migrants are predominantly male and have intermediary levels of education. Characteristics that are inconsistent across data sources are marital, employment, and citizenship status.

Aside from the magnitude and characteristics of return migration, I also examine one possible reason for return migration during later life, namely higher levels of retirement income. Mexicans with greater retirement benefits may view this income stream as a means toward greater luxury in the home country. Conversely, these migrants may return migrate only upon concluding that they cannot make ends meet in the U.S. Each scenario has vastly different implications for the U.S. economy. I examine this question in two chapters in order to take advantage of two forms of data: survey and administrative data. Pooling IPUMS U.S.A. and IPUMS Mexico, I conduct logistic regressions to determine if higher levels of retirement income are associated with an increased probability of return migration. I also do a sensitivity analysis to assess possible biases associated with pooling two data sources. Results from this chapter suggest that Mexican immigrants with lower levels of retirement income are more likely to return to their home country during later life than those with higher levels of retirement income. This pattern holds assuming various rates of Hispanic undercount. However, in the absence of a natural experiment, one cannot attach a causal interpretation to the results of this chapter.

The experimental nature of chapter 4 does enable a causal interpretation. In chapter 4, I use a natural experiment whereby the Social Security Administration substantially lowered the Social Security benefits of the 1917-1921 birth cohorts due to a mistake in their benefit calculation formula. These birth cohorts have since been referred to as the “notch” generation as graphs depicting average benefit amounts by birth cohort show a visible notch for this group. In chapter 4, I use this natural source of exogeneity to observe whether the “notch” generation was more likely to return migrate than those who did not receive these lower benefits. Results of this chapter indicate that Social Security benefits do not affect the probability of return migration for Latin American primary Social Security beneficiaries.

For Mama Lola and Papa Chepe

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Chapter 1

Introduction

“Return migration is the great unwritten chapter in the history of migration.”

Russell King¹

1.1 Background

Population aging has emerged as one of the most intricate dilemmas of the 21st century. As life expectancy has increased, so have the amount of resources needed to care for an older population. Compounding this development is the rapid diversification of the elderly population, Hispanics being at the forefront of this trend. The Federal Interagency Forum on Aging-Related Statistics (2008) reports that between 2006 and 2050, Hispanic elderly will grow an astounding 533 percent, compared to 476 percent for Asians, 228 percent for Blacks, and only 76 percent for Non-Hispanic Whites.² A by-product of this surge is a growth in the number of older Hispanic immigrants. Over 50 percent of Hispanic baby boomers are foreign-born (Gassoumis, Wilbur, Baker, & Torres-Gil, 2009) and this number will likely not diminish in years to come. The impending growth of this group necessitates a renewed look at their socioeconomic and health challenges, their institutional needs, and their preferences as they enter the third age.

While the literature abounds with information on the health advantages of Hispanic elderly (Markides, Rudkin, Angel, & Espino, 1997; Markides & Coreil, 1986; Markides et

¹See King (2000) page 7.

²These are the author's calculations based on data presented on table 2 on page 77 in Federal Interagency Forum on Aging-Related Statistics (2008).

al., 1999) in spite of their adverse socioeconomic outcomes (Gassoumis et al., 2009; National Research Council, 1997; Valdez & Arce, 2000; Social Security Administration, 2012c; Angel, Angel, Lee, & Markides, 1999), one essential subset of this population remains hidden: those who return to their country of origin during later life.

Elderly return migrants spend some part of their lives in the U.S. but elude observation during later life, a time when they are more susceptible to illness (Schiller, Lucas, Ward, & Peregoy, 2012) and poverty (Sandoval, Rank, & Hirschl, 2009), and have relatively high consumption patterns (Mason, Lee, Tung, Lai, & Miller, 2009). While a sizable 38 percent of newly documented Mexican immigrants intend to retire in Mexico (Aguilera, 2004), we have yet to determine how many actually do so.

The ramifications of return migration among Hispanic elderly are plentiful. Return migrants potentially alter the composition of Hispanic elderly who remain in the U.S., forfeit Medicare and Supplemental Security Income coverage which is unavailable abroad (resulting in decreased fiscal spending), and diminish our general understanding of the aging process for immigrants in the U.S. Their absence creates a notable gap in our knowledge based on the Hispanic elderly population.

This dissertation examines the magnitude and characteristics of return migration among Latin American elderly in the U.S. Focusing on Mexico, it provides estimates on the proportion of Latin American elderly who return to their countries of origin during later life and a profile of their sociodemographic characteristics. Moreover, it considers one possible reason for return migration, namely low retirement benefits. Migrants who receive low levels of retirement income may find it more feasible to return to their home countries where the U.S. stretches further.

1.1.1 Health Consequences of Return Migration

Almost a decade ago, the National Research Council called for research identifying the reasons for particular health disadvantages among certain elderly ethnic groups (Bulatao & Anderson, 2004). Implicitly, the goal of these studies was to help address these disparities by first understanding the process of aging in the United States for these populations. Since then, a plethora of studies have emerged attempting to pinpoint the reasons for health and socioeconomic differentials among the different ethnic elderly groups (National Research Council, 2004; Groeneveld, Laufer, & Garber, 2005; Schoeni, Martin, Andreski, & Freedman, 2006; Strothers et al., 2005; Du et al., 2007; Chen, Diamant, Pourat, & Kagawa-Singer, 2005; Borjas, 2009).

Return migration surfaced as a possible explanation for some of these differentials, but its influence remains unclear. Hispanics have long been found to experience relatively low mortality despite their low socioeconomic status, a phenomenon otherwise described as the

“Hispanic epidemiological paradox (Markides & Coreil, 1986).” Work by Palloni and Arias (2004) has suggested, however, that this mortality advantage can be explained at least in part by the tendency for unhealthy Hispanic immigrants to return migrate during later life, a theory referred to as the salmon bias (Pablos-Méndez, 1994).

However, while convincing, this assertion is based only on indirect information. The authors take the lower mortality of Mexicans and not other Hispanic groups as proof of the salmon bias as the former is, presumably, more likely to return migrate given their closer proximity to their country of origin. Thus, the authors do not directly observe the prevalence of return migration among this group but only assume it has a relatively higher propensity to return migrate.

Using data from the Social Security Administration, Turra and Elo (2008) are able to directly track movement across borders. The authors find that while mortality is indeed higher among return migrants, it is not large enough to account for the Hispanic epidemiological paradox. While this study moves us a step further in understanding the ramifications of elderly return migration, it only applies to primary Social Security beneficiaries. The migration patterns among non-Social Security beneficiaries remain unclear. Given the high proportion of migrants who work in the U.S. but never qualify for Social Security (Burtless & Singer, 2011), this omission is not inconsequential. Thus, despite its important potential bearing on the Hispanic epidemiological paradox, the specifics of return migration among elderly Hispanics remain uncertain.

1.1.2 Return Migration and Socioeconomic Status

The consequences of return migration extend beyond those relating health and are equally as nebulous. Return migration may, for example, exacerbate the unfavorable socioeconomic profile of the Hispanic elderly population. Currently, the literature depicts Hispanic elderly immigrants as a relatively impoverished population with relatively low educational and income levels compared to native-born citizen (Gassoumis et al., 2009), relatively low Social Security coverage (Angel et al., 1999) and as less likely to receive health insurance through Medicare than non-Hispanic Whites (Ruggles et al., 2010). However, the outcomes of this population may not be quite as dire if return migrants are positively selected on these socioeconomic outcomes.

Research on older European retirement migrants suggests that this is a possibility. Casado-Díaz, Kaiser, and Warnes (2004) reports that one group of older Northern Europeans who migrated to Southern Europe were “drawn then from from the middle and upper-income groups of society (p. 360).” The authors recount that most of these retirement migrants owned a home in their country of origin and most had at least one occupational or private pension.

However, whether this same pattern holds among older Hispanic immigrants has yet to be determined. Scarce information exists on the characteristics of older Hispanic return migrants, most of which focuses on older Mexicans in Mexico who *at some point* returned from the United States (Aguila & Zissimopoulos, 2008; Ruiz-Tagle & Wong, 2009; Wong, Espinoza, & Palloni, 2007; Van Hook & Zhang, 2011) and not those who returned to Mexico *specifically during later life*.

In light of this information deficit, it is also possible that older Hispanic return migrants are negatively selected. Although research suggests that older American (Sunil, Rojas, & Bradley, 2007) and European (Casado-Díaz et al., 2004) retirement migrants migrate for amenity-seeking purposes, older Hispanic retirement migrants may differ in this respect. The poorer socioeconomic outcomes of this group may render them less able to navigate retirement in the U.S., both financially and otherwise. For example, the large proportion of Mexican-born migrants who do not pay into Social Security (Burtless & Singer, 2011) may find themselves without a critical source of income upon retirement. There also exist non-financial difficulties. Torrez (1998) notes language barriers, the inability to fill out hospital forms, and overall intimidation in dealing with federal and state agencies as important barriers to service utilization for one group of older Mexicans. Upon facing these barriers, or as a means of avoiding them, older Hispanics may return to their home countries where the cost-of-living may be lower and they know the language.

1.1.3 Possible Savings On Public Service Expenditures

Beyond its potential influence on health and socioeconomic outcomes, return migration among older Hispanics may also diminish fiscal spending on old-age support programs. The National Research Council reports that immigrant elderly are among the most costly group in terms of Medicaid and Supplemental Security Income (SSI) expenditures (National Research Council, 1997).³ Among immigrants in particular, 88 percent of Hispanic elderly receive Medicare coverage and 13% receive Supplemental Security Income (Minnesota Population Center, n.d.-a). However, these estimates do not include immigrants who return to their country of origin and are therefore, ineligible to receive these services (Centers for Medicare and Medicaid Services, 2010; Social Security Administration, n.d.-c). Part of the fiscal spending associated with elderly immigrants may be offset by return migration.

However, these savings hinge on whether immigrant elderly return migrants qualify

³It is important to note that SSI spending for this population has likely diminished since the publication of the National Research Council's (1997) study. As of 1996, the only non-citizen immigrants eligible to receive SSI are those who were receiving SSI on August 22, 1996 and are lawfully living in the United States. Those who entered the U.S. after this date may not be eligible to receive SSI for the first five years as a lawfully admitted permanent resident even after having the qualifying 10 years of earnings credits (Social Security Administration, 2008).

for Medicare and SSI. If not, return migration would not influence total spending on these programs. In the absence of detailed information on return migration, this is difficult to know. While Aguila and Zissimopoulos (2008) estimate that less than 12% of elderly in Mexico with U.S. migration experience were receiving U.S. Social Security, this number is not isolated to those who returned from the U.S. specifically during later life. Subsequent work should examine the characteristics of older Mexican return migrants, particularly as they relate to fiscal spending.

1.2 Magnitude of Return Migration: What We (Don't) Know

1.2.1 Indirect Rates of Return Migration

Despite the social and methodological issues it engenders, the literature on elderly return migration is far from encyclopedic. This paucity of information is not due to irrelevance but to methodological limitations which render its examination a formidable challenge. Scant data sources directly observe the number of Mexican immigrants who return to their home countries. For this reason, studies often rely on indirect methods which “produce estimates of a certain parameter on the basis of information that is only indirectly related to its value (United Nations, 1983)[p. 1].”

One of the very few estimates on this topic comes from Van Hook and Zhang (2011). The authors use the CPS matching-method (Van Hook, Zhang, Bean, & Passel, 2006) to estimate the rate and characteristics of emigration from the U.S. among Mexican-origin and non-Mexican-origin individuals. This method uses attrition in the Current Population Survey (CPS) to estimate emigration given certain assumptions. The CPS interviews households four months out of the year and re-interviews these same households during the same four months a year later. A feature of the CPS that is critical to the CPS matching method is that it re-interviews addresses and not individuals. Therefore, respondents who are lost to follow-up are dropped from the sample and the new individuals living in those same addresses are interviewed, enabling the authors to estimate rates of emigration. Van Hook et al. then make some assumptions about factors affecting domestic migration, mortality, and attrition to generate the probability that an individual migrated abroad. Specifically, they assume that emigration is close to zero among the second generation and that the factors that affect whether an immigrant is lost-to-followship are the same as that of a second-generation individual after adjusting for composition differences. This assumption allows the authors to estimate foreign-born emigration based on the predicted probabilities of death and non-response among the second generation.

Using this method, the authors estimate that, on average, literally no Mexican-origin males aged 65 years and older emigrated from the U.S. in any year between 1995 and 2009.⁴ While it is certainly conceivable that few older immigrants return migrated, it is difficult to concede that *no* Mexican immigrant males returned to country of origin, especially since many working-age migrants intend to retire in Mexico (Aguilera, 2004).

It is important to ponder factors that can explain this result. One explanation is the time period the authors observe. The authors present estimates on the average annual emigration rate for the 14-year period between 1995 and 2009. This annual rate captures migrants who return to Mexico and subsequently reenter the U.S. Thus, a zero emigration rate may indicate that every male migrant who returns to Mexico migrates back to the U.S. within one year. There are also methodological explanations. In relying exclusively on the Current Population Survey, the CPS-matching method is subject to the CPS's sampling error. Rendall, Brownell, and Kups (2010) caution that using the CPS to indirectly estimate return migration may result in downwardly biased estimates. Using direct methods that observe the number of Mexicans who report having return from the U.S., the authors find strikingly different estimates than those derived from indirect methods.

A more subtle explanation lies in Van Hook and Zhang's (2011) method. The authors use the following equation to estimate emigration among the foreign-born population: $e^f = a^f - m^f - d^f - r^f$ where e^f equals the emigration rate for the foreign-born, a^f equals total foreign-born attrition rate, m^f is the foreign-born mortality rate, and r^f is the rate of lost-to-follow-up that include other reasons. The variables a^f , m^f , d^f , and r^f are all estimates derived from the corresponding values for the second generation after adjusting for demographic differences. This implies that any error in these variables would subsequently carry over into the estimate for emigration. For example, Latino undercount, a particularly prominent issue in the census (Romero, 1992; Rodriguez & Hagan, 1991), would artificially decrease a^f and, by extension e^f if also existent in the Current Population Survey. Similar problems are possible in calculating m^f , the rate of internal migration, for this population. Romero (1992) notes numerous reasons why Latino immigrants may falsely appear as having moved in official surveys. These include the tendency for landlords to give incomplete information about residents to conceal illegal renovations and multi-household units who misreport the number of residents in order to conceal illegal living arrangements. An inflated m^f would subsequently decrease e^f , resulting in error.

The sensitivity of Van Hook and Zhang's (2011) estimate to error necessitates its cross-validation. Given the propensity for indirect estimates of emigration to substantially differ from direct estimates (Rendall et al., 2010), it is important to compare emigration estimates across both methods. However, very few studies directly observe the rate of return migration among older Hispanic immigrants.

⁴They estimate a 4 percent migration rate for elderly Mexican females.

1.2.2 Direct Rates of Return Migration

Studies that do address this topic using direct methods often assess migration among all or working-age adults and do not focus on seniors (Gitter, Gitter, & Southgate, 2008; Lindstrom, 1996; Passel & Cohn, 2009; Reyes, 1997; Van Hook et al., 2006; Van Hook & Zhang, 2011). As previously noted, studies that do treat older adults examine those who *at some point* return migrated rather than those who did so *specifically during later life*. For example, Ruiz-Tagle and Wong (2009) use the 1997 Encuesta Nacional de la Dinámica Demográfica (ENADID) to examine the characteristics of Mexicans 65 and older living in Mexico who at some point migrated to the U.S and returned. The authors find that only 0.7 percent of Mexicans aged 65 in Mexico had ever lived in the U.S. However, this number is eight percent in another study which expands the universe to include the 50 and older population in Mexico in 2001 (Wong et al., 2007). While these studies contribute to our knowledge base regarding the Hispanic elderly population, they do not shed light on older return migrants.

This gap in the literature is important as Hispanics who return migrate during later life may differ from those who return at other ages in critical ways. In her review of the literature, Reyes (2001) notes that “[m]igrants move as target earners and only stay for as long as it takes to save or remit money equal to some pre-determined amount (p. 1,186).” However, older immigrants are more likely to have exited the labor force and may relocate to their homeland for reasons more pertinent to their life stage. Litwak and Longino (1987) postulate that post-retirement moves generally occur for three reasons. The first takes places immediately after retirement for amenity-related purposes, 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. Studies have yet to determine if this theory holds among Hispanic elderly immigrants.

The transnational ties Hispanic immigrants maintain with their home countries may influence their retirement location in ways unique to this population. Aguilera (2004) notes that

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

Thus, for Hispanic elderly, return migration may be more a means toward meeting social obligations than a quest for greater luxury and caretaker services.

Studies that do examine return migration specifically during later life often only include a subset of elders. Turra and Elo use data from the Social Security Administration to produce one such estimate. The authors find that 9.3 percent of all person-years of foreign-

born Hispanic males were lived abroad during the late 1990s compared to only 2 percent of their native-born counterparts (Turra & Elo, 2008). However, this estimate only includes Hispanic primary Social Security beneficiaries. It excludes immigrant elders who may have returned to their home country without U.S. legal status and who do not qualify for Social Security benefits. It also excludes individuals who may have legal status but do not have enough work years to qualify for Social Security benefits. Given the fact that the Social Security Administration (SSA) assumes that 83 percent of older emigrants emigrate before they qualify for benefits (Duleep, 1994), this limitation is not inconsequential.

The second chapter of this dissertation provides a socioeconomic profile of older Mexican immigrants who return to their home country during later life. It presents estimates on the magnitude of Mexicans immigrants who return migrate at age 45 years and older as well as their socioeconomic characteristics.

1.3 Social Security and Return Migration

Equally as important as understanding how many and who return migrates is understanding why they do so. Immigrants' motivation for returning to their home countries during later life speaks to their experience in the U.S. Whether it be out of financial hardship, familial living arrangements, or ties to the home country, the reasons for return migrating are illustrative of the conditions undergone in the U.S. However, while the literature is replete with information on the possible reasons for migrating to the U.S. (Massey et al., 1993; E. S. Lee, 1966; Sjaastad, 1962), it is scant on the reasons for migration out of the U.S. Among the factors deemed influential in determining return migration are land ownership in the country of origin (Massey, 1987), marital status (Massey, 1987; Ruiz-Tagle & Wong, 2009), and duration in the U.S. (Massey, 1987). Ruiz-Tagle and Wong (2009) posit that the familial and social networks that immigrants develop over time in the U.S. play an important role in their decision to remain in the U.S.

Duration of time in the U.S. may be important for another reason: retirement benefits. Immigrants with longer U.S. work histories may accrue greater Social Security benefits which may either prompt or discourage them from returning to their home countries depending on whether retirement in the U.S. is viewed as a normal or an inferior good.

It is important to assess the relationship between Social Security and return migration for a number of reasons. One reason is that the economic benefits of Social Security may prompt return migration. Social Security was designed to protect seniors from poverty after exiting the workforce, particularly those with limited means (Altman, 2005). However, the ability of immigrants to accrue Social Security is often encumbered by their migration histories, despite their relatively low socioeconomic status (Borjas, 2009). The often truncated work histories of immigrants often prohibit them from accruing the ten years of U.S. work

experience needed to receive Social Security benefits . Up until 1996, indigent immigrants had the option of receiving Supplemental Security Income (SSI) as an alternative source of income. However, recent immigrants became ineligible for this program after the welfare form of 1996, after which it was limited to those already receiving SSI, naturalized citizens, and those with 40 quarters of employment covered by Social Security. Faced with budget constraints, these elders may decide to return to their home countries.

However, Social Security benefits may also have the opposite effect and generate return migration. Higher Social Security payments may prompt return migration if residence in the U.S. is viewed as an inferior good. Work by Casado-Díaz, Kaiser, and Warnes (2004) suggests that this may be the case. The authors state that at least among Northern Europeans retiring in Southern Europe

International migration for retirement is no longer the preserve of the rich or professional and artistic elites, but it remains selective of the more affluent and is strongly patterned by the socio-economic background of migrants.. (p. 362).

Chapters 3 and 4 explore the relationship between retirement income and return migration. Both consider whether elderly immigrants with lower levels of retirement income are more likely to return migrate than those with higher levels of retirement income. I dedicate two chapters to this issue in order to exploit the strengths of two forms of available data, namely survey data and administrative data. The former, i.e. the Integrated Public-Use Microdata Series (IPUMS) for both Mexico and the U.S., contain numerous pertinent variables but do not provide the opportunity for a natural experiment. However, the richness of these data allows me to explore the competing interests older Mexicans may face in deciding where to retire such as the location of their spouse and children, their financial security in the U.S., and the interaction between these two factors. While informative, a causal interpretation cannot be used for this chapter. The presence of observables correlated with both retirement income and the controls may confound the true effect of retirement income and therefore, chapter 3 should be treated as a descriptive study.

In contrast, the experimental nature of chapter 4 does enable a causal interpretation. In chapter 4, I use a natural experiment to examine the relationship between retirement income and return migration using administrative data from the U.S. Social Security Administration.

1.4 Research Questions

This dissertation addresses the following research questions:

- What proportion of Mexican immigrants in the U.S. aged 50 years and older return migrate?

- What are the the sociodemographic characteristics of those who return migrate?
- Do these characteristics differ when observed using different data sources?
- Are elderly Mexican more or less likely to return migrate during later life if they receive lower retirement income benefits?

1.5 Summary of Dissertation

1.5.1 Chapter 2: Magnitude and Characteristics of Return Migration

Chapter one sheds light on the number and composition of return migrants by comparing their characteristics to those of Mexican immigrants who remain in the U.S. during later life. Moreover, because of the tendency for migration-related outcomes to differ markedly across data sources (Bustamante, Jasso, Taylor, & Legarreta, 1997), I compare these results across three data sources to assess the consistency of the outcomes.

While most research on return migration uses indirect methods⁵ to estimate rates of return migration (Jasso & Rosenzweig, 1982; Van Hook et al., 2006; Van Hook & Zhang, 2011; Passel & Cohn, 2009), I directly observe the proportion of Mexican immigrants who return migrate instead of inferring these rates from other information. Indirect methods such as the residual method (Warren & Passel, 1987) which entails subtracting U.S. citizens from the total Hispanic population, are subject to enumeration and reporting errors (Van Hook et al., 2006) and often differ substantially from direct rates (Rendall et al., 2010), thus requiring cross-validation with direct estimates at the very least.

I calculate the proportion of Mexican immigrants aged 50 years and older who returned to Mexico within a five-year period with a simple equation. Specifically, I divide the number of Mexicans in Mexico aged 50 years and older who reported having return migrated within the last five years by Mexicans in the U.S. aged 45 years and older five years prior. I calculate this rate using return migrant samples from the 1997 National Survey of Demographic Dynamics (ENADID), the 2000 Integrated Public Use Microdata Series for Mexico, and the 2001 Mexican Health and Aging Study (MHAS). The denominators for these proportions are drawn from the March supplement of the Current Population Survey for the years 1995 and 1996 - to correspond with IPUMS Mexico and the MHAS - and the the 1992 National Health Interview Survey.

⁵Defined as methods which infer migration rates from extraneous information instead of directly enumerating these rates.

I also compare the descriptive statistics of return migrants in all of the data sources to that of Mexican immigrants who remained in the U.S. using a Rao-Scott chi-squared test.

In this chapter, I find that less than 6 percent of Mexican immigrants aged 45 years and older return migrate during a five-year, most of whom are married males with a primary level education. In contrast, Mexican immigrants who remain in the U.S. during this time period have a more equal sex ratio and did not complete a primary level education. However, this rate ranges from 2 percent when observed using the Integrated Public Use Microdata Series for Mexico to 6 percent when observed using the Mexican Health and Aging Study. This chapter also reveals the disturbing inconsistencies that may emerge when observing these outcomes across data sources. Characteristics such as the employment and citizenship status of return migrants remain uncertain due to varied estimates across data sources. In this chapter, I also discuss the possible reasons for these divergent outcomes and their potential ramifications for social policy.

1.5.2 Chapter 3: Determinants of Return Migration

Chapter three explores the determinants of return migration, paying particular attention to the role of retirement income. To date, the literature on return migration has focused primarily on the role of the social networks in determining (or deterring) return to the country of origin (Ruiz-Tagle & Wong, 2009; Massey, 1987). In his study on the correlates of return migration, Massey (1987) emphasizes the seminal role of duration in the U.S. in the following statement:

[M]igrant experience ultimately overcomes the effect of all other variables, to make settlement all but inevitable in the long run. After accumulating 15 years of U.S. experience, our typical migrant would have a 99% chance of settlement, irrespective of his legal status, origin, U.S. occupation, or whether he had children (p. 1394).

In this statement, Massey (1987) all but sentences long-term migrants to settle in the U.S. However, it is important to note that his results pertain to migrants of all ages. Working-age migrants likely build families in the U.S. which they must support throughout their working lives. Elderly migrants are less likely to have these same ties to the labor force and may decide to spend their retirement abroad as is the case for certain older Americans (Sunil et al., 2007) and Europeans (Casado-Díaz et al., 2004). This dissertation considers an additional aspect of the migrant experience in determining return to the country of origin, namely retirement benefits.

The ideal dataset to explore this issue would contain a sample of migrants in Mexico who recently returned from the U.S. as well as those who lived in the U.S. five years prior

but chose to remain in the U.S. In the absence of this ideal database, I pool two data sources to obtain the same universe. Specifically, I pool Mexicans in Mexico aged 60 years and older who indicated having returned from the U.S. within the last five years with Mexican immigrants in the U.S. aged 60 years and older who lived in the U.S. five years prior. Combining these two samples, I conduct logistic regressions of return migration on various demographic characteristics, including retirement income.

Admittedly, this method of combining two sources runs the risk of producing spurious differences between both group due to the different sampling probabilities of these two groups rather than inherent differences. In order to guard against this threat, I conduct a sensitivity analysis whereby I alter the population weights of both samples by the amount of undercount found in the literature. This sensitivity analysis provides some sense of the amount of undercount that would alter the direction of the estimates. The results of this dissertation suggest that even a five and ten percent undercount rate would not significantly alter the results.

In this chapter, I find that older Mexican immigrants who receive lower levels of retirement income are more likely to return migrate than those with higher levels of retirement income.

This finding contributes to our knowledge base regarding the influence of retirement income during later life for Hispanic immigrants. The AARP Public Policy Institute (2010) reports that 26 percent of Hispanic elderly rely on Social Security for 90 or more percent of their total income. Almost 44 percent rely on Social Security for 50 or percent of their total income (AARP Public Policy Institute, 2010). The results of this chapter suggest that Social Security may influence not just the economic security of Hispanic elderly but also the location of their retirement. However, the threat of selection by unobservables prohibits a causal interpretation to this finding.

1.5.3 Chapter 4: Impact of Social Security On Return Migration

The experimental nature of the fourth chapter of this dissertation does enable a causal interpretation, albeit on a more limited universe. Chapter four observes the results of a natural experiment whereby the Social Security Administration arbitrarily lowered the benefits of the 1917 through 1921 birth cohorts due to a miscalculation in their benefit calculation equation. This group is known as the “notch generation” as graphs depicting benefit levels by birth cohort display a visible notch for this birth interval. Chapter four considers whether Latin American elderly who received these lower Social Security benefits were more likely to return migrate than their lower-paid counterparts.

Due to the nature of the data, this chapter only includes primary Social Security beneficiaries. Another difference between chapter three and chapter four is the definition of

return migration. Chapter three examines return migration within a five-year period whereas chapter four examines return migration at any point beyond age 62.

In this chapter, I find that approximately 10 percent of all Latin American primary beneficiaries return to their home countries during later life, the probability of which is not affected by higher Social Security benefits.

The results of this chapter reveal interesting nuances regarding the relationship between retirement income and return migration during later life. Whereas the results in chapter three suggest an inverse relationship between retirement income and the probability of return migration, chapter four shows no relationship. This divergence may be attributable to the complex role of retirement income during later life. As chapter four only includes primary Social Security beneficiaries, it is possible that only those who do not receive any Social Security are likely to return migrate compared to those who receive relatively low Social Security benefits. Chapter five delves deeper into this issue.

1.6 Overall Goal of Dissertation

The overarching goal of this dissertation is to directly inform our understanding of this unexplored population. Several researchers conjecture that the magnitude of return migration among Latin American elderly is inconsequential and is not a feasible area of study. These remarks are often based on extrapolated knowledge of the migration literature but not direct evidence. While I admit that return migration may be uncommon among older Latin American immigrants, I disagree that this is not a feasible area of study. Even if it is rare, the literature needs solid estimates of the rate of return migration and concrete evidence on its possible motives. The goal of this dissertation is not to provide a definitive text on return migration among Latin American elderly but to cautiously introduce quantitative evidence of its occurrence and its possible implications.

Chapter 2

Who Stays and Who Goes? The Demographic Characteristics of Older Mexican Return Migrants

“[M]any observers, consciously or not, embrace a second misconception: that immigrants never change and they retain all the characteristics that they possessed when they first arrived as newcomers in the United States. Many of us assume, unwittingly, that immigrants are like Peter Pan - forever frozen in their status as newcomers, never aging, never advancing economically, and never assimilating.”

Dowell Myers - Immigrants and Boomers ¹

2.1 Background

Return migration is essential to understanding immigrant incorporation in the United States. Our knowledge of how well immigrants fare in the U.S. is affected not only by the characteristics of immigrants currently in the U.S., but also those who return to their country of origin. Return migration plays a particularly important role during old age, a time when most individuals exit the labor force and are heavily dependent on retirement income. Faced with budget constraints, foreign-born elderly may choose to return to their home countries. Of interest to researchers are the implications of elderly return migration for empirical computations. Health and mortality estimates of the foreign-born population

¹See Myers (2007), page 104.

are potentially biased if there are systematic differences between immigrants in the U.S. and return migrants. From a U.S. budgetary perspective, return migration translates into savings on social service expenditures since programs such as Medicare and Supplemental Security Income (SSI) are generally unavailable to individuals living abroad.

Despite the substantive issues engendered by elderly return migration, little is known about the topic. Part of the reason for this dearth of information are the caveats associated with utilizing migration data. These limitations include non-reporting bias resulting from migrant mobility, omitted variable bias, and the limited availability of longitudinal data tracking migrant activity. While numerous surveys focus on migration, each has limitations that warrant caution.

As a way of addressing these issues, this study examines return migration among Mexican immigrant elderly and compares their characteristics to those of Mexican immigrants who remain in the U.S. upon reaching retirement age using multiple surveys. The first section of this paper illustrates the importance of elderly return migration in relation to issues such as immigrant incorporation, mortality, and service consumption followed by a discussion of different data sources used to observe migration. The next section describes the methods used to generate estimates of the size and characteristics of elderly return migration, and presents the results. The final section assesses the patterns and discrepancies apparent across all the data sets and the implications for our understanding of elderly return migration.

2.2 Motivation

The successful immigrant narrative often involves arriving to the U.S. at a relatively disadvantaged position followed by a period of adaptation and eventual assimilation into the U.S. mainstream (Gordon, 1964). Duration in the United States is correlated with greater English-language proficiency (G. Stevens, 1992), higher employment levels (Chiswick, Cohen, & Zach, 1997), lower poverty rates (Myers, 2007), and a reduction in the income gap between immigrants and natives (Raphael & Smolensky, 2008). There is evidence to suggest that by the time immigrants reach old age, they show signs of successful U.S. incorporation. For example, the vast majority of foreign-born elderly have lived in the U.S. for over 35 years and own a home, have obtained U.S. citizenship, and are monolingual in English or speak it very well or well (Integrated Public Use Microdata Series (IPUMS), 2009).² These outcomes are mediated by region of origin (National Research Council, 2004) and the same positive pattern does not hold in terms of health (Cho, Frisbie, & Rogers, 2004).

Moreover, these estimates assume that we accurately observe the characteristics of

²In order to generate these estimates, I recoded the “citizen” variable into a binary variable reflecting foreign-born status

migrants who age in the United States, and often do not consider the characteristics of those who return migrate during later life. Studies document the social mobility of immigrants the longer their duration in the United States (Myers & Lee, 1998; Myers, 2007; Card, 2005; G. Stevens, 1992), but do not observe the conditions of those who return to their home countries, particularly at old age.

As the largest group of immigrants in the United States (30 percent) (Grieco, 2010), Mexican immigrants can assist in better understanding this issue. Hispanic elderly - of whom Mexicans are the majority (Ruggles et al., 2010) - currently comprise 6.6 percent of all elderly and are expected to increase to 19.8 percent of all elders by 2050 (Administration on Aging, 2010). Their sheer volume, as well as the relatively high propensity among Latin Americans to return migrate (Jasso & Rosenzweig, 1990), position Mexican immigrants as a key segment in studying return migration.

The experiences of Mexican elderly return migrants are vital in comprehending the socioeconomic outcomes of immigrants in the United States. Eight in ten immigrants arrive to the U.S. at working-age (Batalova & Terrazas, 2007). Many of these migrants do not accrue Social Security benefits that reflect their years of work due to their participation in informal occupations that do not pay into Old-Age Survivors, and Disability Insurance (OASDI) (Burtless & Singer, 2011). Of the undocumented who does pay into Social Security (with illegitimate Social Security numbers), the authors find that the vast majority never claim these benefits. Lack of Social Security benefits may be associated with returning to the country of origin. Aguila and Zissimopoulos (2008) estimate that only 12 percent of Mexican return migrants ages 65-69 receive Social Security. Further effort should go into determining whether this differential is due to the number of years spent in the U.S., type of occupation while in the U.S., or other proxy variables.

Return migration affects not only our general understanding of how immigrants fare in the U.S., but also empirical calculations of their characteristics. For example, return migration may account for the relatively better health of immigrants than natives (Jasso, Massey, Rosenzweig, & Smith, 2004). Evidence shows that the health advantages enjoyed by Hispanics despite their low socio-economic status, a phenomenon otherwise described as the “Hispanic epidemiological paradox” (Markides & Coreil, 1986), may be attributed at least in part to return migration among less healthy immigrants. This theory is referred to as the salmon bias (Pablos-Méndez, 1994). Palloni and Arias (2004) argue that the greater mortality advantages experienced by Mexican and not other Hispanic immigrants at old age are proof of the salmon bias, as Mexicans are presumably most likely to migrate based on their close proximity to their country of origin. The authors also note that elderly Mexican return migrants have worse self-reported health than Mexican immigrants in the U.S. (Palloni & Arias, 2004). However, Turra and Elo (2008) take a less marked stand on the salmon bias. Unlike Palloni and Arias (2004), the authors are able to directly track mortality and movement to and from foreign countries over a 10-year time span using data from the Social Security Administration. They find that while mortality is higher among

return migrants, the magnitude of the difference is not substantial enough to explain the Hispanic epidemiological paradox.

The ability of Turra and Elo (2008) to directly calculate mortality among return migrants using data from the Social Security Administration strengthens their analysis compared to that of Palloni and Arias (2004). However, the former does not include undocumented immigrants in their analysis since it is limited to primary Social Security beneficiaries. These studies illuminate the need to directly track return migration and its determinants among both documented and undocumented immigrants.

Aside from its theoretical implications on research methods, return migration also has tangible ramifications on the U.S. budget. While Social Security is available to individuals living abroad, old-age support programs such as Medicare and Supplemental Security Income (SSI) are not. Thus, the presence of individuals abroad potentially translates into savings on old-age support programs in the United States.

A more indirect effect of return migration on the receiving country budget are possible effects on its old-age dependency ratio, which is the population 65 and over divided by those aged 20-64. Immigrants arrive to the U.S. at young ages (Batalova & Terrazas, 2007) and will not increase the old-age dependency ratio if they return to their home countries in old age. In his online discussion about the impact of immigration on Social Security, Ronald Lee asserts that the long-run demographic effects of immigration on receiving countries' old-age support ratio are quite small since immigrants themselves eventually age (Population Reference Bureau, 2008). This effect may be larger than expected if immigrants return to their home countries upon reaching old age.

Despite these social and methodological issues, little is known about the topic of return migration. The sparse literature that does exist on this topic provides a rough sketch of its size and characteristics. Wong, Espinoza, and Palloni (2007) find that of all Mexicans in Mexico aged 50 years and older, a notable eight percent had U.S. migration experience. However, this number drops to less than one percent among the 65 and older population in Mexico (Ruiz-Tagle & Wong, 2009). These studies typically analyze the characteristics of older Mexicans in Mexico with U.S. migration histories but do not focus on those who returned to Mexico during later life. Part of the reason for this dearth of information is due to data limitations.

2.2.1 Strengths and Limitations of Data Sources Used to Study Migration

The paucity of rich data on migrant activity poses serious challenges to studying return migration. Numerous migration data sets are replete with information on a subset of

migrant characteristics, but each possesses shortcomings inherent in attempting to capture an occurrence as unstable as migration. As will be discussed, these shortcomings include the inability to follow migrants across borders, non-reporting bias, non-representativeness, lack of essential variables, proxy bias, and small sample sizes. This section discusses five different surveys commonly used to study migration, their strengths and limitations, and the implications of these strengths and limitations for migration research. Table 2.2.1 summarizes the surveys discussed in this section.

Table 2.2.1: Surveys commonly used to study migration

Dataset	Years available	N	Sampling method	Population universe
New Immigrant Survey (NIS)	2003	8,573	Geographic clustered design that over-samples from the 85 top Metropolitan Statistical Areas (MSA) and 38 counties where newly admitted immigrants are most likely to reside	All newly admitted migrants (Green card holders)
Mexican census		10,099,182 (from 10 percent sample of 2000 census)	Stratified cluster design; stratified geographically by municipality and urban area	Mexican citizens and foreign residents - Also includes Mexican diplomats living abroad and their families
Mexican Health and Aging Study (MHAS)	2001, 2003	9,862 (in 2001 wave)	Probabilistic, stratified by UPM ?	Nationally representative sample of Individuals aged 50+ and their spouses
National Survey of Demographic Dynamics (ENADID)	1992, 1997, 2006, 2009	41,926 households (in 2006)	Nationally representative	
Mexican Migration Project (MMP)	1982-2008	138,711	200 random households from complete enumeration of households	Residents of following areas in Mexico: Aguascalientes, Baja California Norte, Chihuahua, Colima, Durango, Guanajuato, Guerrero, Hidalgo, Jalisco, Mexico, Michoacan, Morelos, Nayarit, Nuevo Len, Oaxaca, Puebla, San Luis Potos, Sinaloa, Tlaxcala, Veracruz, and Zacatecas

Housing 20 percent of the world’s immigrants (United Nations, Department of Economic and Social Affairs, Population Division, 2009), the United States produces numerous data sources documenting international migration. These surveys range from national databases specifically designed to chronicle movement into the country such as the administrative records of the U.S. Department of Homeland Security (U.S. Department of Homeland Security, n.d.) to more local data sets that treat migration as only one consideration in a larger issue such as the California Health Interview Survey (California Health Interview Survey (CHIS), n.d.). A limitation of U.S.-based surveys is that they do not follow migrants across the border. Given that over 400,000 Mexican immigrants return to Mexico every year (Passel & Cohn, 2009), this limitation is not inconsequential.

A particular case in point is the New Immigrant Survey (NIS). The NIS is a nationally representative prospective-retrospective panel study conducted in 2003 of new legal immigrants in the United States that covers demographics, employment, health, income, assets, and migration history. Future waves of the NIS will re-interview respondents every three to five years (Jasso, Massey, Rosenzweig, & Smith, 2005). In this survey, immigrants with recently obtained U.S. legal status are asked extensively about their international migration experience before moving permanently to the U.S., domestic migration once in the U.S., but not international migration experience once in the U.S.

This issue poses subtle challenges to studying immigrant incorporation. For example, Akresh (2008) demonstrates that newly admitted immigrants experience downward mobility in terms of occupational prestige in moving from their last job abroad to their first U.S. job. However, by the time they are interviewed, most immigrants have experienced upward mobility. While subsequent waves of data collection may show different patterns emerging, these efforts will miss migrants who return migrate out of an inability to find adequate work. Given that it is more difficult for older workers to find new employment (Mayer, 2010), this limitation may prove particularly prominent among this population.

Mexico-based data sources that do capture return migrant activity often exhibit shortcomings in documenting international migration. For example, though not specific to return migration, the 2000 Mexican census was found to undercount *emigration* to the U.S. This data source asks household heads if any household members lived abroad in the preceding five years. Ibarra and Lubotsky (2007) compare the number of individuals listed in the Mexican census as having migrated to the U.S. between 1995 and 2000 to recently arrived Mexican immigrants enumerated in the U.S. census. The authors estimate that the Mexican census only captures 84 percent of male migrants and 39 percent of female migrants. The authors note that part of the reason for this undercount is the inability to track entire families that migrate together. In this later case, female household members are not present to report the migration status of males abroad. Though this issue highlights problems in capturing emigration and not return migration, similar problems may exist in documenting all forms of international migration.

Another reason for this under-reporting may be respondent reluctance to provide government officials with personal information. In his undercover work posing as an undocumented immigrant attempting an illegal border-crossing, Conover (1987) observed that Mexicans' sense of distrust in the government prompted them to conceal information about their plans to migrate to the U.S. from Mexican officials. Rodriguez and Hagan (1991) examine this issue within the context of the U.S. census and its coverage of the undocumented population. The authors interview undocumented immigrants to determine the extent of under-reporting and the reasons why they did not turn in their U.S. census forms. The most salient reasons included fear that their landlords would find out that more people were staying in the apartment than officially reported, the frequency with which migrants moved, and cultural perceptions about who respondents considered as members of the household.

Rodriguez and Hagan examine migrant reporting in the U.S. and not Mexican census but one can imagine reasons for respondent under-reporting in the Mexican census. These reasons may include fear that families members abroad might get caught without documentation, lack of information as to the exact location of migrant family members, and general distrust of Mexican government officials (Morris, 1991). Little evidence exists as to the prevalence of this issue in Mexican data sources.

Certain Mexico-based data sources have been more successful in generating respondent trust. For example, the Mexican Migration Project (MMP) goes to great lengths to solicit trust from its respondents by using ethnosurvey techniques that rephrase the wording of surveys based on the context of the interview while obtaining identical information across respondents. The idea is to frame the questionnaire in a manner that is non threatening, natural, and puts the respondent at ease (Massey & Capoferro, 2004). The MMP also contains elusive yet powerful variables for determining the reasons for and patterns of migration. These variables include documentation status, marriage and occupation before first U.S. trip, and year of citizenship accrual.

Despite these strengths, the MMP suffers from other limitations. One issue is its representativeness. For many years, the MMP focused on areas in Western Mexico that send the most migrants to the United States.³ Massey and Zenteno (2000) compare the outcomes of migrants captured in the MMP to those captured in the Mexico-based Encuesta Nacional de la Dinámica Demográfica [National Survey of Demographic Dynamics] (ENADID). The authors find generally comparable results in terms of direction but not magnitude. For example, the effect of age varies markedly between both surveys. In the ENADID, the log-odds of out-migration for someone who is between the ages of 15-24 is 119 percent higher than for someone 45 years and older. However, age holds a less powerful effect in the MMP. In the MMP, the log-odds of out-migration for someone aged 15-24 is only 77 percent higher than someone aged 45 years and older.

³This has changed in the last 10 years but researchers are still cautioned against assuming national representativeness (Mexican Migration Project, n.d.).

The ENADID is another valuable source for examining migrant patterns and characteristics. It is a nationally representative sample survey implemented in 1992, 1997, 2006, and 2009 by Mexican public health officials in order to acquire information on demographic processes such as fertility, mortality, and migration. It obtains information from household heads on whether household members had lived abroad within the last five years and if they returned. Respondents are then asked to specify the year in which migrants returned. While the ENADID captures essential information such as year of departure, motive for having lived abroad, and the documentation used during the last trip abroad, Massey and Zenteno (2000) argue that it misses an imperative variable in trying to understand the motives U.S. migration, namely the existence of children living abroad. The authors assert that this gap in information can underestimate of effect of family size and the odds of out-migration. Among the ENADID's other limitations the authors note are that it does not include migrants currently in the U.S. as does the MMP, and the limited number of variables covering socio-economic background.

An important consideration in using the ENADID and the Mexican census is the existence of proxy bias. Both surveys obtain information on the characteristics of return migrants through interviews with household heads which may or may not be the actual return migrants. The use of proxies runs the risk of mis-reporting as proxies may not be as familiar with the characteristics and migration activity of the respondent as the respondent herself. Todorov and Kirchner (2000) assess the importance of proxy bias in the reporting of disability. The authors estimate the difference between respondent self-reporting of disability during one phase of the National Health Interview Survey, Supplement on Disability (NHIS-D), and proxy reporting in the other phase. They limited their analysis to respondents who were capable of reporting for themselves but were not present during one of the interviews. Proxies under-reported difficulty with Activities of Daily Living (ADL) for respondents aged 18-64 and over-reported difficulty with ADLs for those aged 65 and older. This study illustrates potential biases in soliciting information from individuals other than the respondent, a situation which can prove detrimental to studying an occurrence as unstable as migration.

Perhaps more germane to examining the migration of Mexican elders in particular is the Mexican Health and Aging Study (MHAS). The MHAS is a nationally-representative prospective panel study of health and aging among the 50 and older population in Mexico and over samples the largest migrant-sending regions in Mexico. The implementation of the MHAS is unlike like that of the ENADID and the Mexican census in that it interviews both the respondent and the spouse but it restricts respondent interviews to those aged 50 years and older. The MHAS contains a rich spectrum of variables ranging from familial characteristics to detailed health information. However, it samples substantially fewer households than the census and the ENADID, thereby providing a small sample of elderly return migrants (Aguila & Zissimopoulos, 2008).⁴

⁴For the purposes of this analysis, the number of total sampled households is not as important as the number of sampled households that contain elderly return migrants. Even by this criteria the MHAS is more

This information points to a common trade-off in migration data sources: While some surveys such as the MHAS are rich in variables, they are limited in their sample size. In contrast, national data sets such as the Mexican census contain large sample sizes but do not provide the same level of granularity. Other limitations in migration data sources include limited coverage, non-response and proxy bias, and lack of key variables.

These examples lead to a formidable conclusion: migration-related outcomes can be troublingly sensitive to their data source. Considering the central role of quantitative information in the policy context, these inconsistencies can powerfully sway social policy. For example, in their 2003 Trustees Report, the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds projected that the combined payroll tax would have to increase by 1.92 in order keep the OASDI trust funds solvent for the next 75 years (Social Security Administration, 2003). However, the 2003 Technical Panel on Assumptions and Methods⁵ concluded that the levels of international migration used in these projections were implausibly low and recommended an alternative set of assumptions. Had these assumptions been used in the official projections, the required payroll tax increase would have been 1.67 percentage points instead of 1.92 percentage points (Wilmoth, 2005).

This example illustrates the sweeping consequences of small variations in quantitative estimates. In scarcely explored topics with major policy implications such as return migration among older Mexicans, this limitation may prove especially problematic. The higher the magnitude of return migration, the greater its impact on savings on U.S. old-age support programs, our understanding of immigrant incorporation in the U.S., and theoretical issues such as the Hispanic epidemiological paradox. The characteristics of return migrants are equally important with positive selection potentially exacerbating costs in the U.S. and clouding our understanding of the foreign-born experience in the U.S. Relying on one data source to explore these issues may obscure our understanding of this phenomenon and hinder informed social policy.

While each survey has its limitations, each can also provide insight into understanding elderly return migration. This analysis will borrow the technique employed by Massey and Zenteno (2000) and Ibarra and Lubotsky (2007) and compare the characteristics of elderly return migrants across multiple surveys to check for robustness. This cross-validation will directly inform our knowledge of elderly return migration in a way that is less subject to the respective limitations of each survey. The aforementioned issues illustrate the need to address the uncertainty associated with estimates of return migration. The higher the magnitude of return migration, the greater its impact on our understanding of immigrant incorporation in the U.S., theoretical issues such as the Hispanic epidemiological paradox, and U.S. savings on old-age support programs. This broad-brush overview of the differences between Mexican

limited than the ENADID and the Census.

⁵This panel was appointed by the Social Security Advisory Board (SSAB), which is responsible for advising the President and Congress on matters related to Social Security.

immigrants who remain in the U.S. and those who return migrate will not provide an in-depth examination of each difference, but rather, will give us an aerial assessment of elderly return migration with the added rigor of multiple survey comparisons.

2.3 Methods

2.3.1 Data

This analysis examines the differences between Mexican immigrants who remain in the U.S. upon reaching retirement and those who return migrate. It also compares the sociodemographic characteristics of return migrants across three different data sets in order to assess the consistency of the outcomes. I use the Integrated Public Use Microdata Series (IPUMS) (Ruggles et al., 2010), the Mexican Health and Aging Study (MHAS) (Universities of Pennsylvania, Maryland and Wisconsin, and the Instituto Nacional de Estadística, Geografía e Informática (INEGI), 2012), and the 1997 National Survey of Demographic Dynamics (ENADID) (Instituto Nacional de Estadística y Geografía, 2011). These data sources capture individuals who returned to Mexico after having lived in the United States. Table A.2.1 summarizes the characteristics of each data source.

Table 2.3.1: Characteristics of three return migration data sources

Dataset	Year	N	Variable	Sampling frame	Interviewee	Number of Households
IPUMS Mexico	2000	3,274	Five years ago, in January of 1995, in what state of the Republic or country did you live?	2000 Census	Household head reported return migration status of all household members	
Mexican Health and Aging Study (MHAS)	2001	99	Now think about the last time you came back from the U.S. after living there. In what year did you return?	Original sample from the Encuesta Nacional de Empleo [National Employment Survey]	One 50+ household member and spouse	9,862
National Survey of Demographic Dynamics (ENADID)	1997	126	Five years ago, as of June of 1992, in what state in the Republic of Mexico or country did you live?	National Survey of Urban Employment (ENEU)	Head of household	325,558

Integrated Public Use Microdata Series (IPUMS) U.S.A

The sample of older Mexican immigrants in the U.S. to which I compare four return migrant samples comes from the Integrated Public Use Microdata Series (IPUMS) (Minnesota Population Center, 2011). IPUMS is a repository of harmonized census microdata from around the world, making variables comparable across countries and years. The IPUMS data files draw upon the 5 percent sample from the 2000 U.S. census. The U.S. census was conducted in April of 2000. The sample in this analysis comes from the long form questionnaire and consists of adults 50 years and older who indicated having been born in Mexico (N= 59,652).

Integrated Public Use Microdata Series (IPUMS) Mexico

One of the return migrant samples I examine comes from 10 percent IPUMS sample from the 2000 Mexican census. Return migrants are identified in IPUMS Mexico by a variable in the Mexican census which asks respondents in what country they lived five years ago. Native-born Mexicans aged 50 years and older who report having lived in the United States 5 years ago are coded as return migrants (N=3,274). The Mexican census was conducted in February of 2000 by the Instituto Nacional de Estadística, Geografía e Informática (INEGI). The sample design was a stratified cluster design, stratified geographically by municipality and urban area, and weighted according to attain a nationally representative sample.

An important detail about the design of the Mexican census is the interviewee. Unlike many sample surveys, in the Mexican census, household heads were asked to enumerate and provide information about all members of the households, including this who had left to live in another country within the preceding five years. This method runs this risk of omitting migrant activity that the household head may not have had as good a recollection of as the actual migrant.

Mexican Health and Aging Study (MHAS)

Another return migrant sample which I compare to Mexican immigrants who remain in the U.S. comes from the Mexican Health and Aging Study (MHAS). The MHAS is a prospective panel study taken in Mexico in 2001 and 2003 of Mexicans aged 50 and older on topics including demographics, income, health, and retirement. It is implemented through a collaborative effort among researchers from the University of Pennsylvania, the University of Maryland, the University of Wisconsin, and INEGI. This paper utilizes data from 2001 during which 9,862 households and 15,186 individuals were interviewed. The sampling frame is all individuals aged 50 years and older in the original sample from the Encuesta Nacional

de Empleo (ENE), whose sampling frame was all enumerated households from the 1995 Mexican census.

Unlike the Mexican census, the MHAS does not interview household heads but rather, directly obtains information from respondents aged 50 years and older and their spouses. A proxy familiar with the respondent was interviewed in cases where the respondent was too ill, had cognitive impairments, or was absent for an extended period of time.

The MHAS tracks return migration by a variable indicating the year in which respondents last returned from a long stay in the United States. Over 1,000 respondents aged 50 years and in the MHAS reported having ever lived and worked in the U.S. Of this number, 191 returned to the U.S. at age 45 years and older.

Unfortunately, not all of these respondents can be included in the analysis for the purposes of comparability. IPUMS Mexico captures return migration that took place among individuals 45 years and older between 1995 and 2000. A similar time span must also be observed using the MHAS. Because the MHAS cross section took place in 2001, the corresponding years in which return migration are observed are between 1996 and 2001. The MHAS contains 99 individuals aged 50 years and older who returned from the U.S. to Mexico within the five years before the survey.

National Survey of Demographic Dynamics (ENADID)

The third return migrant sample come from the National Survey of Demographic Dynamics (ENADID) for 1997. Similar to IPUMS Mexico, the ENADID tracks return migration by asking respondents in which country they lived five years ago. The ENADID is a national cross-sectional survey conducted in 1992, 1997, 2006, and 2009 by the Consejo Nacional de Población (CONAPO), INEGI, and the National Institute of Public Health [Instituto Nacional de Salud Pública], on over 41,000 households in Mexico to ascertain information on demographic dynamics such as income, occupation, education, fertility, and migration. The sampling frame for the 1997 ENADID was the Encuesta Nacional de Empleo Urbano (ENEU), whose sampling frame the 1995 Mexican census. In 1997, 126 respondents aged 50 years and older reported living in the United States five years ago. Similar to the Mexican census, all questions were answered by the household head which may not have been the return migrant.

Current Population Survey (CPS)

As will be discussed in greater detail, in determining the rates of return migration, the number of Mexicans reporting having lived in the U.S. five years prior is divided by

the number of Mexican immigrants in the U.S. five years earlier. The Current Population Survey (CPS) is used to determine this latter number for the years 1995 (N=948), and 1996 (N=933). The CPS is a monthly survey of U.S. households on topics including demographics, employment status, and migration conducted by the Bureau of Labor Statistics (BLS). Mexican immigrants were determined by a variable indicating the respondent's country of birth. Only those 45 years or older were included.

National Health Interview Survey (NHIS)

The 1992 CPS is needed to calculate the corresponding denominator population for the 1997 ENADID. Unfortunately, this data set does not indicate the respondent's country of birth. Therefore, the National Health Interview Survey (NHIS) was used for this year. The NHIS is a cross-sectional household survey interview survey conducted continuously throughout the year since 1957 by the Centers for Disease Control (CDC). In 1992, 669 Mexican immigrants aged 45 years and older were enumerated.

2.3.2 Proportion Who Return Migrated

The exploratory nature of this study necessitates minimal assumptions and conservative inference techniques. To date, I am not aware of any estimate of the proportion of Mexican elderly immigrants in the United States who return to Mexico. For this reason, I rely on cross-validation and non-parametric techniques to begin to understand this phenomenon. Although this study cannot make causal claims, it takes a careful approach toward understanding the basics of this little-explored issue.

While most research on return migration uses indirect methods to estimate rates of return migration (Jasso & Rosenzweig, 1982; Warren & Peck, 1980; Passel & Cohn, 2009; Van Hook et al., 2006), this analysis directly observes the proportion of Mexican immigrants who return migrate. I calculate the proportion of Mexican immigrants in the U.S. aged 45 years and older who returned to Mexico within a ve-year time span with a simple equation. Specically, I divide the number of Mexicans aged 50 years and older in Mexico who reported living in the U.S. ve years ago by Mexican immigrants in the U.S. aged 45 years and older ve years prior. I calculate this ve-year rate using the three return migrants samples from the aforementioned data sources.

I calculate these proportions using multiple surveys to assess the consistency of the outcomes. Following the example of Massey and Zenteno (2000) and Ibarra and Lubotsky (2007), I assume that similar patterns across data sources are more revealing than only relying on one data source. I calculate this five-year incidence of return migration using four

return migrants samples from different data sources and corresponding samples of Mexican immigrants in the U.S. five year prior who are five years younger. The equation is as follows:

The denominators for this equation are Mexican immigrants aged 45 years and older drawn from the March Supplement of the Current Population Survey (CPS). The CPS is a nationally-representative monthly survey administered by the U.S. Census Bureau to obtain current labor force statistics in the United States. This analysis uses the CPS for 1995 (N=948) and 1996 (N=933) which correspond to the return migrant samples in IPUMS Mexico (2000) and MHAS (2001), respectively. The 1992 CPS was not used as the denominator for the rate of return migrating pertaining to the 1997 ENADID since it does not indicate the respondents country of birth. For this reason, the denominator used for the 1997 ENADID is drawn from the 1992 National Health Interview Survey (NHIS) (N=669). The NHIS is an annual, cross-sectional, and nationally-representative household survey used to monitor the health of the United States.

$$R_{1995,2000} = \frac{M_{x,2000,IPUMSMexico}}{I_{x-5,1995,CPS}}$$

- $R_{1995,2000}$ = Proportion of Mexican immigrants in the U.S. in 1995 who returned to Mexico between 1995 and 2000.
- $M_{x,2000}$ = Mexicans aged x who reported having lived in the U.S. 5 years ago in IPUMS Mexico 2000.
- $I_{x-5,1995}$ = Mexican immigrants in the U.S. aged $x - 5$ in the 1995 CPS.

Estimates using other data sets have similar but different years.

The author recognizes the numerator-denominator bias in this method. The data sources used to capture return migrants may have different coverage rates than those covering immigrants in the U.S., thereby distorting the true rate of return migration. This limitation makes it particularly important to compare estimates across data sources rather than rely on one data source.

It is also important to note that this method does not capture migration within this ve-year time period. Migrants may travel to and from Mexico during the ve years of observation but would not be included in the numerator if at the end of those ve years, they are back in the United States. Similarly, this study does not present estimates on the probability of return migration at any point during later life as it is limited to return migration within a ve-year period. Inference

2.3.3 Inference

This article contains weighted descriptive statistics on age, education, marital status, spousal living arrangements, and employment and citizenship status. It compares these characteristics across return migrant data sources as well as with the sample of Mexican immigrants who remained in the U.S. I merge all data sets and use a Rao-Scott Chi-Squared test to compare the distribution of categorical variables across samples. A Rao-Scott Chi-Squared test tests the association between row and column variables in a multiway contingency table while adjusting for complex survey design (Rao & Scott, 1984). It is a nonparametric test appropriate when using small samples containing categorical variables in a complex survey. Standard errors are clustered by household. When indicated, estimates for each sex are standardized by the age distribution of Mexican immigrants in the U.S. in 2000. In other words, the sampling weights of each data source are adjusted so that their sum is the same but their age distribution mirrors that of Mexican immigrants in the U.S. in 2000.

2.4 Results

This section presents the results of a multiple survey comparison of the socio-demographic characteristics of Mexican immigrants who return to Mexico upon reaching old age, and Mexican immigrants who remain in the U.S. during this time period. This portion of the analysis begins by providing a summary table of various characteristics of both populations as depicted in four surveys. It then examines each of the components of this table in greater detail while taking into account issues such as missing values, proxy status, question wording, and other issues that might explain inconsistencies across data sources.

2.4.1 Summary Statistics

Table 2.4.1 displays weighted descriptive statistics for Mexican immigrants in the U.S. and return migrants as represented using IPUMS Mexico, the MHAS, and the ENADID. The fourth, sixth, and eighth columns of this table list the difference between the return migrant estimate and that of Mexican immigrants in the U.S. of the same age.

A notable feature of this table are the small sample sizes of return migrants contained in the MHAS and the ENADID, particularly for women. These small sizes highlight the importance of multiple survey comparisons when examining sensitive populations such as elderly return migrants. In their assessment of the representativeness of the MMP, Massey and Zenteno (2000) compare estimates generated using the Western Mexico-focused MMP to those of nationally representative ENADID. The authors found striking differences in the magnitude of estimates across surveys which they attributed to small sizes. Nonetheless, the

authors point out that similarities in the direction of the estimates speak to the comparability of the surveys and assist in understanding the characteristics of migrants. Similarly, this paper assumes that while individual surveys may be subject to the biases associated with small sample sizes, any common trends across surveys provide a more accurate depiction of elderly return migrant characteristics than can be obtained by only using one survey. Along the same lines, discrepancies in the direction of the differences across surveys illustrate areas that require further investigation.

The first glance overview of the differences between both populations provided by table 2.4.1 shows wildly divergent results across data sources. In general, the sample surveys, i.e. the ENADID and the MHAS, denote greater differences between return migrants and Mexican immigrants in the U.S. than IPUMS Mexico, which is a sample of the complete census enumeration. It is difficult to assess at this point whether these differences are due to varying sample sizes, sampling methods, or random variation. Subsequent sections will take a closer look at each of these results and provide possible explanations for their divergence.

The estimates for females are also wildly divergent likely due to the small sample of women in the MHAS ($n=29$) and the ENADID ($n=89$). Due to this issue, females are dropped from the analysis in subsequent sections.

2.4.2 Rates of Return Migration

Figure 2.2 displays the proportion of Mexican immigrants aged 50 years and older in the U.S. who returned to Mexico within the proceeding five years using the IPUMS Mexico, the MHAS, and the ENADID. All three data sources reveal a similar pattern: among the 50 and older population, Mexican immigrant males are more likely to return migrate than their female counterparts and only a relatively low proportion of older Mexican immigrants return migrate. However, while the general pattern is similar, this graph reveals marked differences in the magnitude of return migration rates across data sources. Less than two percent of older Mexican immigrants in the U.S. return migrated as depicted in IPUMS Mexico while this proportion is almost six percent in the ENADID.

Determining the exact reason for these divergent outcomes is beyond the purview of this analysis. However, it is important to at least touch upon a few of several possible reasons. One explanation for these differences may be data source type, i.e. census versus sample survey. Both sample surveys show higher rates of return migration than IPUMS Mexico, which is based on a sample of the complete census enumeration.

Data source type is important as certain population characteristics have been shown to substantially differ between the Census and sample surveys. For example, in 2000, the Current Population Survey reported an unemployment rate that was 2.1 percentage points lower than that reported in the 2000 U.S. census (S. L. Clark, Iceland, Palumbo, Posey, & Weismantle, 2003). Statistics on a subset of the population such as elderly return migrants might amplify these differences. In an attempt to increase the number of migrants in their sample, the MHAS and ENADID over-sample regions in Mexico that send a large amount of migrants to the U.S. However, given the relatively small number of Mexicans in Mexico who have migrated to the U.S. (Ruiz-Tagle & Wong, 2009; Wong & Palloni, 2009), these sample surveys may not achieve the level of representativeness required to effectively capture migrants who returned to Mexico during later life.

Moreover, some contend that question ordering can account for differences in results across data sources. Special populations have been demonstrated to be particularly affected by question ordering. S. Lee and Grant (2009) find that Spanish-speakers are the only population whose self-reported health is worse when asked about their self-reported health *before* questions about chronic conditions in the California Health Interview Survey (CHIS). The authors conjecture that for these respondents, objective measures of health conditions may contextualize their subsequent response to the self-reported health question in a way that is different for non-Spanish-speaking interviewees.

This finding illustrates potential discrepancies that may emerge when data sources differ in their presentation, a situation which may account for the divergent rates of return migration across data sources. For example, in the data sources with the lowest rates of return migration, i.e. the ENADID and IPUMS, respondents are first asked about interna-

tional migration much earlier in the questionnaire than in the MHAS. In the ENADID and IPUMS Mexico, respondents are asked in which country they lived five years prior before covering detailed demographic questions such as marital status, highest level of education, literacy, and occupation. In contrast, the MHAS solicits information on migration to the U.S. after covering sensitive topics such as whether the respondent can write a message, health history, and marital dissolution. Migrants - particularly those who traveled to the U.S. without proper documentation - may feel more comfortable sharing some of the details of their experience abroad after they have divulged less sensitive details about themselves.

2.4.3 Total Rates of Return Migration

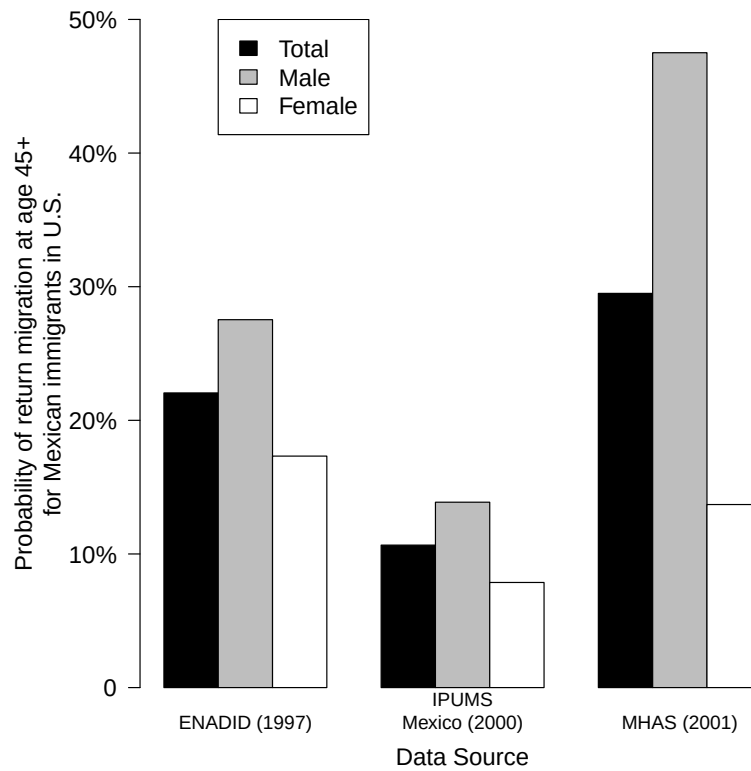
Whereas figure 2.2 displays the proportion of older Mexicans who had lived in the U.S. five years previously, figure 2.1 displays the total probability of return migration at age 45 years and older for Mexican immigrants in the U.S. This figure demonstrates the same variability as the previous. The probability of returning to Mexico at age 45 years and older ranges from 22 percent when observed using the 1997 ENADID to almost 30 percent when observed using the MHAS.

This multiple survey comparison reveals notable differences across surveys in terms of the proportion of elderly return migrants from the U.S. to Mexico. Relying on one data source for this estimate limits our ability to assess its bounds and uncertainty. This proportion has potential implications for U.S. old-age support expenditures, biases in our understanding of elderly Mexicans in the U.S., and economic consequences for the return migrant receiving country. Figure 2.2 provides us with a range of possible values for this estimate. All three data sources suggest that relatively few Mexican immigrants in the U.S. return to Mexico upon reaching older ages.

2.4.4 Age and Sex Distribution

Figure 2.3 displays population pyramids for return migrants using the three return migrant data sources and Mexican immigrants in the U.S. The white bars represent the age distribution of return migrant females whereas the gray bars represent that of return migrant males. These distributions are compared to those of Mexican immigrants in the U.S. represented in population pyramid in the bottom right-hand corner. All of the return migrant pyramids skew to the right, indicating the predominance of males among return migrants compared to Mexican immigrants who stayed in the U.S. Moreover, the sex composition of return migrants in all three of the samples is statistically different from that of immigrants in the U.S., suggesting that older return migrants are unequivocally more male than female. Subsequent results are restricted to males for this reason. This finding corroborates with

Figure 2.1: Probability of return migration at age 45+ for Mexican immigrants in U.S.



Note: These proportions represent the integral of the separate rates of return migration by age.

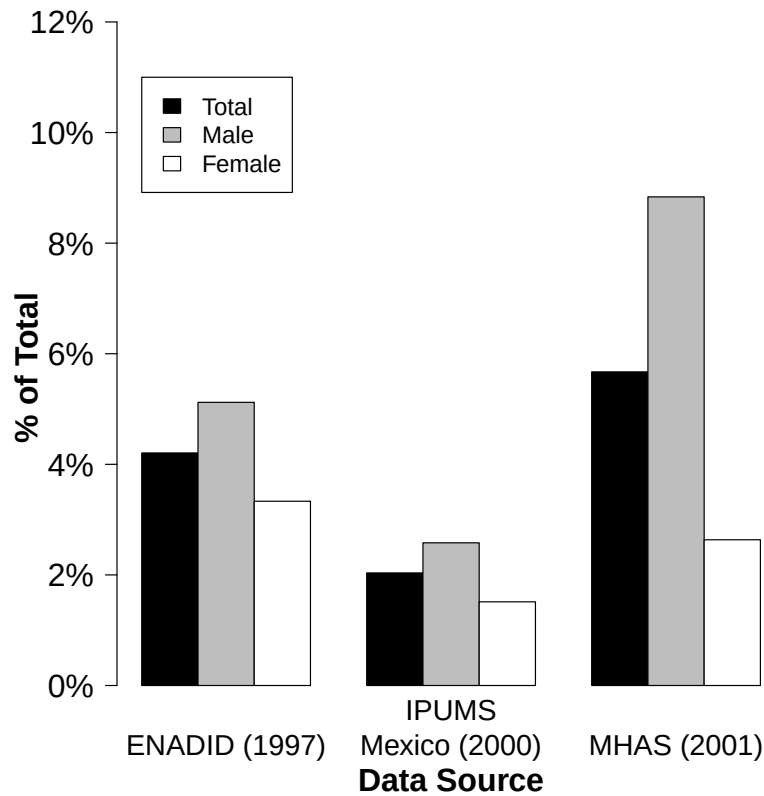
that of Ruiz-Tagle and Wong (2009) who find a similar pattern among Mexican immigrants immigrants of all ages.

However, the message is not as unequivocal with regard to age. The return migrant sample in IPUMS Mexico has an age distribution that is statistically different than that of Mexican immigrants in the U.S. Return migrants in this data source are younger than Mexican immigrants who remain in the U.S. In contrast, the ENADID and MHAS show no difference. The same pattern holds for women.

2.4.5 Rates of Return Migration by Age

Figure 2.4 displays this same information from another vantage point. Figure 2.4 demonstrates rates of return migration for males by age. These rates are not standardized to the age distribution of Mexican immigrants in the U.S. This graph reveals notable variability

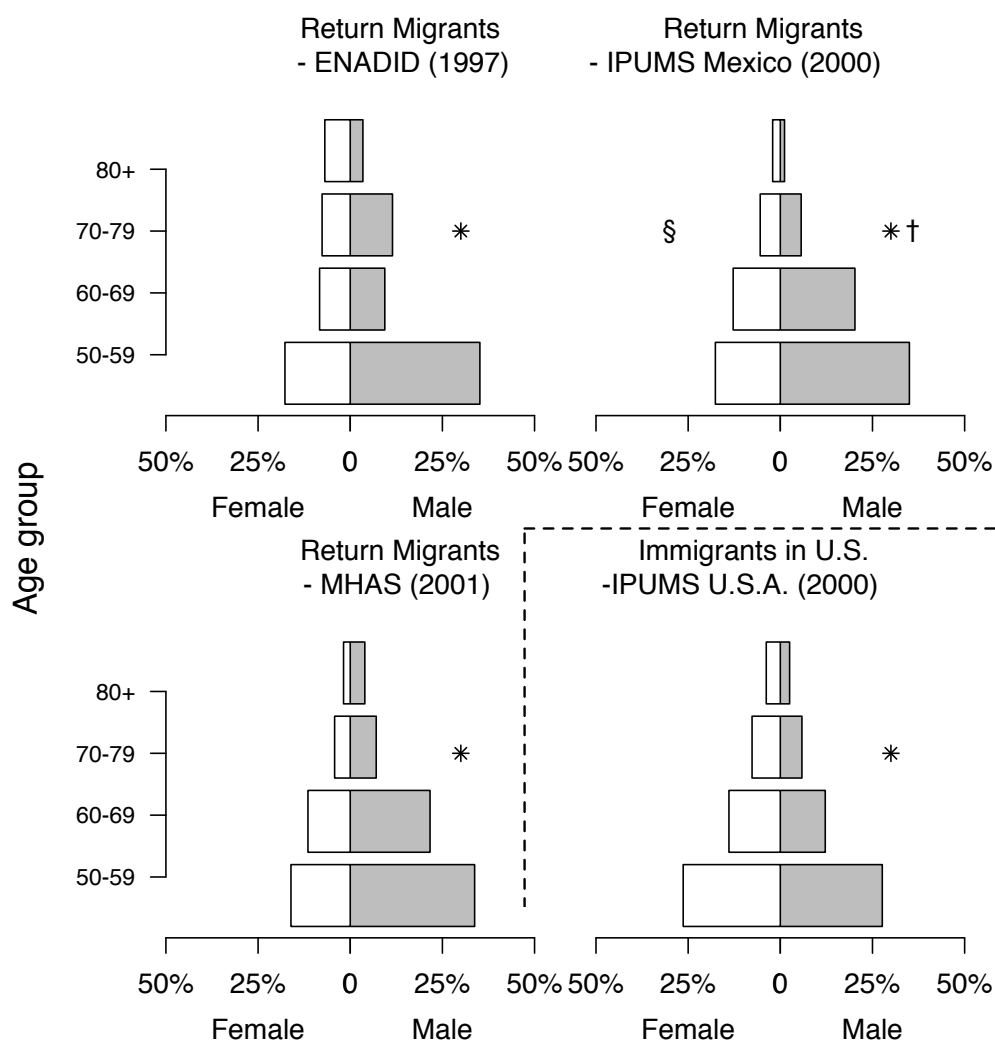
Figure 2.2: Proportion of 50+ Mexicans in Mexico who lived in the U.S. 5 years ago as reported in three surveys



across surveys. The probability of return migration decreases monotonically up until age 65 in the MHAS and ENADID, but peaks in the 65-69 age range in IPUMS Mexico. Aside from the age pattern of return migration, substantial differences exist in terms of the levels of return migration across data sources. For example, only approximately four percent of 65-69 year olds had return migrated within the last five years in the IPUMS Mexico whereas this number is close to eight percent in the MHAS.

The ambiguity of this result is regrettable as age of return may signal the reason for return migration during later life. According to Litwak and Longino (1987), there are three major reasons for post-retirement moves. The first occurs immediately after retirement and is usually prompted by a desire for greater amenities, followed by a move to be closer to a caretaker once health begins to deteriorate and finally, a move to an institutional settings once the caretaker can no longer handle the burden of caretaking. In the context of international migration, the literature confirms the occurrence of the first of these moves among older Americans (Sunil et al., 2007) and Northern Europeans (Casado-Díaz et al., 2004) while newspapers suggest a growing incidence of the third type of move among elderly in the U.S. (Christie, 2006).

Figure 2.3: Population pyramids of 50+ return migrants in four data sources and Mexican immigrants in the U.S.

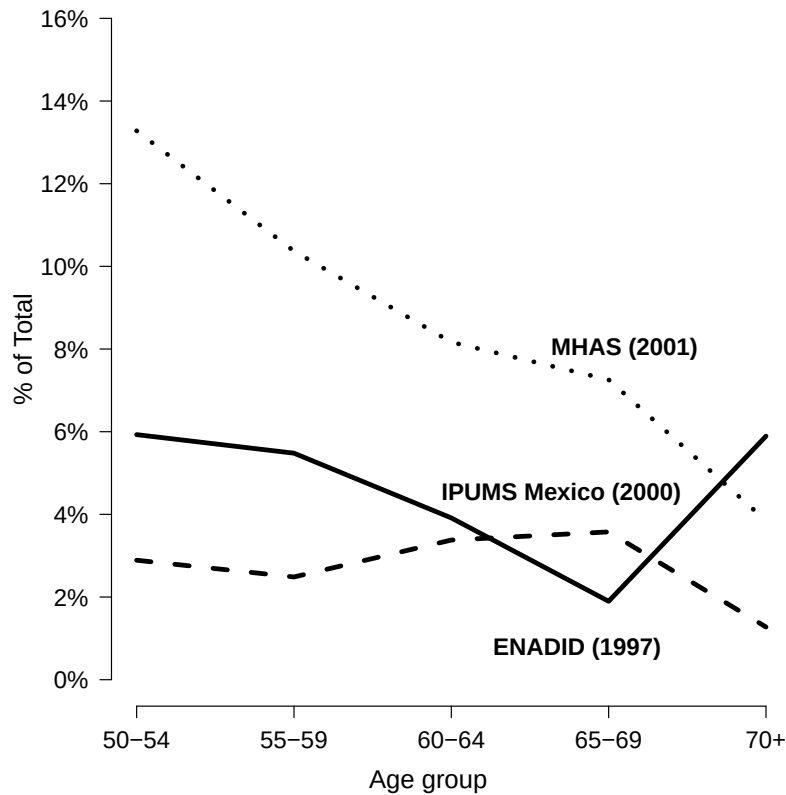


* Sex composition of return migrant sample statistically different from that of Mexican immigrants in U.S. (p-value<0.05)

† Age distribution of male return migrant sample statistically different from that of Mexican immigrant males in U.S. (p-value<0.05)

§ Age distribution of female return migrant sample statistically different than that of Mexican immigrant females in U.S. (p-value<0.05)

Figure 2.4: Proportion of 50+ Mexicans in Mexico in each age group who lived in the U.S. 5 years ago by age group as reported in four surveys



However, such information does not exist concerning immigrant elderly in the U.S. Although Litwak and Longino (1987) observe that immigrant elderly in the U.S. are far more likely to live with children during old age than the native-born and are therefore, less likely to move, the authors do not observe whether this is the case for immigrants who return to their home countries during later life.

The results of this analysis illustrate the opaqueness surrounding this issue. It remains unclear whether older return migrants are generally younger than older Mexican immigrants who remain in the U.S. Sample size emerges as a possible reason. The data sources which find no statistically significant difference between the age distribution of return migrants and Mexican immigrants in the U.S., namely the ENADID and the MHAS, have much smaller sample sizes than the data source which does suggest a statistically significant difference. This points to a prominent issue in studying special populations: often, sample sizes are not large enough to examine these special populations in depth. While data sources such as the Mexican Migration Project and the MHAS, over-sample special populations to assure greater sample size, older return migrants represent a population still largely unexplored due to this methodological issue. Moreover, the results of this analysis illuminate the misleading

conclusions that can be drawn by relying on only one data source to examine this issue.

2.4.6 Education

The literature describes migration into and out of the U.S. as selective processes (Chiquiar & Hanson, 2005; Massey, 1987; Aguila & Zissimopoulos, 2008; Ruiz-Tagle & Wong, 2009), education being a particularly prominent characteristic of interest given its implications for health (Winkleby, Jatulis, Frank, & Fortman, 1992), labor market outcomes (Card, 1999), and public service consumption (National Research Council, 1997). Studies show that Mexican immigrants to the U.S. are positively selected on education (Chiquiar & Hanson, 2005) while emigrants out of the U.S. are selected at intermediary levels of the educational spectrum (Ruiz-Tagle & Wong, 2009). However, to date, much of this work focuses on all or working-age Mexican immigrants and does not isolate older Mexican immigrants. While Gassoumis, Wilbur, Baker, and Torres-Gil (2009) find relatively low educational levels among Hispanic immigrant baby boomers compared to their native counterparts, this estimate does not include those who may have recently returned to their home country.

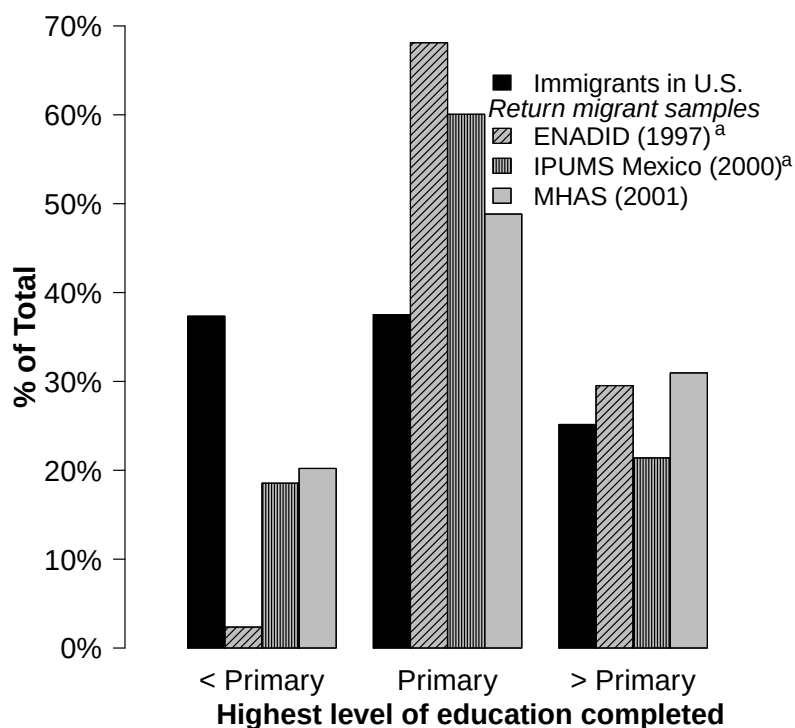
This section observes if education has the same relationship to return migration across data sources. Figure 2.5 displays the distribution of the highest level of education completed by return migrant males as indicated in IPUMS Mexico, the MHAS, and the ENADID, and by Mexican immigrant males in the U.S. as indicated in IPUMS U.S.A. These estimates are standardized by the age distribution of Mexican immigrants in the U.S. in order to rule out the possible effect of age as a confounder. This figure demonstrates that Mexican immigrant males who return to Mexico during later life are more educated than those remain in the U.S. during this time period. The black bars skew while the others skew right, indicating that return migrant males are more likely to have completed a primary education than Mexican immigrants who remain in the U.S. at age 50 years and older. This difference between return migrants and Mexican immigrants in the U.S. is statistically significant in two of the three return migrant data sources. The MHAS return migrant sample is the only sample of return migrants that differs from older Mexican immigrants in the U.S.

2.4.7 Return Migration By Educational Level

Similarly, figure 2.6 displays rates of return migration among older male Mexican immigrants by highest level of education completed. Similar to previous findings, the magnitude of return migration per educational level varies across surveys but the general pattern holds. In all three data sources, Mexican immigrants with a primary level education are most likely to return to Mexico than are those with less and more than a primary education.

This finding has important theoretical and fiscal implications. While studies generally

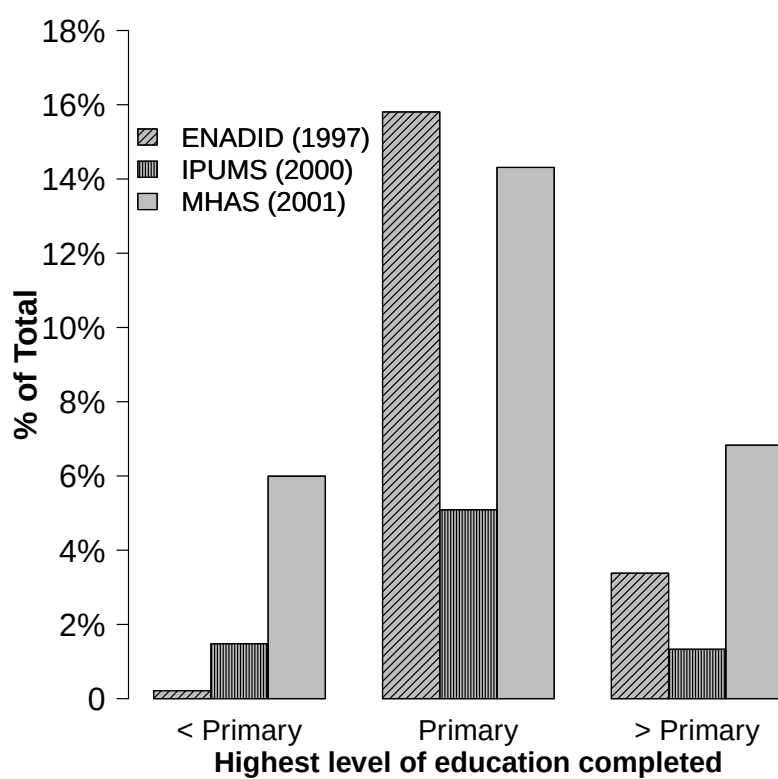
Figure 2.5: Highest level of education completed by 50+ male return migrants as reported in three surveys and by 50+ Mexican immigrants in the U.S. (age-standardized)



^aDistribution statistically different from that of immigrants in U.S.

depict an uneducated foreign-born elderly population (Gassoumis et al., 2009; National Research Council, 2004) with poor socioeconomic prospects (Borjas, 2009) and relatively high public service consumption (National Research Council, 1997), return migration may exacerbate this adverse portrayal. An elementary school education is seminal to basic literacy (Entwisle & Hayduk, 1988) and is associated with higher wages (Hansen, 1963), more active participation in the labor force (Floro & Wolf, 1990), and overall economic development (Colclough, 1982). The propensity for older Mexicans in the U.S. to lack the fundamental skills provided by an elementary level education renders them an especially vulnerable group in the U.S. However, this analysis demonstrates that as much as six percent of foreign-born older immigrants return migrate within a five-year period. While still low by native-born standards, the socioeconomic status of older Mexican who reach old age in the U.S. may not be quite as dire when considering return migration.

Figure 2.6: Proportion of 50+ Mexican males in Mexico who lived in the U.S. 5 years ago by highest level of education completed as reported in three data sources (age-standardized)



2.4.8 Marital Status

Marital status can provide valuable insights as to the reasons for return migration during later life. Rogers (1988) posits that widowhood prompts migration among the aged in situations where the widow or widower feels unable to live independently. In such cases, older immigrants may reunite with family abroad in response to the loss of a spouse.

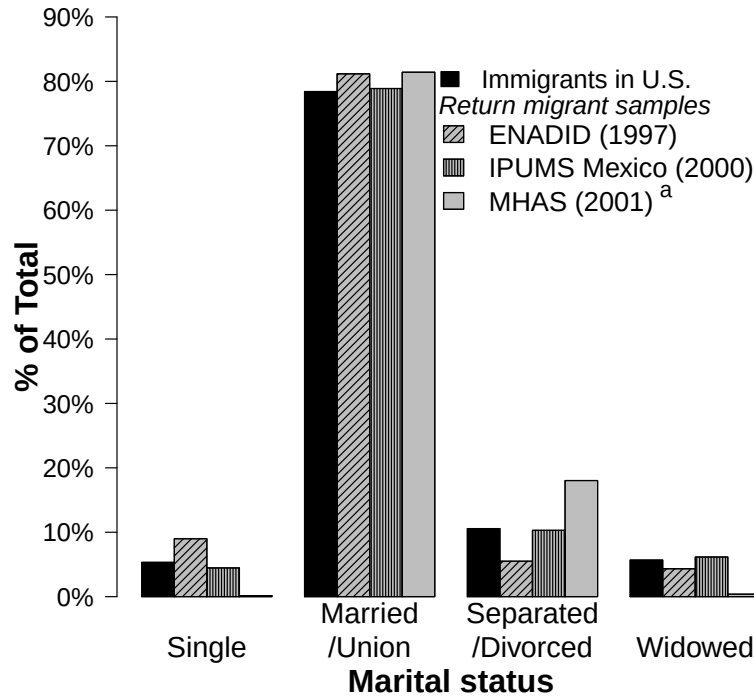
However, figure 2.7 suggests that this is not the case among older Mexican return migrants. Figure 2.7 displays the marital status of older Mexican return migrant males and Mexican immigrant males who remained in the U.S. All estimates are standardized to the age distribution of the latter. This figure suggests that return migrants are as likely to be married as Mexican immigrants who remain in the U.S. Return migrants are statistically more likely to be married than return migrants in only one return migrant sample, namely the MHAS. Nonetheless, the difference in this estimate to that of immigrants in the U.S. is only three percentage points. Thus, the marital status of return migrant males does not appear substantially different than that of Mexican immigrant males who remained in the U.S.

This finding suggests that older Mexican immigrants may have different motivations for returning to their country of origin than their working-age counterparts. Marital status significantly affects emigration out of the U.S. in numerous studies on pooled samples of elderly and non-elderly Mexican immigrants (Massey, 1987; Ruiz-Tagle & Wong, 2009; Van Hook & Zhang, 2011). In contrast, this analysis does not suggest a strong relationship between marital status and return migration among older Mexican immigrants.

The different role of marital status between these two age groups may be a function of their ties to the U.S. labor force. Working-age Mexican males often leave their spouses to migrate to the U.S. for short time periods in order to build up savings (Massey, Durand, & Malone, 2002). These migrants often intend to return to Mexico upon saving a target amount of money. However, most older Mexicans are married and living with their spouses (Ruggles et al., 2010) and are more likely to have exited the labor force. For these reasons, these migrants may face less pressure to emigrate.

However, migratory patterns may also hinge on whether the spouse is herself a migrant. Massey (1987) finds that the probability of returning to Mexico from the U.S. among Mexican immigrants is significantly lower if a man is married at the time of the survey, but this effect is partially offset if the wife is also a migrant. This suggests that unless they are themselves migrants, spouses serve as an anchor that keep migrants from returning to their home countries. Further analysis should investigate if older return migrants migrate with their spouses.

Figure 2.7: Marital status of 50+ male return migrants as reported in three surveys and Mexican immigrants in the U.S. (age-standardized)



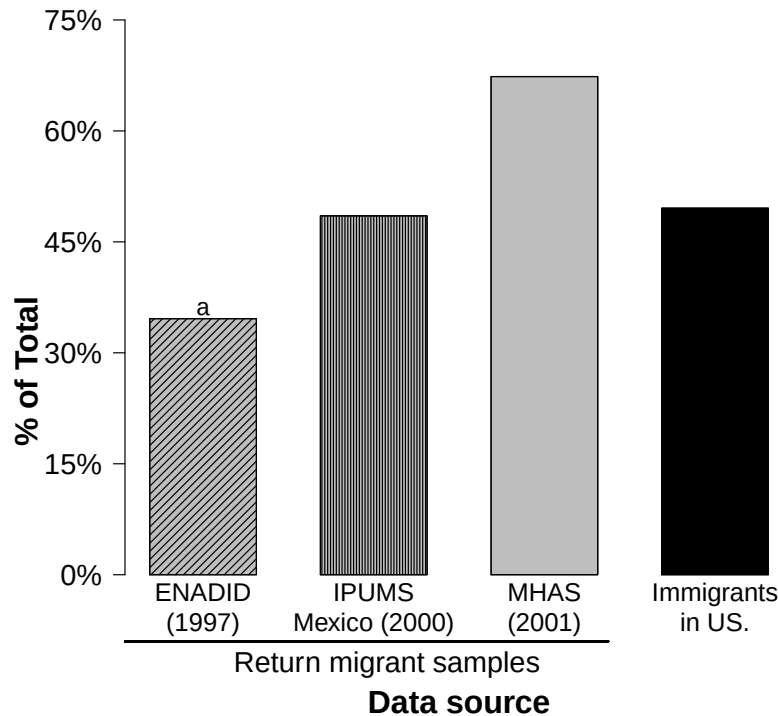
^aDistribution statistically different from that of immigrants in U.S.

2.4.9 Employment Status

A key insight in understanding elderly return migration is whether migrants return to Mexico to retire or to look for employment. While older Americans (Sunil et al., 2007) and Northern Europeans (Casado-Díaz et al., 2004) migrate primarily to seek amenities and move to a more favorable environment, the same pattern may not hold among older Mexicans immigrants. Mexican elderly currently experience an increasing income gap between themselves and natives and receive less retirement income, both through Social Security and private sources (Borjas, 2009). These circumstances may limit their retirement location options regardless of their preferences.

Unfortunately, employment status remains amorphous when compared across data sources. Figure 2.8 displays the proportion of return migrant males aged 50 years and older who are employed in all three of the return migrant samples and among Mexican immigrants in the U.S. This result differs markedly across data sources. The 1997 ENADID suggests that return migrants are less likely to be employed while the other two data sources do not suggest any difference in the employment status of return migrants and those who

Figure 2.8: Proportion of 50+ male return migrants and Mexican immigrants in the U.S. who are currently employed (age-standardized)



^aProportion statistically different than that of immigrants in U.S.

remain in the U.S.

The sensitivity of this result to the data source highlights a key area for further inquiry. The employment status of return migrants has potential implications for the destination and source countries economies. Deller (1995) and Serow and Haas (1992) both find positive economic multiplier effects associated with the entry of retirement migrants into a community. However, both of these studies either assume or observe moderate to high levels of retirement income. In theory, these multiplier effects may be the result of employment rather than retirement income. Conversely, later-life migration may create additional strain on the receiving economy instead of benefits by increasing public service consumption particularly in the absence of employment and/or retirement income. The economic challenges Mexico faces in light of its rapidly aging population (Wong & Palloni, 2009) may be offset or exacerbated depending on the employment status of elderly return migrants and whether they receive retirement income. This analysis indicates the need for further investigation into this highly pertinent issue.

2.5 Discussion

As millions of Hispanics join the ranks of the U.S. elderly population (Administration on Aging, 2010), international migration in the U.S. will no longer be the preserve of work-age adults. To varying degrees, foreign-born Hispanic elderly will face the same challenges as their non-Hispanic counterparts but may have the viable option to return to their home countries in light of these challenges. Their residence of choice will carry important implications for assessments of their future fiscal costs. The numerous reports forecasting future budgetary spending on old-age support programs (Social Security Administration, 2012a; Centers for Medicare and Medicaid Services, 2011; Poisal et al., 2007) evidence the demand for methodologically rigorous projections that consider the varied behaviors of subsets of the elderly population. These projections must include mention of elderly return migration to achieve maximum accuracy. However, the numerous methodological challenges of studying migration behavior have prevented such considerations to date.

This paper examines the magnitude and characteristics of return migration among Mexican immigrants aged 50 years and older using multiple data sources to assess the consistency of the results. In this way, it addresses a common limitation whereby migration-related findings often differ based on their data source (Bustamante et al., 1997). It compares key demographic characteristics of a sample of Mexican-born individuals aged 50 years and older in the 2000 U.S. census with return migrant samples aged 50 years and older in the 2000 IPUMS Mexico, the 2001 MHAS, and the 1997 ENADID.

This study finds that less than six percent of all Mexican immigrants in the U.S. aged 45 years and older return to Mexico within a five-year period, the vast majority of whom are male. However, the rate of elderly return migration ranges from two percent when observed using IPUMS Mexico to almost six percent when observed using the MHAS.

The variation in this estimate is troubling given its important implications for the U.S. budget. Currently, the Medicare Payment Advisory Commission (2012) reports an annual total of \$8,147 in Medicare spending per beneficiary. Based on this estimate, if two percent of Mexican immigrants aged 65 and older returned to Mexico, Medicare spending would decrease by over \$113 million.⁶ Savings would increase to over \$339 million if the return migration rate were 6 percent for this population. Further savings would be achieved through reduced spending on Medicaid and Supplemental Security Income.

Return migration may also have more indirect effects on the U.S. budget via its implications for fiscal projections. Every year, the Social Security Administration forecasts the

⁶This estimate comes from a simple back-of-the-envelope calculation. Ruggles et al. (2010) reports that there are currently 694,225 Mexican immigrants aged 65 years and older in the U.S. Multiplying two percent of this number by annual personal health care spending (\$8,147) yields \$113,117,021.5. Of course, this estimate is only a rough estimation as Mexican immigrants likely have different spending patterns than all other elders.

solvency of the Social Security based on a set of assumptions regarding fertility, mortality, immigration, and emigration. In their emigration assumptions, the administration indicates using annual departure rates by age and sex but not by region of birth (Social Security Administration, 2012a). This study provides rates of departure for the older subset of the largest group of immigrants in the U.S., which the literature suggests likely differ from that of other immigrants (Jasso & Rosenzweig, 1982).⁷

Aside from the magnitude of return migration, the characteristics of return migrants carry equally important implications. This study finds that the average older return migrant from the U.S. to Mexico is a married male with a primary level education. In contrast, older Mexican immigrants who remain in the U.S. have a more equal sex ratio and are more likely to not have completed a primary level education.

This pattern has important implications. Males generally receive higher retirement income levels than females (General Accountability Office, 2007) and for this reason may bring greater wealth into the Mexican economy. While Aguila and Zissimopoulos (2008) find that only a relatively small proportion of Mexicans in Mexico aged 50 years and older with U.S. migration experience receive U.S. Social Security, Serow and Haas (1992) illustrate the far-ranging multiplier effects of retirement income at the individual level.

However, it may also be the case that older Mexican males return migrate in the event that they do not receive Social Security. Further research should investigate the effect of retirement income on return migration during later life.

While the concentration of males among immigrants *into the U.S.* has been explained by a tendency among males to look for work in the U.S. (Cerrutti & Massey, 2001), there is no straightforward explanation for the male predominance of migration *out of the U.S.* at older ages. Most male return migrants are married and living with their spouse, suggesting that Mexican immigrants either migrate with their spouse or to join a spouse abroad. This diminishes the possibility that males respond to the loss of a spouse by returning to their country of origin. Some authors note the importance of economic motives in determining return migration, motives which may be more applicable to males. Massey (1987) cites the importance of land ownership in Mexico in predicting return migration. Females may be less likely to return migration since they are also less likely to own land. However, regardless of the lack of clarity as to why males are more likely to return migrate, the general pattern across data sources is clear.

Results pertaining to education are also fairly consistent. Two of the three return migrant samples indicate that return migrant males are more likely to have completed a primary education than older Mexican immigrant males in the U.S. While the completion of a primary education is often taken for granted in the U.S.,⁸ it can have significant ramifications

⁷The authors demonstrate notable differences in the rate of emigration depending on country of origin.

⁸Official reports which describe the economic benefits of varying levels of education such as that of the

for Mexicans in the U.S. and in Mexico. Completing a primary education has been shown to raise the wages of both Mexican immigrants in both the U.S. and Mexicans in Mexico (Chiquiar & Hanson, 2005). The higher wages of these migrants, in turn, affect the fiscal cost of immigrants in the U.S. The National Research Council (1997) reports that immigrants with higher levels of education are significantly less costly than those with lower levels of education.

Marital status is also fairly consistent across data sources. Although results from the MHAS suggest that return migrant males are more likely to be married than older Mexican immigrants in the U.S., there is only a three percentage point difference between both estimates.

Other results with equally important implications are not as robust. A case in point is age. The age pattern of return migration differs markedly across data sources. Among those who return to Mexico during later life, the probability of return migration peaks at age 65-69 in the IPUMS Mexico but not in the other data sources. The levels of return migration by age also differ markedly. For example, in the 1997 ENADID sample, return migration is approximately two percent among the population aged 65-69 whereas this number is almost eight percent in the MHAS.

Age of return is crucial in determining not only fiscal savings, but also the level of bias in estimates of Mexican immigrants currently in the U.S. Age of return affects estimates on mortality, social service consumption, and employment status among Mexican immigrants who remain in the U.S. with older return migrants decreasing the former two and increasing the latter. For example, D. R. Williams (2005) reports a death rate of 343.7 per 10,000 Hispanics aged 75-84.⁹ If only five percent of the 27,942 return migrants enumerated in IPUMS Mexico for the years 1995-2000 were in this age group, the numbers of deaths among Mexican immigrants in the U.S. would increase by 47.5, assuming similar death rates for both populations. However, if 30 percent of return migrants were in this age group, total deaths would increase by 285.¹⁰ The lack of consistency across estimates of the age pattern of return migration among older migrants highlight the need to further investigate this area. More complicated analyses that use age of return migration as an independent variable may vary from data source to data source, further obfuscating our understanding of the phenomenon.

Another characteristic that remains unclear is employment status. Results from the

Census Bureau (Cheeseman Day & Newburger, 2002) and the Bureau of Labor Statistics (Bureau of Labor Statistics, 2003) do not include wage differences between those with and without a primary education. This is likely due to the fact that the vast majority of Americans receive a primary education and it is probably deemed unnecessary to describe these income differentials.

⁹D. R. Williams (2005) does not directly report this death rate. He reports a death rate of 572.87 per 10,000 Non-Hispanic Whites aged 75-84 and a Hispanic/White ratio of 0.6. I multiply the former by the latter to obtain a Hispanic mortality rate.

¹⁰I arrive at this number by multiplying the total number of return migrants by 5 and 10 percent, and then multiplying this product by the death rate.

1997 ENADID indicate that return migrants are less likely to be employed than Mexican immigrants in the U.S. whereas the other data sources do not show any difference. Understanding the labor market behavior of return migrants is important as it may affect the Mexican economy. Immigrants who return to their home countries to retire may create economic multiplier effects that can spur economic growth (Deller, 1995), assuming they have retirement or other forms of income. This growth may also result if immigrants return to the home country to work.

Aside from the economic implications of employment status, this variable may also shed light on the reasons for return migration. A high proportion of employed return migrants may imply that immigrants return to their home countries to look for work. These migrants may return migrate after losing their job or to employ the skills they acquired in the U.S., e.g. English language skills, in the Mexican job market. Conversely, a high proportion of retired return migrants may have quite different implications. These return migrants may return migrate to take advantage of the higher purchasing power of the U.S. dollar in Mexico. In the absence of robust results, it is not possible to determine which of these is the case. Further investigation is required not only to assess the employment levels of return migrants but also the reasoning behind these levels.

This analysis reveals the sensitivity of outcomes to the specific data source, particularly when examining the factors associated with return migration among older Mexicans in the U.S. A simple comparison of one sample older Mexicans in the U.S. and one sample of return migrants may produce differences between both groups that would not appear in a comparison involving another return migrant sample. Caution is warranted in any inference techniques that do not consider the confounding effects of data source type, small sample size, question ordering, question wording, and a host of other nuances.

Chapter 3

Correlates of Return Migration: Retirement Income and Other Considerations

“I have always paid income tax. I object only when it reaches a stage when I am threatened with having nothing left for my old age - which is due to start next Tuesday or Wednesday.”

Noel Coward¹

3.1 Introduction

Return migration has emerged as a key issue in understanding foreign-born elderly in the U.S. Elderly return migrants spend a portion of their lives in the U.S. but are unobserved once they cross the border during later life. Their absence has implications for the selectivity of elderly immigrants who remain in the U.S., U.S. fiscal policy, and the retirement behavior of return migrants. Gruber and Wise (1998) find that individuals are most likely to retire during the age at which they first become eligible for retirement benefits. However, this age may hold different implications for immigrants than for the native-born. Older immigrants are more likely to have worked in multiple countries (Gustman & Steinmeier, 1998),² and may

¹See Book of Famous Quotes (n.d.)

²Gustman and Steinmeier (1998) calculate the percent of work years not incorporated into the average of the 35 years of work used to determine Social Security levels. The authors note that the higher zero work

not have accrued the years of work required to receive retirement benefits in either the destination or home country (Aguila & Zissimopoulos, 2008).³ In the absence of labor income, these individuals may face budget constraints that compel them to return to their home countries where the U.S. dollar has a higher purchasing power. Though most immigrants nearing retirement age expect to receive Social Security (Gustman & Steinmeier, 1998), this number does not include migrants who might have returned to their home countries because they do not receive Social Security.

To date, the literature on retirement migration has focused primarily on older Americans (Sunil et al., 2007; Truly, 2002; Haas & Serow, 2002; Day & Barlett, 2000) and older Europeans (Casado-Díaz et al., 2004; King, Warnes, & Williams, 1998; A. M. Williams, King, & Warnes, 1997; A. M. Williams, King, Warnes, & Patterson, 2000; Gustafson, 2001), despite the fact that Mexico sends the largest number of emigrants worldwide (The World Bank, 2011). Their over-representation among all international migrants may render Mexicans more apt toward international retirement migration. Indeed, among Mexicans of all ages, Jasso and Rosenzweig (1982) estimate a relatively high emigration rate, presumably to their country of origin.

In discussing the income of return migrants, it is important to distinguish between retirement and non-retirement income. Numerous characteristics specific to retirement income necessitate its isolation in determining the effects of income on return migration. For example, retirement income is subject to certain citizenship requirements that may interact with an immigrant's probability of return migrating in ways that other forms of income do not.⁴ This form of income is also transportable from the U.S. to Mexico (Social Security Administration, 2011b) and from Mexico to the U.S. (Social Security Administration, 2009b). Both the U.S. and Mexico's Social Security Administrations enable beneficiaries to receive benefits while abroad. Moreover, Hispanics rely heavily on Social Security during later life. In 2010, among Hispanics receiving Social Security, 40 percent of elderly married couples and 63 percent of elderly unmarried persons relied on Social Security for 90 percent or more of their income (Social Security Administration, 2012c).

Though not specific to Mexicans, there is evidence to suggest that return migration during later life is associated with greater wealth. Wealthier individuals have been shown to

years in the equation of immigrants is likely attributed to their divided work histories between two countries.

³Aguila 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.

⁴Immigrants do not have to be U.S. citizens in order to receive Social Security but they must meet the same work requirements as natives and they must show evidence that they legally reside in the United States (General Accounting Office, 2003). While there are citizenship requirements for most paid employment, it is often easier to falsify the documentation necessary for paid employment than that required to receive Social Security benefits as is exemplified by the Social Security Administration's large amount of Social Security taxes from illegitimate Social Security numbers (Social Security Administration, 2009a).

be more mobile during later life than their lower-income counterparts. Casado-Díaz et al.'s (2004) study on retirement migration from northern to southern Europe described this form of migration as more common among the more affluent. This study pertains to Europeans but field observations from Massey (1987) suggest that this may also be the case among Mexican elderly. The author notes casual field observations of older Mexicans receiving their U.S. pensions and Social Security payments in Mexico.

One reason for the greater mobility of wealthier seniors relates to the higher purchasing power of the U.S. dollar in other countries. Sunil, Rojas, and Bradley (2007) find that the main reason why one group of older Americans retired in Mexico was its lower cost of living. The authors quote one senior as stating “[In Mexico] you have quality of life for a cheaper price...The cost of living is less and the quality of life is better. I could never afford a gardner in the United States. I could never afford a cleaning lady everyday or every other day (pgs. 498-499).”

Irrespective of the direction of this relationship, the wealth of return migrants holds important implications for the U.S. economy and our understanding of elderly immigrants. If elderly return migrants are among the more destitute and have no source of retirement income, this scenario entails greater benefits for the U.S. economy. Most immigrants arrive to the U.S. at working-ages (Batalova & Terrazas, 2007). If poorer migrants return to their home countries upon reaching retirement age, those most costly in terms of Medicaid and Supplemental Security Income (SSI) (National Research Council, 1997) will no longer be eligible to receive these services.

The ramifications of elderly return migration are different if those most likely to return migrate are at the higher ends of the income distribution. These individuals likely spend their income in the country of origin, possibly creating economic multiplier effects. Serow and Haas (1992) find that for every entering retiree, 1.5 jobs were created due to increased demand for retail, health care, and eating and dining establishments. This result only applies to one North Carolina community but similar results may also pertain to comparable communities in Mexico.

Aside from its broader macroeconomic consequences, elderly return migration may also reflect the individual-level conditions of immigrants in the U.S., retirement income being a particularly prominent indicator of socioeconomic stability.⁵ AARP Public Policy Institute (2010) reports that only 78% of Hispanic elderly immigrants receive Social Security compared to 91% of Whites. However, return migration may render this estimate misleading if individuals return migrate as a response to not receiving Social Security. A study by Aguila and Zissimopoulos (2008) provides evidence that such may be the case. The authors estimate that only 12 percent of older return migrants in Mexico who spent a least a year in the U.S. were receiving U.S. Social Security. This estimate refers to Mexicans in Mexico who at some

⁵AARP Public Policy Institute (2010) report that over a quarter of Hispanic elderly rely on Social Security for more than 90 percent of their total income.

point returned from the U.S. and does not focus on those who returned specifically at older ages. It remains unclear whether this circumstance also applies to those in the later group.

This relationship between retirement income and return migration bears witness not just to the socioeconomic conditions of elderly immigrants in the U.S., but more broadly, to their integration into U.S. society. From its origins, Social Security has been hailed as the insignia of a progressive society which assures its citizens economic security during old age after a lifetime of hard work (Altman, 2005), the word “citizen” being the operative word. In his 1935 presidential statement signing the Social Security Act, Franklin D. Roosevelt was specific in his use of the phrase “average citizen” to describe the population for whom the protections of Social Security were intended (Social Security Administration, n.d.-a). His language, as well as the current eligibility requirements of Social Security which require 10 years of work (Social Security Administration, 2012b) and legal residence in the U.S. (General Accounting Office, 2003), connote a certain membership into U.S. society that must be achieved before non-citizens are able to collect Social Security. Those who do not achieve this membership and are not eligible to receive Social Security in old age may decide to return migrate. Thus, retirement income and return migration may work in tandem to reflect an immigrant’s assimilation into the U.S. mainstream by the time they reach old age.

Despite the salience of this issue, little is known about elderly return migration among this population. The sparse literature that does address this topic focuses on Mexican elderly who *at some point* returned from the U.S. and not necessarily those who did so during later life (Aguila & Zissimopoulos, 2008; Ruiz-Tagle & Wong, 2009).

Part of the reason for this paucity of information is undoubtedly due to data limitations. The ideal dataset required to explore this issue would capture individuals who remained in the U.S., as well as keep track of those who crossed the border. The non-existence of this ideal dataset has created a notable gap in our understanding of immigrant aging in the United States.

This study addresses this gap in the literature by examining the conditional probabilities of return migration among Mexican immigrants aged 60 years and older in the U.S. It pays particular attention to the effect of retirement income on return migration among this population.

3.2 Methods

3.2.1 Data

In order to obtain conditional probabilities of return migration, this study pools the 10.6 percent Integrated Public-Use Microdata Series (IPUMS) sample from the 2000 Mexican

census and the five percent IPUMS sample from the 2000 U.S. census (Ruggles et al., 2010). IPUMS is a repository of harmonized census data from around the world, making samples comparable across time and countries. Both datasets are weighted to accurately represent the national population. The first sample includes Mexicans aged 60 years and older in Mexico who reported living in the U.S. five years prior ($N=1,583$). The second sample includes Mexicans aged 60 years and older currently living in the U.S. who reported living in the U.S. five years ago ($N=27,697$). Thus, the pooled sample consists of Mexican immigrants in the U.S. who remained in the U.S. within the proceeding five years and those who return migrated.

3.2.2 Empirical Strategy

Using this pooled sample, I conduct logistic regressions of the probability of return migration on various demographic characteristics. The dependent variable is an indicator that equals one if the respondent lives in Mexico and zero if the respondent lives in the U.S. As noted, both groups lived in the U.S. five years prior. Standard errors are clustered by household to adjust for serial correlation. The equation for the probability of return migration is

$$\Pr(\text{Return migrate}) = x' + R_M + \varepsilon \quad (3.1)$$

where

$$R_M = \begin{cases} \frac{J}{9.459} & \text{for } M = 1 \\ \left(\frac{S(1 + 0.035) + I(1 + 0.034)}{12} \right) & \text{for } M = 0 \end{cases} \quad (3.2)$$

where x is a host of demographic and social context variables recoded so that IPUMS U.S.A. and IPUMS Mexico versions resemble each other. R_M represents total retirement income for return migrants, $M = 1$, and immigrants who stayed in the U.S., $M = 0$. It should be noted that this variable does not indicate the source of the retirement income but rather, only the total amount. Therefore, the total may include income from both Mexican and U.S. sources. The separate equations for R_M denote the fact that adjustments had to be made to make retirement income from IPUMS U.S.A. comparable to that of IPUMS Mexico. As a first step, I divided total retirement income in Mexico, J , by 9.459 to transform this amount from Mexico *pesos* to U.S. dollars. I then account for temporal issues in measuring both quantities. IPUMS Mexico measures retirement income from the previous month. Since respondents were interviewed in 2000, the their reported retirement income

likely only corresponds to the year 2000. In contrast, IPUMS U.S.A. measures income from the previous year. Therefore, the amount of retirement income reported by respondents in 2000 may correspond to the year 1999. In order to adjust for this one-year difference, Social Security income, S , is adjusted by the 2000 Cost-of-Living-Adjustment, 3.5 percent (Social Security Administration, 2011a).⁶ Similarly, non-Social Security retirement income, I , is adjusted by 3.4 percent, productivity growth in 2000 (Bureau of Labor Statistics, 2011), in order to accurately reflect its value in 2000. I then divided the sum of these two quantities must by 12 in order to measure monthly income instead of annual income.

It is important to ponder the exact meaning of the dependent variable. The dependent variable measures whether a Mexican immigrant was living in Mexico and returned from the U.S. five years prior. This outcome does not capture cyclical migration. In other words, it does not count migrants who migrated to the U.S. multiple times within the last five years. Similarly, it does not capture Mexican elders who returned to Mexico at old age but not within the preceding five years.

There are numerous caveats associated with this method. The greatest risk is that any differences between Mexican immigrants in the U.S. and return migrants will be due to the different sampling probabilities of both data sets rather than inherent differences between both groups.

Manski and Lerman (1977) proposed a method of addressing this issue whereby the value of each observation is weighted to accurately reflect the entire population. However, Cuecuecha Mendoza (2010) cautions against what he considers a major limitation of Manski and Lerman's method, namely that the magnitude by which population weights need to be adjusted to achieve true representation can never be known.

While it is true that this amount can never be known, existing research provides some indication of the approximate amount. The 1990 census was found to undercount Hispanics by 5 percent (U.S. Census Bureau, 1992).⁷ This number is likely lower in the sample treated in this analysis since the latter is composed only of older adults and undercount is typically lower among this population (Robinson, Adlakha, & West, 2002). Romero (1992) estimates that only 4 percent of the Hispanic residual⁸ foreign-born population was 65 years and older.

Based on this information, I inflate the weights of the IPUMS U.S.A. sample by 5 and 10 percent to test the sensitivity of the results to the sampling probability. A 10 percent inflation factor is a conservative upper-bound since this was the general undercount rate for the residual foreign-born population in the 2000 U.S. census (Costanzo, Davis, Irazi,

⁶In 1972, Congress implemented automatic cost-of-living-adjustments (COLA) to Social Security payments in order account for rising inflation.

⁷Hispanic undercount is not available for 2000 because of the lack of consistent birth, death, and immigration data by race and ethnicity (Edmonston, 2002).

⁸Defined as the population left over after subtracting U.S. citizens from the total Hispanic population

Goodkind, & Ramirez, 2002), which is likely lower among older adults.

IPUMS Mexico is also subject to undercounting the return migrant population. While Cuecuecha Mendoza (2010) assumes no undercount of this population, there are numerous reasons why the Mexican census would under-document return migrants. Possible reasons include respondent mis-reporting,⁹ sampling error, and reluctance to discuss the migration experience, particularly among formerly undocumented migrants. Therefore, this study inflates the IPUMS Mexico weights by 5 percent. This is an arbitrary amount that can be adjusted with more information.

Moreover, it is possible that the characteristics of those not captured in the sample differ from those who are captured in the sample, a limitation which the constant weight adjustments do not address. However, this issue plagues all studies that rely on samples, not just those that pool two samples.

3.2.3 Retirement Income as a Predictor of Return Migration

Unfortunately, it is not known how much retirement income these migrants were receiving *before* they return migrated. The only information that is available is the amount of retirement income they were receiving at the time of the survey. This omission generally poses a challenge when treating income as a predictor of return migration since income levels may have changed between the time migrants chose to return migrate and the time they were interviewed.

However, retirement income is less subject to this pitfall. At the time that they decided to return migrate (or not), the immigrants in this study likely knew their retirement benefits five years into the future. Retirement income is unlike wage income in that it is predetermined and individuals have a means of ascertaining the exact amount prior to retirement. Until 2011, the U.S. Social Security Administration sent out statements describing future benefits at each retirement age in order to facilitate the process of saving for retirement.¹⁰ Therefore, given that Social Security comprises most of all retirement income among this population,¹¹ these migrants had a means of knowing their future retirement levels. However, it is important to note that the effectiveness of these statements in making future beneficiaries aware of their Social Security benefits is questionable (RAND Corporation, 2010).

Nevertheless, the literature describes older adults who migrate internationally as a

⁹Like the U.S. census, the Mexican census asks the household head to report on all household members. In the case of return migration, the household head may not know the exact date of return of the former migrant.

¹⁰This was suspended in 2011 (Astrue, 2011).

¹¹Among migrants in the U.S. receiving any form of retirement income, Social Security accounted for 100 percent of all retirement income for at least half of the population.

particularly conscientious group who seriously consider the role of income in this decision. For example, Sunil, Rojas, and Bradley (2007) found that 88 percent of older Americans retired in Mexico to take advantage of its lower cost-of-living. These seniors had a clear idea of their financial situation in Mexico as exemplified by the high proportion who agreed with the statement “My retirement lifestyle here matches my expectations.”

Older immigrants considering retirement in their home countries are likely as scrupulous of income in their decision to return migrate. Stark, Hemelstein, and Yegorov (1997) describe the decision to return migrate as a thoughtful effort to return to the home country only after saving the optimal level abroad. This empirical evidence and theory depict retirement migrants as conscientious agents knowingly improving their outcomes via international migration rather than passively moving abroad unaware of their financial situation. As concluded by Longino, Perzynski, and Stoller (2002), “[c]hoosing a place to retire is not much like throwing darts on a map (p. 46)” but is a highly premeditated choice intricately woven with financial awareness. For these reasons, I assume that migrants were aware of their future retirement income levels before return migrating.

There are numerous limitations with this method. This first is that it does not account for potential unobservables correlated with both income and return migration. These unobservables may include a sense of nostalgia for the home country and familial living arrangements before return migrating. Both of these factors likely affect return migration and bias the result if they are correlated with retirement income.

Among the most pertinent variables not included in the data is duration in the United States. Unfortunately, the Mexican census does not ask respondents the amount of time they lived in their place of residence five years prior. This variable likely holds predictive power as theoretical (Duleep, 1994)¹² and empirical work (Ruiz-Tagle & Wong, 2009) suggest that immigrants who return to their home countries spend less time in the U.S. than those who remained in the U.S.

In order to address this limitation, for IPUMS Mexico, I impute the number of years return migrants spent in the U.S. using information from the Encuesta Nacional de la Dinámica Demográfica (ENADID). The ENADID is a nationally representative survey conducted by the Instituto Nacional de Estadística y Geografía (INEGI) in order to better understand demographic phenomena in Mexico. Unlike the Mexican census, the ENADID asks respondents the total number of years they spent in the U.S. and also contains variables present in IPUMS Mexico that can be used to estimate the total number of years spent in the U.S. I utilize information on a subset of individuals in this data source that returned from the U.S. within the last five years.

¹²In their determination of the emigration rate of immigrants in the U.S., the Social Security Administration assumes that only those who have spent a relatively short amount of time in the U.S. will return migrate.

Passel and Clark (1998) use a similar method to predict undocumented status. The authors generate coefficients on the probability of return migration using a survey of formerly undocumented immigrants. They then use these coefficients to calculate the probability of being undocumented in the Current Population Survey.

Despite there being a precedence for this method, filling in missing data with existing information adds considerable uncertainty to the estimates. The estimate used to replace the missing value may be a function of numerous extraneous factors such as the different sampling probabilities of the ENADID and IPUMS Mexico, biases in the predictor variables, and sampling error. Rubin (1987) addresses this uncertainty by generating multiple plausible values for each missing observation and then replacing the missing value with the mean of the plausible values, a method known as multiple imputation. The variables used to determine these multiple plausible values are age, sex, education, and class of worker. In this way, multiple imputation creates a distribution around each missing value that properly reflects the uncertainty associated with estimating missing information. This study uses the predictive mean matching imputation method whereby each missing value is assigned a predicted value and one of the three closest observed values is used as a replacement.

One concern with this method is that the amount of retirement income a migrant receives may be correlated with the amount of time she lived in the U.S., resulting in multicollinearity. However, these two variables only showed a moderate correlation of 0.48. This number is probably lower than expected because many immigrants spend several years in the U.S. without paying into Social Security (Burtless & Singer, 2011), and therefore, their levels of retirement income are unrelated to their length of stay in the U.S. Moreover, it is important to remember that retirement income includes income from both Mexican and U.S. institutions. Migrants who spent only a short period of time in the U.S. may receive retirement income from Mexican institutions.

Another concern is reverse causality. The present study assesses the effects of retirement income on return migration but it may be the case that return migration affects retirement income. In the United States, Social Security benefits are based on the average pay of the 35 highest earning years (Social Security Administration, 2012d). Therefore, return migration would only alter this form of retirement income if migrants interrupted their highest paid work years in order to return to their home country. Even if this is the case, migrants are made aware of the ramifications of leaving their job to return migrate by the statements that are sent to them by the Social Security Administration every year.

The possibility that return migration influences retirement income from Mexican institutions is also minimal. Mexican public pensions for private and public workers are based on the last five years of employment. Theoretically, the last couple years that migrants spent in the U.S., could have been spent working in Mexico accruing Social Security benefits. However, given the fact that less than 30 percent of 50-59-year-olds in Mexico pay into Social Security (Rofman, 2005), this seems unlikely. This 30 percent includes immigrants who re-

turned from the U.S. at any age and those who have never been to the U.S. Migrants who recently returned from the U.S. such as those in this study likely have a lower probability of working in jobs that pay into Social Security since return migrants often opt for informal sector employment upon returning to the home country (Ilahi, 1999).

3.3 Results

Table 4.3.2 displays weighted descriptive statistics of older return migrants and Mexican immigrants who remained in the U.S.

These weighted summary statistics describe the typical older return migrant as a 65-year-old married male with a primary education who is living with his spouse and does not receive retirement income. In contrast, older Mexican immigrants who remain in the U.S. during later life appear more likely to be female and live with one or more children, and have either very low or higher levels of education.

3.3.1 Reasons for return migrating

While this information provides some insight as to the factors associated with return migration during later life, figure 3.1 charts the reasons for its occurrence. Figure 3.1 charts the reasons given for moving from the U.S. within the last five years among 60+ return migrants in Mexico as captured in IPUMS Mexico. This figure demonstrates that most older Mexican male immigrants in the U.S. return to Mexico either to look for work or to reunite with family. Approximately half of men report either of these two reasons for recently returning from living in the U.S. However, family plays a far more important role among female return migrants, approximately 45 percent of whom report reunification with family as their primary reason for recently returning to Mexico.

This finding provides support to that of Ruiz-Tagle and Wong (2009) who describe the importance of social networks in determining return to the country of origin. While family plays a leading role for women in determining return to Mexico during old age, financial factors play an equally important role for men.

An important feature of this figure is the high proportion of men and women who report “other/ unknown” reasons for recently returning from the U.S. Among these reasons may be any financial difficulties associated with retiring in the U.S.. The remainder of this section explores this “other/ unknown” category by considering the role of retirement income in the decision to return migrate while controlling for demographic characteristics as well as familial context.

Table 3.3.1: Weighted summary statistics of 60+ Mexican immigrants in the U.S. in 2000 and 60+ Mexicans in Mexico in 2000 who lived in the U.S. five years ago

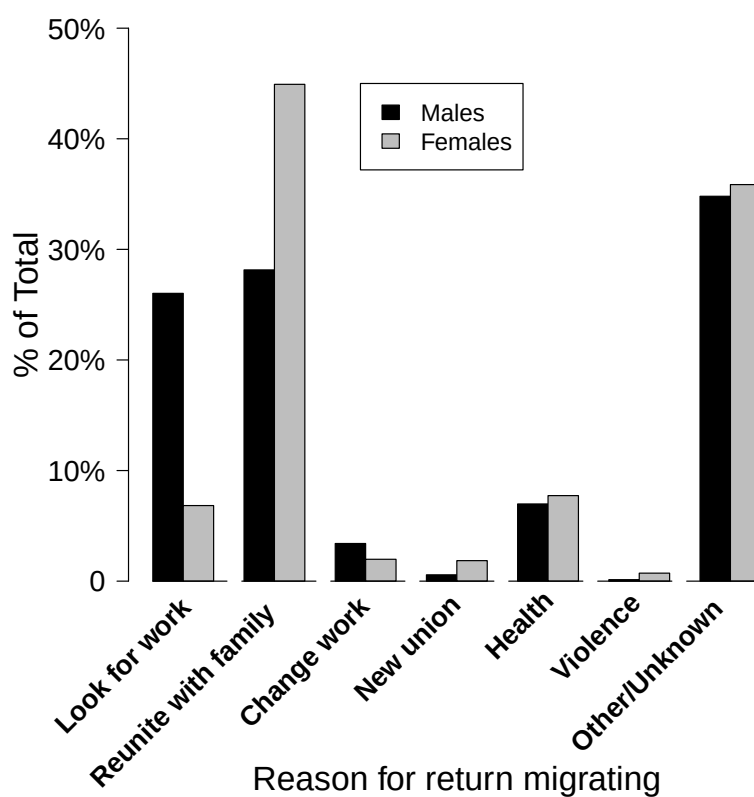
Variable	Return Migrants		Immigrants in U.S.	
	Male	Female	Male	Female
	(N=939)	(N=644)	(N=12,653)	(N=15,044)
Median age	65	66	67	68
Sex	57.10%	42.90%	44.75%	55.25%
Education ¹				
< Primary	22.28%	18.40%	44.10%	43.96%
Primary	56.53%	58.84%	34.43%	34.73%
> Primary	16.65%	15.97%	21.47%	21.31%
Marital status				
Married/ In union	77.90%	42.83%	75.44%	43.35%
Single/ Never	3.43%	4.24%	4.56%	6.25%
married				
Divorced	9.78%	12.75%	9.47%	13.17%
Widowed	8.76%	39.82%	10.53%	37.22%
Living with spouse	70.21%	38.55%	66.62%	39.76%
Living with 1+ children	44.01%	39.52%	54.13%	55.82%
Employed	31.15%	8.02%	27.96%	11.62%
Receives retirement	45.5%	26.4%	69.95%	67.07%
income ²				

Source: Author's calculations using IPUMS 10.6% sample of the 2000 Mexican census and IPUMS 5% sample of the 2000 U.S. census

¹Proportions do not equal zero because unknowns were left out.

²Only includes those age-eligible for Social Security, namely the 60+ population in Mexico and the 62+ population in the U.S.

Figure 3.1: Reasons listed for returning to Mexico from the U.S. within the last five years among Mexicans aged 60 years and older



Source: Author's calculations using IPUMS Mexico 2000.

However, before exploring these relationships, it is necessary to treat a variable which is not included in the IPUMS Mexico data but which is undoubtedly important to the decision to return migrate, namely number of years spent in the U.S. Specifically I use multiple imputation to replace the missing values for this variable with estimations based on information from existing variables.

3.3.2 Multiple Imputation Diagnostics

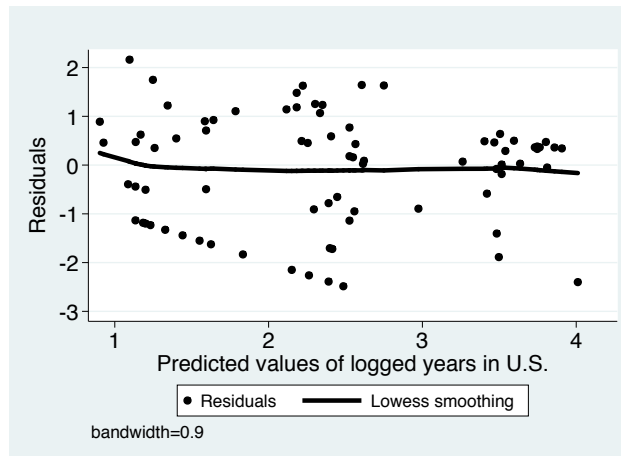
However, before imputing years in the U.S., it is important to assess the appropriateness of the multiple imputation model and discuss its assumptions. Multiple imputation rests on the assumption that data is missing at random. However, the nature of this analysis tells us that a key variable, i.e., number of years in the U.S., is not missing at random as it is only missing for return migrants and not immigrants in the U.S. As a solution to this problem, it is common to assume the data is missing at random after controlling for key variables (Abayomi, Gelman, & Levy, 2008). For the purposes of this analysis, these key variables are age, sex, education, and class of worker.

I use a battery of diagnostic techniques described by Su, Geli, Hill, and Yajima (2011) to assess the fit of the multiple imputation model. Among the techniques the authors propose is plotting the predicted values of the variable of interest against their residuals. A random pattern denotes a good model. Figure 3.2(a) displays this plot. The residual points show no pattern across the predicted values suggesting a good fit. This is confirmed by the virtually horizontal lowess smoothing line. Another encouraging sign is the similar histograms of the observed and imputed values. Abayomi, Gelman, and Levy (2008) caution that, in general, a flag should be raised when these two distributions differ markedly and there is no a priori information to explain the difference. The reasoning is that imputed values are reliable extensions of the observed values and should not differ substantially unless there is reason to believe otherwise. Given that both the actual and imputed values treat only return migrants, their distributions of log years in the U.S. should be similar. A third sign of the appropriateness of the model is the similar of plots of the predicted and observed values against another age. The lowess curves on figure 3.2(c) of observed and predicted log years in the U.S. against age also suggest a good model fit.

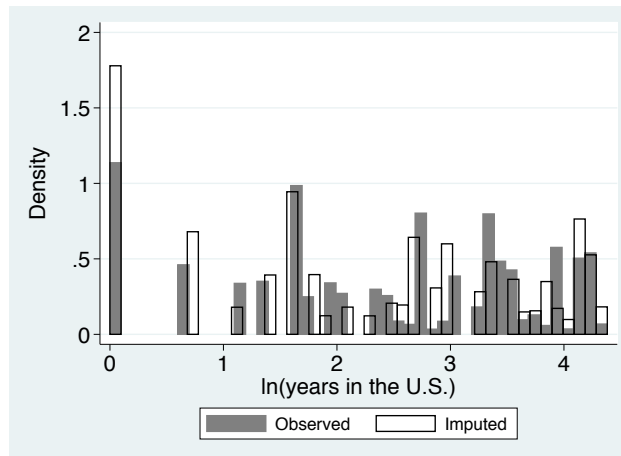
3.3.3 Role of Retirement Income

Having imputed the log number of years actual return migrants spent in the U.S., I then determine the correlates of return migration.

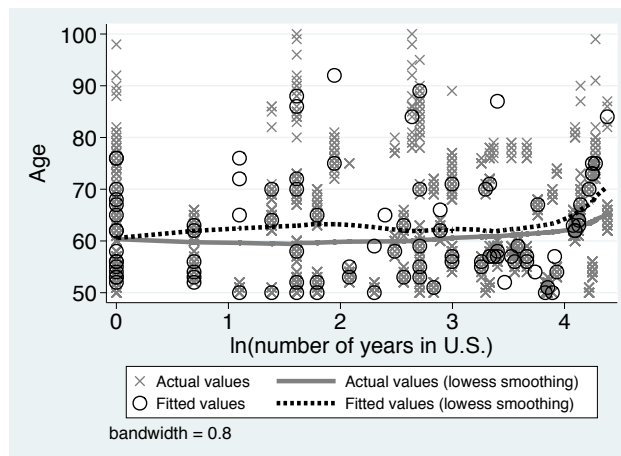
Table 3.3.2 suggests that higher levels of retirement income are associated with a lower probability of return migration during later life. In other words, migrants who expected to



(a) Fitted values plotted against residuals



(b) Histogram of observed log years in the U.S. and predicted log years in the U.S.



(c) Predicted and observed log number of years in the U.S. against age

Figure 3.2: Model diagnostics of multiple imputation

Source: Author's calculations using the National Survey of Demographic Dynamics (ENADID) (1997)

receive low levels of retirement income were more likely return to Mexico during later life than those who expected to receive lower retirement income levels. These migrants may have reasoned that lower income levels could go a longer way in Mexico than in the U.S. given the sizable purchasing power differential. As noted by Roberts, Frank, and Lozano-Ascencio (1999), “For Mexican migrants in the U.S., their community of origin may offer... a social support safety net for the elderly and for their own retirement (p. 247).” This finding portrays retirement in the U.S. as a normal good, the probability of which increases with additional income, namely retirement income.

3.3.4 Assessing the Linearity of the Model

However, it is necessary to examine the linearity of this relationship before moving further. It is possible that only immigrants with very low or very high levels of retirement income return migrate but not those with intermediary levels of retirement income, or vice versa. Unfortunately, traditional goodness-of-fit statistics with which to assess a model’s linearity are not directly applicable to multiply-imputed data (Schafer & Olsen, 1998).

As such, I visually inspect this relationship to acquire a sense of the most appropriate specification. Figures 3.3(a) and 3.3(b) display the predicted probability of return migration using the model in table 3.3.2 against the log of monthly retirement income assuming a linear and quadratic fit of log monthly retirement income, respectively. Despite their different functional form, both figures display a roughly similar pattern: the probability of return migration is approximately 11 percent for Mexican immigrants with no retirement income and decreases almost monotonically as the retirement income increases. Figure 3.3(b) displays a slight exception to this pattern whereby the probability of return migration decreases slightly up until a log retirement income value of approximately 4.5 at which point it increases slightly and decreases more steeply thereafter. However, this deviation is not very pronounced. For this reason, I conclude that a quadratic log retirement income term does not contribute to the model and assume a linear relationship between retirement income and return migration.

In interpreting this result, it is important to remember that retirement income is but one source of income for these migrants. Studies suggest that older Hispanics also rely on family income during later life, albeit to a far lesser extent than Social Security (Markides et al., 1999; Angel et al., 1999). Nonetheless, retirement income is special in that it is typically a predetermined income stream that is independent of fluctuating circumstances. Family income and other forms of income may change as circumstances change but retirement income levels will typically remain similar through time. Therefore, this result implies that older Mexican immigrants with this steady income stream are more likely to remain in the U.S. than return to Mexico in their third age.

Table 3.3.2: Predictors of having return migrated within the last five years for Mexican immigrants aged 60 years and older using a logit model

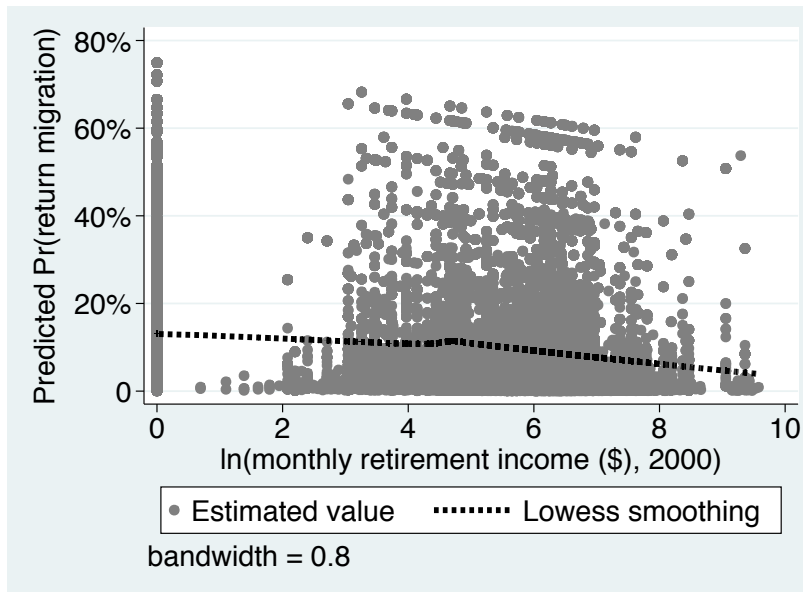
	$\beta/(se)$
ln(retirement income)	-0.102*** (0.016)
ln(years in the U.S.) ¹	-1.023*** (0.072)
Male	0.489*** (0.072)
Age (ref: 60-61)	
62-64	0.215 (0.127)
65+	0.073 (0.107)
Education (ref: < Primary)	
Primary	1.329*** (0.095)
> Primary	0.599*** (0.129)
Single (ref) ²	
Married, living with spouse	0.408*** (0.095)
Married, not living with spouse	-0.505** (0.189)
Living with 1+ children	-0.690*** (0.138)
No. of children	-0.128 (0.066)
Constant	-1.346*** (0.208)

Source: Author's calculations using IPUMS U.S.A. (2000) pooled with IPUMS Mexico (2000).

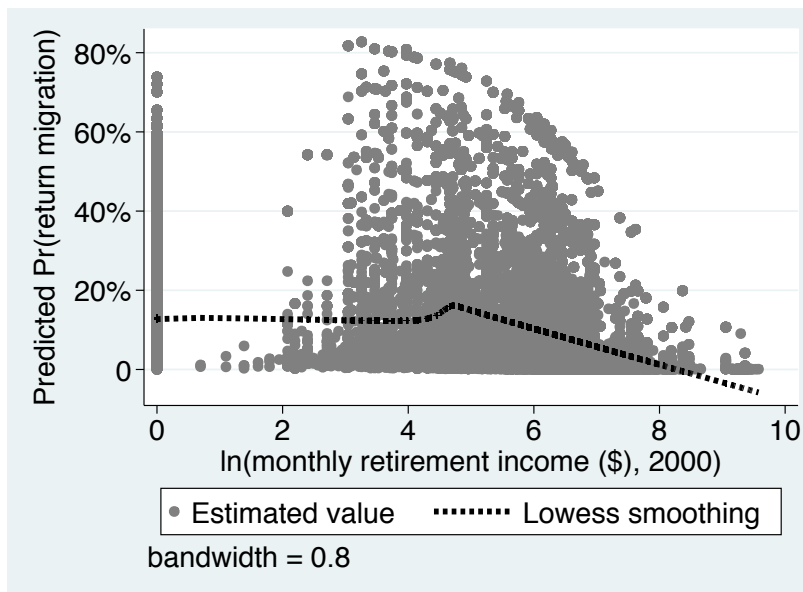
*p<0.05, **p<0.01, ***p<0.001

¹Values imputed for return migrants.

²Includes never married, widowed, and divorced.



(a) Linear fit



(b) Quadratic fit

Figure 3.3: Predicted probability of return migration against the log of monthly retirement income is U.S. dollars for the year 2000 using a logit model assuming a linear and quadratic fit

Source: Author's calculations using IPUMS Mexico (2000) pooled with the IPUMS U.S.A. (2000)

Another steady income stream that may influence return migration among this group is Supplemental Security Income. Foreign-born elderly are heavy consumers of Supplemental Security Income (National Research Council, 1997) and it is possible that this income flow is a stronger predictor of return migration than Social Security. Supplemental Security Income is unavailable abroad and migrants may be more likely to return migrate if they do not qualify. Unfortunately, the available data does not permit an analysis of whether Latin American immigrant elderly who do not receive Supplemental Security Income are more likely to return migrate than those who do receive Supplemental Security Income.

Nonetheless, Social Security plays a much more prominent role in the income security of foreign-born Hispanic elderly than Supplemental Security Income. Only 11 percent of foreign-born Hispanic elderly receive Supplemental Security Income (Minnesota Population Center, n.d.-b) compared to 70 percent of those who receive Social Security (Minnesota Population Center, n.d.-b).¹³ For those who do receive Supplemental Security Income, this form of income is typically much smaller than the amount of Social Security they receive. The average elderly immigrant from Latin America receiving Social Security received \$9,414 in Social Security income in the previous year compared to \$5,634 in Supplemental Security Income among those receiving Supplemental Security Income.¹⁴ Therefore, while Supplemental Security Income undoubtedly plays an important role in later life outcomes for Latin American elderly, the relatively small proportion of elderly who receive it, as well as the relatively small amounts they receive, renders the relationship between return migration and Social Security a more fruitful one to explore.

These results in table 3.3.2 also reveal that numerous demographic and other controls do not mitigate the effect of retirement income on return migration. One such control is time spent in the U.S. Studies document the lower probability of return migration the longer a migrant lives and works in the U.S. (Massey, 1987; Ruiz-Tagle & Wong, 2009; Durand, Kandel, Parrado, & Massey, 1996). Given these findings, it is not surprising that the longer a migrant's duration in the U.S., the lower the probability of return migration.

Older male immigrants were also more likely to return migrate than their female counterparts. On one level, this finding is also not surprising. Among Mexican migrants of all ages, the literature describes migration into the U.S. (Donato, 2010; Fry, 2006; Kanaiaupuni, 2000) and out of the U.S. (Reyes, 1997) as largely a male occurrence.

However, it is necessary to consider why this would also apply to the older population. While it is commonly found that working-age males are more likely to migrate internationally,

¹³This estimate is based on the 2009-2011 American Community Survey (Minnesota Population Center, n.d.-b). In order to arrive at this estimate, I first recoded the amount of Supplemental Security Income and Social Security into indicator variables and then calculate a frequency of these variables for individuals aged 65 years and older who were born in Latin America.

¹⁴These estimates are also based on the 2009-2011 American Community Survey (Minnesota Population Center, n.d.-b).

there is no straightforward reason why this should also be the case among older males. Often, working-age males in Mexico engage in circular migration to and from the U.S as a means of financially supporting their families in Mexico (Kanaiaupuni, 2000; Massey et al., 2002). Kanaiaupuni (2000) notes that “men more often migrate in response to the economic necessities of marriage and children and the needs of a growing family. Women’s migration, however, does not increase with family formation...(p. 1318).” However, older Mexican males are more likely to have exited the labor force at older ages, albeit later than those in other OECD countries (D’Addio, Keese, & Whitehouse, 2010). Older males may experience less pressure to economically support their families and may, therefore, migrate for different reasons.

Nonetheless, economic motives may persist as a primary reason for return migration for this age group. Studies agree that land is a significant pull factor that encourages men to return to their country even after controlling for age (Massey, 1987; Durand et al., 1996). Thus, their tendency to return migrate may be a result of the greater tendency for men to own land in Latin America than women (Deere, 2001). It is possible that, for men, economics continues to take on a seminal role in the decision to cross international borders even during later life whereas women are more likely consider their familial context.

Unlike sex, age does not appear to predict return migration among the 60 and older Mexican immigrant population. Age was grouped into three categories to assess whether the early U.S. retirement age of 62 to 64 has a bearing on return migration. The penchant for individuals to retire at this age instead of the normal retirement age of 65 (Gruber & Wise, 1998) may prompt immigrants to migrate internationally as they may no longer be attached to the labor force. Model 1 suggests that it does not. Older Mexican immigrants are just as likely to return migrate at age 60 and 61 as they are at the early retirement age and older ages.

Higher levels of education were associated with return migration during later life. Similar to Ruiz-Tagle and Wong (2009), this study finds that those who completed a primary level education had a higher probability of return migration than those with less and more education. This finding rules out the possibility that return migration takes place only among the least educated, a group who studies show receive lower quality Medicare services (Schneider, Zaslavsky, & Epstein, 2002), face greater barriers to in-home and community-based services (Li, 2006) and are less knowledgeable on hospice care in the U.S. (Mor, Hendershot, & Cryan, 1989) than their more educated counterparts. Despite these barriers, the least educated opt to remain in the U.S. during later life.

Spousal living arrangements also had its bearing on the return migration during later life. Those who are married *and living with their spouse* at the time of the survey were more likely to report having recently return migrated than the single, never married, or widowed. In contrast, those who were married and not living with their spouse were less likely to have recently return migrated.

There are a couple mechanisms that can explain this result. One possibility is that return migrants are unmarried when they leave the U.S. and marry upon returning to Mexico. However, the low proportion of individuals who report return migrating to form a new union in figure 3.1 suggests that this is not likely. Another possibility is that older Mexican immigrants in the U.S. reunite with spouses upon returning to Mexico. This is a possibility as less than one percent of return migrants returned to Mexico with their spouses.

Reunification with children may also play a significant role in determining return migration. Those living with one or more children at the time of the census were less likely to have return migrated than those not living with children. As with spousal living arrangements, the data does not tell us if the migrant lived with her children before she return migrated or if she moved in with her children upon returning to Mexico. In the absence of this information, there are multiple explanations. One explanation is that return migrants leave their children in the U.S. when they return to Mexico. This story falls in line with stories of older Americans who retire in retirement communities in Mexico mostly as couples, thereby leaving their children behind (Sunil et al., 2007).

Another explanation is that older Mexicans return migrate because they do not have children to care for them in the U.S. during later life or their children cannot care for them. The National Alliance for Caregiving and AARP (2009) describe the key role children play as a source of care for their elderly parents. Older Mexicans may return migrate in order to seek care from someone other than their children. The essential role of caregiving in later life migration is explored in a U.S.A. Today article which described Mexico as an increasingly viable option for seniors looking for affordable care in their old age (Hawley, 2007). The negative relationship between living with a child and the probability of return migration suggests this may apply to older Mexicans as well.

Irrespective of these controls, the higher the level of retirement income an elderly Mexican immigrant expects to receive, the less likely she is to return to Mexico.

3.3.5 Analysis of Recent Retirees

However, in considering the effect of retirement income, it is important to consider more closely the effect of age. Litwak and Longino (1987) theorize that individuals often migrate immediately following retirement in order to seek greater amenities, followed by a move to be closer to a caretaker when health begins to decline, and finally, a move to an institutionalized home once more intensive caretaking is necessary. Rogers's (1988) work on the age profiles of elderly migration finds similar variability across the different stages of old age. Given this variability, it may be beneficial to examine the role of retirement income in determining return migration only for younger elderly migrants. According to Litwak and Longino (1987), these elderly are more likely to migrate in order to seek amenities. Therefore, greater

retirement income benefits may motivate these seniors to seek these amenities abroad.

Model 2 on table 3.3.3 displays predictors of return migration during later life only for Latin American elderly immigrants aged 60 to 70. In this table we see that the same results hold for younger cohorts. The probability of return migration decreases with lower retirement income levels.

This finding calls into question Litwak and Longino's (1987) theory when applied to older Latin American immigrants. Empirical work on older Americans (Sunil et al., 2007) and older Europeans (Casado-Díaz et al., 2004) supports Litwak and Longino's hypothesis regarding the motivation for migrating among younger retirees. The literature suggests that both types of migrants are typically relatively affluent couples who migrate to seek greater luxury abroad (Sunil et al., 2007; Casado-Díaz et al., 2004). However, the results of the analysis in this work suggest that foreign-born Latin American retirement migrants are less affluent than those who remain. As previously noted, this group faces numerous challenges that restrict their choices regarding the location of their retirement irrespective of their preferences.

3.3.6 Sensitivity Analysis

As noted, this analysis was conducted on a pooled sample of Mexican immigrants in the U.S. in IPUMS U.S.A. and return migrants in IPUMS Mexico. This method assumes that each data source accurately captures their respective populations, and that the results are not influenced by the different sampling probabilities of each. This is a strong assumption as studies have found that migration-related outcomes can be disturbingly sensitive to the data source (Bustamante et al., 1997; Raymer, Abel, & Smith, 2007; Ibarra & Lubotsky, 2007). In order to explore this possibility, columns two and three of table 3.3.4 provide estimates of the probability of return migration using adjusted weights. The results indicate that the inverse relationship between the probability of return migration and retirement income does not change even when assuming 5 and 10 percent undercount.

3.4 Discussion

Scientific research (Sunil et al., 2007; Casado-Díaz et al., 2004) and popular media (Christie, 2006; Hawley, 2007) suggest that international retirement migration is becoming an increasingly attractive option for older Americans and Europeans. Indeed, a rich literature documents the theory and prevalence of this form of migration among these two groups (Rogers, 1988; Sunil et al., 2007; Casado-Díaz et al., 2004; A. M. Williams et al., 1997; Truly, 2002), with greater amenities and favorable climate appearing prominent motivations

Table 3.3.3: Predictors of having return migrated within the last five years for Mexican immigrants aged 60 years and older using a logit model (disaggregated by age)

	Model 1 $\beta/(se)$	Model 2 $\beta/(se)$
Age group in universe	60 and older	60-70
ln(retirement income)	-0.104*** (0.015)	-0.067*** (0.017)
ln(years in U.S.) ¹	-1.022*** (0.071)	-1.032*** (0.091)
Male	0.496*** (0.070)	0.584*** (0.083)
Age (ref:60-61)		
62-64	0.223 (0.123)	0.185 (0.124)
65+	0.086 (0.104)	0.229 (0.117)
Education (ref:<Primary)		
Primary	1.327*** (0.092)	1.397*** (0.111)
>Primary	0.559*** (0.126)	0.574*** (0.147)
Single (ref) ²		
Married, living with spouse	0.422*** (0.092)	0.441*** (0.109)
Married, not living with spouse	-0.506** (0.184)	-0.409* (0.201)
Living with one or more children	-0.716*** (0.133)	-0.789*** (0.152)
No. of children	-0.120 (0.063)	-0.109 (0.068)
Constant	-1.346*** (0.203)	-1.441*** (0.254)

Source: Author's calculations using IPUMS U.S.A. (2000) pooled with IPUMS Mexico (2000).

*p<0.05, **p<0.01, ***p<0.001

¹ Values imputed for return migrants.

²Includes those never married, divorced, and widowed.

Table 3.3.4: Predictors of having return migrated within the last five years for Mexican immigrants aged 60 years and older using a logit model (including sensitivity analysis which inflates population weights by varying amounts for models 2 and 3)

	Model 1	Model 2	Model 3
	$\beta/(se)$	$\beta/(se)$	$\beta/(se)$
Amount inflated IPUMS Mexico weights	0	5%	5%
Amount inflated IPUMS U.S.A. weights	0	5%	10%
ln(retirement income)	-0.102*** (0.016)	-0.104*** (0.015)	-0.104*** (0.015)
ln(years in the U.S.) ¹	-1.023*** (0.072)	-1.020*** (0.071)	-1.022*** (0.071)
Male	0.489*** (0.072)	0.498*** (0.070)	0.496*** (0.070)
Age (ref: 60-61)			
62-64	0.215 (0.127)	0.222 (0.123)	0.223 (0.123)
65+	0.073 (0.107)	0.086 (0.104)	0.086 (0.104)
Education (ref: < Primary)			
Primary	1.329*** (0.095)	1.327*** (0.092)	1.327*** (0.092)
> Primary	0.599*** (0.129)	0.559*** (0.126)	0.559*** (0.126)
Single, never married, widowed			
Married, living with spouse	0.408*** (0.095)	0.419*** (0.092)	0.422*** (0.092)
Married, not living with spouse	-0.505** (0.189)	-0.504** (0.184)	-0.506** (0.184)
Living with 1+ children	-0.690*** (0.138)	-0.714*** (0.133)	-0.716*** (0.133)
No. of children	-0.128 (0.066)	-0.120 (0.063)	-0.120 (0.063)
Constant	-1.346*** (0.208)	-1.306*** (0.203)	-1.346*** (0.203)

Source: Author's calculations using IPUMS U.S.A. (2000) pooled with IPUMS Mexico (2000).

*p<0.05, **p<0.01, ***p<0.001

¹ Values imputed for return migrants.

(Sunil et al., 2007; Casado-Díaz et al., 2004). However, far less is known about the prevalence of and reasons for international retirement migration among older Mexican immigrants in the United States. The growth of elderly Hispanics as a whole will far outpace the growth of the other elderly ethnic groups (Federal Interagency Forum on Aging-Related Statistics, 2008) and the specifics regarding the location of their retirement will likely have significant economic and social consequences. Among the more prominent details is whether they return to their home countries with retirement income.

Pooling data from the U.S. and Mexican 2000 censuses, this study examines whether higher retirement income levels are associated with a lower probability of return migration among Mexican elderly in the U.S. Specifically, it compares Mexican immigrants aged 60 years and older who resided in the U.S. between 1995 and 2000 to Mexicans in Mexico in 2000 who lived in the U.S. five years prior. It also conducts sensitivity analysis to explore possible biases associated with pooling two data sources. Results suggest that older immigrants with lower levels of retirement income are more likely to return migrate than those with higher levels of retirement income.

This finding has important implications for the U.S. economy. While immigrants are eligible for Social Security while abroad, they generally cannot consume Supplemental Security Income (Social Security Administration, n.d.-c) and Medicare (Centers for Medicare and Medicaid Services, 2010). Given the fact that greater Medicare spending goes toward lower-income individuals than higher-income individuals (J. Lee, McClellan, & Skinner, 1999), return migration may generate substantial savings in U.S. federal program expenditures.

However, given the strong ties that migrants retain to both the home and destination countries (Aguilera, 2004), it is unlikely that some migrants do not travel to and from their home countries during later life. Further studies should assess whether return migrants actually migrate back to the U.S. for regular medical appointments.

Aside from its economic consequences, this study also informs our understanding of immigrant preferences regarding their retirement location. Aguilera (2004) notes that immigrants often have competing demands in the home and destination countries that sway their decision as to where they should retire, one of these demands being the location of family members. The present study moves this idea further by controlling for these factors and observing the independent contribution of income. It assumes that retirement income may signal preferences irrespective of competing demands. In other words, the relationship between retirement income and return migration may reveal where an immigrant *wants* to retire instead of where she feels she *has* to retire. The results of this study suggest that with more money, Mexican immigrants in the U.S. prefer to retire in the U.S. even after controlling for the location of family members.

This is not to say that the location of family members is not important. On the contrary, the location of spouses and children both influenced return migration. Similar to

Ruiz-Tagle and Wong (2009), this study finds that those who were married and living with their spouse were more likely to have return migrated than the single, never married, and widowed. In contrast, those who were married and *not living with their spouse* were less likely to have return migrated. As very few migrants returned with spouses, these migrants likely reunited with spouses upon returning to Mexico.

This situation sets older Mexican retirement migrants apart from their European and American counterparts, most of whom migrate with their spouses for amenity-seeking purposes (Casado-Díaz et al., 2004; Sunil et al., 2007). The differing circumstances under which older Mexican immigrants migrate internationally may speak to their differing motivations. Whereas older Americans and older Europeans migrate internationally in search of a more extravagant lifestyle (Casado-Díaz et al., 2004; Sunil et al., 2007), many older Mexican immigrants appear to return migrate to reunite with spouses after some period of separation. Studies indicate that for Mexicans, this separation often stems from economic necessity (Massey et al., 2002; Lindstrom, 1996). Lindstrom (1996) describes the length of separation as the result of “weigh[ing] the economic benefits of remaining longer against the psychic and social costs of separation from family and friends in place of origin (p. 371).” Thus, for older Mexican immigrants, return migration may be a means toward emotional remuneration after meeting financial obligations that drove them to the U.S. and away from their spouses in the first place.

However, this is only one possibility. It is not clear from available information whether older return migrants migrate to the U.S. for the same reasons as younger return migrants. Further work should investigate if the two have different motivations for entry into the U.S. and how this might interact with the probability of return during later life.

There is agreement, however, on the effect of length of time in the U.S. on the probability of return for both groups. As is the case for younger migrants (Massey, 1987; Ruiz-Tagle & Wong, 2009), older Mexican immigrants who spent a longer time period in the U.S. were less likely to return to Mexico during later life. This result lends credence to the powerful effect of U.S. exposure. In his work on Mexican immigrant males of all ages, Massey (1987) finds that “[a]s the social process of migration runs its course and migrants build up increasing time abroad, the probability of settlement eventually becomes so great that other variables become irrelevant. (p. 1394).” The results of this study suggest that this is also true for older Mexican immigrants, a large proportion of whom, upon first becoming U.S. legal permanent residents, intend to retire in Mexico (Aguilera, 2004).

Limitations

This study does not provide a definitive portrait of return migration and retirement income among Mexican elderly. Rather, it attempts to shed light on an important topic virtually untouched because of data limitations. One of its limitations is the estimation of

number of years spent in the U.S. for return migrants. Although the imputed values obtained in this study fall in line with previous work, systematic error that is unaccounted for may compromise the general results of the study. Another limitation is its pooling the of the 2000 Mexican and U.S. censuses in order to obtain the universe of interest. There is a possibility that the observed differences between return migrants and immigrants in the U.S. are due to the different sampling probabilities of each data source. However, sensitivity analyses were used to explore this possibility and do not suggest that this is the case.

Chapter 4

The Impact of Social Security on Return Migration Among Latin American Elderly in the U.S.

“[T]hey want the federal government controlling Social Security, like it’s some kind of federal program.”

George W. Bush¹

4.1 Background

Two population trends are rapidly changing the U.S. demographic landscape and will continue to do so for several years to come: immigration and aging. Large inflows of foreign migrants enter the U.S.² as it undergoes unprecedented population aging, significantly altering the country’s demographic composition. However, the extent of this change cannot be fully understood without first understanding the interaction between these two processes. Beyond their separate effects on the U.S. population composition, immigration and aging may interact and affect one another. To date, most empirical work on the interaction be-

¹See Bendavid (2000).

²Recent evidence suggests that unauthorized immigration into the U.S. has decreased (Cave., 2011; Hoefer, Rytina, & Baker, 2011; Passel & Cohn, 2010). Nonetheless, this is a fairly recent dip in a four-decade increase in immigration to the U.S. Further studies should examine if this is a temporary downward spike or a continuous trend.

tween aging and immigration focuses on the effects of migration on Social Security (Burtless & Singer, 2011; Social Security Administration, 2002b; Gustman & Steinmeier, 1998; R. Lee & Miller, 2000). However, far less work examines the effects of Social Security on migration.³

One way in which Social Security may influence migration is by prompting return to the country of origin. Wealth differentials created by Social Security may lower or increase rates of return migration depending on whether residence in the U.S. during later life is a normal good.⁴ Wealthier migrants in the U.S. may view their income as a means through which they can enjoy a better life in their home country upon retirement. Conversely, these migrants may choose to return migrate only upon concluding that their income is not sufficient to make ends meet in the U.S.

Return migration, in turn, holds numerous economic and social implications for the U.S. These ramifications include potential savings on old-age support programs via programs such as Medicare and Supplemental Security Income which are generally unavailable abroad, selectivity among immigrants who remain in the U.S., and hints as to the assimilation patterns of immigrants in the U.S.

As the largest group of immigrants in the United States (54 percent) (Grieco, 2010), examining Hispanic immigrants can assist in better understanding this issue. Hispanic elderly currently comprise seven percent of all elderly and are expected to increase to almost twenty percent of all elders by 2050 (Administration on Aging, 2010). Their sheer volume, as well as their relatively high propensity to return migrate (Jasso & Rosenzweig, 1990), position Hispanic immigrants as a key segment in studying return migration. This is the case despite the fact that to date, research on international migration during later life has been heavily focused on Europeans (A. M. Williams et al., 1997; Casado-Díaz et al., 2004) and older Americans (Sunil et al., 2007; Truly, 2002).

This study assesses the role of Social Security in prompting older immigrants from Latin America to return to their country of origin. It observes the results of a natural experiment created by the “notch” generation whereby the Social Security Administration lowered the Social Security benefits of those born after December 31, 1916 due to a miscalculation in their benefit calculation formula. This study examines if those with lower payments were less likely to return migrate than those with higher Social Security levels.

³Sana and Massey (2000) provide one of the few studies that examine the effect of Social Security on immigration. The authors find that male household heads in Mexico with jobs that did not participate in Mexico’s Social Security system were more likely to migrate to the U.S. than their counterparts with jobs paying into Social Security.

⁴Defined as a good that experiences an increase in demand as the real income of an individual or economy increases (Investopedia, n.d.-b).

4.1.1 The “Notch” generation

The basis for this natural experiment originates in the 1970s. In 1972, Congress implemented automatic cost-of-living-adjustments (COLA) to Social Security payments in order account for rising inflation. However, it was later discovered that the benefit calculation formula for beneficiaries born between 1910 and 1916 was flawed in indexing for both wages and pricing, resulting in a recalculation in 1977 and substantially lower payments for those born between 1917 and 1921 (Social Security Administration, 2002a). The latter group was later known as the “notch” generation as the drop in their benefit levels created a visible notch in graphs depicting average benefit levels by cohort. Social Security benefit levels dropped by an average of \$110⁵ a month for individuals who retired at age 65 in the 1917 birth cohort compared to those who retired at age 65 in the 1916 birth cohort (Social Security Administration, 2002a).

The present study considers whether the different benefit levels created by the the 1977 legislation prompted different rates of return migration during later life.

The direction of this relationship can conceivably run in either direction. Higher Social Security payments may prompt return migration if residence in the U.S. is viewed as an inferior good.⁶

Work by Casado-Díaz, Kaiser, and Warnes (2004) suggests that this may be the case. The authors state that at least among Northern Europeans retiring in Southern Europe

International migration for retirement is no longer the preserve of the rich or professional and artistic elites, but it remains selective of the more affluent and is strongly patterned by the socio-economic background of migrants... (p. 362).

However, there is also reason to believe that retirement in the U.S. is viewed as a normal good. Immigrants with higher income levels may view their greater wealth as a facilitator which helps them remain in the U.S. where the cost of living may be higher than in their home country. Roberts, Frank, and Lozano-Ascencio (1999) note that “For Mexicans in the U.S., their community of origin may offer . . . a social support safety net for the elderly and for their own retirement (p. 247).” Such was probably the case among one group of older Mexicans whose probability of return decreased with higher wages (Massey, 1987). These migrants may have preferred U.S. retirement but found their socioeconomic situation more sustainable in Mexico.

Regardless of the direction of this relationship, the Social Security benefit levels and, by extension, the income levels of return migrants have a tangible effect on the U.S. econ-

⁵In 1994 dollars.

⁶Defined as a type of good for which demand declines as the level of income or real GDP in the economy increases (Investopedia, n.d.-a).

omy. Most immigrants arrive to the U.S. at working age (Batalova & Terrazas, 2007) and contribute to the pool of workers who support the retired population. While as of 2000 the Social Security Administration had received \$374 billion in wages from illegitimate Social Security numbers thought to have come primarily from undocumented immigrants (Social Security Administration, 2002b), noted demographer Ronald Lee asserts that immigration is not the solution to the Social Security problem as these migrants will themselves age and draw upon the Social Security system during later life (Population Reference Bureau, 2008). However, this issue may be more nuanced if some immigrants do not age in the United States but rather, return to their home countries during later life.

For example, if immigrants do eventually return migrate, their absence may generate savings in U.S. old-age support programs. Though they are eligible to receive Social Security payments while living abroad,⁷ immigrants who return migrate cannot consume Medicare and Supplemental Security Income as these programs are unavailable abroad.⁸

However, the amount of savings will differ based on the characteristics of those who return migrate compared to those who remain in the U.S. Higher income levels are associated with better health (Macinko, Shi, Starfield, & Jr., 2003) and lower consumption of public services (National Research Council, 1997), both of which translate into increased savings. The U.S. economy would benefit most if migrants who remained in the U.S. were those with these favorable characteristics while return migrants constituted those with the opposite traits.

Notwithstanding the salience of this issue for the U.S., the ramifications of return migration extend beyond those in the U.S. Higher levels of income at older ages may spur economic growth in the receiving country. Using simulation techniques, Deller (1995) assesses the economic impact of retirement migration on a small rural state. The author finds that for every 100 new retirees that enter into a community, 55 jobs will be created due to increased demand for health care, retail, eating and drinking establishments, and air transportation. This research study makes certain assumptions about the levels and types of consumption of retirees, both of which lead to economic growth among higher income retirees and achieve the opposite among lower-income retirees, the latter typically consuming more in public services than the former.

Aside from its economic ramifications, elderly return migration may also provide information on patterns of immigrant assimilation in the U.S. The successful immigrant narrative often involves arriving to the U.S. at a relatively disadvantaged position followed by a period

⁷U.S. citizens and citizens of specific countries, including Mexico, may receive Social Security as long as they are living abroad except if they are dependents or survivors, in which case additional requirements apply (Social Security Administration, 2011b).

⁸There is undoubtedly some abuse in the system whereby immigrants do not report that they are living abroad in order to continue receiving benefits. However, officially, these immigrants are ineligible to receive Supplemental Security Income benefits abroad.

of adaptation and eventual assimilation into the U.S. mainstream (Gordon, 1964). Duration in the United States is correlated with greater English-language proficiency (G. Stevens, 1992), higher employment levels (Chiswick et al., 1997), lower poverty rates (Myers, 2007), and a reduction in the income gap between immigrants and natives (Raphael & Smolensky, 2008). While evidence suggests that many immigrants generally fare well by the time they reach old age,⁹ we do not observe the conditions of those who return to their home countries, particularly at old age. Faced with budget constraints, these migrants may return to their country of origin where the U.S. dollar may have a higher purchasing power.

This study assesses if higher Social Security payments result in a higher probability of return migration. Utilizing a natural experiment that created arbitrarily higher Social Security payments for certain birth cohorts, it determines if foreign-born elderly who received these higher payments were more likely to return to their home countries than their lower-paid counterparts.

4.2 Methods

4.2.1 Data

This analysis is based on two data bases from the Social Security Administration's master data files, namely the NUMIDENT and a one percent simple random sample of the Master Beneficiary Record (MBR). The former contains one record for every Social Security number in the U.S. whereas the latter contains one record for every person who has ever applied for Social Security benefits. This data is not publicly available but I was granted access to a merged file via a dissertation grant from Boston College's Center for Retirement Research. Social Security Administration personnel merged the data files and removed personal identifiers in order to protect the confidentiality of Social Security recipients. I conducted the analysis at the Social Security Administration in Washington, D.C. The NUMIDENT contains information on sex and country of birth. The MBR contains information on current and last place of residence, payment history, year of birth, year of death, primary Social Security beneficiary status, and the amount of benefits.

The variable used to track return migration is the zip code on file at the time of death or if the beneficiary is not dead, the zip code on file as of 2011. Turra and Elo (2008) use similar information to document mortality among immigrants who remain in the U.S. during

⁹The vast majority of foreign-born elderly have lived in the U.S. for over 21 years and are U.S. citizens, and almost 40 percent speak English very well or well (Ruggles et al., 2010). Almost a quarter of foreign-born elderly indicate only speaking English. This is likely due to question-wording which asks respondents what languages they speak at home. These outcomes are mediated by region of origin and the same positive pattern does not hold in terms of health (National Research Council, 2004).

later life and those who return migrate. The authors argue as to the quality of this variable by citing the fact that the Social Security Administration sends out questionnaires to foreign addresses once a year to update information on beneficiaries abroad. Failure to fill out these questionnaires can result in suspension of benefits.

Nonetheless, there are numerous limitations to documenting return migration in this manner. The first is that it may underestimate return migration. Immigrants may return migrate but not change their addresses with the Social Security Administration. However, the possibility of this occurrence is minimized by the fact that payments depend on updating personal information while abroad. Moreover, occasionally the address on file is that of the representative payee and not the actual beneficiary. A representative payee manages Social Security and Supplemental Security Income payments for beneficiaries who are incapable of managing their own finances. As noted in table 4.3.2, approximately nine percent of cases pre- and post-notch have a representative payee or had a representative payee at the time of death who, possibly, did not live in the same household. However, the fact that the potential magnitude of this bias is the same in both groups provides some assurance against differential bias across groups. An additional limitation is the possibility that return migrants have their Social Security benefits directly deposited into their bank accounts in which case they would not need to change their Social Security mailing address in order to receive benefits. However, the individuals I observe become eligible for Social Security benefits in the early 1980s, a time when direct deposit was virtually non-existent. Yet another limitation is that individual's return migration behavior is not known prior to 2011 or to their date of death. They may have migrated to and from their home country but this would not be observed.

Nonetheless, this variable does capture return migration behavior at the end of life or as of 2011 which is more information than is currently available from other sources for this population.

An added contribution of this study is its use of direct methods to estimate the effects of the 1977 legislation on Social Security payments. Indirect methods estimate Social Security benefits from other information instead of directly observing benefit levels. For example, in examining mortality differences created by the "notch," Snyder and Evans (2002) estimated OASDI benefits for each group using cohort-specific profiles from the Current Population Survey. The authors use the same computer program that Social Security field offices use to calculate benefits and find that the higher income group had a statistically higher mortality rate. Krueger and Pischke (1992) use a similar program to assess the effect of Social Security on the labor supply and find a positive relationship.

While these estimations likely achieve high accuracy, the Social Security payments of immigrants may be more difficult to estimate due to additional pertinent variables such as time in the U.S., U.S. versus foreign work history, and legal status which are often difficult to record. Fortunately, using Social Security Administration data allows me to directly observe how benefit levels changed as a result of the 1977 legislation.

4.2.2 Empirical Strategy

Comparison of Treatment and Control Groups

The individuals included in this analysis are primary Social Security beneficiaries aged 62 years and older who were born in Latin America between 1915 and 1918. As noted, those born after December 31, 1916, received lower Social Security benefits than those born prior to this date. I do not include secondary Social Security beneficiaries, e.g. spouses, dependent children, as these individuals may have received benefits without having lived and worked in the U.S.

Including only four birth cohorts guards against misleading results due to inherent differences between the treatment and control groups rather than differences in Social Security benefits. As is, there exists a four-year age difference between certain individuals who received higher Social Security benefits and those who received lower Social Security benefits, creating concern that the latter is an invalid counterfactual for the former. In their assessment of the effects of higher income on mortality using the “notch” generation, Snyder and Evans (2002) caution against this issue. They note that observing a multi-year time span might produce spurious differences in mortality rates between both cohorts due to secular trends in mortality rather than OASDI benefits. Unfortunately, Social Security Administration data files do not contain many common control variables with which to test this assumption. Among the key variables it does not include are education, number of children, and living arrangements.

As a method of addressing this issue without Social Security Administration data, I use data from IPUMS U.S.A. to test whether there are significant demographic differences between both cohorts. Because it is based on the U.S. census, IPUMS U.S.A. is not available for 1979, the year in which the 1917 cohort turned 62 and became age-eligible for benefits. Therefore, I compare demographic characteristics of Latin American immigrants in the U.S. from the 1915-1916 birth cohorts to those of the 1917-1918 cohorts using the 1980 census. In this year, the 1915-1916 cohorts were 65-66 and the 1917-1918 cohorts were 63-64.

I use a t-test to test the mean difference in continuous variables between both groups, and a chi-square test to test differences in categorical variables between both groups.

Regression Discontinuity Approach

Having compared both groups, I use a regression discontinuity approach to assess whether higher Social Security payments result in a higher probability of return migration. Regression discontinuity is a selection-on-unobservables design that exploits the natural variation in treatments that depend on whether units fall below a certain threshold. In general,

the units in a treatment group differ from those of the control group on characteristics other than treatment status, thereby obfuscating the true effect of the treatment. However, regression discontinuity is based on the premise that individuals whose indices fall just below an arbitrary threshold are comparable to those who indices fall just above it. In this way, it minimizes the threat of selection bias and provides virtually transparent identification.

In this analysis, treatment, D_i , consists of having received higher Social Security payments as a result of being born before January 1, 1917, c . Therefore, D_i equals 1 for those born before c , and 0 for those born after this date. Because treatment is strictly conditional on date of birth, X_i , individuals born shortly before this cut-off date likely resemble those born shortly afterward. Using this natural source of exogeneity, I obtain a causal estimate of the effect of greater Social Security benefits, measured by the coefficient τ , on the probability of return migration for those born around c . Specifically, I compare this outcome among beneficiaries born between January 1, 1915 and December 31, 1916, denoted by $h - c$, to those born between January 1, 1917 and December 31, 1918, denoted by $c + h$.

In its simplest form, this regression discontinuity approach is represented by

$$\begin{aligned} \text{logit}(\text{return migrate}) &= \alpha + \tau D_i + \lambda S_i + \rho Mx_i + \varepsilon_i \\ \text{with } h - c &< X_i < c + h \end{aligned} \tag{4.1}$$

where Mx_i indicates whether the individual is from Mexico and S_i is given a value of 1 if the individual is male. The reader will note that τ mirrors the average treatment effect of a simple logistic regression (D. S. Lee, 2009; Jacob & Lefgren, 2004). The only difference between the two estimates is that regression discontinuity calls for restricting the sample to small neighborhoods to the right and to the left of the threshold.

However, Angrist and Pischke (2008) note that in a regression discontinuity approach, it is necessary to distinguish the effect of the discontinuity, represented by D_i , from the smooth linear function, X_i , even though the former is a deterministic function of the latter. This proposition leads to the following model:

$$\begin{aligned} \text{logit}(\text{return migration}) &= \alpha + X_i + \tau D_i + \lambda S_i + \rho Mx_i + \varepsilon \\ \text{with } h - c &< X_i < c + h \end{aligned} \tag{4.2}$$

The authors go on to caution that estimates based on observations near the threshold bias the sample average for the population average in the neighborhood of the threshold. One solution they propose to this problem is the use of local linear regression with more weight

given to points close to the cutoff. This variation of regression discontinuity is illustrated in the following equation:

$$\begin{aligned} \text{logit}(\text{return migrate}) = & \alpha + \tau D_i + \beta(X_i - c) + \gamma(X_i - c) \cdot D_i \\ & + \lambda S_i + \rho Mx_i + \varepsilon_i \end{aligned} \quad (4.3)$$

with $h - c < X_i < c + h$

The variable created by subtracting the individual birthdate, X_i , by the threshold hold, c_i , assigns a greater weight to observations closer to the January 1, 1917 cut-off. I present the results of the models represented in equations 4.2 and 4.3.

4.3 Results

4.3.1 Pre- Post-Notch Comparison

Before examining differences in the probability of return migration among those with higher and lower Social Security benefits, it is important to first assess whether both groups are comparable. As discussed, Social Security Administration data files do not contain several pertinent control variables. Therefore, I compare the demographic characteristics of the pre- and post-notch groups as depicted in the 1980 census. Moreover, because the regression discontinuity analysis using Social Security Administration data only includes primary Social Security beneficiaries, this descriptive analysis using IPUMS U.S.A. only includes those receiving Social Security in 1980.

Table 4.3.1 describes Latin American immigrants aged 63-64 and 65-66 living in the U.S. in 1980 who were receiving Social Security benefits, and whether their characteristics are statistically different. This table reveals that there are no statistically significant differences between these two groups on these observable characteristics. Approximately 40 percent of the pre- and post-notch group is male, close to half completed less than a primary education, most are married and living with their spouse, and relatively few live with their children. Moreover, close to half of both groups were born in Mexico and relatively few speak fluent English. Close to half of both groups are naturalized citizens and the majority have been in the U.S. for over 21 years. Moreover, less than 20 percent of both groups was employed at the time of the survey.

This descriptive snapshot of the 1915-1916 and 1917-1918 birth cohorts provides some assurance that the pre- and post-notch group I examine in the regression discontinuity analysis resemble one other.

Table 4.3.1: Descriptive statistics of Latin American immigrants aged 63-64 in 1980 (Pre-notch) and 65-66 in 1980 (Post-notch) receiving Social Security

	Pre-notch	Post-notch	Statistically different
	(N=802)	(N=1,285)	
Male	40.3%	40.9%	No
Education			No
None	9.6%	9.8%	
<Primary	23.6%	23.0%	
Primary	16.5%	16.2%	
Junior High	20.2%	22.0%	
High School	18.7%	17.4%	
>High School	11.5%	11.7%	
Marital status			No
Married, spouse present	64.5%	61.0%	
Married, spouse absent	2.0%	2.6%	
Separated	3.4%	3.9%	
Divorced	6.5%	7.6%	
Widowed	18.8%	18.1%	
Single	4.9%	7.1%	
Living with Spouse	64.5%	60.8%	No
Living with 1+ children	37.4%	37.9%	No
Region of birth			No
Mexico	48.6%	46.8%	
Central America	5.2%	5.9%	
South America	9.2%	8.2%	
Cuba	25.8%	27.0%	
West Indies	11.1%	12.1%	
English fluency			No
Speaks only English	15.3%	16.3%	
Very well	17.6%	18.4%	
Well	17.8%	17.9%	
Not well	26.6%	25.2%	
None	22.7%	22.2%	
Naturalized U.S. citizen	50.3%	51.4%	No
Years in U.S.			No
0-5	2.6%	3.1%	
6-10	6.9%	6.7%	
11-15	12.5%	14.9%	
16-20	14.2%	14.7%	
21+	61.2%	58.9%	
Employed	19.5%	18.9%	No

Source: Author's calculations using the 5% IPUMS U.S.A. sample of the 1980 census

4.3.2 Descriptive Statistics

Having compared both groups in the census, the following section examines those included in the regression discontinuity analysis using Social Security Administration data. Table 4.3.2 displays descriptive statistics of primary Social Security beneficiaries born in Latin America in 1915-1916 (the pre-notch group), and in 1917-1918 (the post-notch group).

Table 4.3.2: Descriptive statistics of primary Social Security beneficiaries from one percent Master Beneficiary Record

	Total	Pre-Notch	Post-Notch
	(N=753)	(N=316)	(N=437)
Male	50.1%	49.2%	50.7%
Born in Mexico	37.3%	38.0%	36.8%
Retired at 65	17.0%	17.1%	16.9%
Died by 2011	74.0%	76.9%	71.9%
Representative payee	8.9%	8.9%	8.9%

These descriptive statistics reveal that both groups are fairly similar. Approximately half of both groups consist of males. At first glance, this number may be surprising as the proportion of males is typically lower among older age groups (Howden & Meyer, 2011). However, this relatively high sex ratio is explained by the fact that the deceased are not dropped from the sample. Since the Social Security Administration keeps the last known address on file, the deceased are not right-censored and are kept in the sample. Moreover, a substantial proportion of both groups were born in Mexico. Given that over half of immigrants from Latin America are from Mexico (Grieco & Trevelyan, 2010), it is not surprising that such a high proportion of Latin American primary Social Security beneficiaries are from Mexico. Moreover, relatively few pre- and post-notch retired at age 65 years or older. This finding falls in line with Gruber and Wise's (1998) seminal conclusion that the age of public pension eligibility has a greater impact on the propensity to retire than the normal retirement age.

The only characteristic in which immigrants pre- and post-notch significantly differ is in the proportion who had died by 2011. Five percentage points more in the pre-notch group had died than those post-notch. This is not surprising as the former group is older. However, while the deceased are not dropped from the sample, it is worth pondering the ramifications of this difference. Pablos-Méndez (1994) describes the "salmon bias" as the desire to die in one's home country, thereby biasing estimates of immigrants who remain in the U.S. If immigrants do indeed choose to return migrate only upon realizing they will die soon, this situation may obscure the effect of Social Security benefits in determining return migration. However, this bias would pertain to both the treatment and control groups and not affect the interpretation of the outcome.

Both the treatment and control groups were also equally likely to have a representative payee or to have had a representative payee at the time of death. This similarity is important as the presence of a representative payee potentially biases the results. If the beneficiary has a representative payee, the zip code on file may represent that of the payee and not the beneficiary. The fact that both groups are equally likely to have a representative payee provides some assurance that any differences their return migration rates is not due to this issue.

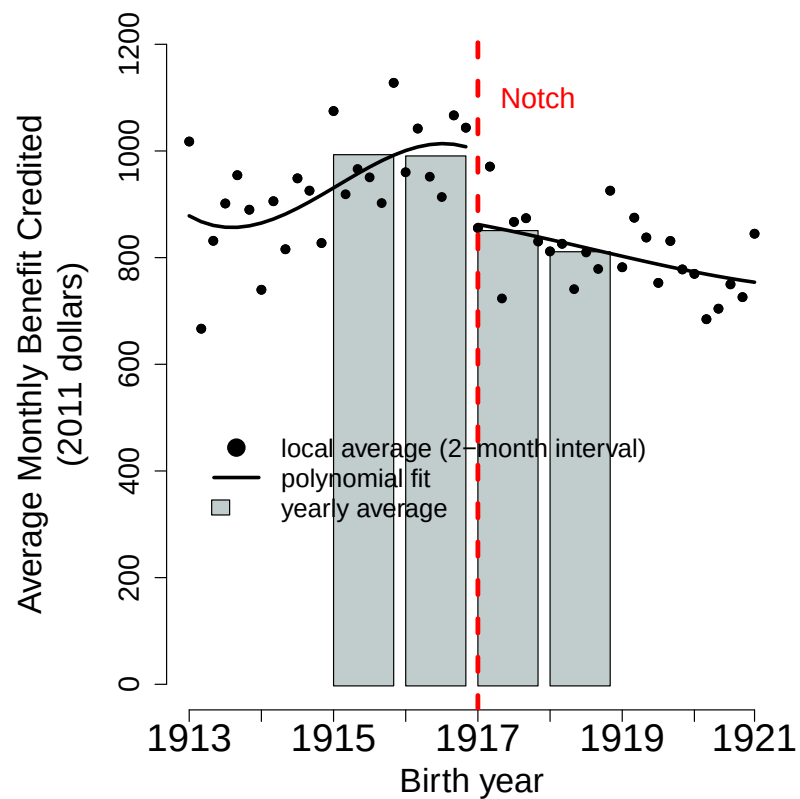
4.3.3 Effect of the Notch

As noted, a regression discontinuity design rests on the assumption that crossing an arbitrary threshold significantly increases the probability of treatment. In this case, treatment consists of having received higher Social Security benefits as a result of being born before January 1st, 1917. Figure 4.1 displays the average Social Security benefit for each two-month interval between 1913 and 1920 as well as a polynomial fit line on either side of the notch. As is consistent with historical accounts (Social Security Administration, 2002a), the polynomial line increases up to 1917 after which it decreases noticeably in 1916.

However, Angrist and Pischke (2008) warn that polynomial models may not adequately represent the effect of the threshold on the explanatory variable. The authors caution that a discontinuity in the explanatory variable upon crossing the threshold may be due to latent higher-order terms rather than the effect of crossing the threshold. To address this issue, they suggest comparing average outcomes of small neighborhoods to the right and to the left of the threshold, as the treatment effect should not depend on the correct specification of the model in this case. Thus, the rectangular bars indicate the average Social Security benefit for the birth cohorts on which this analysis is focused, namely those born between 1915 and 1918. This figure demonstrates fairly similar benefits between the 1915 and 1916 birth cohorts and a significant drop in the benefits of the 1917 and 1918 birth cohorts. Specifically, the average monthly benefit for the pre-notch group is 19 percent higher than that of the post-notch group in these years. Table 4.3.3 indicates that the differences in the mean benefits of the pre- and post-notch group are statistically significant even after controlling for sex and whether the beneficiary was born in Mexico. The coefficients for the birth years 1917 and 1918 are statistically different from that of 1915, while 1916 is not.

While statistically significant, it is nonetheless important to ponder the viability of this income differential in affecting return migration. The literature points to a strong negative relationship between duration in the U.S. and the propensity to return migrate (Massey, 1987; Ruiz-Tagle & Wong, 2009). Over time, migrants develop social and familial networks while abroad that may be more influential in determining return migration than income, particularly when this income differential is only 19 percent.

Figure 4.1: Median Monthly Benefit Credited for Latin American primary beneficiaries born pre- and post-notch



Source: Author's calculations using the one percent sample of the Social Security Administration's Master Beneficiary Record and the NUMIDENT.

However, in the context of international migration, this 19 percent income differential may hold significantly more value in the home country. According to Stark, Hemelstein, and Yegorov (1997), in choosing their optimal length in the U.S., immigrants put a high premium on the relative value of their income in the home country. Specifically, the longer a migrant is abroad, the longer she forgoes the opportunity to spend her savings in the home country where she can buy more goods and services. This is particularly true in cases where there is a high purchasing power differential between the destination and home countries and low wages in the home countries, as is the case in Latin America and the U.S. Thus, according to this theoretical model, the 19 percent higher income possessed by the pre-notch group compared to the post-notch group may shorten their stay in the U.S. since they obtain the desired pocket of money in a shorter time span.

Table 4.3.3: Predictors of the average Monthly Benefit Credited (MBC) among elderly Latin American primary Social Security beneficiaries

	Total
	(N=749)
Intercept	936.02* (37.67)
Born 1915	—
Born 1916	−22.33 (47.72)
Born 1917	−133.78* (45.71)
Born 1918	−208.93* (42.78)
Born in Mexico	−181.26* (32.10)
Male	272.21* (31.09)

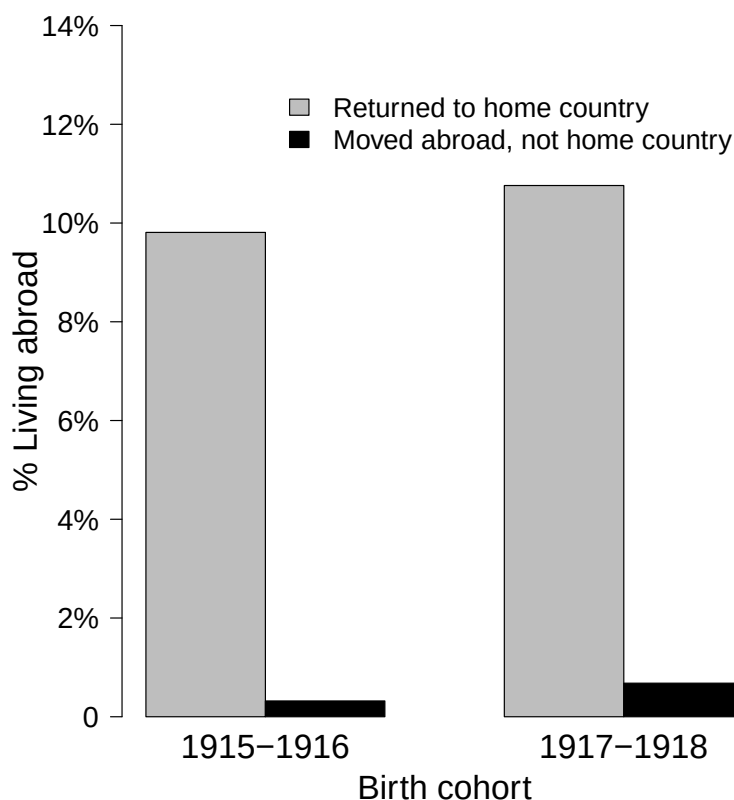
Source: Author's calculations using the one percent sample of the Social Security Administration's Master Beneficiary Record and the NUMIDENT.

* p-value<0.05

An initial look at the return migration rates of both groups suggests that this is not the case. Figure 4.2 displays the proportion of Latin American primary Social Security beneficiaries born in 1915-1916 and 1917-1918 who were living abroad at the time of death or as of 2011, as well as those who were living specifically in their home countries. As shown in figure 4.2, approximately 10 percent and 11 percent of the pre-and post-notch group,

respectively, was living abroad at the time of death or as of 2011, the vast majority of whom returned to their home countries.

Figure 4.2: Proportion of Latin American primary beneficiaries who return migrated by notch status



Source: Author's calculations using the one percent sample of the Social Security Administration's Master Beneficiary Record and the NUMIDENT.

It is important to note that despite the natural exogeneity provided by the notch, Social Security is but one source of income. Many of the migrants in this work likely receive Supplemental Security Income, financial assistance from their families, and other income. However, because the 1915-1916 birth cohorts are assumed to be very similar to the 1917-1918 birth cohorts, their "other" sources of income are presumably very similar. Therefore, the 19 percent higher Social Security income received by the pre-notch group is an exogenous addition to their total income, which is likely almost identical to the post-notch group.

While this figures suggests that the 19 percent income differential created by the "notch" has only a minimal effect on return migration, it is difficult to answer this question without controlling for the few key variables available in this data set, namely sex and region of birth.

4.3.4 Regression Discontinuity Results

Table 4.3.4 shows the results of the regression discontinuity analysis which includes these controls. This table presents estimates which do not weigh according to the distance from the notch. Model 1 includes individuals born between January 1, 1915 and December 31, 1918. Models 2 and 3 adjust the bandwidth, h , to assess the sensitivity of this model to the period of observation. Model 2 reduces the bandwidth by half to include only those born between in 1916 and 1917 whereas model 3 doubles the bandwidth to eight years to include those born between 1913 and 1920. These adjustments do not alter the primary result which is that the income differential created by the notch does not affect the probability of return migration.

The table also demonstrates the demands that this regression discontinuity approach makes on the data with its standard errors increasing notably with smaller bandwidths.

Figures 4.3(a), 4.3(b), and 4.3(c) provide a graphical representation of this result. These figures display the probability of return migration for each two-month interval in the respective bandwidth based on models 1, 2, and 3 on table 4.3.4. This graph demonstrates that the probability of return migration hovers around ten percent for individuals born pre- and post-notch even after controlling for sex and whether they were born in Mexico irrespective of the bandwidth, h . Although the lowess smoother on figures 4.3(a) and 4.3(b) suggest a substantial difference in the probability of return migration between both groups, the results on table 4.3.4 indicate that these differences are not statistically significant.

Table 4.3.4: Predictors of return migration among primary Social Security beneficiaries in the U.S. born in Latin America (i.e., Equation 4.2)

	Model 1	Model 2	Model 3
Bandwidth (h)	1915-1918	1916-1917	1913-1920
Constant	10.41 (9.36)	12.99 (26.25)	-5.96* -3.17
Birthday	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
Notch	0.55 (0.52)	0.71 (0.73)	-0.21 (0.36)
Male	0.33 (0.25)	0.36 (0.36)	0.12 (0.17)
Born in Mexico	1.07* (0.25)	1.15* (0.36)	1.06* (0.13)

Source: Author's calculations using the one percent sample of the Social Security Administration's Master Beneficiary Record and the NUMIDENT.

* $p < 0.05$

Table 4.3.5 and figures 4.4(a), 4.4(b), and 4.4(c) demonstrate that the general results do not change even when utilizing weights in accordance with the distance from the notch.

Table 4.3.5: Predictors of return migration among primary Social Security beneficiaries in the U.S. born in Latin America (weighted to adjust for the bias in the neighborhood of the boundary, i.e., Equation 4.3)

	Model 1	Model 2	Model 3
Bandwidth (h)	1915-1918	1916-1917	1913-1920
Constant	-2.95*	-3.36*	-2.54*
	(0.40)	(0.62)	(0.26)
Notch	0.58	0.72	-0.15
	(0.51)	(0.75)	(0.35)
Birthday - January 1, 1917	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)
Notch * (Birthday - January 1, 1917)	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)
Male	0.32	0.38	0.11
	(0.25)	(0.36)	(0.17)
Born in Mexico	1.07*	1.14*	1.07*
	(0.25)	(0.37)	(0.18)

Source: Author's calculations using the one percent sample of the Social Security Administration's Master Beneficiary Record and the NUMIDENT.

* $p < 0.05$

At first glance, this finding suggests that income does not play a strong role in the decision to return migrate for Latin American primary Social Security beneficiaries. Indeed, both ethnographic (Suro, 1998; Aguilera, 2004) and quantitative work (Ruiz-Tagle & Wong, 2009) support the idea that the familial and social networks that immigrants develop over time in the U.S. are key in determining return to the country of origin, perhaps more so than income.

However, this finding may also imply that income plays a more nuanced role in the decision to return migrate than a deterministic linear function. For Latin American primary Social Security beneficiaries, the threshold income differential at which point they decide to return migrate may be much higher or much lower than 19 percent. For example, there is evidence to suggest that it is immigrants who do not receive *any* Social Security in the U.S. who return migrate. Aguila and Zissimopoulos (2008) estimate that less than 12 percent of Mexicans in Mexico aged 65 years and older with U.S. migration experience were receiving U.S. Social Security. This number compares to 70 percent of Mexicans aged 65 and older in the U.S. that same year (Ruggles et al., 2010).

The citizenship requirements of Social Security may also explain the non-influence of

income in this result. Social Security recipients must be U.S. citizens or legal permanent residents (General Accounting Office, 2003). Technically, formerly undocumented immigrants are eligible to collect Social Security benefits that they accrued while undocumented once they obtain U.S. legal status (General Accounting Office, 2003). However, Burtless and Singer (2011) report that “an overwhelming percentage of undocumented migrants who earn Social Security-covered wages will probably not become legal U.S. residents or gain eligibility for Social Security (pgs. 19-20).” These facts point to the possibility that elderly Latin American immigrants return migrate if they do not have the legal ability to remain in the U.S. upon reaching retirement age, a situation which the data of the present study would not capture.

A result that *is* significant in all three of the models is region of birth. In all three of the models, individuals born in Mexico were more likely to return migrate than those who were born in other countries. While this result has been found to hold among Mexican immigrants of all ages (Passel & Cohn, 2009; Massey et al., 2002), little information exists as to whether this pattern applies to older Mexicans in particular.

A possible reason for this finding is the closer proximity of Mexican immigrants to their country of origin than other immigrants. In their analysis of the effect of the “salmon” bias on the Hispanic epidemiological paradox, Palloni and Arias (2004) assume that Mexican immigrants are more likely to return migrate since their country of origin is closer and therefore, more “easily reachable (p. 402).” However, the authors acknowledge the tenuousness of this assumption given the high volume of Salvadoran and Guatemalan return migration in the 1990s. Roberts, Frank, and Lozano-Ascencio (1999) have another take as to why proximity might be important in determining return migration. The authors claim that the geographical closeness of Mexico and the U.S. facilitates return migration not so much by making it physically easier to cross borders but by strengthening social and economic ties of immigrants and their home country during visits to the home country. In other words, Mexican immigrants may be more likely to retire in Mexico because they reinforced their social and economic networks during visits. This is likely not the case for immigrants from countries whose physical distance impedes on their ability to frequently visit.

Somewhat surprisingly, males were not more likely to return migrate than females. Previous studies document the greater tendency among males to return to the country of origin albeit these studies usually pertain to immigrants of all ages instead of just elders (Ruiz-Tagle & Wong, 2009; Turra & Elo, 2008; Aguila & Zissimopoulos, 2008).¹⁰

¹⁰Aguila and Zissimopoulos (2008) examine return migration among Mexicans aged 50 years and older but most of these individuals returned to Mexico at working ages.

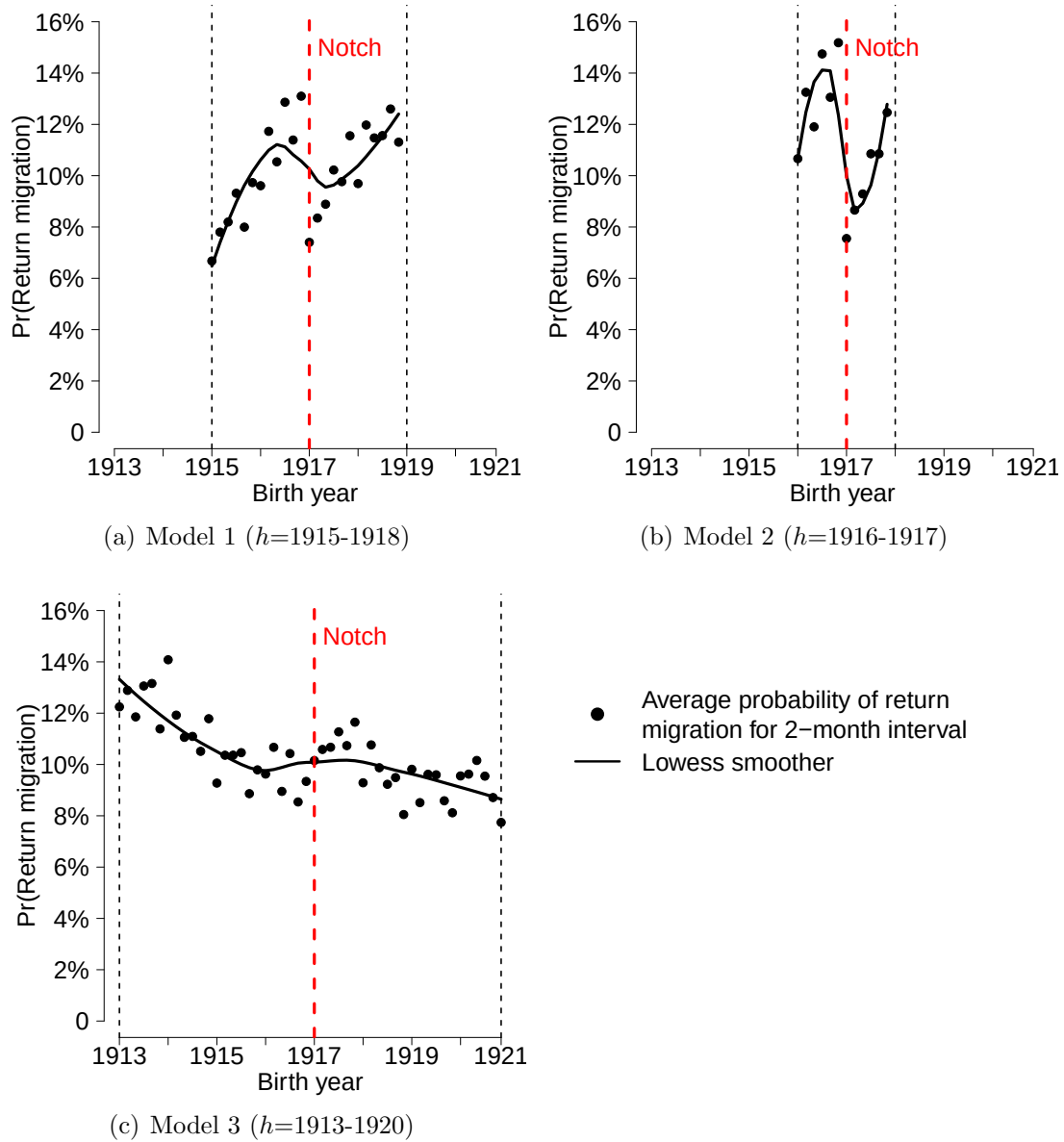


Figure 4.3: Average probability of return migration for Latin American primary Social Security beneficiaries

Source: Author's calculations using the one percent sample of the Social Security Administration's Master Beneficiary Record and the NUMIDENT.

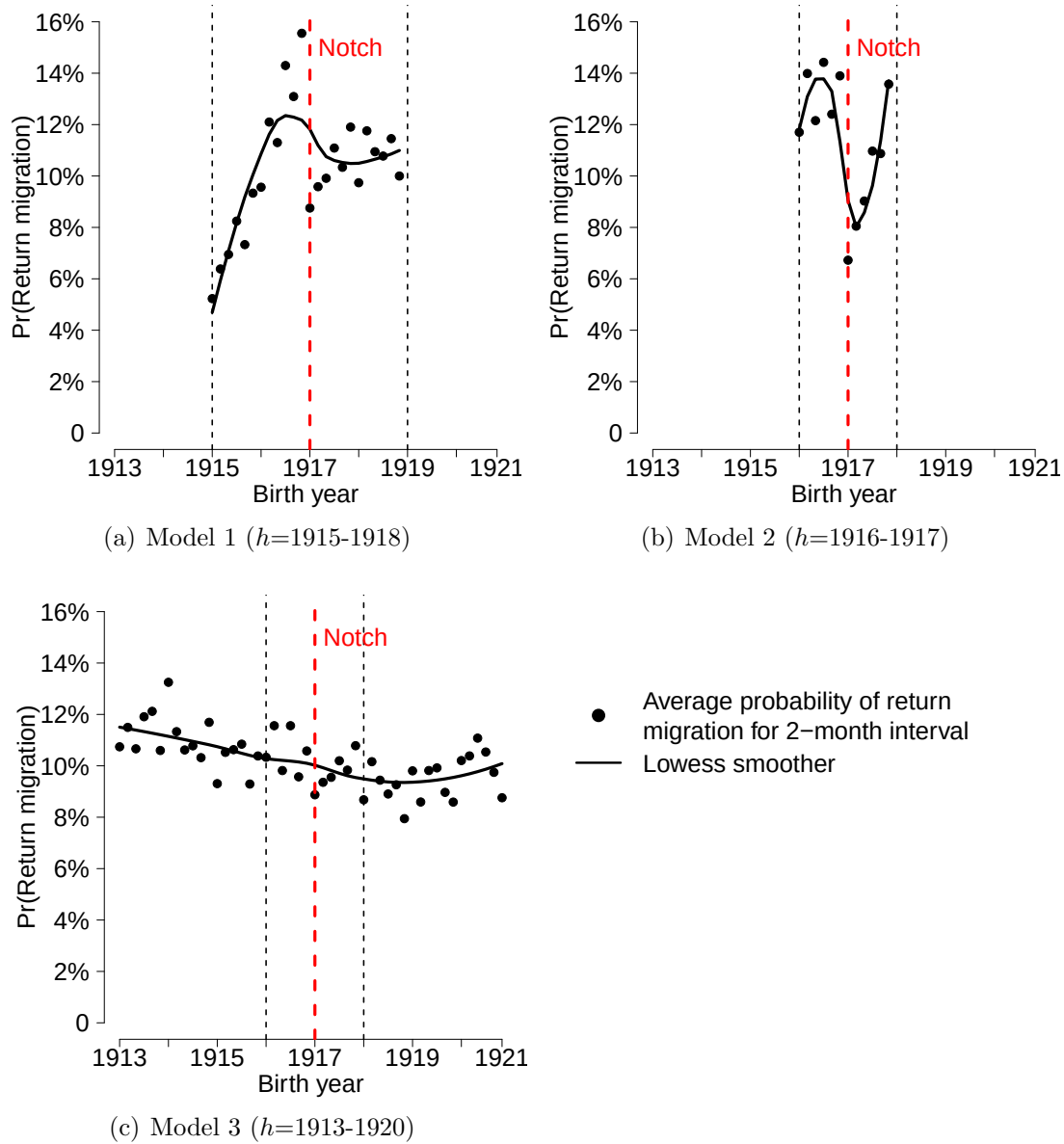


Figure 4.4: Average probability of return migration for Latin American primary Social Security beneficiaries (weighted to adjust for the bias in the neighborhood of the boundary)

Source: Author's calculations using the one percent sample of the Social Security Administration's Master Beneficiary Record and the NUMIDENT.

4.4 Discussion

This study examines whether elderly Latin American immigrants in the U.S. are more likely to return to their country of origin if they receive lower Social Security payments. To minimize the possibility of selection bias in answering this question, I utilize a natural experiment whereby the Social Security Administration unexpectedly lowered the Social Security benefits of beneficiaries born after 1916, a group otherwise known as the “notch” generation, due to an error in their benefit calculation formula. I compare the probability of return migration for the 1915-1916 birth cohorts to that of the the 1917-1918 birth cohorts to determine if Social Security differentials had an effect on the outcome. The exogenous source of these differences in Social Security benefits ensures that those who benefited from this windfall are similar to those who did not.

At face value, the results of this analysis suggest that lower Social Security benefits do not influence the probability of return migration. This finding falls in line with studies describing the primal role of social ties and time in the U.S. in determining return migration (Massey, 1987; Ruiz-Tagle & Wong, 2009), rather than financial context. The decision to return may also be a function of business ties in the home country rather than income stream in the destination country. Although not specific to elderly, (Durand, Kandel, Parrado, & Massey, 1996) find that Mexican immigrants are much more likely to return to Mexico with savings if they own a home or land in Mexico.

However, there are several other ways to interpret this result. One explanation is that the 19 percent income differential created by the notch is not large enough to prompt or discourage return migration. Immigrants with lower income levels may indeed be more compelled to return migrate but only if they receive substantially less income. For example, Van Hook and Zhang (2011) found an association between poverty and emigration from the the U.S. Specifically, the authors find that Mexican immigrant women were 16 percent less likely to emigrate from the U.S. if they were at 150 percent of the federal poverty level compared to those at the poverty lines. However, poverty had no effect on the probability of return migration for men.

Another explanation is that the relationship between Social Security benefits and return migration during later later is not linear. It may be that elderly immigrants are more likely to return to their countries of origin if they do not receive *any* retirement benefits. In the aforementioned study, Van Hook and Zhang (2011) find that elderly immigrants were less likely to emigrate from the U.S. if they received cash welfare or Supplemental Security Income. Though these programs are means-tested and are not Social Security, this finding may suggest that immigrants stay in the U.S. if they have a consistent income stream such as Social Security. The present paper would not capture this situation as it is limited to primary Social Security beneficiaries.

Before discussing the policy implications of this finding, there are numerous noteworthy limitations to mention. The first is that it is limited to primary Social Security beneficiaries. Therefore, this analysis does not provide information on return migration among undocumented immigrants or those who do not qualify for Social Security for other reasons. Another limitation is that it does not provide information on the age of return migration or the prevalence of cyclical migration to and from the country of origin during later life. Rather, it only includes information on the last country of residence as of 2011 or at the time of death. Further research should determine whether elderly immigrants partake in cyclical migration. Despite these limitations, this is the first study to use direct estimates of the effect of the Social Security notch to assess whether it influences return migration among Latin American elderly in the U.S. albeit on a restricted universe.

Having noted these limitations, the magnitude of return migration is not inconsequential (approximately 10 percent). In one year, the Centers for Medicare and Medicaid Services spend approximately \$8,100 per capita on Medicare services (Medicare Payment Advisory Commission, 2012). Assuming migrants have similar Medicare spending patterns as the average Medicare beneficiary, every return migrant saves the U.S. budget this much in expenditures per year. Over ten years, this amount adds up to \$81,000 per beneficiary. This does not include savings in Supplemental Security Income and other programs that are not available abroad.

Not only does it generate savings, but this 10 percent return migration rate represents a significant shift in resources from one country to another. In describing the importance of retirement migration from Northern to Southern Europe, A. M. Williams, King, and Warnes (1997) state that retirement migration “is a highly selective migration process which redistributes individuals - and their concomitant incomes, expenditure, health and health care needs - across international boundaries (p. 132).”

One aspect of this redistribution involves the transport of Social Security payments from the U.S. to return migrants’ home countries. While the siphoning off of this income stream may not significantly impact the U.S. budget, it may create sizable economic multiplier effects abroad (Deller, 1995; Serow & Haas, 1992). Serow and Haas (1992) find that for every entering retiree, 1.5 jobs were created in one North Carolina community due to increased demand for retail, health care, and eating and dining establishments. This result only applies to one North Carolina community but similar results may also pertain to comparable communities in Latin America. Aside from consumption, a proportion of this income likely also goes toward production, particularly if migrants are more educated and own land or businesses (Durand et al., 1996).

This income stream may also ameliorate budget constraints within households. Reil-Held (2006) finds a positive relationship between the amount elderly people receive in public transfers and the amount they give to younger generations. Evidence suggests that this is particularly true for elderly individuals with lower-income children (McGarry & Schoeni,

1995). The lower the income of their middle-aged children, the more elderly parents in one study transferred to their children (Cox & Jimenez, 1992). This is likely the case in numerous Latin American countries given the generally downward direction of private transfer from older to younger individuals (R. D. Lee & Mason, 2011).

An important related question is whether the gains from incoming Social Security revenue offset the costs of supporting additional elderly in the country. As is, Latin America faces considerable challenges in providing a safety net for its burgeoning elderly population (Wong & Palloni, 2009). Future research should examine return migration flows by age and the associated costs and benefits for the receiving country.

Chapter 5

Explaining the Divergent Results of Chapters 3 and 4

“Opening the question as to why people move after retirement is like opening Pandora’s briefcase. One can never fully anticipate what will come out.”

Charles Longino¹

The above quote by Charles Longino succinctly illustrates the opaqueness surrounding retirement migration. While this dissertation attempts to illuminate one aspect of this multifaceted phenomenon, several questions remain. The topic of this dissertation, return migration among Mexican elderly in the U.S., has far-reaching implications for spending on U.S. old-age support programs, biases in estimates pertaining to Hispanic elderly who remain in the U.S., and our knowledge base regarding immigrant assimilation patterns. It has contributed an understanding of the proportion of older Mexican immigrants who return to Mexico during later life, their characteristics, and their motivation for doing so. In chapter two, I show that less than six percent of older Mexican immigrants return migrate during a five-year period, most of whom are married males with a primary level education. However, this number ranges from two percent when observed using IPUMS Mexico to six percent when observed using the Mexican Health and Aging Study. In chapters three and four, I explore one possible motivation for return migration among this group: retirement income. The results of chapter three suggest that higher levels of retirement income are associated with a lower probability of return migration for older Mexicans at the turn of the 1990s. However, this relationship disappears when examining all Latin American elderly who retired in the early 1980s using a natural experiment.

¹See Longino, Perzynski, and Stoller (2002), page 29.

What accounts for these different outcomes? The remainder of this chapter considers several reasons for these divergent outcomes.

5.0.1 Model Universe as an Explanation

Mexican vs. All Latin American Migrants

One explanation is that retirement income is only important to Mexican and not other Latin American immigrants in considering where to retire. It is worth considering this possibility as the universe of the model which found a significant relationship between retirement income and return migration, that in chapter three, only includes Mexicans whereas that in chapter four includes all older Latin American immigrants who retired in the early 1980s.

Why might this be the case? Part of the reason may be related to the distance from the U.S. to the home country. Roberts, Frank, and Lozano-Ascencio (1999) maintain that Mexico's close proximity to the U.S. facilitates communication between both countries and, by extension, return migration. By this reasoning, Mexicans and non-Mexican immigrants alike may be compelled to return migrate by lower retirement income levels but Mexicans may find it logistically more feasible to do so. The higher propensity to return migrate among Mexican immigrants found in chapter four supports this theory. However, a more rigorous test of this hypothesis would either expand the universe in chapter three to include all Latin American immigrants or restrict that of chapter four to only contain Mexicans. Either of these methods would explain whether Mexicans differ from their other Latin American immigrant counterparts.²

However, there is insufficient empirical work to support this hypothesis. Scant studies examine return migration among Latin American immigrants by country of origin, most of which date back to the 1970s. Moreover, this work suggests that Latin American immigrants from non-Mexican countries are actually more likely to return migrate than Mexican immigrants (Jasso & Rosenzweig, 1982).³ Thus, it remains unclear whether Mexicans are significantly different than their non-Mexican Latin American immigrant counterparts with respect to the motivations for return migration.

²However, at this moment, I cannot perform this analysis. For one thing, I cannot put together a database containing return migrants from all Latin American countries using IPUMS data. Not all Latin American countries in IPUMS contain the variable indicating country of residence five years prior which was used to identify return migrants in Mexico. I also cannot run the model in chapter four on only Mexicans. Doing so would require returning to Washington D.C. to use the data as I do not have it at my disposal.

³The authors calculate emigration rates and not return migration rates but I am assuming that immigrants who leave the U.S. return to their country of origin.

Cohort Effect

Another explanation for the divergent outcomes of chapters three and four is that it is the result of a cohort effect. The results of chapter four pertain to immigrants born between 1915-1918 whereas those of chapter three pertain to immigrants born between 1900 and 1940. The wider birth range of the later group may create differences between both samples that render their responses to retirement income different. In his seminal paper “The Cohort as a Concept in the Study of Social Change,” Ryder (1965) argues that the shared experiences of birth cohorts creates similarities in their responses to various social phenomenon. It may be the case that 1915 through 1918 birth cohorts faced unique circumstances throughout their lives that do not trigger return migration in the face of deprivation which may not be the case for other birth cohorts.⁴

Once again, it is difficult to assess this hypothesis. To date, no estimates exist on the propensity to return migrate during later life by birth cohort. However, existing work suggests that numerous other later-life outcomes differ by birth cohort such as financial preparedness for retirement (Iams, Phillips, Robinson, Deang, & Dushi, 2008), labor force participation (Heiland & Li, 2012), and retirement wealth (A. H. Stevens, 2008). Thus, preferences regarding retirement location may also differ by birth cohort. However, detailed data on this topic has yet to emerge.

Period Effect

Along similar lines, the different effect of retirement income on return migration in chapters three and four may be the result of a period effect. Chapter three measures the five-year incidence of return migration between 1995 and 2000, whereas chapter four measures the probability of return migration at any point during later life. This may signal that immigrants were likely to return migrate during 1995 through 2000 but not during other years. A noteworthy future endeavor would estimate return migration over time.

U.S. Social Security Beneficiaries vs. Other Retirement Income Recipients

A more feasible area of study is whether the inverse relationship between retirement income and the probability of return migration found in chapter three holds up when restricting the analysis to those who receive retirement income. The reader will recall that chapter three includes all Mexican immigrants aged 60 years and older who are receiving

⁴A test of this hypothesis would involve using IPUMS data from the early 1980s to examine the effect of retirement income on return migration among 63 to 66 year-olds to determine if we observe the same results as in chapter four. Unfortunately, there is no way to identify return migrants in the 1980 IPUMS Mexico sample.

retirement income as well as those who are not receiving retirement income. In contrast, chapter four treats only primary Social Security beneficiaries. Latin American elderly Social Security beneficiaries may differ from non-beneficiaries in ways that can influence the outcome. For example, six percentage points more Latin American Social Security beneficiaries are females than males, almost nine percentage point more are married, and only 57 percent of non-beneficiaries receive health insurance through Medicare compared to 100 percent of Social Security beneficiaries (Minnesota Population Center, n.d.-c).⁵ All of these factors may influence return migration during later life.

I explore this issue in table 5.0.1. Table 5.0.1 shows the results of three scenarios. The first treats retirement income as an indicator variable and includes all Mexican immigrants including those who do and do not receive retirement income. The second model examines this same group but treats retirement income as a continuous variable. The third model is restricted to Mexican immigrants aged 60 years and older receiving retirement income. The results of model 1 suggest that receiving retirement income is associated with a lower probability of return migration.

While this finding signals that individuals who receive retirement income differ from those who do not in terms of their migration behavior, this result does not tell us if this is due entirely to retirement income. Migrants who receive retirement income may possess qualities that influence their migration behavior which are also correlated with receiving retirement income. For example, these individuals may have lived and worked in either in the home and destination country long enough to qualify for benefits, or, if they receive U.S. Social Security, they may be U.S. citizens or legal permanent residents. Aguila and Zissimopoulos (2008) find that older Mexican return migrants with U.S. legal status were more likely to have returned from the U.S. during later life than those who were not U.S. citizens or legal permanent residents.

Thus, a more convincing test is whether this relationship holds among those who receive retirement income. These individuals are likely to share characteristics that those who do not receive retirement income lack and a model restricted to these individuals would control for this variation. The results of this test are displayed in model three of table 5.0.1. Model three confirms the results of model one, demonstrating that individuals receiving higher levels of retirement income have a lower probability of return migrating. Comparing model three to model two, one can see that this relationship is stronger among those receiving retirement income than it is for the overall population. Model two is a replicate of table 3.3.2 (from section 3.3.3) which includes all Mexicans and treats retirement income as a continuous variable. Every unit of retirement income lowers the probability of return migration even more so for those receiving retirement income than the for general population.

Figure 5.1 shows this result graphically. Figure 5.1 shows the predicted probability of

⁵These estimates pertain to the individuals aged 65 years and older who were born in Latin America as indicated using the 2009-2011 ACS on Minnesota Population Center (n.d.-c).

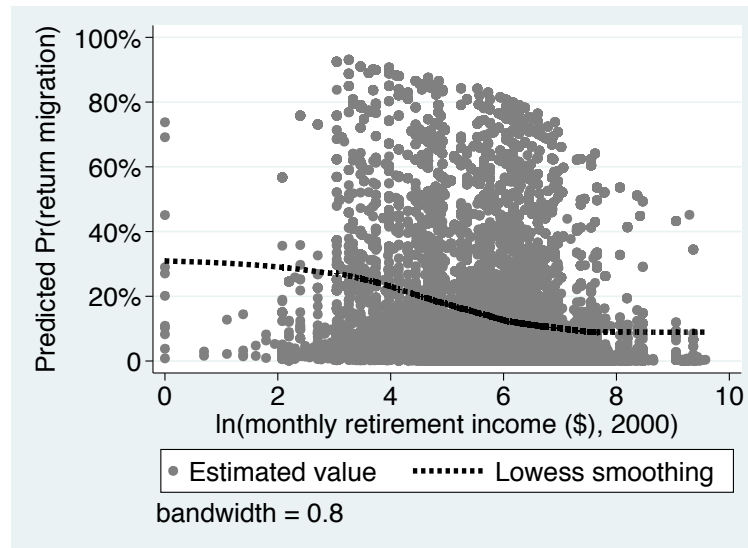


Figure 5.1: Probability of having return migrated within the last five years among Mexican immigrants aged 60 years and older who receive retirement income against the log of monthly retirement income

Source: Author's calculations using IPUM Mexico (2000) pooled with IPUMS U.S.A. (2000)

return migration for those receiving retirement income using model 3 on table 5.0.1 against the log of monthly retirement income in 2000. This figure shows that higher levels of retirement income diminish the predicted probability of return migration for those receiving retirement income.

Thus, restricting the universe to those who receive retirement income does not explain the divergent outcomes of chapters three and four. Retirement income is a significant predictor of return migration in the former chapter but not the latter.

However, even in doing so, there remains a key difference between both models which impedes perfect harmonization. Model three in table 5.0.1 includes individuals who receive retirement income from both U.S. AND Mexican institutions, not just those who receive U.S. Social Security as is the case in chapter four. Given this limitation, it may be the case that individuals who receive retirement income from Mexican institutions differ from those who receive U.S. Social Security in ways that may explain the difference in the results between both chapters.

For example, migrants who receive U.S. Social Security may have spent a greater number of years in the U.S. and may be reluctant to leave during later life. However, this situation is accounted for in the model by controlling for years in the U.S.

Another way in which U.S. Social Security beneficiaries may differ from Mexican re-

retirement income recipients is in the type of employment they had which qualified them for their respective retirement income streams. One can suppose there are two migrants who spent ten years in the United States. One paid into Social Security ten consecutive years and the other participated in the informal labor market over a longer time span and did not pay into Social Security those ten years. Even though cumulatively this individual spent ten years in the U.S., she may be less inclined to stay in the U.S. during later life having not participated in the formal labor market. The literature suggests that this is a possibility. Passel (2005a) finds that at least 35 percent of undocumented immigrants present in the U.S. in 2004 had been in the U.S. for at least ten years.

Unfortunately, it is not possible to test this assumption with the existing data. As noted, IPUMS Mexico does not indicate whether migrants received retirement income from Mexican or U.S. institutions. Rather, it only provides a total sum of retirement income which may stem from either source or a combination of both. In light of this limitation, this possibility remains unexplored and an area of future inquiry.

5.0.2 Definition of Retirement Income as an Explanation

Another explanation for the divergent results of chapters three and four is the different operationalization of retirement income in both chapters. In chapter three, I test whether immigrants respond to retirement income from U.S. and Mexican Social Security, pensions, and other forms of retirement income. In contrast, in chapter four, I only examine whether immigrants alter their return migration behavior in response to Social Security levels. It may be the case that income sources other than Social Security play an equally or more important role in determining return migration during later life. There is marginal evidence to support this possibility. Aguila and Zissimopoulos (2008) find that a larger proportion of older Mexicans in Mexico with U.S. migration experience were receiving Mexican Social Security than U.S. Social Security. However, these migrants had returned from the U.S. *at some point* in their lives. The situation may be different among migrants who have recently returned from the U.S. Further analyses should examine if this is the case.⁶

5.0.3 Becoming Comfortable with the Uncomfortable

This chapter has outlined several possible reasons why the results of chapters three and four do not corroborate. Unfortunately, many of these possibilities are untestable given existing data. As is often the case, I suspect the difference is due to a combination of factors.

⁶Unfortunately, IPUMS Mexico does not indicate if return migrants were receiving U.S. Social Security. Rather, it only indicates the amount of total retirement income from all sources the respondent was receiving. Therefore, it is not possible to know to what extent Social Security in particular influenced return migration.

Despite this uncertainty, chapters three and four reveal that retirement income plays a role in determining return migration during later life for at least certain Mexican immigrants. To what extent this result is generalizeable to all Mexican immigrants across time and cohorts remains uncertain and is a key area for further inquiry.

Table 5.0.1: Predictors of having return migrated within the last five years for Mexican immigrants aged 60 years and older (three scenarios) using a logit model

	Model 1 $\beta/(se)$	Model 2 ¹ $\beta/(se)$	Model 3 ² $\beta/(se)$
Universe	Mexican grants 60+	immi-grants 60+	Mexican grants 60+ receiving retirement income
Receives retirement income	-0.382*** (0.092)		
ln(retirement income)		-0.104*** (0.015)	-0.462*** (0.079)
ln(years in U.S.) ¹	-1.040*** (0.068)	-1.022*** (0.071)	-1.245*** (0.093)
Male	0.520*** (0.069)	0.496*** (0.070)	1.020*** (0.131)
Age (ref: 60-61)			
62-64	0.208 (0.121)	0.223 (0.123)	-0.128 (0.258)
65+	-0.020 (0.103)	0.086 (0.104)	-0.316 (0.230)
Education (ref: <Primary)			
Primary	1.334*** (0.091)	1.327*** (0.092)	1.662*** (0.175)
>Primary	0.566*** (0.124)	0.559*** (0.126)	1.432*** (0.215)
Single ²			
Married, living with spouse	0.373*** (0.091)	0.422*** (0.092)	0.343* (0.160)
Married, not living with spouse	-0.491** (0.179)	-0.506** (0.184)	-0.131 (0.327)
Living with 1+ children	-0.683*** (0.132)	-0.716*** (0.133)	-0.824** (0.254)
No. of children	-0.131* (0.063)	-0.120 (0.063)	-0.172 (0.126)
Constant	-1.286*** (0.195)	-1.346*** (0.203)	1.204* (0.499)

Source: Author's calculations using IPUMS U.S.A. (2000) pooled with IPUMS Mexico (2000).

*p<0.05, **p<0.01, ***p<0.001

¹ Values imputed for return migrants.

² Includes never married, widowed, and divorced.

Chapter 6

Conclusion

“[I]n reality [old age] is a very moving struggle. It is the refusal to become the insect, the inert object to which the adult world wishes to reduce the aged. There is something heroic in desiring to preserve a minimum of dignity in the midst of such total deprivation.”

Simone de Beauvoir - The Coming of Age

The U.S. currently undergoes two powerful demographic currents: continuous immigration and continuous aging. In discussing this juncture, the literature often treats these two forces as complementary. The common narrative is that immigrants arrive to the U.S. as ready-made workers and pay taxes to support the swelling American elderly population (Wattenberg, 1997; Myers, 2007). However, almost half a century after the Immigration Act of 1965 enabled them to enter the U.S., many of these migrants have themselves aged and have joined the ranks of the U.S. elderly population. For many, their status has evolved from that of unattached laborers to established denizens who are just as rooted to the U.S. as their native counterparts. However, their story is not that of their native counterparts. Immigrant elderly are more likely to not be covered by either Medicare or Medicaid (Friedland & Pankaj, 1997), more likely to live in poverty (Reimers, 2006), and less likely to receive Social Security benefits than the native-born (Borjas, 2009).¹ In light of these issues, these migrants may decide to return to their country of origin.

¹It is important to note that historically, immigrant elderly have disproportionately consumed Supplemental Security Income (Hu, 1998; National Research Council, 1997). However, as of August 1996, the only non-citizens that may receive Supplemental Security Income are those enrolled in the program before August 31, 1996 (Davies & Greenwood, 2004).

This dissertation examines the proportion of elderly Mexican immigrants who return migrate during later life and a possible motivation for doing so, namely limited retirement income. In examining this issue, this work attempts to move beyond the static image of the laboring Mexican immigrant. Rather, it acknowledges that many of these migrants have settled in the U.S. and help shape the ongoing discourse on population aging. As of 2000, there were 3.1 million foreign-born individuals aged 65 years and older in the United States,² 31 percent of whom were born in Latin America (He, 2002).³ Similar to their native-born counterparts, these migrants show signs of strong attachment to the U.S. Sixty-three percent of Hispanic elderly immigrants have been in the U.S. for over 30 years, 46 percent speak English well or very well, and well over half are U.S. citizens (Ruggles et al., 2010). This dissertation considers how many Latin American immigrants return to their country given their social ties to the U.S. and the reason for doing so.

6.1 Summary

According to the results of this dissertation, approximately ten percent of Latin American immigrants who are primary Social Security beneficiaries return migrate during later life. Given that 70 percent of all Latin American elderly immigrants in the U.S. receive Social Security (Ruggles et al., 2010), this number suggests that a substantial proportion of *all* Latin American elderly immigrants return migrate. It should be noted that this proportion pertains to the early 1980s and may have changed over time. Moreover, this estimate only pertains to primary Social Security beneficiaries.

However, information from the Social Security Administration may be used to roughly estimate the amount of all Latin American immigrants - not just primary Social Security beneficiaries - who return migrate during later life. The Social Security Administration currently assumes that 30 percent of legal immigrants emigrate, 17 percent of whom do so after becoming eligible for Social Security benefits (Duleep, 1994). Assuming that the 75,300 cases enumerated to have return migrated in chapter four represent 17 percent of everyone who emigrates, the amount of all Latin American immigrant elderly who return migrate may approximate $(75,300/0.17) = 442,941$. As noted, this is only a rough estimate. The proportion of immigrants who emigrate before they qualify for Social Security may be higher or lower than that of all other emigrants. Moreover, it is likely that Latin American beneficiaries have a different emigration rate than those from other countries. Jasso and Rosenzweig (1982) report that emigration among legal immigrants varies considerably depending on country of origin. Nonetheless, the results of chapter four may be used as a springboard from which to refine Social Security Administration estimates.

²Currently, this number is 4.5 million (U.S. Census Bureau, 2012).

³According to Ruggles et al. (2010), this proportion has not changed in the last ten years.

6.1.1 Fiscal Consequences

In a time when many old-age support programs experience financial strain, the ten percent rate of return migration found in chapter four potentially makes a dent on the U.S. budget. The Centers for Medicare and Medicaid Services (2011) report that the Hospital Insurance (Medicare Part A) trust fund will be exhausted in 2024 while that of the Supplemental Medical Insurance (Medicare Parts B and D) will be adequately financed into the future only by hefty fee increases. The Disability Insurance trust fund faces a similar exhaustion date in 2027 (Social Security Administration, n.d.-b). Medicaid is in similar insolvency with an expected nine percent annual rate of growth in federal Medicaid expenditures between 2012-2022 (Congressional Budget Office, 2012). Given that all of these programs are not available abroad, a ten percent return migration rate may create significant savings in these popular programs.

Aside from its economic implications, this finding also complicates a viewpoint gaining momentum in the migration literature. To date, much of the work on the interaction between immigration and aging treats immigrants as a perpetual labor-force who some argue help sustain the Social Security system (Bongaarts, 2004; Myers, 2007). These studies often do not consider the long-term consequences of immigration particularly once these foreign-born workers are elderly. Myers (2007) states that “many of us assume, unwittingly, that immigrants are like Peter Pan - forever frozen in their status as newcomers, never aging, never advancing economically, and never assimilating (104).”

A noteworthy counter-example is R. Lee and Miller (2000). The authors critique this static approach to assessing the fiscal effects of immigration by stating “such studies are easily misleading, because current U.S. immigrant *individuals* are disproportionately of working age and, consequently, pay more in taxes than they cost in benefits. Nonetheless, they will grow old and retire, and these future costs are not included (p. 350).” They conclude that when considering the costs of immigrants when they age as well as that of the second and third generations, the fiscal impact of immigration is quite small.

However, return migration sheds new light on this issue. Over ten percent of Latin American immigrants return to their home countries during later life. While these migrants are eligible to receive Social Security abroad, they are not eligible to receive numerous other program services. Therefore, while Lee is correct in stating that immigrants are not the *solution* to the Social Security problem, they may actually generate more savings than originally thought due to return migration.

Indeed, the savings just presented may be a conservative estimate. It is important to note that the analysis in chapter four does not include secondary Social Security beneficiaries or those who do not qualify for Social Security. This estimate would undoubtedly be greater were I to include return migration among undocumented immigrants who generally

do not qualify for Social Security.⁴ Unfortunately, I could not obtain information of the the proportion of all - not just Social Security beneficiaries - who return migrate at any point during later life.

However, I was able to estimate the *five-year incidence* of return migration for a pooled sample of this group and Social Security beneficiaries. Specifically, I estimate the proportion of all Mexican immigrants aged 50 years and older living in the U.S. who returned to Mexico within a five-year period in the 1990s and 2000s. Unlike the rate in chapter four, these estimates include non-Social Security beneficiaries and the undocumented although it is not possible to identify who falls into what category. In this chapter, I also grapple with a long-standing issue in migration research, namely inconsistencies in estimates across data sources. The literature documents numerous instances in which migration-related outcomes vary across data sources (Ibarraran & Lubotsky, 2007; Rees, 1977; Raymer et al., 2007; DaVanzo & Morrison, 1981; Massey & Zenteno, 2000)⁵ due to the elusiveness of tracking movement across borders.

As a means of addressing this issue, I calculate the rate of return migration using multiple data sources to assess the consistency of the outcomes. Specifically, I estimate the five-year incidence of return migration using the Integrated Public-Use Microdata Series for Mexico (IPUMS), the Mexican Health and Aging Study (MHAS), and the National Survey of Demographic Dynamics (ENADID). I find notable inconsistencies across data sources. Approximately two percent of older Mexican immigrants return migrate when calculated using IPUMS Mexico while this number is almost six percent when calculated using the Mexican Health and Aging Study. However, there is less ambiguity with regard to the demographic characteristics of return migrants. All data sources suggest that older Mexican return migrants are typically married males with a primary level education.

The results of chapter two also illuminate the drawbacks of relying on only one data source in studying migration. The four percentage point range in the rate of return migration across data sources has important implications for fiscal spending, the level of bias in estimates pertaining to Hispanic immigrants in the U.S., and our understanding of immigrant assimilation in the U.S. The greater the number of migrants who return, the greater the savings in old-age expenditures, the greater the potential for bias, and the more obscure our understanding of the aging process for Hispanic immigrants in the U.S.⁶

⁴In theory, formerly undocumented immigrants can collect benefits from the Social Security taxes they paid while undocumented (General Accounting Office, 2003). However, Burtless and Singer (2011) finds that “Social-Security-covered-wages of the undocumented workers who earn them will never result in an increased claim for Social Security benefits (Abstract)” as the vast majority of undocumented workers are unlikely to obtain U.S. citizenship or legal permanent residence.

⁵Massey and Zenteno (2000) find substantial differences in the magnitude of estimates albeit not the direction.

⁶For a full discussion of these implications see section 2.5.

6.1.2 Immigrant Retirement Preferences

One feature of this process that is largely neglected in the literature is the preferred retirement location of immigrants. In discussing elderly well-being, studies focus heavily on economic (R. L. Clark, 1989; Borjas, 2009) and health outcomes (Hitchcock et al., 2006; Heidrich, 1993; Fillembaum, 1985) and generally omit preferences regarding the location of their retirement. This is despite the fact that evidence suggests the importance of environmental factors such as amenities (Sunil et al., 2007) and weather (A. M. Williams et al., 1997) in later-life satisfaction. Kallan (1993) notes the “increasing importance of various noneconomic factors (p. 403)” in the retirement location decision. However, much of this literature focuses on older Americans (Sunil et al., 2007; Kallan, 1993) and older Europeans (Casado-Díaz et al., 2004).

This dissertation explores the retirement preferences of older Mexican immigrants. While Aguilera (2004) finds that 38 percent of previously undocumented Mexican immigrants in the U.S. intend to retire in Mexico, few studies examine how many actually do so. The results of this dissertation suggest that relatively few elderly Mexican immigrants return to their home countries during later life.

However, it remains unclear whether this is due to preference. Kallan (1993) notes the varying ability for seniors to carry out their retirement location preferences depending on traits including wealth. The author states the following:

Kallan (1993) “Environmental amenities, for example, would have a greater influence on migration propensities for younger, wealthier, and healthier migrants; it is these groups that can better afford to take amenities into account when considering to move, in contrast to those who are required to move for assistance reasons (p. 404).”

Therefore, irrespective of where they prefer to retire, Hispanic immigrants accrue less resources with which to execute their preferred retirement plans than their native-born and European counterparts. This is partly due to their participation in the informal labor-market. Burtless and Singer (2011) find that approximately half of Mexican immigrants residing in the U.S. work in employment not covered by Social Security. Even among those that do pay into Social Security, their low income levels usually translate into low Social Security benefits albeit a higher replacement rate.⁷ According to Smith (2003) Mexican males make less than 70 percent the wages of native White men (Smith, 2003).⁸ Their wages are low even compared to that of other immigrants. While the average annual wage income of non-Mexican working immigrants is \$21,000, that of Mexican immigrants is \$12,000 (Lazear,

⁷As noted by Hendley and Bilimoria (1999), “The [Social Security] program is progressive in nature so that the system returns a greater percentage of pre-retirement earnings to low-wage workers than to high-wage workers (p. 61)”

⁸The exact proportion depends on years of birth.

2007). These outcomes foreshadow impecunious retirement, a situation which may propel Hispanic immigrants to return to the home country regardless of their original retirement plans.

In chapters three and four of this dissertation, I examine whether this is the case. Specifically, I determine whether lower levels of retirement income are associated with a higher probability of return migration. I dedicate two chapters to this question to exploit two forms of data, namely survey and administrative data. In chapter three, I pool the 10.6 percent Integrated Public-Use Microdata Series (IPUMS) sample from the 2000 Mexican census with the five percent IPUMS sample from the 2000 U.S. census to determine if Mexicans immigrants aged 60 years and older with lower levels of retirement income were less likely to return migrate within the last five years than those with higher retirement income levels. Combined, these two data sources contain a rich spectrum of control variables including educational level, spousal living arrangements, and years in the U.S.

However, these data do not provide an opportunity to exploit a natural experiment. The data I use in chapter four does provide this opportunity. In chapter four, I use administrative data from the Social Security Administration to determine if Latin American primary Social Security beneficiaries who received greater Social Security benefits due to their being part of the “notch” generation⁹. Together, these two chapters explore the relationship between retirement income and return migration among elderly Latin American immigrants in the U.S. from separate vantage points.

As such, the answer to this question depends on the vantage point. While older Mexican immigrants appear more likely to return migrate if they receive lower levels of retirement income, this does not appear to be the case for immigrants from Latin America in general who are primary Social Security beneficiaries.¹⁰ The contradictory findings of both chapters illustrate the nuanced role of retirement income for migrants during later life and highlight the need for further work on this important topic.

Despite this contradiction, the results of this dissertation underscore the importance of moving beyond social and familial considerations in discussing the determinants of return migration. While studies generally agree that immigrants build social and familial networks over time that compel them to remain in the U.S. (Massey, 1987; Ruiz-Tagle & Wong, 2009), this dissertation sheds light on another possible time-dependent predictor of return migration: retirement income. At least for a subset of older Latin American immigrants, retirement income appears to be influential in predicting their country of residence during later life.

⁹See section 4.1.1 for a description of the “notch” generation.

¹⁰I provide a detailed discussion of why the general results of these two chapters might differ in chapter five.

6.2 Limitations and Further Research

While informative, this dissertation does not discuss several themes which merit greater attention.

One of the most notable limitations is that it treats return migration as a singular occurrence and does not explore the tendency for migrants to move back and forth between countries in accordance with life circumstances. I was limited to treating return migration in this manner by data limitations. The data sources which I used in this work only contain information on return from last trip to the U.S. Although Social Security Administration files do contain information on country of residence for every year, this variable was not available for the period of observation in chapter four. In the future, I will use Social Security Administration data to create a multi-state lifetable which describes the probability of entering and leaving the U.S. among older immigrants for each five-year age group. I will also explore whether migrants utilize Medicare services upon re-entering this U.S. This information may shed light on the extent to which migrants coordinate their migration behavior with their health care needs.

Another noteworthy future endeavor is an examination of the path to citizenship for older return migrants. While existing research suggests that relatively few older Mexicans with U.S. migration experience are U.S. citizens or legal permanent residents U.S. (Aguila & Zissimopoulos, 2008), this research does not tell us when these migrants obtained U.S. legal status. Time since U.S. citizenship may help explain the timing of return migration as some migrants may remain in the U.S. long enough to become U.S. before returning to their country of origin. In the future, I will use the Mexican Migration Project to explore this issue.

A third topic which I wish to further develop is the interaction between time in the U.S. and retirement income. As there is some correlation between both variables, it is difficult to tease out the separate effects of each. However, over a quarter of unauthorized migrants have been in the U.S. for at least ten years (Passel, 2005b) and therefore, likely do not pay into Social Security. These migrants offer an opportunity to explore whether they are as likely to return to their home countries during later life as those who have been here as long but do not have U.S. legal status.

6.3 There's No Place Like Home

A young girl in red shoes yearning for Kansas after an odyssean journey once uttered these famous words. Like this young girl, the migrants I discuss in this work have traversed the roads of a foreign land although theirs were paved with the shimmering concrete of U.S.

coastal cities and the earthy plains of the American heartland instead of yellow bricks. The results of the analyses presented here suggest that unlike this young girl, by the end of this journey, “home” was not necessarily the place of birth for most of these migrants. Most settled in the destination country. This work has attempted to throw light on the few who returned. Like Odysseus in Homer’s epic tale, these migrants sidestepped several factors pulling them to remain in foreign territory and returned to the homeland at older ages. Much has yet to be understood about this journey but its importance will not diminish. As the U.S. continues to age and migrants keep crossing its borders, this topic promises to be even more salient in years to come.

Appendix A

Chapter 2

A.1 Questions in various migration data sources

A.2 Description of independent variables in chapter 2

Table A.1.1: Questions covered in various migration surveys

Variable	IPUMS Mexico	Mexican Health and Aging Study (MHAS)	National Survey of Demographic Dynamics (ENADID)	Mexican Migration Project (MMP)
<i>Migration</i>				
Country of residence 5 years ago	x	x	x	x
Year last returned from the U.S.		x	x (within the 5 years preceding the survey year)	x
Year first arrived in the U.S.		x		x
Reason returned to Mexico	x			
Reason migrated to U.S.			x	
Citizenship status		x	x	x
<i>Demographics</i>				
Age	x	x	x	x
Sex	x	x	x	x
Marital status	x	x	x	x
Education	x	x	x	x
<i>Health</i>				
Self-reported health		x		x
Lung disease		x		x
Cancer		x		x
Heart disease		x		x
Stroke		x		x
Hypertension		x		x
<i>Family structure</i>				
Number of children	x (only asked of women 12+)	x	x (only asked of women 15-54)	x
Lives with spouse	x	x	x	x
Lives with one or more kids	x	x	x	x

Table A.2.1: Education categories in different surveys

	Mexico IPUMS	MHAS	ENADID
school3	mx00a_edlev1	a3_1	p03d1701
< Primary	None; Preschool or kindergarten	None	Ninguno (None); Preescolar (Preschool)
Primary	Primary	Primary	Primaria (Primary)
> Primary	Secondary; College-prep, secondary, or high school; Normal (teacher- training); Technical or commercial school; Professoional	Secondary (Junior High); Technical or commerical; Preparatory or high school; Basic teaching school; College; Graduate	Secundaria (Junior High); Preparatoria o Bachillerato (High school); Normal carrera (Normal, teacher-training); Professional o superior (Professional or more); Maestría o doctorado (Master's or doctorate)

Table A.2.2: Marital status category in different surveys

	Mexico IPUMS	MHAS	ENADID
marst	marst	a10	p03d19
Single/never married	Single/never married	Single	Está soltero(a) (Single)
Married/in union	Married/in union	Married; In a consensual union	Está casado(a) (Married); Vive con su pareja en unión libre (Consensual union)
Separated/ divorced/ spouse absent	Separated/ divorced/ spouse absent	Divorced; Separated from a union; Separated from a marriage	Está divorciado(a) (Divorced); Está separado (Separated)
Widowed	Widowed	Widowed from a union; Widowed from a marriage	Está viudo(a) (Widowed)

Table A.2.3: Worked last week categories across surveys

	Mexico IPUMS	MHAS	ENADID
workedlwd	mx00a_econact	i5	p03d20
Work	Worked; Worked, stated looking for work; Worked, stated that s/he is a student; Worked, stated household duties; Worked, stated retired or pensioner; Worked, stated does not work; Worked, no information available;	Work	trabajó (worked)
Did not work, but had a job	Had a job but did not work	Not worked, but you had a job	tenía trabajo pero no trabajó (Had job but not at work)
Looked for work	Looked for work	Look for work	buscó trabajo (Looked for work)
Were a student	Student	Were a student	Es estudiante (Was a student)
Worked around house	Household duties	Work around house	Se dedica a los quehaceres de su hogar (Worked around house)
Not working	Is retired or pensioner; Is permanently disabled for purpose of work; Does not work	Not work	Está jubilado(a) o pensionado(a) (Is retired or pensioner); Tiene alguna limitación física o mental que le impide trabajar (Has a physical or mental limitation the prohibits from working)

Appendix B

Chapter 3

B.1 Descriptive Statistics of Database Used for Multiple Imputation

Table B.1.1: Descriptive statistics of Mexicans in Mexico aged 50 years and older who reported having returned from the U.S. five years prior

	Males	Females
Unweighted N	77	49
Weighted N	19,665	13,418
Median age	57	60
Education		
<Primary	3.7%	11.4%
Primary	45.9%	34.2%
High School	11%	14.2%
College	32.2%	47.4%
Class of worker		
Not working	35.3%	77.5%
Employee	15.6%	4.1%
Day laborer	3.1%	0
Owner	8.9%	0.1%
Owner-account worker	27.1%	11.5%
Unpaid worker	8.9%	6.7%

B.2 Alternative model specifications of chapter three models

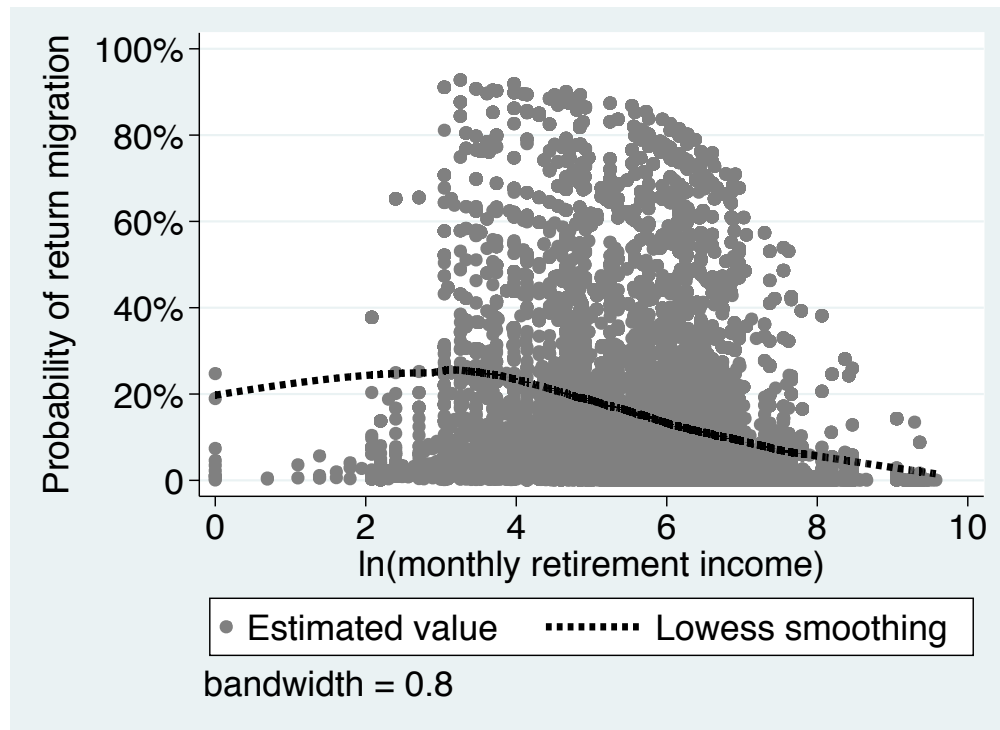


Figure B.1: Predicted probability of return migration among Mexican immigrants aged 60 years and older who receive retirement income against the log of monthly retirement income assuming a quadratic fit

B.3 Sensitivity analysis of model which only includes individuals who receive retirement income

Table B.3.1 demonstrates the effect of retirement income on the probability of return migration under three scenarios. The first, presented in model one, assumes that IPUMS Mexico and IPUMS USA population weights adjust for undercount. Model two contains population weights which are inflated to adjust for undercount, i.e., five percent for both IPUMS Mexico and IPUMS USA. Model three assumes an unadjusted undercount of five percent for IPUMS Mexico and a ten percent unadjusted undercount for IPUMS USA.

The results of this table reveal that higher levels of retirement income are associated with a lower probability of return migration even when assuming different rates of undercount.

Table B.3.1: Predictors of having return migrated within the last five years for Mexican immigrants aged 60 years and older who receive retirement income (assuming different rates of undercount) using a logit model

	Model 1 $\beta/(se)$	Model 2 $\beta/(se)$	Model 3 $\beta/(se)$
Amount by which IPUMS Mexico weights are inflated	0	5%	5%
Amount by which IPUMS U.S.A. weight are inflated	0	5%	10%
ln(retirement income)	0.590 (0.312)	0.575 (0.304)	0.576 (0.303)
ln(retirement income) ²	-0.105*** (0.031)	-0.104*** (0.030)	-0.104*** (0.030)
ln(years in U.S.) ¹	-1.249*** (0.096)	-1.246*** (0.094)	-1.248*** (0.094)
Male	1.092*** (0.132)	1.095*** (0.128)	1.095*** (0.128)
Age (ref: 60-61)	0.000	0.000	0.000
62-64	-0.116 (0.254)	-0.104 (0.247)	-0.105 (0.247)
65+	-0.369 (0.233)	-0.354 (0.226)	-0.352 (0.226)
Education (ref: <Primary)			
Primary	1.696*** (0.182)	1.688*** (0.175)	1.687*** (0.175)
> Primary	1.592*** (0.212)	1.549*** (0.206)	1.548*** (0.206)
Single ²			
Married, living w/ spouse	0.331* (0.164)	0.341* (0.160)	0.346* (0.160)
Married, not living w/ spouse	-0.042 (0.298)	-0.033 (0.290)	-0.033 (0.290)
Living w/ 1+ children	-0.829** (0.260)	-0.854*** (0.252)	-0.856*** (0.252)
No. of children	-0.160 (0.132)	-0.150 (0.127)	-0.150 (0.127)
Constant	-1.299 (0.878)	-1.196 (0.855)	-1.240 (0.853)

Source: Author's calculations using IPUMS U.S.A. (2000) pooled with IPUMS Mexico (2000).

*p<0.05, **p<0.01, ***p<0.001

¹ Values imputed for return migrants.

² Includes never married, widowed, and divorced.

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