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Trends in Unauthorized Immigration: Undocumented Inflow Now Trails Legal Inflow

Jeffrey S. Passel
Senior Demographer
Pew Hispanic Center

D'Vera Cohn
Senior Writer
Pew Research Center

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Paul Taylor, Acting Director

Rakesh Kochhar, Associate Director for Research

Richard Fry, Senior Research Associate

Gretchen Livingston, Senior Researcher

Daniel Dockterman, Research Assistant

Susan Minushkin, Deputy Director

Mark Hugo Lopez, Associate Director

Jeffrey S. Passel, Senior Demographer

Ana Gonzalez-Barrera, Senior Analyst

Mary Seaborn, Administrative Manager

Executive Summary

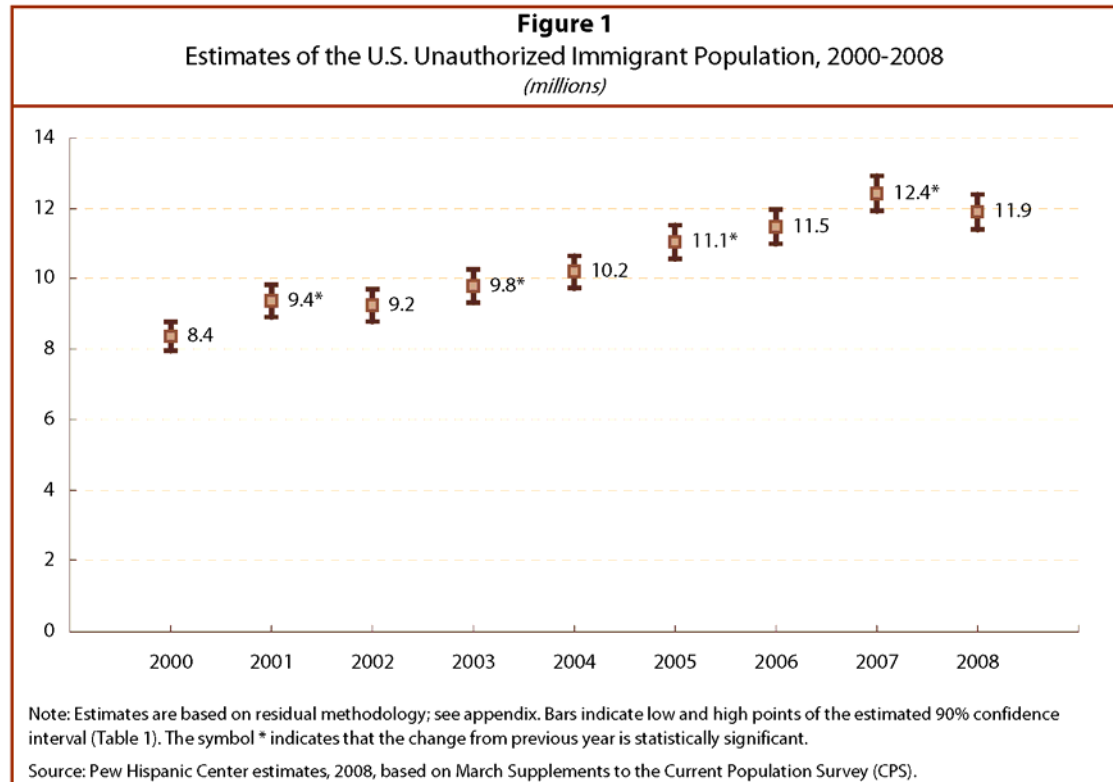
There were 11.9 million unauthorized immigrants living in the United States in March 2008, according to new Pew Hispanic Center estimates. The size of the unauthorized population appears to have declined since 2007, but this finding is inconclusive because of the margin of error in these estimates.

However, it is clear from the estimates that the unauthorized immigrant population grew more slowly in the period from 2005 to 2008 than it did earlier in the decade.

It also is clear that from 2005 to 2008, the inflow of immigrants who are undocumented fell below that of immigrants who are legal permanent residents. That reverses a trend that began a decade ago. The turnaround appears to have occurred in 2007.

The Pew Hispanic Center also estimates that inflows of unauthorized immigrants averaged 800,000 a year from 2000 to 2004, but fell to 500,000 a year from 2005 to 2008 with a decreasing year-to-year trend. By contrast, the inflow of legal permanent residents has been relatively steady this decade.

Although the growth of the unauthorized population has slackened, its size has increased by more than 40% since 2000, when it was 8.4 million. In 2005, the Pew Hispanic Center estimated there were 11.1 million undocumented immigrants in the United States. The most recent estimate, 11.9 million, indicates that unauthorized immigrants make up 4% of the U.S. population.



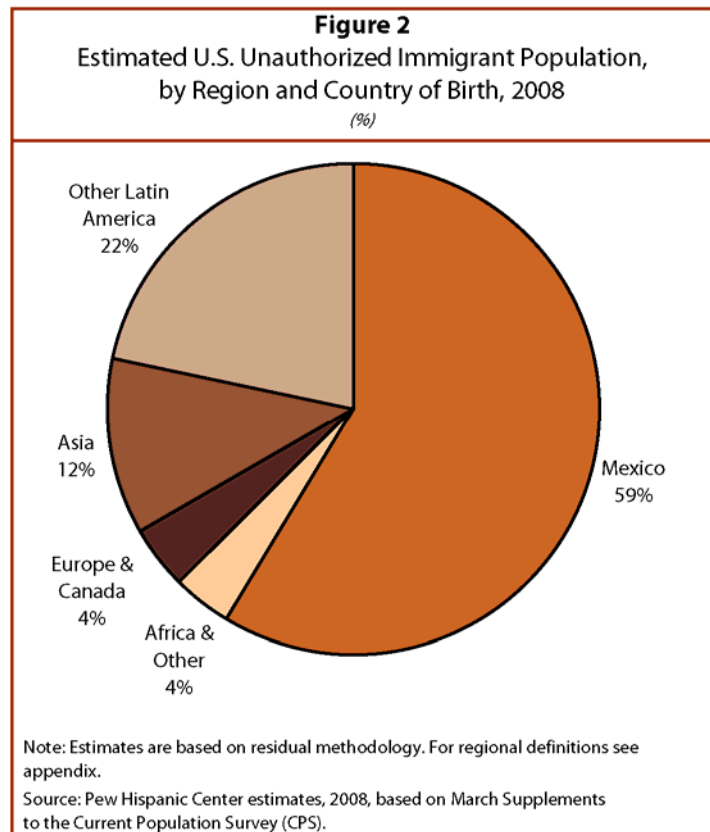
These estimates are based mainly on data from the 2000 Census and the March Current Population Surveys for the years since then. Because the Census Bureau does not ask people their immigration status, these estimates are derived using a widely accepted methodology that essentially subtracts the estimated legal-immigrant population from the total foreign-born population. The residual is treated as a source of data on the unauthorized immigrant population. [For more details, see Methodology appendix]

The estimates are not designed to explain why the net growth rate has declined. There could be a number of possible causes, including a slowdown in U.S. economic growth that has had a disproportionate impact on foreign-born [Latino workers](#), at the same time that economic growth in Mexico and other Latin American countries has been stable. Another factor could be a heightened focus on enforcement of immigration laws, which a [recent Pew Hispanic Center survey](#) indicates has generated worry among many Hispanics.

Other major findings:

- Undocumented immigrants make up 30% of the nation's foreign-born population of more than 39 million people. More than four-in-ten of the nation's unauthorized immigrants—5.3 million people—have arrived since the decade began.

- The vast majority of undocumented immigrants—four-in-five—come from Latin American countries. In March 2008, 9.6 million unauthorized immigrants from Latin America were living in the United States.
- The number of unauthorized immigrants from Mexico, 7 million, appears to have leveled off since 2007. Mexico remains the birth country of most unauthorized immigrants in the U.S.
- The number of undocumented immigrants from other Latin American nations has fallen since 2007.



About this Report

The Pew Hispanic Center estimates the undocumented population using the “residual method,” a well-developed and widely accepted technique that is based on official government data. Under this methodology, a demographic estimate of the legal foreign-born population—including naturalized citizens, legal permanent residents, temporary legal residents and refugees—is subtracted from the total foreign-born population. The remainder, or residual, is the source of population estimates and characteristics of unauthorized immigrants.

These unauthorized immigrants consist of residents of the United States who are not U.S. citizens, who do not hold current permanent-resident visas or who have not been granted permission under a set of specific authorized temporary statuses for longer-term residence and work. The vast majority of undocumented immigrants either entered the country without valid documents or they arrived with valid visas but stayed past their visa expiration date or otherwise violated the terms of their admission.

Also included in this group are some people who had entered without valid documents or violated the terms of their visas but later obtained temporary authorization to live and work in the United States. Among them are immigrants from certain countries holding temporary protected status (TPS) or people who have filed for asylum status but whose claims are unresolved. This group may account for as much as 10% of the unauthorized estimate. Many of these “quasi-legal” individuals could revert to unauthorized status.

These Pew Hispanic Center estimates use data mainly from the Current Population Survey, a monthly survey of about 55,000 households conducted jointly by the U.S. Bureau of Labor Statistics and the Census Bureau. It is best known as the source for monthly unemployment statistics. Each March, the CPS sample size and questionnaire are augmented to produce additional data on the foreign-born population and other topics. The Pew Hispanic Center estimates make adjustments to the government data to compensate for undercounting of some groups, and therefore its population totals differ somewhat from the ones the government uses. Estimates for any given year are based on a March reference date.

A Note on Terminology

The terms “Latino” and “Hispanic” are used interchangeably in this report.

“Foreign-born” refers to an individual who is not a U.S. citizen at birth or, in other words, who is born outside the U.S., Puerto Rico or other U.S. territories and whose parents are not U.S. citizens. The terms “foreign-born” and “immigrant” are used interchangeably.

The terms “unauthorized immigrants” and “undocumented immigrants” are used interchangeably.

About the Authors

Jeffrey S. Passel is a senior demographer at the Pew Hispanic Center. He is a nationally known expert on immigration to the United States and on the demography of racial and ethnic groups. In 2005, Dr. Passel was made a fellow of the American Statistical Association, which cited his outstanding contributions to the measurement of population composition and change. He formerly served as principal research associate at the Urban Institute’s Labor, Human Services and Population Center. From 1987 to 1989, he was assistant chief for population estimates and projections in the Population Division of the U.S. Census Bureau.

D’Vera Cohn is a senior writer at the Pew Research Center. She was a reporter at The Washington Post from 1985 to 2006, where she wrote chiefly about demographic topics including race, immigration and families. She was the newspaper’s lead reporter for the 2000 Census.

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Contents

Executive Summary	i
Other major findings:	ii
About this Report	iv
A Note on Terminology	iv
About the Authors	v
Recommended Citation	v
Acknowledgments	v
Contents	vi
Current Estimates and Trends	1
Annual Growth	2
Legal and Unauthorized Trends	2
Arrival Year	3
Mexico	3
Other Latin America	4
Other Undocumented	6
References	7
Appendix A: Methodology	10
Overview of Methods	10
Residual Methodology	11
Legal Immigrant Populations	11
Other Demographic Components	12
CPS Coverage	13
Sampling Error and Interval Estimates	13
Weighting and Editing the CPS	15

CPS Weights	15
Country of Birth.....	16

Current Estimates and Trends

As of March 2008, 11.9 million undocumented immigrants were living in the United States. This represents an increase since 2005, when the Pew Hispanic Center estimated there were 11.1 million undocumented immigrants in the country. The number has risen by more than 40% since 2000, when it was estimated at 8.4 million.

The estimate of unauthorized immigrants in 2007 appears to be larger than the estimate for 2008, but this difference is not statistically significant. The estimates are derived from sample surveys and thus are subject to uncertainty from sampling error, as well as other types of error. Each annual estimate of the undocumented population is actually the midpoint of a range of possible values that could be the true number. Although it is sometimes difficult to infer magnitude or direction of any single year-to-year trend, intervals based on estimates of sampling error allow some conclusions to be drawn about changes over time.

As can be seen in Table 1 and Figure 1 the range of values for the undocumented population in 2008 is 11.4 million to 12.4 million. In 2007, the range is 11.9 million to 12.9 million. Although the apparent change between the two years is a decline of 500,000, no conclusion should be drawn about the one-year trend. That is because the apparent change of 500,000 has its own margin of error—a range that is larger than the range for either the 2007 or 2008 estimate. Thus, the true change could be zero or could be larger than 500,000. (These ranges represent approximate 90% confidence intervals, meaning that there is a 90% probability that the interval contains the true value.)

	ESTIMATE	LOW	HIGH
Year			
2008	11.9	11.4	12.4
2007	12.4	11.9	12.9
2006	11.5	11.0	12.0
2005	11.1	10.6	11.5
2004	10.2	9.7	10.7
2003	9.8	9.3	10.2
2002	9.2	8.8	9.7
2001	9.4	8.9	9.8
2000	8.4	7.9	8.8

Note: Estimates are based on residual methodology. Low and high values represent the bounds of the estimated 90% confidence interval; see appendix. Boldface indicates that the change from previous year is statistically significant.
Source: Pew Hispanic Center estimates, 2008, based on March Supplements to the Current Population Survey (CPS).

The series of annual estimates in Table 1 and Figure 1 show that the overall undocumented population has increased since 2000. For half the years of this decade, it can be concluded that the unauthorized population grew during the previous year, but for the rest, the apparent change in size of the unauthorized population is not statistically significant. Looking at two-year periods, the

apparent change between 2006 and 2008 is the only time this decade that there was not a statistically significant increase.

Annual Growth

Although the undocumented population has been rising, its net growth has slowed substantially since 2005, compared with earlier in the decade.

From 2000 to early 2005, the unauthorized immigrant population grew by an annual net average of about 525,000, increasing to 11.1 million from 8.4 million. Using information on date of arrival, the Pew Hispanic Center estimates imply that during those years, an average of 800,000 new undocumented immigrants—both border crossers and visa violators—entered the U.S. annually.

Since 2005, the growth patterns have changed substantially. From 2005 to 2008, annual growth has averaged only 275,000 as the undocumented population grew from 11.1 million to 11.9 million. The estimates of unauthorized immigrants by period of arrival imply that new annual arrivals averaged 500,000 over the three-year period, with a substantially smaller number arriving since 2007.

The undocumented population is not a fixed group of people. Over time, some immigrants enter the unauthorized population and others are subtracted from it—by leaving the country, converting to legal status or dying. The methodology behind these estimates does not produce definitive estimates for each of these components of change.

Legal and Unauthorized Trends

This decreasing inflow of undocumented immigrants, which occurred during a period when legal immigration has been relatively steady, has had a hand in reshaping the composition of the nation's new foreign-born population. A decade ago, newly arrived unauthorized immigrants began to outnumber newly arrived legal permanent residents. The reverse now appears to be true.

Over the [1998-2004 period](#), the inflow of undocumented immigrants exceeded arrivals of legal permanent residents. From 2005 to 2008, about 1.6 million new undocumented immigrants arrived (an average of 500,000 a year), compared with 2.1 million legal permanent residents (an average of 650,000 a year). Examination of the

PERIOD	NUMBER	PERCENT
Total	11.9	100%
2005-2008	1.6	13%
2000-2004	3.7	31%
1995-1999	3.1	26%
1990-1994	2.0	16%
1980-1989	1.6	13%

Note: Estimates are based on residual methodology; see appendix. Numbers rounded independently and may not add to total shown. Estimates represent persons in the U.S. in unauthorized status as of March 2008. They do not represent the status at entry or the magnitude of unauthorized immigration during the period.

Source: Pew Hispanic Center estimates, 2008, based on March Supplements to the Current Population Survey (CPS).

annual estimates points to 2007 as the year the turnaround occurred.

The growth of the undocumented population may have slowed, but unauthorized immigrants continue to make up a notable share—30%—of the nation’s foreign-born population of more than 39 million people.

Arrival Year

The unauthorized immigrant population is dominated by recent arrivals—44% came to the United States in this decade. Of those, 1.6 million, or 13% of all unauthorized immigrants, arrived from 2005 to 2008. The other 3.7 million, or 31% of the undocumented population, came to the country from 2000 to 2004.

A slightly smaller share, 43%, includes longer-term residents who arrived during the 1990s. Of the 5.1 million who arrived during that decade, 3.1 million came from in 1995 to 1999, when immigration rates reached their modern peak. An estimated 1.6 million undocumented immigrants, 13% of the total, remain as undocumented residents since arriving in the 1980s.

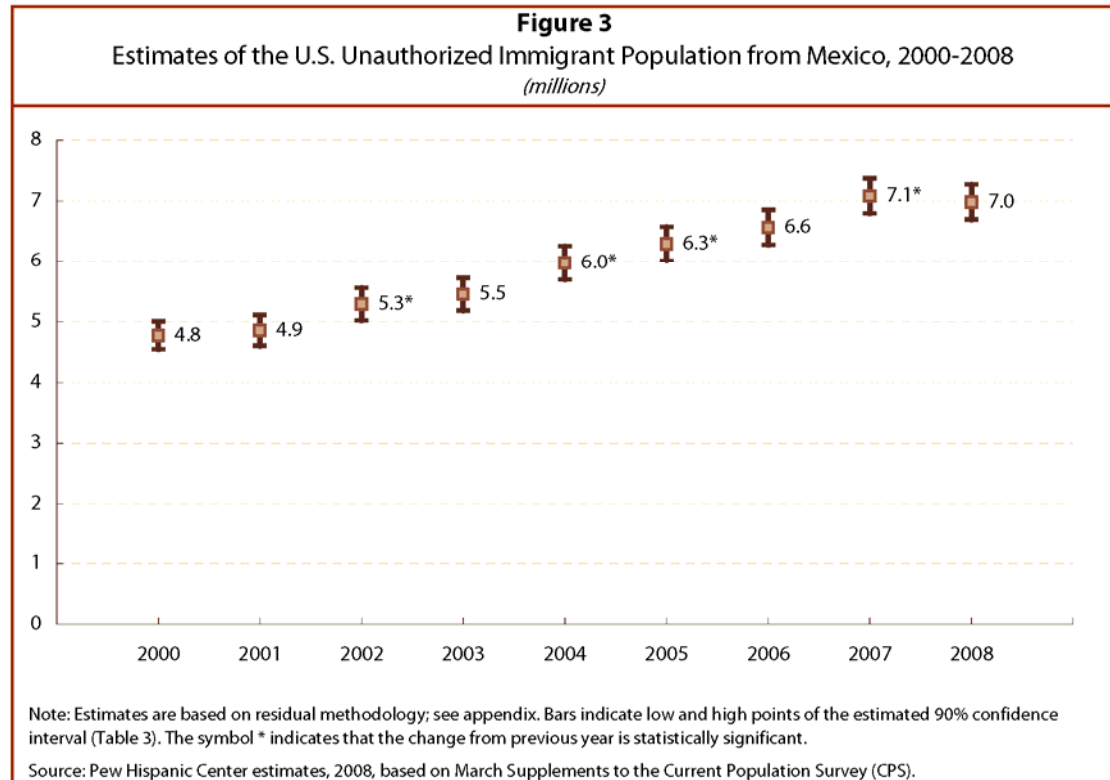
Mexico

The population of undocumented Mexican immigrants has grown markedly since 2000 but appears to have leveled off since 2007. There were 4.8 million unauthorized Mexican immigrants living in the United States at the time of the 2000 Census and 7 million in March 2008, according to the Pew Hispanic Center estimates.

Year	ESTIMATE	LOW	HIGH
2008	7.0	6.7	7.3
2007	7.1	6.8	7.4
2006	6.6	6.3	6.9
2005	6.3	6.0	6.6
2004	6.0	5.7	6.3
2003	5.5	5.2	5.7
2002	5.3	5.0	5.6
2001	4.9	4.6	5.1
2000	4.8	4.6	5.0

Note: Estimates are based on residual methodology. Low and high values represent the bounds of the estimated 90% interval; see appendix. Boldface indicates that the change from previous year is statistically significant.

Source: Pew Hispanic Center estimates, 2008, based on March Supplements to the Current Population Survey (CPS).



Inflows from Mexico have varied considerably in the [past 15 years](#), peaking around 2000, dropping dramatically in 2002 and 2003, and increasing somewhat after that. The slowing growth of unauthorized Mexican population in accord with a number of [other indicators](#) suggests a lessening of immigration from Mexico since mid-2006.

Undocumented immigrants remain a large majority of new Mexican immigrants arriving in the U.S., with 80% to 85% of Mexicans who have been in the U.S. for less than a decade being unauthorized. Among all foreign-born Mexicans in the country, more than half (56%) are estimated to be unauthorized.

Immigrants from Mexico account for a majority (59%) of all unauthorized immigrants in the United States; no other country makes up even a double-digit share. The Mexican-born share of all undocumented immigrants remained essentially unchanged for more than a decade.

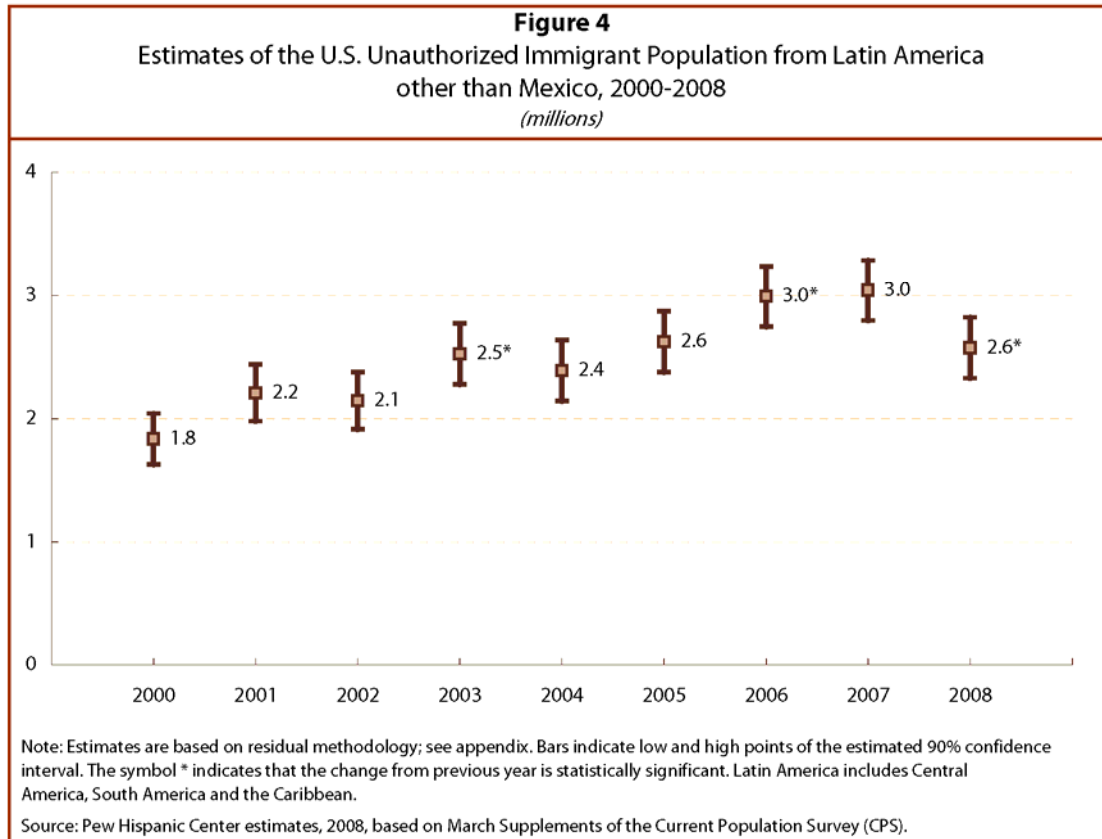
Among U.S. residents of [Mexican ancestry](#), most were born in the United States. Four-in-ten are foreign-born.

Other Latin America

The number of unauthorized immigrants in the United States from Latin American countries other than Mexico grew by more than 40% from 2000, when

there were 1.8 million, to 2008, when there were 2.6 million. This population reached 3 million in March 2006, but has declined since then.

The short-term trends earlier in the decade are unclear. Overall, the number of undocumented immigrants from Latin American nations other than Mexico has risen since 2000, but the growth rate is smaller than for undocumented Mexicans and the pattern of year-to-year changes more erratic.



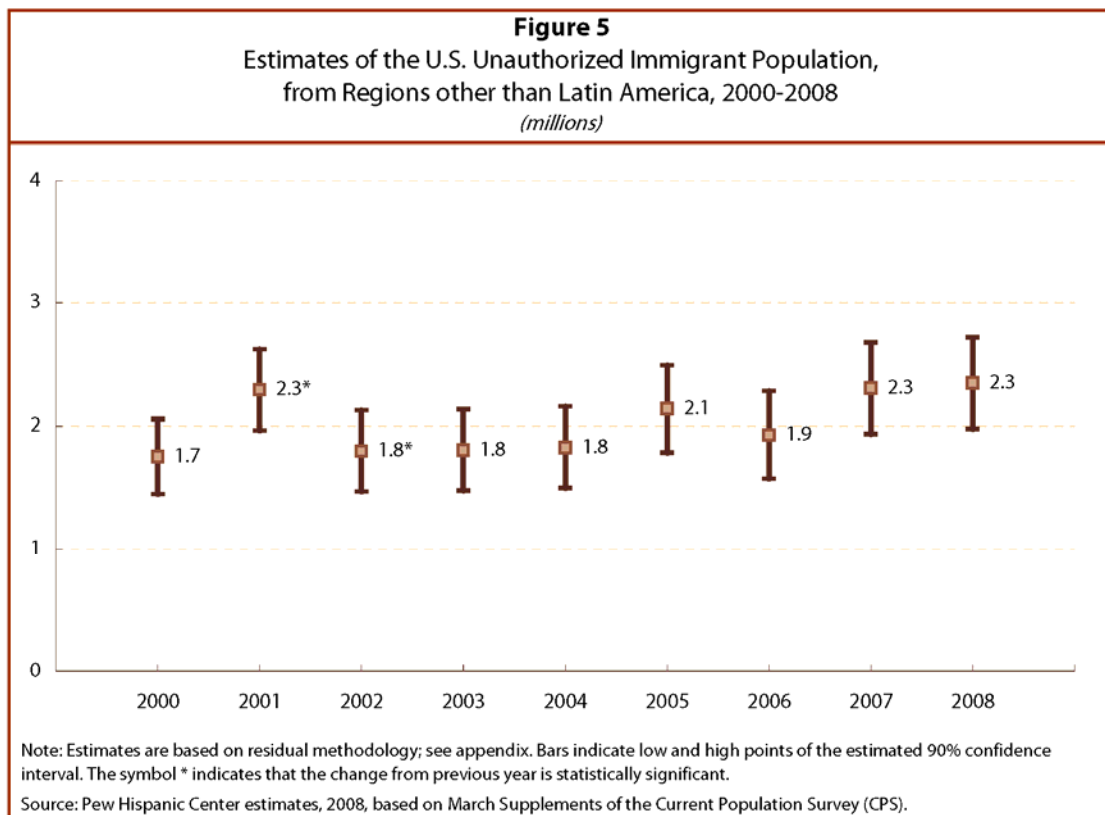
This recent decline is borne out by other Bureau of Labor Statistics data, cited in a [recent annual Pew Hispanic Center report](#), indicating that the number of foreign-born South Americans in the U.S. workforce declined in the first quarter of 2008 compared with 2007.

It appears that legal immigration from Latin American countries other than Mexico has been steady through the decade, while undocumented immigration has declined. That means that the composition of the immigration flow from these countries has changed this decade from majority undocumented to majority legal.

Other Undocumented

The number of undocumented immigrants from nations outside Latin America may have risen somewhat since 2000 and leveled off since 2005, but most year-to-year changes are not statistically significant.

In March 2008, the number of unauthorized immigrants from countries outside Latin America was estimated at 2.3 million—a figure significantly larger than the 1.7 million in 2000. Few of the year-to-year changes over the decade are statistically significant. It is difficult to determine a trend because this unauthorized population is relatively small compared with the legal population, which leads to a large margin of sampling error.



References

- Ahmed, Bashir and J. Gregory Robinson. 1994. "Estimates of Emigration of the Foreign-Born Population: 1980-1990." Technical Working Paper No. 9. Washington, DC: U.S. Census Bureau.
<http://www.census.gov/population/www/documentation/twps0009/twps0009.html>
- Hoefler, Michael, Nancy Rytina and Bryan C. Baker. 2008. *Estimates of the Unauthorized Immigrant Population Residing in the United States: January 2007*. Washington, DC: Office of Immigration Statistics, Policy Directorate, U.S. Department of Homeland Security.
http://www.dhs.gov/xlibrary/assets/statistics/publications/ois_ill_pe_2007.pdf
- Hoefler, Michael, Nancy Rytina and Christopher Campbell. 2007. *Estimates of the Unauthorized Immigrant Population Residing in the United States: January 2006*. Washington, DC: Office of Immigration Statistics, Policy Directorate, U.S. Department of Homeland Security.
http://www.dhs.gov/xlibrary/assets/statistics/publications/ill_pe_2006.pdf
- Hoefler, Michael, Nancy Rytina and Christopher Campbell. 2006. *Estimates of the Unauthorized Immigrant Population Residing in the United States: January 2005*. Washington, DC: Office of Immigration Statistics, Policy Directorate, U.S. Department of Homeland Security.
http://www.dhs.gov/xlibrary/assets/statistics/publications/ILL_PE_2005.pdf
- Hogan, Howard. 2001. "Accuracy and Coverage Evaluation: Data and Analysis to Support the ESCAP Report." DSSD Census 2000 Procedures and Operations Memorandum Series B 1, Report to the Executive Steering Committee for A.C.E. Policy, Washington, DC: U.S. Census Bureau. March.
<http://www.census.gov/dmd/www/pdf/Fr1.pdf>
- Killion, Ruth Ann. 2007. CPS Supplements: 2006 Weighting Specification for the CPS Annual Social and Economic Supplement. Demographic Statistical Methods Division memorandum for Cheryl Landman. Washington, DC: U.S. Census Bureau. May.
- Kochhar, Rakesh. 2008. *Latino Labor Report, 2008: Construction Reverses Job Growth for Latinos*. Washington, DC: Pew Hispanic Center, June.
<http://pewhispanic.org/files/reports/88.pdf>
- Lopez, Mark Hugo and Susan Minushkin. 2008. *2008 National Survey of Latinos: Hispanics See Their Situation in the U.S. Deteriorating; Oppose Key Immigration Enforcement Measures*. Washington, DC: Pew Hispanic Center, September.
<http://pewhispanic.org/files/reports/93.pdf>

- Marcelli, Enrico A. and Paul M. Ong. 2002. "2000 Census Coverage of Foreign Born Mexicans in Los Angeles County: Implications for Demographic Analysis." Paper presented at the 2002 annual meeting of the Population Association of America, Atlanta, GA. April.
- Mule, Thomas. 2002. "Revised Preliminary Estimates of Net Undercounts for Seven Race/Ethnicity Groupings." DSSD Revised A.C.E. Estimates Memorandum Series PP-2. Washington, DC: U.S. Census Bureau. April.
<http://www.census.gov/dmd/www/pdf/PP-2.pdf>
- Passel, Jeffrey S. 2007. *Unauthorized Migrants in the United States: Estimates, Methods, and Characteristics*. OECD Social, Employment and Migration Working Papers No. 57. Paris: OECD Working Party on Migration, September.
<http://www.oecd.org/dataoecd/41/25/39264671.pdf>
- Passel, Jeffrey S. 2006. *Size and Characteristics of the Unauthorized Migrant Population in the U.S.: Estimates Based on the March 2005 Current Population Survey*. Washington, DC: Pew Hispanic Center, March.
<http://pewhispanic.org/files/reports/61.pdf>
- Passel, Jeffrey S. 2005. *Unauthorized Migrants: Numbers and Characteristics*. Washington, DC: Pew Hispanic Center, June.
<http://pewhispanic.org/files/reports/46.pdf>
- Passel, Jeffrey S. and Roberto Suro. 2005. *Rise, Peak and Decline: Trends in U.S. Immigration 1992 – 2004*. Washington, DC: Pew Hispanic Center, September.
<http://pewhispanic.org/files/reports/53.pdf>
- Passel, Jeffrey S., Jennifer Van Hook, and Frank D. Bean. 2004. *Estimates of Legal and Unauthorized Foreign Born Population for the United States and Selected States, Based on Census 2000*. Report to the Census Bureau. Washington, DC: Urban Institute. June.
- Pew Hispanic Center. 2008. *Statistical Portrait of Hispanics in the United States, 2006*. Washington, DC: Pew Hispanic Center, January.
<http://pewhispanic.org/factsheets/factsheet.php?FactsheetID=35>
- Pew Hispanic Center. 2007. *Indicators of Recent Migration Flows from Mexico*. Washington, DC: Pew Hispanic Center, May.
<http://pewhispanic.org/files/factsheets/33.pdf>
- U.S. Bureau of Labor Statistics. 2008. *Adjustments to Household Survey Population Estimates in January 2008*. Washington, DC: U.S. Bureau of Labor Statistics. February. <http://www.bls.gov/cps/cps08adj.pdf>

- U.S. Census Bureau. 2008a. *Methodology for the United States Resident Population Estimates by Age, Sex, Race, and Hispanic Origin (Vintage 2007): April 1, 2000 to July 1, 2007*. Washington, DC: U.S. Census Bureau.
<http://www.census.gov/popest/topics/methodology/2007-nat-meth.html>
- U.S. Census Bureau. 2008b. *Current Population Survey, 2008 Annual Social and Economic (ASEC) Supplement*. Washington, DC: U.S. Census Bureau.
<http://www.census.gov/aprd/techdoc/cps/cpsmar08.pdf>
- U.S. Census Bureau. 2006. *Current Population Survey: Design and Methodology*. Technical Paper 66. Washington, DC: U.S. Census Bureau. October.
<http://www.census.gov/prod/2006pubs/tp-66.pdf>
- Van Hook, Jennifer, Weiwei Zhang, Frank D. Bean, and Jeffrey S. Passel. 2006. “A New Approach to Estimating Foreign-Born Emigration.” *Demography* 43 (2, May): 361–382.
- Warren, Robert E. and Jeffrey S. Passel. 1987. “A Count of the Uncountable: Estimates of Undocumented Aliens Counted in the 1980 United States Census.” *Demography* 24 (3, August): 375–393.

Appendix A: Methodology

Overview of Methods

The estimates of the unauthorized immigrant population presented in this report are derived with a residual methodology that compares the size of the total foreign-born population of the U.S. (legal and undocumented) with an independent, demographic estimate of the legally resident foreign-born population. The difference between the two is the estimated unauthorized population. Variants of the residual method have been used as a basis for measuring the unauthorized immigrant population since 1980 by various analysts, most recently by the Department of Homeland Security (Hofer et al. 2008). (See Passel 2007 for a review of methods and estimates.) This appendix includes a brief description of the estimation methods and highlights critical assumptions and parameters.

Data on the total foreign-born population for the estimates presented are based on the March Supplements to the Current Population Survey (CPS) for 2001–2008 and on the 2000 Census. The March CPS data have been modified from the official data in several ways to produce a consistent time series that is usable for these estimates and comparisons over time. Two specific modifications are discussed here. The Census Bureau occasionally changes the methods it uses to produce population estimates used as control totals for the CPS. The changes introduced for 2008 had potentially large effects on the foreign-born population, so revised weights were developed for the historical data series to make the annual estimates comparable. The other modification involves allocating to specific countries those immigrants in the CPS who had not been assigned a country of birth or who had been assigned a broad generic code (e.g., born in Central America). The revised weights had a notable impact, especially on the estimate for 2007. The country-allocation changes affect the estimated unauthorized immigrant numbers for countries and regions of birth but have essentially no impact on the U.S. totals.

This report presents annual estimates of the unauthorized population for 2000–2008, but caution should be exercised in interpreting differences from one year to the next as measures of annual change. Sampling error in the survey and nonsampling errors in both the survey and the demographic estimate may be as large as or larger than the measured change. This appendix includes a discussion of estimated sampling variability in the CPS and its potential impact on measuring change in the unauthorized immigrant population. Traditionally, time intervals of at least four to five years have been used (e.g., Passel 2006).

Residual Methodology

The residual methodology relies on a tautological relationship 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:

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

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

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

L_{total} = Legal immigrants, total

In the Pew Hispanic Center's application of the residual method, the legal immigrant population consists of two main groups: legal permanent residents (by far the larger) and legal temporary immigrants. The much smaller number of legal temporary immigrants, which includes groups such as foreign students in the U.S. and persons on long-term temporary work visas (H-1B or L-1 visas), is estimated by identifying individual respondents in the CPS whose characteristics align with the visa requirements. This group is then removed from the CPS population (A_{total} in equation 1) so the remaining comparisons are for permanent immigrants only.

Legal Immigrant Populations

The residual estimates are calculated for a number of detailed population groups subdivided by gender, age (16 groups), country or region of birth (35 areas), date of entry to the U.S., and state (California, New York, Texas, Florida, Illinois, New Jersey and the balance of the U.S.). The following components are summed to estimate the legally resident immigrant population:

- a. Persons arriving in the U.S. before 1980—all are assumed to be legal by 2000 or later. The data for this groups are from the March CPS (or 2000 Census), corrected for undercount.
- b. Refugees—counted in the year they arrive in the U.S., not when they obtain green cards. Data are from the Office of Refugee Resettlement (ORR) or the Office of Immigration Statistics (OIS).
- c. Asylum approvals—included as legal when asylum status is approved. These, too, are counted as arriving in the year of physical arrival in the U.S., if known, or otherwise in the year of approval. Data are provided by OIS.

d. Cuban-Haitian and other entrants, Amerasians, and various groups of parolees—treated similarly to asylum approvals and refugees. They are also included as legal when approved, not when they obtain green cards; for many, these dates are the same. Data are from ORR and OIS.

e. Persons acquiring legal status under the Immigration Reform and Control Act of 1986—included as legal when they obtain their green cards, based on the *Yearbooks of Immigration Statistics* published by what was then the Immigration and Naturalization Service (INS). Almost all of these 2.6 million formerly undocumented immigrants obtained green cards between 1989 and the late 1990s. They are assigned to years of arrival (many before 1980) based on survey and other data for this group.

f. New legal permanent residents (or persons getting “green cards”). Information on this group comes from OIS and its predecessor offices in INS. Two groups of green card recipients are treated differently in the estimation process:

(1) “New Arrivals”—i.e., persons getting green cards as they enter the U.S.—are counted in the year they arrive (unless they have already been counted in groups b–e to avoid double counting).

(2) Persons “adjusting” to LPR status—i.e., persons getting green cards who are already in another legal status in the U.S. These people are counted as legal in the year they obtain their green card but are assigned to years of arrival based on date of nonimmigrant visa. Persons adjusting from statuses in groups b–e are excluded to avoid double counting.

Other Demographic Components

These legal immigrant population groups are combined using demographic techniques to estimate the legally resident immigrant population for each year and then carried forward one year at a time by adding new immigrants, subtracting deaths and subtracting emigrants. The data elements required for the demographic estimation process are:

a. Mortality rates to estimate deaths. The mortality rates come from official U.S. Life Tables (NCHS) applied to each age-sex-country of birth group.

b. Emigration rates to estimate movement out of the U.S. Age-sex-country-specific rates have been developed using information from Ahmed and Robinson (1994) and Van Hook et al. (2006).

c. Interstate mobility rates to estimate state-to-state movement. These rates are developed from the March CPS, which includes a question on residence one year before the survey.

CPS Coverage

Assumptions about coverage of immigrants in the CPS enter into the estimates at two different points. To compute the initial residual, the CPS data on the total foreign-born population are compared with an estimate of legal foreign-born residents. Because some immigrants are missed in the CPS, the estimate of legal immigrants is “deflated” with assumptions about coverage to develop an estimate of legal immigrants actually counted in the CPS. There are no direct measures of immigrant coverage in the CPS, but the Pew Hispanic Center has developed some estimated undercount rates for legal immigrants that vary by age, sex, race, and duration of residence from race-sex-age-specific estimates of undercount in Census 2000 (Hogan 2001; Mule 2002). For 2008, application of these rates results in an overall CPS undercount rate for legally resident immigrants of 2.0% and of 2.6% for legal immigrants who entered after 1980.

This initial residual estimate is actually an estimate of unauthorized immigrants counted in the CPS. To arrive at the overall total, it is necessary to inflate the numbers by the undercount rate of unauthorized immigrants. Again, there is limited information on census undercount of this group. A study of Mexicans in Los Angeles at the time of the 2000 Census found that unauthorized migrants had undercoverage rates that were several times higher than those of legal immigrants and that averaged 10–15% (Marcelli and Ong 2002). The Pew Hispanic Center has developed a set of assumptions consistent with the available information from the census-based studies and with historical demographic data from Mexico. The undercount rates are higher for countries where the population is largely Latino, for young adult males and for recent arrivals. Overall, in 2008, these assumptions resulted in an estimated undercount of 12.5% for unauthorized immigrants in the March CPS. This assumption is slightly higher than the undercount rate of 10% assumed in OIS estimates (Hoefer et al., 2008, 2007, 2006); however, the OIS estimates use the Census Bureau’s American Community Survey (ACS), not the CPS.

Sampling Error and Interval Estimates

The residual estimate, as computed from equation (1), is subject to sampling error because the CPS component is based on a sample. It is also subject to various nonsampling errors due to the nature of the demographic estimate and the development of the CPS estimate. While the nonsampling errors are difficult to quantify, there are established methods for estimating sampling error, in general. Because the demographic estimate is not sample-based, the sampling error estimate of the undocumented immigrant population is equal to the sampling error for the CPS estimate of the foreign-born population that entered the U.S. since 1980.

The March Supplement to the CPS contains about 80,000 households with roughly 55,000 from the regular March CPS sample and additional households from the previous November as well as some from February and April samples. The survey is not a simple random sample but consists of clusters drawn at different sampling rates to represent states and other sampling strata. As a result, computing sampling errors is not straightforward. The Census Bureau does, however, provide guidance on computing standard errors (U.S. Census Bureau 2008, 2006, for example).

For the estimates shown in this report, the Pew Hispanic Center estimated the standard errors for several different population groupings—including the total foreign-born population and the population subdivided by period of arrival. Several different sets of parameters from the Census Bureau documentation were tested in computing the sampling errors—those for Asian and Hispanic populations, those for measuring income groups, those for employment groups, those for some household members and those for all household members. Each gave slightly different estimates of the standard error for the foreign-born population.

Combining the various estimates produced an approximate standard error of 300,000 for the estimate of unauthorized immigrants in 2008; for Mexico, the standard error is about 175,000; for other Latin America, 150,000; and nations other than Latin America, 225,000. With these standard errors, the 90% confidence interval in 2008 as $\pm 495,000$ for the total unauthorized immigrant population (Table 1); $\pm 290,000$ for Mexicans; $\pm 250,000$ for other Latin Americans; and $\pm 370,000$ for non-Latin Americans. Note that the standard error for non-Latin American unauthorized immigrants is larger than for either of the Latin American groups even though the estimated undocumented population is smaller. This pattern results from the fact that the relative size of the standard errors is not a function of the relative size of the undocumented population, but of the relative sizes of the total foreign-born population entering after 1980.

The CPS has undergone a number of changes this decade. In addition, the foreign-born population has increased steadily. As a result, the standard errors of the estimates of unauthorized immigrants are smaller for years earlier in the decade than for 2008. In comparing estimates from different years, the sampling error of both years' estimates must be taken into account. Thus, the standard error of the difference of change in undocumented population is roughly 1.4 times the standard error of the estimate for one year. When comparing consecutive years, the overlapping sample design of the CPS must be taken into account (U.S. Census Bureau 2006). In this case, the standard error of the change is about 1.2 times the standard error for the population in a single year. The 90% confidence intervals shown in the report are ± 1.645 times the standard error of the estimate.

Weighting and Editing the CPS

CPS Weights

The Current Population Survey is weighted to agree with a set of population estimates, called “population controls.” These controls include national estimates by age-sex-race/Hispanic origin, a different set of national totals by age-sex-race and age-sex-Hispanic origin, and two sets of totals for states by age-sex-race (U.S. Census Bureau 2006; Killion 2007).

The population estimates used as control totals for the CPS are supplied each year by the Census Bureau. For most years, the population controls are consistent with those from previous years, but always incorporate new data for the most recent years. Each new series of estimates goes back to 2000 and is labeled with a “vintage” corresponding to the year in which they were introduced. (The March population controls for each year are based on the previous year’s vintage.)

In some years, the changes in the population estimates are larger as a result of new methods and/or data. Such a substantial revision occurred for the “Vintage 2007” estimates when the Census Bureau revised its method for measuring immigration. The revisions lowered the measured level of immigration for every year since 2000. As a result, the vintage 2007 population estimate for March 2008 was about 800,000 less than what it would have been if the vintage 2006 methods had continued; the change reduced the Hispanic population by about 400,000. While the Census Bureau releases the entire series of population estimates, it does not go back in time and revise the previous March CPS supplements.

The vintage 2007 revisions clearly had the potential to affect the measured size of the foreign-born population and thus the Pew Hispanic Center’s measures of undocumented immigration (U.S. Bureau of Labor Statistics 2008). The CPS estimate of the foreign-born population is obtained by summing the individual weights for foreign-born respondents and not directly from the population estimates. But revisions that affect weights of Hispanics and Asians can have a sizable impact on the measured foreign-born population.

Because this report includes the time series of undocumented population estimates for 2000–2008, it is important that the estimates be computed with consistent data. To correct the measures for changes in weighting and estimation methods, we reweighted the March CPS data for 2003–2007 using the vintage 2007 population estimates (U.S. Census Bureau 2008a) according to the weighting specifications used by the Census Bureau (2006 and Killion 2007). For 2003–2006, the impact of the changed population controls was negligible, affecting the estimate of undocumented immigrants by less than 100,000. However, for the March 2007 CPS, the introduction of new controls lowered the estimate by

300,000 over what would it have been using the originally published March CPS weights.

The published estimates and specifications did not permit full reweighting of the March 2000–2002 CPSs because of changes in the collection of race data. We anticipate revising the estimates for these years after vintage 2007 data that use the old race definitions are developed.

Country of Birth

The estimates of the unauthorized population shown in this report divide the world into a number of regions. “Latin America” is defined to include Mexico, Central America, Caribbean countries and South America. “Europe” includes Russia and all of the newly independent countries that were part of the former Soviet Union, even though some of the countries are geographically in Asia. This grouping is designed to maintain maximum consistency over time and with the administrative data series used. While all of these countries are separately identified in immigration statistics since their independence, they do not appear in immigration statistics of the 1980s nor are most identified as countries of birth in the CPS. “Asia,” as used in this report, is composed of the Middle Eastern countries of southwest Asia, but not the states that were part of the former Soviet Union. “Africa and Other” consists of all African countries, Oceania, and the small number of respondents not assigned a specific country of birth code.

The published CPS data assign specific countries of birth to almost the entire foreign-born population. However, several hundred thousand (weighted) cases each year are assigned as foreign born, but with their country of birth unknown. In addition, there are a number of “generic” categories used for each region of the world to encompass individuals reporting countries with too few respondents to be identified separately or individuals not giving a specific country response (e.g., Other Europe, Central America, North America). For previously published estimates (e.g., Passel 2006), many individuals with an unknown country of birth were assigned to specific countries or regions on the basis of Hispanic origin (e.g., Mexican origin and unknown country of birth to Mexico), race (e.g., Asian race to Other Asia), and country of birth of mother, father or other close relatives. However, a significant number of respondents remained in the generic categories.

For the estimates presented here, the editing process was extended to assign basically all individuals with an unknown country of birth to a specific country. Those assigned by the previous method were assigned in the same manner; the allocation process was extended to encompass a wider range of relatives and to use reports from nearby households together with the respondent’s race and Hispanic origin. In addition to assigning individuals with an unknown country of birth, the new allocation process was expanded to include some of the generic regional groupings (if all or almost all of the immigrant-sending countries in the

region could be identified). For example, for 2000–2006, the CPS included a category “born in Central America” even though all Central American countries were coded individually. Thus, in the recoded data for 2000–2006, individuals are no longer coded as “born in Central America” but more individuals are assigned to each of the specific countries. In contrast, there is a category labeled “Other African Country” but so few African countries are coded individually that the generic code could not be reliably reassigned.

The groups affected by the reassignment of country of birth differed for 2000–2006 from 2007–2008 because the Census Bureau expanded and changed the country of birth codes beginning with the January 2007 CPS (U.S. Census Bureau 2008b). The groups affected by the reassignment for 2000–2006 were North America, Central America and Unknown Country. For 2007 and later, the revised coding of countries eliminated the North America and Central America codes and expanded the number of specific countries identified. As a result, a broader set of codes be reassigned. These are: Europe not specified, Asia not specified, South America not specified, the Americas; and Unknown Country. While the reassignment of country codes affects the estimates for individual countries and smaller regions, the impact on the total number of undocumented immigrants estimated for each year is negligible and only slightly larger for the three broad groups reported here.