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INTRODUCTION

Migration has a long history in Mexico, both within and beyond the country's borders. Spurred on by U.S. guestworker programs in the 1940's and 1960's, international migration rates increased steadily over the second half of the twentieth century, with multiple attempts by both the Mexican and U.S. governments to harness movement over the last few decades. Recent research suggests that internal migration is also noteworthy in magnitude, though it has certainly received less attention in empirical research (e.g., Boucher, Stark, and Taylor 2005; Pimienta Lastra 2002). In this chapter we use new data from the Mexican Family Life Survey to examine current trends in migration flows, both at the macro and micro level. The results suggest no signs of a slowing migration stream; between the two waves of data collection in 2002 and 2005, over 2.5% of all adults, and over 5% of young adult men had relocated to the United States.

It may not be surprising that theoretical advancement in the field of migration has relied heavily on flows between Mexico and the United States as a testing ground. Yet, progress towards answering some of the central lines of inquiry in migration research (who moves? why do people move? what are the macro and micro level effects of movement on the sending society and on the society of reception?) has been highly data driven. To date, migration research is still most heavily allocated to measuring the number of migrants to major receiving sites (e.g. the United States, Germany, France), characterizing their impact on receiving economies, and measuring migrant incorporation into new social, state, and economic systems. This is in part a function of differential quality and quantity of data in receiving and sending societies. While this research formed an important basis for understanding the effects of *im*migration, it has largely ignored the effects of *em*igration and revealed only secondary information about why people move. Information about sending society characteristics is vital for analysis of the events thought to motivate movement, or to generate the supply of potential movers in response to shifts in migration demand.

The development of several data sets, such as the Mexican Migration Project (MMP), has proven invaluable in advancing research that documents migrant flows and reveals the social and economic

underpinnings that motivate them. In this chapter we build on this rich body of work using a new data set, the Mexican Family Life Survey (MxFLS). The MxFLS provides, in particular, two complements to existing studies: the data are (1) nationally-representative and (2) longitudinal in design. These features provide an opportunity to extend migration research in several new directions. For example, understanding how the migration process influences families of migrants, as well as migrants themselves, benefits greatly from longitudinal data that allows us to observe migrants and their families before and after a member moves. Similarly, analysis of various theories of migration ("why" people move) benefits greatly from the ability to observe migration behavior in the context of changing social and household conditions over time. Additionally, with the exception of a few studies, the causes and consequences of internal migration within Mexico have been far less heavily emphasized in empirical literature; an analysis of inter-regional movement from around the country is possible with the MxFLS data.

In this chapter we present descriptive estimates about Mexican migration and in doing so, attempt to highlight the large potential body of migration research that can be developed with the MxFLS data. We begin by examining, at the national level, recent trends in the size, direction, and composition of migration flows within Mexico and between Mexico and the United States. We then examine evidence for a central question: why do people emigrate? In both cases, we consider how the evidence we find compares to recent research on the topic. Finally we conclude by briefly discussing how the MxFLS data are being used and can be used in the future to directly test migration theories and improve existing estimates of the effects of migration on Mexican families and communities.

II. RECENT TRENDS IN MEXICAN MIGRATION

To examine recent trends in migration, we use data from both waves of the MxFLS. The 2002 survey asks all adult household members to report on the location of their birth, the location of their home at age twelve, and all permanent migrations of one year or more between that age and the survey date. A number of characteristics about each of these moves is collected, such as the date of the move, the age of the migrant at the time of the move, the location to which the migrant moved, why the migrant moved,

and with whom the migrant traveled. In addition, histories of "temporary" migration - all moves out of the locality lasting longer than a month but shorter than a year - are collected for the two years prior to the survey data. In 2005, data on permanent moves are updated for panel respondents; new respondents complete full migration histories. Both types of respondents complete a second set of temporary migration histories for the period from 2003-2005. These histories allow us to present rich description of recent trends in migration.

There are a number of features of Mexican migration that can be documented with this data. Here, we estimate 1) the magnitude of migration rates nationally and across population subgroups; 2) the direction and size of inter-regional flows; 3) the degree to which different types of migrants are selected on demographic and socioeconomic characteristics, and 4) individual and household factors that predict emigration to the U.S..[1] Evidence on each of these characteristics shed light on whether, and how, migration affects population change in Mexico.

Migration experience

We begin our analysis with a simple examination of reported migration behavior. Table 1 uses data from the migration modules collected in the first and second waves of the MxFLS. We report on both permanent and temporary migration and also examine what percentage of the country has U.S. migration experience within these parameters. Migration is defined as any movement outside of a municipality; permanent moves are those moves lasting at least a year in duration while temporary moves are those lasting longer than a month but less than a year.

We find that over a quarter of Mexican adults report moving outside of the municipality they were living in at age 12. One and a half percent of adult respondents report moving to the United States for a year or more. In 2002, women and men report similar levels of permanent migration, though a higher proportion of men have experienced living in the U.S. for a year or more. Respondents living in an

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[1] It is worth pointing out that stated motivating factors can also be analyzed with the MxFLS data. Respondents report on the reasoning behind each of the migrations they list in the migration history.

urban region in 2002 are more likely to have migration experience than respondents living in rural regions. Older respondents are more likely to report any permanent moves than younger respondents, though this likely reflects longer exposure to possible moves. Relative to those with any secondary schooling, a higher percentage of the least educated report having made any moves since age 12. Interestingly, permanent movement to the United States does not appear to vary substantially by educational attainment.

Four percent of Mexican adults report having migrated temporarily in the two years prior to the survey date. We observe that men are more likely to make temporary moves than women, the young are more likely to make temporary moves than the old, and the more highly educated are more likely to make temporary moves than those with no formal schooling. During this period, just under one percent of all adults report moving to the United States for a month but less than a year. It is important to note that this fraction reflects the percentage of adults *living in Mexico* who had been in the United States between 2000 and 2002. A higher proportion of adults may move to the United States over a two-year period; a random sample of Mexican households allows us to observe non-movers and international movers who have returned to Mexico prior to 2002. In the cross-section we cannot observe all movement to the U.S. and thus cannot report on annual rates of out-migration. The longitudinal analysis in the last section of this chapter provides more evidence on this.

Regional Patterns

The patterns above describe trends at the national level; a considerable amount of research has underscored both the present and historical regional nature of migration in Mexico (e.g., Kandel and Massey 2002). We estimate regional trends in internal and international migration behavior and compare the findings from the MxFLS data to those calculated using the 2000 Mexican Census. We stratify the country's 31 states (and the D.F.) into five regions: the Northwest, Northeast, South/Southwest, Center, Center/West and examine moves that cross municipality borders. Table 2 presents the percentage of the 2000 population in each region living in a different municipality in 2000 than in 1995 by region of origin

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in 1995 (including the United States and other countries). For example, 0.98% of the 2000 South/Southwest population was living in the Center region of Mexico in 1995 and 4.45% of the 2000 South/Southwest population lived in a different municipality within the South/Southwest region in 1995. We calculate these estimates first from the MxFLS data, using the migration histories to locate individuals in 1995 and in 2000, and secondly with the 2000 Mexican Census data, which asks respondents to report their locations in 1995.

The MxFLS data reveal that in each region, between 2.5-5 percent of the population in 2000 was living in different municipalities within the region in 1995. Interestingly, less than one percent of the 2000 population of each of the regions was living in the United States in 1995. We observe the largest cross-region movement between the Northwest, South/Southeast and Center regions of the country.

We find that estimates calculated from the Census data are relatively similar in magnitude. The notable deviations suggest that the MxFLS data underestimate the magnitude of within region municipality crossing in the Center and Northeast regions. Additionally, the Census data suggest slightly higher levels of movement to the Northeast and Northwest regions from the South/Southeast and Center regions.

Tabulations of Census data over time suggest significant population growth along the border communities in the last few decades (Pimienta Lastra 2002). To assess the contribution of migration to this growth, we use the MxFLS data to examine migration flows from Mexico's interior to the capital and to the border regions. Of the roughly 8,300 permanent migrations reported by MxFLS respondents, almost 85% originate in municipalities that lie outside of Mexico City's metropolitan area or the northern border with the United States. To asses whether migration patterns over the last few decades are consistent with these conclusions, we present descriptive statistics measuring the percentage of migrations from this internal region that end in Mexico City, the northern border, the United States, and other places in Mexico's interior. Municipality data on the sending and receiving communities of each of these migrations is used to categorize these moves.

Table 3 presents these percentages by birth cohort and period. The first panel combines all birth cohorts reporting data in the 2002 MxFLS survey. By examining the last column in the first panel, it is possible to see that the percentage of total moves that originated in the interior of the country has lessened over time – in the 1960's, 91% of moves started in the interior of the country; in the 1990's this percentage had dropped to 79.7%. Amongst moves originating in the interior of the country, the majority end in other parts of the country's interior; this pattern has not changed substantially over time (panel 1), though in each period, the older birth cohorts are more likely to move within the interior of the country than the younger cohorts. In contrast, the regional patterning of the resulting moves does appear to have changed over time. Focusing on the first panel, which pools data for all birth cohorts, the percentage of moves to Mexico City has halved over the forty year period, whereas the percentage of moves to the northern border has doubled and the percentage of moves to the United States has jumped five-fold. It is important to note that this comparison is contaminated somewhat by the age structure of the respondents reporting migrations in these periods – all of the moves in the 1960's were completed by a younger group of people than the total number of moves in the 1990's – nevertheless, the pattern holds if the moves under consideration in the 1990's are limited to the younger cohorts (last panel).

We take a similar approach to consider population movement from rural to urban regions of Mexico.[2] We present a series of descriptive tabulations by birth cohort and period in Table 4. Across all periods and all birth cohorts, the magnitude of rural to urban migration dominates the magnitude of urban to rural migration. Nevertheless, it is notable how much of rural to urban migration appears to be offset by migration in the opposite direction. Over time, the percentage of moves between rural regions has decreased and the percentage of moves between urban regions has increased; a trend we would expect to see as a larger proportion of the country is born in urban regions. Along these lines, the degree to which rural to urban migrations are offset by urban to rural moves has increased over time. In the 1960's, 34%

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[2] Here we rely on respondents' recollections to classify origin and destination localities as urban or rural. Although this measure has the disadvantage of being subject to recall error as well as to different interpretations about what constitutes an urban or rural community, it has the advantage of not relying on official definitions which can change arbitrarily. Mexico has recently changed the definition of a rural locality from being a settlement of less than 2,500 inhabitants to less than 15,000.

of moves were from rural to urban regions and 9% of moves were from urban to rural regions; in the 1990's the respective percentages were 27 and 19 for the full sample, and 31 and 19 for the youngest cohorts.

Migrant Demographic and Socioeconomic Characteristics

The implications of population redistribution extend beyond size if those moving from certain types of regions are selected on demographic or socioeconomic characteristics. By "selection" we mean the ways in which movers are different from non-movers. Regional inequality in education, wealth, and age may be exacerbated or mitigated if migrants are selected on these characteristics. A long line of research in social science is focused on the process of "brain drain," or the loss of human capital at the country or community level that occurs when well-educated residents move to new locations offering better returns to education (Vas-Zoltan 1976). From a development perspective, brain drain will undermine the success of education initiatives and infrastructure improvements in poorer regions if the newly educated simply move away. A similar issue arises if the young, working population systematically moves from less-developed regions to more-developed ones, thereby simultaneously increasing the dependency ratio in one region and decreasing it in another.

Measuring the characteristics that predict migration is complicated by the likelihood that many people may migrate to improve their socioeconomic status; for this reason a contemporary characteristic observed *after* a movement has taken place may either be the cause or the effect of migratory behavior; we are unable to observe the selection processes at play. Fortunately the MxFLS data allows us to navigate this issue by measuring a number of demographic and socioeconomic characteristics that are fixed in childhood, even though they are observed much later.

To examine these selection processes, we estimate a series of regressions predicting several different types of migration behavior with the sample of MxFLS adults. These estimates include three sociodemographic measures: gender, indigenous status, and birth in a rural or urban community. 44% of our sample is male, 13% consider themselves to be ethnically indigenous, and 67% were born in a rural

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community. To these we add three measures of socioeconomic status in childhood. The first is a set of four dichotomous variables flexibly measuring mother's education (no schooling (48%), any primary (44%), any secondary (5%), and any preparatory or above (3%)). The second is a 0-2 scale capturing whether the respondent reports living in a home with piped water (1 point) and/or an indoor toilet (1 point) at age twelve (mean = 0.79). The third is respondent's height, measured in centimeters (mean = 158). Height is a measure of nutrition and illness that is thought to be particularly responsive to inputs prior to the age of 3 (Martorell 1995). While height is fixed in adulthood, the growth trajectory on which an individual is set is theoretically fixed much earlier in life, and thus should not be a *result* of migration behavior.

We use these measures to predict several indicators of migration experience for the full sample of adults in the MxFLS: whether or not an individual has ever moved (36% of the sample) and whether he or she has made multiple moves (14%). We then look amongst those with migration experience and examine the characteristics predicting those whose first move is for their own work or education (35%), versus being for the work or education of another family member or another reason, such as marriage, childbirth, divorce, health or safety. We also assess the characteristics predicting temporary migration (reported by 12% of those with any migration experience) – moves lasting more than one month, but less than one year. Finally we consider what characteristics predict whether individuals are residing in an urban area at the survey date among those born in a rural area (23%), and whether individuals are residing in an urban area at the survey date among those born in an urban area (6%).

All of these measures will be heavily influenced by the duration of time individuals are *at risk* of migration; for this reason, we include indicators of birth cohort as a control.

Odds ratios[3] from six logistic regressions are presented in Table 5. Z-scores are presented in brackets. Interestingly, we observe that women are slightly more likely to have ever moved than men (Column 1). Nevertheless, this relationship does mask important heterogeneity; among migrants, the

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[3] Odds ratio values that are larger than 1.00 can be interpreted as evidence of a positive relationship between the covariate and the migration indicator; odds ratio values that are less than 1.00 can be interpreted as evidence of an inverse relationship.

odds of moving for the first time for work or education versus for another reason are 4.5 times larger for

men than for women (Column 3). This finding is consistent with previous research that typically

classifies men as "leading" migrants (migrants who move for economic reason) and women as "trailing"

migrants (migrants who move to follow spouses) (Cerutti et al. 2001; Chiswick 2007).

The results generally suggest that migrants are more likely to be advantaged with respect to

socioeconomic status. Respondents with more highly educated mothers were more likely to report any

moves and multiple moves than were respondents with mothers without any formal schooling.

Furthermore, "leading" migrants are more likely to be advantaged with respect to socioeconomic status

than "trailing" migrants; among movers, having a mother with more education is positively associated

with making moves for labor or schooling versus moves for familial reasons (Column 3).

In contrast, we do find that household plumbing at age 12 has a negative, though small,

association with ever migrating, but is unrelated to making multiple moves.

Perhaps not surprisingly, but of greater potential concern, is that migrants from rural to urban

regions appear to be positively selected on socioeconomic background, whereas migrants from urban to

rural regions appear to be negatively selected on socioeconomic background. The odds ratio estimates for

each of the indicators of higher levels of mothers' schooling are all significant and larger than one when

predicting relocation of rural residents to urban areas (Column 5). In contrast, the odds ratio estimates on

more advanced schooling are all less than one when predicting relocation of urban residents to rural areas

(Column 6). Together, this suggests that rural regions are more likely to lose advantaged residents and

more likely to gain disadvantaged ones. The opposite appears to be true for urban regions. Over time,

this imbalance may have implications for educational inequality between regions; though as we discuss

briefly below, a more complicated model of population renewal would be needed to make this conclusion.

Turning to our indicator of health and nutrition in childhood, we observe that taller respondents

are more likely to report having ever moved and among movers, making a first move for work or school

than shorter respondents, net of mothers' education and household plumbing infrastructure at age 12.

This finding is somewhat small in magnitude – a standard deviation in height is associated with a ten

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percent difference in the odds of having ever migrated – though it is consistent with some theory arguing that migrants may be positively selected with respect to health (Palloni and Morenoff 2001).

We also calculate the estimates in Table 5 separately by birth cohort (not shown). We find that the patterns between mother's education and migration behavior largely hold. Interestingly, we also do not observe much cohort change in the association between gender and migration behavior. The most salient change across cohorts is the increase in odds of migration by members of the indigenous population. The older cohorts have odds of migrating and migrating multiple times that are a third to half as large as their non-indigenous counterparts, whereas younger cohorts have similar odds of moving and to moving multiple times to the non-indigenous groups.

Implications

It is important to note that the descriptive trends presented above must be taken one step further to fully assess how migration contributes to long-term population change in Mexico. Migration is one means by which the population of a country is redistributed – the other is through regional differences in fertility, mortality, and the intergenerational transmission of traits. To understand how migration shapes population change, it cannot be considered in isolation, but must instead be considered in concert with these other population processes. An appropriate methodological approach would build these regional- and educational-selective migration rates into a model of population renewal, such as that developed by Rogers (1975). The MxFLS data contain the necessary information to develop these types of models.

III. INTERNATIONAL MIGRATION THEORY: EVIDENCE FROM MxFLS

In recent years, it is estimated that several hundred thousand individuals moved from Mexico to the United States annually. Officials on both sides of the Mexico - U.S. border have raised concern about the effects of the size and composition of these large flows on both Mexico and on the United States. Nevertheless, developing policy aimed at reshaping migration streams (whether strengthening or

weakening them) requires a detailed understanding of *why* people move. Interestingly, this remains one

of the central contested components of theoretical work in migration research. In this section, we

demonstrate how the rich MxFLS data can be used to examine the applicability of migration theories to

the case of Mexico. It is worth noting that evidence shedding light on the motivating factors behind

migration streams has implications for regions far outside of Mexico as well; the MxFLS data is well

placed to fill several gaps in previous theoretical work in this area.

Theories of Migration

A full review of theories of movement is outside the scope of this chapter. We refer the reader to

excellent reviews presented in Fischer and colleagues (1997) and Massey and colleagues (1993). Absent

a full review, it is possible to note that most migration theory is comprised of two linked components,

often referred to as "push" and "pull" factors – another way of describing the sending and receiving

society characteristics that increase incentives or decrease disincentives for migrants to leave their home

communities. Most migration theories posit that these characteristics work in tandem; it becomes

essential then to have rich data not only on sending regions, but also sending households and extended

family networks.

Theories of household/family migration decisions emerge from an older body of work

emphasizing how geographical differences in the supply and demand of labor and capital create wage

discrepancies between locations. The "neoclassical" economic theory of migration (as named by many

theoretical reviews, e.g., Fischer et al. 1997) argues that populations will migrate to areas of higher wage

levels until a balance between locations is reached (Borjas 1989; Massey, Arango, Hugo, Kouaouchi,

Pellegrino, and Taylor 1998). Micro-level neoclassical theory complements macro-level theory by

describing migration from the individual's decision-making perspective. According to micro theory,

individuals continually make cost-benefit calculations and use these calculated comparisons to decide

whether or not to migrate. Cost-benefit calculations include physical and psychological costs, as well as

consideration of probabilities of attaining a job and being deported (Borjas 1989; Massey, Durand, and

Malone 2002).   A number of key studies extended this original work by arguing that individuals make decisions with a much longer time horizon, considering the long term costs and benefits of migrating, such as expected earnings in the future, expected access to credit in the future, and the probability of family reunification (e.g., Harris and Todaro 1970; Rosenzweig and Stark 1989; Todaro 1969).

Household theories, or the "new economic" theory of migration, build upon this research by arguing that the decision to move is not made by an individual, but is made by a family or a household maximizing utility over the unit (Mincer 1978). Within this unit, resource allocation is diversified, which may mean the migration of one or more individual. This theory suggests that the act of diversification occurs as an insurance strategy in the absence of institutionalized markets. In less developed locales, insurance markets for crop risk, futures, and unemployment may be weak or unavailable entirely. Credit may not be available. In situations of financial instability, a diversification of resources becomes essential. Having one family member sending remittances from a wage-job in another region may provide a steady source of income should, for example, an agricultural season at home be particularly low yielding (Massey et al. 1998; Taylor et al. 1996; Stark and Levhari 1982).

Other research extends the cost/benefit approach to migration by using it to describe why many migration flows build over time. "Network" or "chain" theories assert that the costs of migration are reduced by social ties to other migrants and by the social capital accumulated from migration experiences. At the same time, the benefits to migration are separately increased by these same characteristics. Often, a "culture" of migration develops in communities; migration is even sometimes considered a rite of passage in sending regions and maturing adolescents in these communities are likely to follow the pathway of migrant parents (Kandel and Massey 2002; Massey et al. 1998). Network theories most closely describe why migration may increase, given a fixed or even decreasing level of demand for migrant labor.

These theoretical developments have a number of testable implications. According to the neoclassical model of migration, migrants should be more likely to move when the benefits (e.g., wage differentials) are large, and particularly when they outweigh the costs (policy-based hikes in the price of border crossing). Household and family based theories suggest that homes with the least access to credit

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and insurance markets should be most likely to have a member migrate. Network theories suggest that, all else equal, those with family members or friends in the U.S. should be much more likely to move than those without such ties.

A body of empirical work tests and provides support for several components of these theories. In research focused specifically on Mexico-U.S. migration, a number of studies assess the effects of various U.S. immigration policies on changes in migration (e.g., Cornelius 2001; Donato, Durand, and Massey 1992; Phillips and Massey 1999; Zolberg 2000). Another line of this research examines the role of sending and receiving wage, risk, and credit contexts to assess their role in promoting circular migration (Lindstrom 1996). Other studies attempt to test a host of theories simultaneously in large, ambitious analyses (e.g., Massey and Espinosa 1997). A recently developed, yet very large line of work includes a series of studies testing and finding considerable support for network/chain theories in the Mexico-U.S. context (Borjas and Bronars 1991; Cerruti and Massey 2001; Curran and Rivero-Fuentes 2003; Fussell and Massey 2004; Massey and Espinosa 1997; Massey and Zenteno 1999; Palloni, Massey, Ceballos, Espinosa, and Spittel 2001).

This body of work has provided a critical set of results informing recent developments in migration theory. Nevertheless, a number of important extensions can be made – many of which rely on the presence of longitudinal data. For example, most studies have not benefited from the time-ordering advantage provided by observing individuals, their households, and their communities *prior* to observing individuals' decisions about whether or not to move. An even smaller number have benefited from multiple observations over time, supporting estimation of the effects of *changes* in household or community characteristics. Furthermore, only a few data sets combine the broad array of sociodemographic, economic, and health indicators needed to augment this type of analysis, such as access to credit, elicited preferences for risk, and characteristics of respondents' childhood experiences. All three of these methodological benefits greatly increase the confidence with which researchers can interpret estimated relationships as part of a causal pathway.

What Characteristics Predict Migration Behavior?

As an example of how the MxFLS can be used to inform migration theory, we use the MxFLS data to observe the characteristics at multiple levels that predict migration to the United States. We use the longitudinal data to measure the characteristics of persons in Mexico in 2002 prior to measuring whether or not they choose to move to the United States. Because we can observe them prior to migrating, the MxFLS data allows us to examine a representative sample of migrants to the United States – a heretofore particularly difficult group on which to find data with a high degree of external validity either in the United States or Mexico.

In accordance with previous theoretical work, we develop a series of individual and household level measures that are thought to be linked to emigration; we describe each of these measures in turn below. Descriptive statistics are presented in Table 6 separately for urban and rural origins.

Sociodemographic Characteristics

We consider the predictive power of several sociodemographic characteristics: age, education, gender, marital status, employment status and previous migration experience. The measures are constructed as follows: (1) age is measured as a continuous variable; (2) education is measured in completed years; (3) male is a dummy equal to one for male respondents and zero otherwise; (4) marital status is introduced as a series of dichotomous variables indicating single respondents, married respondents or individuals living in consensual union, and respondents who are separated, divorced or widowed; (5) employment status is a series of dichotomous variables indicating, in turn, respondents who were unemployed in 2002, respondents who were employed by someone else, and respondents who were self-employed; (7) previous migration history is a dummy variable coded one for respondents who had ever moved out of the municipality in which they were living at age twelve for a period of a year or more.

Income and Assets

Household income is measured by adding earnings, non-labor income (e.g. income from social programs), and transfers received from parents and siblings outside the household. Household total

income is the sum of the income perceived by all the members of the household. As is common when measuring income, we log this measure to adjust for its skewed distribution. We also include 4 dichotomous variables capturing assets: (1) household business ownership, (2) household participation in government programs, such as PROGRESA or PROCAMPO, and (3) whether any member of the household reported having savings in 2002.

Access to credit

We measure access to credit with three dichotomous variables indicating 1) that no household member declared knowing any institution where he/she could ask for a loan or credit, 2) at least one household member declared knowing *informal* institutions where he/she could ask for a loan or credit (e.g. moneylender, relative, friends), and 3) at least one member of the household declared knowing *formal* institutions where they could ask for a loan or credit (e.g. banks, savings cooperative, governmental credit programs).

Events

Among the household level variables, we measure events that may be associated with migration, such as economic shocks and exposure to victimization. We capture household economic shocks by assessing whether the household experienced any event causing economic deterioration (e.g death, injuries, unemployment, natural disasters) in the 5 years prior to the survey date. Household victimization is measured as a continuous variable summing the number of assault incidents reported by household members within the five years prior to the 2002 survey.

Family Structure

We incorporate family structure characteristics that might be predictive of migration, including the number of elderly parents (aged 60 or older) living in the household in 2002. In addition, we measure the number offspring living with respondents.[4] Furthermore, we measure the number of siblings living in

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[4] Here offspring refers to a respondent's own children instead of the number of children in the household. For example, consider a scenario in which two nuclear families live together in the same household, the first family has one child and the second has two children - we would estimate the offspring of the first family as one, and of the second family as two, even though the total number of children in the household is 3.

the same household (similar to the estimation of the offspring, we measure the number of siblings with whom the respondent lived in 2002).

Our sample includes all individuals aged 15-50 in 2002. Because previous research stresses the difference between the types of migration streams that originate in urban and rural regions, we estimate the odds of moving to the United States separately by urban-rural status in 2002. The standard errors in these regressions are adjusted for clustering at the household level.

Estimated odds ratios, standard errors, and p-values are presented in Table 7. Column 1 and column 2 display the estimates for respondents living in rural regions in 2002 and in urban regions in 2002, respectively.

In both regions, we observe that men are more likely to migrate to the United States than are women and that age is inversely related to the odds of emigration. Interestingly, while the estimate for gender is quite precisely estimated, the odds ratio is not as large in magnitude as one might anticipate. The odds of emigration are about twice as large for men as they are for women. We find no relationship between marital status and emigration for either urban or rural respondents. Among rural respondents the self-employed are more likely to emigrate than the unemployed, net of variation in household income and savings. We do not observe this relationship among respondents in urban regions. For both groups, previous migration experience is predictive of emigration between 2002 and 2005.

With respect to household and family characteristics, we observe that household savings are inversely related to the odds of emigration. In urban regions, participation in social programs such as Oportunidades (PROGRESA) or PROCAMPO is positively associated with emigration. Given that moving to the United States is costly the increase in current and future resources made possible by social programs may relax financial constraints to the extent that international migration is possible. It is important to note that this finding in urban regions contrasts previous research that suggests that enrollment in PROGRESA deters emigration from rural households (Stecklov et al. 2005). In urban regions, access to formal credit is inversely related to emigration, though this is imprecisely estimated. Interestingly, access to credit appears to be unrelated to emigration from rural regions; we do not find

strong support that emigration is a means to manage risk in rural households, which are more likely to be dependent on agriculture for income than are urban households.

We observe that assault experiences are predictive of emigration. The data indicates that in urban regions, the degree of assault experience is positively associated with the odds of relocation to the United States between the two survey waves, net of characteristics that should predict the probability of assault, such as socioeconomic status. Surprisingly, we find the opposite association in rural areas though this result is much less precisely estimated. Two possible explanations link assault to migration. If victimization is related to the loss of valuable assets these may impose a financial constraint to households that can deter migration. In contrast, victimization may be associated with an increased feeling of insecurity, which may in turn foster migration. In urban areas, it appears that the threat of violence may outpace the capital costs of its occurrence with respect to emigration incentives.

With respect to household composition, the data suggest that having older parents living in the household is not associated with migration. Similarly, the number of offspring living in the household is not predictive of migration. Other research has found an association between the timing of births and emigration (e.g., Zahniser 2000), and thus our indicator may mask important heterogeneity by the age of children in the household. By contrast, sibship size (e.g. the number of siblings living in the household) is positively associated with migration in the case of respondents living in urban areas.

DISCUSSION: REMAINING QUESTIONS

As we have shown, the MxFLS data are valuable for studying the size, direction, and composition of flows in Mexico and of flows from Mexico to the United States. Analysis of the first two waves of this data set has revealed several important pieces of evidence about how migration may influence population change in Mexico. Nevertheless, this chapter barely scratches the surface of the types of migration-related research facilitated by the MxFLS. Indeed, many central questions pertaining to the study of migration broadly, as well as its affects on life in Mexico and United States, remain. We maintain that the rich MxFLS data can provide an important source of evidence for a number of these questions.

For example, our examination of the predictors of emigration was limited to a set of individual and household characteristics. These characteristics could be greatly expanded to consider a number of competing theories about the foundations of emigration. For example, Conroy (2007) uses to the MxFLS data to examine the extent to which risk-aversion influences emigration decisions. Additionally, beyond individual characteristics, the MxFLS 2002 data contain a large battery of community-level information collected from interviews, available documentation, and visits to schools, to health providers, and to markets (for price data). This data could be used to complement the existing research on community characteristics and migration flows (e.g., Lindstrom et al., 1996).

As another example, consider theoretical literature that interprets migration as a household or family-level economic strategy. Understanding how migration influences development in Mexico requires attention to how it changes welfare in sending households and communities. With its detailed data on household members and extended family, the MxFLS data allow us to consider these effects. For example, Nobles (2007) uses the data to examine the effects of parental migration on the wellbeing of children. Studying the micro-level outcomes of migration can be quite difficult, in part because (as we have shown above) migrants appear to differ from non-migrants on a number of characteristics, some of which are socioeconomic in nature. Selection on characteristics also related to the outcome of interest in such studies may produce considerable estimate bias if it is not appropriately addressed.

In this vein, one of the strongest features of the MxFLS is that it produces adequate data for analyzing selectivity of migrants. Rubalcava et al. (2008) investigate health selectivity of migrants to the United States using health measures of migrant and non-migrants taken prior to their movement, thus shedding important light on the foundations of the "Latino Health Paradox" in the United States.

Because the MxFLS data are longitudinal, they allow us to observe how characteristics of family members, households, and communities *change* in the process of migration and in the presence or absence of migrants. In addition, the broad scope of the MxFLS provides the analyst considerable leverage toward the consideration of alternative explanations. Both features of the data aid in the causal interpretation of documented associations between migration and household outcomes. We refer the

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reader to the chapter by Hamoudi (2009) in this volume for a more detailed discussion of how the MxFLS can be used to this end.

The MxFLS data are also unusual in that they allow us to follow migrants both within Mexico and to the United States. One of the potential effects of migration flows is how migration influences characteristics of the migrants themselves. Observing migrants over time allows us to observe the processes of acculturation in new communities, whether they are located in the United States or in the urban centers of Mexico. This type of consideration also sheds light on the assumptions that can and cannot be successfully made when using receiving society data to compare migrants to non-migrants, a common practice in migration research.

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Table 1. Permanent and Temporary Migration Experience, Mexican Adults Age 15+ Living in Mexico in 2002 and Adults Age 15+ Living in Mexico in 2005

	2002 cross-section					2005 cross-section				
	Any Permanent Moves		Any Temporary Moves			Any Permanent Moves		Any Temporary Moves		
	all	to the U.S.	all	to the U.S.		all	to the U.S.	all	to the U.S.	
	(since age 12)		(last 2 years)		N	(since age 12)		(last 2 years)		N
All adults	28%	1.6%	4%	0.8%	19,698	25%	1.6%	4%	0.1%	20,302
Urban regions	30%	1.6%	4%	1.0%	11,309	28%	1.5%	4%	0.6%	12,069
Rural regions	21%	1.6%	4%	0.7%	8,389	22%	1.7%	4%	0.8%	8,234
Female	28%	0.8%	3%	0.6%	10,955	27%	0.8%	3%	0.5%	11,405
Male	28%	2.7%	5%	1.0%	8,743	24%	2.5%	4%	0.8%	8,898
Age: 15-24 years	12%	0.9%	6%	0.8%	5,555	8%	0.5%	4%	0.5%	5,806
25-39 years	28%	2.1%	3%	0.6%	6,210	25%	2.3%	4%	0.5%	5,767
40+ years	38%	1.7%	3%	0.9%	7,933	36%	1.8%	3%	0.8%	8,730
Education: 0 years	35%	1.4%	2%	40.0%	2,146	35%	1.3%	2%	0.7%	2,056
1-6 years	31%	1.6%	3%	0.7%	7,824	27%	1.4%	3%	0.7%	8,733
7+ years	24%	1.7%	5%	0.9%	9,728	22%	1.8%	4%	0.6%	9,514
Weighted	*Yes*	*Yes*	*Yes*	*Yes*		*No*	*No*	*No*	*No*	

Source: Mexican Family Life Survey 2002 and 2005

Table 2. 1995 - 2000 Moves Across Regions and Across Municipalities within Regions as a Percentage of Receiving Region's 2000 Population, Persons Age 12 or Older in 2000.

From MxFLS 2002		Region of Reception[1]				
		SSE	CWE	CTR	NEA	NWE
	SSE	4.45%	0.31%	1.09%	0.43%	0.49%
	CWE	0.04%	2.84%	0.28%	0.61%	0.24%
Region of origin[1]	CTR	0.98%	0.87%	3.57%	0.37%	1.19%
	NEA	0.12%	0.19%	0.02%	1.85%	0.57%
	NWE	0.13%	0.13%	0.33%	0.51%	5.11%
	USA	0.11%	0.75%	0.23%	0.56%	0.44%
	Other	0.03%	0.14%	0.05%	0.61%	0.08%

From Census 2000		Region of Reception[1]				
		SSE	CWE	CTR	NEA	NWE
	SSE	4.47%	0.36%	1.06%	1.56%	1.77%
	CWE	0.19%	3.71%	0.43%	0.96%	1.20%
Region of origin[1]	CTR	1.16%	1.00%	8.12%	0.64%	0.84%
	NEA	0.15%	0.27%	0.10%	5.21%	0.82%
	NWE	0.11%	0.32%	0.12%	0.35%	4.31%
	USA	0.16%	0.81%	0.20%	0.40%	0.71%
	Other	0.35%	0.30%	0.31%	0.25%	0.35%

[1] Regions are defined as including the following states: *SSE (South/Southeast):* Campeche (CAM), Yucatan (YUC), Chiapas (CHS), Oaxaca (OAX), Quintana Roo (QOO), Tabasco (TAB), Guerrero (GRO), Veracruz (VER); *CWE (Center/West):* Jalisco (JAL), Michoacan (MIC), Colima (COL), Aguascalientes (AGS), Nayarit (NAY), Zacatecas (ZAC), San Luis Potosi (SLP), Guanajuato (GTO); *CTR (Center):* D.F, Queretaro (QRO), Hidalgo (HGO), Tlaxcala (TLX), Puebla (PUE), Morelos (MOR), Mexico (MEX); *NEA (Northeast):* Tamaulipas (TAM), Nuevo Leon (N.L), Coahuila (COA), Durango (DGO); *NWE (Northwest):* Baja California (B.C), Baja California Sur (BCS), Sonora (SON), Sinaloa (SIN), Chihuahua (CHH); *USA: United States of America*; *Other:* all other countries besides the United States and Mexico.

Table 3. Permanent Migrations Reported by Mexican Adults age 15-65 in 2002, by Birth Cohort, Period, and Receiving Region of Mexico

| Birth Cohort | Period | % of Moves from Interior of the Country to… | | | N[1] | Moves from Interior as % of total |
		Mexico City	Northern Border	USA		
Pre - 1989	All eligible years[2]	5.9%	3.4%	3.9%	6982	84.6%
	1960 – 1969	8.5%	1.9%	1.2%	986	91.3%
	1970 – 1979	7.5%	3.4%	2.0%	1458	88.4%
	1980 – 1989	5.8%	2.8%	3.2%	1920	85.6%
	1990 - 2002	4.0%	4.2%	6.5%	2618	79.7%
Pre - 1949	All eligible years	5.6%	2.2%	2.3%	1,723	86.2%
	1960 - 1969	7.6%	2.0%	1.3%	785	91.8%
	1970 - 1979	5.3%	3.5%	2.4%	457	86.1%
	1980 - 1989	2.6%	0.7%	3.3%	270	78.7%
	1990 - 2002	2.8%	1.9%	4.7%	211	77.9%
1950 - 1959	All eligible years	7.2%	2.4%	2.9%	1633	85.1%
	1970 - 1979	8.7%	3.0%	1.8%	735	89.1%
	1980 - 1989	5.4%	2.5%	2.5%	442	82.3%
	1990 - 2002	2.3%	1.2%	8.2%	257	76.5%
1960 - 1969	All eligible years	5.2%	3.5%	4.6%	1775	84.4%
	1980 - 1989	5.2%	2.9%	3.5%	942	89.0%
	1990 - 2002	3.9%	4.1%	7.6%	567	75.7%
1970 - 1979	All eligible years	6.2%	5.1%	6.0%	1393	82.6%
	1990 – 2002	4.9%	5.1%	6.7%	1135	81.6%
1980 - 1989	All eligible years	3.5%	5.2%	4.4%	458	83.7%

[1] Observations are absolute number of moves
[2] Adults report migrations from age 12 forward. Thus the eligible period for each birth cohort begins 12 years after the oldest members of the cohort are born and continues through 2002.
Source: Mexican Family Life Survey 2002

Table 4. Rural-Urban Displacements Reported by Mexican Adults age 15-65 in 2002,
by Birth Cohort and Period

Birth Cohort	Period	Direction of Migration				
		R - R	R – U	U – R	U - U	N
Pre - 1989	All eligible years[1]	31%	30%	14%	24%	7,520
	1960 - 1969	41%	34%	9%	15%	1,035
	1970 - 1979	35%	31%	12%	22%	1,574
	1980 - 1989	31%	30%	14%	24%	2,087
	1990 - 2002	26%	27%	18%	29%	2,824
Pre - 1949	All eligible years	39%	27%	12%	20%	1,866
	1960 - 1969	43%	32%	9%	15%	819
	1970 - 1979	38%	25%	12%	25%	496
	1980 - 1989	38%	24%	14%	23%	314
	1990 - 2002	27%	24%	22%	26%	237
1950 - 1959	All eligible years	30%	32%	13%	25%	1,777
	1970 - 1979	32%	34%	13%	21%	793
	1980 - 1989	26%	28%	15%	30%	497
	1990 - 2002	28%	20%	16%	35%	274
1960 - 1969	All eligible years	31%	28%	15%	25%	1,908
	1980 - 1989	34%	31%	14%	21%	986
	1990 - 2002	24%	22%	19%	35%	636
1970 - 1979	All eligible years	25%	30%	16%	28%	1,476
	1990 - 2002	26%	29%	16%	28%	1,195
1980 - 1989	All eligible years	28%	32%	18%	20%	493

[1] Adults report migrations from age 12 forward. Thus the eligible period for each
birth cohort begins 12 years after the oldest members of the cohort are born and continues
through 2002.
Source: Mexican Family Life Survey 2002

Table 5. Demographic and Socioeconomic Characteristics Predicting Migration Behavior, Mexican adults, 2005[1]

	Ever moved	More than one Move	Of movers: First move for work or school	Of movers: Temporary moves past 2 years	Of rural births: Living in urban area in 2002	Of urban births: Living in rural area in 2002
Male	0.84*	1.12	1.08	4.48**	0.78	0.83
	[2.46]	[1.23]	[0.58]	[16.53]	[1.84]	[0.82]
Birth cohort: pre-1950						
1949 - 1959	0.89	0.89	0.91	1.36**	1.03	0.87
	[1.71]	[1.27]	[0.56]	[3.38]	[0.36]	[0.60]
1960 - 1969	0.74**	0.80**	0.93	1.41**	0.78*	0.9
	[4.29]	[2.58]	[0.46]	[3.85]	[2.24]	[0.45]
1970 - 1982	0.56**	0.50**	2.14**	1.12	0.51**	0.93
	[6.43]	[6.39]	[5.35]	[1.15]	[5.07]	[0.32]
Indigenous	0.59**	0.68**	1.77**	0.95	0.45**	0.94
	[3.98]	[3.15]	[3.18]	[0.37]	[3.15]	[0.15]
Born in rural community	1.43**	1.21*	0.82	1.35**		
	[3.73]	[2.30]	[1.41]	[3.24]		
Mother's education: none						
some primary	1.15*	1.37**	1.21	1.26**	1.27*	0.62**
	[2.14]	[4.93]	[1.85]	[2.79]	[2.01]	[3.72]
some secondary	1.52**	1.83**	1.50*	1.52*	2.41**	0.17**
	[3.71]	[4.21]	[2.25]	[2.17]	[3.35]	[4.63]
preparatory or higher	1.47**	2.25**	1.38	1.83**	1.78*	0.31**
	[3.03]	[4.70]	[1.18]	[3.23]	[2.57]	[3.12]
HH plumbing at age 12	0.90*	1.02	1.08	1.04	1.1	0.62**
	[1.99]	[0.49]	[0.99]	[1.03]	[1.18]	[3.62]
Height in cms	1.01**	1.01	1.02**	0.99	1.01	1.01
	[2.84]	[1.68]	[3.32]	[1.40]	[1.03]	[0.58]
N	14538	14538	5202	5202	9777	4761
X^2	88.8	122.0	155.9	498.5	80.48	76.93

* $p < 0.05$ ** $p < 0.01$

Source: Mexican Family Life Survey, 2002 and 2005

Note: All models include z-scores in brackets.

[1] For members of the first survey that were not re-interviewed in 2005, the values on the dependent variables are measured in 2002.

Table 6: Descriptive statistics comparing Mexican non-migrants vs. migrants to the U.S. between 2002 and 2005, by origin

	Rural				Urban			
	Non-migrants		Migrants		Non-migrants		Migrants	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Individual Characteristics (2002)								
Age	30.72	9.95	25.14	8.39	30.64	9.61	25.58	8.69
Education	6.51	3.62	7.07	2.86	8.85	3.82	8.70	3.11
Sex	0.46	0.50	0.63	0.48	0.47	0.50	0.62	0.49
Marital Status								
Single	0.34		0.55		0.36		0.58	
Married/Consensual	0.62		0.43		0.58		0.37	
Separated/Divorce	0.04		0.02		0.05		0.05	
Employment Status								
Not employed	0.44		0.37		0.34		0.30	
Employed	0.43		0.47		0.54		0.59	
Self-employed	0.13		0.16		0.12		0.11	
Previous migration experience	0.22	0.41	0.21	0.41	0.24	0.43	0.26	0.44
Household Characteristics (2002)								
HH Ln Monthly Income	6.72	2.44	6.62	2.27	6.69	3.17	6.84	2.99
HH Savings	0.22	0.41	0.13	0.34	0.38	0.49	0.33	0.47
HH Business Ownership	0.20	0.40	0.25	0.43	0.22	0.41	0.28	0.45
HH Participation in Social Programs	0.48	0.50	0.51	0.50	0.06	0.24	0.14	0.35
HH Access to credit								
None	0.26		0.28		0.14		0.16	
Only to Informal Institutions	0.55		0.54		0.47		0.56	
Formal and Informal Institutions	0.19		0.19		0.39		0.29	
HH Economic Shocks last 5 yrs	0.32	0.47	0.35	0.48	0.28	0.45	0.31	0.46
HH Victimization Experience								
last 5 years	0.25	0.82	0.17	0.54	0.27	0.85	0.56	1.45
Number of Older Parents in HH	0.20	0.56	0.22	0.59	0.16	0.50	0.17	0.52
Number of Children in HH	1.71	1.86	1.07	1.58	1.40	1.50	0.94	1.42
Number of Siblings in HH	0.90	1.63	1.62	2.11	0.73	1.27	1.46	1.76
N	6145		326		10,409		236	

Note: Estimates are not weighted.
Source: Mexican Family Life Survey (2002 & 2005)

Table 7: Odds ratios from logistic regressions predicting migration to the United States between 2002 and 2005, Mexican adults age 15 to 50 living in Mexico in 2002

	Rural Respondents (N=6,471)			Urban Respondents (N=10,645)		
	Odds ratio	S.E.	*P-value*	Odds ratio	S.E.	*P-value*
Individual Characteristics (2002)						
Age	0.94	(0.01)	*0.00*	0.94	(0.01)	*0.00*
Education	1.01	(0.02)	*0.58*	0.99	(0.02)	*0.60*
Sex	1.78	(0.25)	*0.00*	1.85	(0.25)	*0.00*
Marital Status						
Single (omitted)						
Married/Consensual Union	0.86	(0.19)	*0.48*	0.67	(0.16)	*0.08*
Separated/Divorce/Widowed	0.63	(0.28)	*0.29*	1.01	(0.38)	*0.97*
Employment Status						
Not employed (omitted)						
Employed	1.08	(0.17)	*0.64*	1.16	(0.19)	*0.36*
Self-employed	1.66	(0.35)	*0.02*	1.20	(0.31)	*0.48*
Previous migration experience	1.52	(0.23)	*0.01*	1.77	(0.32)	*0.00*
Household Characteristics (2002)						
HH Ln Monthly Income	0.96	(0.03)	*0.19*	0.99	(0.03)	*0.71*
HH Savings	0.53	(0.11)	*0.00*	0.83	(0.15)	*0.31*
HH Business Ownership	1.42	(0.24)	*0.04*	1.38	(0.25)	*0.08*
HH Participation in Social Programs	1.15	(0.17)	*0.37*	2.07	(0.51)	*0.00*
HH Access to credit						
None (omitted)						
Only to Informal Institutions	0.86	(0.14)	*0.34*	1.05	(0.26)	*0.85*
Formal and Informal Institutions	0.93	(0.20)	*0.73*	0.69	(0.18)	*0.16*
HH Economic Shocks last 5 yrs	1.08	(0.16)	*0.61*	1.07	(0.19)	*0.71*
HH Victimization Experience						
last 5 years	0.82	(0.09)	*0.06*	1.13	(0.05)	*0.01*
Number of Older Parents in HH	1.00	(0.13)	*1.00*	1.01	(0.16)	*0.96*
Number of Children in HH	1.05	(0.06)	*0.39*	1.13	(0.10)	*0.15*
Number of Siblings in HH	1.05	(0.05)	*0.25*	1.14	(0.06)	*0.02*
Missing values	1.48	(0.25)	*0.02*	0.88	(0.20)	*0.56*
Log Likelihood	-1193.4			-1050.8		
Pseudo R^2	0.08			0.07		

Source: Mexican Family Life Survey (2002 & 2005)