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New Estimate: 11.7 million in 2012

Population Decline of Unauthorized Immigrants Stalls, May Have Reversed

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About the Pew Research Center's Hispanic Trends Project

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About this Report

This report provides estimates of the size of the March 2012 unauthorized immigrant population for the nation, as well as for the six states (California, Florida, Illinois, New Jersey, New York and Texas) where 60% of unauthorized immigrants live. For the nation, it also shows estimates of the size of the unauthorized immigrant population from Mexico and from all other countries. For the nation, the six states and the balance of the country, the report also includes annual estimates of the unauthorized immigrant population for 1995-2012 and an estimate for 1990. Estimates for those years at the national level also are provided for the unauthorized immigrant population from Mexico and all other countries.

The Pew Research Center's Hispanic Trends Project estimates the unauthorized immigrant population using a residual method, which is based on official government data. Under this methodology, a demographic estimate of the legal foreign-born population—naturalized citizens, legal permanent residents, temporary legal residents and refugees—is subtracted from the total foreign-born population as measured in a survey. The remainder, or residual, is the source of population estimates and characteristics of unauthorized immigrants.

The estimates use data from the Current Population Survey (CPS), conducted by the Bureau of Labor Statistics and the Census Bureau, and from the American Community Survey (ACS), conducted by the Census Bureau. The March Supplement to the CPS, a survey of about 80,000 households for 2001 and later versus about 50,000 households earlier, is the source of data for 1995-2004 and for 2012. The ACS, a compilation of monthly data including about 3 million households each year, is the source of data for 2005-2011. The Pew Research Center's Hispanic Trends Project's estimates make adjustments to the government data to compensate for undercounting, 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 for years from the CPS and a July 1 reference date for years from the ACS.

These estimates are not consistent with previously published Pew Research Center estimates of the unauthorized immigrant population. The previous unauthorized immigrant numbers are based on survey data tied to previous Census Bureau population estimates that have since been revised. The Pew Research Center revised the historic survey data so those data conform to updated Census Bureau population estimates. The resulting series of unauthorized immigrant estimates are consistent over time but inconsistent with previous estimates. See Methodology for more details.

Accompanying this report are an interactive graphic and a slide show about overall unauthorized immigration trends.

This report was written by senior demographer Jeffrey S. Passel, senior writer D’Vera Cohn and research associate Ana Gonzalez-Barrera. Research analyst Eileen Patten created the charts and tables. Research assistant Anna Brown number-checked the report. Marcia Kramer was the copy editor.

The authors appreciate the guidance of Paul Taylor, executive vice president of the Pew Research Center, and of Mark Hugo Lopez, the center’s director of Hispanic research.

A Note on Terminology

“Foreign born” refers to an individual who is not a U.S. citizen at birth or who, in other words, 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. “U.S. born” refers to an individual who is a U.S. citizen at birth, including people born in the United States, Puerto Rico or other U.S. territories, as well as those born elsewhere to parents who are U.S. citizens. The U.S.-born population is also called the “native population.”

The “legal immigrant” population is defined as people granted legal permanent residence; those granted asylum; people admitted as refugees; and people admitted under a set of specific authorized temporary statuses for longer-term residence and work. This group includes “naturalized citizens,” legal immigrants who have become U.S. citizens through naturalization; “legal permanent resident aliens” who have been granted permission to stay indefinitely in the U.S. as permanent residents, asylees or refugees; and “legal temporary migrants” who are allowed to live and, in some cases, work in the U.S. for specific periods of time (usually longer than one year).

“Unauthorized immigrants” are all foreign-born non-citizens residing in the country who are not “legal immigrants.” These definitions reflect standard and customary usage by the U.S. Department of Homeland Security and academic researchers. The vast majority of unauthorized immigrants entered the country without valid documents or arrived with valid visas but stayed past their visa expiration date or otherwise violated the terms of their admission. Some who entered as unauthorized immigrants or violated terms of admission have obtained work authorization by applying for adjustment to legal permanent status or by obtaining Temporary Protected Status (TPS). Data are very limited, but this “quasi-legal”

group could account for as much as 10% of the unauthorized population. Many could also revert to unauthorized status.

“Removals” are the compulsory and confirmed movement of inadmissible or deportable aliens out of the United States based on an order of removal. An alien who is removed has administrative or criminal consequences placed on subsequent re-entry. The Department of Homeland Security uses the term “removal” rather than “deportation” to describe the actions of its Immigration and Customs Enforcement (ICE) and Customs and Border Protection (CBP) to expel foreign nationals from the country. “Deportations” are one type of removal and refer to the formal removal of a foreign citizen from the U.S. In addition, a foreign citizen may be expelled under an alternative action called an expedited removal. The Illegal Immigration Reform and Immigrant Responsibility Act of 1996 allows U.S. immigration authorities to issue an expedited order of removal and directly remove a foreign citizen without referral to an immigration judge under certain circumstances. Deportations and expedited removals together comprise removals reported by the Department of Homeland Security.

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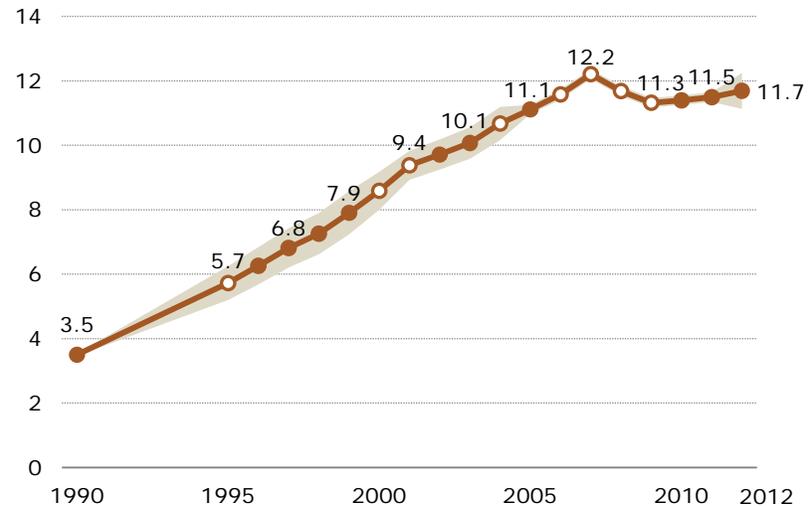
1. Overview

The sharp decline in the U.S. population of unauthorized immigrants that accompanied the 2007-2009 recession has bottomed out, and the number may be rising again. As of March 2012, 11.7 million unauthorized immigrants were living in the United States, according to a new preliminary Pew Research Center estimate based on U.S. government data.

The estimated number of unauthorized immigrants peaked at 12.2 million in 2007 and fell to 11.3 million in 2009, breaking a rising trend that had held for decades. Although there are indications the number of unauthorized immigrants may be rising, the 2012 population estimate is the midpoint of a wide range of possible values and in a statistical sense is no different from the 2009 estimate.

Different trends appear among the six states in which 60% of unauthorized immigrants live—California, Florida, Illinois, New Jersey, New York and Texas.¹ Of these, only Texas had increases but no decrease in its unauthorized immigrant population over the 2007-2011

Figure 1
Estimates of the U.S. Unauthorized Immigrant Population, 1990-2012
in millions



Notes: Shading surrounding line indicates low and high points of the estimated 90% confidence interval. White data markers indicate the change from the previous year is statistically significant (for 1995, change is significant from 1990). Data labels are for 1990, odd years from 1995-2011 and 2012.

Source: Table 1, derived from Pew Research Center estimates based on residual methodology applied to March Supplements to the Current Population Survey for 1995-2004, 2012 and to the American Community Survey for 2005-2011. Estimates for 1990 from [Warren and Warren \(2013\)](#). See Methodology.

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¹ These six states had the largest unauthorized immigrant populations when the Pew Research Center's methodology for estimating such immigration was developed, and were the only states with large enough survey samples from which to develop reliable estimates at that time. With the geographic dispersal of the unauthorized immigrant population, other states may now have larger populations than some of these six. Estimates for the remaining 44 states, and the District of Columbia, will be released in a subsequent report.

period. The other five states (and the balance of the country) all experienced peak numbers of unauthorized immigrants in 2007 followed by declines over the next year or two.

In terms of country of origin, the post-2007 population dip was even sharper among Mexicans (who made up 52% of 2012 unauthorized immigrants) than the overall population decrease, although the Mexican decline appears to have stopped after 2010. In 2012, 6.05 million Mexican unauthorized immigrants were in the U.S., a decline of about 900,000 from 2007.

Methods and Cautions

The new Pew Research estimates rely on the center's residual methodology, in which legal immigration is subtracted from the adjusted total foreign-born population to arrive at a total for unauthorized immigrants. These estimates slightly revise previously published estimates for 2000-2011 ([Passel and Cohn, 2012a](#)) to account for new findings from the 2010 Census. This report also presents the initial, direct residual estimates that cover six individual states and aggregate the rest of the country; more detailed estimates for the remaining states and for characteristics of the unauthorized immigrant population are developed from these estimates and will be available in a later report.

These estimates also introduce a new data source for the Pew Research estimates—the U.S. Census Bureau's American

Comparison with Previous Estimates

Estimates presented here of the unauthorized immigrant population replace those previously published by the Pew Research Center for 2000 to 2011 ([Passel and Cohn, 2012a](#)). The figures for the foreign-born population used in these new estimates are drawn from two U.S. government surveys—the March Supplement to the Current Population Survey (CPS) and the American Community Survey (ACS). Those surveys are, in turn, tied to the Census Bureau's estimates of the population during the survey period. At the time the surveys are released by the Census Bureau, they incorporate the most recent official population estimates.

After the release of 2010 Census results, the Census Bureau issued a set of new population estimates that incorporated updated information about population change over the previous decade. The same process took place after the 1990 and 2000 censuses. However, the Census Bureau generally does not return to previously released ACS, CPS or other survey data to incorporate updated information from these revised intercensal population estimates.

In the interest of greater accuracy, the Pew Research Center developed new survey estimates for the 2005-2009 ACS and the 2000-2010 March CPS that are consistent with the results of both the 2000 and 2010 censuses; for March 2011 consistent with the 2010 Census; and for March 1995-1999 consistent with both the 1990 and 2000 censuses. These new survey estimates are based on the Census Bureau's revised annual intercensal population estimates, i.e., those that are consistent with both the preceding and subsequent censuses.

Those new survey estimates are the basis for the new unauthorized immigrant numbers presented in this report. The new estimates of the unauthorized immigrant population generally show the same trends over time as the previous estimates but at slightly higher levels for some years (notably in the 1990s and second half of the 2000s). Users are cautioned that previous estimates should not be compared with those in this report.

Community Survey (ACS) for 2005 to 2011, replacing the March Current Population Survey (CPS) for those years. The ACS has about 12 times more sample cases than the CPS and thus provides more precise estimates with smaller margins of error.

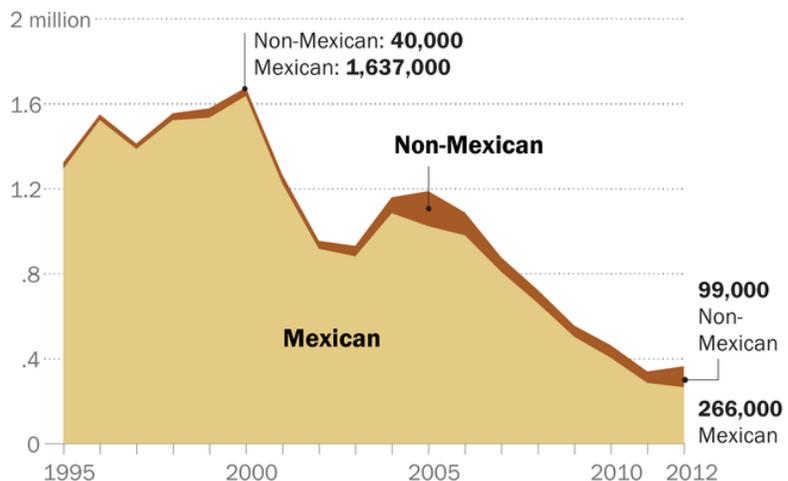
In analyzing recent year-to-year change, especially at the state level, this report focuses on 2005 to 2011 (especially 2007 to 2011) because the large sample size for ACS-based estimates permits more statistically sound statements about annual differences than was possible with the previously published estimates. The 2012 CPS-based estimates are derived from a much smaller sample, resulting in margins of error generally too large to draw conclusions about change from 2011 to 2012. These 2012 CPS estimates should be treated as preliminary because they will be replaced with ACS-based estimates when the 2012 ACS microdata become available later this year. (See Methodology for more details.)

Other Evidence

Additional evidence about trends in unauthorized immigration comes from U.S. government data on border apprehensions.

Driven by unauthorized immigration from Mexico, U.S. Border Patrol apprehensions rose through the 1990s and peaked at 1.7 million in fiscal 2000. After reaching somewhat lower levels for 2001-2007, apprehensions fell dramatically from 2007 to 2011. In 2012, the number of unauthorized immigrants apprehended at the Mexican border rose modestly, to 365,000, but only because of growing apprehensions of non-Mexicans; apprehensions of Mexicans continued to decline.

Figure 2
Border Patrol Apprehensions of Unauthorized Immigrants, 1995-2012



Notes: Data are for fiscal years. Includes apprehensions between ports of entry.

Source: For all apprehensions, U.S. Customs and Border Patrol, 2013b. For 1995-1999 Mexican apprehensions U.S. Department of Homeland Security 2004. For 1999-2012, U.S. Customs and Border Patrol 2013a.

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2. Number and Trend

The number of unauthorized immigrants living in the U.S. climbed steadily from 1990 to 2007, when it peaked at 12.2 million people.² The trend of annual increases averaging more than 500,000 per year then changed abruptly as the number of unauthorized immigrants living in the U.S. fell in 2008 and 2009, reversing a pattern of gains that had prevailed for decades. There was no statistically significant annual change in 2010, 2011 or 2012, indicating that the decline has leveled off.

In 2012, the population of 11.7 million unauthorized immigrants was half a million people smaller than it had been in 2007, when the Great Recession began. (The recession officially ended in June 2009.)

Although it appears that the unauthorized immigrant total has begun to grow again, the data are insufficient to say so definitively. The difference in the size of the unauthorized population from 2010 (11.4 million) to 2012 (11.7 million), or from 2011 (11.5 million) to 2012 is not statistically significant.

As explained above, the estimates are not exact because they are derived from Census Bureau sample surveys, rather than complete counts. Each annual estimate actually is the middle point of a range of possible values. One approximate indicator is that if the annual ranges overlap—as they do for 2010 and 2012, and for 2011 and 2012—apparent differences may not be real. (See Methodology for more detail.)

Table 1
Estimates of the U.S. Unauthorized Immigrant Population, 1990-2012
in thousands

	Estimate	Range
2012	11,700	(11,100-12,200)
2011	11,500	(11,300-11,600)
2010	11,400*	(11,200-11,500)
2009	11,300**	(11,200-11,500)
2008	11,700**	(11,500-11,800)
2007	12,200**	(12,100-12,400)
2006	11,600**	(11,400-11,700)
2005	11,100*	(11,000-11,300)
2004	10,700**	(10,200-11,200)
2003	10,100*	(9,600-10,600)
2002	9,700*	(9,250-10,200)
2001	9,400**	(8,950-9,850)
2000	8,600**	(8,000-9,200)
1999	7,900*	(7,250-8,600)
1998	7,250*	(6,600-7,900)
1997	6,800*	(6,200-7,450)
1996	6,250*	(5,700-6,850)
1995	5,700**	(5,200-6,250)
1990	3,500	(3,450-3,550)

Notes: Range represents the bounds of the estimated 90% confidence interval. The symbol ** indicates the change from the previous year is statistically significant (for 1995, change is significant from 1990). If the annual change is not statistically significant, the symbol * indicates the change from two years ago is significant. Significance of other differences is not shown.

Source: Pew Research Center estimates based on residual methodology applied to March Supplements to the Current Population Survey for 1995-2004, 2012 and to the American Community Survey for 2005-2011. Estimates for 1990 from [Warren and Warren \(2013\)](#). See Methodology.

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² Pew Research Center estimates include annual change from 1995 to 2011. Warren and Warren (2013) includes annual changes from 1990 to 1995.

Despite recent declines, the unauthorized immigrant population in 2012 was about three times what it had been in 1990, when an estimated 3.5 million foreign born residents lived in the U.S. without legal authorization. By 1995, that number grew to 5.7 million. By 2005, the 1995 total had nearly doubled, to 11.1 million.

The legal immigrant population has continued to increase in recent years, so the decline in the unauthorized population means that unauthorized immigrants are a somewhat

smaller share of the foreign-born population of 41.7 million in 2012 (28%) than in 2007 (30%). However, unauthorized immigrants still represented a much higher share of all immigrants in 2012 than in 1995 (21%).

In addition to 11.7 million unauthorized immigrants, the U.S. foreign-born population included 28.3 million legal permanent immigrants in 2012, an increase from 26.9 million in 2007. This growth was consistent with patterns over the past decade. The total also included 1.7 million legal temporary migrants, compared with an estimated 1.5 million in 2007.

Table 2
Estimates of the U.S. Immigrant Population, Selected Years

	All immigrants	Legal	Legal temporary	Unauthorized
Population (in thousands)				
2012	41,700	28,300	1,700	11,700
2007	40,500	26,900	1,500	12,200
2005	38,100	25,600	1,450	11,100
2000	32,600	22,600	1,500	8,600
1995	26,900	20,000	1,100	5,700
Share				
2012	100	68	4	28
2007	100	66	4	30
2005	100	67	4	29
2000	100	69	5	26
1995	100	75	4	21

Notes: All populations rounded independently. Percentages compiled from unrounded numbers, so shares may not add to total.

Source: Pew Research Center estimates based on March Supplements to the Current Population Survey for 1995, 2007 and 2012 and the American Community Survey for 2005. All estimates adjusted for omissions. See Methodology.

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3. State Patterns

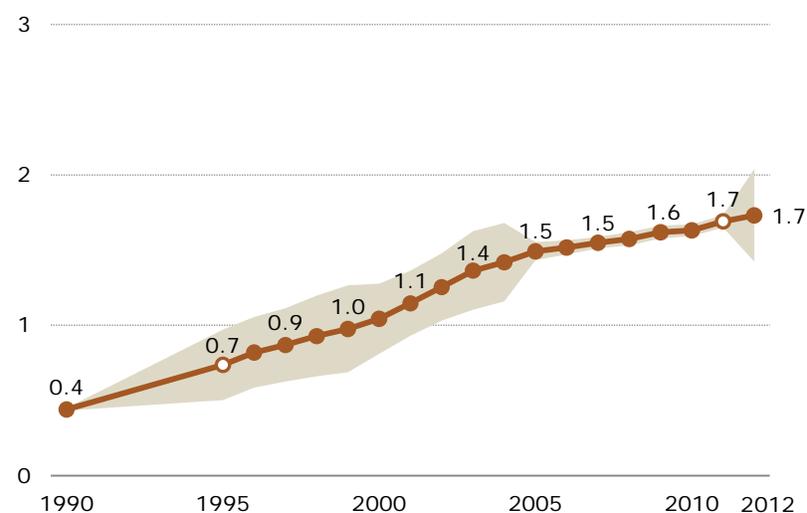
The Pew Research analysis finds that population trends varied from 2007 to 2011 among the six states that are home to most of the nation's unauthorized immigrants—California, Florida, Illinois, New Jersey, New York and Texas. (As explained in the Overview, individual estimates for other states are not available and will be provided in a later report.)

One state—Texas—had increases but no decreases during the 2007-2011 period compared with 2007, continuing its overall increases over the previous decade and a half. The remaining five states (and the combined total for the rest of the country) each had increased to a peak value in 2007 but then experienced declines. After the initial drop, two states—Florida and New Jersey—had increases in 2007-2011. Three states—California, Illinois and New York—had only declines during this period. The remaining states, as a group, showed a slight decrease by 2009 but no other significant changes.

Figure 3

Estimates of the Unauthorized Immigrant Population in Texas, 1990-2012

in millions



Notes: Shading surrounding line indicates low and high points of the estimated 90% confidence interval. White data markers indicate the change from the previous year is statistically significant (for 1995, change is significant from 1990). Data labels are for 1990, odd years from 1995-2011 and 2012.

Source: Table A1, derived from Pew Research Center estimates based on residual methodology applied to March Supplements to the Current Population Survey for 1995-2004, 2012 and to the American Community Survey for 2005-2011. Estimates for 1990 from [Warren and Warren \(2013\)](#). See Methodology.

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As stated earlier, data limitations for 2012 make it difficult to draw conclusions about change from previous years. For all six states, there are no statistically significant differences between the estimates for 2012 and those for 2007, 2008, 2009, 2010 or 2011. However, discernible differences exist between 2011 and previous years. Because the much larger sample size for 2011 permits us to make stronger statements than for 2012, this analysis will focus most on the

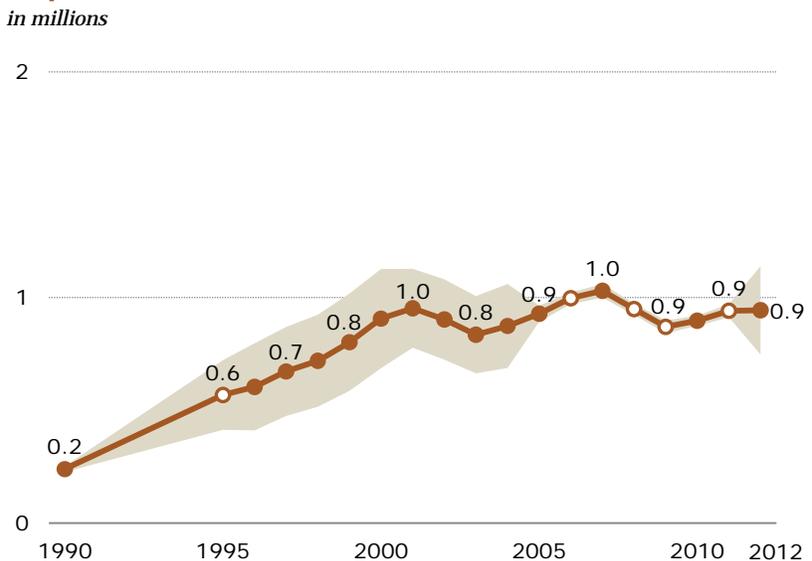
years 2007 to 2011. When the 2012 ACS becomes available, it may be possible to make more definitive statements about differences between 2012 and other recent years.

Texas, which had 1.7 million unauthorized immigrants in 2012, is the only one of the six states that did not experience declines in unauthorized immigration during 2007-2011. The state's unauthorized immigrant population increased by 2009, compared with 2007, and also grew in 2011 compared with 2009 and 2010.

Looking back to 1990, Texas has had dramatic growth in its unauthorized population (as well as its overall population, which expanded more rapidly than the nation as a whole during this period). The 2012 Texas unauthorized total was nearly four times the size it was in 1990, when it was 450,000. The Texas unauthorized population also more than doubled from 1990 to 2000; from 2000 to 2012, it grew by about two-thirds (66%).

Florida had an estimated 950,000 unauthorized immigrants in 2012. The number declined sharply in 2008 and again in 2009 compared with the previous year. However, the number began growing again after that: In 2011, the estimated unauthorized immigrant population in Florida (950,000) was larger than it had been two years earlier, in 2009 (875,000), but not as large as its peak value in 2007 (1.0 million).

Figure 4
Estimates of the Unauthorized Immigrant Population in Florida, 1990-2012
in millions



Notes: Shading surrounding line indicates low and high points of the estimated 90% confidence interval. White data markers indicate the change from the previous year is statistically significant (for 1995, change is significant from 1990). Data labels are for 1990, odd years from 1995-2011 and 2012.

Source: Table A1, derived from Pew Research Center estimates based on residual methodology applied to March Supplements to the Current Population Survey for 1995-2004, 2012 and to the American Community Survey for 2005-2011. Estimates for 1990 from [Warren and Warren \(2013\)](#). See Methodology.

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New Jersey had a somewhat similar pattern of decline, then growth. The state had an estimated 525,000 unauthorized immigrants in 2012. New Jersey's unauthorized population declined in 2008, compared with the 2007 peak (550,000), and then rose in 2010, compared with 2009, staying at that higher level in 2011. (See Appendix chart.)

California, New York and Illinois had declines in their unauthorized immigrant populations in recent years, but no increases after that.

In California, the state with the largest unauthorized immigrant population (2.45 million in 2012), the number declined in 2008 from 2.8 million in 2007 and then declined again in 2009. The decline stopped in 2010 and 2011 but did not change to an increase.

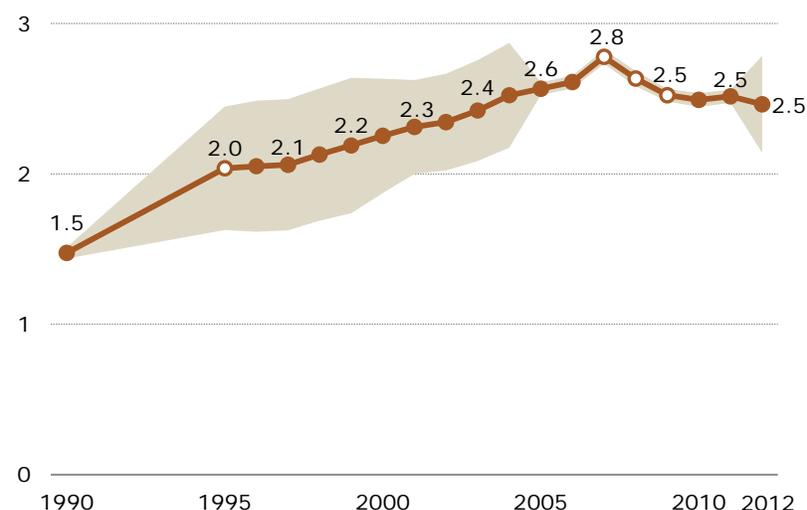
New York had an estimated 875,000 unauthorized immigrants in 2012. The number of unauthorized immigrants in the state declined in 2008, from 1.0 million in 2007, and stayed at that lower level, showing no statistically significant change in 2009, 2010 and 2011. (See Appendix chart.)

Illinois had about 450,000 unauthorized immigrants in 2012. The state's population of unauthorized immigrants was lower in 2009 (500,000) than it had been in 2007 (550,000), but there has been no statistically significant change since then. (See Appendix chart.)

Figure 5

Estimates of the Unauthorized Immigrant Population in California, 1990-2012

in millions



Notes: Shading surrounding line indicates low and high points of the estimated 90% confidence interval. White data markers indicate the change from the previous year is statistically significant (for 1995, change is significant from 1990). Data labels are from 1990, odd years from 1995-2011 and 2012.

Source: Table A1, derived from Pew Research Center estimates based on residual methodology applied to March Supplements to the Current Population Survey for 1995-2004, 2012 and to the American Community Survey for 2005-2011. Estimates for 1990 from [Warren and Warren \(2013\)](#). See Methodology.

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These six states have long been home to the majority of the nation's unauthorized immigrant population, but as foreign-born residents have moved into new destinations, the six are not as dominant as they once were. In 2012, 60% of the unauthorized immigrant population lived in those states, compared with 80% in 1990.

While the total number of unauthorized immigrants living in these six large states was 2½ times as high in 2012 (7.0 million) as in 1990 (2.8 million), the total in the remaining states and the District of Columbia was nearly seven times as high in 2012 (4.7 million) as it was in 1990 (700,000).

As a group, the remaining states had steady annual increases in their unauthorized immigrant population, which reached 4.75 million in 2007. This growth stopped abruptly after 2007, and by 2009 the number had dropped to 4.55 million. Since then, there has been no statistically significant change in the numbers.

Most of this reduction in share in the largest states is due to a sharply reduced proportion in California. The Golden State had 21% of unauthorized immigrants in 2012, compared with 42% in 1990. Illinois and New York had small declines in their shares of all unauthorized immigrants. The other three states had modest increases.

4. National Origin

Most of the U.S. unauthorized population comes from Mexico—52% in 2012. The number of Mexican-origin unauthorized immigrants in 2012 was lower than it was in 2007, while the number from other countries is statistically unchanged.

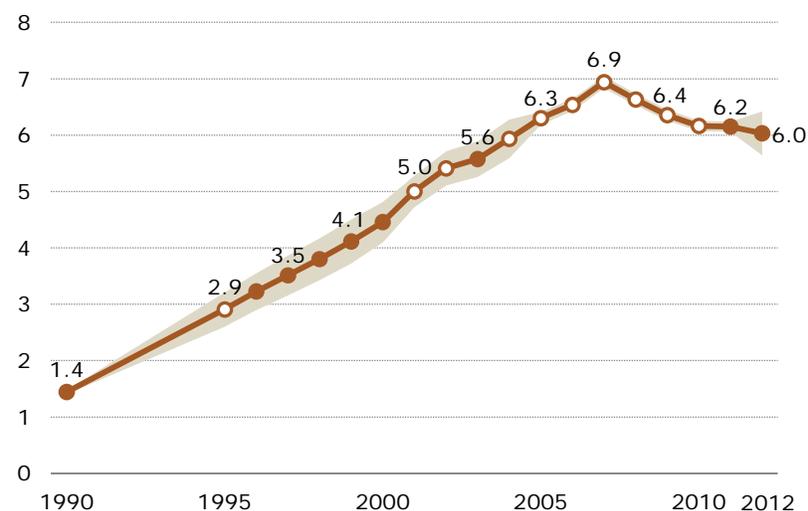
The unauthorized Mexican immigrant population grew dramatically through 2007, reaching a peak of 6.9 million, or almost five times the number in 1990 (1.4 million). The growth trend reversed abruptly after 2007, as the population of unauthorized Mexican immigrants declined in 2008, 2009 and 2010 from the previous year. It did not rise or fall in 2011.

The number of unauthorized immigrants from all other countries also grew steadily through 2007 to 5.25 million, compared with 2.05 million in 1990. This group declined in 2008, held steady in 2009, and rose in 2010 compared with the previous year. The 2011 total was unchanged from 2010 but higher than it had been in 2009. The total for 2012 (5.65 million) appears to be higher than the 2007 peak but because of the large margin of error, this cannot be confirmed with the preliminary estimates.

Figure 6

Estimates of the U.S. Unauthorized Immigrant Population from Mexico, 1990-2012

in millions



Notes: Shading surrounding line indicates low and high points of the estimated 90% confidence interval. White data markers indicate the change from the previous year is statistically significant (for 1995, change is significant from 1990). Data labels are for 1990, odd years from 1995-2011 and 2012.

Source: Table A2, derived from Pew Research Center estimates based on residual methodology applied to March Supplements to the Current Population Survey for 1995-2004, 2012 and to the American Community Survey for 2005-2011. Estimates for 1990 from [Warren and Warren \(2013\)](#). See Methodology.

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Because of the decline in Mexicans and growth in unauthorized immigrants from other countries of origin, Mexicans represented a smaller share of unauthorized immigrants in 2012 (52%) than in 2007 (57%).

Arrivals and Departures

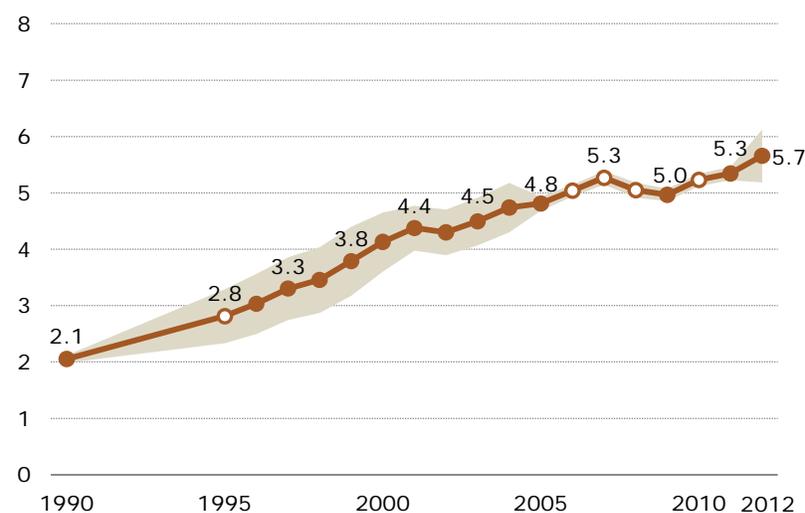
Changes in the size of the unauthorized immigrant population result from the balance of inflows of new unauthorized immigrants offset by departures from the U.S. (and deaths, which are relatively few).

The steady growth until recently of the unauthorized population (from Mexico and all other countries) resulted from significantly larger numbers of arrivals than departures. Since 2007, there is evidence from the U.S. data (both ACS and CPS) as well as from other sources of dramatic reductions in arrivals of new unauthorized immigrants.

However, these reductions in arrivals alone are insufficient to explain the large population declines for unauthorized immigrants from Mexico. Previous Pew Research analysis of Mexico-U.S. migration found that migration to Mexico over the 2005-2010 period roughly balanced the flows into the U.S.—something that had not happened since the 1930s ([Passel, Cohn and Gonzalez-Barrera, 2012](#)). Viewing these new estimates for Mexican unauthorized immigrants in the context of that previous research suggests that the return flow of unauthorized Mexican immigrants for 2007-2009 was significantly larger than the flow from Mexico into the U.S.

Figure 7
Estimates of the U.S. Unauthorized Immigrant Population from Countries Other than Mexico, 1990-2012

in millions



Notes: Shading surrounding line indicates low and high points of the estimated 90% confidence interval. White data markers indicate the change from the previous year is statistically significant (for 1995, change is significant from 1990). Data labels are for 1990, odd years from 1995-2011 and 2012.

Source: Table A2, derived from Pew Research Center estimates based on residual methodology applied to March Supplements to the Current Population Survey for 1995-2004, 2012 and to the American Community Survey for 2005-2011. Estimates for 1990 from [Warren and Warren \(2013\)](#). See Methodology.

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Departures to Mexico in 2007-2009 also were larger than in the years immediately before and after that period, as evidenced in data from the Mexican census of 2010 and Mexican surveys from 2006 and 2009. This increased return represents a marked change in pattern from the largest immigration wave in U.S. history.

Several other data sources also provide evidence of reduced arrivals of new Mexican immigrants, especially unauthorized immigrants. U.S. Customs and Border Patrol apprehensions of Mexicans attempting to enter the U.S. illegally across the southern border help to explain some of the trends in the unauthorized Mexican population. While the apprehensions do not themselves measure the number of illegal border crossers, they are an indicator of changing flows ([Passel, Cohn and Gonzalez-Barrera, 2012](#)).

During years when the unauthorized Mexican population was increasing rapidly, annual apprehensions of Mexicans were almost always close to 1 million or more, peaking at more than 1.6 million in fiscal 2000. Apprehensions began to drop significantly in fiscal 2007 and by 2011 were only about one-sixth of their peak value (286,000 versus 1.64 million). The apprehensions of Mexicans decreased further in 2012, to 266,000 (see Figure 2).

Other evidence to help explain trends in unauthorized immigration from Mexico comes from Mexican government surveys. The ENOE (Encuesta Nacional de Ocupación y Empleo, or National Survey of Occupations and Employment) shows that the rate of migration to the U.S. fell by two-thirds between 2006-2007 and 2011-2012 ([INEGI, 2013](#)). Initial data for 2012 show no change from 2011. These greatly reduced inflows to the U.S. can help explain the decreasing unauthorized Mexican population and its leveling off after 2010.

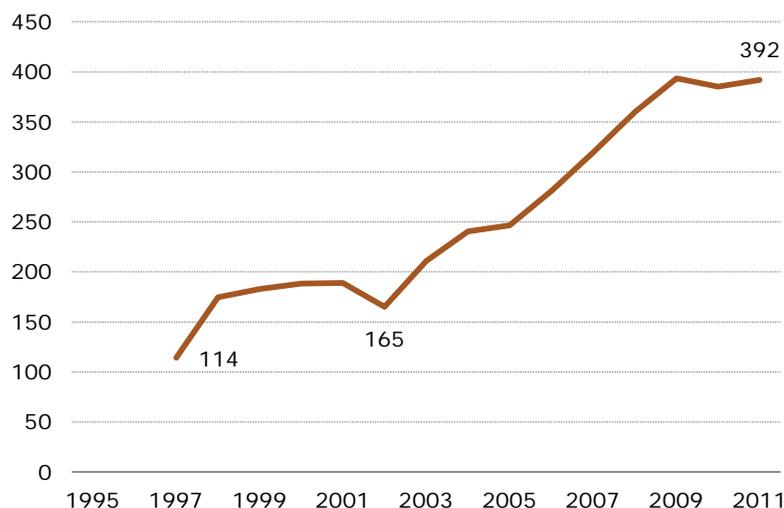
Border Patrol apprehensions of non-Mexicans at the Mexican border, meanwhile, had been below 50,000 from fiscal 1993 to 2002, then grew rapidly to peak at 165,000 in 2005. The number declined or leveled off from 2006 to 2011. In 2012, apprehensions of non-Mexicans nearly doubled the 2011 total, increasing to 99,000.

Another indicator of border activity is deportations (officially called “removals”) by the Department of Homeland Security. In fiscal 2011, DHS formally removed 392,000 unauthorized immigrants and other legal immigrants who violated U.S. laws, about the same number as in 2009 and 2010. Before that, except for a one-year decline in fiscal 2002, the number of deportations had risen each year since the late 1990s.

Removals are one enforcement tactic to diminish the size of the unauthorized immigrant population, although many of those removed return to the U.S. (or try to do so). The recent high levels of removals, from 2008 to 2011, correspond to years when the unauthorized immigrant population was declining or remaining relatively steady.

Figure 8
Immigrants Removed by U.S. Authorities, 1997-2011

in thousands



Notes: Years are fiscal years. Total includes deportations and expedited removals, at the border or in the interior of the U.S. Official data prior to 1997 is not shown because it did not include expedited removals.

Source: *Yearbook of Immigration Statistics: 2011*, Table 39. [U.S. Department of Homeland Security](http://www.dhs.gov)

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References

- Bean, Frank D., R. Corona, R. Tuirán and K. Woodrow-Lafield. 1998. “The Quantification of Migration Between Mexico and the United States,” pp. 1-90 in *Migration Between Mexico and the United States, Binational Study*, Vol. 1. Mexico City and Washington, DC: Mexican Ministry of Foreign Affairs and U.S. Commission on Immigration Reform.
- Capps, Randolph, Leighton Ku, Michael E. Fix, Chris Furgiuele, Jeffrey S. Passel, Rajeev Ramchand, Scott McNiven and Dan Perez-Lopez. 2002. “How are Immigrants Faring After Welfare Reform? Preliminary Evidence from Los Angeles and New York City—Final Report.” Washington, DC: Urban Institute, March.
<http://www.urban.org/publications/410426.html>
- Hoefer, Michael, Nancy Rytina and Bryan Baker. 2012. “Estimates of the Unauthorized Immigrant Population Residing in the United States: January 2011.” Washington, DC: U.S. Department of Homeland Security, Office of Immigration Statistics, March. https://www.dhs.gov/sites/default/files/publications/ois_ill_pe_2011.pdf
- Instituto Nacional de Estadística y Geografía (INEGI). 2013. “Migración Internacional de México al cuarto trimestre de 2012.” Mexico City, April.
<http://www.inegi.org.mx/inegi/contenidos/espanol/prensa/Boletines/muestra3.asp?tema=22&s=inegi&c=279>
- 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, May.
- Passel, Jeffrey. 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. 2001. “Demographic Analysis: An Evaluation.” Section 4 in *U.S. Census Monitoring Board, Presidential Members. Final Report to Congress*. Washington, DC, September.
http://govinfo.library.unt.edu/cmb/cmbp/reports/final_report/default.asp.htm
- Passel, Jeffrey S. and Rebecca L. Clark. 1998. *Immigrants in New York: Their Legal Status, Incomes and Taxes*. Washington, DC: Urban Institute, April.
<http://www.urban.org/publications/407432.html>

- Passel, Jeffrey and D’Vera Cohn. 2012a. “Unauthorized Immigrants: 11.1 Million in 2011.” Washington, DC: Pew Research Center’s Hispanic Trends Project, December. <http://www.pewhispanic.org/2012/12/06/unauthorized-immigrants-11-1-million-in-2011/>
- Passel, Jeffrey and D’Vera Cohn. 2012b. “U.S. Foreign-Born Population: How Much Change from 2009 to 2010?” Washington, DC: Pew Research Center’s Hispanic Trends Project, January. <http://www.pewhispanic.org/2012/01/09/u-s-foreign-born-population-how-much-change-from-2009-to-2010/>
- Passel, Jeffrey S. and D’Vera Cohn. 2011. “Unauthorized Immigrant Population: National and State Trends, 2010.” Washington, DC: Pew Research Center’s Hispanic Trends Project, February. <http://pewhispanic.org/reports/report.php?ReportID=133>
- Passel, Jeffrey and D’Vera Cohn. 2010. “U.S. Unauthorized Immigration Flows Are Down Sharply Since Mid-Decade.” Washington, DC: Pew Research Center’s Hispanic Trends Project, September. <http://pewhispanic.org/reports/report.php?ReportID=126>
- Passel, Jeffrey and D’Vera Cohn. 2008. “Trends in Unauthorized Immigration: Undocumented Inflow Now Trails Legal Inflow.” Washington, D.C.: Pew Research Center’s Hispanic Trends Project, October. <http://www.pewhispanic.org/2008/10/02/trends-in-unauthorized-immigration/>
- Passel, Jeffrey, D’Vera Cohn, and Ana Gonzalez-Barrera. 2012. “Net Migration from Mexico Falls to Zero—and Perhaps Less.” Washington, DC: Pew Research Center’s Hispanic Trends Project, April. <http://www.pewhispanic.org/2012/04/23/net-migration-from-mexico-falls-to-zero-and-perhaps-less/>
- Ruggles, Steven, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder and Matthew Sobek. 2010. Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]. Minneapolis, MN: University of Minnesota. <https://usa.ipums.org/usa/>
- U.S. Census Bureau. 2012a. “Estimating ASEC Variances with Replicate Weights.” Washington, DC. <http://thedataweb.rm.census.gov/ftp/cps ftp.html#cpsmarch>
- U.S. Census Bureau. 2012b. “Current Population Survey, 2012 Annual Social and Economic (ASEC) Supplement.” Washington, DC. <http://www.census.gov/prod/techdoc/cps/cpsmar12.pdf>

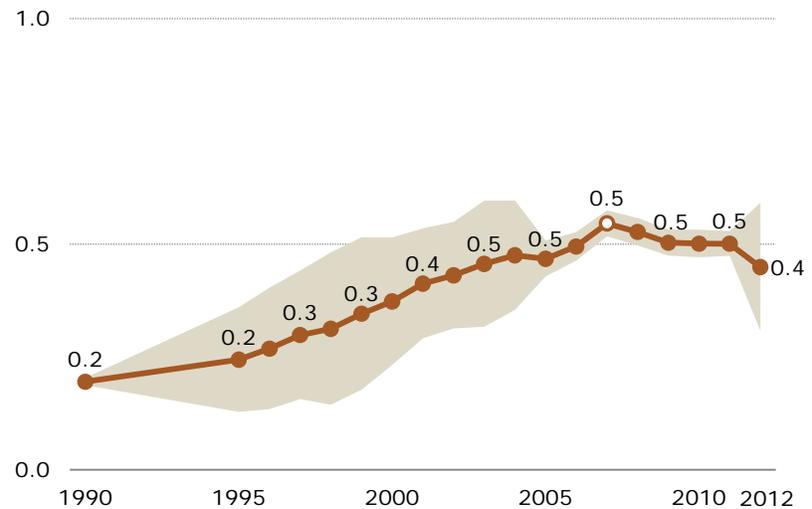
- U.S. Census Bureau. 2006. "Current Population Survey Design and Methodology." Technical Paper 66. Washington, DC, October.
<http://www.census.gov/prod/2006pubs/tp-66.pdf>
- U.S. Customs and Border Patrol. 2013a. "Illegal Alien Apprehensions From Mexico by Fiscal Year 2000-2012." Washington, DC, accessed September 17, 2013.
http://www.cbp.gov/linkhandler/cgov/border_security/border_patrol/usbp_statistics/usbp_fy12_stats/appr_from_mexico.ctt/appr_from_mexico.pdf
- U.S. Customs and Border Patrol. 2013b. "Nationwide Illegal Alien Apprehensions FY 1925-2012." Washington, DC, accessed September 17, 2013.
http://www.cbp.gov/linkhandler/cgov/border_security/border_patrol/usbp_statistics/usbp_fy12_stats/appr_stats_1925_2012.ctt/appr_stats_1925_2012.pdf
- U.S. Department of Homeland Security. 2012. *Yearbook of Immigration Statistics: 2011*. Washington, DC. <http://www.dhs.gov/yearbook-immigration-statistics-2011-3>
- U.S. Department of Homeland Security. 2004. *Yearbook of Immigration Statistics: 2003*. Washington, DC. <http://www.dhs.gov/yearbook-immigration-statistics-2003>
- Van Hook, Jennifer, Frank D. Bean, James D. Bachmeier and Catherine Tucker. Forthcoming. "Recent Trends in Coverage of the Mexican-Born Population of the United States: Results from Applying Multiple Methods Across Time." *Demography*.
- Warren, Robert and John Robert Warren. 2013. "Unauthorized Immigration to the United States: Annual Estimates and Components of Change, by State, 1990 to 2010." *International Migration Review* 47 (2, June): 296-329.
<http://onlinelibrary.wiley.com/doi/10.1111/imre.12022/full>

Appendix A: Additional Charts and Tables

Figure A1

Estimates of the Unauthorized Immigrant Population in Illinois, 1990-2012

in millions

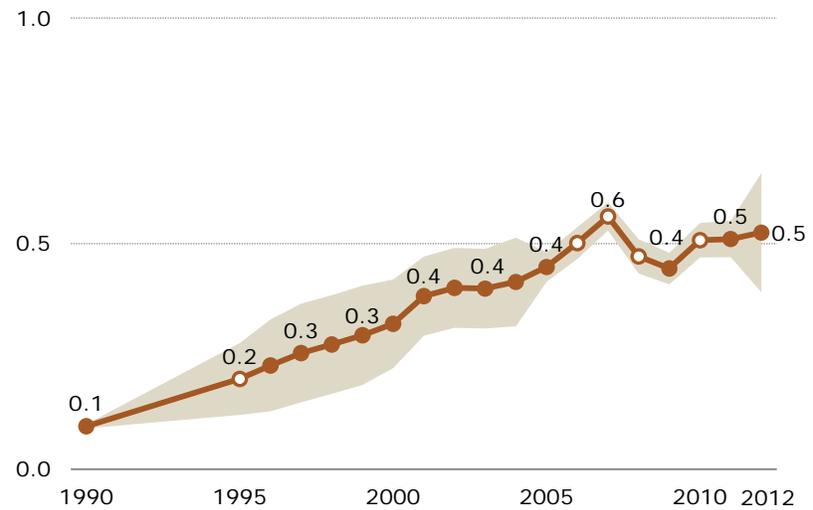


Notes: Shading surrounding line indicates low and high points of the estimated 90% confidence interval. White data markers indicate the change from the previous year is statistically significant (for 1995, change is significant from 1990). Data labels are for 1990, odd years from 1995-2011 and 2012.

Source: Table A1, derived from Pew Research Center estimates based on residual methodology applied to March Supplements to the Current Population Survey for 1995-2004, 2012 and to the American Community Survey for 2005-2011. Estimates for 1990 from [Warren and Warren \(2013\)](#). See Methodology.

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Figure A2

Estimates of the Unauthorized Immigrant Population in New Jersey, 1990-2012*in millions*

Notes: Shading surrounding line indicates low and high points of the estimated 90% confidence interval. White data markers indicate the change from the previous year is statistically significant (for 1995, change is significant from 1990). Data labels are from 1990, odd years from 1995-2011 and 2012.

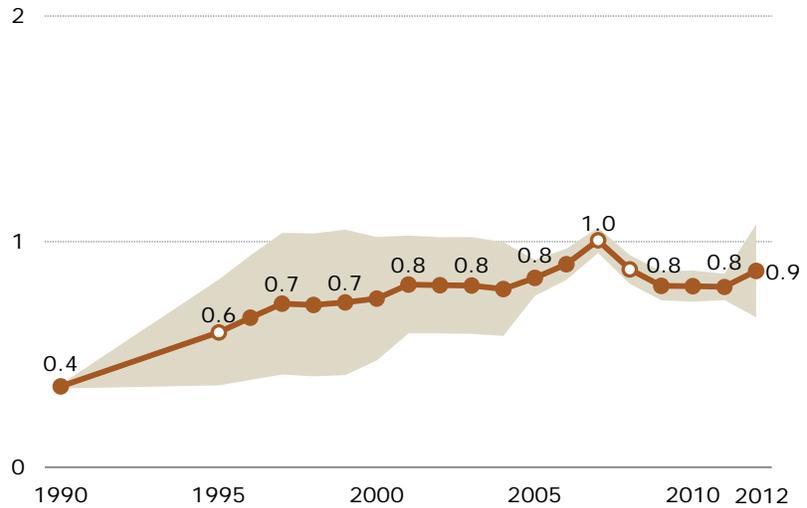
Source: Table A1, derived from Pew Research Center estimates based on residual methodology applied to March Supplements to the Current Population Survey for 1995-2004, 2012 and to the American Community Survey for 2005-2011. Estimates for 1990 from [Warren and Warren \(2013\)](#). See Methodology.

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Figure A3

Estimates of the Unauthorized Immigrant Population in New York, 1990-2012

in millions

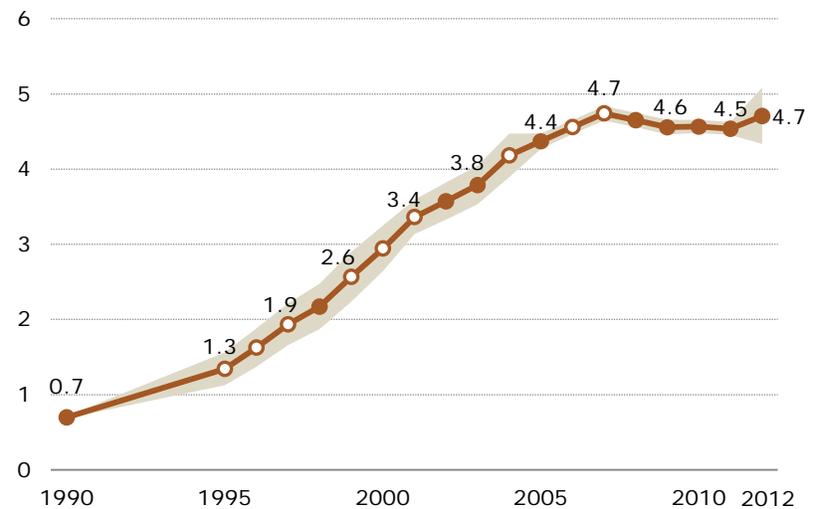


Notes: Shading surrounding line indicates low and high points of the estimated 90% confidence interval. White data markers indicate the change from the previous year is statistically significant (for 1995, change is significant from 1990). Data labels are for 1990, odd years from 1995-2011 and 2012.

Source: Table A1, derived from Pew Research Center estimates based on residual methodology applied to March Supplements to the Current Population Survey for 1995-2004, 2012 and to the American Community Survey for 2005-2011. Estimates for 1990 from [Warren and Warren \(2013\)](#). See Methodology.

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Figure A4
Estimates of the Unauthorized Immigrant Population in the Other States and the District of Columbia, 1990-2012
in millions



Notes: Excludes California, Florida, Illinois, New Jersey, New York and Texas. Shading surrounding line indicates low and high points of the estimated 90% confidence interval. White data markers indicate the change from the previous year is statistically significant (for 1995, change is significant from 1990). Data labels are for 1990, odd years from 1995-2011 and 2012.

Source: Table A1, derived from Pew Research Center estimates based on residual methodology applied to March Supplements to the Current Population Survey for 1995-2004, 2012 and to the American Community Survey for 2005-2011. Estimates for 1990 from [Warren and Warren \(2013\)](#). See Methodology.

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Population Decline of Unauthorized Immigrants Stalls, May Have Reversed

Table A1

Estimates of the U.S. Unauthorized Immigrant Population, 1990-2012*in thousands*

	-----California-----		-----Florida-----		-----Illinois-----		----New Jersey----		-----New York-----		-----Texas-----		-----Other-----	
	Estimate	Range	Estimate	Range	Estimate	Range	Estimate	Range	Estimate	Range	Estimate	Range	Estimate	Range
2012	2,450	(2,150-2,800)	950	(750-1,150)	450	(300-600)	525	(400-650)	875	(675-1,100)	1,750	(1,400-2,050)	4,700	(4,350-5,100)
2011	2,500	(2,450-2,550)	950**	(900-975)	500	(475-525)	500*	(475-550)	800	(750-850)	1,700**	(1,650-1,750)	4,550	(4,450-4,600)
2010	2,500*	(2,450-2,550)	900*	(875-925)	500	(475-525)	500**	(475-550)	800	(725-875)	1,650	(1,600-1,650)	4,550	(4,500-4,650)
2009	2,500**	(2,500-2,550)	875**	(850-900)	500*	(475-525)	450*	(400-475)	800*	(750-875)	1,600*	(1,600-1,650)	4,550*	(4,450-4,650)
2008	2,650**	(2,600-2,700)	950**	(925-975)	525	(500-550)	475**	(425-500)	875**	(825-950)	1,550	(1,550-1,600)	4,650	(4,550-4,750)
2007	2,800**	(2,750-2,850)	1,050*	(1,000-1,050)	550**	(525-575)	550**	(525-600)	1,000**	(950-1,050)	1,550	(1,500-1,600)	4,750**	(4,650-4,850)
2006	2,600	(2,550-2,650)	1,000**	(975-1,000)	500	(475-525)	500**	(475-525)	900	(825-975)	1,500	(1,450-1,550)	4,550**	(4,450-4,650)
2005	2,550	(2,550-2,600)	925	(900-975)	475	(425-500)	450	(425-475)	850	(750-925)	1,500	(1,450-1,550)	4,350*	(4,250-4,450)
2004	2,500	(2,200-2,850)	875	(700-1,050)	475	(350-600)	425	(325-525)	800	(575-1,000)	1,400	(1,150-1,700)	4,200**	(3,900-4,450)
2003	2,400	(2,100-2,750)	825	(675-1,000)	450	(325-600)	400	(300-500)	800	(600-1,000)	1,350	(1,100-1,600)	3,800*	(3,550-4,050)
2002	2,350	(2,000-2,650)	900	(725-1,100)	425	(325-550)	400	(325-500)	800	(600-1,000)	1,250	(1,050-1,500)	3,550*	(3,300-3,800)
2001	2,300	(2,000-2,600)	950	(775-1,150)	425	(300-525)	375	(300-475)	800	(600-1,050)	1,150	(925-1,350)	3,350**	(3,150-3,600)
2000	2,250	(1,850-2,650)	900	(675-1,150)	375	(230-525)	325	(220-425)	750	(475-1,000)	1,050	(800-1,300)	2,950**	(2,650-3,250)
1999	2,200	(1,750-2,650)	800	(575-1,000)	350	(180-525)	300	(190-400)	725	(400-1,050)	975	(675-1,250)	2,550**	(2,250-2,900)
1998	2,150	(1,700-2,550)	725	(525-925)	300	(140-475)	275	(170-375)	725	(400-1,050)	925	(650-1,200)	2,150*	(1,850-2,450)
1997	2,050	(1,650-2,500)	675	(475-875)	300	(160-450)	250	(150-375)	725	(400-1,050)	875	(625-1,100)	1,950**	(1,650-2,200)
1996	2,050*	(1,600-2,500)	600*	(400-800)	275	(130-400)	230*	(130-325)	675*	(375-950)	825*	(575-1,050)	1,600**	(1,350-1,900)
1995	2,050**	(1,650-2,450)	575**	(425-725)	240	(130-350)	200**	(120-275)	600**	(375-825)	725**	(500-975)	1,350**	(1,100-1,550)
1990	1,450	(1,450-1,500)	240	(230-250)	200	(190-200)	95	(90-100)	350	(350-375)	450	(425-450)	700	(675-725)

Notes: Range represents the bounds of the estimated 90% confidence interval. The symbol ** indicates the change from the previous year is statistically significant (for 1995, change is significant from 1990). If the annual change is not significant, the symbol * indicates the change from two years ago is significant. Significance of other differences is not shown.

Source: Pew Research Center estimates based on residual methodology applied to March Supplements to the Current Population Survey for 1995-2004, 2012 and to the American Community Survey for 2005-2011. Estimates for 1990 from [Warren and Warren \(2013\)](#). See Methodology.

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Table A2

Estimates of the U.S. Unauthorized Immigrant Population from Mexico and Other Countries, 1990-2012

in thousands

	-----Mexico-----		-----Other countries-----	
	Estimate	Range	Estimate	Range
2012	6,050	(5,650-6,400)	5,650	(5,200-6,150)
2011	6,150*	(6,050-6,250)	5,350*	(5,250-5,450)
2010	6,150**	(6,050-6,250)	5,250**	(5,100-5,350)
2009	6,350**	(6,250-6,450)	4,950*	(4,850-5,100)
2008	6,650**	(6,550-6,750)	5,050**	(4,900-5,200)
2007	6,950**	(6,850-7,050)	5,250**	(5,150-5,400)
2006	6,550**	(6,450-6,650)	5,050**	(4,950-5,150)
2005	6,300**	(6,200-6,400)	4,800	(4,700-4,950)
2004	5,950**	(5,600-6,300)	4,750	(4,300-5,200)
2003	5,600*	(5,250-5,900)	4,500	(4,050-4,900)
2002	5,400**	(5,100-5,700)	4,300	(3,900-4,700)
2001	5,000**	(4,700-5,300)	4,400	(4,000-4,750)
2000	4,450*	(4,100-4,800)	4,150	(3,600-4,650)
1999	4,100*	(3,750-4,500)	3,800	(3,200-4,400)
1998	3,800*	(3,450-4,150)	3,450	(2,850-4,050)
1997	3,500*	(3,150-3,850)	3,300	(2,750-3,850)
1996	3,250*	(2,900-3,550)	3,050*	(2,500-3,550)
1995	2,900**	(2,600-3,200)	2,800**	(2,350-3,300)
1990	1,450	(1,400-1,500)	2,050	(2,000-2,100)

Notes: Range represents the bounds of the estimated 90% confidence interval. The symbol ** indicates the change from the previous year is statistically significant (for 1995, change is significant from 1990). If the annual change is not significant, the symbol * indicates the change from two years ago is significant. Significance of other differences it not shown.

Source: Pew Research Center estimates based on residual methodology applied to March Supplements to the Current Population Survey for 1995-2004, 2012 and to the American Community Survey for 2005-2011. Estimates for 1990 from [Warren and Warren \(2013\)](#). See Methodology.

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Appendix B: Methodology

Overview

The estimates presented in this report for the unauthorized immigrant population are based on a residual estimation methodology that compares a demographic estimate of the number of immigrants residing legally in the country with the total number of immigrants as measured by a survey—either the American Community Survey or the March Supplement to the Current Population Survey; the difference is assumed to be the number of unauthorized immigrants in the survey, a number that is later adjusted for omissions from the survey (see below). The basic estimate is:

$$\begin{array}{rcccl} \text{Unauthorized} & & \text{Survey, Total} & & \text{Estimated Legal} \\ \text{Immigrants} & = & \text{Foreign Born} & - & \text{Immigrant Population} \\ \text{(U)} & & \text{(F)} & & \text{(L)} \end{array}$$

The legal resident immigrant population is estimated by applying demographic methods to counts of legal admissions covering the period from 1980 to 2012 obtained from the Department of Homeland Security’s Office of Immigration Statistics and its predecessor at the Immigration and Naturalization Service. The initial estimates here are calculated separately for age-gender groups in six states (California, Florida, Illinois, New Jersey, New York and Texas) and the balance of the country; within these areas the estimates are further subdivided into immigrant populations from 35 countries or groups of countries by period of arrival in the United States. Variants of the residual method have been widely used and are generally accepted as the best current estimates ([Hoefer, Rytina and Baker, 2012](#); [Warren and Warren, 2013](#)). See also [Passel and Cohn \(2008\)](#) and [Passel \(2007\)](#) for more details.

The estimates presented in this report are the residual totals, adjusted for survey omissions for these six states and the balance of the country, subdivided for Mexican immigrants and all others. Subsequent work by the Pew Research Center will assign individual foreign-born respondents in the survey a specific status (one option being unauthorized immigrant) based on the individual’s demographic, social, economic, geographic and family characteristics. Later reports will focus on more detailed information on the countries and regions of origin of the immigrants, estimates for all states and major metropolitan areas, and various demographic, social and economic characteristics of the unauthorized and legal immigrant populations.

Data Sources

The American Community Survey is an ongoing survey conducted by the U.S. Census Bureau. The survey collects detailed information on a broad range of topics, including country of birth, year of immigration and citizenship—the information required for the residual estimates. The ACS has a continuous collection design with monthly samples of about 250,000; the nominal annual sample size is about 3.1 million households with about 2.1 million included in the final sample through 2011.

(http://www.census.gov/acs/www/methodology/sample_size_and_data_quality/).

For this report, public-use samples of individual survey records from the ACS are tabulated to provide the data used in the estimation process. The public-use file is a representative 1% sample of the entire U.S. (including about 3 million individual records for each year 2005–2011) obtained from the Integrated Public-Use Microdata Series or IPUMS ([Ruggles et al., 2010](#)). The ACS began full-scale operation in 2005 covering only the household population; since 2006 it has covered the entire U.S. population. ACS data are released by the Census Bureau in September for the previous year. At the time this research was prepared, the most recent ACS data were for 2011.

The other survey data source used for residual estimates comes from March Supplements to the Current Population Survey. The CPS is a monthly survey currently of about 55,000 households conducted jointly by the U.S. Bureau of Labor Statistics and the Census Bureau. Since 2001, the March supplement sample has been expanded to about 80,000 households; before then, the expanded March Supplement sample included about 50,000 households. The CPS universe covers the civilian noninstitutional population. The CPS was redesigned in 1994 and, for the first time, included the information required for the residual estimates (i.e., country of birth, date of immigration and citizenship). Some limitations of the initial March Supplement of redesigned CPS, 1994, preclude its use in making these estimates, so the first CPS-based estimates are for March 1995. CPS data are released by the Census Bureau in September for the previous March. At the time this research was prepared, the most recent March CPS data were for 2012.

Survey Weights

Population figures from both the ACS and CPS are based on the Census Bureau's official population estimates for the nation, states and smaller areas through a weighting process that ensures the survey figures agree with pre-specified national population totals by age, sex, race

and Hispanic origin. At the sub-national level, the two surveys differ in their target populations. The March CPS data agree with state-level totals by age, sex and race and are based on a process that imposes other conditions on weights for couples ([U.S. Census Bureau, 2006](#)). The ACS weights use estimates for much smaller geographic areas that are summed to state totals (http://www.census.gov/acs/www/methodology/methodology_main/ - especially Chapter 11).

The population estimates for the surveys are based on the latest available figures at the time the survey weights are estimated. This process produces the best estimates available at the time of the survey, but it does not guarantee that a time series produced across multiple surveys is consistent or accurate. Significant discontinuities can be introduced when the Census Bureau changes its population estimation methods, as it did several times early in the 2000s and in 2007 and 2008 ([Passel and Cohn, 2010](#)), or when the entire estimates series is recalibrated to take into account the results of a new census.

Previous ACS or CPS weights are not revised to take into account updated population estimates.³ One clear example of the impact of such a discontinuity occurred between the 2009 ACS, which was weighted to population estimates based on the 2000 Census, and the 2010 ACS, which was weighted to results of the 2010 Census. Of the apparent change in the foreign-born population between these two surveys (1.5 million, Table B1), about 60% could be attributed to the weighting change (Table B1 and [Passel and Cohn, 2012b](#)).

The estimates shown for unauthorized immigrants and the underlying survey data are derived from ACS IPUMS 1% samples for 2005-2011 and March CPS public-use files for 1995-2012, which have been reweighted to take into account population estimates consistent with the 1990 Census, the 2000 Census, the 2010 Census and the 2011 population estimates. The population estimates used to reweight the March 2011 CPS come from the Census Bureau's Vintage 2011 population estimates (<http://www.census.gov/popest/data/index.html>); they are consistent with the 2010 Census and the estimates used to weigh the March 2012 CPS. The population estimates used to reweight the CPS for March 2001 through March 2010 are the Census Bureau's intercensal population estimates for the 2000s (<http://www.census.gov/popest/data/intercensal/index.html>); these population estimates use demographic components of population change for 2000-2010 and are consistent with both

³ The only recent exception was for the monthly 2000-2002 CPS to incorporate large changes engendered by the replacement of the updated 1990 Census with results from the 2000 Census. Because of a large change in estimates due to revised methods between the estimates produced for 2006 and those for 2007, the Census Bureau revised CPS weights for research purposes, but for only one month of data—December 2007.

the 2000 and 2010 censuses. Similarly, the population estimates used to reweight the CPS for March 1995 through March 2000 are the intercensal population estimates for the 1990s (<http://www.census.gov/popest/data/intercensal/index.html>), which are consistent with the 1990 and 2000 censuses. The ACS data for 2010 and 2011 do not require reweighting as they are weighted to the Vintage 2011 population estimates, are based on the 2010 Census. For the 2005-2009 ACS, the reweighting uses the same intercensal population estimates as used for the CPS.

The reweighting methodology for both the ACS and CPS follows, to the extent possible, the methods used by the Census Bureau in producing the sample weights that equal the population totals. For both surveys, the process followed by the Pew Research Center starts from the existing weights and adjusts them to equal the revised population estimates. It is not possible to completely replicate the Census Bureau's weighting process because not all the information the Census Bureau used is publicly available. The CPS reweighting adheres more closely to the final phase of the Census Bureau's weighting process because all of the variables used can be found in the public-use data sets. A more detailed discussion of the methods can be found in the Methodological Appendix to [Passel and Cohn \(2010\)](#) and in the Census Bureau's documentation of CPS weighting procedures (<http://www.census.gov/prod/2006pubs/tp-66.pdf>).

For the ACS reweighting more approximations are required because the geographic detail available in the IPUMS data set does not replicate the small weighting areas used by the Census Bureau. Moreover, not all the detailed population estimates used are available and not all the weighting procedures are spelled out in detail. The ACS reweighting uses states as the basic weighting areas as well as estimates of the household population and the institutional and noninstitutional group quarters populations. A more detailed discussion of the ACS reweighting can be found in the Methodology Appendix of [Passel and Cohn \(2011\)](#) and in Chapter 11 of the Census Bureau's documentation (http://www.census.gov/acs/www/methodology/methodology_main/)

In a few instances, additional changes or modification beyond simple reweighting were required to arrive at a consistent data series. The 2005 ACS did not cover the entire U.S. population; it included only the household population and omitted the group quarters population. Because the group quarters population tends to change little from year to year, either in numbers or characteristics, we augmented the 2005 ACS with individual microdata records from the group quarters population in the 2006 IPUMS data set. The records were initially reweighted to produce 2005 data that agreed with the Census Bureau's original estimates for the 2005 group quarters population. The augmented 2005 ACS, including the

household and group quarters populations, was then reweighted to agree with the revised 2005 population estimates.

In previous Pew Research Center estimates and analyses based on the 2000 March CPS, the weights were not the original CPS weights. Rather, they were a set of research weights produced by the Census Bureau to bring the March 2000 CPS into line with the 2000 Census (Passel, 2001). For 2001, the CPS March Supplement used by the Census Bureau in its published data series had a sample size and survey design consistent with the CPS for 1994-2000. For March 2002, the CPS sample size was greatly expanded, a new sample design was implemented and new weighting procedures were introduced, among other significant changes (<http://www.census.gov/prod/2006pubs/tp-66.pdf>). To test the new procedures and to provide an overlapping data point, the Census Bureau released an alternative March 2001 CPS data set (called the “SCHIP” file) that used the new sample size, survey design and weighting schemes. The Pew Research Center has used this SCHIP file in all previous analyses and as a basis for the revised weights.

Finally, the original weights released by the Census Bureau for the March 1995 CPS contained a significant error that had a large impact on the numbers of Asians and immigrants overall. Passel and Clark (1998) produced a set of alternative weights that corrected this initial error. These weights were used as input to the revised weights produced by the Pew Research Center.

Results. Although the changes caused by reweighting are relatively small as a share of the population (see Table B2), their impact can be relatively greater on subgroups such as the foreign-born population and, hence, residual estimates of unauthorized immigrants.

Table B1 compares the total and foreign-born populations based on the original weights with the same figures based on the new weights. For recent years, the revised weights increased the foreign-born population by 2% or more (roughly 800,000-1.2 million) for the 2008-2009 ACS and 2009-2011 CPS while there were smaller changes in the total population; for some years, the revisions led to reductions in the total population. For the 2007 ACS and 2008 CPS, the increases in the foreign-born population were just shy of 1%, amounting to increased numbers of about 350,000. Changes to the foreign-born estimates in the remaining two ACS years, 2005-2006, were much smaller, less than 50,000.

For the 2001-2007 CPS estimates (which are based on the expanded and redesigned post-2000 Census samples), the changes introduced by reweighting are erratic. Some years (2001, 2003, 2004) show reductions in the foreign-born estimates exceeding 100,000; 2006 has an increase of more than 100,000. These different patterns of change reflect a number of factors:

changes in the methodology used to measure migration in the population estimates; the substitution of final for preliminary data in the population estimates; and the smoothing introduced into the intercensal population estimates to close differences between the initial estimates and the 2010 Census results.

For the 1996-2000 CPS, the changes introduced by the revised weights are much larger, exceeding 1 million for 1996-1999 and more than 600,000 in 2000. These differences reflect the failure of the pre-2000 population estimates to fully capture the immigration that was occurring during the 1990s, particularly the second half of the decade (Passel, 2001). The new weights for these years accurately capture the trends in the changing overall population and correctly attribute most of the shortfall of the estimates to the immigrant population.

Adjustment for Undercount

Adjustments for omissions from the surveys (also referred to as adjustments for undercount) are introduced into the estimation process at several points. The initial comparisons with the survey (based on the equation shown above) take the difference between the immigrants in the survey and the estimated legal population. Since the comparison is people appearing in the survey, the estimated legal population must be discounted slightly because some legal immigrants are missed by the survey. This initial estimate represents unauthorized immigrants included in the survey. To estimate the total number of unauthorized immigrants in the country, it must be adjusted for those left out. Similarly, the estimated number of legal immigrants appearing in the survey must also be adjusted for undercount to arrive at the total foreign-born population.

These various coverage adjustments are done separately for groups based on age, sex, country of birth and year of arrival. The patterns and levels of adjustments are based on Census Bureau studies of overall census coverage (see http://www.census.gov/coverage_measurement/ for links to evaluation studies of the 1980, 1990, 2000 and 2010 Censuses; also Passel, 2001) that are adjusted up or down to reflect the results of a number of specialized studies that focus on immigrants. Census Bureau undercount estimates have generally been subdivided by race/Hispanic origin, age, and sex. So the adjustments to the Pew Research Center data use rates for countries of birth based on the predominant race of immigrants from the country—Hispanic and non-Hispanic races for white, black and Asian. Undercount rates for children do not differ by gender, but for younger adults (ages 18-29 and 30-49) the undercount rates for males tend to be higher, and for some groups much higher, than those for females. At older ages, the undercount rates are lower than for younger adults with no strong patterns of gender differences (and with some estimated overcounts).

The basic information on specific coverage patterns of immigrants is drawn principally from comparisons with Mexican data, U.S. mortality data and specialized surveys conducted at the time of the 2000 Census (Van Hook et al, forthcoming; Bean et al., 1998; [Capps et al., 2002](#); Marcelli and Ong, 2002). In these studies, unauthorized immigrants generally have significantly higher undercount rates than legal immigrants who, in turn, tend to have higher undercounts than U.S. natives. More recent immigrants are more likely than longer-term residents to be missed. The most recent study (Van Hook et al, forthcoming) finds marked improvements in coverage of Mexicans in the ACS and CPS between the late 1990s and the 2000s. This and earlier work suggest very serious coverage problems with immigrants in the data collected before the 2000 Census but fewer issues in the 2000 Census and subsequent data sets. This whole pattern of assumptions leads to adjustments of 10% to 20% for the estimates of unauthorized immigrants in the 1995-2000 CPS, with slightly larger adjustments for unauthorized Mexicans in those years. (Note that this means even larger coverage adjustments, sometimes exceeding 30% for adult men below age 40.)

After 2000, the coverage adjustments build in steady improvements in overall coverage and improvements specifically for Mexican immigrants. The improvements are even greater than noted in the research comparing Mexico and U.S. sources because the reweighted ACS and CPS data provide even greater improvements in reducing undercounts, since they incorporate results of the 2010 Census ([Passel and Cohn, 2012b](#)). With all of these factors, coverage adjustments increase the estimate of the unauthorized immigrant population by 8% to 13% for 2000-2009 and by 5% to 7% for 2010-2012. For the overall immigrant population, coverage adjustments hovered slightly below 5% during the 1990s and trended downward to around 2% to 3% by 2012. Since the population estimates used in weighting the ACS and the CPS come from the same sources, the coverage adjustments tend to be similar.

Margins of Error

Estimates of the unauthorized immigrant population are computed as the difference between a deterministic, administratively based estimate (i.e., the legal foreign-born population, or “L” in the equation above) and a sample-based estimate (i.e., the survey total of the foreign-born population, or “F”). Consequently the margin of error (or variance) for the estimated unauthorized population is the margin of error for “F,” the sample-based estimate of the foreign-born population. The margins of error shown in this report, for the entire U.S. and for individual states, are based on the variance of the foreign-born population entering since 1980. For all ACS years and for the 2005-2012 CPS, variances were computed with replicate weights supplied for the CPS by the Census Bureau (U.S. Census Bureau, 2012a; data available at <http://thedataweb.rm.census.gov/ftp/cps ftp.html#cpsmarch>) and for the ACS through

IPUMS (Ruggles et al., 2010; documentation of the weights at http://www.census.gov/acs/www/methodology/methodology_main/, especially Chapter 12); for earlier CPS data, generalized variance formulas supplied in Census Bureau documentation were used to compute margins of error (U.S. Census Bureau, 2012b, especially Appendix G).

Other Methodological Issues

Rounding of Estimates. All state- and national-level estimates for unauthorized immigrant populations are presented as rounded numbers to avoid the appearance of unwarranted precision in the estimates. No estimates smaller than 10,000 are shown. Estimates in the range of 10,000-100,000 are rounded to the nearest 5,000; estimates in the range of 100,000-250,000 to the nearest 10,000; estimates smaller than 1 million to the nearest 25,000; estimates of 1-10 million are rounded to the nearest 50,000; and estimates larger than that to the nearest 100,000. Unrounded numbers are used for significance tests, in plotting charts and in computations of differences and percentages.

Country of Birth. Some modifications in the original CPS countries of birth were introduced to ensure that all foreign-born respondents could be assigned to a specific country or region of birth. See [Passel and Cohn \(2008\)](#) for a detailed treatment of how persons with unknown country of birth were assigned to specific countries.

Table B1

Population by Nativity and Alternative Weights: 2005-2011 American Community Survey and 1995-2012 March Current Population Survey

in thousands (unless otherwise noted)

	Alternative -----weights-----		Original -----weights-----		---Difference---		Percent ---difference---	
	Total	Foreign born	Total	Foreign born	Total	Foreign born	Total	Foreign born
American Community Survey								
2011	311,592	40,392	311,592	40,392	0	0	0.0%	0.0%
2010	309,350	39,929	309,350	39,929	0	0	0.0%	0.0%
2009	306,772	39,313	307,007	38,462	-235	851	-0.1%	2.2%
2008	304,094	38,803	304,060	38,024	34	779	<0.05%	2.0%
2007	301,231	38,414	301,621	38,058	-390	356	-0.1%	0.9%
2006	298,380	37,460	299,398	37,476	-1,019	-17	-0.3%	<0.05%
2005	295,517	36,408	296,410	36,364	-894	44	-0.3%	0.1%
Current Population Survey (March Supplement)								
2012	308,827	39,996	308,827	39,996	0	0	0.0%	0.0%
2011	306,583	39,461	306,110	38,241	474	1,221	0.2%	3.2%
2010	304,225	38,564	304,280	37,623	-55	941	<0.05%	2.5%
2009	301,552	37,533	301,483	36,766	69	767	<0.05%	2.1%
2008	298,793	37,624	299,106	37,271	-313	354	-0.1%	0.9%
2007	295,840	37,200	296,824	37,290	-984	-90	-0.3%	-0.2%
2006	293,092	35,816	293,834	35,681	-743	134	-0.3%	0.4%
2005	290,256	35,182	291,155	35,166	-899	17	-0.3%	<0.05%
2004	287,508	34,148	288,280	34,254	-772	-106	-0.3%	-0.3%
2003	284,871	33,120	285,933	33,483	-1,063	-363	-0.4%	-1.1%
2002	282,268	32,487	282,082	32,460	186	27	0.1%	0.1%
2001	279,629	31,533	279,517	31,815	112	-283	<0.05%	-0.9%
2000	276,944	30,715	276,979	30,088	-35	627	<0.05%	2.1%
1999	273,972	29,005	271,743	26,484	2,229	2,522	0.8%	9.5%
1998	271,288	27,968	269,094	26,315	2,195	1,654	0.8%	6.3%
1997	268,584	26,843	266,792	25,792	1,791	1,050	0.7%	4.1%
1996	265,742	25,703	264,314	24,559	1,428	1,143	0.5%	4.7%
1995	263,198	24,768	262,043	24,479	1,155	289	0.4%	1.2%

Notes: Percent difference uses original weights as the base. See text for description of alternative weights.

Source: Pew Research Center Hispanic Trends Project tabulations of 1% microdata (IPUMS) files for the American Community Survey and public-use files from the Census Bureau for March Current Population Survey.

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Table B2

**New and Previous
Estimates of the U.S.
Unauthorized
Immigrant
Population,
2000-2011**

in millions

	New	Previous
2011	11.5	11.1
2010	11.4	11.2
2009	11.3	11.1
2008	11.7	11.6
2007	12.2	12.0
2006	11.6	11.3
2005	11.1	11.1
2004	10.7	10.4
2003	10.1	9.7
2002	9.7	9.4
2001	9.4	9.3
2000	8.6	8.4

Note: Estimates are ranges (not shown).

Source: For new Pew Research Center estimates, based on residual methodology applied to March Supplements to the Current Population Survey for 2000-2004, 2012 and to the American Community Survey for 2005-2011. See Methodology. For previous Pew Research estimates, [Passel and Cohn, \(2012a\)](#).

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