

**ESTIMATES OF THE
LEGAL AND UNAUTHORIZED FOREIGN-BORN POPULATION
FOR THE UNITED STATES AND SELECTED STATES,
BASED ON CENSUS 2000**

by

Jeffrey S. Passel, Jennifer Van Hook, and Frank D. Bean
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INTRODUCTION

Based on analyses drawing on data from Census 2000 and myriad other sources, this report presents initial, direct¹ estimates of the unauthorized foreign-born population of the United States and six states in the year 2000. The estimates are presented by age, sex, and period of entry for broad country of origin groups and for 29 individual countries of origin. To our knowledge, the estimates are the first using Census 2000 data incorporating improved methods for identifying and adjusting directly on the basis of microdata for the presence of legal nonimmigrants (or legal temporary migrants²) among the enumerated foreign-born in census data. The results thus represent what are probably the best and most up-to-date estimates currently available for 2000.

Despite this improvement, the estimates are appropriately viewed as preliminary, and we use the term “initial” deliberately in describing the estimates. Our research program calls for two significant enhancements to existing estimates—improvements in both the census data on which the estimates are based and the underlying data and assumptions used in deriving estimates of the legally-resident immigrant population; the census improvements are included here. Our plans call for revising the estimates moving forward on an ongoing basis, to incorporate not only newly released and more up-to-date data, but also upgraded data (i.e., data that have been corrected for certain kinds of errors), more geographic detail for sources and destinations, and other improved methodological bases of estimation. We devote a section of this report to detailing the further work planned (including some already completed) plus other proposed enhancements.

As we note in more detail below, the estimates are based on the latest version of what is called a residual methodology. The key new result based on using this approach here is that an estimated 8.3 million unauthorized migrants were residing in the United States in early 2000, 6.5 million of whom came during the 1990s. Mexico accounts for 4.8 million of the total, with about 4.0 million who came during the 1990s.

The basic methodology of the residual approach involves subtracting an estimate of the legally-resident immigrant population from census-based figures on the total number of immigrants residing in the country to measure the unauthorized migrant population included in Census 2000. The resulting differences are then further adjusted for an estimate of the degree of

¹ In this context, “direct” estimates are based on geographic-specific data, as opposed to “indirect” or “synthetic” estimates which draw on data and assumption from other, generally larger, areas. This distinction is discussed further below.

² These terms are defined more precisely below.

underenumeration of unauthorized migrants in the census or survey. In the present research, the data we use include: Census 2000 data, data from the U.S. Immigration and Naturalization Service (INS), the Office of Refugee Resettlement (ORR), the Census Bureau's Accuracy and Coverage Evaluation (A.C.E.) program, the Current Population Survey (CPS), the National Center for Health Statistics (NCHS), and other data sources as noted below in order to inform the various adjustments that are required in the components of the estimate.

Background

Over the past three decades, the question of unauthorized migration to the United States, especially unauthorized migration originating in Mexico, has frequently galvanized public opinion and attracted the attention of U.S. policymakers (U.S. Commission on Immigration Reform 1994, 1997; Bean et al. 1997; Espenshade and Belanger 1998). Given such preoccupations with unauthorized migration, and the conspicuous presence of persons from Mexico among unauthorized migrants flows (Bean, et al. 1990; U.S. Immigration and Naturalization Service 2000), it is not surprising that many analysts and policymakers seek information about the number of unauthorized migrants in the United States, especially unauthorized migrants from Mexico. The degree of importance attached to such information underscores the need to develop empirically-based analytic estimates of the size of the unauthorized population in the United States that are demographically sound, even when available data may be more limited than would be maximally desirable. When social scientists fail to generate such estimates, the resulting void has been and will almost certainly be filled by persons supplying figures that are less defensible.

We use the term “unauthorized migrant” in this report. An unauthorized migrant is a person who *resides* in the United States, but who is **not** a U.S. citizen, has **not** been admitted for permanent residence,³ and is **not** in an authorized temporary status permitting longer-term residence and work. Various labels have been applied to what we here call unauthorized migrants, including “undocumented,” “illegals,” “illegal aliens,” and “illegal immigrants,” each of which has a somewhat different meaning and connotation (Keely 1977). We think the term unauthorized migrant best encompasses the population we seek to estimate because many migrants now enter the country or work using counterfeit documents and thus are not really “undocumented,” in the sense that they have documents, but not completely legal documents.

Unauthorized migrants are also heterogeneous with respect to duration of stay. Clear distinctions based on duration of stay, such as between temporary and permanent migrants, or sojourners and settlers, to use more sociological terms (Bean, et al. 1989; Chavez 1988; U.S. Commission on Immigration Reform 1997), are particularly important in order not to misunderstand evidence about unauthorized migration flows. Much of the historical and current debate about unauthorized migration derives from different perceptions about whether sojourners or settlers dominate such flows. To the extent that the unauthorized migrant population is made up of sojourners, return migrants represent out-flows that help to offset in-flows. Out-flow is a critical component because, in the case of unauthorized Mexican migrants, the majority of

³ The category of “persons admitted for permanent residence” extends beyond the category colloquially referred to as “green cards” or called “aliens admitted for permanent residence” by the INS and its successor agency, the Department of Homeland Security (DHS). In this context, refugees, asylees, and parolees have been admitted for permanent residence may stay in the country indefinitely and, thus, are included in the authorized population, but do not have “green cards.”

entrances, at least until recently, have been offset by exits, as indicated by estimates of repeat entrances (Espenshade 1995) and net flow (Passel and Woodrow 1987; Woodrow, Passel, and Warren 1987). During the 1970s, many observers mistook substantial numbers of border apprehensions as indicating large *net* in-flows. By failing to account for out-flow, such observers highly exaggerated the rate of growth of the unauthorized migrant population. In effect, the error was to assume that the number of settlers predominated over the number of sojourners, when in fact just the opposite was the case.

Such misperceptions provide an example of why early efforts to assess the size of the total unauthorized migrant population were often prone to error, producing results that were highly speculative, covered a wide range, and usually proved to be much higher than subsequent analytic estimates (Farrell 1972; Chapman 1975, 1976; Lesko Associates 1975; Castillo 1978). Despite methodological difficulties and persistently large ranges, the first analytic studies (Korns 1977; Lancaster and Scheuren 1977; Siegel, et al. 1980; Robinson 1980; Goldberg 1974; Garcia y Griego 1979, 1980; Zazueta and Corona 1979; Zazueta 1982; Diez Canedo 1984; Bean, King, and Passel 1983) generated estimates for the 1970s that contradicted the speculative assertions that there were substantially more than 6 million unauthorized migrants in the country at that time. Nonetheless, virtually all of these early “low” estimates proved to be too high when compared with subsequent estimates based on better data and methods, as well as the numbers who subsequently legalized under the 1986 Immigration Reform and Control Act (IRCA).

Notwithstanding the detailed definition of “unauthorized migrant,” there remain a number of ambiguities, definitional issues, and uncertainties in interpreting various estimates. For example, while unauthorized migrants enumerated in the census are more likely to have lived in the United States for shorter periods than the authorized migrants and are more likely to be sojourners than the authorized migrants, distinguishing sojourners from settlers in either group remains highly problematic. Further, there are a number of categories and a significant number of migrants whose status does not permit unambiguous classification as either authorized or unauthorized. Some examples of such migrants would include persons who have applied for asylum, family members of legal immigrants with admission applications pending, and migrants granted Temporary Protected Status (TPS). Because our methods do not estimate the numbers of migrants in these categories nor include them in the estimated legal population, they are, by default and implication, part of our estimate of the unauthorized population.⁴

Residual Estimates in the 1980s

While these early estimates were based on a variety of methodologies (Hill 1985; Siegel, et al. 1980), subsequent work in the 1980s and 1990s often involved developing estimates of the size and growth of the unauthorized migrant population by calculating a difference between the non-native population enumerated in the Census or the Current Population Survey (CPS) and the legally-resident immigrant population (i.e., this quantity equaled the enumerated foreign born population minus legally-resident immigrants). Called the “residual method,” this approach, as originally applied, gave an estimate only of the enumerated unauthorized migrant population,

⁴ We are hoping to be able to define more precisely some of these categories and provide measures of them in subsequent research. If successful, we could include them as either unauthorized or authorized depending on the purpose of the estimates and their application.

that is, of that portion of the unauthorized population enumerated in the Census or present in samples such as the CPS. The unenumerated portion of the population was not included. As we note below, this portion must be calculated by other means. Except in the case of Heer (1979), Warren (1982), and Passel and Woodrow (1987), residual methods were generally not employed with data collected prior to the 1980s because the 1980 Census was the first decennial census in which a sizable enumerated unauthorized migrant population could be detected through demographic analysis (Fay, Passel, and Robinson 1988).

Residual approaches have come to serve as the basis for almost all of the empirically-based estimates of the unauthorized migrant population in the last two decades. These approaches depend on being able to calculate two components—the enumerated foreign-born population and the legally-resident immigrant population—whose difference constitutes the basis for final estimate. Estimates of the legally-resident immigrant population must be obtained from other sources than official government surveys. The most often used early source was the Alien Address Registration Program (form I-53) of the INS. For almost 40 years through 1981, the INS annually collected data on residence and other items from legally-resident non-citizens. Because of the discontinuation of the Alien Registration Program after 1981, the only studies that have used I-53 data have involved analyses of the 1980 Census (Passel and Woodrow 1984; Warren and Passel 1987; Passel 1985b) and analyses of CPS data for years prior to 1980 (Heer 1979; Warren 1982; Passel and Woodrow 1987).

The limitations associated with using I-53 data were minor in comparison to its advantages. Both researchers and observers preferred the alien registration data for estimating the legally-resident immigrant population over having to construct an estimate based on INS immigration records, estimates of mortality, and estimates of emigration. Moreover, in addition to deriving the total number of legal immigrants from the registered number of legally-resident aliens, the residual estimates based on I-53 data also provided refined estimates of emigration as a by-product of the methods based on the basic population accounting equation. Overall, about 2.1 million unauthorized migrants were estimated to have been in the 1980 Census (Warren and Passel 1987).

Data from the alien registration program also permitted development of direct estimates of legal immigrants for states and metropolitan areas, thus, leading to estimates of the unauthorized population by state (Passel and Woodrow 1984) and metropolitan area (Bean, Lowell and Taylor 1988; Passel 1985b). Studies using this approach showed that unauthorized migrants tended to concentrate in areas that had large legal immigrant populations, namely metropolitan areas in California, New York, Texas, Illinois, and Florida and a few other areas such as the Washington, D.C. metropolitan area. Among all states in 1980, California contained the largest share of unauthorized migrants, accommodating nearly one-half (49.8 percent) of all unauthorized migrants, with a large majority (67.5 percent) of those originating in Mexico. Passel (1985a) was able to address one of the principal deficiencies of these estimates (i.e., their restriction to enumerated populations) by drawing on information from the Census of Mexico and other sources; he concluded that there were 2.5–3.5 million unauthorized migrants in the entire United States, a figure substantially less than virtually all of the previous estimates from the 1970s.

After the Alien Registration Program was discontinued in 1981, estimates of the legally-resident immigrant population had to be constructed by projecting forward the 1980 adjusted Alien Registration population (i.e., the legal immigrant population in 1980) to the

year of interest. For each year of projection, numbers of new legal immigrants, refugees, and parolees were added and numbers of emigrants and deaths to the legally-resident foreign-born were subtracted. The Census Bureau used this approach to estimate the unauthorized population enumerated in national surveys during the 1980s until the implementation of the legalization programs of the 1986 Immigration Reform and Control Act (IRCA) began in 1988. Studies using this approach included analyses of April 1983 (Passel and Woodrow 1987) and the June 1986 CPS data (Woodrow, et al. 1987), which were the only CPS data sets before IRCA that collected information about nativity.⁵

Starting in 1987, about 1.8 million long-term unauthorized migrants and an additional 1.3 million short-term migrants (agricultural workers) applied for legalization under the legalization provisions of IRCA. As a result, estimation methodologies had to account for this transition or out-flow from unauthorized to authorized status. In this variation of the residual method, the legal population is constructed in the same way as above, with the numbers of those formerly unauthorized migrants now legalized after long-term residence or after short-term agricultural work (termed Special Agricultural Workers (SAWs)) believed to be living in the United States being added to the estimate of the legally-resident foreign born population. Post-IRCA studies that have used this method include analyses of the June 1988 (Woodrow and Passel 1990) and the November 1989 CPS files (Woodrow 1990, 1991, 1992), and 1990 Census data (Woodrow 1991; General Accounting Office 1993; Clark, et al. 1994; Passel 1994).

Estimates in the 1990s

The 1990s saw the development of some new methods as well as extensions of the residual methods to produce a number of new estimates of the unauthorized population. A truly direct “survey-based” methodology developed by Heer and his associates involved asking questions of respondents designed to elicit information on their legal status (Heer, et al. 1992; Marcelli and Heer 1997; Marcelli, Pastor, and Joassert 1999). Similar methods used in the 1980s had been found to generate aggregate estimates of unauthorized Mexican migrants in Los Angeles that were similar to those obtained using residual methodologies (Heer and Passel 1987). Heer’s new methods were also applied in Los Angeles County and again led to similar values to corresponding residual-based estimates. This congruence between estimates from disparate methods provides a strong indication of the overall validity of the estimates and methods used.

The availability of a totally new data source led to several versions of estimates by Warren (1990, 1994) from the INS. Warren used matched I-94 arrival and departure records to measure nonimmigrant overstays—a totally new and direct approach. In these first estimates, Warren continued to rely on residual methods as a basis for the larger segment of the unauthorized population—clandestine entrants. In another methodological advance, Warren introduced a “components of change” approach to estimate the stock of unauthorized migrants (U.S. Immigration and Naturalization Service 1997, 2000; Warren 1994, 1997). This method

⁵ In addition to an estimate of legal foreign-born residents, the residual method needs a measure of the total foreign-born population. In a census or survey, defining this population requires questions on country of birth and citizenship. (Data on year of immigration, while helpful in assessing and interpreting the resulting estimates, are not essential for the method.) Routine collection of this information in the CPS did not begin until 1994. Before then such data were only collected in selected special supplements to the CPS, including November 1979, April 1983, June 1986, June 1988, November 1989, and November 1991.

involved adding and subtracting annual components of various entrances and exits to the unauthorized migrant population to bring a 1982 estimate for the population forward to some date such as October 1996. Following these procedures, INS estimated that five million unauthorized migrants resided in the United States by October 1996, including 2.7 million from Mexico (U.S. Immigration and Naturalization Service, 1997, 1999, 2000). In this work, to some degree, and in his later work, Warren (1997, 2000, 2003) reverted to reliance on residual estimates alone as the overstay data were no longer available and the components of change were somewhat limited. For 2000, Warren (2003) estimated an unauthorized population of 7.0 million.⁶

In work for the Binational Study (1997), Bean, Van Hook, and Woodrow with colleagues from Mexico (Bean et al. 1998; Van Hook and Bean 1998a, 1998b) brought together data from U.S. and Mexican sources to measure unauthorized migration between the two countries. The principal basis for their estimates was the residual method, but it was enhanced by the introduction of a number of new data elements to address critical assumptions of the method, including analyses of mortality data to provide an empirical basis for estimating coverage of the unauthorized migrant population in government censuses and surveys. This work yielded a figure of 2.3–2.4 million for the number of unauthorized Mexicans in the country in 1996. Bean, Van Hook and colleagues (2001) consolidated and extended the work of the Binational Study, generating an estimate of about 7.1 million unauthorized persons in the country in early 2000.

Work at the Urban Institute in the 1990s and beyond on unauthorized migration and its impacts relied heavily on residual-based estimates of the group. In a study for the Office of Management and Budget (OMB), Clark and her colleagues (Clark et al. 1994) based many results on residual estimates for states that used the 1990 Census (Passel 1994). With the advent of regular immigration questions in the CPS, Passel and Clark developed an on-going program to measure various immigrant groups—including unauthorized migrants, refugees, legal nonimmigrants, and naturalized citizens. They also extended the estimation work to assign individual cases in the March CPS to the various immigrant status groups (Passel and Clark 1998; Clark et al. 2000). For the unauthorized population, their methodology relies heavily on residual-based estimates. National and state-level estimates were built on their earlier work with the 1990 Census by using CPS data from March 1995 for the total foreign-born population with trends in legal immigration by carrying forward estimates for 1990 (Passel 1999, 1998). Annual estimates based on the CPS followed for 1996 through 2001 (Passel 2002).

Census 2000 and More Recent Estimates

Census 2000 introduced a new set of issues into the measurement problem as substantially more immigrants were counted than the previous estimates had found (Passel 2001; Robinson 2001; Deardorff and Blumerman 2001). Residual estimates based on Census 2000 found significantly larger numbers of unauthorized migrants than the previous estimates that relied on CPS data (Passel 2001, 2002a, 2002b; Costanzo et al. 2001; Warren 2003)—

⁶ Although this estimate is well below our estimate, a significant fraction of the difference is attributable to definitional differences in the definition of authorized and unauthorized populations. In particular, Warren includes data on two ambiguous components in his estimated legal population—individuals with temporary protected status and those in the asylum backlog; these two groups, which account for about 600,000 persons, are implicitly within our estimate of unauthorized migrants. Most of the rest of the difference is explained by different assumptions about census coverage and about temporary legal migrants.

7 to 8.5 million after Census 2000 compared with 5 to 6 million for pre-Census estimates. These much larger estimates were supported by subsequent analyses that employed residual estimation techniques with other data sets that were consistent with Census 2000; such data sets include: March 2000 CPS Supplement reweighted to Census 2000 totals; the March 2001 SCHIP CPS supplement; the Census 2000 Supplementary Survey; and the regular March 2002–2003 CPS Supplements (Passel 2003, 2004b; Passel et al. 2004a, 2004b)

METHODOLOGY

Residual Estimates

Variants of the residual method differ in key areas:

- data sources used to derive the estimates;
- population covered;
- geographic and demographic detail of the estimates;
- methods used to estimate components of demographic change;
- assumptions about census coverage;
- definitions and measurement of components of the legal population.

This section sets forth the basics of our variant of the residual method for measuring unauthorized migrants and highlights key data elements and assumptions. The next section describes in detail the data sources for estimating the legal immigrant population and for converting that measure into an estimate of the unauthorized population. The final section presents our key results.

Estimation Methods and Equations

There are several different approaches to the concepts underlying residual estimates of the unauthorized population. (See also, Passel 2002a, Bean et al. 2001.) The essential relationship is that the total number of unauthorized migrants residing in the country is equal to the total number of all immigrants less the total number of legal immigrants residing in the country, or:⁷

$$U_{total} = A_{total} - L_{total} \quad (1)$$

where U_{total} = Unauthorized migrants, total (counted and uncounted);

A_{total} = All immigrants (Legal and Unauthorized), total;

L_{total} = Legal immigrants, total.

In addition to the distinction between legal and unauthorized migrants, this formulation makes two other distinctions. An important, but subtle, one is the differentiation between “immigrants” and the “foreign-born” population, discussed below. The other is between those immigrants

⁷ Note that all computations are done for subgroups of the population based on age group, sex, country of birth, period of entry, and state of residence. Thus, to fully specify the estimates, *five* additional subscripts should appear in all equations (plus, possibly, a sixth for the reference date. In the interests of notational clarity and simplicity, all of these additional subscripts are omitted from the equations.

counted in the census or survey⁸ and those not counted. Estimating one from the other requires information on census coverage. Thus, for the counted population:

$$U_{counted} = A_{counted} - L_{counted} \quad (2)$$

where $U_{counted}$ = Unauthorized migrants, counted;

$A_{counted}$ = All immigrants (Legal and Unauthorized), counted;

$L_{counted}$ = Legal immigrants, counted.

The two key populations in equation (2) are developed from different data sources. The counted legal immigrant population, $L_{counted}$, is developed by first estimating the total legal immigrant population and subtracting an estimate of the undercount; that is,

$$L_{counted} = L_{total} - L_{uncounted} = L_{total} * (1.0 - u_{legal}) \quad (3)$$

where $L_{uncounted}$ = Legal immigrants, not counted in the census;

u_{legal} = Census undercount rate for legal immigrants.

The counted immigrant population, $A_{counted}$, is derived from the census, principally by excluding those foreign-born persons who are not considered to be “immigrants,” or:

$$A_{counted} = FB_{counted} - NI_{counted} \quad (4)$$

where $FB_{counted}$ = Foreign-born population, counted in the census;

$NI_{counted}$ = Legal nonimmigrants, counted in the census.

The counted foreign-born population, $FB_{counted}$, has the conventional meaning used in the census—all people living in the United States who were born outside the United States, its territories, and possessions *and* who were not U.S. citizens at birth. The foreign-born population includes “immigrants” and “nonimmigrants.”

Temporary Legal Migrants. “Legal nonimmigrants” or “temporary legal migrants” are, as noted earlier, persons admitted to the United States for specific purposes and for limited time periods. How to measure this group and how (or whether) to include them in various components of the population estimates are one of the most problematic aspects of measuring the U.S. population overall and the number of unauthorized migrants. *Intended* duration of stay in the United States is one aspect of the defining legal nonimmigrants as part of the U.S. population. International definitions call for treating individuals staying for one year or more as part of a country’s population (Kraly and Warren 1992). Our treatment of legal nonimmigrants attempts to adhere to this standard. For example, the largest two groups of legal nonimmigrants are “visitors for pleasure”—B2 visas or “tourists”—and “visitors for business”—B1 visas. These short-term visitors are not considered “residents” of the United States. They are not included in our estimates of the legal population nor should individual visa holders be counted in censuses or surveys. To the extent that any B-visa holders are counted, they represent

⁸ For most purposes, a census and a survey can be treated as equivalent in the estimation process. For our research, even Census 2000 is really a survey since we are using the Public Use Microdata Sample (PUMS) drawn from the long-form data (still a sample). To simplify the discussion, we will use the term “census” to encompass surveys such as the CPS.

“unauthorized” residents because they have either overstayed or are *not* U.S. residents. Thus, by the logic of our estimates, tourists and business visitors (i.e., B-visa holders) who appear in the census are correctly included in our estimate of unauthorized migrants.

Most other large categories of legal nonimmigrants are considered “residents” of the United States by both U.S. census and international residence rules. Major categories include: “foreign students” or F1 and M1 visas (who can stay as long as they are enrolled in school); “(hi-tech) guest workers” or H1B visas (who can stay for up to two 3-year terms); “intracompany transferees” or L1 visas (again, up to two 3-year terms). Estimating the total number of legal nonimmigrants residing in the country (or the number missed by the census) has proved difficult, principally because of a lack of comprehensive data on resident stocks. However, Passel and Clark (1998), extending methods first developed by Word (1995), classified selected respondents in the March Supplements to the CPS as legal nonimmigrants by matching individual characteristics (principally, year of immigration, occupation, and relationships) with visa requirements.

Application of similar methods to Census 2000 permits us to identify probable legal nonimmigrants, tabulate their numbers, and then exclude them from further consideration in the estimates as the quantity, $NI_{counted}$. The methods rely heavily on duration of residence and reported characteristics. Legal nonimmigrants counted in the census who overstay their authorized period of admission will not be identified as part of the $NI_{counted}$ population by our methods and thus become part of our estimated unauthorized population. This result is the correct one by the logic of the method. Legal nonimmigrants who violate other terms of admission (such as working too many hours) may still be classified as nonimmigrants by our methods. Thus, our methods will tend to treat visa overstayers as unauthorized but other visa abusers as authorized.

Substituting the estimate of counted *legal immigrants* from equation (3), $L_{counted}$, and counted *total immigrants* from equation (4), $A_{counted}$, into equation (2), we estimate the *counted* unauthorized migrants, $U_{counted}$. This estimate is converted into the *total* number of unauthorized migrants, U_{total} , with information on the coverage of unauthorized migrants in the census, as:

$$U_{total} = U_{counted} / (1.0 - u_{unauthorized}) = (A_{counted} - L_{counted}) / (1.0 - u_{unauthorized}) \quad (5)$$

where U_{total} = Unauthorized immigrants, total (counted and not counted);

$u_{unauthorized}$ = Census undercount rate for unauthorized migrants.

It is clear from these equations that the composition of the unauthorized estimate—in terms of population groups included or excluded—depends critically on which populations are included as *legal* immigrants, how many *legal nonimmigrants* are excluded from the census foreign-born population, and the assumptions about *census coverage*. (Figure 1 illustrates the logic of the estimation method with data from our estimates for Census 2000.)

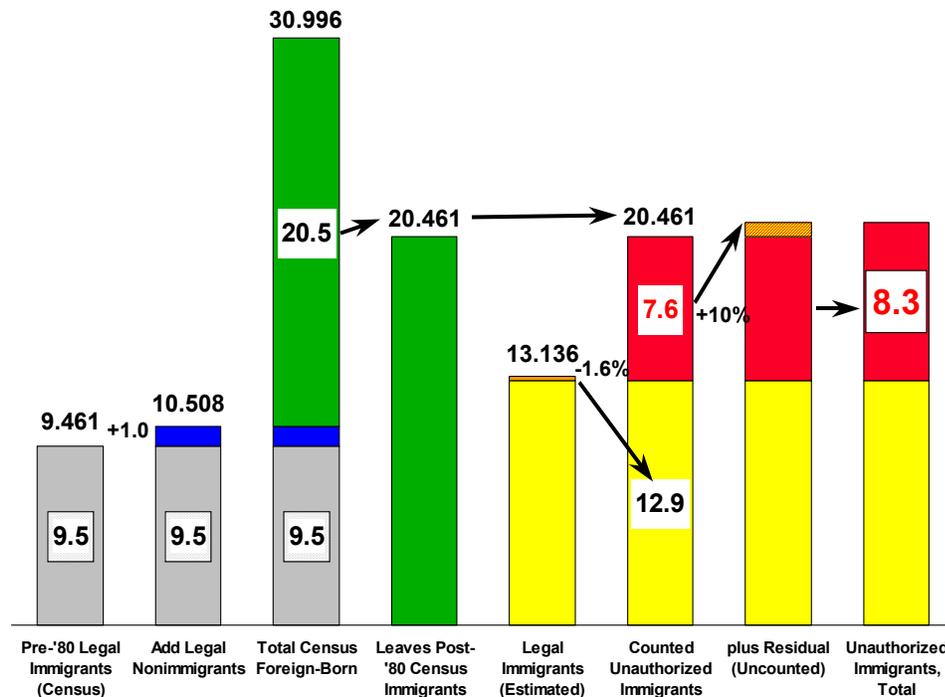
DETAILED DATA AND ASSUMPTIONS: CURRENT ESTIMATES AND ENHANCEMENTS

Overview

Construction of estimates of unauthorized migrants with residual methods requires estimates of counted immigrants (derived from the census), legally-resident immigrants (from

components of immigration), and census coverage. (See Figure 1.) In this section of the report, we describe in detail the data sources used to derive each of these three sets of estimates and the assumptions underlying them. In our application of the method, each population is subdivided into detailed categories and corresponding categories are compared to derive the residual. We start by describing the detailed categories used for each classification variable.

Figure 1. Development of Estimate of Unauthorized Migrants from Census 2000 Data



Note: Populations in millions.

Source: Authors' estimates. See text for explanation of categories.

The estimates presented here build on earlier estimates by Passel (1998, 1999, 2002b) and Passel and Clark (1998)—residual estimates of the unauthorized population based on the 1990 Census, the March 1995–1999 CPS, and ultimately early tabulations from Census 2000. The previously developed residual estimates based in part on Census 2000 have been appropriately characterized as “preliminary” for a number of reasons, but especially because several “short cuts” were required to produce the necessary Census figures on the foreign-born population from the available data.⁹ The estimated legal immigrant population in these earlier estimates represented extensions of estimates for 1990 and 1995 (Passel 1999). Specifically, detailed components of change were applied to the estimated legal immigrant population for March 1995 to carry the estimate forward to April 1, 2000—Census Day.

⁹ This point is discussed in more detail below.

The current estimates incorporate upgrades of the previous estimates in the census data used as a basis for the counted total immigrant population and the counted nonimmigrant population; as such they represent a substantial advance over the previous estimates. The incorporation of detailed INS data on legal admissions is nearly complete, but the results could not be incorporated into these estimates because the start of work on this project was delayed to get full clearance of the research plan. Thus, the current estimates represent an interim set on the way to the final set envisioned in our research agenda.

In future work on this project, we plan to develop revisions of the estimates presented in this report. The revised estimates will include greater detail by area of origin, state of residence, and metropolitan area. We also plan revisions that will enhance the detail and precision of the estimates of various components that make up the legal population estimate, the methods and data used to estimate the census immigrant and nonimmigrant populations, and will incorporate new research results on the mortality, emigration, interstate migration and census coverage of the foreign-born population.¹⁰ Accordingly, for each of the data sets employed in the estimates, parameters used to derive the estimates, and assumptions required by the methodology, we present not only information on the current estimates, but follow with our proposed enhancements and other issues we plan to investigate.

Detailed Categories for Estimates

Our estimates of the legal immigrant population, the total immigrant population, and the total nonimmigrant population are subdivided by sex and sixteen 5-year age groups from 0-4 through 70-74 years with a terminal age group of 75 years and over. All populations are further subdivided by periods of entry: before 1980, 1980-1984, 1985-1989, 1990-1994, and 1995-2000. In producing the estimates of legal residents entering the United States before 1980, we use census figures, assuming in essence that there are no unauthorized migrants who have lived in the country for more than 20 years. This assumption is roughly supported by the data and by previous estimates (e.g., Passel 1999). Further, virtually any immigrant who has been in the United States since before 1980 has been eligible to acquire a green card for many years.

Countries of Birth

Current Estimates. The current estimates are produced for 35 non-overlapping countries and groups of countries.¹¹ (See Table 1.) Although the major sources of unauthorized migrants are clearly delineated with this grouping, it was developed originally for use with CPS data and for a range of statuses, including refugee/asylee. Accordingly, it is not ideal for application to estimates of unauthorized migrants. For example, some large countries of origin for unauthorized migrants (e.g., Guatemala, Honduras) are not shown separately. Moreover, some of the countries for which separate estimates are shown, particularly those sending large

¹⁰ We do not have a full time schedule for incorporating all of the various revisions in part because we do not know how long each will take to complete (and, perhaps more importantly, which sub-projects will yield useful and valid results). Accordingly, in this report, we do not differentiate which of the enhancements will be completed as part of this project and which may be a part of future research.

¹¹ Note that the category labeled “Middle East” includes only countries of Asia from Turkey in the north and west to Yemen/Saudi Arabia in the south and Iran in the east; Afghanistan and Pakistan are not considered part of the “Middle East” in this grouping.

numbers of refugees (e.g., Romania, Vietnam, Laos) account for virtually no unauthorized migrants.

Proposed Enhancements. Because we will be using microdata from Census 2000 with very large numbers of cases in our revision,¹² we are planning to expand the list of countries for which we will produce to approximately 77 countries/regions. After examining the census and INS data, we may ultimately find that some of these countries of origin may be too small or the estimates too problematic to produce a residual estimate; if so, we will collapse some of the categories further. Regardless of the collapsing, we will have many more countries in the enhanced estimates and a list specifically tailored for the unauthorized population.

Table 2 shows our proposed groups with population totals from the Census 2000 1-Percent Public Use Microdata Sample (PUMS) and data on INS green card admissions. We selected these groups so that the number of foreign-born in the census who entered during 1980-2000 (the period for which we are estimating unauthorized migrants) was at least 45,000. We made a few exceptions because of more recent immigration flows or other reasons. The countries/regions falling at the lower end of the selection criteria are:

- Benelux (Belgium, Netherlands, Luxembourg, plus some other smaller countries)—43,000. These countries are a logical geographic group and did not fit well with the other remaining European country groups;
- Czechoslovakia (former)—37,000. Retained as a separate group for similar reasons as Benelux; also, it was a separate source of refugees in the 1980s;
- Afghanistan—45,000. Retained as a separate country because it is a key foreign policy area and a separate source of refugees in the 1980s and 1990s;
- Other Central America (Belize and general “Central America” code)—24,000. This residual group is needed to provide the region total. Every other single country in the region is justifiably separate; further, we did not want to collapse these areas with Costa Rica;
- Other South America—35,000. Again, this residual group is needed for area total; here, we did not want to “lose” separate codes for Bolivia and Chile;
- Liberia—33,000. Retained as a separate country because it is a key current foreign policy area and potential new source of refugees post-2000.

In developing the enhanced country groups, some of our considerations were:

- The European groups suppress a number of countries that historically have sent large numbers of immigrants (e.g., Netherlands, Greece, Spain, and Hungary). But, these countries have sent relatively few immigrants in the 1980s, 1990s, and 2000s and virtually no unauthorized migrants. Thus, we do not see any reason to carry these as separate countries for the analyses planned.
- All of the republics of the Former Yugoslavia are grouped together as are: (1) all of the republics of the Former Soviet Union and (2) the Czech and Slovak Republics. These choices are almost mandatory because we are comparing the country-specific

¹² Even the 1-Percent PUMS has a very large number of foreign-born cases, but obviously the 5-percent PUMS and full sample include even more.

estimates from the census with historical INS data. Until recently, the constituent republics have not been separately identified in historical INS data so that we cannot construct separate estimates for legal immigrants from Croatia and Slovenia, for example. Further, we are not confident that the Census reporting is completely consistent with the new names of the detailed areas. We expect some (perhaps many) respondents to report the name of the country *at the time they were born* rather than the current name of the area. Thus, even though Bosnia-Herzegovina, Russia, Ukraine, and Armenia might qualify as separate areas, we prefer leaving them grouped together under historical names. Also, for reasons of compatibility with the historical INS and Census data, we grouped the Central Asian republics of the Former Soviet Union with European countries.

- Our enhanced definition of “Middle East” still includes only countries on the Asia continent, but we have opted to include Afghanistan as part of the Middle East. This new grouping is chosen for “political”/policy reasons. We have left Pakistan in the “South and East Asia” group.
- Saudi Arabia is not shown separately because the numbers of immigrants from there are not very large. However, we have grouped the Gulf Emirates and Yemen with Saudi Arabia as the “Gulf States.” The “Other Middle East” is Jordan, Syria, and Cyprus.
- “China, Hong Kong, Taiwan” is a single group in the current estimates but is divided into 3 groups—China (PRC), Taiwan, and Hong Kong—in the enhanced grouping. We have kept Macau and Mongolia grouped with PRC because very few immigrants come from either area; in addition, INS doesn’t have a separate code for Mongolia until about 1987; before that, it was part of China. We are not confident that reporting of country of birth in Census 2000 is completely consistent with identifying these three areas as separate countries for reasons similar to those discussed above for the former Soviet Union.¹³ Based on our analyses of the enhanced data, we may collapse some or all of these.
- “Canada” actually includes the very small numbers who report themselves as born in “Greenland, Antarctica, St. Pierre and Miquelon, and ‘North America’.” There are very few persons reporting these areas of birth and no other logical place to put them.
- The “Other Caribbean” group is fairly large, but only Barbados and Grenada have as many as 20,000 post-1980 immigrants.
- We added much more detail for Africa. With this detail, we will be able to reaggregate to more useful areas (e.g., a larger “Middle East” that includes North Africa) and to better track refugee trends.
- Ethiopia and Eritrea are grouped together for historical reasons.
- There is no separate code for Cape Verde. The numbers are too small.
- “Southern Africa” is mostly South Africa, but we thought it was the logical place to group some of the smaller countries in southern Africa, such as Swaziland, Lesotho,

¹³ There are other reasons for collapsing these areas into a single grouping for “China.” Until the 1980s, the area designated as “China” in INS statistics is what is now called “Taiwan.” No attempt was made to identify legal immigrants from the PRC. On the other hand, Hong Kong is now part of the PRC.

and Namibia that are contiguous with South Africa and that used to be part of the country.

- We grouped Australia and New Zealand together. Previously, we had grouped New Zealand with “Other Oceania.” This new grouping seems to make more sense. Although Oceania is not a significant source of legal or unauthorized migrants, the grouping into these two country groups roughly splits the migrants from the region by race; those from Australia-New Zealand are mostly white and the others are mostly Pacific Islanders.

States and Metropolitan Areas

Current Estimates. The current estimate methodology yields “direct”¹⁴ estimates for the 6 states that historically have had the largest unauthorized populations—California, Texas, Florida, New York, Illinois, New Jersey—and the balance of the country. For these six states and the balance of the nation, the number of legal immigrants going to a state in each year is estimated from the administrative data. As the estimates are carried forward to 2000, a component of internal migration between the areas is incorporated into the estimate. Although country-specific survival rates, emigration rates, and census coverage are built into the estimates, no geographic differences are assumed.

We have also developed “synthetic” estimates for the remaining states and for selected metropolitan areas. These estimates assume that the ratio of the residual estimate of unauthorized migrants to the census population is the same in each state as in the “balance of the country” for combinations of the 35 country groups defined above.¹⁵

Proposed Enhancements. We plan to expand the number of states for which we will make “direct” or component-based estimates by 11 states for a total of 17 states—adding Arizona, Georgia, North Carolina, Colorado, Washington, Virginia, Massachusetts, Nevada, Maryland, Michigan, and Oregon. In addition, we plan to produce estimates for the rest of the country subdivided into the balances of the 4 Census Regions. Some expansion beyond the current 6 states is essential. Our synthetic estimates (as well as anecdotal evidence) indicate that the unauthorized population has expanded rapidly in some of the states that have historically had smaller numbers of unauthorized migrants. For example, Arizona has probably passed New Jersey to have at least the sixth largest unauthorized population. Further, Georgia may have already or may soon pass New Jersey, too. This list of 17 states and 4 regions is maximal in the sense that we probably cannot expand to making direct estimates for more areas with the proposed level of detail. In fact, the numbers of immigrants (legal *and* unauthorized), as well as underlying components for some areas, may be too small to produce a reliable and creditable residual estimate; so, we may ultimately produce estimates for a somewhat smaller number of areas.

¹⁴ The estimates are deemed “direct” in that a component-based population estimate is developed using geographic-specific data for the area. This designation is in contrast to “synthetic” estimates which take estimates for a larger area that is apportioned among constituent areas on the basis of other estimates, rates, and data for the smaller areas.

¹⁵ We have not included these estimates in this report, but they are available on request from the Urban Institute.

The 17 states on our new list include approximately 87–89% of the estimated unauthorized population. Thirteen of the 17 states include the largest numbers of Mexican immigrants who entered in the 1990s (according to Census 2000). Twelve states have 70,000 or more Mexicans who entered in the 1990s. These 17 states include most of the states with the fastest growing foreign-born populations, especially in terms of numbers, but also in terms of rates (Passel et al. 2003).

We are planning to produce what we are calling “semi–direct” estimates for larger metropolitan areas, such as Los Angeles, New York, Chicago, Houston, Dallas, Phoenix, Miami, and Washington, D.C. In these estimates, the INS admissions data on intended residence will be used to allocate the estimated legal population derived for states and regions. The state estimates are “direct” because geographic-specific component estimation equations are used which incorporate initial settlement, mortality, emigration, and internal migration. The metropolitan area approach does not carry out all of the detailed components for estimating the legal immigrant population, but does use initial residence data to allocate the estimate. We also plan to produce “synthetic estimates” for many smaller metropolitan areas.¹⁶

Census 2000 Data for Immigrants and Nonimmigrants

Current Estimates. The current estimates are based on tabulations from the 1-Percent PUMS. For the previous estimates based on Census 2000 (2002), the requisite data on the foreign-born population—i.e., tabulations by country of birth, year of arrival, age, sex, and state of residence—were not available for comparison with estimates of legal foreign-born residents.¹⁷ Instead, the available foreign-born data for states were from Summary File 3 (SF-3) tabulations, which had only *some* of the needed information:

- detailed country of birth (but not period);
- 10-year periods of arrival by region of birth (but not countries);
- 5-year periods of arrival for the whole foreign-born population (but no countries); but
- *no* data by age and sex (even for the entire foreign-born population).

The required full matrix of information was estimated with iterative proportional fitting—an initial approximation to the existing marginal totals available from the SF-3 data (i.e., to totals for countries, 10-year periods by region of birth, and 5-year periods for the total) was first adjusted to each marginal total in turn; then the adjustment process was iterated until the distributions converged to the known marginal totals. A combination of data from the Census 2000 Supplementary Survey (C2SS) and the CPS provided the internal cells of the initial approximation to the required age-sex-period-country matrix for each state.

The current estimates offer significant improvements over the previous estimates. Specifically, the incorporation of PUMS data provides more accurate, less “noisy” initial distributions and direct estimation of legal nonimmigrants. The residuals by age-sex-period and country make much more sense in the current estimates. In addition, estimates for some of the smaller countries do not show large fluctuations by period of arrival. However, the overall validity of the previous estimates is generally supported by the current revisions in that there is

¹⁶ Current estimates have been produced for metropolitan areas in California, but not other states.

¹⁷ Information necessary to identify legal nonimmigrants for Equation (4) was not readily available either.

very little difference between the previous estimates and the current estimates for the larger sources of unauthorized migration, the overall distribution by state of residence, region of origin, or period of arrival.

Proposed Enhancements. We will incorporate the 5-Percent PUMS in our on-going work and plan to investigate the potential benefit of using the full census sample. In some early estimates (e.g., Warren and Passel 1987; Woodrow and Passel 1990), there was evidence of misreporting of nativity for recent births, especially among Latinos; specifically, it appeared that some foreign-born children were reported as born in the United States in census and survey data. To remedy this misreporting, Warren and Passel (1987) and Woodrow and Passel (1990) adjusted the figures for foreign-born children upward before computing the residual estimates. By making comparisons with birth records, we plan to investigate the extent to which foreign-born children *may* be misreported as native-born in Census 2000.

Legal Nonimmigrants

Current Estimates. The current estimates identify individuals as legal nonimmigrants using the methods described in Passel et al. (2002), methods that have been used successfully with CPS data for the same purpose. Because the census provides an extremely large sample *and* information on single years of arrival, the application of these methods to census data permits development of better and more detailed estimates by date and age of arrival. The data collected in the census differ from CPS data in ways that affect the quality of the legal nonimmigrant estimates, both pro and con. For example, the PUMS data provide information on school enrollment for all ages whereas the CPS requires inferring school enrollment for ages 25 and over. On the other hand, the CPS provides better information on public assistance use than the Census, which can address only Temporary Assistance for Needy Families (TANF) and General Assistance (GA) combined and Supplemental Security Income (SSI) whereas the CPS has separate data on the three programs plus information not available from Census 2000 on food stamps and Medicaid.¹⁸

Table 3 shows the categories for which estimates of legal nonimmigrants were made. About 1.05 million legal nonimmigrants are estimated to appear in Census 2000. The single largest category is foreign students with about 363,000 students and 39,000 dependents. The other two large categories are intracompany transferees (164,000 principals and 140,000 dependents) and H1B (or hi-tech) guest workers (122,000 principals and 68,000 dependents). The division of these highly-skilled workers into transferees and hi-tech is rather arbitrary within our estimation methods—management-type occupations are classified as transferees and technical occupations as H1B. In practice, individuals in a wide range of occupations appear to get both kinds of visas. In individual cases, the choice of which visa to seek seems to be driven by expediency—migrants and their future employers (assisted by immigration attorneys) apply for the visa that is more readily available.¹⁹

¹⁸ The new occupation and industry coding schemes appears to be a neutral change (i.e., neither greatly improving nor harming the quality of the resulting estimates), but the switch did require extensive programming changes. Our new estimates took advantage of work at the Urban Institute with the 2003 CPS, which required also conversion of the 1990-based occupation and industry codes of the CPS to Census 2000-based codes.

¹⁹ Personal communications with several immigration attorneys.

In previous estimates, there were no data from Census 2000 with which to make these status assignments. To account for legal nonimmigrants, Passel (2002a) computed the percentage of the foreign-born population in the March 2000 CPS (weighted to Census 2000) who were assigned as nonimmigrants (by age, sex, period of entry, country of birth, and state). These percentages were increased by 10 percent on the theory that legal nonimmigrants would be better represented in Census 2000 than in the CPS. For the previous version of Census 2000-based estimates, the legal nonimmigrant numbers for Equation (4) were derived by multiplying these adjusted percentages times the population matrices derived with the methods described in the previous section. At the national level, the current, revised estimates of legal nonimmigrants in Census 2000 differ by only about 8,000 from the earlier, preliminary figures (!).

Proposed Enhancements. In our revised estimates, we will use the 5-Percent PUMS for the legal nonimmigrants. We also plan to examine the assignment rules to see if they can be improved to take advantage of material specifically available in the Census and not the CPS. In addition, we will incorporate advances from other projects (e.g., Cassidy) into our estimates, if possible.

Components of Legal Immigrant Estimate:

The current estimates rely on estimates of legal residents for 1995 developed with methods described in Passel (1999). The specific methods described below for the current estimates were implemented in this application for legal immigrants arriving in 1995–2000 and in previous applications for 1980–1990 and 1990–1995 (Passel 1999). Sources and methods for the broader period from 1980–2000 are generally described below. For the enhanced estimates planned for ongoing work on this project, we plan to implement methods that estimate the legally-resident immigrant population in 2000 by starting with data for 1980 and carry the estimates forward to 2000.

Refugee and Parolee Admissions (1980–2000)

Current Estimates. The current estimates derive the number of refugee and parolee admissions in each year from the *Annual Reports* of the Office of Refugee Resettlement (in the Department of Health and Human Services). The ORR data provide information on country of birth and state of settlement for 1983 through 2000.²⁰ For 1980–1982, the refugee/parolee estimates are derived from INS data on adjustments over the 1980–1985 period. Refugees and parolees are assumed to be “new arrivals” in the ORR data, that is, they are assumed to have arrived in the year when they appear in the data. The assignment of refugee data to age-sex groups is described below under “LPR Admissions.”

Proposed Enhancements. For our proposed enhancements, the total number of refugees and parolees arriving in a given year will not be changed from the current estimates. However, we plan to base the age, sex, and state distributions on tabulations from INS microdata for the 1980–2002 period. The microdata designate individuals as refugees or parolees and give their year of arrival. For years before 1997, almost all of the refugees have adjusted to lawful permanent resident (LPR) status by 2002 so that the tabulations of microdata cover essentially all

²⁰ The ORR data begin only in 1983 because the agency did not exist before. Our application uses only summary information from published ORR tables because we do not have access to microdata that would permit us to tabulate the detailed information we require.

admission. For the later years near 2000, some adjustment to new totals will be required as final data will be available to replace earlier provisional data.

Asylee Approvals (1980–2000)

Current Estimates. Totals of asylee approvals by country of birth and by state are obtained from the *Statistical Yearbooks* of the INS.²¹ Distribution of these totals to the full array of cells by age, sex, period, country of origin, and state is described below under “LPR Admissions.”

Proposed Enhancements. See “Proposed Enhancements” for refugees.

IRCA Legalizations (SAWs and General Amnesty)

Current Estimates. Current estimates use tabulations from microdata on applicants supplied by INS. Only approved applications are added to the legal immigrant population—at the point where the applications for legal temporary status are approved.

Proposed Enhancements. It will be necessary to retabulate the legalization data for the new groupings of countries and states. No other changes are anticipated.

LPR Admissions (1980–2000)

Current Estimates. The total number of green cards distributed by INS in a given year is the basis for determining the number of LPRs added to the population in a year. From the published figures (or the microdata), it is necessary to remove those admissions that are refugees, asylees, or parolees adjusting from their admission status to LPR to avoid double counting such immigrants. Similarly, LPR admissions of individuals who legalized under IRCA must also be subtracted.²² This group was very large in 1989–1992—even larger than other green card admissions in some years. However, by 2000, the numbers are very small.

In constructing our estimates, we used published tabulations rather than microdata. The published tables offer only some of the information needed for the full array age-sex-country of birth-year of arrival detail required for the estimates. Consequently, a number of rather arcane, detailed steps and adjustments are required. The methods, contained in a series of linked spreadsheets, are only described in a general sense here. The first step is to derive the number of additions to the legal immigrant population in a given year by country of birth. These numbers are the total of LPR admissions (derived as green cards distributed less adjustments of former refugees, parolees, asylees, and legalized aliens) plus new refugees, asylees, and parolees plus any legalization approvals, by country of birth. These totals are grouped into the 35 regions of birth noted above.

The next step is to derive the age-sex distribution of the new legal immigrants for each country group. The distribution for each of the country groups is again drawn from a table

²¹ Since asylees are, by definition, residents of the United States, the distribution of asylees by state is perhaps less problematic than for some of the categories of new arrivals since, in the case of asylees, “state of intended residence” (the INS variable) is, in virtually all cases, the actual state of residence.

²² All of the named groups—refugees, asylees, parolees, and IRCA adjustees—have been added to the legal immigrant population upon arrival or attainment of their temporary status. So, they should not be added again when receiving a green card.

published by INS on the age and sex of LPR approvals.²³ These initial distributions are adjusted with iterative proportional fitting so that the individual county totals and overall age-sex distributions agree with the marginal totals. Then, distribution of LPRs across states is derived for each country group using similar methods from published INS intended state of residence. Iterative proportional fitting is again used to ensure that the data for both the state and country totals are preserved. Finally, the fully-detailed age-sex-period-country-state matrix of new legal immigrants is derived by fitting an initial matrix of immigrant populations to the required marginals derived in previous steps; one marginal is states by country of birth, another is country of birth by age and sex, and the third is country of birth by period of arrival.

All of the computations described above are done with data for each fiscal year (which runs from October 1 through the next September 30). One further step is required to produce the data needed for the estimation process. The data for consecutive INS fiscal years are averaged to get the input data required for our estimate years which run from April 1-March 31. Table 4 shows the legal arrivals for 1990–1995 and 1995–2000 by period of entry as estimated with these methods.

Proposed Enhancements. The current method for deriving the fully-detailed matrix of new legal immigrants from pre-tabulated data in INS’ published tables of LPR admissions is very complicated, requires numerous simplifying assumptions and, simply put, is not very satisfactory. For our revised estimates, we plan to use tabulations of INS public-use microdata on admissions for 1980–2000. These data provide individual information on class of admission, date of arrival, age, sex, state of residence, and country of birth—all of the variables needed for our estimates. Thus, we can generate the matrices we need simply by tabulating the microdata. Further, since the data also include data of admission, we do not have to average consecutive fiscal years to arrive at the requisite annual data; we can simply tabulate for the periods needed.

The only remaining issue is how to deal with unknown values on the key variables. The number of unknowns tends to be very small before 1997, but reaches troublesome levels by 1998–1999.²⁴ For earlier years, proportional allocation of unknowns across known values will work well. The variable with high levels of missing values that causes us the most concern is date of arrival. We are still developing methods for allocating the very large numbers of cases with unknown values on this variable for 1997–2000, but will probably have to use country-specific data on arrival patterns for earlier years in the allocation process.

Pre-1980 Legal Admissions

Current Estimates. The current estimates assume that all persons arriving before 1980 have acquired authorized status by 2000. Thus, when deriving figures for the total legal immigrant population across all periods of arrival, we use the Census 2000 data on pre-1980 arrivals (to measure $L_{counted}$ in Equation (3)). Since the estimates of post-1980 legal arrivals are from administrative data, they are, in theory, the actual total, i.e., L_{total} , and not a survey or census-based figure. Thus, to be truly comparable with the estimates generated for post-1980

²³ Not all countries are presented in the published table so “proxy” countries provide a distribution for the ones not listed. A proxy country is one from a related region that can be expected to have a similar age-sex distribution or a broader region containing the target country.

²⁴ We have not investigated why the INS data systems began to break down, but suspect there were internal INS issues related to field-level workloads, contractors, and other processing issues involved.

legal immigrants, the census data for these early cohorts needs to be corrected for census undercount. When these cohorts are used, we apply age-sex-race specific undercount rates from the Census Bureau's A.C.E. program (as noted above) to derive the total number of pre-1980 immigrants (legal and unauthorized) or L_{total} for the pre-1980 arrivals. While this correction has a small impact on the total size of the legally-resident foreign-born population, it has no impact on the estimates of unauthorized migrants.

For applications of our methods to estimating the unauthorized population for years before 2000 (from either Census or CPS data), the pre-1980 entry cohorts may enter into the estimation process. For these applications (e.g., Passel and Clark 1998, Passel 2002a), we have used estimates of legal residents in 1980 originally developed by Warren and Passel (1987). This group is then survived forward to the estimate date using demographic components of change. In this type of estimation process, some new immigrants are added to this cohort from INS admissions after 1980 based on dates of arrival before 1980.²⁵

Proposed Enhancements. None planned.

Census Coverage

Current Estimates. In the current estimates, we base the adjustments for census undercount on rates measured by the original A.C.E. (Hogan et al. 2001) for race groups by sex and broad age groups. For our application, we start by assigning each country a set of race-specific rates—e.g., Hispanic for Mexico, black for Africa, white for the Former Soviet Union, Asian for China.²⁶ We further assume that the national A.C.E. rates can be applied to each state. Research conducted in 2001-2002 by the Census Bureau has demonstrated that these initial rates actually overestimate the rate of undercount, by anywhere from 1-5 percentage points, (Fenstermaker and Haines 2002). However, we continue to use these unadjusted rates because there are a number of reasons to think that immigrants and migrants suffer undercounts at higher rates than natives. Some factors that might lead to higher undercounts for the foreign-born include not speaking English well, low incomes, difficult or unusual living arrangements in large households, fear of government, and assorted other factors.²⁷

We make further adjustments to these rates based on the prior research of Van Hook and Bean (1998a). They found higher rates of undercount among recent immigrants and much higher rates among unauthorized migrants. We operationalize these findings in several steps. First, among legal immigrants, we assume a relationship between period of arrival and undercount. In line with the work of Van Hook and Bean, immigrants arriving in the five years before the census are assumed to have undercount rates 1.5 times the age-specific rates measured

²⁵ The methods described in this paragraph have no impact on the estimates of the unauthorized population in 2000 as presented here nor on our proposed enhanced estimates.

²⁶ Other methods, such as proportional assignments of race-specific rates by country of birth based on census data, are possible. At the time the current estimates were developed, there was little available for computing alternative adjustments. Further, it is our opinion that a simple set of assumptions would yield estimates that differed little, if any, from those based on more complicated schemes and that more involved assumptions are no more defensible than our simple ones.

²⁷ There are a few other indications of possibly lower undercount rates for the foreign-born or for some segments of the foreign-born. For example, Passel (2004) reports higher rates of political participation among some race/ethnic groups for naturalized citizens than for natives. We hope to address the question of census coverage differentials empirically in subsequent research.

in the A.C.E. This factor is reduced to 1.0 for immigrants arriving in 1990–94 and to 0.5 for those arriving in the 1980s; this choice of a factor less than 1.0 reflects the Census Bureau research showing ultimate net undercount rates lower than measured by the initial A.C.E. The resulting undercount rates serve to reduce the estimates of legal immigrants to estimates of “legal immigrants counted” or “census-level” estimates—i.e., convert L_{total} into $L_{counted}$ in Equation (3). With these assumptions, the estimated overall net undercount of legal immigrants, with these assumptions amounts to about 1.6 percent for post-1980 legal immigrants.

For adjusting the estimates of unauthorized migrants counted in Census 2000 for those missed, we again draw on the work of Van Hook and Bean (1998a), as well as assumptions made by Warren (2003) and Bean et al. (1997). This work (and these assumptions) show that unauthorized migrants have higher undercount rates than legal immigrants. To operationalize this assumption, we first assume that overall the age-sex-country specific undercount rates for unauthorized migrants, $u_{unauthorized}$ in Equation (5), are twice those of legal immigrants arriving in the same period. We then allow the factor to vary by period of arrival with more recently-arrived unauthorized migrants having higher rates of census undercount than those who have been in the country longer. Thus, we assume that unauthorized migrants arriving in 1995–2000 have rates 3.0 times those of natives of the same race for arrivals; 1990–1994 arrivals experience rates 2.0 times those of natives; and long-term unauthorized, i.e., those arriving during 1980–1989 arrivals, have the same undercount rates as natives. These assumptions translate into an assumed undercount rate of 9.1 percent for unauthorized migrants and add about three-quarters of a million unauthorized migrants to the estimated 7.6 million who were included in the Census. (See Figure 1.²⁸)

Proposed Enhancements. We currently base our 2000 coverage estimates of the foreign-born population on measures from the A.C.E. and assumptions based on prior research relating to the 1990 Census (Van Hook and Bean 1998a). However, we have no empirically-based assessment of coverage of the foreign-born for 2000 (although we believe that coverage patterns of natives and immigrants were probably similar in 2000 and 1990). We plan to use the death registration method to estimate and assess coverage of the foreign-born population by country-of-origin, age, and sex for the 2000 Census. We used this method in prior work to estimate coverage in the 1990 Census (Passel 1999; Bean et al. 1998).

Other Parameters

Mortality to 2000

Current Estimates. We currently use life tables from 1995 and 2000 by race and sex to estimate mortality rates for legal immigrants. The impact of this choice on the resulting estimates is generally not very large since most legal immigrants who have arrived since 1980 are young. Overall for the 1995–2000 period, we estimate that fewer than 300,000 deaths occurred to legal immigrants who arrived since 1980. (See Table 4.) In essence, we are assuming no differences in mortality across states, no differences between legal immigrants and natives, and that race-sex is the principal source of variation.

²⁸ The undercount rate of 9.1 percent uses the total unauthorized population as its denominator (8.3 million). In Figure 1, the counted unauthorized population of 7.6 million is shown to be increased by 10 percent to allow for undercount. These two percentages have the same numerator (uncounted unauthorized migrants) but different denominators (total unauthorized migrants versus counted unauthorized).

Proposed Enhancements. For the revisions, we anticipate using a broader range of contemporaneous life tables covering the 1980–2000 period. We also plan to draw on a number of studies that have examined socioeconomic variations in mortality (e.g., Rogers et al. 2000, Palloni and Arias 2004, and Duleep 1995).

Emigration to 2000

Current Estimates. To estimate emigration of legal immigrants through 2000, the current estimates use single-year emigration rates by “race” (i.e., country), age, and sex. These rates have been derived by Passel (1999) so that they are consistent with the estimates of Ahmed and Robinson (1994) for 1970–1990 immigrants between 1980 and 1990 developed with residual techniques. The derived rates are “consistent” with the published numbers in that a population experiencing the derived rates for single ages in single years will reproduce the 10-year rates for 5-year age groups presented by Ahmed and Robinson. For legal immigrants arriving since 1980, the assumed emigration rates imply over 700,000 emigrants during the 1995–2000 period. (See Table 4.)

Proposed Enhancements. This component is one where there is little direct information available, yet the range of plausible values could add or subtract several hundred thousand to the estimated unauthorized population for every 5-year period in the estimates. We plan to investigate a range of alternative measures of emigration. Mulder et al. (2002) and Mulder (2003) use residual methods to produce new emigration estimates for the 1990s. We will compare Mulder’s emigration estimates with those we have used and those we will develop based on the CPS and the SIPP (Survey of Income and Program Participation), as described below. We also plan to monitor the ongoing work of Woodrow-Lafield and Kraly (2004) for any breakthroughs. Regardless of which emigration rates we ultimately select, the rates will be annualized for application to the model.

The CPS collects data on migration in the prior year (the “residence one year ago” question) among current U.S. residents in the March CPS Supplement. The CPS design involves returning to half of each year’s housing units in the next year’s survey. For the March Supplement, the overlapping design may permit inferring or estimating levels of emigration by comparing individuals appearing (or not appearing) in consecutive years. We can determine the total number of U.S. residents who moved from their residence between year 1 and year 2 by matching CPS files from adjacent years. The number of immigrants no longer living in their original residence is approximately the number of foreign-born internal migrants plus the number of foreign-born emigrants plus the number of foreign-born deaths. Two of these quantities can be estimated from other sources. The number of foreign-born internal migrants is available from the CPS question on residence one year ago (in the non-overlapping portion of the March Supplement); the number of foreign-born deaths can be approximated with from vital statistics or with life tables. By subtracting the estimated deaths and internal migrants from the number of out-movers, we can approximate the number of emigrants and the rate of emigration by country of origin, by period-of-entry, by age, and by sex.²⁹

²⁹ The CPS sample size will limit the utility of this method because the coefficient of variation of the estimated number of emigrants is likely to be quite large. It may, however, be possible to measure differences along single dimensions even if cross-tabulations are not statistically viable. Passel and Zimmermann (2001) have used multiple March CPS Supplements to assess differences in migration patterns of the foreign-born.

We plan to investigate using the SIPP to generate a supplementary set of emigration rates for the foreign-born. The SIPP follows individuals for 3 to 4 years including those who change residence within the United States (e.g., Schachter and Kuenzi 2002). In addition, some individuals leave the sample due to emigration, death, institutionalization, or other reasons. Foreign-born persons appear to have higher attrition rates than the native-born, particularly due to the inability to locate the person or entire household. After making allowances for attrition due to death, institutionalization, refusals, and inability to locate a household that moved within the United States, the remaining attrition may be taken as an indicator of emigration.

Interstate Migration to 2000

Current Estimates. Interstate movement of legal immigrants is the final demographic component of population change. The current estimates approximate the rate of interstate mobility of legal immigrants with information on residence one year ago from the annual March CPS Supplements. In-migrants to each of the 6 states and the balance of the nation are estimated for each year from 1995 to 2000 from the CPS' in-migration "rate" for the foreign-born population; similarly, out-migration rates for the foreign-born population in each of the areas provide estimates of the number of out-migrants from each (Table 5). The total number of in-migrants are adjusted to agree with the total the number of out-migrants. In this application uses a uniform set of rates applied to all foreign-born groups regardless of age, sex, country of birth, or period of entry. While this assumption is almost certainly not valid, the CPS samples are not large enough to support more detailed estimates.

Proposed Enhancements. We plan to develop more detailed interstate migration rates for five-year periods from 1975 to 2000, possibly specific for various combinations of age, sex, period of entry, and country of birth. In producing these estimates, we will experiment with alternative methods of interpolation, averaging, and smoothing. The rates will be derived from principally from decennial census public-use samples, which should permit development of fairly detailed estimates. The sources of migration data are:

- a. 2000 PUMS — 1995–2000 migration;
- b. 1990 PUMS — 1985–1990 migration;
- c. 1980 PUMS — 1975–1980 migration; and
- d. 1995 CPS (March) — 1990–1995 migration.

The sample for the March 1995 CPS is much smaller than the censuses and will not permit development of detailed estimates. We expect to use the CPS data as relatively high-level control totals to adjust interpolated rates between the 1985–1990 and 1995–2000 rates. Interpolation between 1975–1980 and 1985–1990 will provide estimates for 1980–1985.

Starting Population for Preliminary Estimates

Current Estimates. As noted above, the current estimates actually start from 1995 with the estimates published by Passel and Clark (1998) and Passel (1999).

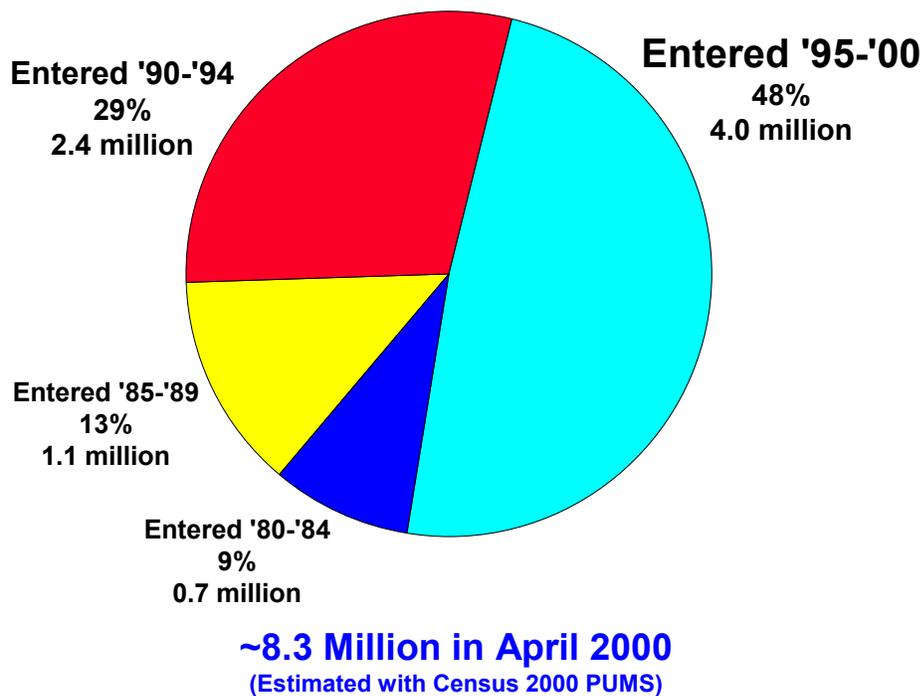
Proposed Enhancements. We plan to develop our revised estimates by starting the estimation process in 1980 and building up the legal immigrant population with enhanced data items for all of the components noted.

RESULTS

Total Numbers and Period of Arrival

Application of the procedures described above generates an estimate of the unauthorized foreign-born population in the United States in April 2000 of slightly more than 8.3 million persons (Table 6 and Table 1). This figure represents slightly less than 3 percent of the total U.S. population, or about 1 in every 34 persons. When subdivided by period of entry and country of origin, two major features of the U.S. unauthorized population stand out. The first is that an overwhelming majority of unauthorized migrants came to the United States in the 1990s. Almost 4 of 5 unauthorized persons in the country in 2000 had entered in the previous ten years, with only about one in five coming in the decade before. (See also Figure 2.)

**Figure 2. Unauthorized Migrants by Period of Arrival:
Based on Census 2000**



Source: Authors' estimates. See text for explanation of methods.

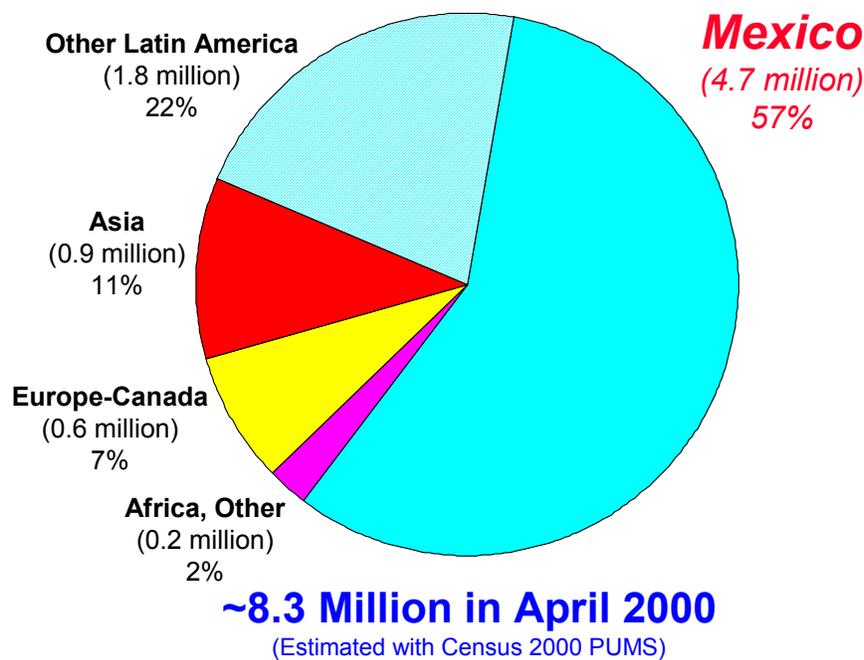
Countries and Regions of Origin

The second notable feature of the unauthorized population is that the very large fraction of unauthorized migrants who come from Mexico may be increasing. Over 57 percent of the 8.3 million unauthorized migrants in the United States in 2000 are from Mexico, a figure slightly higher than the percentage found in estimates of the relative number coming from Mexico just a few years previously, which had hovered around 55 percent (Bean, et al, 2001). Just how much the preponderance of Mexicans in the unauthorized population had increased compared to earlier years is indicated by the fact that almost 84 percent of unauthorized Mexican migrants in the

United States in 2000 came during the 1990s, a higher figure than the percentage coming during the same decade from any other country group in the estimates.

Another distinctive finding is no single country of origin accounts for even close to the share contributed by Mexico. However, having noted this, we also point out that three regions of origin (not counting Mexico) nonetheless contribute almost thirty percent of the unauthorized migrants in 2000—Asia, Central America, and South America. Thus, in the year 2000, whether or not Mexico is included in the discussion, the vast majority of unauthorized migrants living in the country are either Asian or Latino. (See Figure 3.) The numbers from other countries or regions are relatively small (e.g., only about 6 percent of the unauthorized population is from all of the countries of Europe combined, and only 3.5 percent from countries in the Caribbean). These patterns are evident in more detail in Table 7, which presents information for additional single countries of origin. The countries (or regions) whose increases in the number of unauthorized persons during the 1990s seem to be most rapid are Haiti, Colombia, Guyana, Mexico, Canada, and other countries in South and East Asia and South America not individually noted in the table.³⁰

**Figure 3. Unauthorized Migrants by Region of Birth:
Based on Census 2000**



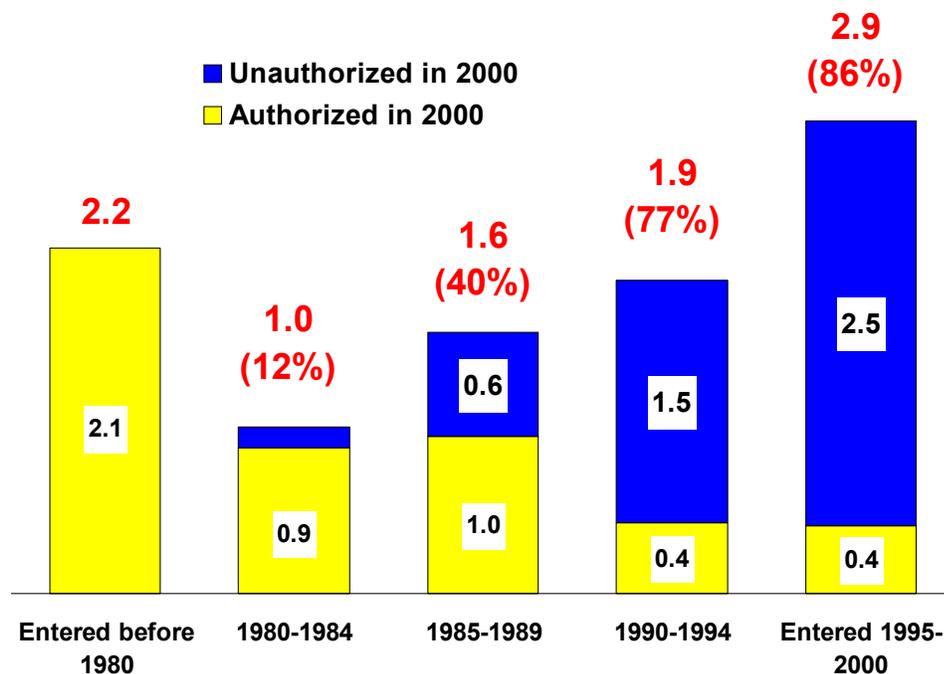
Source: Authors' estimates. See text for explanation of methods.

³⁰ For several countries or periods, the estimates of unauthorized migrants are negative. While illogical, these estimates generally point to slight inconsistencies between administrative data used for the legal immigrant population and census figures for the total foreign-born. For example, an overall negative estimate for a country suggests the possibility of errors in estimates of survival, emigration, or census coverage; it also indicates few, if any unauthorized migrants from the area. A negative estimate for one period of arrival offset by a positive estimate for an adjacent period may suggest: (a) misreporting of period of arrival in one of the data systems contributing to the estimate; (b) misreporting in the Census; or (c) inconsistencies in reporting. We have opted not to “correct” such negative estimates because they are more likely to result from inconsistencies than from overall measurement errors; consequently, a “correction” may adversely affect the quality of estimates for larger areas or the overall total.

Other Characteristics and Geographic Distribution

The results of our estimation procedures also show greater concentrations of males and young working age persons (Table 8); this pattern is consistent with the notion unauthorized migration is substantially labor migration (i.e., heavily driven by those seeking work), especially in the Mexican case. Thus, the overall sex ratio is 127 (136 among Mexicans and 117 among non-Mexicans). Among Mexican males aged 15-29, the sex ratio is 172 (whereas it is 123 among non-Mexicans of the same age). The estimates also show a heavy concentration in the age range 15-29, especially for Mexican unauthorized migrants. These patterns reflect a preponderance of young, working-age males in the unauthorized population that is consistent with characterizations of unauthorized migration as consisting predominantly of clandestine labor migration. That these tendencies are more pronounced in the case of Mexicans concurs with the view that this kind of labor migration is especially characteristic of the migration from Mexico.

Figure 4. Mexican-Born Population by Period of Arrival and Authorized Status: Based on Census 2000



Note: Mexican-born population in United States (in millions). Labels show total population (in millions) and percent unauthorized for each entry cohort. About half of all Mexican immigrants in the United States are unauthorized.

Source: Authors' estimates based on Census 2000 PUMS. See text for explanation of methods.

Unauthorized Mexicans account for just about half of all Mexican-born persons living in the United States. However, our estimates show that almost all recent migrants from Mexico are unauthorized. For example, about 86 percent of Mexican-born migrants who came to the United

States between 1995 and 2000 were unauthorized. (See Figure 4.) The longer a cohort has been in the U.S., the smaller the proportion unauthorized. This pattern reflects several different processes. First, as discussed earlier, it is generally thought that unauthorized migrants are more likely to return to Mexico or move between the two countries than the authorized population. This pattern of mobility would give rise to data shown in Figure 4. Further, there are many routes to authorized status—including through family relationships, marriage, or employment. With more time in the United States, more unauthorized migrants can attain authorized status.

The age distribution among the non-Mexican unauthorized population is somewhat different than among Mexicans. The proportion aged 30–44 years is substantially greater among non-Mexicans (Table 8). This pattern may reflect several differences in the migration process. If a higher share of the Mexicans are clandestine entrants (as opposed to visa overstayers) and/or the non-Mexicans have been in the United States longer, then this pattern would result. These data suggest that the non-Mexican unauthorized migrants are less likely to be sojourners and short-term labor migrants than Mexicans.

The geographic distribution of the unauthorized migrant population is of considerable interest to policy makers, researchers, and the general populace, if for no other reason than this population, as we have just seen, has an age and sex structure that is different from that of both the legal immigrant population and the general population. If the bulk of unauthorized migrants are young male migrants, the public policy concerns associated with unauthorized migration will be different than if some other age-sex-national origin pattern characterizes unauthorized migrants. While there is a stereotype of unauthorized migrants as overwhelmingly young, single, Mexican males, our data show something quite different. Mexican males are by far the largest single group, but they constitute a minority of the unauthorized population. Interestingly, the geographic origins of the unauthorized population varies considerably by state. When we examine the concentrations in the six largest immigrant-receiving states along with the rest of the country (Table 9), we find the largest unauthorized numbers are in California, Texas, and Illinois, which contain 27, 13, and 13 percent respectively of the total unauthorized population. The largest Mexican unauthorized populations are in California and Texas (33 and 18 percent respectively of the Mexican unauthorized population). Only small percentages of the Mexican unauthorized population are located in the other four major states (varying from 7 percent of the total in Illinois to 1 percent in New Jersey). Perhaps most interestingly, 36 percent of the Mexican unauthorized population is located outside the six major states, reflecting the oft-noted spread of Mexican labor migrants to other parts of the United States during the 1990s (e.g., Passel and Zimmermann 2001).

The estimates methods presented here contain a substantial amount of demographic and geographic detail not discussed. Further, the revisions and enhancements we have proposed have the potential to provide even more detailed information (especially by country of origin and state of residence). Further, from these estimates, it may be possible to develop even more demographic and socioeconomic information with the assignment techniques developed by Passel and Clark (1998) and Cassidy (2003). Future research reports will explore these possibilities.

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Table 1. Countries and Country Groups Used in Current Estimates of Unauthorized Migrants

All countries	
Europe, total	Poland Portugal Romania Afghanistan Former USSR ^{1/} Europe, balance
Asia, total	Middle East, total ^{2/} Iran Iraq Middle East, balance
	South and East Asia, total Afghanistan Cambodia China, Taiwan, Hong Kong India Korea Laos Philippines Thailand Vietnam South and East Asia, balance ^{3/}
Canada & North America	
Latin America, total	Mexico
	Central America, total El Salvador Central America, balance
	Caribbean, total Cuba Dominican Republic Haiti Jamaica Caribbean, balance
	South America, total Colombia Guyana Peru South America, balance
Africa, total	Ethiopia Africa, balance
Other (mainly Oceania) and Unknown ^{4/}	

Notes: See text for further details.

^{1/} Includes central Asian republics.

^{2/} Asia only.

^{3/} Pakistan and eastward.

^{4/} Unknown in Census 2000 is "at sea" only and includes the few areas not included elsewhere; CPS has larger numbers.

Table 2. Foreign-Born Population by Country Group and Period of Immigration, Census 2000 and INS Admissions, 1990-2000, by Proposed New Country Groups

(Populations in thousands)

Proposed Country of Birth Groups for Enhancements	Census 2000			INS Green Cards		Proposed Country of Birth Groups for Enhancements	Census 2000			INS Green Cards	
	1% PUMS			(includes IRCA)			1% PUMS			(includes IRCA)	
	Total	'80-'00	Pre-'80	'90-'00	'86-'02		Total	'80-'00	Pre-'80	'90-'00	'86-'02
All Countries	30,996	21,535	9,461	9,780	15,688						
Europe, Total						North & Central America, total					
Scandinavia	141	65	76	27	46	Canada	844	366	479	139 244	
United Kingdom	674	294	381	138	241	Mexico	9,161	7,020	2,141	2,757 3,995	
Ireland	162	60	101	68	89	Central America, total					
Benelux	133	43	90	18	33	Guatemala	469	398	70	125 201	
France	146	77	68	27	49	El Salvador	825	704	121	275 452	
Germany	712	201	511	68	122	Honduras	254	216	38	73 113	
Portugal	222	76	146	25	44	Nicaragua	232	186	46	85 158	
Italy	474	71	402	23	43	Costa Rica	67	46	22	15 26	
Mediterranean	252	79	173	30	55	Panama	109	59	50	26 41	
Poland	480	290	191	180	255	Other Cent Amer	41	24	17	12 21	
Romania	142	102	40	55	91	Caribbean, total					
Czechoslovakia	85	37	48	11	22	Cuba	878	401	477	171 337	
Yugoslavia	275	175	99	62	161	Jamaica	513	342	171	183 317	
USSR	891	719	172	492	683	Haiti	409	314	94	180 325	
Oth Cent & E. Eur	263	114	149	65	110	Dominican Rep	711	539	172	366 532	
Asia, Total						Trinidad & Tobago	194	129	66	63 98	
Middle East, total						Other Caribbean	231	139	92	61 107	
Turkey	71	49	23	26	42	South America, total					
Lebanon	98	64	34	45	77	Colombia	500	367	133	141 239	
Israel/Palestine	109	69	40	34	60	Venezuela	102	86	16	28 51	
Iraq	91	62	29	37	58	Guyana	201	152	49	80 145	
Gulf States	75	66	9	37	58	Ecuador	281	205	76	81 131	
Iran	282	167	116	129	229	Peru	269	216	52	112 171	
Afghanistan	48	45	4	20	35	Bolivia	61	47	14	18 29	
Other Middle East	110	74	37	69	113	Brazil	211	184	27	50 86	
S & E Asia, Total						Argentina	131	77	54	27 47	
Pakistan	219	188	31	120	190	Chile	78	54	24	19 34	
India	1,018	826	193	372	667	Other South Amer	53	35	18	14 22	
Bangladesh	107	99	7	63	90	Africa, Total					
Korea	857	606	251	188	386	Egypt	107	69	37	46 74	
Japan	346	223	123	60	103	Oth North Africa	80	64	16	39 68	
China	974	760	215	414	691	Liberia	40	33	7	16 26	
Taiwan	314	236	77	112	193	Ghana	64	54	10	36 54	
Hong Kong	207	131	77	78	126	Nigeria	137	113	25	68 107	
Philippines	1,395	953	441	527	884	Oth Western Africa	80	69	11	34 61	
Thailand	168	121	47	54	95	Ethiopia (Eritrea)	89	81	8	54 83	
Cambodia	141	122	19	22	71	Oth Eastern Africa	129	111	18	48 82	
Laos	196	153	43	53	95	Southern Africa	65	49	16	22 41	
Vietnam	986	778	208	443	657	Cent & Oth Africa	89	77	12	10 16	
Malaysia	53	47	6	15	26	Oceania, Total					
Indonesia	73	50	23	17	29	Australia-NZ	80	56	24	26 45	
Other S & E Asia	127	92	35	31	53	Other Oceania	92	70	22	23 37	
						All Other	0	0	0	0 0	

Source: Authors' tabulations of 1% PUMS and *INS Statistical Yearbooks*.

**Table 3. Estimates of Legal Nonimmigrants
in Census 2000, by Category**

Visa Category and Description		Number (000s)	Percent
Total		1,047.4	100.0%
F1, M1	Foreign Students	363.1	34.7%
F2, M2	Dependents	39.2	3.7%
J1	Professors/Scholars	49.0	4.7%
J2	Dependents	22.0	2.1%
J1	Physicians	12.8	1.2%
J2	Dependents	7.4	0.7%
H1A	Nurses	7.7	0.7%
H4	Dependents	2.8	0.3%
R1	Religious Workers	7.2	0.7%
R2	Dependents	4.4	0.4%
L1	Intracompany Transferee	164.3	15.7%
L2	Dependents	140.1	13.4%
A1	A1 - Diplomats	3.9	0.4%
A3	Dependents/Attendants, Drivers	7.7	0.7%
J1	HS Exchange	12.1	1.2%
J1	Au Pairs	4.8	0.5%
G	Foreign Government officials	2.6	0.3%
G5	Dependents/Attendants, Drivers	3.3	0.3%
H1B	Specialty ("Hi-Tech") Workers	122.0	11.6%
H4	Dependents	68.3	6.5%
O, P	Artists, Entertainers, Athletes	1.9	0.2%
O3, P4	Dependents	0.7	0.1%

Source: Author's tabulations using 1-percent PUMS.

Table 4.
Components of Change in Legal Immigrant Population,
by Period of Arrival: 1990-2000

(In thousands)

Population or Component	All Periods	1995-2000	1990-1994	1985-1989	1980-1984	Pre-1980*
Legal Immigrant Population , 2000	20,776	3,018	3,337	3,622	3,138	7,661
Total Legal Change, 1995-2000	1,775	2,840	243	-34	-185	-1,088
Legal Arrivals, 1995-2000	3,888	2,989	566	264	59	11
Emigration, 1995-2000	1,114	124	250	199	151	391
Deaths, 1995-2000	998	24	74	100	93	708
Legal Immigrant Population , 1995	18,993	0	3,268	3,655	3,322	8,747
Total Legal Change, 1990-1995	1,767	0	3,262	226	-101	-1,620
Legal Arrivals, 1990-1995	4,009	0	3,398	490	110	11
Emigration, 1990-1995	1,085	0	111	204	149	621
Deaths, 1990-1995	1,157	0	25	60	62	1,010
Legal Immigrant Population , 1990	17,226	0	0	3,435	3,424	10,368

* Legal population for pre-1980 entry cohort in 2000 is from Census 2000. Estimates for earlier years are derived with components of change.

Table 5. Annual Estimates of Interstate Mobility for the Legal Immigrant Population, by State: 1995-2000

(In thousands)

Period	Total	CA	FL	IL	NJ	NY	TX	Other
Net "Movers"								
1995-2000	0	-120	65	-36	13	-108	-35	221
1999-2000	0	-29	41	-26	-12	-25	8	44
1998-99	0	-6	18	-14	-17	-28	-14	61
1997-98	0	-33	-10	0	24	-28	-5	51
1996-97	0	-26	8	2	9	-14	-12	33
1995-96	0	-26	8	2	8	-14	-12	32
In-Movers								
1995-2000	1,912	229	224	93	147	191	186	842
1999-2000	471	56	64	21	20	49	53	209
1998-99	417	72	51	18	33	37	17	189
1997-98	302	26	33	23	42	30	14	134
1996-97	365	38	39	16	27	38	52	157
1995-96	357	37	38	16	26	37	51	153
Annual Out-Movers								
1995-2000	1,912	349	159	129	133	299	222	620
1999-2000	471	85	23	47	31	74	45	165
1998-99	417	78	33	32	49	65	30	129
1997-98	302	59	43	22	18	58	19	82
1996-97	365	64	30	14	18	51	64	124
1995-96	357	63	30	13	17	50	62	121

Source: Authors' estimates based on rates from *March Current Population Survey* Supplements for 1995-2000.

**Table 6. Adjusted Residual Estimates of the
Unauthorized Foreign-born Population,
by Region of Birth and Period of Entry: Based on Census 2000**

Populations in thousands

Area of Birth	Unauthorized Population			Percentage Distribution		
	Total	Entered 1990- 2000	Entered 1980- 1989	Total	Entered 1990- 2000	Entered 1980- 1989
Total	8,326	6,478	1,849	100%	100%	100%
Europe	519	330	188	6%	5%	10%
Asia	890	609	281	11%	9%	15%
Canada+	122	98	24	1%	2%	1%
Mexico	4,784	4,016	768	57%	62%	42%
Central America	920	578	342	11%	9%	19%
Caribbean	292	206	87	4%	3%	5%
South America	577	482	94	7%	7%	5%
Africa	204	146	58	2%	2%	3%
All Other*	19	13	6	0%	0%	0%

Source: Authors' estimates.

Note: Estimates are adjusted for census undercount. "Canada+" refers to Canada plus other Northern America.

* For constituent areas, see Table 1 and text.

Table 7. Adjusted Residual Estimates of the Unauthorized Foreign-born Population, by Country of Birth and Period of Entry: Based on Census 2000

Populations in thousands

Area of Birth	Unauthorized Population			Percentage Distribution			Percent Arriving in 1990-2000
	Total	Entered 1990-2000	Entered 1980-1989	Total	Entered 1990-2000	Entered 1980-1989	
Total	8,326	6,478	1,849	100%	100%	100%	78%
Europe, Total	519	330	188	6%	5%	10%	64%
Poland	78	50	27	1%	1%	1%	65%
Portugal	30	11	18	(z)	(z)	1%	38%
Romania	19	15	4	(z)	(z)	(z)	79%
United Kingdom	54	35	19	1%	1%	1%	65%
Former USSR	128	95	33	2%	1%	2%	75%
Europe, balance	211	124	87	3%	2%	5%	59%
Asia, total	890	609	281	11%	9%	15%	68%
Middle East, total	-1	-14	13	(x)	(x)	1%	(z)
Iran	-11	-14	3	(x)	(x)	(z)	(z)
Iraq	-5	-11	7	(x)	(x)	(z)	(z)
Mid. East, balance	14	11	3	(z)	(z)	(z)	75%
S. & E. Asia, total	891	624	267	11%	10%	14%	70%
Afghanistan	8	4	4	(z)	(z)	(z)	49%
Cambodia	14	11	3	(z)	(z)	(z)	79%
China+	139	92	46	2%	1%	3%	67%
India	176	135	41	2%	2%	2%	77%
Korea	190	117	73	2%	2%	4%	61%
Laos	-14	-1	-13	(x)	(x)	(x)	(z)
Philippines	155	77	78	2%	1%	4%	50%
Thailand	31	21	10	(z)	(z)	1%	68%
Vietnam	18	8	10	(z)	(z)	1%	44%
S&E Asia, balance	175	160	15	2%	2%	1%	91%
Canada+	122	98	24	1%	2%	1%	80%
Mexico	4,784	4,016	768	57%	62%	42%	84%
Central America, total	920	578	342	11%	9%	19%	63%
El Salvador	404	220	184	5%	3%	10%	54%
Cent. Amer., balance	516	358	158	6%	6%	9%	69%
Caribbean, total	292	206	87	4%	3%	5%	70%
Cuba	19	32	-13	(z)	1%	(x)	(z)
Dominican Republic	89	38	51	1%	1%	3%	43%
Haiti	52	46	6	1%	1%	(z)	89%
Jamaica	60	32	28	1%	(z)	2%	53%
Caribbean, balance	72	57	15	1%	1%	1%	80%
South America, total	577	482	94	7%	7%	5%	84%
Colombia	149	132	17	2%	2%	1%	88%
Guyana	18	16	3	(z)	(z)	(z)	86%
Peru	74	56	18	1%	1%	1%	76%
South Amer., balance	336	279	57	4%	4%	3%	83%
Africa, total	204	146	58	2%	2%	3%	72%
Ethiopia	-5	3	-8	(x)	(z)	(x)	(z)
Africa, balance	209	143	66	3%	2%	4%	69%
Other & Unknown	19	13	6	(z)	(z)	(z)	67%

Source: Authors' estimates.

(z) - Estimate rounds to zero.

(x) - not applicable (negative estimate, see text).

Note: "Canada+" refers to Canada plus other Northern America; "China+" refers to China, Taiwan, and Hong Kong.

**Table 8. Adjusted Residual Estimates of the
Unauthorized Foreign-born Population, by Age and Sex: Based on Census 2000**

Populations in thousands

Sex and Age	Unauthorized Population			Percentage Born in Mexico	Sex Ratio (per 100)	
	Total	Born in Mexico	Born Elsewhere		Entered 1990- 2000	Entered 1980- 1989
Total	8,326	4,784	3,542	57%	136	136
Males	4,661	2,753	1,908	59%	---	---
0-14	649	398	252	61%	114	104
15-29	2,626	1,736	891	66%	172	123
30-44	1,555	706	849	45%	111	107
45+	-170	-86	-84	---	---	---
Females	3,666	2,031	1,635	55%		
0-14	590	348	242	59%	---	---
15-29	1,734	1,010	724	58%	---	---
30-44	1,432	636	797	44%	---	---
45+	-91	37	-128	---	---	---

Source: Authors' estimates.

--- not applicable (negative estimate, see text).

**Table 9. Adjusted Residual Estimates of the
Unauthorized Foreign-born Population, by State of Residence and
Region of Birth: Based on Census 2000**

Populations in
thousands

Area of Birth	Unauthorized Population			Percentage Distribution			Percentage Born in Mexico
	Total	Born in Mexico	Born Elsewhere	Total	Born in Mexico	Born Elsewhere	
Total	8,326	4,784	3,542	100%	100%	100%	57%
California	2,255	1,577	678	27%	33%	19%	70%
Texas	1,111	859	252	13%	18%	7%	77%
New York	676	148	528	8%	3%	15%	22%
New Jersey	350	56	294	4%	1%	8%	16%
Florida	552	112	440	7%	2%	12%	20%
Illinois	1,111	331	780	13%	7%	22%	30%
Other	2,910	1,701	1,209	35%	36%	34%	58%

Source: Authors' estimates. See text.