Dynamics of Immigration: Return Migration to Western Mexico

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Foreword

Return migration is a subject rarely discussed during the national debate on immigration, let alone during California's own public dialog on restriction of public services to immigrants. In fact, in the long history of immigration to America there has been a tradition of many new arrivals returning to their homeland—some soon after arrival, others a few years after migration. The image of people moving back and forth across our national borders is not a sharp one in the public's mind because the data that document this flow are few, and the belief is well established that people who come to America come to stay. This report on return migration to western Mexico begins to fill in a vivid picture of California's immigrant population. Using a rich and historically diverse survey dataset of families in western Mexico, Belinda Reyes, the author of *Dynamics of Immigration: Return Migration to Western Mexico*, paints a portrait of substantial return migration to hometowns and cities in Mexico. Moreover, she finds that those immigrants who remain in the United States are quite different from those who return to their Mexican

homeland. Those who choose to stay in California have the best employment experiences, the highest wages, and the most education—just the kind of selection that has been the key feature of U.S. immigration for many generations.

The author draws some implications from this selectivity for demands on social services and public service. She suggests that the driving force of movement to California by Mexicans from western Mexico is well-paying jobs, and not the availability of plentiful benefits from our social service programs. While the survey data cover only the states of western Mexico, these states are historically the most important region sending immigrants to California and the United States.

This study is the second in a series of reports by the Public Policy Institute of California that focus on an understanding of the process of immigration to California, and on the implication of that process for the long-term economic health of the state and its people. An earlier PPIC report, *Undocumented Immigration to California: 1980–1993*, provides the first solid annual estimates of undocumented flows over a 13-year period, and suggests that those flows are closely tied to the health of the state's economy. A future report will document the consequences of Proposition 187 for the use of prenatal services in California, and yet another report will estimate the onward movement of immigrants to other states and regions of the United States.

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Summary

In the public debate over immigration policy, little is said about return migration. Yet, historically, a large percentage of immigrants have returned to their native countries after only a few years in the United States. Some community studies and press reports have discussed the return migration of recent Mexican immigrants. However, beyond using estimates of the net number of immigrants, the debate over immigration policy has virtually ignored the possibility that return migration may affect the costs of immigration, the composition of the immigrant population in the United States, or estimates of how well immigrants assimilate. The failure to consider return migration could have unforeseen results for policy: If return migration is large and selective (that is, those who return are different from those who stay), policymakers run the risk of making immigration policy decisions based on inaccurate data or faulty assumptions.

Relevance of Return Migration for Policy Considerations

The public cost of immigration has become a central political issue in California, as well as nationally. Many observers claim that immigrants, attracted by California's resources and social services, come to the state and plan to settle permanently. They also claim that undocumented immigrants cost the state far more than they contribute in taxes. At the national level, cost concerns recently prompted certain provisions of the new Federal Welfare Reform Act (Public Law 104-193, *The Personal Responsibility and Work Opportunity Reconciliation Act of 1996*) that severely tighten the requirements for legal immigrants to qualify for federal programs.

How these provisions will affect the use and costs of public programs depends on how long immigrants stay and what kinds of demands those who stay make on the programs. The legislation lengthens the exemption period—during which immigrants are not eligible for benefits—from five to 10 years. If most immigrants return to their countries of origin before the end of the exemption period, the new legislation would affect use only for those who have been in the United States more than five but fewer than 10 years.

In any case, demand for services will also depend on whether those who remain in the United States through the exemption period are a selective sample of all immigrants. If those who stay are more educated and more successful in finding jobs than those who return, they will be less likely to apply for social services. Moreover, immigrants' use of services and their contribution to revenues may vary over the time they stay in the nation or the state. Some may impose a short-term cost but provide a long-term benefit as their earnings increase and they pay higher

taxes. Given these possibilities, it is useful to know more about the characteristics of the long-term settlers.

This study is the first to examine the length of stay and the differences between Mexicans who stay and those who return. In 1990, immigrants from Mexico accounted for 39 percent of all immigrants (legal and illegal) and 50 percent of the illegal immigrants in California. This study analyzed the return migration of a sample of immigrants from western Mexico, which historically has sent the most immigrants to California and the United States.

Data for the study come from the Mexican Migration Project. Data were collected in retrospective surveys between 1982 and 1993 by Douglas Massey and Jorge Durand, in six states of western Mexico. With these data, the behavior of immigrants from this area could be tracked over time. Further, because immigrants were interviewed in Mexico and the United States, the data capture both long-term settlers and temporary migrants.

Major Findings

The rate of return of immigrants to western Mexico is high in the sample. In general, return rates are higher for those with low education, for low-wage earners, and for undocumented immigrants. Within two years, over 50 percent of those with less than an elementary school education, 70 percent of the people employed as agricultural workers, and 50 percent of the undocumented immigrants in the sample return to Mexico. Immigrants who are unemployed also return soon after migration: Nearly 70 percent of them return within the first year after migration.

Most of the adult immigrants in the sample are male (70 percent) and have low levels of education. Most men are of working age and more than 30 percent of them were employed as agricultural workers. Most of them (83 percent) move alone (that is, without other family members) and are undocumented (57 percent).

The women who migrate have slightly more education than the men and a higher percentage of them are in higher-paid occupations than men. Like the men, most women (64 percent) move alone, but fewer than half the women (47 percent) are undocumented. Women are also more likely to stay in the United States for longer periods of time. About 40 percent of them stay for longer than 15 years, whereas only about 20 percent of men remain that long.

A fairly high percentage of immigrants (51 percent of the men and 26 percent of the women) in the sample move more than once. However, the study's findings seem to indicate that circular migration is not a prelude to settling down for long periods of time in the United States: Most of the people who have been in the United States for long periods move only once and most multiple movers (82 percent) stay only a couple of years.

Implications

The study's results make clear that return migration, the length of time immigrants stay in the United States, and the differences between returnees and long-term settlers are critical for considering immigration's social and economic effects. The decision to remain or return to Mexico appears strongly related to immigrants' access to social networks and to their economic experience in the United States.

Relatively Few Immigrants Stay Longer Than Five Years

About 50 percent of all the immigrants in the study sample return to Mexico after only two years, and by 10 years, almost 70 percent of those who came to the United States have returned. But what do such percentages mean in numbers of immigrants? The study estimated that about 5 million immigrants (documented and undocumented) from the sampled communities in Mexico moved to the United States between 1980 and 1990—or an average of almost 504,000 immigrants per year. About 137,700 (27 percent) of those who enter in a given year stay in the United States longer than 10 years.

Within the United States, California is the destination of choice for two-thirds of the immigrants in the sample: The study estimated that about 3.2 million immigrants from the sampled communities entered the state between 1980 and 1990, and almost 65 percent of them were undocumented. Of the roughly 326,000 immigrants (documented and undocumented) from those communities who entered the state per year, about 95,000 (29 percent) stay in California longer than 10 years. However, the undocumented immigrants in the sample return much more quickly then the legal immigrants. About 213,000 undocumented immigrants from the sampled communities entered California each year between 1980 and 1990. By the end of 10 years, all but 57,646 (27 percent) who entered in a given year will have returned to Mexico.

Most Immigrants Do Not Qualify for Public Service Programs

With such high rates of return migration, a relatively small percentage of immigrants from western Mexico stay in the United States long enough to qualify for social services under current eligibility rules. Only long-term legal settlers and/or immigrants who gain early

citizenship could put demands on the social service systems of California and other states.

Undocumented immigrants are barred from receiving anything except emergency medical services under the Medicaid program. Under the new Federal Welfare Reform Act, they are barred from assistance through the Special Supplemental Food Program for Women, Infants and Children (WIC). Families headed by an undocumented person can qualify for Aid to Families with Dependent Children (AFDC), Medicaid, food stamps, and other programs if (and only if) their children are citizens. However, a relatively small percentage of undocumented immigrants in the sample would qualify for these or other benefits, for several reasons: 74 percent of them are males and most move alone, stay for less then two years, and then return to Mexico. Only 12 percent of the undocumented immigrants move with children or have them after migration and only 9.5 percent of the undocumented immigrants with children had them in the United States, which makes those children citizens and eligible for benefits.

Legal immigrants are eligible for services only after specified waiting periods. The Welfare Reform Act will make legal immigrants ineligible for any federal program (Supplemental Security Income [SSI], food stamps, and Medicaid) unless they have worked in the United States for 40 quarters receiving benefits or are refugees who have been in the country for less than five years.

Legal immigrants will also not be eligible for any federal means-tested public benefits (including cash, medical, housing and food assistance, or social services) for five years beginning on the date they enter the country. After five years, they could be eligible, but the

sponsor's income and resources are deemed "available" until the immigrant meets the 40-quarter requirement or becomes a U.S. citizen.

Return migration is not as prevalent among legal immigrants as it is among the undocumented. Even so, a large percentage of legal immigrants return in the first few years after migration. By five years, 43 percent, and by 10 years, 50 percent of the legal immigrants in the sample returned to Mexico. The 50 percent who remain in the United States for longer then 10 years are those with the most education and the strongest ties to the labor market, and thus the least likely to require public services when they are eligible.

Those Who Stay Have a Higher Potential for Assimilation

As the discussion above indicates, those who stay are a selective sample whose characteristics give them greater assimilation potential:

- Most of the immigrants from western Mexico have less than an elementary school education, and these are the immigrants most likely to return to Mexico. In contrast, high school educated immigrants are the least likely to return.
- Immigrants who are employed and are in high-earning occupations are more likely to stay in the United States than those who are unemployed or are agricultural and nonmanual workers.
- Although 54 percent of those who come from western Mexico are undocumented, they are more likely to return than documented immigrants.

These and other results of the study suggest that most immigrants from the sampled communities come to the United States and California for economic reasons and that social programs probably have little effect

on migration decisions, especially for undocumented immigrants. If so, undocumented immigration is likely to continue even though access to public programs and services is further limited or restricted.

Costs of Immigration Should Be Estimated Over Duration of Stay

The results also suggest that, in any given year, immigrants may impose a net cost; but as low-wage earners return to Mexico and the earnings of long-term settlers increase with time in the United States, immigrants may provide a long-term benefit. Thus, annual cost accounting—which is generally invoked in the immigration debate—can address short-term issues, such as whether immigrants cost more in a given year than they contribute to public coffers. However, cost accounting is not appropriate for determining the number who are allowed to enter the country or the public services that will be provided to them.

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1. Introduction

Return migration is an important, but often neglected, component of the immigration process. Various studies have estimated the return migration of early immigrant groups, but aside from community studies and press accounts, relatively little is known about the return migration of recent immigrants or those immigrants' characteristics.[1] Return migration affects the costs of immigration, the composition of the immigrant population in the United States, and estimates of immigrant assimilation. If return migration is large and selective (that is, those who return are different from those who stay), then policymakers run the risk of making policy decisions for the immigrant population based on inaccurate data and faulty assumptions. To provide an empirical starting point for public policy decisions, it is essential to understand the extent and dynamics of immigrants' return migration.

[1] Exceptions are Lindstrom's (1996) article on Mexican immigrants and Suzuki's (1995) article on Japanese return migration.

The study reported here takes a step in that direction. It analyzes data on the return migration of immigrants from the western part of Mexico, traditionally the most important source region for Mexican migration to the United States and California. In 1990, immigrants from Mexico represented 22 percent of the immigrant population of the United States. They represent an even higher percentage of the immigrant population in California: 39 percent of the Golden State's immigrants (Johnson, 1993) and half of its *undocumented* immigrants (Warren, 1994) are from Mexico.

The importance of the western part of Mexico as a sending region is suggested by an Immigration and Naturalization Service (INS) survey of applicants for amnesty following passage of the Immigration Reform and Control Act of 1986. Of those applying in California, 54 percent of the Special Agricultural Worker (SAW) applicants and 64 percent of the pre-1982 applicants born in Mexico last resided in the western part of Mexico.[2] The return migration patterns of immigrants from this area are clearly relevant to the state and national immigration debates.

Based on the analysis, this report addresses two questions:

- How large is return migration from the United States to western Mexico?
- Do those who stay and those who return differ in policy-relevant ways?

This chapter discusses the relevance of return migration for public cost considerations and describes the organization of the report.

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[2]California Health and Welfare Agency, *A Survey of Newly Legalized Persons in California*, 1989.

The Relevance of Return Migration for Cost Considerations

The public cost of immigrants—particularly undocumented immigrants—has become a central political issue nationally, and especially in California. Critics of immigration maintain that immigrants, attracted by California's resources and social services, move to the state and plan to settle permanently. They also claim that undocumented immigrants cost the state far more than they contribute in taxes. At the national level, cost concerns prompted certain provisions of the Federal Welfare Reform Act (Public Law 104-193, *The Personal Responsibility and Work Opportunity Reconciliation Act of 1996*) that severely tighten the requirements for *legal* immigrants to qualify for federal programs.

How these provisions will affect the use and costs of public programs depends on how long immigrants stay and what kinds of demands they make on those programs. The legislation lengthens the exemption period during which immigrants are not eligible for benefits from five to 10 years. If most immigrants return to their countries of origin before the end of the exemption period, the new legislation would affect use only for those who have been in the United States more than five but fewer than 10 years.

In any case, demand for services will also depend on whether those who remain in the United States through the exemption period are a selective sample of all immigrants. If those who stay in the United States have higher levels of education and are more successful in finding jobs than those who return, they will be less likely to seek out social services.

Whatever the exemption period, and however long they stay, immigrants' use of services and their contribution to revenues may vary

over the duration of their residence in the nation or state. Some immigrants may impose a short-term cost but provide a long-term benefit as their earnings increase and they pay higher taxes. It is therefore important to determine whether immigrants are a net cost or a net benefit for the state and the nation *over the duration of their residence in the United States*, as opposed to whether they are a net cost or a net benefit *on an annual basis*.[3] To this end, it is essential to determine how long immigrants stay in the United States and how many immigrants will make California a permanent place of residence.

An example may help illustrate this point. For the most part, the total number of immigrants in the United States is calculated using decennial Census data. A typical method of determining the net increase in the total number of immigrants (legal and illegal) in the United States at a given time is to subtract the number of immigrants in the most recent Census from the number in the prior Census.[4] With this methodology, the number of immigrants in the Census increases if a constant flow of immigrants enters the United States every year to settle down. For example, if 100,000 immigrants enter every year and they all stay, by the end of the ten-year period between censuses, 1,000,000 new

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[3]Most cost estimates cited in policy debates are calculated at a specific year. Some examples are Los Angeles County Internal Services Division (ISD), *Impact of Undocumented Persons and Other Immigrants on Costs, Revenues and Services in Los Angeles County*, November 6, 1992; Rebecca Clark and Jeffrey Passel, *How Much Do Immigrants Pay in Taxes? Evidence from Los Angeles County*, The Urban Institute, PRIP-UI-26, Washington, D.C., August 1993; Georges Vernez and K. F. McCarthy, *The Cost of Immigration to Taxpayers: Analytical and Policy Issues*, RAND, Santa Monica, California, 1996; and Donald Huddle, *The Costs of Immigration*, Carrying Capacity Network, Washington, D.C., 1993.

[4]So far, there is no yearly estimate of flows of immigrants; demographer Hans Johnson, *Undocumented Immigration to California: 1980–1993*, Public Policy Institute of California, 1996, is the only study that investigates net yearly flows of immigrants.

immigrants will be living in the United States.[5] Suppose, however, that beginning in the first year of the decade, 500,000 immigrants arrive in the United States each year, but they all stay for only two years, so that at any one time there are 1,000,000 new immigrants in the United States.

These two examples lead to the same increase in the number of immigrants at the end of the decade but will have very different effects on the state of California. For instance, if short-term immigrants make little use of emergency medical services and leave their children behind in Mexico, their demands for social services may be minimal, but they pay sales taxes from the moment they enter the state. Thus, they may be a net benefit to the state. Conversely, if long-term settlers use social services after many years in the United States and never earn enough money to pay for their use of services, they will be a net cost to the state.

Given these possibilities, it is important to identify the characteristics of the long-term settlers, as well as how long immigrants stay, to determine the long-term effects of immigration. Knowing that a high proportion of recent immigrants have low levels of education tells us almost nothing about the characteristics of the long-term settlers, if those who leave differ from those who stay in the United States. We need to determine the potential economic progress and social mobility of those who stay.

However, most of the research on immigrants' social mobility and assimilation relies on cross-sectional data (in this report, *assimilation* refers to improvement in earnings).[6] We could estimate the economic

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[5]This example ignores mortality.

[6]Immigrants assimilate when their earnings converge with the earnings of the native born. Assimilation also involves other factors such as English proficiency, improvements in educational attainment, and wealth accumulation.

progress of immigrants by using such data if there were no selectivity in terms of either cohort quality over time or selective return migration.[7] Economic progress could be partially measured by combining successive censuses and measuring the progress of immigrant cohorts over time (Borjas, 1985, 1987). Unfortunately, that would not address the problem of selective return because there is no way of differentiating the characteristics of return migrants from those of long-term settlers, unless one can determine who stays and who returns.[8] This is important because, if the less successful are more likely to return, the people who remain will have a greater assimilation potential than the whole sample of recent immigrants.

This is the first study to examine Mexican immigrants' length of stay and to differentiate characteristics of immigrants who stay and those who return. It is based on data collected in retrospective surveys between 1982 and 1993 by Douglas Massey and Jorge Durand for the Mexican Migration Project. With these data, we can track the behavior of immigrants from western Mexico over time. Further, because immigrants were interviewed in Mexico and the United States, the data capture both long-term settlers and returnees.

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[7]Selectivity in cohort quality implies that the characteristics of the immigrant population change over time. Borjas (1985), for example, argues that recent immigrants have lower "quality" than early cohorts of immigrants. The selectivity of return implies that people with particular characteristics are more likely to return than an average person. DaVanzo (1983) finds that people with low levels of education are more likely to return to their origin location than people with higher levels of education.

[8]Researchers generally need to make assumptions about return migration and the characteristics of immigrants if they use cross-sectional data to estimate immigrants' assimilation.

Using these data, the study

- determines the proportion of Mexican immigrants from the western part of Mexico who remain in the United States for long periods of time;
- compares the characteristics of those who return to Mexico and those who stay in the United States for longer periods of time;
- investigates the implicit reasons why some immigrants remain in the United States while others return to western Mexico.

The final chapter considers what the findings imply about the actual numbers of immigrants who stay for long periods of time, about immigrants' use of services under the Federal Welfare Reform Act, and about the assimilation potential of the sample of immigrants.

Organization of the Report

Chapter 2 briefly reviews the literature on return migration, discusses some theories of return migration, and describes the assumptions of this study. Chapter 3 discusses the data, problems with the data, the methodology, and the variables used in the analysis. Chapter 4 presents the results of descriptive and multivariate analyses of the data. Chapter 5 discusses the conclusions and speculates on their implications for the immigration debate.

2. Literature and Theories About Return Migration

There is a moderate amount of research on the return migration of earlier immigrant groups, less on return migration of recent immigrants, and very little on the characteristics associated with return migration patterns. This chapter addresses what is known about the prevalence of return migration and how theorists explain return migration behavior; it also describes the assumptions of this study.

What Is Known About the Prevalence of Return Migration?

The U.S. Bureau of the Census (1960) estimates that of the 15.7 million immigrants who were admitted for permanent residence in the United States between 1908 and 1957, 30 percent returned to their country of origin. The share of the immigrant population who return varies by place of origin. Kirwan and Harrigan (1986) found that 25 percent of the male immigrants from Finland returned to their country

of origin after only two years in the United States, while Gould (1980) estimates that some 60 percent of the Italian immigrants who moved to the United States early in the century went back to Italy after a few years.

The press has documented some of the complexities of contemporary immigration. According to the *Los Angeles Times*, "an ever increasing number [of immigrants] are going back home, mirroring a trend recorded during the Great Depression. In Southern California, with its enormous immigrant population and persistent economic problems, the reverse migration is even more pronounced."[1] Another *Los Angeles Times* report describes an immigrant population that moves to the United States to work and returns permanently to their country of origin after "building nest eggs in a U.S. economy that, even in bad times, is far more robust than those of their homelands."[2]

Other articles describe an immigrant population that continuously moves between Mexico and the United States. A June 1993 article in the *Washington Post* describes a bus depot in Houston, Texas that is frequented by Mexican immigrants who commute between Mexico and the United States on a daily, weekly, or other temporary basis. Julio Guerrero, 28, a welder in Houston, finished school in Mexico and came to the United States eight years ago to start work. He is a naturalized U.S citizen, but his wife and two children still live in Mexico. Julio commutes to his home in Mexico on weekends.[3] His is one of many examples of circular migration between Mexico and the United States and illustrates the complexities of the migration process.

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[1] *Los Angeles Times*, March 4, 1993, p. A1.

[2] *Los Angeles Times*, February 21, 1993, p. B1.

[3] The *Washington Post*, June, 6 1993, p. A1.

Ethnographic research on communities in Mexico finds that many immigrants do not intend to permanently settle in the United States and that the process of return migration may, in fact, be selective (Bean, Telles, and Lowell, 1987; Cornelius, 1976 and 1978; Hugo, 1981; Jenkins, 1977; Jones, 1982a, b; Massey et al., 1987; Mines and de Janvry, 1982; Ranney and Kossoudji, 1983; White, Bean, and Espenshade, 1990). A few econometric analyses show similar results (Borjas, 1994; Lindstrom, 1996).

Harry Cross and James Sandos' (1981) study of Mexican immigrants found that short-term migrants tend to be males in their mid 20s who move to the United States seeking employment. Wayne Cornelius (1976a, b) found that immigrants are mostly married men who travel to the United States without their wives and children.[4] Research on return migration from the United States has found that long-term settlers are better educated and better skilled than those who return (DaVanzo, 1976; DaVanzo and Morrison, 1981; DaVanzo, 1983).

Although many immigrants evidently return to their place of origin, most policy analysts and legislators have assumed that immigrants migrate with the intention of settling permanently in the United States. Even when return migration is taken into account in public policy, policy analysts often assume a constant rate of return and no selectivity. Assuming that there is no selectivity implies that the return migrants are a random sample of the immigrant population. In fact, people with certain characteristics and experiences may be more likely to return than others. The magnitude of return migration and the characteristics of

[4]Also see Ranney and Kossoudji (1983) and Durand and Massey (1992).

those who stay or return can have important ramifications for policymaking.

How Do Theorists Explain Return Migration?

The various theories and hypotheses about return migration include the disappointment theory, the circular migration theory, the target income theory, and the social network theory. These theories are discussed below.

The Disappointment Theory

The disappointment theory of migration maintains that people engage in return migration because they "failed" (that is, could not find employment or could earn only low wages) at the target location (Herzog and Schottman, 1982). People move with the intention of settling in the new location, but with limited information before migration may miscalculate the benefits of migration. Those who make mistakes may have to remigrate to obtain success.

It is difficult to know what information prospective migrants have before migrating; hence, supporters of this hypothesis use measures of distance and the immigrants' education as proxies for available information. They believe that the greater the distance between origin and destination, the sparser the information about a new location and thus the greater the chance of making a mistake. However, independent of distance, more-educated people may be better at gathering information. They may also have more-sophisticated networks of information than the less-educated, including professional networks or access to the Internet.

If the disappointment theory is correct, we would expect that people who cannot find employment or those who earn low wages in the United States will be more likely to return than those who find employment and earn high wages. This will come about soon after migration rather than after an extended period of time. Empirical research has provided only mixed support for the disappointment hypothesis (King, 1986).

The Circular Migration Theory

The circular migration theory refers to "a great variety of movement, usually short term, repetitive or cyclical in nature, but all having in common the lack of any declared intention of a permanent or long lasting change of residence" (Zelinsky, 1971, pp. 225–226). The temporary and circular nature of Mexican migration has been extensively documented (Bean, Telles, and Lowell, 1987; Cornelius, 1976b; Jenkins, 1977; Jones, 1982a, b; Lindstrom, 1996; Massey et al., 1987; Mines and de Janvry, 1982; Ranney and Kossoudji, 1983; White, Bean and Espenshade, 1990). Land shortages, pressures on agricultural resources, and the temporary and unstable quality of migrant employment make it difficult for people to earn sufficient income to support themselves and their families in either the immigrant's place of origin or his destination. Furthermore, the comparatively high purchasing power of U.S. earnings in Mexico and a strong preference for residence in the community of origin reinforce the temporary nature of much of Mexican migration to the United States (Cornelius, 1976b; Escobar, Gonzalez, and Roberts, 1987; Lindstrom, 1996; Massey et al., 1987; Reicher and Massey, 1979).

Under these conditions, circular migration provides the means to maximize the family's income and keeps the mover's options open for both the origin and destination, reducing the risk of not being able to

support the family (Elkan, 1959; Hugo, 1981). As an example, *ejidatarios* (holders of communal land holdings) are required to work their own land or run the risk of losing their title to it. In many instances, however, they cannot earn enough income from the land to support their families. Many of them move to the United States temporarily during down periods on the farm and return home for the harvest (Taylor, 1987). Under this theory, permanent settlement occurs as the immigrant acquires experience in the United States, gains familiarity with the U.S. labor market, and specializes in an occupation. As the constant shuttling back and forth becomes more difficult to sustain, men bring their families to settle permanently in the United States (Durand and Massey, 1992).

The Target Income Theory

According to the target income theory, immigrants move to accumulate savings to invest in better technologies or to buy more land in their home community (Borjas, 1994; Hill, 1987; Lindstrom, 1996; Massey et al., 1993). This theory assumes that immigrants have a strong preference for remaining in their home community rather than relocating in the United States but must resort to international migration because of limited wage opportunities at home (Berg, 1961). Immigrants plan to stay in the United States for as long as it takes to accumulate enough savings to reach a particular level of income; they then return to their place of origin. The higher their income, the faster they are able to accumulate their target income and the sooner they return. Although there is much ethnographic research in this area, only Lindstrom (1996) presents an econometric examination of the target income theory.

The Social Network Theory

These three theories are all based on economic considerations, but immigration is a social process that involves networking as well as an economic process. As proposed by Massey (1990), "Immigration is far more dynamic than standard economic analysis suggests because it tends to feed back on itself through social channels. . . . Once a critical takeoff stage is reached, migration alters social structures in a way that increases the likelihood of subsequent migration. . . . It relies on a variety of social-structural mechanisms, the most important of which is network formation" (p. 68). In addition to increasing the probability of migration by reducing its cost, social networks may increase the probability of permanent settlement (Greenwood, 1969; Taylor, 1986; Mines and Massey, 1985). Prospective immigrants can count on earlier migrants for information, transportation, housing, and in some cases even employment. Every new migrant expands the social network and reduces the risk for all other potential migrants (Cornelius, 1976a; Lomnitz, 1977).

International migration may start for a number of reasons, but once it has started, social networks create the social structures that lead to continuous and permanent migration. After social networks are well developed and "daughter communities" in the receiving society are created, international migration may continue even after economic conditions change. Circular and return migration will therefore occur in the early stages of the migration process when networks are not yet well developed. The maturation of migration networks is often associated with longer stays, or perhaps switching from temporary to permanent

migration (Mines, 1981; Mines and Massey, 1985; Massey et al., 1987; Alarcon, 1995).[5]

The Study's Use of These Theories

Migration is a complex process and its causes may involve elements from each of the migration theories. After discussing the findings in Chapter 4, we will consider the implications of these theories. However, in order to analyze the motives for migration, we assume that individuals move to the location that maximizes their earnings, that this is done within the context of the household's decision to diversify its sources of income, and that social networks serve as a source of information. Potential immigrants determine whether the benefits of moving to the United States outweigh the cost of immigration and if their contribution to family income will be greater than in Mexico. Benefits include increased earnings; they may also include nonfinancial returns such as a better climate, a better educational system, and the possibility of being close to friends and family. Costs include not only the transportation costs, but also the cost of gathering information about opportunities available in the United States and the hardships involved with no longer living close to friends and relatives.

Costs and benefits are not fixed across individuals but vary across immigrant types, household types, and communities of origin. For example, documented immigrants incur fewer expenses when they move to the United States than do undocumented immigrants.

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[5]Since the western part of Mexico has historically been a source of immigrants to the United States, one could expect that there would be less back-and-forth migration between the two countries and that immigrants would stay longer in the United States than would a sample of immigrants from a newly forming migration system, as in the northern region of Mexico (Ranney and Kossoudji, 1983).

Undocumented immigrants not only have to pay for their transportation and the “coyote” (smuggler of immigrants), but risk capture, incarceration, or even death, making the journey extremely expensive.

3. Data, Methodology, and Variables Used in the Study

This chapter discusses the data, methodology, and variables used in the analysis. Because the study relies heavily on a comprehensive data set of western Mexican immigrants, it is appropriate to discuss the sampling techniques and problems with the data.

Source of the Study Data: The Mexican Migration Project

The analysis in this report is based on data from the Mexican Migration Project (MMP).[1] The data were collected in 31 Mexican communities located in six states of western Mexico between 1982 and 1993 (Figure 1 shows the geographic location of these states). The communities were chosen to generate a range of places with respect to

[1] For more on the sample, see Massey and Parrado (1994), Massey and Singer (1995), and Lindstrom and Massey (1994).

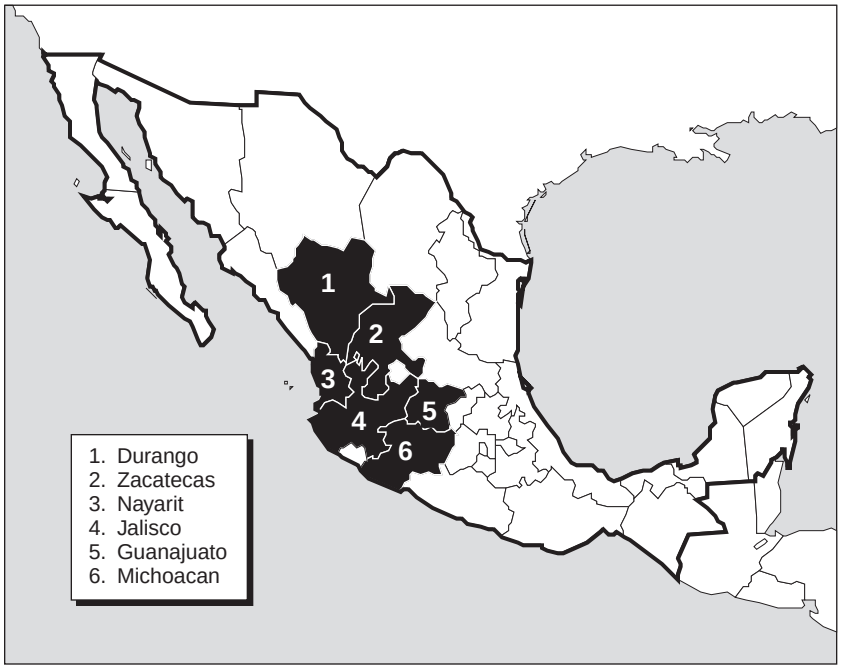

Figure 1—Six States of Western Mexico Containing the Sample Communities

size, political category, ethnicity, economic structure, and geographic location.

Constructing the Sample

Several of the communities were surveyed per year in successive years using simple random sampling methods, and each community was sampled once. Table 1 presents the communities sampled, the year they were sampled, and the sampled population in each community. The surveys of households in each community yield information about immigrants in the United States at the time of the survey and about people who had been in the United States in previous years but were living in Mexico at the time of the survey. The MMP also included a

Table 1

Characteristics of Mexican Communities: Sample for the Mexican Migration Project

Community	State	Type	1990 Population	Year of Survey	Households on Mexican Sampling Frame	Size of Mexican Sample	Size of U.S. Sample
Guadalajara[a]	Jalisco	Metropolitan area	2,870,417	1982	831	200	0
Leon[a]	Guanajuato	Metropolitan area	67,920	1987	861	200	0
Morelia[a]	Michoacan	Metropolitan area	492,901	1991	3,578	200	0
Irapuato[a]	Guanajuato	Metropolitan area	362,915	1991	2,009	200	20
Uruapan[a]	Michoacan	Metropolitan area	217,068	1992	1,087	200	13
Ciudad Guzman[a]	Jalisco	Metropolitan area	74,068	1992	1,951	201	20
San Francisco[a]	Guanajuato	Smaller urban area	52,291	1987	780	200	20
Salvatierra[b]	Guanajuato	Smaller urban area	33,123	1992	2,761	200	15
Los Reyes[b]	Michoacan	Smaller urban area	32,474	1989	6,776	200	20
Ameca[b]	Jalisco	Smaller urban area	30,882	1991	1,776	200	20
Yuriria[a]	Guanajuato	Smaller urban area	23,726	1992	1,774	200	15
San Felipe[b]	Guanajuato	Smaller urban area	20,614	1990	3,771	200	20
Ixtlan del Rio[b]	Nayarit	Smaller urban area	19,645	1990	4,472	200	20
Romita[b]	Guanajuato	Smaller urban area	16,535	1988	2,723	200	20

Table 1—continued

Community	State	Type	1990 Population	Year of Survey	Households on Mexican Sampling Frame	Size of Mexican Sample	Size of U.S. Sample
El Salto[b]	Jalisco	Town	11,546	1982	1,903	200	20
Las Varas[b]	Nayarit	Town	11,541	1990	2,693	200	20
Juchipila[b]	Zacatecas	Town	7,750	1991	1,717	364	20
Chavinda[b]	Michoacan	Town	7,437	1982	1,925	200	20
Nahuatzen[b]	Michoacan	Town	7,025	1990	1,441	200	20
Ario de Rayon[b]	Michoacan	Town	6,429	1989	1,395	200	20
Union[b]	Jalisco	Town	4,760	1988	799	200	20
San Diego[b]	Jalisco	Town	3,516	1988	510	200	20
Santa Maria[b]	Jalisco	Ranchos	3,098	1988	534	200	15
Amacueca[b]	Jalisco	Ranchos	2,685	1982	579	106	14
Tepec-Cofradia[b]	Jalisco	Ranchos	2,321	1982	438	94	6
La Yerbabuena[b]	Michoacan	Ranchos	2,240	1989	448	150	20
Mineral de Pozos[b]	Guanajuato	Ranchos	1,737	1988	248	150	10
Contitlan[b]	Zacatecas	Ranchos	5,785	1991	233	116	0
La Soledad[b]	Guanajuato	Ranchos	1,080	1991	143	100	10
Emiliano Zapata[b]	Jalisco	Ranchos	894	1992	214	100	7

[a]Census of neighborhood within community.

[b]Complete census of all households in community.

sample of people in the United States. For this sample, interviewers traveled to the immigrants' U.S. destination and gathered a nonrandom sample of immigrant households from each community living in the United States.

The MMP sample derives from the states of Guanajuato, Jalisco, Michoacan, Zacatecas, and Nayarit, which collectively constitute the core of western Mexico, long the most important source region for Mexican migration to the United States (Massey and Parrado, 1994; Gamio, 1930; Dagodag, 1975, North and Houston, 1976; Jones, 1988).[2] Although other regions in Mexico contribute immigrants to the United States (not included in the sample), over 50 percent of Mexican immigration to California originates in the five states shown in Figure 1.[3]

A sample frame of each community was constructed to draw a random sample of households for interviewing. In most cases, the entire community was the sample frame (small cities, towns, villages or ranchos), but in cities larger than 50,000, one working-class neighborhood was identified and sampled, to conserve resources.[4] Two

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[2]Most researchers find that the pattern of regional differences in intensity of migration has persisted over time. The six states on the Central Plateau (Durango, Guanajuato, Jalisco, Michoacan, San Luis Potosi, and Zacatecas) are identified by Cross and Sandos (1981) as the major sending areas during the 1880–1940 period. Cross and Sandos also note that the importance of these source regions of migration intensified during the bracero period (1942–1964), when half of the bracero workers came from the Central Plateau.

[3]As discussed in Chapter 1, a survey of amnestied people shows that 54 percent of the SAW amnestied persons and 64 percent of the pre-1982 amnestied persons whose place of birth was Mexico were last resident in one of the six Mexican states from which the sample is drawn. However, in recent years, Baja California and other northern states have provided a number of immigrants to the United States. It is possible that people who move from these border states originated in other parts in Mexico and are engaging in step migration. In the future, the sample will be expanded to include other regions in Mexico.

[4]Durand and Massey's rationale was that only a small percentage of the Mexican population lives abroad: In the 1930s, about 5.7 percent of Mexico's national population

hundred households were interviewed in most communities, except for some ranchos where 100 to 150 households were interviewed. The head of each household was questioned about all household members. Households included everyone who (a) lives in the house, whether or not they are relatives of the household head, and (b) all children of the household head, whether or not they still live in the sampled house.

The sample of permanent migrants in the United States was constructed from responses to the Mexican survey.[5] After information on names and locations of possible contacts was gathered, people from the same Mexican communities were interviewed in the United States. Interviewers gathered more information about possible respondents in the United States, using snowball sampling techniques. A snowball sample is also known as a reputational sample, and, as opposed to being a random sample of all immigrants, it relies on personal contacts, friends, and family of the people interviewed to gather information about other prospective respondents (Goodman, 1961). In most cases, 20 outmigrant households from each community were sampled in the United States; from smaller Mexican communities, 10 to 15 households were surveyed.

The MMP interviewed 5652 households in Mexico and 410 in the United States. For the most part, the household head was the primary

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resided in the United States (Garcia y Griego, 1989). In no other census year between 1920 and 1980 has Mexico's immigrant population in the United States exceeded 3 percent of Mexico's total population (ibid.). Hence, selecting regions and counties where immigrants are known to reside reduces the cost of gathering information on international migrants.

[5]People were interviewed in the United States with the idea of including a sample of people who are permanent settlers. It is possible that many of the immigrants with family in Mexico are temporary migrants. Hence, not including a sample of permanent settlers may underestimate the length of stay of immigrants and would overestimate the number of moves that end in return.

informant for the household. The study's questionnaire follows the logic of an ethnosurvey, which tries to blend qualitative and quantitative techniques. A semi-structured interview required that specific information be gathered from each subject, but the actual wording and ordering of the questions was left to the judgment of the interviewer. This allows the respondent more flexibility, but the quality of the information elicited depends strongly on the ability of the interviewer to gather information.[6]

In addition to gathering demographic (age, education, marital status, number of children, etc.) and socioeconomic (occupation, wages, and other economic variables) information about all members of the household, the interviewer asked the informant which people in the household had ever been to or were now in the United States. For those with migration experience, the interviewer recorded information about the first and most recent U.S. trips, including the year, duration, destination, U.S. occupation, legal status, and hourly wage, as well as the total number of U.S. trips.

The interviews resulted in a total sample of 42,686 people, 9530 of whom have lived in the United States at some point in their lives.[7] Some of the immigrants in the sample migrated to the United States more than once and thus are counted twice when modeling the choice to return to Mexico: one time for the first and another time for the last move to the

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[6]Some researchers argue that open questions do not force the respondent to an a priori way of looking at the world and a specified group of alternatives. They therefore paint a better picture of the respondent's views and choices. For more on this, see Howard Shuman and Stanley Presser, *Questions and Answers in Attitude Survey: Experiments on Question Form, Wording and Context*, Academic Press, New York, 1981.

[7]The majority of the sample of migrants (9530) is constructed from those interviewed in Mexico; 15 percent from those interviewed in the United States as part of the snowball sample.

United States.[8] This generates a subsample of 12,332 entries into the United States. It is this sample of 12,332 entries that we use to model return migration.

Problems with the Data

Although the MMP sample has limitations, no other database provides a sample of households in both the United States and Mexico extensive enough to permit a comprehensive analysis of return migration. The first problem is the representativeness of the sample. The MMP sample is not a representative sample of the immigrant population in the United States. It is a representative sample of the relevant communities in the western part of Mexico, which, as explained above, has long been the most important source region for Mexican migration to the United States; and Mexico is the largest contributor of immigrants to California and the United States.

Second, the U.S. subsample is not representative of the immigrant population from western Mexico. For the purposes of this study, we approximated the number of people from these communities who immigrated by weighting. Appendix A describes the weighting schema in more detail.

Third, the snowball sampling techniques used to gather information about immigrants in the United States may systematically undersample people with little connection to the origin location or people living in nontraditional locations in the United States, since it relies on friendship and/or family ties to gather information about prospective respondents

[8]We use two moves per migrant because the database included information on the characteristics of the migrant for only the first and the most recent migrations, even if the migrant moved more than two times.

from the same origin community. For example, it is possible that educated immigrants who settle here and people with citizenship are more difficult to track while in the United States than any other type of immigrant. Research on the internal migration of immigrants finds that educated immigrants and those who stay longer are more likely to have moved out of ethnic neighborhoods and may rely less heavily than less-educated and recent immigrants on ethnic connections.[9] This makes the findings for these groups less reliable.

Fourth, collecting information about all members of the household from the head of the household may lead to less-accurate information about household members. However, for those who no longer live in the household, it would be impossible to generate relevant information about their characteristics and migration experience unless they happen to be visiting the house at the time of the interview. If there is measurement error in the independent variable, it will lead to downward bias in the estimates.

Finally, the fact that we are using retrospective data rather than longitudinal data for migration information on U.S. immigrants creates a number of problems. One of these problems is telescoping. Telescoping occurs when the respondent attributes an event to the incorrect time period, such as when income earned in one year is attributed to another year. Forward telescoping occurs when the respondent includes events from a time period earlier than the period being asked about. Backward telescoping occurs when the respondent pushes events backward into a

[9]See Rogelio Saenz, "Interregional Migration Patterns of Chicanos: The Core, Periphery, and Frontier," *Social Science Quarterly*, Vol. 72, No. 1, March 1991; and Ann Bartel, "Where Do the New U.S. Immigrants Live?" *Journal of Labor Economics*, Vol. 72, No. 4, 1989.

time period prior to the one being asked about. Both forward and backward telescoping may occur within the same interview. However, studies show that forward telescoping is more common, resulting in a net overreporting in most surveys.[10]

Retrospective data, unlike longitudinal data, may be more accurate at representing recent events than past events. For example, people may be very precise at estimating their current wages, but may inflate or deflate the wages they earned 20 years ago. This will lead to a downward bias in the estimates.

Immigrants may also lie about their immigration status. However, since most of the immigrants (85 percent) are surveyed in Mexico and connections are built in the home community before interviewing people in the United States, we trust that there would not be much incentive to lie about immigration status.

Despite these drawbacks, no other dataset has provided such a comprehensive sample of families in both Mexico and the United States to study return migration. Most studies of Mexican immigrants rely on Census data, which are limited to people living in the United States at a moment in time, or use data from surveys from one or two communities in Mexico. The Census cannot capture people who have been in the United States but are now living in Mexico, and the community samples cannot capture people who are living in the United States. Furthermore, the limited community samples cannot capture differences among communities. There may be something specific about a particular community that makes people behave in a certain fashion. Generalizing

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[10]For more on telescoping and other sources of error, consult Seymour Sudman and Norman M. Bradburn, *Asking Questions: A Practical Guide to Questionnaire Design*, Jossey-Bass Publishers, San Francisco, Calif., 1982.

from the findings in this community to the rest of the country may misrepresent migration patterns for all other communities.

The number and diversity of the communities in this sample, the number of people sampled in both Mexico and the United States, the breadth of information collected from individuals, families, and communities, and the retrospective nature of the survey allow for a comprehensive analysis of migration flows in and out of the country. Although this is a selected sample of communities in Mexico, as opposed to a national sample, these communities are the traditional sending areas of Mexican immigrants to the United States.

Methodology

The study conducted both descriptive and multivariate analyses.

Descriptive Analysis

We used data from the Mexican Migration Project to examine the characteristics of Mexican immigrants in the sample. We first examined the characteristics (age at the time of migration, education at the time of the survey, immigration status while in the United States, main occupation while in the United States, and the year of migration) of Mexican immigrants in the sample.[11]

We then analyzed the settlement patterns of Mexican immigrants by looking at the probability of staying in the United States, using survival curves. If we divide the sample of movers into categories based on their length of stay in the United States, we find that 64 percent of the men

[11]In this study, the unit of observation is an immigrant's entry into the United States. Immigrants who move more then once are counted twice in the database—for their first and their most recent migrations.

and 45 percent of the women were in the United States for less than two years (see Table 2). These numbers are misleading, however, because they include both people who return before two years and people who have been in the United States for only two years.[12] To get a better sense of the number of long-term settlers, we generated survival distribution functions (SDF) or life tables. Life tables are frequently used to describe the lifetime of a population.[13] This report uses the life table to evaluate the probability that an immigrant will stay in the United States for longer than *t* years.[14] We generated the life table estimates by counting the number of people who return and the censored

Table 2

Length of Stay of Mexican Immigrants

	Less Than 2 Years	2 to 5 Years	More Than 5 Years
Men	64.2	18.2	17.6
Women	44.6	24.2	31.3
Total	58.3	21.7	20.0

SOURCE: The Mexican Migration Project Database.

[12]Some people in the sample are censored because they were surveyed soon after their migration. Someone who was surveyed in 1992 and migrated to the U.S. in 1991, for example, is still in the United States in 1992, but since we do not have any more years of data, we do not know how long he is going to stay in the United States. We know only that he was in the United States for at least a year before he was interviewed.

[13]For more on survival functions and their applications, see Chiang (1984).

[14]As discussed above, we can use only the information about the immigrant's first and last U.S. migrations. An alternative is to use the total number of moves. However, the dataset provides information about all moves only for heads of household, and we believe that using only heads of household would bias our results. Since the number of people who move back and forth between Mexico and the United States is substantial—24 percent of the immigrant men and 9 percent of the women in the sample moved more than four times—our analysis overestimates the immigrants' length of stay.

observations (that is, the number of people who were still in the United States but were interviewed before they completed their migration process and thus had incomplete duration data) that fall into each of the time intervals.[15]

This analysis allows us to represent the settlement patterns of the immigrant population in the sample more accurately than is possible in a simple descriptive table and helps to uncover the patterns of migration. For example, we can model the probability of return for immigrants in California and for immigrants in other U.S. destinations to see if there is any difference in how quickly they return.

Last, we contrasted multiple movers with one-time movers in the sample on the basis of their age at the time of migration, their education at the time of the survey, their main occupation while in the United States, and their immigration status while in the United States.

Multivariate Analysis

Descriptive analysis cannot accurately disentangle the reasons for the patterns and relationships we find, because no effect can be observed in isolation from all other effects. For example, if most of the immigrants who move to California have low levels of education and we find that most of the California immigrants return to Mexico sooner than from other destinations, the reason why they return sooner could be something specific about California that makes people return or a higher

[15]This model takes into account censoring in the sample by assuming that the experience of the uncensored observations can be used to estimate survival rates for the censored observations. In other words, the unconditional probability of survival time *t* for the uncensored observations can be used to estimate conditional probabilities of survival for observations censored at time *t*. This assumption is not a problem as long as there is nothing systematically different about immigrants whose observations are censored.

probability of return for people with low levels of education. Multivariate analysis allows us to study each effect while holding all other effects constant. We can look at the effect of California while holding the education level of California's immigrants constant, and clearly see how each of these variables affects the probability of return, independent of one another.

A simple approach to estimating the probability of return is to run a discrete logit model; however, there are some complications that require a more elaborate specification. On the one hand, some of the observations in the sample are censored, because individuals were surveyed before the termination of their trip. On the other hand, the probability of return depends on the time the immigrants have been in the United States. People who stay for long periods of time are more likely than recent immigrants to settle permanently in the United States. A hazard model provides the means for analyzing this type of data. In a hazard model, we assume that the probability of return in a given period is a function of the time the person has been in the United States and some independent variables. Since duration is measured as the number of months in the United States, a discrete-time model is appropriate. By estimating a discrete-time hazard model of return migration, we can determine the probability that on any one trip to the United States an individual *i* will return to his place of origin at time period *t*.[16] A complete description of the model is contained in Appendix B.

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[16]For more on discrete hazard models see James Heckman and Burton Singer (1984), "Econometric Duration Analysis," *Journal of Econometrics,* Vol. 24, pp. 63–132; J. D. Kalbfleisch and R. L Prentice (1980), *The Statistical Analysis of Failure Time Data,* Wiley and Sons, New York; Nicholas M. Kiefer (1988), "Analysis of Group Duration Data," *Statistical Inference in Stochastic Processes,* pp. 107–137; Tony Lancaster (1990), *The Econometric Analysis of Transition Data,* Cambridge University Press, New York; and Glenn T. Sueyoshi, "Semiparametric Estimation of Generalized Accelerated Failure Time

The Study's Variables: What Affects the Probability of Return?

The dependent variable in this model is a binary choice of returning to Mexico or staying in the United States, given that the person has been in the United States for t years on a particular move to the United States.[17] The independent variables belong to three major sets of variables: the characteristics of the individual, the characteristics of the household, and the characteristics of the community. They are listed in Table 3 and described in more detail below.

Individual Characteristics

The individual characteristics used in this report are age at the time of migration, education, occupation, and status in the household. Migration characteristics include length of stay in the United States, immigration status, year of migration, wage, and total number of trips made to the United States. They affect the probability of return by affecting the cost and the benefits of immigration.

Migration research consistently demonstrates a strong correlation between age and migration (Miller, 1977). Younger persons are more likely to immigrate and may be more likely to stay because they have a longer horizon to absorb the benefits of migration. Previous research has also found a correlation between the probability of migration and education (Hay, 1980; Taylor, 1986; Robinson and Tomes, 1982; and

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Models with Group Data," mimeo, Department of Economics, University of California at San Diego, updated. For an application of the approach to migration data, see Reed (1996).

[17] *Return* in this context is not necessarily a permanent move back to Mexico. Some migrants could be engaging in circular migration and may eventually move back to the United States.

Table 3

Description of Variables Used to Model Return Migration

Region	
ZACATECAS	Zacatecas
NAYARIT	Nayarit
JALISCO	Jalisco
MICHOACAN	Michoacan
GUANAJUATO	Guanajuato
Age	
AGE	Continuous variable: Age in years
AGESQ	Square of AGE
12 TO 20	= 1 if between 12 and 20 years old, otherwise = 0
21 TO 30	= 1 if between 21 and 30 years old, otherwise = 0
31 TO 45	= 1 if between 31 and 45 years old, otherwise = 0
MORE THAN 45	= 1 if over 45 years old, otherwise = 0
Education	
NO SCHOOLING	= 1 if person has not completed any school, otherwise = 0
3RD GRADE	= 1 if person has completed 3rd grade, otherwise = 0
PRIMARY	= 1 if person has completed 6th grade, otherwise = 0
SECONDARY	= 1 if person has completed 9th grade, otherwise = 0
Education	
HIGH SCHOOL	= 1 if person has completed 12th grade, otherwise = 0
POSTSECONDARY	= 1 if person has completed any postsecondary work, otherwise =0
Occupation	
AGRICULTURAL WORKER	= 1 if occupation in the U.S.: farmer, sharecropper, day laborer, fisherman, farm machinery operator; otherwise = 0
MANUAL	= 1 if occupation in the U.S.: skilled and unskilled manual worker; otherwise = 0
PROFESSIONAL	= 1 if occupation in the U.S.: professional manager, technician, office worker, salesperson or industrial owner
SERVICE	=1 if occupation in the U.S.: street vendor, restaurant or hotel worker, domestic, self-employed service worker
NOTLABOR	=1 if occupation in the U.S.: housewife, student, retiree, ill or incapacitated; otherwise =0
UNEMPLOYED	=1 if occupation in the U.S.: unemployed, otherwise =0
Household Characteristics	
AGE OF HEAD	Continuous variable: age of household head
EDUCATION OF HEAD	Continuous variable: age of household head
WORKER/PERSONS	Continuous variable: proportion of household members who work
PEOPLE IN HOUSEHOLD	Continuous variable: number of persons in household
LAND	=1 if household owns at least one parcel of land, otherwise = 0

Table 3—continued

Household Characteristics	
HEAD OF HOUSEHOLD	=1 if person is the household head, otherwise = 0
BUSINESS	=1 if person owns a business in origin community, otherwise =0
FAMILY MOVE	=1 if all members of the primary family moved in the same year
Documentation	
AGRICULTURAL WORKER	= 1 if person's documentation status is bracero, otherwise = 0
CITIZEN	= 1 if person's documentation status is U.S. citizen, otherwise = 0
AMNESTIED WORKER	= 1 if person's documentation status is amnesty, otherwise = 0
Documentation	
GREEN CARD	= 1 if person's documentation status is Green Card, otherwise = 0
UNDOCUMENTED	= 1 if person's documentation status is undocumented, otherwise = 0
Origin Community	
POPULATION	Continuous variable: population of community
MEN LABOR FORCE IN MANUFACTURING	Continuous variable: percentage of male labor force participation in manufacturing
WEIGHT	Weight variable
URBAN	= 1 if community is urban community, otherwise = 0
Network	
FAMILY IN US NOW	= 1 if person has family currently living in the U.S., otherwise = 0
FAMILY WITH MIGRATION EXPERIENCE	= 1 if person has family members who moved before them to the U.S., otherwise = 0
Other	
LOS ANGELES	= 1 if person has migrated to Los Angeles, otherwise = 0
OTHER CALIFORNIA LOCATION	= 1 if person migrated to other California destination (excluding Los Angeles)
REST OF US	Dummy: migrated to U.S. destination other than California, otherwise = 0
DURATION	One-year period of duration
U.S.TRIPS	Continuous variable: number of U.S. trips
WAGECORL	Continuous variable: wage corrected for CPI (1994 = 100)
LOG OF WAGES	Log of WAGECORL
FEMALE	= 1 if person is female, otherwise = 0
MALE	= 1 if person is male, otherwise = 0

Falaris, 1987). DaVanzo (1983), for example, finds that returnees are less educated than nonreturnees. The effect of education, however, depends on the transferability of skills acquired through schooling across the border and the recognition and valuation of those skills by U.S. employers. If returns to schooling for Mexican immigrants are small, we may expect a larger rate of return to Mexico for those with more education (Taylor, 1987). The immigrant's occupation is used as a proxy for the person's economic opportunities at the new location and his access to information before migration. If the disappointment hypothesis is correct, one would expect that those who are unemployed will be more likely to return to their country of origin, whereas a professional will be more likely to stay, all other things being equal (Schwartz, 1973).

A person's status in the household affects the probability of return if that person's potential contribution to the household's income is important for the household's survival. The person's status in the household may also influence him to share his earnings with the rest of the household in Mexico (Lucas and Stark, 1985; Taylor, 1987). For example, one would expect the household head to have a greater motivation than other household members to send money back to relatives in Mexico, all else being equal; one would also expect him to be more likely to return because of the administrative role he may play on the family farm. However, immigrants may be more likely to become heads of household after they settle in the United States, which would produce a negative correlation between headship and return migration.

Another set of variables accounts for the immigrants' experience with migration—the total number of trips to the United States, the trips' duration, immigration status, year of migration, and the wage the

immigrant earned in the United States. Multiple movers are expected to move more than those with less migration experience (Massey, et al., 1993; DaVanzo, 1976, 1983). Massey et al. (1993), for example, found that the likelihood of an additional trip increases with each trip taken. Duration is expected to decrease the probability of return. Connections at the previous location deteriorate and the location-specific capital depreciates as time away from the village increases (DaVanzo, 1983).[18] Furthermore, those who stay longer in the United States become a selective sample of immigrants with a strong preference to settle there. For example, immigrants with low levels of education are hypothesized to return to Mexico sooner than more-educated immigrants. However, those who remain for a long period of time in the United States are a selective sample of immigrants and may have such a strong preference to stay that they are less likely to return than immigrants with more education.

Immigration status, wages in the United States, and U.S. immigration policy contribute to the constraints and the opportunities available to prospective immigrants. Immigration status acts as a proxy for economic and social opportunities available to potential returnees and may also reflect some of the difference in the cost of migration by immigration status. Undocumented immigrants can be expected to be more likely to return than documented immigrants. The year of migration is included as a proxy for the effect of immigration policy on the probability of return. The Immigration Reform and Control Act (IRCA), which went into effect in 1986, attempted to limit undocumented immigration into the United States by (a) increasing

[18]Location-specific capital includes such things as language and a general understanding of how things are done in a particular location.

protection at the border and (b) instituting employer sanctions. But it also tried to ensure a constant number of agricultural workers by giving amnesty to anyone who migrated before 1982 and anyone who was working in agriculture between 1984 and 1985 for more than nine months—1.6 million immigrants in California were granted amnesty through IRCA. Some researchers hypothesize that IRCA may, in fact, have encouraged some people to stay by increasing the cost of crossing and recrossing the border (Alarcon, 1995).

Finally, we expect people who earn higher wages to be less likely to return to Mexico, all other things being equal.[19] This is consistent with the disappointment hypothesis of migration: Those who earn low wages in the United States will return home faster. However, consistent with the target income hypothesis, after longer periods in the United States, high-wage earners may be more likely than lower-wage earners to return to Mexico because the former are able to accumulate their targeted income sooner.

Household Characteristics

The following household characteristics are used in this analysis: age of household head; education of household head; the ratio of the total number of people employed in the total number of people in the household; the total number of people in the household; owning land; owning a business; having a family member with U.S. migration experience; having a family member currently living in the United States; and having all the family members in the United States.

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[19]We use the log of the wage in the United States for the last U.S. visit. Wages are corrected for inflation using the Consumer Price Index. All wages are in 1994 dollars.

There are a number of ways in which the family can influence the migration process. Having family members/kin at destination provides aid, information, or encouragement to the mover and may decrease the probability of return (Taylor, 1987). In addition, people from families with migration experience may be more likely to move than those from families with no migration experience. But the family produces certain commitments and obligations that may force people to return. For example, ownership of land or a business may tie the family member to the household. Families with more community investment are integrated at home and more likely to return to their place of origin. A poor family's economic opportunities may create social responsibilities that force the individual to either continuously remit money or return to the village.

The head of household's education proxies for the family's income and the family's access to information. The total number of people in the household, in addition to the ratio of earners to people in the household, accounts for the family's labor supply. The greater the number of adults who can absorb the household or farm duties of those who migrate, the less likely the immigrant will be to return (Taylor, 1987). The age of the head of the household acts as a proxy for the family's life-cycle stage. For example, older heads of household are not likely to have young children and immigrants with young children may have different incentives to return to their country of origin than those with adult children.

Location Characteristics

Location characteristics account, in part, for the variation in social and economic opportunities across communities. These characteristics

are dummy variables for the various Mexican states, the population of the immigrant's community of origin at the time of the trip to the United States, the percentage of the men employed in manufacturing in the home community, the destination in the United States, and whether the community of origin is urban.

The economic opportunities available to prospective immigrants may vary across origin communities. There are also differences in terms of migration history and the communities' binational migration networks. Economic opportunities in the origin location not only serve as a push, forcing people out of the origin location, but may also affect the probability of return. Migrants from rural areas may have less of an opportunity for productive investment and, therefore, foreign earnings offer no solution for their long-term earning instability. If they have a strong preference for staying in Mexico, they move back and forth to cover current needs and are more likely to move for short periods of time. In contrast, people who move from urban areas or economically dynamic areas may move to accumulate savings and then invest those savings in productive investments in their origin community (Durand, 1988; Escobar-Latapi and Martinez-Castellanos, 1991; Lindstrom, 1996; Massey et al., 1987). If this is true, we would observe these persons staying longer in the United States than people from less dynamic origin communities, so as to accumulate more savings.

4. Mexican Immigration to the United States: Who Stays and Who Goes?

In general, the debate over immigration uses data on the immigrant population in the United States or California for a particular year and generalizes from these data about the characteristics of the immigrant population in the country or state. However, the debate takes little account of how long immigrants stay and their characteristics. This chapter first presents the analysis results that characterize the length of stay and describes the characteristics of those in the sample from western Mexico who come, those who stay, and those who return.[1] It then considers the results of the multivariate analyses and how the results support or differ from the descriptive results.

[1]In order to get a clear sense of the migration determinants, we look only at adult immigrants; children younger than 12 are excluded from the analysis, except when we report the age distribution of the sample, since they are tied movers.

Characteristics of the Sample

Immigrants from western Mexico constitute a high percentage of California's total immigration population. Their age, educational, and occupational distribution can provide an indication of the human capital and potential for assimilation of Mexican immigrants. Other important characteristics are the immigration status, marital status, year of migration, and U.S. destination of immigrants in the sample. Given that the motives for migration, as well as the patterns of staying, may vary for men and women, they are analyzed separately in this report.[2] The results are presented in Table 4.[3]

Sex, Age, Education, and Occupation

Even though half of the entire sample is female, 70 percent of the adult immigrants are male. The immigrant women are younger than the men. Thirty-five percent of the women were younger than 12 years at the time of their migration, compared with 16 percent of the men. However, the majority of the immigrants in the sample are of working age. The average age of immigrant men is 29 and the average age of immigrant women is 27.

The educational attainment of Mexican immigrants in general is low, but women are slightly more educated than men. When children younger than 12 years are excluded, 31 percent of the immigrant men

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[2]All the results for men and women were tested and the differences are statistically significant. We also tested the structure of the multivariate equation and found that although similar factors affect the probability of return of men and women, they have different effects on men and women and needs to be modeled separately.

[3]These are the results for the weighted sample. For some details of the weighting scheme, see Appendix A.

Table 4

Characteristics of the Sampled Population of Mexican Immigrants

	Male	Female	All
Percent of all adult immigrants	70.2	29.8	100.0
Age distribution (includes children)			
Under 12	16.0	35.0	22.7
12–20	19.5	19.7	19.6
21–30	34.6	26.9	31.9
31–45	22.1	12.6	18.7
Over 45	7.8	5.8	7.1
Average age	29.0	27.0	28.5
Educational distribution			
No education	10.9	6.0	9.4
Third grade	20.4	16.0	19.1
Elementary school	34.8	39.7	36.2
Junior high school	17.9	17.5	17.8
High school	9.9	14.3	11.2
More than high school	6.1	6.5	6.2
Average years of education	6.0	6.7	6.0
In the labor force	94.7	56.0	85.2
Occupation			
Technical/professional/industrial owner or supervisor	2.6	4.1	2.9
Office and service worker/sales	18.6	40.0	22.9
Skilled and unskilled manual worker	39.4	34.3	38.4
Nonmanual worker	4.4	6.5	4.8
Agricultural worker	32.6	12.6	28.6
Unemployed	2.4	2.5	2.4
Immigration status			
Bracero	4.8	0.1	3.4
Citizen	1.6	5.5	4.4
Amnesty (SAW and LAW)	16.6	13.5	15.7
Green Card	15.4	20.5	16.9
Undocumented	56.8	47.8	54.1
Tourist and other	4.8	12.7	5.5

Table 4—continued

Family move			
Moved with other family members	17.2	36.0	23.3
Moved alone	82.8	64.1	76.7
Undocumented immigrants			
Moved with children	8.8	22.3	12.4
Moved without children	91.2	77.7	87.6
Had children after migration	6.4	17.3	9.3
Did not have children after migration	93.6	82.7	90.7
Immigration status (children)			
Agricultural worker	0.1	0.0	0.0
Citizen	72.2	74.6	73.5
Amnesty	1.2	1.3	1.2
Green Card	9.7	10.6	10.2
Undocumented	14.6	9.5	11.8
Tourist or other	2.2	4.0	3.3
Year of last U.S. migration			
Before 1965	8.9	2.3	6.9
1965–1975	10.1	14.7	11.5
1975–1986	31.1	33.4	31.8
After 1986	49.9	49.6	49.8
Place of destination			
Los Angeles	30.2	42.1	33.7
Other California	30.6	28.5	30.0
Other U.S.	39.2	29.4	36.3
Unweighted sample of movers	6,145	2,186	8,331
Weighted sample of movers	67,389	36,995	104,384

SOURCE: The Mexican Migration Database, collected by Douglas Massey.

NOTES: T-tests of all the independent variables show significant difference between men and women. All categories except age and those specific to children are only calculated for people older than 12 years old.

have less than three years of education, compared to 22 percent of the women. On average, women have 6.7 years of schooling and men have 6.

The educational differences are reflected in occupational differences. A higher percentage of immigrant women (40 percent) than men (19 percent) are engaged in office work, service, and sales. A greater proportion of men than women are employed in agriculture: 33 percent of the men but only 13 percent of the women are agricultural workers while in the United States.

Immigration and Marital Status

Immigration status is a major concern in the current debate. Fifty-four percent of the immigrants in the sample are undocumented, and 74 percent of the adult undocumented immigrants are men.[4] Fifty-two percent of the women and 43 percent of the men have some form of documentation.[5]

Only 23 percent of the immigrants in the sample move with another family member: 17 percent of the men and 36 percent of the women. Only 12 percent of undocumented immigrants are part of a family migration: 9 percent of the men and 22 percent of the women. Further, only 9.5 percent of the undocumented immigrants in the sample had children after migration and only 11.8 percent of the children in the sample are undocumented.

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[4]We obtained the 74 percent using the following equation:

$$\%\text{undoc males} = \frac{\left[\text{TOTAL mig}(\%\text{ male})\right] \times \%\text{ males who are undoc}}{\text{TOTAL imm} * \text{undoc}}$$

[5]In most cases, immigration status is noted at the time of migration; but for some immigrants, it is the most recent immigration status. Consequently, it is possible that some of the immigrants in the sample changed status while in the United States. For example, some of the citizens may have entered the country as undocumented immigrants and become citizens.

Year of Migration and Destination

Most of the immigrants in the sample are recent arrivals—50 percent moved after 1986—and most came to California: 60 percent of the men and 71 percent of the women. Within California, 42 percent of the immigrant women and 30 percent of the men came to Los Angeles.

How Long-Term Settlers Differ from Temporary Migrants

The effects of immigration depend, in some measure, on the stability of the immigrant population. Figure 2 shows the percentage of all adult immigrants by their length of stay in the United States. After only two years, 48 percent of the immigrants have returned to their place of origin,

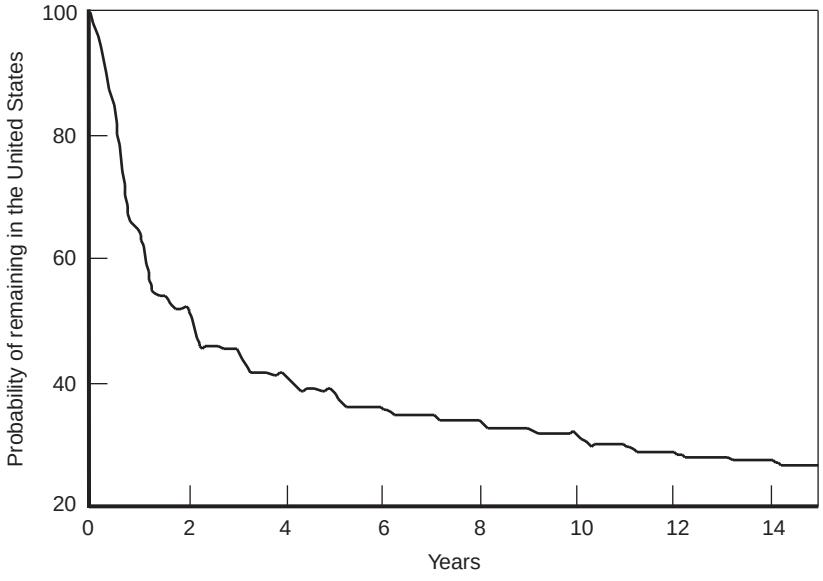

Figure 2—Probability over Time That Immigrants in Sample Remain in the United States

and less than a third of the sample stay longer than 10 years in the United States. Stayers and leavers differ in many characteristics, the most important of which are discussed below.

Gender and Age Differences

As Figure 3 indicates, length of stay varies greatly by gender. If children younger than 12 are included, 46 percent of immigrant males but only 23 percent of females return to Mexico after two years. After 10 years, only 37 percent of the immigrant males, but 62 percent of the females, are still in the United States.

Part of the gender difference in settlement patterns is explained by the age structure of the immigrant population. As discussed above, more

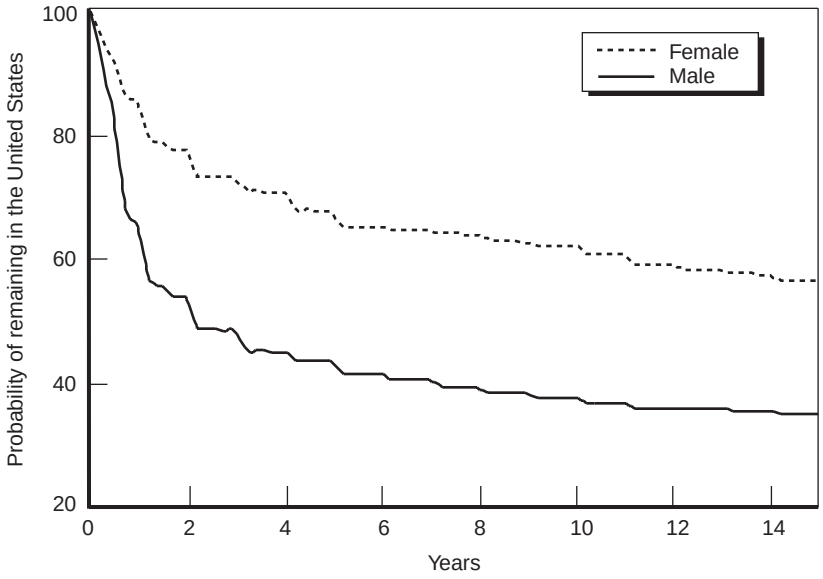

Figure 3—Probability of Remaining over Time by Gender (all ages)

of the immigrant females (35 percent) than males (16 percent) are younger than 12 years. As Figure 4 shows, immigrant children tend to stay longer than older immigrants in the United States, and the length of stay decreases with age—around 90 percent of the immigrant children remain for longer than 10 years. If children are excluded from the sample, length of stay is still higher for women: 45 percent of the adult women but only 26 percent of the adult men stay for longer than 10 years (see Figure 5). Henceforth, children under 12 years old are excluded from the analysis, because we are interested in uncovering the determinants of return migration, and the destination of children is generally chosen by their parents.

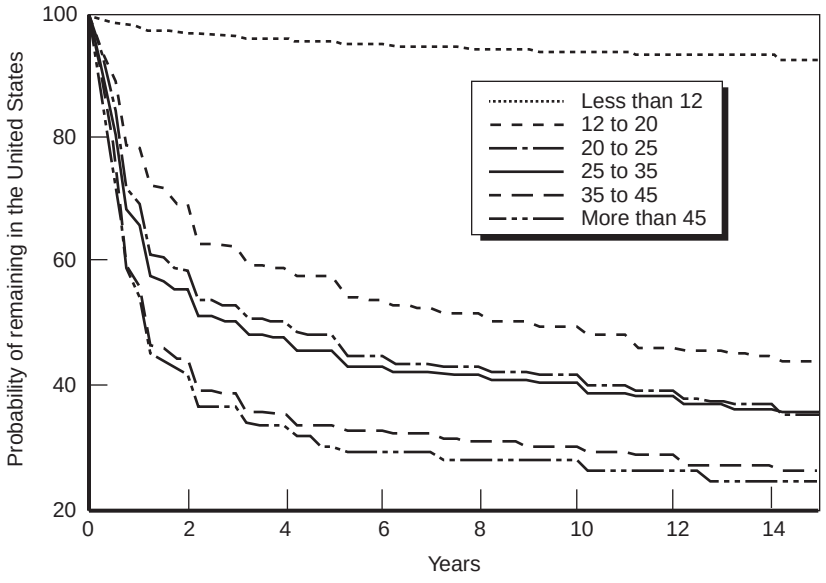

Figure 4—Probability of Remaining over Time by Age

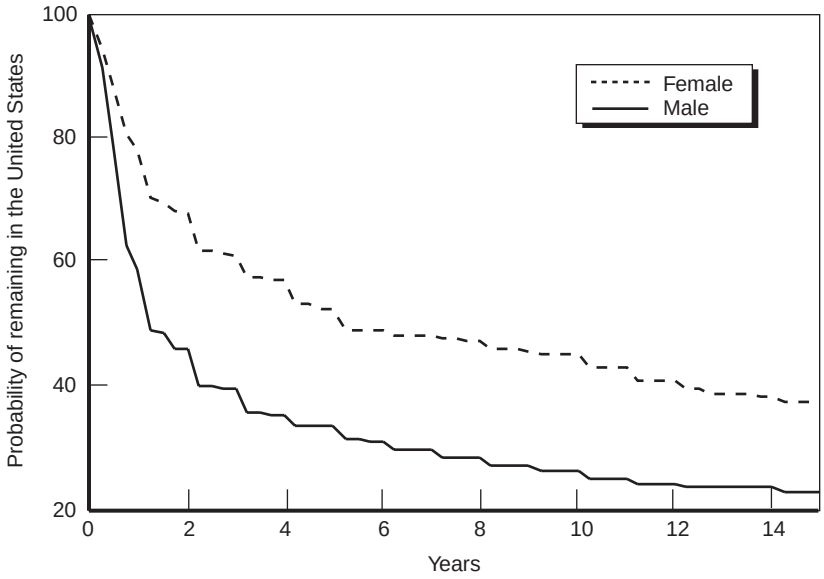

Figure 5—Probability of Remaining over Time by Gender
(children under 12 excluded)

Education Differences

The study's findings imply that, over time, the educational distribution of the immigrant population is improving, because the immigrants with less education return to Mexico faster than people with more education. Close to 65 percent of the sample of migrants has less than an elementary school education, and only 20 percent of those with no education and 36 percent of those with an elementary school education stay for more than five years (see Figure 6). For people with more than a junior high school education, length of stay differs little by educational level, possibly the result of higher returns to education in Mexico than in the United States. If an education is not transferable or if people with different levels of education end up doing the same types of jobs in the United States, there would be no benefit to having a higher

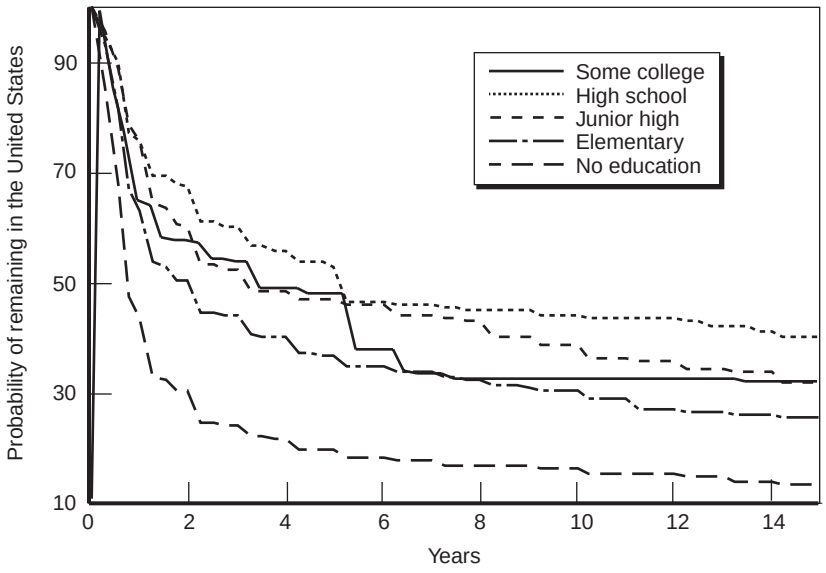

Figure 6—Probability of Remaining over Time by Education

level of education.[6] After five years, the number of immigrants with more than a high school education who stay appears to decline sharply. However, more of them are still in the United States 15 years later than are people with less than an elementary school education.

Differences by Documentation Status

There has been considerable debate in recent years about the migration of undocumented immigrants and their families, how permanently they settle, and their use of social services. Figure 7 reveals

[6]This may also be a result of an undersample of educated immigrants in the United States, as explained in Chapter 3.

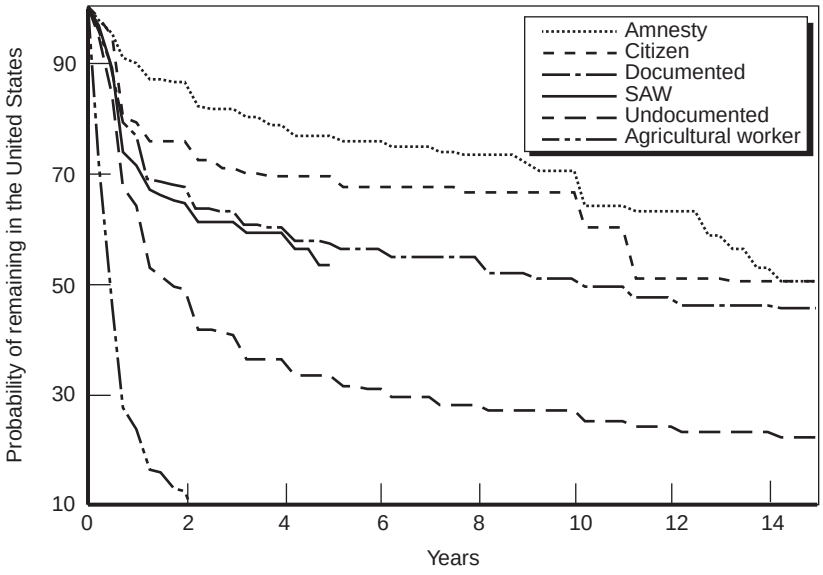

Figure 7—Probability of Remaining over Time by Immigration Status

that undocumented immigrants are much more likely than documented immigrants to return to Mexico. Although 54 percent of the immigrants in the sample are undocumented, only 26 percent of them remain in the United States for longer than 10 years.[7] As Figure 8 shows, this pattern is even more dramatic for men, who comprise 74 percent of the undocumented immigrants. Fifty-seven percent of the undocumented men return after only two years and only about 20 percent of them live in the United States for longer than 10 years.

[7] However, many of these immigrants may have changed status after a number of years in the United States. IRCA, for instance, gave amnesty to anyone who migrated before 1982 and anyone who was working in agriculture between 1984 and 1985 for more than nine months. A total of 1.6 million immigrants in California were granted amnesty through IRCA.

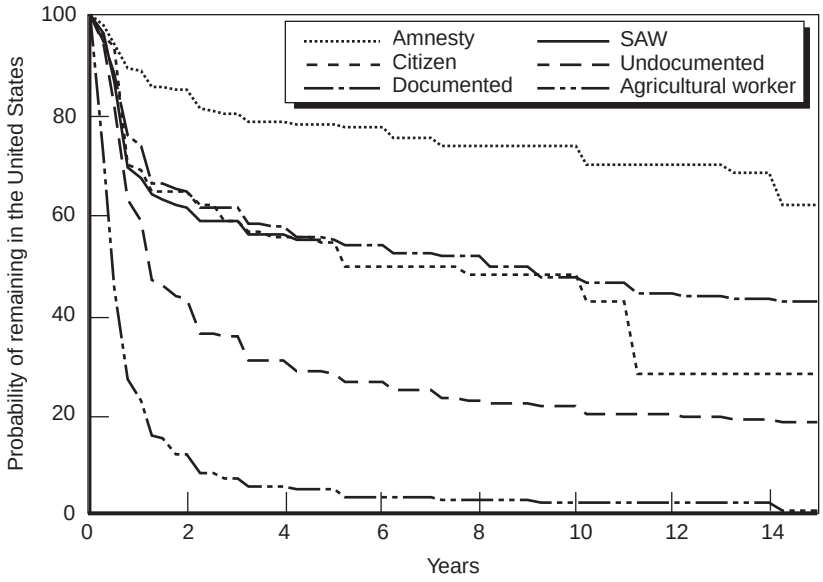

Figure 8—Probability of Men Remaining over Time by Immigration Status

Differences by Employment Status and Occupation

The study's findings indicate that those who stay are more likely to be employed and in higher-paid occupations than those who leave. These findings are consistent with previous research (Dinerman, 1982; Goldring, 1990; Massey et al., 1987) and suggest an improvement in the earnings potential of the immigrant population over time.

People out of the labor force or unemployed have different rates of return depending on their gender. See Figure 9. Only 3 percent of the men in the sample are out of the labor force (not employed in the labor force and not seeking employment) and they tend to return quickly to Mexico—52 percent return within two years. However, women out of the labor force (43 percent) stay longer in the United States than men—

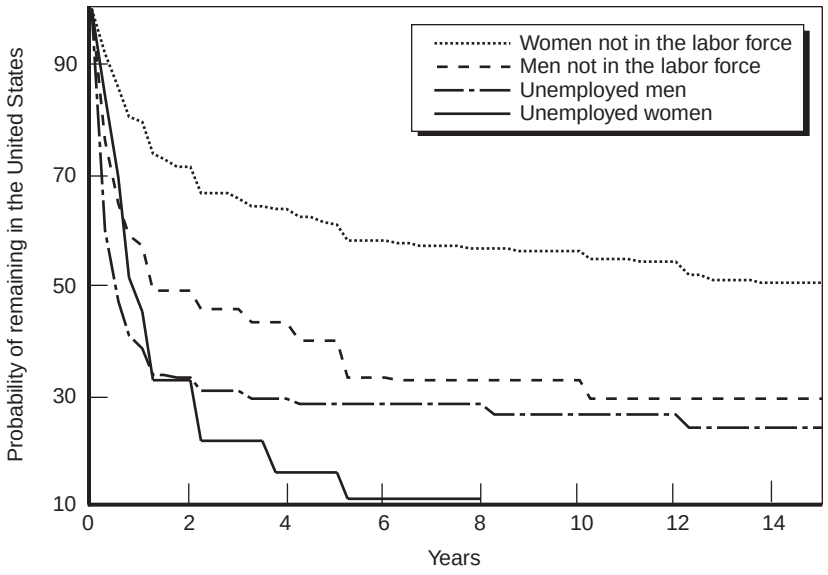

Figure 9—Probability of Remaining over Time by Labor Force Status

only 29 percent of them return after two years and 56 percent stay for longer than 10 years.

The gender differences largely disappear among the unemployed (out of work and seeking employment). Unemployed men and women return quickly to western Mexico; 63 percent of the men and 56 percent of the women leave after only one year in the United States. This finding suggests that the "disappointment" hypothesis may explain some of the settlement patterns of Mexican immigrants, a possibility considered in the findings of the multivariate analysis.

Occupation also relates to different lengths of stay. Figure 10 shows the survival rates by occupation in the United States. Technicians, professional workers, industry owners, and supervisors have a greater proportion of long-term settlers than other occupational groups have. Agricultural workers, who are 32 percent of the sampled immigrant men,

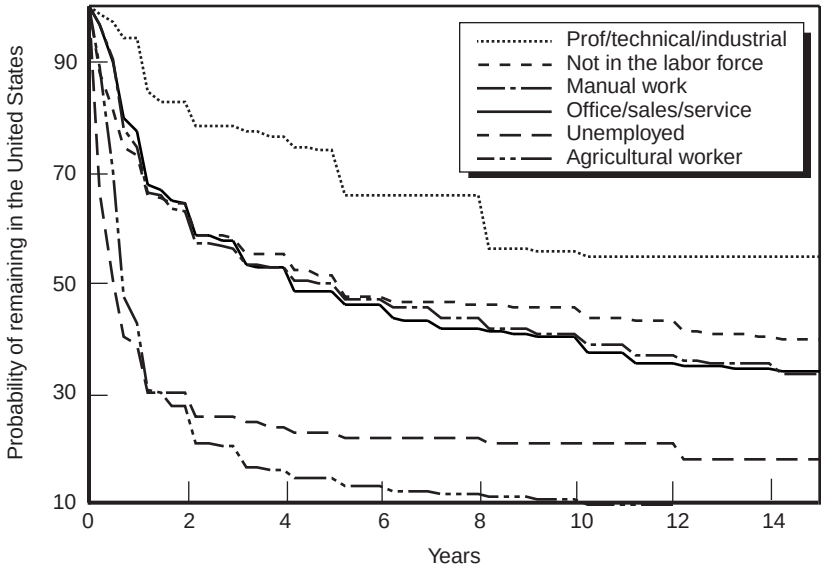

Figure 10—Probability of Remaining over Time by Occupation

return very rapidly: Only 14 percent of the men who worked in agriculture are still in the United States after five years.

Differences by Location

In considering effects of immigration at the national and state level, it is important to know not only which locations draw what share of immigrants but where they are more likely to stay. As stated earlier, 60 percent of men and 71 percent of women in the sample moved to California, and Los Angeles was the destination of over half of the entire group. The study found that those who move to California (especially to Los Angeles) stay longer than those who move to other U.S. locations. As Figure 11 shows, 53 percent of those who moved to Los Angeles, 34 percent who moved to other California locations, and 29 percent who

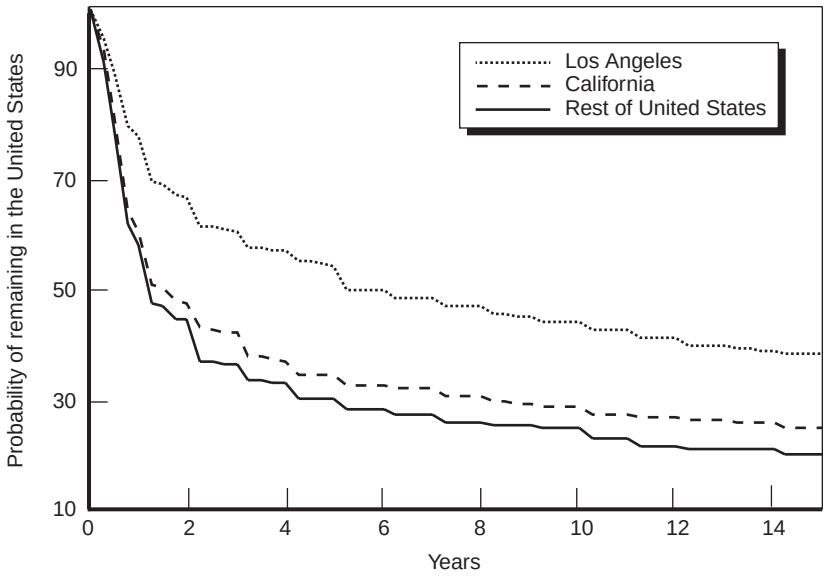

Figure 11—Probability of Remaining over Time by U.S. Destination

moved to other U.S. locations remained in the United States after five years.

Circular Migration and the Characteristics of Movers

There is policy concern about a "revolving door" at the U.S. southern border; that is, some immigrants continually circle in and out of the country. Some observers claim that such circular migration is transitional behavior ultimately leading to long-term settlement in the United States. Others maintain that circular migrants are temporary workers who move to take advantage of economic opportunities and do not plan to settle permanently in the United States (Elkan, 1959; Hugo, 1981; Zelinsky, 1971). The findings of this study suggest that, although

many immigrants move more than once, this is generally not transitional behavior: The multiple movers tend not to be stayers.

How Prevalent Is Circular Migration?

Circular migration is common in the sample, especially among men. As Table 5 shows, over half of the men move more than once and 14 percent move more than six times. This is less prevalent for women: only 26 percent move more than once.

The findings in Table 5 seem to indicate that circular migration is not a process intermediary to settling down, since most of the men who have been in the United States for long periods of time are one-time

Table 5

Percentage Distribution of the Number of Trips by Gender and Length of Stay in the United States

Item	One Trip	Two Trips	Three Trips	Four Trips	Five Trips	Six Trips
Total sample	57.8	15.8	7.7	4.8	2.9	10.6
Males	49.1	17.3	9.7	5.9	3.8	13.8
Females	73.8	13.0	4.0	2.8	1.2	4.9
Length of stay in the U.S., males						
Less than 2 years	36.4	19.4	11.5	7.3	4.9	20.2
2 to 5 years	55.3	17.5	9.0	6.5	4.0	7.8
More than 5 years	72.9	12.4	6.5	2.4	1.2	4.0
Length of stay in the U.S., females						
Less than 2 years	55.7	18.1	5.7	5.4	2.6	11.9
2 to 5 years	73.4	13.9	6.9	3.4	0.6	1.5
More than 5 years	87.7	8.7	1.2	0.6	0.5	1.3

SOURCE: The Mexican Migration Sample Database.

NOTES: These figures include children younger than 12 years old. Totals do not sum to 100 percent because of rounding.

movers. Of the immigrants who have been in the United States for more than five years, 85 percent of the men and 97 percent of the women moved only one or two times.

Multiple Movers Versus One-Time Movers

As Table 6 shows, multiple movers tend to be older, less educated, and documented:

Table 6

Number of Trips by Age, Education, and Documentation
(in percentage)

	One Trip	Two to Five Trips	Six Trips or More
Age			
Less than 12 years	96.9	3.0	0.1
12 to 20 years	80.9	18.1	1.0
20 to 25 years	58.7	36.3	5.0
25 to 35 years	35.2	50.0	14.8
35 to 45 years	24.3	49.2	26.5
More than 45 years	21.6	41.8	36.6
Education			
No education	37.1	42.9	20.2
Completed elementary	45.8	39.0	15.2
Completed junior high	52.2	38.2	9.6
Completed high school	52.8	41.5	5.7
Completed college	49.9	37.0	13.1
Documentation			
Special Agricultural Worker	2.2	71.0	26.8
Bracero	35.7	52.8	11.5
Granted amnesty	19.7	56.1	24.2
U.S. citizen	12.8	60.8	26.4
Green Card	30.8	40.5	28.7
Undocumented	61.4	33.0	5.6

SOURCE: The Mexican Migration Sample Database.

NOTES: These percentages include children younger than 12 years of age.

- Among those who moved more than six times, 37 percent were 45 or older, 5 percent were between 20 and 25, and 1 percent were 12 to 20 years old. Ninety-seven percent of the children in the sample moved once.
- Sixty-three percent of the immigrants with no education moved more than once, while less than half of those with more than a junior high school education were multiple movers.
- Only 6 percent of the undocumented immigrants moved more than six times; 61 percent moved only once. In contrast, over 20 percent of the documented immigrants—27 percent of the SAWs, 24 percent of the amnestied workers, 26 percent of the citizens, and 29 percent of the immigrants with Green Cards—moved more than six times.

Further analysis is needed to understand the implications of these findings. On the one hand, people may move a number of times in order to acquire legal status and then settle in the United States. On the other hand, documentation does not have to imply permanent settlement. Immigrants may seek legal status to legitimize their migration patterns.

Results of the Multivariate Analysis

The results of the multivariate analysis supported the descriptive results on most dimensions. Immigrants who had more education and documentation, who were in skilled work, and who located in California stayed longer than their opposites. However, there were differences between the results on other dimensions.

Using the discrete hazard model of return migration, the analysis examined the effect of every independent variable while holding all other variables constant. In other words, it isolated the effect of each variable from that of all other variables. For example, the descriptive analysis found that undocumented immigrants return more quickly than documented immigrants. However, if undocumented immigrants are also people with little or no education, they may return sooner—not because they are undocumented immigrants but because they have insufficient education. The model allows us to examine the effect of immigration status while holding the immigrants' education constant.

The results of the discrete hazard model are presented in Table 7. The odds ratios provide ratios of probabilities. For example, for documented immigrants the odds ratio is the ratio of the probability of return for documented immigrants over the probability for return of undocumented immigrants.[8] If the odds ratio is very close to 1, it means that there is not much variation in the probability of return of documented and undocumented immigrants. If the odds ratio is greater than 1, documented immigrants are more likely to return than undocumented immigrants. If it is less than 1, the opposite is true: Undocumented immigrants are more likely to return than documented immigrants. Hence, the most important predictors of the probability of return are those variables for which the odds ratio is farthest from 1.

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[8]This is given by $\text{Ln}(P_{doc,t}/P_{undoc,t}) = X_{doc}\ (\beta_{doc,t} - \beta_{undoc,t})$, which is the difference in the betas (βs) for documented and undocumented immigrants times the number of documented immigrants in the sample, X_{doc}. It does not depend on the other choices, because of the independence of irrelevant alternatives assumption of the logit equation, i.e., the equation explicitly assumes that all choices are independent of one another. See William H. Greene, *Econometric Analysis*, Second Edition, Macmillan Publishing Co., New York, 1993, pp. 670–672.

Table 7

Results of the Discrete Hazard Model of Return Migration for Men and Women

Independent Variable	Odds Ratio—Males	Odds Ratio—Females
Intercept	0.1157	0.0505
Individual Characteristics		
Age		
Age at migration	1.001	1.030**
Age at migration squared	1.000	1.000**
Age × 2nd year in U.S.	0.987**	0.973**
Age × 3rd year in U.S.	0.974**	0.980**
Education		
Education	0.911**	0.931**
Education squared	1.005**	1.005**
Education × 2nd year	0.991*	0.951**
Education × 3rd year	1.069**	0.979**
Destination		
Los Angeles	0.600**	0.733**
Other California location	0.768**	0.880**
California × 2nd year	0.867**	0.611**
California × 3rd year	1.581**	1.113*
Los Angeles × 2nd year	1.257**	0.993
Los Angeles × 3rd year	1.759**	1.323**
Immigration status		
Documented	0.711**	1.027
Documented × 2nd year	0.575**	0.585**
Documented × 3rd year	0.757**	0.784**
Employment		
Not employed	1.659**	0.739**
Skilled worker	0.611**	0.414**
Not employed × 2nd year	0.174**	0.791**
Not employed × 3rd year	0.314**	0.767**
Skilled worker × 2nd year	0.767**	1.089
Skilled worker × 3rd year	0.891**	2.085**
Origin community		
Jalisco	0.856**	0.672**
Zacatecas	0.620**	0.401**
Guanajuato	0.948**	0.914**
Nayarit	0.501**	0.576**

Table 7—continued

Independent Variable	Odds Ratio—Males	Odds Ratio—Females
Origin community		
Urban community origin	0.867**	0.836**
Origin community population	1.000	1.000**
Participation of males in manufacturing in community of origin	1.000	0.999
Wages		
Log of wages	0.750**	0.725**
Log of wages × 2nd year	1.143**	1.109**
Log of wages × 3rd year	1.031**	1.218**
Migration experience		
Migrated before 1986 (IRCA)	0.871**	0.723**
before 1986 × 2nd year	0.668**	0.782**
before 1986 × 3rd year	0.713**	0.693**
2nd year	0.604**	1.953**
3rd year	0.131**	0.371**
Number of trips to U.S.	1.044**	1.091**
Family/network characteristics		
Family in U.S. at time of survey	0.702**	0.923**
Family traveled to U.S.	0.985	1.129**
Ratio of workers in household	0.994	1.097**
Number of persons in household	0.885**	0.915**
Business ownership	1.055**	0.961*
Years of education of household head	0.993**	1.015**
Age of household head	1.019**	1.000
Land ownership	0.937**	0.943**

SOURCE: The Mexican Migration Database.

*Statistically significant at the 10-percent level.

**Statistically significant at the 5-percent level.

Economic Factors in the Decision to Stay or to Return

In general, the results of the multivariate analysis agree with the descriptive results on most dimensions and demonstrate the importance of social networks and economic factors in the decision to return. Immigrants who had more education and documentation, and who moved to California stayed longer in the United States than immigrants

with low levels of education and no documents, and who moved to other parts of the United States.

As discussed in Chapter 2, educated immigrants may have better sources of information and better connections than those with low levels of education, thus improving their potential for success in the new location. The same is true for documented immigrants. Their legal status gives them access to more opportunities in the United States than undocumented immigrants. Finally, the ethnic enclaves developed in California help immigrants with information about employment and may even provide housing to new entrants, lowering the cost of migration and improving the chances of a long stay in the United States. Further, having no family in the United States before migration is one of the strongest predictors of return for men in the sample.

Another strong predictor of staying is earning potential. Low-wage earners and unskilled workers are more likely than higher-paid and skilled workers to leave. Figure 12 uses the results of Table 8 to simulate the length of stay in the United States of Mexican men by their occupation. The figure shows that the probability of stay declines faster for men out of the labor force and unskilled workers than for skilled workers with greater earnings potential. Only about a third of the skilled workers return within three years, whereas close to 40 percent of the unskilled and those out of the labor force return after only three years.

Labor force status is another strong predictor. The probability of stay declines sharply for men out of the labor force during the first year after migration, but after two years remains more or less constant, whereas that of unskilled workers continues to decline. Since most of the men who were unemployed or out of the labor force return during the first year, their probability of return remains higher than that of skilled

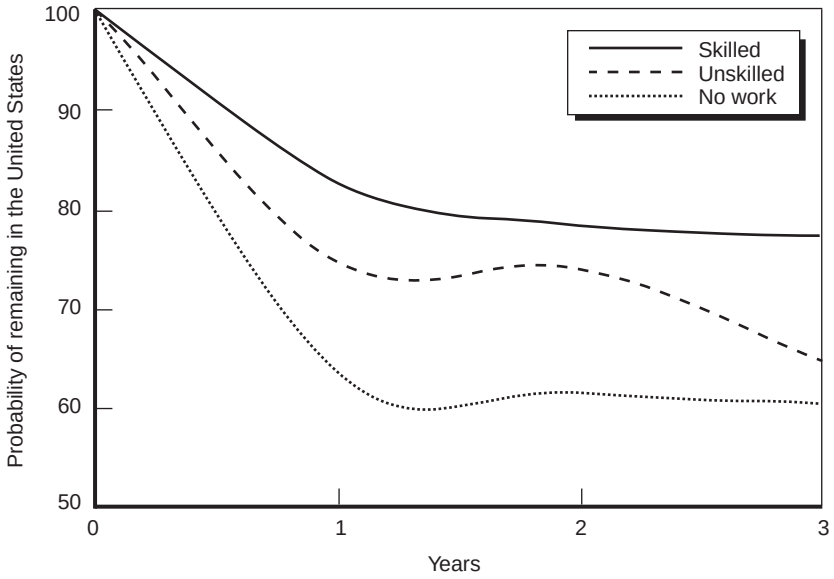

Figure 12—Simulation of the Probability of Remaining by Occupation

and unskilled workers. Although only 5 percent of the men in the sample were either unemployed or out of the labor force, those who stay in the United States for longer than two years have a strong preference for remaining. These men may include retirees, students, or the disabled.

The effect of wages on the probability of return demonstrates the importance of economic factors for the decision to remain in the United States. Wages are one of the strongest predictors of return (see Table 8). Figure 13 shows the results of a simulation of the length of stay of Mexican men by wages. As the disappointment hypothesis would predict, low-wage earners are more likely to return soon after migration. Close to 30 percent of those who earned $2.40 an hour return within one year. However, wages are not as important a predictor of return after the second and third year in the United States. High-wage earners

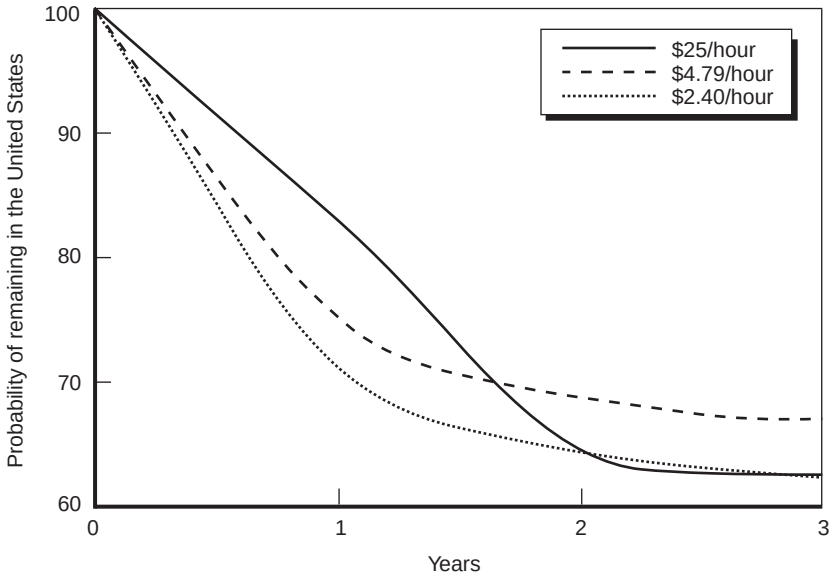

Figure 13—Simulation of the Probability of Remaining by Immigrant's Wage

are as likely to return during the second and third year after migration as the low-wage earners.

This finding may lend some support to the target income theory. Berg (1961) and Hill (1987) hypothesize that the length of time an immigrant stays in the United States decreases with higher wages. Under this hypothesis, immigrants have a strong preference for remaining in their home community (as opposed to relocating in the United States), but must resort to international migration because of limited wage opportunities at home (Berg, 1961). Immigrants therefore plan to stay in the United States as long as it takes to accumulate enough savings to reach a particular level of income and then return to their place of origin. The higher their income, the faster they are able to accumulate their target income and the sooner they return.

Although the descriptive findings about women and children may lend some support to Durand and Massey's (1992) hypothesis about family migration and settlement patterns, the multivariate analysis suggests that economic factors are a strong predictor of return migration for women, as well as for men. Durand and Massey argue that the first migrants are invariably men, but that over time, as migrants acquire experience in the United States, gain familiarity with the U.S. labor market, and specialize in certain occupations, the constant shuttling back and forth becomes difficult to sustain. Men then begin to bring their families to the United States and settle permanently. Therefore, women and children move at a later stage of the migration process, and they are more likely to move to settle permanently in the new location. It is clear from the findings in Table 4 that some women do not work in the United States (44 percent) and may move as "tied" movers, following their husbands. However, 64 percent of the women move alone, over 50 percent are employed after they enter the United States, and economic factors, wages, and employment are some of the strongest predictors of return migration. Women, as well as men, respond to economic incentives.

Other Factors Related to Return Migration

Holding all other influences constant, the study found that men are more likely to return to Mexico if they are heads of household and recent immigrants who moved after the Immigration Reform and Control Act (after 1986). They are less likely to return if they have been in the United States for longer than two years and come from the state of Nayarit.

Similar variables affect the probability of return of women. They are more likely to return to Mexico if they are undocumented, if they have low levels of education, if they moved after the Immigration Reform and Control Act (after 1986), if they earned low wages, and if they were unemployed while in the United States. However, most women stay for at least one year, unlike men, who are more likely to return within the first year after migration.

Findings Support Theories About Return Migration

In Chapter 2 we discussed the disappointment hypothesis, the circular migration hypothesis, the target income hypothesis, and the social network hypothesis. The analysis confirms that immigration is a complex process, and the findings offer some support for the hypotheses.

As posited by the disappointment hypothesis, immigrants (both men and women) who cannot find employment while in the United States and those who earn low wages have a high rate of return soon after migration. In other words, immigrants who "fail" in the United States return home soon after migration.

The findings also give some support to the circular migration hypothesis. A fairly high percentage (51 percent of men and 26 percent of women) move more than once (Table 6). However, most of the multiple movers do not stay in the United States longer than two years and the majority of those who have stayed longer than five years have moved only once. Thus, circular migration apparently does not constitute a "transition" to permanent settlement. However, more research is necessary to confirm this point.

The multivariate model findings may lend some support to the target income theory. Immediately after moving, those who "fail"—by not

finding high-paying jobs—return to western Mexico. Of those who are able to find satisfactory employment and who stay longer than two years, the high-wage earners are as likely as the low-wage earners to return. Having reached an economic goal in the United States, the high-wage earners may prefer to benefit from the higher purchasing power their accumulated income has in Mexico.

Finally, as the social network theory hypothesizes, independent of economic outcomes, social networks improve the chances that immigrants will stay for longer periods. Immigrants with family or friends in the United States may be able to assimilate sooner into the new location and are more likely than people without connections in the United States to stay for longer periods of time.

5. Conclusions and Implications

The results of the study make clear the importance of return migration, the length of time immigrants stay in this country, and the differences between returnees and long-term settlers in considering immigration's social and economic effects. The purpose of the study was not to estimate the public costs associated with immigration, but the results demonstrate that cost effects should not be estimated solely on the basis of the total number of immigrants in the country at a fixed point in time. Length of stay in the United States and the characteristics of those who stay for long periods of time should also be taken into account.

For the sample from western Mexico, the study's major conclusions underline the importance of these considerations:

- Immigration is not a one-way process for a very high proportion of immigrants. In the study sample, about 50 percent return to Mexico after only two years, and by 10 years, almost 70 percent of those who came to the United States have returned.

- Return migration is even more pronounced for undocumented immigrants. Close to 40 percent of those in the sample return to Mexico after only one year in the United States.
- Those who do stay for five years or more are the most educated and have the strongest ties to the labor market. For these reasons, they are also the immigrants more likely to be assimilated into the state and national economy and less likely to impose public costs.

Further research could use the study's findings to estimate the actual numbers of immigrants who are long-term settlers, the likelihood that they will qualify for social services under the Federal Welfare Reform Act (Public Law 104-193), and the assimilation potential of those who stay. The remainder of this chapter suggests the relevance of the findings in considering these issues.

Most Immigrants Stay Only a Short Time in the United States

Chapter 4 reported that only about 30 percent of the immigrants in the sample stay in the United States for longer than 10 years—but what does that mean in actual numbers? In this section, we use the probabilities of returning to Mexico that are derived from the life tables in Chapter 4 to forecast the number of immigrants from western Mexico who would remain in the United States continuously for longer than 10 years.[1] These estimates are displayed in Table 8.

[1]If a person enters more than once between 1980 and 1990, he/she is counted twice in the sample (first move and most recent move) and the length of stay is determined for each of these moves.

The numbers do not represent new findings; they are simply a more compelling way of presenting the findings from Chapter 4. Further, these are not estimates of the *total* number of immigrants in the United States or California *at a particular point in time* (i.e., the stock): Such an estimate would require data on new entrants to the United States every year. Rather, we take the number of entries from the communities in the sample into the United States during the 1980s and estimate how many of these entrants will stay in the country continuously for longer than 10 years, using the models developed in Chapter 4. Some of the percentages used to derive the numbers in Table 8 differ from the percentages in Chapter 4, because the analyses in that chapter used data on all immigrants from western Mexico—independent of their year of migration. The estimates shown in Table 8 are restricted to the subsample that moved in the 1980s.

The first column of Table 8 gives an estimate of the total number of immigrants from the sampled communities in western Mexico who entered during the 1980s: About 5 million immigrants (documented

Table 8

Estimated Number of Immigrants from Western Mexico Entering United States in 1980–1990 and Remaining for Five or 10 Years

	Number of Immigrants Entering		Number of Annual Average Remaining	
	1980–1990	Annual Average	5 Years Later	10 Years Later
National total	5,039,399	503,940	200,921	137,727
Undocumented	3,332,105	333,211	111,259	76,938
Documented	1,707,294	170,729	87,738	59,977
California total	3,264,947	326,495	145,617	95,826
Undocumented	2,139,810	213,981	82,105	57,646
Documented	1,125,136	112,514	62,389	38,390

SOURCE: The Mexican Migration Database.

and undocumented) from those communities moved to the United States between 1980 and 1990. About 3 million moved to California and almost 65 percent of them were undocumented. The second column shows an average yearly estimate of the number of immigrants in the sample who entered the United States for that decade. Almost 504,000 moved to the United States in an average year in the 1980s, of whom 333,211 were undocumented.

The next set of columns estimates the number of immigrants from the communities in the sample who stayed in the country continuously for longer than five and 10 years, respectively. Twenty-seven percent of the immigrants who moved to the United States between 1980 and 1990 stayed in the country longer than 10 years—137,727 of the 503,940 who moved in a particular year.

Of the 326,495 western Mexican immigrants (documented and undocumented) estimated to have moved to California in an average year in the 1980s, only 95,826 will be in the state for longer than 10 years. However, undocumented immigrants return faster than documented immigrants; therefore, we find that of the 213,981 undocumented immigrants from the communities in the sample who entered California in a typical year in the 1980s, only 57,646 (27 percent) will stay in the United States for longer than 10 years.

Most Immigrants Do Not Qualify for Public Services Programs

Immigrants do not have the same access to social service programs as do citizens. Their eligibility for various programs depends on their immigration status, as well as on the length of time they have been in the United States. The patterns of migration found in this analysis suggest

that only a small percentage of immigrants from western Mexico, documented or undocumented, may be receiving benefits, even under the old five-year waiting period.

Use by Undocumented Immigrants

Under the Medicaid program, undocumented immigrants are barred from receiving anything except emergency medical services. Under the new Federal Welfare Reform Act (Public Law 104-193), they are not eligible for assistance through the Special Supplemental Food Program for Women, Infants and Children (WIC).[2] Families headed by an undocumented person can qualify for Aid to Families with Dependent Children (AFDC), Medicaid, food stamps, and other programs only if their children are citizens. Their benefits are lower than those of citizen families because the benefits are supposed to cover only the children, not the adults. However, only a relatively small percentage of undocumented immigrants in the sample would qualify for such benefits, for several reasons:

- Most of them are males who return to Mexico after only two years in the United States. Seventy-four percent of the undocumented immigrants in the sample are males and only 20 percent of them stay for longer than 10 years.

[2]Under the Federal Welfare Reform Act, undocumented immigrants will be eligible for emergency medical care, in-kind disaster relief, and public health programs for immunization and communicable diseases. Other benefits for which they are eligible are in-kind services at the community level, such as soup kitchens, crisis counseling and intervention, and short-term shelter.

- Although a large number of immigrants in the sample are married, only 12 percent of the undocumented immigrants move with children or had children after migration.
- Only 9.5 percent of the undocumented immigrants with children had them in the United States after migration, making those children citizens and eligible for benefits.

These percentages suggest that using social services and having children in the United States are not a significant part of the process of migration for undocumented immigrants from western Mexico. The majority of the undocumented immigrants move alone, work for several years in the United States, and return to Mexico. Under these circumstances, it appears that migration is likely to continue even if access to public programs and services is further limited or restricted.

Use by Documented Immigrants

There are waiting periods for legal immigrants before they can receive social services. The legalization rules under the Immigration Reform and Control Act (IRCA) of 1986 prohibit immigrants from participating in federally funded public assistance programs for the first five years after legalization. Until recently, amnestied workers were banned from welfare. Some of them are now becoming eligible to receive benefits. However, the Welfare Reform Act will make legal immigrants ineligible for any federal program (SSI, food stamps, and Medicaid) unless they have worked in the United States for 40 quarters

without receiving benefits or are refugees who have been in the country for less than five years.[3]

Further, legal immigrants would not be eligible for any federal means-tested public benefits (including cash, medical, housing, and food assistance, and social services) for five years beginning on the date of their entry into the United States. After this period, legal immigrants could be eligible, but the sponsor's income and resources, and his or her spouse's income and resources, would be deemed available until the immigrant meets the 40-quarter requirement or becomes a U.S. citizen.

Figure 7 showed that return migration is not as prevalent among legal immigrants as it is for undocumented immigrants in the sample.[4] The majority of legal immigrants who return do so in the first few years after migration. By five years, 43 percent of the legal immigrants returned to Mexico. By 10 years, half of them are still in the United States. However, as discussed below, those who stay may be less likely to need benefits than the whole sample of immigrants, given their demographic characteristics.

Those Who Stay Have a Higher Potential for Assimilation

The sample of returnees is not a random sample of all immigrants. Consequently, the people who remain in the United States after the

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[3]Legal immigrants, as well as illegal immigrants, will still be eligible for emergency medical services and public health programs for immunizations and communicable diseases.

[4]A high percentage of amnestied immigrants (76 percent) have remained in the United States for longer than five years. However, amnestied immigrants are a special case: One means of qualifying for amnesty under the Immigration Reform and Control Act of 1986 was to have resided in the country continuously at least since 1982. Thus, those who qualified were, in terms of the legislation, already long-term stayers.

termination of the waiting period for social services will be a selective sample of all immigrants who come to the United States. In general, the characteristics of those who stay give them greater assimilation potential:

- Most of the immigrants from western Mexico have less than an elementary school education, and these are the immigrants most likely to return to Mexico. In contrast, high school educated immigrants are the least likely to return.
- Immigrants who are employed and are in high-earning occupations are more likely to stay in the United States than those who are unemployed or than agricultural and nonmanual workers. Over 50 percent of the professionals are still in the United States 15 years after their migration, but very few of the agricultural and nonmanual workers stay for longer than 15 years.
- Although 54 percent of those who come from western Mexico are undocumented, they are more likely to return than documented immigrants. Fifty-four percent of the undocumented immigrants return after only two years.

These findings imply that long-term settlers may have better potential for assimilation and may be more likely to pay higher taxes than the whole sample of immigrants.

Implications of the Study

These and other results of the study suggest that most immigrants from the sampled communities come to the United States and California for economic reasons and that social programs probably have little effect

on migration decisions, especially for undocumented immigrants. This implies that undocumented immigration is likely to continue even if access to public programs and services is limited or restricted.

The results also suggest that, in any given year, immigrants may impose a net cost; but as low-wage earners return to Mexico and the earnings of long-term settlers increase with time in the United States, immigrants may provide a long-term benefit. Thus, annual cost accounting—which is generally invoked in the immigration debate—can address short-term issues, such as whether immigrants cost more in a given year than they contribute to public coffers. However, it is not appropriate for determining the number who are allowed to enter the country or the public services that will be provided to them. As Georges Vernez and Kevin McCarthy (1996, p. 47) argue:

> Determining how to factor in fiscal costs in formulating immigration policy requires taking a long-term as well as a short-term perspective. In essence, we need to know not only whether immigrants in the aggregate consume more than they contribute in any one year but also what services they use and what revenues they contribute over the entire course of their lifetime. We also need to distinguish among immigrants along those dimensions that are most relevant to their long-term economic success and/or use of public services.

Appendix A

Sample Weights

The MMP sample is essentially fixed across communities. For most communities, 200 households were surveyed in Mexico and 20 in the United States. However, the communities differ in size and migration propensity. To obtain a representative sample of the binational community, weighting becomes necessary. The MMP sample suggests a weighting scheme, which is elaborated in Massey and Parrado (1994). We use Massey and Parrado's Mexico weights, but develop an alternative weighting scheme for the U.S. sample.[1]

The weighting scheme for the sample in Mexico is straightforward. The weights are given by

$$W_{iM} = 1/SF_{iM} \qquad (1)$$

[1]We estimated the models in Chapter 4 and 5 with Massey and Parrado's (1994) weights and there was no significant difference in the results.

$$SF_{iM} = HS_{iM}/F_{iM} \quad (2)$$

where W_{iM} is the weight for community *i* in Mexico, SF_{iM} is the sample fraction, HS_{iM} is the number of households sampled in Mexico for community *i*, and F_{iM} is community *i*'s Mexican sample frame.[2]

The weight for the U.S. sample is more complicated since we do not have a sample frame for each community in the United States. For the U.S. sample, we first estimate the outmigrant population and then apply a weighting scheme similar to that on (1) and (2). The weights for the U.S. sample are given by

$$W_{iU.S.} = 1/SF_{iU.S.} \quad (3)$$

$$SF_{iU.S.} = PS_{iU.S.}/M_{iU.S.} \quad (4)$$

where $W_{iU.S.}$ is the weight for community *i* in the United States, $SF_{iU.S.}$ is the sample fraction in the United States, $PS_{iU.S.}$ is the total number of people from community *i* living in the United States at the time of the survey, and $M_{iU.S.}$ is the estimate of the outmigrant population for community *i*. Different from other researchers, we use the total number of immigrants as opposed to the number of nonresident children, because nonresident children may not be a representative sample of the community's outmigrant population. There is no reason to believe that children have the same migration pattern as that of other members of the household. In fact, we find that most of the immigrants in the sample are the children of the household head—62 percent of the immigrants are the household's sons or daughters. If children are more likely to move than any other member of the household and we only use the ratio

[2]These are the same weights used by Massey and Parrado (1994), Massey and Singer (1995), and Lindstrom and Massey (1994).

of children in the United States to that of children in Mexico to estimate the outmigrant population, this will lead to an overestimate of the number of people in the United States. Furthermore, international migrants may differ from those who stay in the home community in their likelihood of forming a new household. On the one hand, the household head may be more likely to consider an international migrant a nonhousehold member than a child who still lives in the home community, holding age and other characteristics constant. On the other hand, children in the United States and those in Mexico may differ in their marriage propensity. For example, undocumented immigrants have an incentive to marry to obtain documented status in the United States and thus legalize their migration pattern. This will distort estimates of the outmigrant population.

The estimate of the outmigrant population is given by

$$M_{iU.S.} = \text{Prob}(U.S.|\text{sampled}) * F_{iM} \quad (5)$$

Prob(U.S.|sampled) is the probability that someone in the sample is in the United States:

$$\text{Prob}(U.S.|\text{sampled}) = (PS_{iU.S.}/HS_{iM}) * (PS_{iU.S.}/PC_{iU.S.}) \quad (6)$$

The first expression on the right-hand side, $(PS_{iU.S.}/HS_{iM})$, shows the number of people from the sampled household who were living in the United States at the time of the survey. It captures the migration of people who retain connections to the home community—heads of households, children, etc. However, it does not capture the migration of whole families who leave no connections in the home community. The second expression tries to capture family migration by obtaining an estimate of the people in the United States with connections to the home

community. $PC_{iU.S.}$ is the number of people from community *i* with connections to the community, perhaps the person's parents or other family member who could provide information about that person's current location. The estimate of the outmigrant population is then given by

$$M_{iU.S.} = (PS_{iU.S.}/HS_{iM}) * (PS_{iU.S.}/PC_{iU.S.}) * F_{iM} \quad (7)$$

This is the total number of people in the United States per household sampled times the total number of households in those communities, corrected for family migration.

Appendix B

Discrete-Time Hazard Model of Return Migration

This model is similar to a logit model in that it is assumed that there is an underlying response variable Y_{it} defined by the relationship

$$\begin{aligned} Y_{it} = {} & b_0 + b_1 X_i + b_2 N_i + b_3 C_{it} + b_4 X_i * T_2 + b_5 X_i * T_3 \\ & + b_6 N_i * T_2 + b_7 N_i * T_3 + b_8 C_{it} * T_2 + b_9 C_{it} * T_3 \\ & + b_{10} T_2 + b_{11} T_3 + e_{it} \end{aligned} \quad (1)$$

where X_i are individual characteristics that affect the probability of return of individual *i*. It includes such variables as age at the time of migration, education at the time of the survey, major occupation while in the United States, immigration status, number of U.S. trips, and if the person is a household head. N_i are family and network characteristics: if someone in the family has been in the United States or if someone in the family currently lives in the United States, the number of people in the

household, the workers per family members, if the family owns land or has a business, and the age and education of the household head. C_{it} are the community characteristics: if urban, the population of the community at the year of migration, and the percentage of males in the labor force employed in manufacturing. T_2 and T_3 are dummies for the second year and for duration longer than 3 years, respectively. They capture the difference in the probability of return over time. People are generally more likely to return after the first year and the probability of return decreases over time.

The effect of the independent variables on the probability of return may also vary over time. For example, undocumented immigrants may be more likely than any other immigrant type to return right after migration, but those who stay longer than three years may be people who have a strong preference to stay in the United States to the extent that, after three years, the few undocumented immigrants who are still in the United States are less likely than documented immigrants to return. To capture this effect, we use the interaction between duration and each of the independent variables.

$b_0, b_1, \ldots, b_{11}$ are the coefficients to be estimated and e_{it} is the error term. In practice, Y_{it} is unobservable, and what is observed is the realization of Y_{it}, which is given by a dummy variable Y^*_{it} defined by

$$\begin{aligned} Y^*_{it} &= 1 \text{ if } Y_{it} > 0 \\ Y^*_{it} &= 0 \text{ otherwise} \end{aligned} \qquad (2)$$

Assuming that e_{it} follows a logistic distribution, the probability of individual *i* returning at year *l* is

$$P(R_{il}) = \left\{P_{t=1}^{l-1}\left(1 - f\left(Z_{it}\ b\right)\right)\right\}\ f\ \left(Z_{il}\ b\right) \qquad (3)$$

where Z_{it} represents the vector of explanatory variables in Eq. (1), b is the vector of estimated coefficients, and f is the logistic cumulative distribution function. This equation shows that the probability of returning in year *l* is the product of the probability of not returning in years 1 to *l* – 1 times the probability of returning in years *l*. The probability of not returning at year *l* is given by

$$P(R_{il}) = P_{t=1}^{l}\left(1 - f\left(Z_{it}\ b\right)\right), \qquad (4)$$

the product of the probabilities of not returning from years 1 to year *l*. We then estimate the likelihood function for R returnees and N nonreturnees, which is given by

$$L = \left[P_{t=1}^{R}\left\{P_{t=1}^{li-1}\left(1 - f\ \left(Z_{it}\ b\right)\right)\right\}\ f\left(Z_{il}\ b\right)\right]\ P_{t=1}^{N}\ P_{t=1}^{l}\ \left(1 - f\left(Z_{it}\ b\right)\right) \qquad (5)$$

There are M * T observations in the sample. M is the total number of first and last moves for every immigrant in the sample and T is the number of years each immigrant stays in the United States in each particular move. Hence, every observation is an immigrant's year in the United States. The dependent variable is then the probability that immigrant *i* will return to Mexico in year t, given that she/he has been in the United States for t years. This model allows us to better construct the probability of return over time than a simple logit equation, while maintaining the simplicity of discrete models. It also allows us to observe the effect of the independent variables over time, by interacting the independent variables with duration. As explained above, the interaction of documentation and duration gives us a sense of how fast undocumented immigrants are returning, in addition to determining if

undocumented immigrants are more likely to return than any other immigrant type. The results of this model are presented in Table 7. The findings for the most relevant variables are discussed in Chapter 4.[1]

[1]To determine if the weights used affect the results of our equations, we estimated the descriptive and multivariate analyses using the weights developed by Massey and Parrado (1994) and found no significant difference in the results.

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