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Stemming The Tide? Assessing the Deterrent Effects of the Immigration Reform and Control Act*

Katharine M. Donato
Department of Sociology
Louisiana State University
Baton Rouge, LA 70803

Jorge Durand
Centro de Investigaciones sobre los Movimientos Sociales
Universidad de Guadalajara
Guadalajara, Mexico

Douglas S. Massey
Population Research Center
Department of Sociology
University of Chicago
Chicago, IL 60637

This study uses a new source of data to assess the degree to which the Immigration Reform and Control Act (IRCA) deterred undocumented migration from Mexico to the United States. Data were collected from migrants interviewed in seven Mexican communities during the winters of 1987 through 1989, as well as from out-migrants from those communities who subsequently located in the United States. We conduct time-series experiments that examine changes in migrants' behavior before and after passage of the IRCA in 1986. We estimate trends in the probability of taking a first illegal trip, the probability of repeat migration, the probability of apprehension by the Border Patrol, the probability of using a border smuggler, and the costs of illegal border crossing. In none of these analyses could we detect any evidence that IRCA has significantly deterred undocumented migration from Mexico.

In 1986 Congress passed legislation aimed at curbing undocumented migration to the United States. The Immigration Reform and Control Act (IRCA) sought to reduce illegal migration through sanctions of employers, increased border enforcement, and a legalization program for undocumented migrants already in the United States. Citizens, policy makers, and migration researchers on both sides of the border now are asking whether IRCA achieved its stated aim.

Since 1986 researchers have sought to evaluate the consequences of IRCA, especially

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for migration from Mexico, the largest source of legal and illegal migrants (Passel and Woodrow 1987; Warren and Passel 1987). In the following section we review these studies and conclude that research has not yet shown definitively whether undocumented migration has declined since 1986. Using a unique data set, we then present evidence to address this issue. We estimate the probability of taking a first trip to the United States without documents, as well as the likelihood of making subsequent illegal trips. We also consider the manner and cost of crossing the U.S.-Mexican border and the probability of being apprehended while attempting to enter the United States illegally. We examine how these variables changed before and after passage of IRCA in 1986.

IRCA and Its Effects

The main purpose of IRCA was to stop the movement of undocumented migrants to the United States, and it relied on several mechanisms to accomplish this end. First, it prohibited employers from hiring undocumented workers and enacted civil and criminal penalties against those who did so knowingly. Second, it authorized an increase in the resources allocated to the Immigration and Naturalization Service (INS) for border enforcement (Bean, Vernez, and Keely 1989; Espenshade et al. 1990). Third, IRCA provided for the legalization of two types of undocumented immigrants already in the United States: those who had resided continuously in the United States since 1982, and those who had worked as agricultural laborers for at least 90 days during 1986.

By 1989 IRCA had brought about several changes in Mexican migration with potentially far-reaching effects. First, some 1.2 million Mexicans applied for the general amnesty and 1.1 million sought amnesty as special agricultural workers (Bean et al. 1989). As a result, more than 2 million Mexicans will qualify as new legal U.S. residents. Second, thousands of employers and job applicants now must fill out an I-9 form stating that the employer has seen one or more documents to confirm the applicant's right to work in the United States. Third, the INS received a 50% budget increase of some $400 million to hire additional border patrol officers in 1987 and 1988, and additional funds were made available to the Department of Labor to inspect employers' records (Bean et al. 1989; Goodis 1986). Finally, a $35 million contingency fund was established to cover "immigration emergencies," although its use requires the approval of Congress and the president.

In view of these far-reaching provisions, it is very likely that IRCA had some influence on migration patterns, but evidence is mixed as to whether IRCA actually deterred undocumented migrants from Mexico. Several studies analyzed apprehension statistics and found that IRCA accomplished its intended goal of reducing the volume of illegal Mexican migration (Bean et al. 1990; Espenshade 1990; White, Bean, and Espenshade 1990). These investigations detect a decline in the number of post-IRCA apprehensions; they controlled for various factors expected to affect migration rates, such as wages and unemployment levels in the United States, and unemployment rates, income levels, and the size of the migrant-aged population in Mexico.

The use of apprehension statistics to measure undocumented migration is problematic in several ways, however. First, apprehension data measure migration only in the aggregate, but migrants are heterogeneous and consist of several different kinds of people: those leaving on their first trip, those making a second trip, and those leaving on the latest of a series of trips. Although each of these persons makes a decision to migrate illegally, their decisions are likely to be quite different. In particular, those with prior experience as migrants to the United States are less likely to be influenced by penalties and enforcement provisions than those who have never migrated before because they have access to knowledge and social contacts that help them evade detection and deportation. Although

IRCA sought to lower probabilities associated with all decisions regarding migration, it may have affected different migrants in different ways, and apprehension statistics provide no way of distinguishing between them.

Second, the relationship between the number of apprehensions and the number of entries is unknown. Apprehensions reflect not only the number of attempted border crossings (the primary variable of interest) but also the rate of apprehension and the efficiency of enforcement, both of which are affected by the budget and personnel available to the U.S. Border Patrol (White et al. 1990). Although statistical models can control for resources available to the Border Patrol, it is not possible to know whether variations in these resources are connected with the efficiency of enforcement or with the probability of apprehension, because we have no count of those who escape detection.

Finally, apprehension statistics confound the separate effects of IRCA's amnesty and the enforcement provisions in IRCA. As prior investigators have noted (see Bean et al 1990; Espenshade 1990; White et al. 1990), the amnesty alone must have reduced the number of illegal border crossings after 1986 because it gave legal documents to more than 2 million Mexicans who otherwise would have attempted to enter and work illegally. Studies based on apprehension statistics attempt to control for this effect by including monthly data on amnesty applications in their statistical models, but migrants planning to apply for legalization probably did not stop crossing the border month-by-month; instead they decided to stay soon after IRCA was passed and stopped migrating immediately, thereby undermining the rationale for including a monthly control variable in statistical models.

To circumvent these problems with apprehension statistics, other researchers have turned to information gathered in Mexican sending communities or from other local samples. In general, these studies suggest that IRCA had little or no effect on the flow of undocumented Mexican migrants after its passage in 1986. Although Cornelius (1989, 1990a) reports that respondents in three Mexican communities were well informed about IRCA and its sanctions, more persons left for the United States in 1988 than in previous years. Similarly, González and Escobar (1990) note an increase in the volume of U.S. migration from the Mexican town of Jalostotitlán after 1987; and Massey, Donato, and Liang (1990) report that the probability of undocumented migration from two communities was higher in 1987 than at any time in the last 15 years. Further, Chavez, Flores, and Lopez-Garza (1990) found that IRCA did not deter undocumented migrants from remaining in the United States. These researchers' respondents stated that they had no intention of returning home to Mexico or Central America if they were found ineligible for IRCA's legalization program; rather, they planned to increase the length of their stay. Similarly, only 15% of the undocumented workers interviewed by Cornelius (1990b) said they would consider leaving the United States because of IRCA; and Bustamante (1990) found little change after 1986 in daily counts of undocumented migrants crossing the Mexican-U.S. border at two locations.

These studies, however, share certain weaknesses common to all localized studies. First, they rely on generalizations from isolated settings, which may or may not be representative of broader trends (Durand and Massey forthcoming). Even after taking the sample design into account and making careful comparisons with other studies, one should be wary about taking findings from one or two community samples as indications of the overall success or failure of IRCA. Second, studies of the consequences of IRCA contain a weakness inherent in all policy evaluations: the data points after the policy change are too few, so that before-and-after comparisons are weak. Although time-series experiments acquire increasing internal validity as time passes, in the short term their research design is inherently flawed. Massey et al. (1990), for example, could estimate the probability of undocumented migration only through 1987, just one year after the passage of IRCA, and they had data from only two communities. Finally, most of the community studies do not

include data on migrants who have settled in the United States; thus the likelihood of out-migration in years when they left is understated.

In the present paper we use a new source of data that partially overcomes these weaknesses. The data are longitudinal, cover multiple communities, provide a large sample, include samples of settled U.S. migrants, and yield reliable information on Mexican immigration through 1989. They also permit separate examination of the distinct events that together determine the overall flow of undocumented migrants across the border—that is, the probability of making a first, second, or third trip to the United States. The data also allow us to measure how IRCA affected the cost of entering the United States without documents, and to observe the likelihood of apprehension before and after passage of IRCA. In this way we can disentangle the consequences of stricter border enforcement from the effects of IRCA's legalization program.

Data and Methods

Our analysis draws on a survey of seven Mexican communities conducted during the winters of 1987–1988 through 1989–1990. The communities are located in the states of Jalisco, Michoacán, and Guanajuato, which traditionally have sent large numbers of undocumented migrants to the United States (Dagodag 1975; Jones 1988; North and Houstoun 1976). The communities were chosen to provide a broad variety of economic bases; they include several rural agrarian villages, an isolated mining town, a small commercial city, a mid-sized industrial city, and a neighborhood in a large metropolitan area. Within each community, we drew a simple random sample of 150–200 households, which yielded a total sample size of 1,350. Respondents were interviewed during December and January, when most temporary and recurrent migrants are at home with their families. The sample therefore is representative of housing units occupied during the winter months of 1987–1990. For all seven communities taken together, the sampling fraction was 21% and the refusal rate was about 7%.

This sample of Mexican communities was supplemented by a nonrandom survey of out-migrants located in U.S. destination areas during the summer following each period of Mexican fieldwork. We analyzed preliminary data from the Mexican communities to learn where in the United States migrants went, and sent teams of interviewers to those locations to interview households that had established themselves permanently. We used snowball sampling methods to compile samples of 20 out-migrant households per community, for a total of 100 U.S. households. (Surveys could not be carried out in destination areas for two communities because an interviewer dropped out of the project.)

The survey questionnaire gathered information on the social and demographic characteristics of household heads, their spouses, children, and other household members. Among household members with U.S. migrant experience, the survey obtained additional information about the first and the most recent trip to the United States, which included date of initial entry, duration, occupation, wage, place of destination, and legal status. Household heads who had been to the United States also provided a complete history of border crossing that contained dates, crossing points, costs, modes of entry, and whether they were apprehended by the Border Patrol.

For the present study we draw on two basic sources of information: the birth date and the date of the first trip to the United States (compiled for all household members) and the history of border crossing (gathered from household heads). Because the great majority of migrants in the sample are males, our analyses focus exclusively on men. (We attempted a separate analysis for women but abandoned it because the number of cases was too small to enable reliable estimation.) Given each subject's date of birth and year of first trip, we

constructed a year-by-year life history up to the date of the first U.S. trip. That is, we built a discrete-time person-year file that followed each subject from birth to the date of the survey or to the first U.S. trip, whichever came first. Such retrospective histories obviously contain some recall error, but checks for internal consistency revealed that migrants were able to remember the years when they left for the United States with considerable accuracy (see Massey 1985).

The outcome measure is whether or not the subject migrated within the person-year in question. If a man did not migrate in a given year, the migration variable is coded 0; if he migrated in that year, it is coded 1, and all later years of life are excluded from the file. For each year in which a migration took place, we also created variables to record the legal status under which the trip was taken. Legal migrants have valid U.S. documents that entitle them to work in the United States; undocumented migrants do not.

This person-year file provided the basis for estimating an age-period model of the probability of undertaking a first trip to the United States. (Originally we estimated age-period-cohort models, but cohort coefficients always proved to be insignificant.) We regressed the 0-1 migration variable on dummy variables representing each man's age and period in the person-year, and included additional dummy variables to indicate the community from which the migration occurred. We estimated this model using a maximum-likelihood logistic regression procedure, which produces estimates of the probability of making a first U.S. trip in any year, given that no prior migration had occurred.

The border-crossing history gathered from household heads was used to build person-year files that enabled us to estimate probabilities of trip progression, or the probability of taking trip $x + 1$, given that x trips already had occurred. Beginning from the point of return from trip x, we followed a man through life year by year, noting his age and the period in which the person-year was located. Then we constructed a migration variable by coding each person-year as 0 if the man did not take trip $x + 1$ and as 1 if he did so; all years subsequent to that in which he took trip $x + 1$ were excluded from the file, or (more accurately) were included in another trip progression file. By following this procedure, we constructed a series of person-year files to estimate different probabilities of trip progression.

Finally, we used border-crossing histories to obtain information on the mode of entry, the costs of the trip, and whether or not an apprehension was made by the INS. These data permitted us to consider the extent to which IRCA has affected the costs of surreptitious entry into the United States. We estimated multivariate regression models to predict the probability of using a "coyote" (a border smuggler), the cost of the coyote, the total costs of the trip, and the probability of apprehension. We predicted these variables from a set of personal and household characteristics that included age, education, the amount of U.S. experience, the number of prior trips, marital status, and whether other family members accompanied the migrant, together with period dummy variables indicating the year in which entry was attempted.

In all of these analyses, our evaluation of the effects of IRCA takes the form of a time-series experiment (see Campbell and Stanley 1966). Period dummies are specified for single years from 1980 to 1989, and the estimated coefficients provide a basis for assessing trends in the probabilities of events under consideration: making a first trip, taking subsequent trips, being apprehended, and so on. If IRCA had an effect in deterring undocumented migration, we would expect declines in probabilities of migration, rising costs of border crossing, and increasing probabilities of apprehension after 1986, compared to a baseline period from 1980 to 1985.

Making a First Trip

Table 1 displays the propensity for Mexicans without prior U.S. experience to undertake a trip to the United States without documents. The model assumes constant migration rates below age 15 and above age 54, and constant rates within five-year intervals from 15 to 54. These restrictions correspond to well-known empirical regularities of the age-migration profile (Rogers, Willekens, and Ledent 1983). We captured period effects using 18 dummy variables: 1940–1944 corresponds to World War II and the beginning of the U.S.-sponsored bracero program, which arranged for the seasonal importation of Mexican farm laborers into the United States; 1945–1949 and 1950–1954 correspond to the expansion and the peak of the bracero program; 1955–1959 represents the plateau years of bracero migration; 1960–1964 represents the phasing out of this program; 1965–1969 and 1970–1974 are periods of increasing legal restriction on Mexican immigration and of growing undocumented migration; 1975–1979 represents a period of cyclical economic growth in Mexico and of sustained unemployment and inflation in the United States; and the single years from 1980 through 1989 establish trends before and after passage of IRCA. The reference period consists of years before 1940.

During the 1980s, economic conditions in Mexico and the United States fluctuated considerably. The years 1980 and 1981 brought strong economic growth to Mexico but recession within the United States, whereas the period 1982 through 1986 corresponds to a deepening economic crisis in Mexico and a boom in the United States. The years 1987 to 1989 represent the post-IRCA period, when sanctions of employers were established and border enforcement was strengthened. If IRCA had a deterrent effect, we would expect a break in the probabilities after 1986. Specifically, given the economic crisis in Mexico and the boom in the United States, we anticipate rising probabilities of out-migration from 1982 to 1986, followed by a reversal or a leveling off from 1987 to 1989.

We estimated the coefficients in the left-hand columns of Table 1 using data from the Mexican community samples alone, whereas those in the right-hand columns are based on the combined sample of Mexican and U.S. households. By themselves, the Mexican community samples probably yield biased estimates of the likelihood of illegal migration because they exclude migrants who settled abroad. The combined sample attempts to correct this deficiency by including settlers surveyed in U.S. destination areas, but because this sample was not selected by using probability methods, it may not be representative of all out-migrants from the communities studied. In order to test the sensitivity of our estimates to the presence or absence of the U.S. respondents, we estimated the equation with and without those respondents.

The two sets of estimates depict the same age profile of migration: movement is unlikely in childhood, becomes increasingly common through adolescence, peaks in young adulthood, and then declines to a minimum at age 50 or 55. Both equations also show similar community effects, revealing substantial differences between rural and urban areas. Compared to the reference community of San Francisco del Rincón (a newly industrialized city in the Guanajuato countryside), the likelihood of migration to the United States was highest in the agrarian towns of San Diego de Alejandría, Ario de Rayón, and Unión de San Antonio and was lowest in León, the largest city in Guanajuato. It was also quite low in Romita, another small city, as well as in Mineral de Pozos, a declining mining town located in the mountains of Guanajuato.

Despite the similarity of the age and community coefficients, however, the period coefficients differ substantially across the two equations, yielding significantly different model chi-square statistics ($p<.05$). Thus the estimated period effects differ depending on whether U.S. respondents are included or excluded from the analysis. In general, the inclusion of U.S. settler households produces higher coefficients from the late 1970s

Table 1. Age-Period Analysis of the Probability that Males from Seven Mexican Communities Will Migrate to the United States Without Documents

Age, Period, and Community	Without U.S. Sample		With U.S. Sample	
	B	SE	B	SE
Age				
< 15	—	—	—	—
15–19	3.215*	0.150	3.437*	0.160
20–24	3.588*	0.153	3.677*	0.167
25–29	3.261*	0.167	3.169*	0.187
30–34	2.807*	0.190	2.877*	0.206
35–39	2.721*	0.205	2.672*	0.228
40–44	2.524*	0.238	2.199*	0.293
45–49	2.330*	0.287	2.025*	0.352
50–54	1.606*	0.433	0.635*	0.724
55+	1.403*	0.333	1.041*	0.407
Period				
Before 1940	—	—	—	—
1940–44	1.528*	0.368	1.224*	0.542
1945–49	1.538*	0.360	1.712*	0.500
1950–54	1.839*	0.347	1.472*	0.505
1955–59	1.410*	0.355	0.788	0.541
1960–64	0.980*	0.361	0.892	0.514
1965–69	0.806*	0.358	0.916	0.499
1970–74	1.620*	0.334	2.360*	0.460
1975–79	1.934*	0.330	2.805*	0.456
1980	2.351*	0.356	2.933*	0.481
1981	2.134*	0.363	2.929*	0.480
1982	1.656*	0.382	2.387*	0.496
1983	2.028*	0.362	2.810*	0.480
1984	2.030*	0.361	2.867*	0.477
1985	2.259*	0.352	2.934*	0.474
1986 (IRCA)	2.125*	0.356	2.914*	0.474
1987	2.161*	0.353	2.886*	0.474
1988	1.927*	0.371	2.518*	0.490
1989	2.120*	0.463	2.578*	0.578
Community				
San Francisco del Rincón	—	—	—	—
León	−1.010*	0.176	−1.514*	0.239
San Diego de Alejandría	1.295*	0.115	1.405*	0.128
Romita	−0.488*	0.156	−0.255	0.165
Mineral de Pozos	−0.819*	0.184	−0.642*	0.196
Unión de San Antonio	0.487*	0.135	0.555*	0.151
Ario de Rayón	1.046*	0.125	1.191*	0.137
Intercept	−8.919*	0.354	−9.826*	0.481
Chi-Square	1032.38*		855.81*	
Person-Years	88,270		90,845	

* $p<.05$.

through the mid-1980s, precisely the years when U.S. settlers are likely to have left for the United States. Therefore, by inflating period coefficients before 1986 compared to those after 1986, the inclusion of the U.S. sample yields a pattern of results that is most consistent with a deterrent effect of IRCA. Because we ultimately argue that IRCA had little effect, we use the combined sample in all subsequent analyses to give the analysis a conservative bias.

Whichever set of estimates is used, however, the period coefficients for the 1980s suggest that the probability of becoming an illegal migrant was quite high throughout the decade. The coefficients estimated for the combined sample vary in a rather narrow range between 2.4 and 2.9 during the 1980s, and none of the year-to-year differences are statistically significant. A formal statistical test contrasting the set of coefficients for 1980–1985 with those for 1987–1989 also proved negative ($p>.05$). Although the coefficients peak at 2.9 in the year when IRCA was passed and fall to 2.5 and 2.6 in 1987 and 1988, the decrease does not exceed one standard error. In short, we find no reliable shift in the probability of undocumented migration as a result of IRCA.

In order to make the results of the age-period analysis more tangible, we used the equation shown in the right-hand columns of Table 1 to generate predicted probabilities of making a first illegal trip in different years, given an age, a period, and a community. From these predicted probabilities we derived a set of life tables to compute the cumulative probability of illegal migration by age, assuming the rates of out-migration that prevailed from 1980 through 1989 (see Massey 1985). The top section of Table 2 presents the cumulative probability of migrating illegally by age 40 for four communities, namely the two with the highest and the two with the lowest rates of out-migration (the complete life tables are available on request).

These figures show what would happen if a male born into each community were to go through life subject to the rates of out-migration prevailing in different years. These hypothetical lifetime probabilities of undocumented migration suggest that IRCA, at best, had only a minor deterrent effect. In communities where U.S. migration was well established, the probability that a young man eventually would become an illegal migrant was extremely high, with or without IRCA. In San Diego de Alejandría, for example, the lifetime probability of illegal migration ranged from .78 to .92 before IRCA was passed, and from .82 to .91 afterward. The probability rose from .78 in 1982 to .92 in 1985, leveled off at about .91 to .92 in 1986 and 1987, fell to .82 in 1988, and then increased to .84 in 1989. Although IRCA could have been responsible for the drop between 1987 and 1988, we already know that the shift was not statistically significant and that the decline was not sustained into 1989 in any case.

In communities where migration was not prevalent, such as León, the lifetime probabilities of migration were much lower, fluctuating between .08 and .13 before IRCA and between .09 and .13 afterward. Because these estimates come from the same underlying model as that used for communities with high probabilities of migration, the time trend is the same. These figures show that even in a large metropolis with diverse opportunities for employment, a young man had a 10% chance of becoming an illegal migrant during the 1980s, and IRCA did not affect this fact.

Deciding to Migrate Again

Field studies suggest that repeated movement back and forth across the border is a common strategy among Mexican migrants to the United States (see Durand and Massey forthcoming and Massey et al. 1987 for reviews). The career of the recurrent migrant inevitably develops from a series of successive choices made over the course of the life cycle: first to take one trip to the United States, then a second trip, and then additional trips.

Table 2. Cumulative Probability of Making a Trip to the United States by Age 40, Given Probabilities of Undocumented Migration Prevailing in Seven Mexican Communities, 1980–89

	Pre-IRCA						IRCA	Post-IRCA		
Community	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Probability of Making a First Trip										
San Diego de Alejandría	.921	.920	.778	.895	.908	.921	.917	.912	.819	.836
Ario de Rayón	.875	.873	.705	.841	.857	.874	.869	.862	.750	.770
Mineral de Pozos	.219	.290	.181	.262	.275	.291	.286	.280	.203	.215
León	.134	.134	.080	.120	.126	.134	.132	.129	.091	.096
Probability of Making a Second Trip (Given a First Trip)										
San Diego de Alejandría	1.000	1.000	.997	.998	1.000	1.000	1.000	1.000	1.000	—
Ario de Rayón	.997	1.000	.998	.999	1.000	1.000	1.000	1.000	1.000	—
Mineral de Pozos	.964	.961	.851	.874	.983	.947	.961	.965	.946	—
León and Romita	.862	.856	.676	.707	.912	.825	.857	.865	.825	—
Probability of Making A Third Trip (Given a Second Trip)										
San Diego de Alejandría	.788	.865	.816	.780	.910	.843	.874	.814	.828	—
Ario de Rayón	.624	.717	.656	.615	.782	.689	.730	.654	.671	—
Mineral de Pozos	.898	.947	.917	.893	.971	.934	.952	.916	.925	—
León and Romita	.315	.388	.354	.309	.447	.365	.398	.337	.350	—

IRCA presumably sought to reduce the probabilities associated with all of these decisions. The left-hand columns of Table 3 address the first step on the road to recurrent migration by analyzing the probability that a household head with one prior trip to the United States will decide to make a second trip.

A shift from persons to household heads is required here because complete trip histories were gathered only from the latter. In restricting the analysis to household heads with U.S. experience, however, we reduce the number of cases; this step led to limitations on degrees-of-freedom that required respecification of the dummy variables for age, period, and community. The present model assumes constant migration rates below age 20 and above age 54, and fixed rates within five-year intervals from 20 to 54. Period dummies correspond to 1960–1964, 1965–1969, 1970–1974, and 1975–1979, with single-year coefficients estimated throughout the 1980s; the period before 1960 serves as the reference category. Because of the small number of observations, we had to omit person-years in 1989 and we combined the dummy variables for León and Romita.

The coefficients for age reveal that the likelihood of making a second illegal trip to the United States declines steadily over the life course. Compared to those for persons under age 20, the coefficients become steadily more negative as age increases, falling from $-.230$ ($p>.05$) in the interval 20–24 to -1.084 ($p<.006$) in the interval 30–34, and declining to -1.856 ($p<.001$) in the age group 40–44 and bottoming out at -4.383 in the interval above age 55. Thus the older the person, the less likely he is to undertake a second illegal trip to the United States.

As before, community differences also are significant. Compared to findings for San Francisco del Rincón, the probability of making a second trip without documents was highest in the agrarian towns of San Diego de Alejandría, Ario de Rayón, and Unión de San Antonio, and lowest in the urban centers of León and Romita. Migrants in the fading mining town of Mineral de Pozos displayed approximately the same probability of taking a second trip as those in San Francisco del Rincón.

These period coefficients display more variability across time than those in the earlier model, but generally lead to the same conclusions about the effects of IRCA. During the 1980s the period coefficients varied between 0.8 and 1.5, but none of the year-to-year fluctuations were statistically significant. A formal test comparing coefficients during 1980–1986 to those during 1987–1988 showed that the probability of making a second trip did not change after implementation of IRCA. Indeed, from 1984 through 1988 the period coefficients varied only from 1.2 to 1.5, a range that does not exceed even the smallest standard error observed during the period.

The left-hand columns of the table continue the analysis of trip-progression probabilities by selecting those who have made two trips and predicting the probability that they will make additional illegal trips. The main difference between this and the previous model is the addition of dummy variables to capture the effect of previous migrant experience. That is, we consider the probability of taking trip $x+1$, controlling for the fact that x trips already have been taken, where x is an integer greater than or equal to 2. As other studies found (see Massey et al. 1987), the probability of making an additional trip increases with the number of trips that have been made already, suggesting the existence of a self-sustaining social process of migration (Piore 1979). Thus the coefficient for prior trips increases from 1.623 with four to six earlier trips, to 2.429 when seven or more prior trips were taken (compared to the reference category of two or three trips).

The period coefficients show that the men's propensity to make illegal additional trips was high throughout the 1980s and did not fluctuate greatly from year to year. None of the yearly differences are statistically significant, and period coefficients during the decade vary between 1.4 and 1.9. As before, a formal contrast of coefficients before and after passage of

Table 3. Age-Period Analysis of the Probability That Males from Seven Mexican Communities Will Make an Additional Trip to the United States

Age, Period, Community and Experience	Given One Prior Trip		Given 2+ Prior Trips	
	B	SE	B	SE
Age				
<20	—	—	—	—
20–24	−0.230	0.217	0.348	0.263
25–29	−0.326	0.224	0.071	0.258
30–34	−1.084*	0.259	0.035	0.261
35–39	−1.349*	0.285	−0.289	0.272
40–44	−1.856*	0.348	−0.538	0.283
45–49	−1.815*	0.387	−0.825*	0.308
50–54	−1.830*	0.458	−1.455*	0.356
55+	−4.383*	1.019	−1.911*	0.342
Period				
Before 1960	—	—	—	—
1960–64	−0.924	0.537	−1.423*	0.485
1965–69	0.129	0.360	0.180	0.298
1970–74	1.373*	0.242	1.150*	0.221
1975–79	1.398*	0.228	1.567*	0.199
1980	1.305*	0.331	1.438*	0.264
1981	1.280*	0.337	1.699*	0.249
1982	0.729	0.398	1.528*	0.256
1983	0.814*	0.398	1.414*	0.261
1984	1.516*	0.333	1.889*	0.242
1985	1.174*	0.363	1.620*	0.254
1986 (IRCA)	1.284*	0.365	1.734*	0.249
1987	1.314*	0.376	1.522*	0.260
1988	1.173*	0.424	1.569*	0.253
Community				
San Francisco del Rincón	—	—	—	—
Romita and Leon	−0.566	0.327	−0.988*	0.380
San Diego de Alejandría	1.117*	0.227	0.436	0.277
Mineral de Pozos	−0.032	0.501	0.834	0.514
Unión de San Antonio	1.077*	0.257	0.086	0.289
Ario de Rayón	1.214*	0.232	−0.032	0.283
Previous Migrant Experience				
2–3 trips	—	—	—	—
4–6 trips	—	—	1.623*	0.185
7+ trips	—	—	2.429*	0.179
Intercept	−3.446*	0.305	−5.139*	0.415
Chi-Square	449.21*		748.83*	
Person-Years	4,635		7,640	

* $p<.05$

IRCA revealed no statistically significant differences. In short, there is little evidence that IRCA had any effect at all in deterring recurrent illegal migration.

From the equations in Table 3 we can estimate probabilities that male household heads will make second and third trips to the United States without documents, given an age, a period, and a community. We derived life tables for each year of the 1980s using these estimated probabilities, and used the tables to compute cumulative probabilities of making additional trips by age 40 (these life tables are available to readers upon request). The probability of making a second trip is shown in the middle section of Table 2; the probability of making a third trip is shown in the bottom section.

Like the coefficients in Table 3, these figures suggest that IRCA had little or no effect in deterring recurrent illegal migration. Among residents of communities where migration was well established, the likelihood of making a second illegal trip was close to unity throughout the decade. In San Diego and Ario, men who had gone to the United States in the past were virtually certain to return by age 40, a pattern that was not affected by the passage of IRCA in 1986. Even in communities where migration was less well established, the cumulative probability of making a second illegal trip remained very high throughout the 1980s. In Mineral de Pozos, for example, the lifetime probability of making a second trip never fell below .85, and in León and Romita it varied between .68 and .91.

A similar pattern is observed when lifetime probabilities of making a third illegal trip are considered. In San Diego this probability never fell below .81. Likewise, in León and Romita the probability of taking a third trip varied between .34 and .45. The only possible evidence for a deterrent effect appears in 1987, when migration probabilities declined in comparison to those in the prior year, but this decline was not sustained into 1988. Once men have embarked on a career of recurrent U.S. migration, in other words, they are unlikely to change their behavior.

Crossing the Border

The intent of Congress in passing IRCA was clearly to make it more difficult and costly for undocumented migrants to cross the border into the United States. Toward this end, IRCA allocated additional resources to the INS for border enforcement, and during 1988 and 1989 the Border Patrol was able to increase its personnel and line watch hours substantially (Bean et al. 1989). If these efforts were effective, we would expect an increase in the likelihood of apprehension at the border and an increase in the extent to which migrants failed to gain entry into the United States. We also would expect migrants to adopt new and more costly strategies for crossing the border in order to circumvent the new enforcement initiatives arising from IRCA.

In the history of border crossing collected from household heads we asked, for each U.S. trip, the number of attempted crossings and the number of apprehensions associated with those crossings. These data provide a basis for determining whether or not IRCA caused an increase in the efficiency of enforcement activities along the U.S.-Mexico border. A decrease in the ratio of attempted crossings to apprehensions, for example, would indicate increasing deterrence, and the achievement of a ratio of unity would indicate perfect deterrence: everyone who was caught gave up and went home.

Unfortunately for the sponsors of IRCA and the boosters of the INS, our data provide no support for the view that apprehension deters migration. Among questionnaires administered in the first two communities (León and San Francisco del Rincón), the number of attempts was *always* one greater than the number of apprehensions; that is, all migrants simply tried until they succeeded. Apprehended or not, every migrant who attempted to enter the United States eventually got in. Because reports of entries and of apprehensions

provided redundant information, the question on the number of attempts was omitted in subsequent community surveys to conserve space on the questionnaire.

Not everyone who attempted to cross the border escaped apprehension, however. This fact provides a basis for estimating the efficiency of enforcement. Table 4 presents a model that predicts the probability of being apprehended while attempting to cross the border illegally into the United States. As before, this probability is predicted from dummy variables for age, period, and community, but we also added other controls. The migrants' socioeconomic status was measured by their education and occupation in Mexico, and prior migrant experience was indicated by the number of prior trips and the length of the initial trip. Access to social capital that could increase the likelihood of success in evading detection was indexed by dummy variables denoting the existence of family ties to the United States and the mode of border crossing (e.g., alone, with a coyote, or with family members).

The left-hand side of the table presents an estimated equation that uses these variables to predict the likelihood of apprehension; the columns on the right show an equation that predicts the use of a coyote in attempting to cross. Because we estimated these equations with a logistic regression procedure maximized for use with discrete independent variables, all explanatory factors are expressed as dummy variables. Neither equation constitutes an event history analysis, however, because the units are trips rather than person-years.

In general, the probability of apprehension was relatively high (around .50) throughout the 1980s and does not appear to have been affected much by variables in the model. Persons with primary education or more were somewhat less likely to be apprehended, but for the typical migrant, the probability of apprehension does not appear to be related strongly either to personal characteristics or to enforcement efforts arising from the implementation of IRCA. The probability of apprehension *declined* significantly in 1986, the year when IRCA was passed, but no other coefficient was significantly different from 0, and a formal test reveals no difference between coefficients associated with years before and after 1986.

If we consider a typical migrant and predict his probability of apprehension from the above equation, we find that migrants from most communities had roughly the same chance of being apprehended throughout the decade. Let us assume the case of a 25 year-old migrant with some primary education, no family ties in the United States, and an agrarian occupational background who attempts to cross the border alone on his first U.S. trip. In San Diego (the only community with a significant coefficient), such a person had about a 56% chance of apprehension in 1980, roughly a 47% chance in 1986, and a 60% chance in 1989.

Thus our data from Mexico reveal a fairly high probability of apprehension by INS combined with a near-certain probability of ultimately entering the United States. This paradoxical outcome may reflect the nature of the coyote industry in the 1980s. The informal contracts between coyotes and migrants require payment only after the migrant has been delivered to a specific, prearranged site in the United States. The migrant rarely carries the payment himself because doing so would expose him to robbery and exploitation. Rather, payment is made by family members or friends when the coyote telephones and informs them that the migrant has arrived; the coyote hands over the migrant after receiving payment. In this way, both parties to the contract avoid risks.

If the coyote is incompetent or unlucky, the migrant can secure the services of another guide or simply try again later, because no money has been lost. In-depth interviews suggest that very infrequently a migrant will abandon temporarily the idea of crossing the border if he has been unwary and has lost his money. Typically that person will stay in the Mexican border community and will work until he has saved enough money to try crossing again. This information is difficult to secure in surveys, however, because migrants consider it "undignified" not to have enough fortitude to make as many attempts as needed to get across the border.

Table 4. Logistic Regression Analysis of the Probability of Being Apprehended and of Using a Coyote on an Illegal Border–Crossing

	Being Apprehended		Using Coyote	
Explanatory Variables	B	SE	B	SE
Age (ref = <25)				
25–34	−0.202	0.358	0.143	0.385
35–44	−0.369	0.378	0.231	0.407
45–54	0.128	0.429	0.546	0.452
55+	0.009	0.497	0.607	0.515
Education (ref = 0)				
1–5 years	−0.430*	0.190	0.102	0.190
6+ years	−0.218	0.227	0.225	0.235
Occupation (ref = skilled)				
Unskilled worker	−0.255	0.308	0.076	0.297
Agricultural worker	0.189	0.288	−0.266	0.271
Previous Experience (ref = <4)				
4–6 Trips	−0.143	0.195	0.267	0.205
7+ Trips	−0.448	0.286	−0.044	0.282
Length of First Trip (ref = <1 year)				
1–5 years	−0.481	0.519	1.057*	0.532
6–10 years	−0.310	0.486	0.344	0.501
11–15 years	0.431	0.486	−0.363	0.498
16–20 years	0.116	0.506	−0.787	0.512
21–25 years	0.866	0.620	−0.930	0.622
26+ years	−0.758	0.558	−1.182	0.562
U.S. Family Connections (ref = none)				
Parent/grandparent	−0.017	0.158	0.150	0.158
Sibling	0.131	0.152	0.458*	0.147
Mode of Crossing (ref = alone)				
With coyote	−0.059	0.200	—	—
With family	0.103	0.176	−0.340	0.178
Period (ref = <1960)				
1960–64	0.517	0.315	0.588*	0.298
1965–69	−0.009	0.280	−0.187	0.252
1970–74	−0.411*	0.204	0.349	0.199
1975–79	0.118	0.189	0.900*	0.182
1980	−0.062	0.223	0.285	0.224
1981	−0.056	0.193	−0.464*	0.197
1982	0.180	0.206	−0.577*	0.212
1983	−0.269	0.194	0.067	0.201
1984	−0.138	0.187	0.030	0.190
1985	−0.080	0.188	−0.018	0.196
1986 (IRCA)	−0.432*	0.210	0.176	0.217
1987	−0.315	0.191	−0.331*	0.191
1988	−0.188	0.173	0.508*	0.108
1989	0.120	0.226	0.860*	0.277
1990	0.195	0.561	0.160	0.615

(Continued)

Table 4. *(Continued)*

	Being Apprehended		Using Coyote	
Explanatory Variables	B	SE	B	SE
Community (ref = San Francisco del Rincón)				
León	0.507	0.803	1.458	0.826
San Diego de Alejandría	0.738*	0.321	0.600	0.320
Romita	−0.038	0.383	0.631	0.370
Unión de San Antonio and Mineral de Pozos	−0.338	0.333	0.608	0.321
Ario de Rayón	0.496	0.320	0.681*	0.320
Intercept	−0.100	0.684	−0.807	0.692
Chi-Square	691.46*		939.39*	
Number of Crossings	1,270		1,331	

* $p<.05$

Statistical models of the apprehension process thus suggest that escaping detection appears to be almost a random process which is unrelated to personal traits or to the enforcement provisions of IRCA. The equation predicting the use of coyotes in border crossing displays a more systematic structure. As migrants age, become more educated, and acquire additional experience, they are more likely to employ the services of a coyote. Traveling with siblings also increases the likelihood that a coyote will be used. In addition, a coyote is more likely to be used by migrants from all communities other than San Francisco del Rincón.

Across the 1980s, however, we found no strong trends in the probability of using a coyote. The likelihood of using a coyote is significantly lower in 1981, 1982, and 1987, and is significantly higher in 1988 and 1989; these findings provide weak evidence that migrants turned to coyotes after implementation of IRCA. Yet this higher likelihood of coyote use did not persist into 1990. In view of the instability in the temporal pattern during the 1980s, it is probably hazardous to draw firm conclusions about the effect of IRCA on the mode of border crossing.

Our last attempt to detect the effects of IRCA's enforcement provisions focuses on the costs of crossing the Mexico-U.S. border illegally. If border crossing became increasingly risky and hazardous, we might expect the demand for coyotes to grow and their fees to rise, leading to an overall increase in the cost of a trip. Table 5 therefore presents the results of two OLS regressions that analyze total trip costs and the cost of renting a coyote's services (both expressed in constant 1985 dollars). In each case the unit of analysis is the trip; we logged total costs to improve the fit, but did not log coyote costs. As before, we controlled for age, education, occupation, prior U.S. experience, and family connections, and then examined coefficients for period dummies to test for the effect of IRCA.

In general, the background variables in these models were not related strongly either to coyote costs or to trip costs, and the size of the expenditures did not display a clear trend over time. According to the period coefficients, total trip costs were significantly greater than in the reference category in 1980, 1981, 1985, and 1989. Coyote costs likewise were higher in 1980 and significantly lower in 1982, but apart from these two years, the cost of a coyote has not changed much in real terms since 1960, when it averaged around $350 per passage. Certainly there is little evidence of increased costs as a result of IRCA.

Table 5. OLS Regression of Selected Variables on Total Trip Costs (Logged) and Coyote Costs: Undocumented Migrants from Seven Mexican Communities

	Total Trip Costs		Coyote Costs	
Explanatory Variables	B	SE	B	SE
Personal Characteristics				
Age	0.001	0.013	−0.503	1.231
Education	0.070*	0.035	−5.990	3.227
Migrant Background				
Skilled Workers	—	—	—	—
Unskilled Worker	−0.280	0.367	18.076	34.562
Agricultural Worker	−0.354	0.373	−19.698	34.484
Previous Migrant Trips	−0.244*	0.054	0.725	4.641
Length of First U.S. Trip	0.011	0.015	−5.294*	1.378
Hourly Wage on First Trip	−0.028	0.023	−0.778	2.029
Family Connections				
Parent/Grandparent	−0.225	0.188	55.874*	17.161
Sibling	−0.241	0.184	10.487	16.845
Mode of Crossing				
Alone	—	—	—	—
With Coyote	0.294	0.241	—	—
With Family	0.224	0.203	9.426	18.409
Period				
Before 1960	—	—	—	—
1960–64	0.576	0.348	179.100*	31.639
1965–69	0.721*	0.304	−31.597	25.215
1970–74	0.399	0.213	5.300	19.552
1975–79	0.735*	0.209	60.603*	19.193
1980	0.666*	0.243	50.328*	22.655
1981	0.654*	0.240	−33.675	21.526
1982	0.445	0.236	−51.857*	21.019
1983	−0.465	0.257	−41.481	22.245
1984	0.105	0.213	−27.881	19.805
1985	0.504*	0.230	−7.291	20.158
1986 IRCA	−0.421	0.238	−38.821	22.528
1987	0.333	0.254	−10.709	21.812
1988	−0.022	0.210	16.940	19.098
1989	0.834*	0.291	15.193	27.032
1990	−0.729	0.862	78.453	57.502
Community				
San Francisco del Rincón	—	—	—	—
León and Romita	−1.540*	0.472	—	—
León	—	—	240.561	208.731
Romita	—	—	−107.885*	48.617
San Diego de Alejandría	−0.225	0.420	−109.698*	42.769
Mineral de Pozos	−2.578*	0.672	−136.252*	65.716
Unión de San Antonio	−0.058	0.440	−43.354	44.401
Ario de Rayón	−2.159*	0.428	−17.875	43.615
Intercept	5.649*	0.764	358.053*	71.592
R^2	0.268		0.214	
Number of Trips	700		866	

* $p<.05$

Conclusion

In this study we used a new source of data to assess the degree to which the Immigration Reform and Control Act deterred undocumented migration from Mexico to the United States. Data were collected from U.S. migrants interviewed in seven Mexican communities during winters from 1987 through 1989, and were supplemented by samples of out-migrants from those communities who were interviewed in the United States during the subsequent summers. These data permitted us to carry out a set of time-series experiments that examined changes in migrants' behavior before and after passage of IRCA in 1986.

In looking for deterrent effects of IRCA, we examined migration from a variety of viewpoints. We measured the probability of taking a first trip without documents, as well as the probability of repeat migration. We examined changes in the probability of apprehension while attempting to enter the United States illegally and measured trends in the costs of border crossing. In none of these analyses could we uncover statistically reliable evidence that IRCA had a significant effect in deterring undocumented migration from Mexico.

The probability of making a first illegal trip to the United States remained high throughout the 1980s, with no consistent change in either direction. In one community with a well-developed migratory tradition, the probability that a young man would migrate illegally by his fortieth birthday remained above .80 throughout the decade; the probability of making additional trips was even higher and less variable over time. The probability of making a second trip was at or near 1.00 during each year of the 1980s, and the probability of making a third trip never fell below .75. Once men had begun migrating, they were very likely to continue.

Once they arrived at the border, moreover, undocumented migrants in our sample faced few new obstacles to entry as a result of IRCA. The probability of apprehension did not vary systematically over time, and generally fluctuated between 40% and 60%. We also found that *every* migrant who attempted a border crossing, whether apprehended or not, eventually gained entry. We uncovered limited evidence that migrants after 1986 turned to coyotes (smugglers) to increase their chances of successful entry, but the statistical basis for this conclusion is weak. Certainly there is no evidence that migrants spent any additional money to cross the border in the wake of the new enforcement provisions in IRCA. The costs of illegal entry—both total costs and coyote's fees—have remained relatively stable over the years.

In general, the results we present here are consistent with the view that international migration operates as a self-sustaining social process (Massey et al. 1987). Once people begin migrating, they are very likely to make additional trips, and once a sufficient number of people have become involved in the process, social ties between U.S. employers, migrants, and others form to facilitate the movement of new migrants and to encourage the repeated movement of experienced migrants. Therefore, in communities with well-developed migrant networks, recurrent seasonal migration to the United States has become a preferred and widespread strategy for economic mobility, and IRCA did little to change this fact.

Thus, unlike investigators who based their studies on apprehension statistics, we find little evidence that IRCA has significantly deterred undocumented Mexicans from entering the United States. Our conclusion is consistent with the findings of other field investigators who have studied Mexican sending communities. This discrepancy between studies based on community data and on apprehension statistics suggests that the reduction in apprehensions which occurred along the Mexican border after 1986 reflected the effects of the legalization program. By offering legal status to more than 2 million undocumented migrants, the amnesty caused an abrupt drop in cross-border circulation, and it is this effect

that is reflected in the apprehensions statistics. IRCA clearly had an effect, but our analyses suggest that it was not deterrence.

The few small effects that we have uncovered are little to show for the millions of dollars and thousands of hours that IRCA has invested in an effort to stem the tide of Mexican migrants to the United States. In the end, we return to the conclusion that international migration is a dynamic social process with strong internal momentum; once it has begun, it is very difficult to stop. Even the substantial efforts at deterrence represented by IRCA have not altered this fundamental fact.

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