# CUMULATIVE CAUSATION AND PATTERNS OF MEXICAN IMMIGRATION TO U.S. METROPOLITAN DESTINATIONS

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**Abstract**

This paper uses census data to examine the volume and demographic composition of flows of migrants from Mexico to 115 metropolitan areas across the United States between 1995 and 2000. We modify and apply the cumulative causation theory of international migration, which has primarily been used to account for migration dynamics at migrants' points of origin, migration from 1995-2000 is largely a function of the volume a decade prior. Net of prior volume and other control variables, however, the maturity of the co-ethnic settlement community – approximated using information about an area's Mexican-origin population - is negatively associated with the volume of migration, which runs counter to dynamics at origin, where migration volume increases in a linear fashion as the migration networks driving the flows mature. The results also reveal that the effect of prior migration volume on subsequent volume depends on the level of maturity characterizing the Mexican-origin community of the receiving area. The rate of increase in subsequent volume associated with prior volume decreases with increasing co-ethnic settlement maturity. Moreover, and consistent with the principle of cumulative causation, results indicate that migration flows into less mature settlement areas are driven to a greater extent by labor market structural factors, whereas in more established receiving areas, such factors do not account for any of the observed variation in the volume of Mexican immigration flows. Finally, unlike the volume of Mexican immigration, to U.S. urban areas, the gender- and age-composition of such flows are primarily shaped by the maturity of the local co-ethnic settlement community rather than by the volume of previously arriving flows into the area.

## INTRODUCTION

### *A Newly Emerging Research Setting for the Study of Mexican Immigration to the U.S.*

Over the past thirty years, considerable advances have been made in the sociology of international migration. These advances are due to the efforts of a numerous researchers studying primarily immigrant sending communities (Massey et al. 1987, 1994, 1998; Massey and Espinosa 1997; Mines and Massey 1985; Reichert 1981, 1982), whose research led to the development of a theory of international migration that links micro- and macro-level processes to explain the dynamics of international migration flows (Massey 1999). This theoretical synthesis employs the principle of cumulative causation (Myrdal 1957) in order to explain how migration flows evolve through a reciprocal process of cause-and-effect between the structures that induce international movement, and the actions of the migrants themselves. Focusing on the migration of Mexicans to the United States, this literature demonstrates that the social process of migration brings about structural changes in migrants' sending communities, which, in turn, lead to conditions that induce ever-more migration (Massey 1990a; Massey et al. 1987, 1994; Massey and Zenteno 1999).

A limitation of the cumulative causation theory of migration is that it is only able to explain migration outcomes (i.e., the volume and socio-demographic diversity of migration streams) in terms of migrants' *origin* communities. It is unclear whether migration outcomes predicted by the theory should also be expected to materialize in migrants' points of destination. This limitation stems from the nature of the research settings (at least across the United States) and data available during the 1980s and 1990s when the theory was developed. First, that the theory is an origin-specific one derives from the fact that it was based on a raft of research studies employing Mexican Migration Project (MMP) data (Durand and Massey 2004). These

data were compiled over several decades from interviews of households in several Mexican sending communities. Hence, the perspective's origin-specific emphasis.

Secondly, until 2000, it was not possible to use large-scale public-use data in the U.S. to conduct the type of destination-specific inter-community research that Massey et al. (1994) argues is crucial for understanding migration's cumulative causation tendencies. This is due to the fact that Mexican immigrants had concentrated in five U.S. states for nearly the entirety of the twentieth century. Thus, with respect to receiving communities, there was very little variation for researchers to study. Given the tendency of Mexican immigrants to concentrate in the same local destinations over the course of a century, there was no reason for social scientists to seek to develop a destination-specific perspective on international migration patterns more nuanced than the simple and straight-forward notion that new immigrants tend to converge on places where co-ethnics had previously settled (Bartel 1989).

While this notion, which is generally consistent with the principle of cumulative causation, still holds, it is no longer adequate as a theory of destination-specific migration patterns given the recent large-scale changes in the geography of Mexican migration to the United States (Durand, Massey and Capoferro 2005; Massey, Durand and Malone 2002). If immigrants only migrated to where they have acquaintances, how could it be that during the 1990s, migrants began settling in a diverse set of local areas that had little or no prior experience with Mexican immigration (Leach and Bean 2008; Light 2006; Light and von Scheven 2008)? In the wake of this dispersion, new research questions have arisen. Across the hundreds of local areas in the U.S. that now receive substantial flows of Mexican immigrants, how does the volume and rate of increase (or decrease) over time vary between those long-established receiving areas and those that have only recently emerged as Mexican immigrant destinations in

the U.S.? Is there social and demographic variation in the composition of Mexican migration flows across local receiving areas, and if so, what variables can explain this variation? And can the origin-specific theory of cumulative causation, wholly or in part, explain patterns observed in migration flows across local U.S. receiving areas?

The unfolding of large-scale geographic dispersion of Mexican migration flows has increased the available sample size, with respect to the number of local immigrant receiving areas.[1] With this larger sample size, a new research opportunity has emerged whereby it is possible to more systematically study trends in Mexican migration flows to particular U.S. destinations using data from U.S. census surveys. This paper serves as an initial effort to capitalize on this emerging research opportunity in order to better understand variation in the volume and socio-demographic composition of Mexican migration flows into local metropolitan receiving areas across the United States between 1995 and 2000.

We begin by summarizing the cumulative causation theory of international migration and propose a destination-specific analog that predicts migration outcomes – in terms of both volume and composition of in-flows – that are similar in some ways, but different in others, as compared with outcomes predicted by the origin-specific perspective. We then describe the data, measures and methods used in analyses to test these hypotheses. Subsequently, we examine and discuss the results from models of (a) the size of 1995-2000 Mexican immigration flows across a given set of U.S. metropolitan areas and (b) the gender- and age-composition of these flows. The

[1] We employ a threshold of 1,500 "recent" Mexican immigrants (those arriving within five years of a given reference year) as constituting a "substantial" flow of Mexican immigrants. In the 1990 5% Census micro-data sample, there were only 47 metropolitan statistical areas (MSAs) receiving flows of new migrants from Mexico that were this large. Of these, only 15 were located outside of Arizona, California, Illinois, New Mexico or Texas. By 2000, however, there existed 120 such MSAs. Sixty-five percent (or 78) of these are located *outside* of the five traditional destination states. While the majority of newly arrived Mexican immigrants still descend on local destinations in traditional receiving states, at the level of the local receiving area, most are now located outside of the U.S. Southwest.

paper concludes with a summary of the results, a discussion of the its theoretical and public policy implications, and some suggestions for subsequent research endeavors.

## THEORETICAL BACKGROUND

### *Cumulative Causation Theory and International Migration*

The theory of cumulative causation (Massey et al. 1987, 1994; Massey 1999, 1990a) is particularly appealing as a framework through which to understand processes of migration because it draws from a range of perspectives on migration from across the social science disciplines and integrates them into one general theory (Massey 1999a). This theoretical synthesis is made possible by placing the focus on immigrant households and social networks, which both affect and are affected by numerous macro-structural forces that various disciplines have argued shape international migration. In focusing on immigrant social networks, however, the theory does not gainsay the fact that certain structural conditions are necessary in order to initiate the out-flow of migrants abroad.

In the case of Mexican migration, Massey, in particular, draws upon decades of work by economists, sociologists and anthropologists, which shows how instability in Mexican financial and labor markets, changes in the nature of agricultural production, and global economic restructuring, for example, serve as strong "push factors" precipitating migration flows to the United States (Massey et al. 1987, 2002; Massey 1999). These pushes are complemented by "pull" factors in the United States, such as relatively higher wages, more stable markets, and strong demand for unskilled labor. Indeed, cumulative causation theory, despite its focus on immigrant social networks, does not downplay the importance of these structural factors as necessary to trigger substantial transnational flows. However, the key insight of the theory is that once started, migrant social networks develop and expand, and they can transform structural

factors in such a way that impels additional migration. Eventually these networks "mature" to the point of sustaining migration flows independently of the original structural triggers (Massey et al. 1994; Massey and Espinosa 1997; Massey 1999).

Research conducted in Mexican sending communities has shown that migration decisions, at least during the early stages of a migration flow, tend to be made at the level of the household, and represent strategies of risk-diversification and/or capital acquisition. For example, a small-landowner in a Mexican agricultural town may migrate temporarily to the work in the United States in order to acquire enough money to be able to farm his land (Massey et al. 1987). Insofar as this infusion of capital leads to efficiencies in production, it is likely to set off in non-migrant households the demand for migrant remittances, and thus, to spur increases in the out-migration rate of the village (Stark 1991b; Stark and Taylor 1991). In general, migrant remittances tend to lead to changes in modes of production and consumption by early-migrant households that initially increase inequality in the community, fostering a sense of relative deprivation and the likelihood of migration by members of non-migrant households (Reichtert 1982; Stark 1991a).

Early on in a migratory out-flow, migrants tend to be married men who sojourn alone to the United States to work temporarily (Reichert 1981). They typically come from households that fall in the middle strata of the local socioeconomic structure: not so poor that they cannot shoulder the financial burden of migration, but not so well-off that the option of labor migration is unattractive (Massey et al. 1994). Flows are transformed in two ways as they mature. First, the volume of out-migration increases, up to the point that all eligible migrants have emigrated. This results from the expansion of social networks. Each additional migrant participating in a flow increases the probability that a non-migrant will have a family member or acquaintance

with migration experience, and thus gain access to the type of information that reduces the financial and psychological costs of making a trip abroad (Mines and Massey 1985).

The second transformation that occurs to out-flows, then, is that as migrant networks expand, they become increasingly diverse with respect to gender, marital status, and socioeconomic status (Massey et al. 1987). That is, flows become less selective. This is because when a migration stream is in its early stages, risks and costs are relatively high, and tend to be borne, as noted above, by men from the middle-range of the local class structure (Massey et al. 1994). But as flows mature and information about migration becomes more pervasive and accessible to more people, the costs and risks associated with migration are reduced, and thus migration comes to be seen as a viable option for persons who earlier might have deemed it as either too risky, or not considered it as an option at all (Mines and Massey 1985).

Finally, researchers in Mexico have noted that economic structures are not the only factors that are transformed by the social process of migration. The maturation of cumulatively caused migration flows gives rise in the sending community to a "culture of migration", in which labor migration to the United States comes to be seen as a normal and expected part of the life-course, especially among boys (Kandel and Massey 2002). Thus migration flows are sustained not only by the mere fact of expanding migrant social networks, but also by cultural influences that value labor migration for reasons that transcend its original economic motivations (Reichert 1981).

In short, the cumulative causation perspective describes a process through which migration begets ever-more migration and flows of increasing demographic and socioeconomic diversity. In a study of 19 sending communities in Mexico, Massey et al. (1994) found that places with longer histories of migration to the U.S. had both larger and more diverse out-flows

than those communities with a more recent history of sending migrants abroad. The primary objective of this paper, to which we turn now, is to apply Massey et al.'s (1994) cross-community analytical approach, and evaluate the extent to which the origin-specific framework of cumulative causation can be applied to explain migration patterns at points of destination in the U.S.

***Cumulative Causation Theory: A Destination-Specific Analog***

According to the origin-specific formulation of cumulative causation, both the volume of migratory out-flows and the nature or composition of flows are driven by the maturity of the migration networks in a given sending community[2] (Massey et al. 1994). Communities with longer histories of out-migration, and hence with more mature migration networks, were found to have larger and more diverse out-flows than places with shorter migration histories and more recently developed networks. In short, the volume and socio-demographic diversity of migrant out-flows increase in proportion to one another, and both are driven by the maturity of the sending community's system of migration networks. The objective here is to use Massey's intercommunity approach to study the volume and nature of Mexican immigrant *in-flows* to U.S. metropolitan areas across the United States in order to determine the extent to which cumulative causation processes specified at points of origin yield expected migratory outcomes a points of destination.

To formulate a set of hypotheses to predict Mexican migration patterns observed in U.S. urban destinations, one must first consider necessary modifications to the origin-specific theory. The first challenge one confronts is in conceptualizing (not to mention measuring) the maturity of migrant networks operating in U.S. receiving areas. At points of origin, migration decisions

[2] Massey et al. (1994) do not examine out-flows *per se*, but rather the "prevalence ratio" (the number of persons with migration experience divided by all persons alive in a given community at a given time) to approximate volume, and the characteristics of those with migration experience to measure the composition of "flows".

are made within the context of *one* community-specific system of migration networks that exerts its influence on all residents in a given community. As a result, the operationalization of network "maturity" is relatively straightforward, and consists of determining the share of the sending community's population that has migration experience (Massey et al. 1994). More mature sending communities – those that have a long history of sending labor migrants abroad – are also those in which more members of the community have either migrated themselves, or have knowledge of persons who have. In other words, the maturity of migration networks cannot be distinguished from the volume and characteristics of migrant out-flows.

The situation is certainly different in U.S. metropolitan receiving areas, where the network influence on migration flows is less clear. Insofar as Mexican in-flows to a given receiving area in the United States consist of migrants hailing from a variety of sending communities in Mexico, the volume and characteristics of these flows are driven not by one, community-specific migrant network system, but by a plethora of sending community-based networks which likely vary in their level of maturity. Moreover, it is not possible to directly measure these networks using U.S. Census data.

The destination-specific theory of cumulative causation that we propose here argues that the community-level variable that exerts influence over the volume and nature of Mexican in-flows is not the maturity of the origin-based migration networks, but rather the maturity of the co-ethnic receiving society ensconced within a given U.S. destination. Maturity in this sense refers to (a) the duration over which a given destination has hosted substantial flows of Mexican migrants and (b) the level of development characterizing ethnic-specific structures and institutions in the co-ethnic receiving community.

The major difference between the origin- and destination-specific theories is that in the former, network maturity, the volume of out-migration, and the socio-demographic composition of migration flows are not independent of one another. Rather, an increase in the volume of out-migration and the increase in the socio-demographic diversity of migration flows are themselves indicators of increased maturation of the community's system of migrant social networks. In contrast, the destination-specific theory does not consider the volume of immigration from Mexico, the composition of the in-flows, and the maturity of the co-ethnic settlement community as indicators of the same underlying process of cumulative causation.

Within the framework of the origin-specific theory, the maturity of the sending community's migration network drives both the volume and socio-demographic diversity of the out-flow, both of which increase as networks mature. Dynamics at U.S. destinations leads to a different set of relationships between these variables. In a given sending community the only thing limiting the volume and type of migrants participating in migration streams is the number and type of residents eligible to migrate in the total population. Thus migration volume and the diversity of the flows increase as a linear function of the maturity of the networks, up to the point that all persons capable of migrating have done so.

A more complex set of interrelationships among these three variables – the maturity of the Mexican ethnic community, the volume of in-flows from Mexico, and the composition of these flows – is expected by the destination-specific theory given the distinctive dynamics at work in urban receiving areas in the U.S. First, consistent with the principle of cumulative causation, it is expected that, net of other factors and across U.S. metropolitan areas, the volume of Mexican immigration at time *t* will be a linear function, and driven to a considerable extent by the volume in a given MSA at time *t - 1*. Secondly, however, net of the volume of an area's

previously arrived Mexican migration flow, the maturity of the co-ethnic settlement community should be *negatively* related to the volume of the subsequent flow. This is because in its early stages of development, the local co-ethnic community is likely to be geared toward the facilitation of circular labor migration rather than toward the facilitation of permanent settlement. But as the co-ethnic structures and institutions of a place take root, they are more likely to be oriented to the facilitation of the settlement and integration of newcomers (Massey et al. 1987). Given that jobs, housing and schools in a given area are finite, MSAs with co-ethnic structures and institutions geared more toward settlement should have less capacity for the accommodation of newcomers than places where the co-ethnic community is oriented more toward circular migration (Light 2006).

Third, it follows from the first two destination-specific hypotheses that the rate of increase in the volume of migration occurring at time *t* associated with the volume of migration observed at time *t - 1* should decline with increases in the maturity of the structures present in the co-ethnic receiving community. Stated more plainly, as the structures present in the Mexican immigrant community of a given MSA transition from those geared toward circular migration to those designed to facilitate permanent migration, the rate of increase in volume from time *t - 1* to time *t* should diminish. In other words, the rate of increase will be higher in less mature areas, and flatten out as co-ethnic communities mature.

Fourth, despite the fact that the volume of flows is expected to decline with increasing settlement maturity, the principle of cumulative causation, in suggesting that migration flows become increasingly independent of local structural factors, should still hold. That is, secular labor market dynamics should play a greater role in determining the volume of immigration in places with less mature co-ethnic communities than in places where ethnic-specific structures are

more developed. As these structures and institutions take root, they should increasingly be able to govern subsequent migration flows independently of larger structural forces.

Fifth, the destination-specific theory predicts that the diversity of migration flows will depend largely on the nature of the co-ethnic receiving community rather than on the volume of previously arrived migration flows. Given that sojourner migration has typically been undertaken by adult males it stands to reason that flows into newly emerging co-ethnic communities designed to facilitate this type of migration pattern will be less demographically diverse than areas with co-ethnic structures designed to facilitate permanent settlement, which should contain flows with higher shares of women and children. Thus, net of an area's settlement maturity, the demographic composition of migration flows should not be significantly related to the volume of previous flows. Rather, variation in diversity of flows should be explained largely by settlement maturity.

The following is a summary of the hypotheses predicted by the destination-specific theory of cumulative causation:

***H1****: Based on the principle of cumulative causation, metropolitan areas with larger flows at a prior point in time will receive larger flows subsequently.*

***H2****: Net of prior migration volume, subsequent migration flows will be negatively related to the maturity of the Mexican settlement community in the receiving metropolitan area.*

***H3****: The rate of increase in immigration volume at time* t *associated with the immigration volume at time* t - 1 *will diminish as the maturity of the Mexican settlement community increases.*

***H4****: The volume of immigration at time* t *will be determined to a greater extent by local labor market dynamics – such as wages and employment – in newer receiving areas. In areas with more mature Mexican settlement communities, the prior volume of immigration will largely account for variation in the subsequent volume.*

***H5****: The demographic diversity of recent immigration flows at time* t *– that is their gender and age compositions – will be determined primarily by the maturity of the Mexican settlement community in the local receiving area rather than by the area's prior immigration volume.*

## DATA, MEASURES AND ANALYTICAL STRATEGY

### Data

The analyses undertaken in this paper employ micro-data from the 5% sample of the 1990 and 2000 U.S. Censuses (Ruggles et al. 2009). Using these data, we created an aggregate data file of metropolitan statistical areas (MSAs), as defined by the United States Bureau of the Census. This aggregate file consists of several key MSA-level variables, described below, that were estimated from the micro-data file. Because subsequent analyses include the examination of the demographic structure of recent migration flows from Mexico, the analytical data file is limited to those MSA receiving at least 1,500 migrants from Mexico between 1995 and 2000, to ensure reliable estimates of flow-characteristics.[3] This limitation results in an analytical data file consisting of 115 MSAs (listed in Appendix Table A.1).

### Dependent Variables: The Size and Composition of Recent Mexican Migration Flows

The analyses focus on the size and composition of recent migration flows. Recent Mexican migrants are those persons reporting in the Census that they have lived five or fewer years in the United States *and* those persons who first immigrated before 1995 but who resided in Mexico in 1995 (i.e. return migrants). The *volume* of recent Mexican migration is defined by the number of recent Mexican migrants divided by the total MSA population, multiplied by 1,000. Thus, this dependent variable represents the number of recent Mexican migrants residing in a given MSA in 2000 per 1,000 residents in the total population.

The *demographic composition* of recent Mexican migration flows is measured using two variables. The gender composition of recent flows is defined as the percentage of recent adult

[3] Because the 2000 micro-data file is a 5% sample, the threshold of 1,500 estimated recent migrants means that estimated migrant-flow characteristics are based on a sample of 75 individual migrants.

migrants from Mexico (those aged 20 and older) that are women. The child composition of recent flows is operationalized as the percent of the total recent flow under the age of 16.

Independent Variables

The three dependent variables defined above are modeled as a function of several independent variables measuring the local MSA-level receiving contexts for new immigration flows from Mexico. The two key independent variables are those approximating destination-specific processes of cumulative causation. According to the logic presented above, we distinguish between two separate aspects of destination-specific cumulative causation: (1) the volume of prior migration and (2) the maturity of the Mexican-origin settlement community in a given MSA. The size of the prior flow is measured as the Mexican immigration rate (migrants per 1,000 in the total population) between 1985 and 1990. The settlement maturity variable is estimated using four pieces of information about the resident Mexican-origin population in a given MSA using a Principal Components Analysis (PCA) of 2000 census data. The construction of this variable is described in detail below.

Models of Recent Mexican Migration Flows

To examine the relationship between the two aspects of destination-specific cumulative causation processes (prior flow and maturity) and the three dependent variables defined above (Volume of 1995-2000 flow, percentage female, and percentage youth), we estimated a series of models using Ordinary Least Squares. The formal specification of the general model is

$$MO_{j_t} = \beta_0 + \beta_1 FLOW_{j_{t-1}} + \beta_2 MAT_{j_t} + \vec{\beta}_3 \vec{Z}_{j_{t-1}} + \varepsilon_j$$

where $MO_{j_t}$ refers to a given migration outcome (volume, gender composition or youth composition) in the *jth* MSA at time *t* (i.e., in 2000); $FLOW_{j_{t-1}}$ represents the size of the Mexican migration flow into the *jth* MSA at time *t - 1* (i.e., between 1985 and 1990); $MAT_{j_t}$

denotes the maturity score of a given MSA at time *t*; and $\vec{Z}_{j_{t-1}}$ is a vector of lagged control variables all measured at time *t - 1* (in 1990).

The vector of lagged controls consists of five variables that are expected to influence the volume and nature of Mexican migration flows to urban labor markets. Net of other local urban dynamics, large population centers are likely to serve as a draw for immigrants and their families. Thus, we include a control for total MSA population in 1990, entered in regression models in natural log form. Also, given that wage rates and the cost of living are likely to enter into the calculus of migrants' destination choices, we include controls for each. Wage rates are approximated by the natural log of the median hourly income reported by full-time, full-year workers in 1990.[4] Cost of living is proxied by the median monthly rent reported by renting household heads in 1990.

Factors of labor supply and demand are also likely to influence migration outcomes (Sassen 1988). Thus, we include a measure of native-born low-skilled labor supply and the unemployment rate, an approximation of labor demand. U.S.-born low-skilled labor supply is operationalized as the percentage of the workforce aged 18-25 with at most, a high school education. The unemployment rate is measured as the percentage of labor force participants between the ages of 25 and 64 that is unemployed. Both of these variables are measured in 1990. All of the variables used in subsequent models of the size and nature of Mexican migration flows are described in Table 1.

[4] Full-time, full-year workers are those persons who reported in the 1990 census that they worked at least 35 weeks during 1989 and usually worked at least 35 hours per week. The control variable is computed as the natural log of the total earnings reported in 1989 divided by the total number hours worked during the same year among such workers.

### *The "Maturity" of Mexican Settlement Communities in U.S. Urban Areas*

We approximate the maturity of the Mexican-origin settlement community of a given metropolitan area using a Principal Components Analysis (PCA) of four variables related to the duration of residence among the area's Mexican-origin population. This method allows us to systematically approximate both the timing of the onset of Mexican immigration into a given metro area as well as the maturity of the ethnic-specific social structures that facilitate newcomers' immigration and early settlement. This approximation is necessitated by the fact that reliable data on both the timing of Mexican immigration to various American cities and the nature of Mexican-origin social structures in these cities are not readily available.

The four items used in the PCA are described in Table 2. First, more mature areas are those in which persons of Mexican-origin make up a relatively larger share of the total MSA population. Second, we further distinguish between metropolitan areas with a variable indicating the percentage of the Mexican-origin population consisting of persons born in Mexico. Those places with equal proportions of Mexican-origin residents but where the Mexican-origin population is predominantly U.S.-born are conceived to have more mature ethnic structures in place than those places where the bulk of the Mexican-origin residents were born in Mexico. The third and fourth items provide additional qualitative distinction between metro areas by approximating the relative "recency" of the Mexican immigrant population. Those places where a relatively large share of Mexican immigrants are long-term residents (in the U.S. more than 20 years) are also likely more mature receiving communities. By contrast, those places where new arrivals (those in the U.S. five or fewer years) predominate are likely very new receiving areas, lacking a well-developed system of ethnic-specific organizations and institutions.

The PCA results are shown in Table 3. First, the results indicate that all four items load on a single latent dimension that we label the maturity of Mexican-origin settlement community present in a given receiving city. The factor loadings represent the correlation between each item the maturity factor. Secondly, each factor loading runs in the anticipated direction. The percentage of the total MSA population that is of Mexican-origin is *positively* associated with settlement maturity (factor loading = 0.848). Further, the share of the Mexican-origin population that is born in Mexico is *negatively* related to the maturity of the Mexican-origin settlement community (factor loading = - 0.726). Places where a relatively large share of the Mexican-origin population is made up of immigrants are less mature. And those places where a large proportion of Mexican immigrants have arrived in the United States only between 1995 and 2000 are less mature communities, based on the *negative* loading for this item (loading = - 0.923). Similarly, the percentage of immigrants in the United States for more than 20 years is *positively* related to settlement maturity (factor loading = 0.969). The maturity factor accounts for about 76 percent of the shared variation among the four items. Analyses reported elsewhere (Bachmeier 2009), designed to test the validity of this measure of Mexican-origin settlement maturity, indicate that it serves as valid approximation of both the historical timing of Mexican immigration to this set of metropolitan areas and also the maturity of the co-ethnic social structures in these places.

PCA is useful here not only as a way of measuring co-ethnic settlement maturity but also to reduce the four separate items to one factor for use in multivariate models, thus reducing the number of parameters that must be estimated from limited numbers of metropolitan level observations. Based on its combination of values on the four items used in the analysis, PCA gives each city a settlement maturity factor score. These scores are normally distributed with

mean of zero and a standard deviation of one. Thus, negative scores represent places with below-average settlement maturity (i.e., places where large-scale Mexican immigration started relatively more recently, and with less developed ethnic-specific organizations and institutions), and increasingly positive scores indicate higher levels of maturity. The maturity score for each of the 115 MSAs included in the analysis are shown in Appendix Table A.1. Cities are sorted in descending order by maturity score.

## RESULTS

### *Cumulative Causation and the Volume of Mexican Immigration: 1995-2000*

As discussed above two predictions were offered with respect to destination-specific cumulative causation dynamics related to the *volume* of Mexican immigration. First, unlike at points of origin, where flows tend to increase exponentially as migrant social networks mature, one might expect the rate of increase in migration volume to diminish the more mature the co-ethnic receiving community. This is because as in-flows become more independently sustained by social ties, and thus, less responsive to local labor and housing market conditions, the likelihood of market saturation increases. Thus, as migration matures, the local receiving area becomes increasingly strained in its ability to accommodate newcomers (Light 2006).

We begin with OLS models of the rate of Mexican immigration across the 115 MSAs included in the analysis between 1995 and 2000.[5] We estimated seven separate models, the

[5] The formal specification of the full model (Model 7 in Table 4) is

$$FLOW_{j_t} = \beta_0 + \beta_1 FLOW_{j_{t-1}} + \beta_2 MAT_{j_t} + \vec{\beta}_3 \vec{Z}_{j_{t-1}} + \varepsilon_j$$

Where $FLOW_{j_t}$, the dependent variable, is the Mexican immigration rate into the jth metropolitan area between 1995-2000; $FLOW_{j_{t-1}}$ is the Mexican migration rate in the jth metro area between 1985-1990; $MAT_{j_t}$ is the maturity factor score measured in 2000; $\vec{Z}_{j_{t-1}}$ is a vector of the five structural control variables; $\varepsilon_j$ is an error term; and $\beta_0$, $\beta_1$, $\beta_2$, and $\vec{\beta}_3$ are parameters estimated from the data.

results of which are displayed in Table 4. This was done in order to observe the relationships between each variable and the immigration volume with and without the influence of other sets of variables. In the interest of space, we limit our discussion to the coefficients reported to the two key independent variables pertinent to the hypotheses: the immigration rate from 1985 to 1990 and the maturity of the Mexican-origin settlement community.

Model 1 includes only the variable measuring prior flow. At the zero-order, a one-unit increase in the prior volume of immigration is associated with an increase in the subsequent rate of immigration of about 0.8 migrants per 1,000 residents in the total population. That is, an MSA with a migration rate of one migrant more than another MSA in 1990 is estimated to have just under a migrant advantage in the rate of immigration in 2000. In Model 2, the zero-order coefficient for maturity is about 7.3. Without adjusting for any other factors, an MSA, say, with about average settlement maturity (i.e., a factor score of 0) is estimated to have an immigration rate in 2000 that is approximately seven migrants per 1,000 smaller than an MSA with a score of 1 (a standard deviation increase). Both effects are highly statistically significant.

Model 4 enters both variables into the equation at the same time and while the positive effect of prior volume on subsequent volume is slightly strengthened and remains statistically significant, the coefficient for the maturity factor switches in sign from positive to negative, and is reduced to a more modest level of statistical significance. Thus, as predicted by the destination-specific theory, holding the volume of 1985-1990 immigration flows constant, receiving areas with more mature Mexican-origin settlement communities are estimated to have significantly lower immigration rates during the 1995 to 2000 period. Net of the 1985 to 1990 rate, the subsequent rate is expected to decrease by almost one-and-a-half migrants with a one-unit increase in the settlement maturity factor score across urban areas.

Model 7 reveals that these patterns largely hold, and are even strengthened somewhat. Net of all factors, including local demographic and economic variables, across the 115 MSAs included in the analysis, a one migrant increase in the rate of immigration experienced between 1985 and 1990 is associated with about a one migrant increase in the rate of immigration observed a decade later. In other words, the model estimates that in two labor markets identical in all aspects, except that one had a migration rate one migrant larger than the other during a prior decade, the former area will have a one migrant increase over the latter in the subsequent decade as well. And all else equal, a one-unit increase in the settlement maturity factor score across MSAs is associated with a decrease in the migration rate of about 1.7 migrants.

Results reported in Table 4, then, are consistent with the first and second hypotheses, which predict, a positive relationship between prior flow and subsequent flow, and a negative relationship between maturity and subsequent flow, respectively. The third hypothesis predicts that the positive effect of prior flow on subsequent flow will diminish with increases in the Mexican-origin settlement maturity in a given area. To test this we divide the MSAs into thirds based on their maturity scores. We then constructed two dummy-coded variables comparing low- and moderate-maturity areas to places with maturity scores in the top third (the reference category). These dummies are included in the OLS model in place of the linear maturity measure, and interacted with the 1985-1990 immigration rate variable.[6] This model gauges the

[6] Formally

$$FLOW_{j_t} = \beta_0 + \beta_1 FLOW_{j_{t-1}} + \beta_3 LOWMAT_{j_t} + \beta_4 MIDMAT_{j_t} + \beta_5 (FLOW_{j_{t-1}} * LOWMAT_{j_t}) + \beta_6 (FLOW_{j_{t-1}} * MIDMAT_{j_t}) + \varepsilon_j$$

where $FLOW_{j_t}$, the dependent variable, is the Mexican immigration rate into the jth metropolitan area between 1995-2000; $FLOW_{j_{t-1}}$ is the Mexican migration rate in the jth metro area between 1985-1990; $LOWMAT_{j_t}$ is a dummy-coded variable with those MSAs in the lowest third of the range of maturity scores coded 1; $MIDMAT_{j_t}$ is a dummy-coded variable with those MSAs in middle third of the range of maturity scores coded1; $FLOW_{j_{t-1}} * LOWMAT_{j_t}$ and $FLOW_{j_{t-1}} * MIDMAT_{j_t}$ are interaction terms; and $\varepsilon_j$ is an error term.

extent to which the effect of prior flow on subsequent flows varies across three levels of settlement maturity. The coefficients from the model (not reported) were then used to compute predicted 1995-2000 immigration rates which are plotted against the rate observed a decade earlier separately for each of the three levels of settlement maturity defined above (Figure 1). Predicted values are plotted only within the range of 1985-1990 immigration rates observed in the data at each maturity level.

The pattern depicted in Figure 1 is consistent with the third hypothesis stating that the rate of increase in subsequent migration associated with prior migration should diminish with increased settlement maturity. Thus, as the level of settlement maturity increases from low to high, the slope representing this relationship grows less steep.[7]

Finally, in relation to the volume of immigration from 1995-2000, based on the principle of cumulative causation, the fourth hypothesis states that the volume of migration should become increasingly independent of local labor market conditions as the settlement maturity in the local receiving area increases. To test this hypothesis we estimated piece-wise models of the 1995-2000 flow (Table 5).[8] For the models reported in Table 5, metro areas are divided into low- and high-maturity groups. Low-maturity MSAs in this table are those with scores below zero, which indicates below-average maturity. High-maturity MSAs are those with factor scores of zero or

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[7] The results of the model are not reported but both the main effects and the interaction effects described above are statistically significant at the p<.05 level or higher.

[8] Within high- and low- maturity areas, the formal specification of the model is

$$FLOW_{j_t} = \beta_0 + \beta_1 FLOW_{j_{t-1}} + \vec{\beta}_2 \vec{Z}_{j_{t-1}} + \varepsilon_j$$

where $FLOW_{j_t}$, the dependent variable, is the Mexican immigration rate into the jth metropolitan area between 1995-2000; $FLOW_{j_{t-1}}$ is the Mexican migration rate in the jth metro area between 1985-1990; $\vec{Z}_{j_{t-1}}$ is a vector of the five structural control variables; $\varepsilon_j$ is an error term; and $\beta_0$, $\beta_1$, and $\vec{\beta}_2$ are parameters estimated from the data.

above. For each grouping of MSAs, we present zero-order models (Models 1 and 2) and a full model (Model 3), which includes the immigration rate for 1985-1990 and the full set of MSA structural controls.

Taking low-maturity MSAs first, Model 1 indicates that a one-unit increase in prior volume is associated with an increase of 1.6 migrants during the subsequent period. This highly significant effect is strengthened in Model 3 when the structural controls are added. Model 3 also indicates that net of prior volume two of the structural controls are also significantly related to the immigration rate observed in 2000. A one percentage point increase in the overall MSA unemployment rate is associated with a decrease in the immigration rate of about two migrants per thousand. An unexpected finding, insofar as it runs counter to neoclassical economic perspectives of migration behavior, is that flows are larger in areas where the median hourly wage rate is lower. This might reflect recent geographical shifts in operations within certain industries, such as meat-processing, agri-business, and light manufacturing, away from places with historically high rates of unionization, and therefore high wage rates, to "right-to-work" states mostly in the South, where wages are lower (Stull, Broadway, and Griffith 2008; Kandel and Parrado 2005; Parrado and Kandel 2008; Zuniga and Hernandez-Leon 2005). Therefore, it is possible that this anomalous effect reflects recent shifts in the low-wage job supply that are not picked up in the model, rather than a true wage effect.

The models for the low-maturity MSAs suggest that while prior immigration volume matters in determining subsequent volume, other structural factors in the MSA play a substantial explanatory role as well. Subtracting the Adjusted R-Squared value for Model 1 from the value for Model 3 (.392 - .238 = .154) indicates that the structural controls uniquely account for about 15 percent of the observed variance in the 1995 to 2000 immigration rate.

Shifting to the models for the high-maturity MSAs, and focusing on Model 3, while the prior flow coefficient is positive and highly significant, only one of the structural controls is significantly related to the 1995-2000 immigration rate. Net of prior migration volume and other structural factors, flows are smaller in MSAs with higher median rents. More importantly, when the Adjusted R-Squared values are decomposed by subtracting the value for Model 1 from the value for Model 3 (.708 - .716 = - .008) one finds that none of the observed variation in the 1995-2000 Mexican immigration rate can be uniquely accounted for by the MSA structural controls in high-maturity MSAs. In other words, consistent with the fourth hypothesis that flows in more mature settlement areas are less governed by secular MSA and labor market dynamics, the results presented in Table 5 reveal that while structural controls *uniquely* explain a substantial portion of the observed variation in the Mexican immigration rate in low-maturity areas, they are unable to uniquely account for any of the corresponding variation in high-maturity places.

***Cumulative Causation and the Demographic Nature of Mexican Immigration: 1995-2000***

We turn now to the models of the demographic composition of Mexican immigration flows, in order to test the fifth hypothesis that the prior volume of Mexican immigration to a given MSA will not significantly relate to the demographic composition of subsequent flows. Rather, the composition of immigration flows will be determined largely by the maturity of the Mexican-origin settlement community in the local receiving area.[9] For each of the demographic

[9] The formal specifications of the models are:

$$PFEMALE_{j_t} = \beta_0 + \beta_1 FLOW_{j_{t-1}} + \beta_2 MAT_{j_t} + \vec{\beta}_3 \vec{Z}_{j_{t-1}} + \varepsilon_j$$

$$PYOUTH_{j_t} = \beta_0 + \beta_1 FLOW_{j_{t-1}} + \beta_2 MAT_{j_t} + \vec{\beta}_3 \vec{Z}_{j_{t-1}} + \varepsilon_j$$

where $FLOW_{j_t}$, the dependent variable, is the Mexican immigration rate into the *jth* metropolitan area between 1995-2000; $FLOW_{j_{t-1}}$ is the Mexican migration rate in the *jth* metro area between 1985-1990; $MAT_{j_t}$ is the

composition outcomes – the percent of adult flows that are female and the percentage of the total in-flow under the age of 16 – we estimated a series of seven regression models analogous to those presented for the immigration rate models in Table 4. To save space, discussion is limited only to the effects of the prior immigration rate and the settlement maturity factor on each of the two demographic composition variables.

The results for the models of the percentage female in the 1995-2000 adult in-flows are shown in Table 6. Model 1 indicates a positive and significant zero-order relationship between prior immigration volume and the percentage-female in subsequent flows. However, this effect is reduced to insignificance in Model 4, which adjusts for the level of co-ethnic settlement maturity in the MSA. Net of prior flow, a standard deviation increase in the settlement maturity factor score is associated with an increase in the female-share of 1995-2000 in-flows of five percentage points. The magnitude of the maturity effect is reduced to about four percentage points in Model 7, which includes all independent variables, but remains statistically significant at the $p < .001$-level.

The results from analogous models for the share of the in-flows composed of children are reported in Table 7. The general pattern is similar to the one observed above for the percentage-female in 1995-2000 in-flows. Though the 1985-1990 immigration rate is significantly and positively related to the percentage of 1995-2000 in-flows consisting of children in the zero-order sense, this effect is reduced in both magnitude and significance when the maturity factor is added to the equation (Model 4), and net of all factors, prior migration volume is not significantly related to the share of the subsequent flow under the age of 16 (Model 7).

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maturity factor score measured in 2000; $\vec{Z}_{j_{t-1}}$ is a vector of the five structural control variables; $\varepsilon_j$ is an error term; and $\beta_0$, $\beta_1$, $\beta_2$, and $\vec{\beta}_3$ are parameters estimated from the data.

Thus, consistent with the fifth hypothesis, the prior volume of immigration is not significantly related to the demographic composition of subsequent Mexican in-flows to U.S. metropolitan areas. Rather, the demographic composition of flows is driven substantially by the maturity of the Mexican-origin settlement community. Net of all other factors, flows of Mexican immigrants into U.S. metropolitan areas between 1995 and 2000 are more demographically diverse the greater the maturity of the co-ethnic community in the receiving MSA. This pattern is displayed graphically in Figure 2.

Additional support for the final hypothesis is provided by a decomposition of the Adjusted R-Squared statistics for the models reported in Tables 2.12 and 2.13 (decomposition results not shown). This exercise reveals that for percentage-female in recent in-flows, the maturity factor uniquely accounts for about eight percent of the total variation observed for this outcome. And maturity uniquely accounts for about six percent of the total variation in percentage-child dependent variable. In contrast, the 1985-1990 immigration rate variable does not uniquely account for any of the observed variation for either dependent variable.

***Summary of Results***

To summarize, the analyses presented above sought to explain variation in two aspects of Mexican migration flows – their volume and their demographic make-up – across 115 metropolitan areas that received substantial in-flows from Mexico between 1995 and 2000. The overarching objective of the analyses was to determine the extent to which hypotheses derived from the origin-specific framework of cumulative causation were supported when applied to migration dynamics at migrants' U.S. destinations. And insofar as the results proved inconsistent with the origin-specific theory, the analyses point to the modifications needed in order to formulate a destination-specific framework that allows for a more systematic

understanding of the variation observed in the size and nature of Mexican immigration flows to the increasing number of local receiving areas across the United States.

A summary of the results is as follows. *First*, consistent with the principle of cumulative causation, which lies at the core of Massey's theoretical synthesis (Massey 1999b), the volume of Mexican immigration to a given MSA between 1995 and 2000 is significantly and positively related to the volume observed ten years earlier. That is, across the 115 MSAs included in the analysis, those that received relatively large flows between 1985 and 1990, also tend to receive relatively large flows a decade later. This positive correlation is statistically significant both in the zero-order case, as well as net of other MSA-level characteristics included in the regression models.

*Second*, while migration flows are relatively larger in MSAs with more mature settlement communities in the zero-order sense, once cross-city variation in the volume of prior migration is accounted for, maturity is *negatively* associated with the rate of Mexican immigration from 1995-2000. That is, all else being equal across MSAs, those places with more deeply established Mexican-origin communities are estimated to have relatively *smaller* immigration flows than those places in which the Mexican immigrant community is less established.

*Third*, the positive relationship between prior and subsequent migration volume, varies depending on the level of settlement maturity in the co-ethnic receiving community of the destination MSA. The slope is at its steepest in places where immigration flows and the co-ethnic community are relatively new to the area, and flattens out as the settlement community matures (see Figure 2.3).

*Fourth*, consistent with the idea that migration networks mature to the point that they are able to sustain migration flows independently of other structural factors, the tendency of prior

migration volume to dominate models of subsequent volume is most acute among high maturity MSAs. In models estimating the 1995-2000 rate of Mexican immigration into areas with above average maturity scores (i.e., those above 0), the MSA structural control variables do not uniquely account for any of the observed variation in the dependent variable. By contrast, structural controls play a far more influential role in determining the volume of migration into low maturity MSAs (those with scores of 0 or lower).

And finally, *fifth*, turning to the demographic composition of Mexican immigration flows, net of other factors, the demographic diversity of flows is not significantly associated with the volume of immigration from 1985-1990. Demographic diversity is, however, positively related to the settlement maturity score of the co-ethnic receiving community. In models estimating the percentage female and percentage youth in recent Mexican immigration flows, settlement maturity, and not prior volume, is the key driver explaining variation in these outcomes.

**DISCUSSIONS AND CONCLUSIONS**

The findings presented and discussed in this paper indicate that key principles of the cumulative causation of transnational migration can be applied to understand immigration patterns at the level of U.S. metropolitan receiving areas. Metropolitan areas that received more immigrants at a previous point in time also receive more immigrants subsequently. Also consistent with the principle, as the social structures associated with immigration take root in a given receiving area, the volume and nature of subsequent flows are increasingly unrelated to conditions of the local labor market. In contrast, flows into newly emerging destinations are determined to a greater extent by these secular labor market factors.

Complexities distinctive to large urban receiving areas, as compared to the less-complex systems of emigration in sending communities, yield different theoretical predictions associated

with cumulative causation. Whereas the volume of outflow from Mexican sending communities is a linear function of the maturity of the area's migration network, immigration volume declines as co-ethnic settlement communities in local receiving areas mature. As settlement communities mature, they transition from a sojourner orientation to a settler orientation, and are thus, less capable of absorbing as many newcomers as at an earlier point in time. And a final point of divergence from the origin-based theory is that the diversity of migration flows is driven by the maturity of the settlement area, rather than by the volume of prior immigration.

Taken as a whole, these results point to a rather predictable system of Mexican immigration flows into U.S. urban areas. These flows change in predictable ways that are governed largely by the nature of the co-ethnic receiving community. This image of a predictable urban immigration system contrasts considerably with some of the more reactionary views informing contemporary immigration policy, which expresses or implies fears of endless flows of immigrants. Given the relatively laissez faire nature of U.S. immigration policy-at least with respect to the management of immigration within the interior of the country-the allocation of jobs and housing is left entirely up to the immigrant co-ethnic community. As policy-makers consider reforms to immigration policy in the coming years, it seems important that they take into account the relatively predictable nature of Mexican immigration, and the pivotal role that the co-ethnic community has played in governing flows for the past century.

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## TABLES AND FIGURES

**Table 1. Descriptive Statistics, U.S. Metropolitan Areas Receiving at Least 1,500 Mexican Migrants between 1995 and 2000 (n=115)**

| | Mean | S.D. |
|---|---|---|
| *Dependent Variables* | | |
| Rate of Migration from Mexico, 1995-2000 | 15.70 | 12.49 |
| Percent Female in Recent Mexican In-Flow[a] | 37.97 | 7.97 |
| Percent under 16 in Recent Mexican In-Flow | | |
| *Cumulative Causation Factors* | | |
| Rate of Migration from Mexico, 1985-1990 | 8.95 | 12.68 |
| Mexican Settlement Maturity Score | 0.00 | 1.00 |
| *Labor Market Conditions* | | |
| Population, 1990 (natural log) | 13.25 | 1.14 |
| Median Rent, 1990 (natural log) | 5.90 | 0.27 |
| Median Hourly Income, 1990 | 10.08 | 1.49 |
| Percent of Native-Born Workforce H.S. or Less, 1990 | 36.70 | 8.88 |
| Unemployment Rate, 1990 | 4.93 | 1.78 |

a Of adult (ages 16 and older) in-flows

**Table 2. Means and Standard Deviations of Components of Mexican Settlement Maturity in MSAs Receiving Recent Flows of Mexican Immigrants (N=115)**

| | Mean | SD |
|---|---|---|
| % Mexican-Origin in MSA | 12.9 | 15.6 |
| % of Mexican-Origin Foreign-Born | 47.1 | 12.8 |
| % of Mexican-Born in U.S. 0-5 Years | 38.1 | 13.7 |
| % of Mexican-Born in U.S. 20+ Years | 16.6 | 9.8 |

**Table 3. Factor Loadings for Settlement Maturity Principal Components Analysis**

| | Loading |
|---|---|
| % Mexican-Origin in MSA | 0.848 |
| % of Mexican-Origin Foreign-Born | -0.726 |
| % of Mexican-Born in U.S. 0-5 Years | -0.923 |
| % of Mexican-Born in U.S. 20+ Years | 0.969 |
| | |
| Eigenvalue | 3.037 |
| Percentage of Variance Explained | 75.915 |

**Table 4. OLS Coefficients for Models of the Rate of Immigration from Mexico to Selected U.S. Metropolitan Areas, 1995-2000 (N=115)**

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 |
|---|---|---|---|---|---|---|---|
| Constant | 8.191 *** | 15.704 *** | 18.082 | 7.437 *** | 48.685 * | 9.298 | 55.120 ** |
| Immigration Rate 1985-1990 | 0.840 *** | | | 0.924 *** | 0.939 *** | | 0.985 *** |
| Settlement Maturity Score | | 7.297 *** | | -1.435 + | | 2.971 * | -1.666 + |
| Population, 1990 (natural log) | | | -1.447 + | | -0.120 | -1.240 + | -0.171 |
| Median Rent, 1990 | | | 7.852 + | | -5.032 | 8.316 + | -5.928 + |
| Median Hourly Income, 1990 | | | -2.590 ** | | -0.429 | -2.288 * | -0.492 |
| % U.S. Born Low-Skilled, 1990 | | | -0.503 *** | | -0.007 | -0.355 * | -0.066 |
| Unemployment Rate, 1990 | | | 3.050 *** | | -1.118 * | 2.003 ** | -0.736 + |
| Adjusted $R^2$ | 0.724 | 0.336 | 0.389 | 0.728 | 0.737 | 0.404 | 0.740 |

*** p<.001; ** p<.01; * p<.05; + p<.10 (One-tailed test)

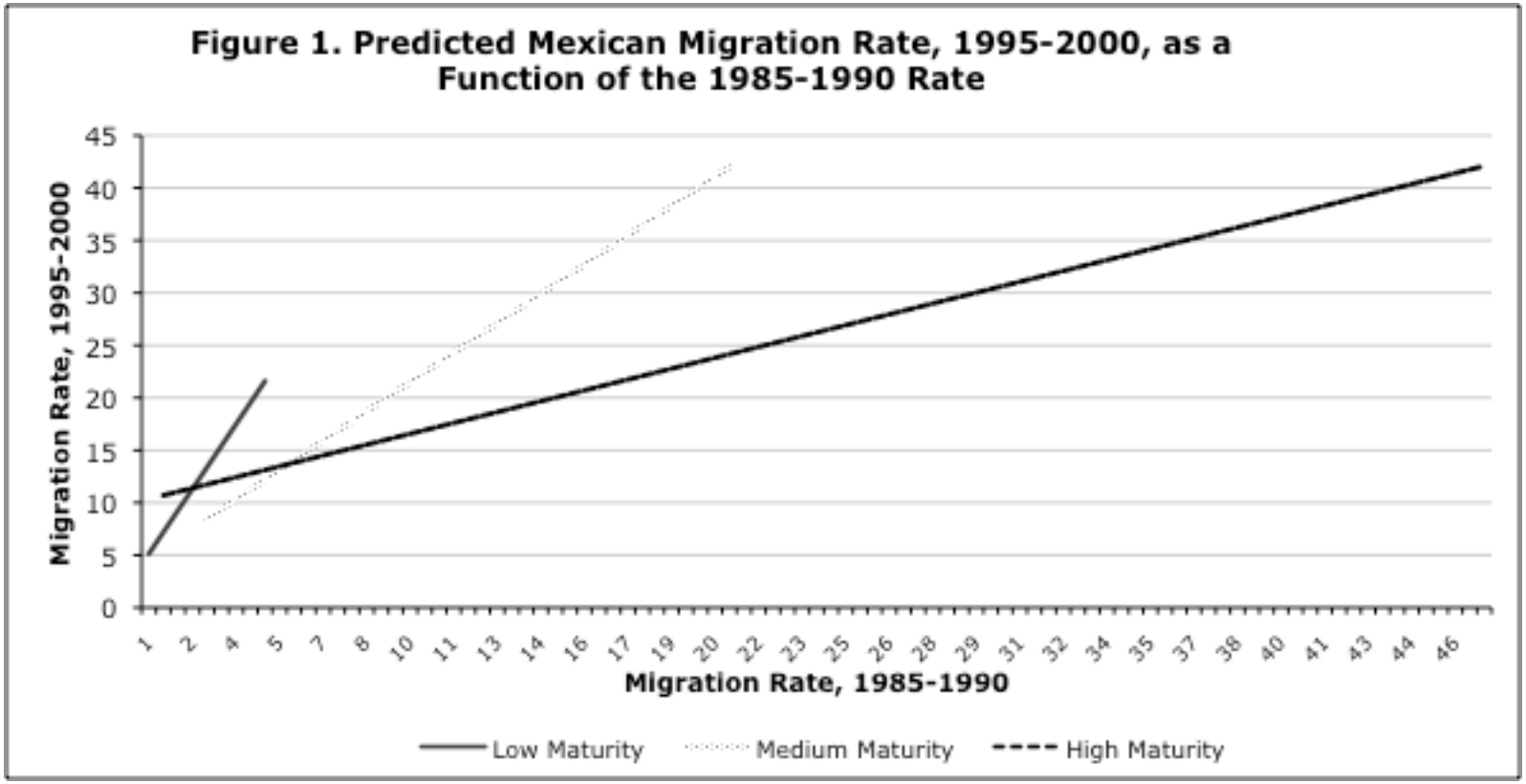
Figure 1. Predicted Mexican Migration Rate, 1995-2000, as a Function of the 1985-1990 Rate
Migration Rate, 1995-2000
0
5
10
15
20
25
30
35
40
45
1 2 4 5 7 8 10 11 13 14 16 17 19 20 22 23 25 26 28 29 31 32 34 35 37 38 40 41 43 44 46
Migration Rate, 1985-1990
Low Maturity
Medium Maturity
High Maturity

**Table 5.Piecewise Models of the Rate of Immigration from Mexico to Low- and High-Maturity U.S. Metropolitan Areas, 1995-2000 (N=115)**

| | *Low Maturity MSAs* | | | *High Maturity MSAs* | | |
|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 1 | Model 2 | Model 3 |
| Constant | 6.925 *** | 90.896 ** | 66.566 ** | 8.903 *** | -40.410 | 5.877 |
| Immigration Rate, 1985-1990 | 1.556 *** | | 1.866 *** | 0.808 *** | | 0.817 *** |
| Population, 1990 (natural log) | | -1.981 * | -0.725 | | -0.419 | 1.141 |
| Median Rent, 1990 | | 0.078 | 0.632 | | -3.865 ** | -1.807 + |
| Median Hourly Income, 1990 | | -8.115 + | -8.649 * | | 18.163 * | 1.493 |
| % U.S. Born Low-Skilled, 1990 | | -0.121 | 0.065 | | -0.696 * | 0.020 |
| Unemployment Rate, 1990 | | -0.828 | -2.096 ** | | 3.943 *** | -0.610 |
| Adjusted $R^2$ | 0.238 | 0.112 | 0.392 | 0.716 | 0.441 | 0.708 |

*** p<.001; ** p<.01; * p<.05; + p<.10 (One-tailed test)

**Table 6. OLS Coefficients for Models of the Percentage Female among Recent Mexican Immigration Flows to U.S. Metropolitan Areas (N=115)**

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 |
|---|---|---|---|---|---|---|---|
| Constant | 34.675 *** | 37.970 *** | 57.966 ** | 37.378 *** | 60.713 ** | 46.389 ** | 45.080 * |
| Immigration Rate 1985-1990 | 0.368 *** | | | 0.066 | 0.084 | | -0.028 |
| Settlement Maturity Score | | 5.765 *** | | 5.139 *** | | 3.915 *** | 4.047 *** |
| Population, 1990 (natural log) | | | -1.316 * | | -1.197 * | -1.043 * | -1.073 * |
| Median Rent, 1990 | | | 0.527 | | -0.630 | 1.138 | 1.545 |
| Median Hourly Income, 1990 | | | -0.452 | | -0.258 | -0.054 | -0.105 |
| % U.S. Born Low-Skilled, 1990 | | | -0.351 *** | | -0.307 *** | -0.157 * | -0.165 * |
| Unemployment Rate, 1990 | | | 2.388 *** | | 2.014 *** | 1.007 * | 1.086 * |
| Adjusted $R^2$ | 0.338 | 0.519 | 0.457 | 0.52 | 0.459 | 0.541 | 0.538 |

*** p<.001; ** p<.01; * p<.05; + p<.10 (One-tailed test)

**Table 7. OLS Coefficients for Models of the Percentage Children among Recent Mexican Immigration Flows to U.S. Metropolitan Areas (N=115)**

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 |
|---|---|---|---|---|---|---|---|
| Constant | 18.704 *** | 21.069 *** | 47.216 ** | 20.422 *** | 51.708 ** | 38.104 * | 40.898 ** |
| Immigration Rate 1985-1990 | 0.264 *** | | | 0.072 + | 0.138 * | | 0.060 |
| Settlement Maturity Score | | 3.950 *** | | 3.267 *** | | 3.081 *** | 2.799 *** |
| Population, 1990 (natural log) | | | -1.609 *** | | -1.415 ** | -1.394 ** | -1.329 ** |
| Median Rent, 1990 | | | -1.518 | | -3.409 | -1.037 | -1.905 |
| Median Hourly Income, 1990 | | | 0.200 | | 0.517 | 0.513 | 0.623 |
| % U.S. Born Low-Skilled, 1990 | | | -0.175 ** | | -0.103 + | -0.022 | -0.004 |
| Unemployment Rate, 1990 | | | 1.735 *** | | 1.123 ** | 0.649 * | 0.482 |
| Adjusted $R^2$ | 0.293 | 0.410 | 0.365 | 0.415 | 0.391 | 0.452 | 0.453 |

*** p<.001; ** p<.01; * p<.05; + p<.10 (One-tailed test)

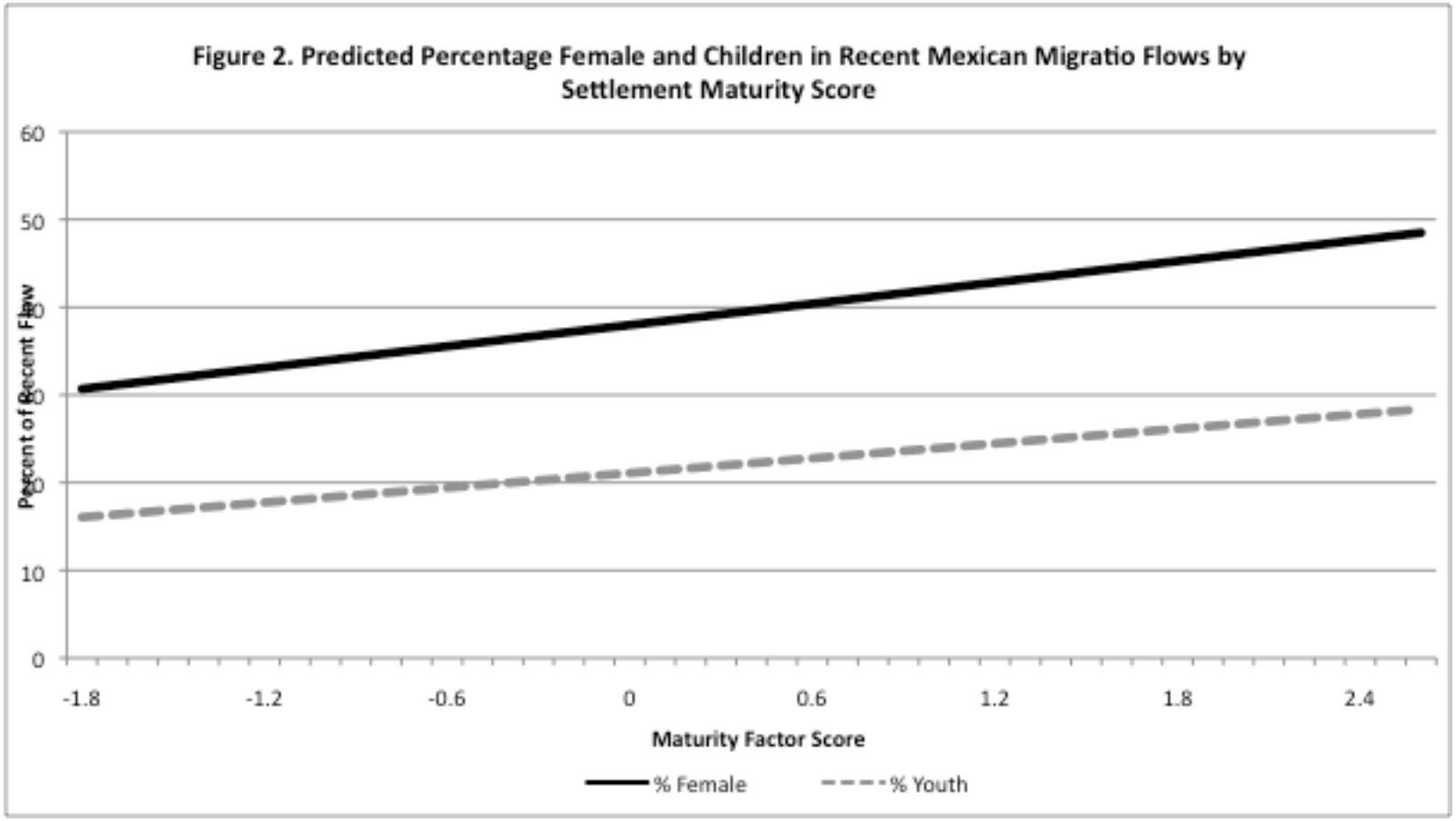
Figure 2. Predicted Percentage Female and Children in Recent Mexican Migratio Flows by Settlement Maturity Score
60
50
40
30
20
10
0
Percent of Recent Flow
-1.8
-1.2
-0.6
0
0.6
1.2
1.8
2.4
Maturity Factor Score
% Female
% Youth

**Appendix Table A1. Mexican Settlement Maturity Factor Scores and Rates of Migration from Mexico in U.S. Metropolitan Statistical Areas with at Least 1,500 Recent Mexican Immigrants, 2000**

| Metropolitan Statistical Area | Settlement Maturity Score | Rank | Mexican Migration Rate 1995-00 | Rank |
|---|---|---|---|---|
| El Paso, TX | 2.565 | 1 | 40.7 | 6 |
| Brownsville-Harlingen-San Benito, TX | 2.556 | 2 | 43.1 | 4 |
| McAllen-Edinburg-Pharr-Mission, TX | 2.439 | 3 | 57.0 | 1 |
| Odessa, TX | 2.224 | 4 | 9.5 | 65 |
| Las Cruces, NM | 2.142 | 5 | 22.8 | 32 |
| San Antonio, TX | 2.012 | 6 | 17.4 | 41 |
| Merced, CA | 1.558 | 7 | 33.6 | 13 |
| Visalia-Tulare-Porterville, CA | 1.480 | 8 | 43.1 | 5 |
| Yuma, AZ | 1.465 | 9 | 49.2 | 3 |
| Tucson, AZ | 1.459 | 10 | 16.4 | 44 |
| Riverside-San Bernardino,CA | 1.437 | 11 | 22.9 | 30 |
| Bakersfield, CA | 1.411 | 12 | 22.9 | 29 |
| Fresno, CA | 1.312 | 13 | 35.8 | 9 |
| Ventura-Oxnard-Simi Valley, CA | 1.305 | 14 | 26.3 | 24 |
| Modesto, CA | 1.300 | 15 | 23.9 | 26 |
| Los Angeles-Long Beach, CA | 1.277 | 16 | 32.4 | 15 |
| Kileen-Temple, TX | 1.118 | 17 | 4.9 | 96 |
| Amarillo, TX | 1.088 | 18 | 10.3 | 61 |
| San Diego, CA | 1.075 | 19 | 21.2 | 35 |
| Stockton, CA | 1.032 | 20 | 26.8 | 23 |
| Santa Cruz, CA | 0.968 | 21 | 27.8 | 21 |
| Salinas-Sea Side-Monterey, CA | 0.961 | 22 | 51.5 | 2 |
| Waco, TX | 0.889 | 23 | 13.6 | 52 |
| Sacramento, CA | 0.889 | 24 | 9.1 | 68 |
| Yakima, WA | 0.881 | 25 | 35.5 | 11 |
| Albuquerque, NM | 0.817 | 26 | 14.2 | 51 |
| Santa Barbara-Santa Maria-Lompoc, CA | 0.796 | 27 | 35.6 | 10 |
| Yuba City, CA | 0.774 | 28 | 19.6 | 37 |
| Galveston-Texas City, TX | 0.735 | 29 | 12.7 | 55 |
| Beaumont-Port Arthur-Orange,TX | 0.679 | 30 | 6.9 | 80 |
| San Jose, CA | 0.640 | 31 | 24.6 | 25 |
| Orange County, CA | 0.593 | 32 | 34.9 | 12 |
| Houston-Brazoria, TX | 0.583 | 33 | 31.7 | 16 |
| Boise City, ID | 0.537 | 34 | 6.5 | 84 |
| Richland-Kennewick-Pasco, WA | 0.533 | 35 | 23.5 | 27 |
| Bryan-College Station, TX | 0.446 | 36 | 17.4 | 40 |
| Chicago, IL | 0.418 | 37 | 20.0 | 36 |
| San Francisco-Oakland-Vallejo, CA | 0.375 | 38 | 16.2 | 45 |
| Greeley, CO | 0.367 | 39 | 29.5 | 19 |
| Colorado Springs, CO | 0.341 | 40 | 6.6 | 83 |
| Austin, TX | 0.271 | 41 | 30.3 | 18 |
| Cleveland, OH | 0.139 | 42 | 0.9 | 113 |
| Santa Rosa-Petaluma, CA | 0.113 | 43 | 23.4 | 28 |
| Las Vegas, NV | 0.097 | 44 | 30.6 | 17 |
| Phoenix, AZ | 0.096 | 45 | 39.1 | 7 |
| Tyler, TX | 0.053 | 46 | 17.1 | 42 |
| St. Louis, MO-IL | 0.036 | 47 | 1.2 | 112 |
| Dallas-Fort Worth, TX | 0.030 | 48 | 36.0 | 8 |
| Detroit, MI | 0.028 | 49 | 2.8 | 106 |
| Boston, MA-NH | 0.028 | 50 | 0.7 | 115 |
| Reno, NV | 0.010 | 51 | 22.7 | 33 |
| Medford, OR | -0.024 | 52 | 9.0 | 69 |
| Tacoma, WA | -0.026 | 53 | 5.0 | 93 |
| Wichita, KS | -0.042 | 54 | 9.9 | 64 |
| Lakeland-Winterhaven, FL | -0.091 | 55 | 8.0 | 74 |
| Santa Fe, NM | -0.092 | 56 | 22.9 | 31 |
| Fort Collins-Loveland, CO | -0.096 | 57 | 6.9 | 79 |
| Milwaukee, WI | -0.134 | 58 | 7.6 | 76 |

(continued)

**Appendix Table A1 (continued). Rates of Migration from Mexico and Mexican Settlement Maturity Factor Scores in U.S. Metropolitan Statistical Areas with at Least 1,500 Recent Mexican Immigrants, 2000**

| Metropolitan Statistical Area | Settlement Maturity Score | Rank | Mexican Migration Rate 1995-00 | Rank |
|---|---|---|---|---|
| Fort Wayne, IN | -0.138 | 59 | 4.3 | 100 |
| Oklahoma City, OK | -0.154 | 60 | 11.9 | 58 |
| Salem, OR | -0.200 | 61 | 27.4 | 22 |
| Rockford, IL | -0.206 | 62 | 12.5 | 57 |
| Tampa-St. Petersburg-Clearwater, FL | -0.248 | 63 | 4.4 | 99 |
| Kansas City, MO-KS | -0.259 | 64 | 8.4 | 72 |
| Denver-Boulder, CO | -0.305 | 65 | 28.3 | 20 |
| Baltimore, MD | -0.319 | 66 | 0.8 | 114 |
| Salt Lake City-Ogden, UT | -0.350 | 67 | 16.7 | 43 |
| Kenosha, WI | -0.367 | 68 | 10.3 | 60 |
| Seattle-Everett, WA | -0.393 | 69 | 6.7 | 82 |
| Miami-Hialeah, FL | -0.402 | 70 | 3.4 | 104 |
| Daytona Beach, FL | -0.402 | 71 | 3.6 | 103 |
| Omaha, NE/IA | -0.435 | 72 | 10.2 | 62 |
| Grand Rapids, MI | -0.442 | 73 | 9.1 | 67 |
| Longview-Marshall, TX | -0.496 | 74 | 14.8 | 48 |
| Fort Pierce, FL | -0.505 | 75 | 7.7 | 75 |
| Orlando, FL | -0.514 | 76 | 4.9 | 95 |
| Fort Lauderdale-Hollywood-Pompano Beach, FL | -0.558 | 77 | 2.8 | 107 |
| West Palm Beach-Boca Raton-Delray Beach, FL | -0.599 | 78 | 6.7 | 81 |
| Washington, DC/MD/VA | -0.605 | 79 | 3.2 | 105 |
| Fort Myers-Cape Coral, FL | -0.630 | 80 | 9.1 | 66 |
| Louisville, KY/IN | -0.660 | 81 | 2.1 | 109 |
| Provo-Orem, UT | -0.662 | 82 | 12.6 | 56 |
| Portland, OR-WA | -0.665 | 83 | 14.7 | 49 |
| Richmond-Petersburg, VA | -0.668 | 84 | 1.9 | 110 |
| Philadelphia, PA/NJ | -0.731 | 85 | 1.6 | 111 |
| Tulsa, OK | -0.738 | 86 | 10.1 | 63 |
| Sarasota, FL | -0.746 | 87 | 8.6 | 70 |
| Minneapolis-St. Paul, MN | -0.760 | 88 | 5.8 | 87 |
| Fayetteville-Springdale, AR | -0.777 | 89 | 18.6 | 39 |
| Des Moines, IA | -0.786 | 90 | 8.4 | 71 |
| Lafayette-W. Lafayette, IN | -0.811 | 91 | 14.4 | 50 |
| Green Bay, WI | -0.847 | 92 | 10.5 | 59 |
| Memphis, TN/AR/MS | -0.872 | 93 | 5.6 | 89 |
| Columbus, OH | -0.873 | 94 | 2.7 | 108 |
| New York-Northeastern NJ | -0.922 | 95 | 4.8 | 97 |
| Atlantic City, NJ | -0.940 | 96 | 5.4 | 92 |
| Madison, WI | -0.990 | 97 | 7.2 | 78 |
| Indianapolis, IN | -1.044 | 98 | 5.5 | 90 |
| Greenville-Spartanburg-Anderson SC | -1.074 | 99 | 6.1 | 85 |
| Elkhart-Goshen, IN | -1.075 | 100 | 33.2 | 14 |
| Charleston-N.Charleston,SC | -1.150 | 101 | 5.5 | 91 |
| Nashville, TN | -1.163 | 102 | 7.4 | 77 |
| Vineland-Milville-Bridgetown, NJ | -1.165 | 103 | 13.1 | 53 |
| Stamford, CT | -1.183 | 104 | 4.5 | 98 |
| Wilmington, DE/NJ/MD | -1.199 | 105 | 6.1 | 86 |
| Columbia, SC | -1.211 | 106 | 4.0 | 102 |
| Monmouth-Ocean, NJ | -1.222 | 107 | 5.0 | 94 |
| Lexington-Fayette, KY | -1.366 | 108 | 8.1 | 73 |
| New Haven-Meriden, CT | -1.382 | 109 | 5.8 | 88 |
| Greensboro-Winston Salem-High Point, NC | -1.416 | 110 | 15.5 | 47 |
| Atlanta, GA | -1.505 | 111 | 18.6 | 38 |
| Birmingham, AL | -1.540 | 112 | 4.3 | 101 |
| Charlotte-Gastonia-Rock Hill, NC-SC | -1.657 | 113 | 15.6 | 46 |
| Raleigh-Durham, NC | -1.765 | 114 | 21.3 | 34 |
| Hickory-Morgantown, NC | -1.785 | 115 | 12.8 | 54 |