Population Estimates

Estimates of the Size and Characteristics of the Resident Nonimmigrant Population in the United States: Fiscal Year 2014

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This report presents estimates of the size and characteristics of the resident nonimmigrant population in the United States during Fiscal Year (FY) 2014.[1] In this report, the term *resident nonimmigrant* refers to foreign nationals who are legally admitted into the United States for specific, temporary purposes and whose classes of admission are associated with residency (e.g., students and temporary workers, as opposed to tourists and business travelers).[2] The characteristics analyzed include category of admission (groups of related nonimmigrant visa classes), country of citizenship, age, sex, and destination state. The estimates are derived from U.S. Department of Homeland Security (DHS) administrative records of nonimmigrant arrivals and departures.

About 1.7 million nonimmigrants resided in the United States on average during 2014.[3] Temporary workers and their families[4] accounted for slightly more than 45 percent of the total and students and their families accounted for nearly 40 percent. More than half of the population were citizens of Asian countries and 80 percent were ages 18 through 44.

DATA AND METHOD

Data are not available to measure the resident nonimmigrant population directly, so this report develops a statistical model of nonimmigrant visit lengths, and applies the model to the population of nonimmigrants entering since October 1, 2003, to estimate the current population. Within DHS, nonimmigrant arrival and departure records are collected and maintained by U.S. Customs and Border Protection (CBP). CBP creates an electronic *DHS Form I-94 Nonimmigrant Arrival/Departure Record* for each admission of a nonimmigrant into the United States at a port of entry as part of the inspection process.[5,6] Corresponding departure forms are created whenever CBP records the departure of a nonimmigrant, but departure records are somewhat incomplete because the United States does not have strict departure control.[7] In 2014, the vast majority of departure records were derived from commercial air and sea carrier departure manifests. Other sources of nonimmigrant departure records included the submission of a paper version of the I-94 form by the nonimmigrant after departure, border crossing records collected by Canada on entries into Canada from the United States by third-country nationals, and CBP Pulse and Surge operations to collect information from certain travelers departing through Southwest border ports of entry.

Although the vast majority of departures by resident nonimmigrants are recorded by the means described above, the absence of a departure record does not provide clear evidence that a nonimmigrant remains in the United States. In particular, an arrival record without a corresponding departure record also may reflect an

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[1] Fiscal year (FY) 2014 refers to the period from October 1, 2013, through September 30, 2014. Years refer to fiscal years unless otherwise noted.

[2] See the Appendix for a complete list of nonimmigrant classes of admission that are considered to be associated with residence for the purpose of this report.

[3] The population size fluctuates from day to day; the average during 2014 is the sum of the population sizes on each day during the year divided by 365.

[4] Hereafter, each category of admission will include both principal nonimmigrants and dependent (non-principal) family members unless otherwise noted.

[5] Certain nonimmigrants, including most Mexican and Canadian visitors for business or pleasure arriving at land ports of entry are exempted from the I-94 form; but these B-1/B-2 visitors are not included in the resident nonimmigrant population and are outside the scope of this report.

[6] The creation of the I-94 form was largely automated in 2014; in the event of an admission for which an I-94 form was not created electronically, the nonimmigrant applicant would be required to complete and submit a paper version of the form which would later be transcribed into electronic form at a CBP processing center.

[7] There is no parallel to the formal admission inspection process for departing from the United States.

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unrecorded departure or a recorded departure that could not be matched to its corresponding arrival.[8] The cumulative impact of unrecorded departures and unmatched records over a period of years is too large to allow for a direct measurement of the nonimmigrant population based solely on arrival and departure records.

In addition, no nationally representative surveys exist that are immediately useful for estimating or measuring the resident nonimmigrant population. Although several representative surveys distinguish between native- and foreign-born persons, no large, national surveys distinguish between (temporary) nonimmigrants and (permanent) immigrants.

Because these "first choice" possibilities (direct measurement and survey estimation) are ruled out or not readily available, this report uses a three-step statistical model to estimate the resident nonimmigrant population. The first step is to construct visit length frequency tables by matching FY 2014 departures back to their associated arrival data, incorporating arrival records from 2004-2014. Frequency tables were constructed for each class of admission and country of citizenship. Second, these frequency tables were used to construct probability models describing the probability that a nonimmigrant would stay for at least a given number of days based on the person's nationality and visa class of admission. For example, based on historical patterns, what is the probability that a Mexican national with an H-2A visa will depart the United States on or before the 100th day of her visit? Third, the probability model was deployed for each day of the year and for every nonimmigrant who arrived in the United States since FY 2004, based on the nonimmigrant's nationality, visa class of admission, and date of admission into the United States. These estimates were added up to produce a total estimated number of days nonimmigrants were present during FY 2014, and the total was divided by 365 to yield the average population size for the year.

Equation 1.

$$\sum_{x \, \epsilon \, \chi} \sum_{d \, \epsilon \, D(x)} \frac{P(\, l \geq d - A(x) \mid f(x), g(x)\,)}{365}$$

Where X is the set of all admissions of resident nonimmigrants in 2004-2014, D(x) is the set of all dates in 2014 that occurred on or after A(x), the admission date for x, L is a random variable representing the length of the nonimmigrant visit in days, and f(x) and g(x) are the country of citizenship and class of admission of x.

Analysis was restricted to resident nonimmigrant classes of admission, i.e., classes characterized by visits lasting two months or longer on average. The two-month duration was chosen in order to be consistent with the residence definitions used in the U.S. Census Bureau's American Community Survey and DHS estimates of the size and characteristics of the unauthorized immigrant population (Hoefer et al., 2012). Because admission under a residence class does not always indicate residence in the United States, data were further restricted

by omitting records for persons exhibiting likely commuter behavior (defined here as arriving in the United States seven or more times per year).

LIMITATIONS

The accuracy and precision of the population estimates depend on how well the visit-length probability models derived from 2014 departure cohorts represent the visit-length probabilities for all visits, the choice of classification variables, and the veracity of the assumptions. Some important limitations are covered below.

Assumptions underlying the probability models

The use of visit-length frequency tables to construct probability models requires the assumptions that no correlation exists between visit length and the failure to record a departure or the inability to match a departure to a prior arrival. The first assumption is likely unproblematic: an airline's failure to submit a departure manifest for a flight, for example, should not be related to the visit length of the people on board the flight. The second assumption is somewhat flawed, however, as relatively long visits are more likely to have an arrival that occurred prior to the advent of electronic I-94 forms, and matching to user-submitted, handwritten forms is not as accurate as matching to electronic forms that were automatically generated based on travel documents (e.g., a machine-readable passport). Nonetheless, changes in the match rate over time should have a minimal impact on the model because more than 97 percent of departure records used to build the frequency tables were successfully matched back to their prior arrivals.

Adjustment to Lawful Permanent Resident status

Departure data were not available for persons who were admitted as nonimmigrants and then adjusted to lawful permanent resident (LPR) status prior to their next departure. To the extent that people who adjust status tend to have shorter or longer stays than people who do not adjust status, the estimates may be biased downward or upward. The impact, if any, would likely be concentrated among visa classes and countries with higher adjustment rates. For example, the ratios of LPR adjustments to nonimmigrant admissions in 2010 were one to five for H-4 dependents (i.e., there was one adjustment to LPR status for every five nonimmigrant admissions), one to nine for H-1B workers, and only one to 60 for seasonal workers. Results are presented only for broad categories of admission classes, instead of for individual classes of admission, to smooth over or wash out the potential bias arising from status adjustments within any single class of admission.

Increasing arrival volume

The observed visit-length distributions are based on completed visits with an arrival between October 1, 2003, and September 30, 2014, and a departure recorded between October 1, 2013, and September 30, 2014. Because arrival flow tends to increase slightly each year, departures in the most recent year disproportionately reflect more recent arrivals. Therefore the visit-length

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[8] Prior analysis found corresponding departure records for approximately 85 percent of all resident nonimmigrant arrival records over a four-year period; the remaining 15 percent had not departed, departed without record, or departed without generating a matchable record.

distributions, and the resulting population estimates, are likely to be slightly biased downwards.

Stability of visit length across time

The estimation methodology implicitly assumes that the visit-length distribution is constant across time. Although the visit-length distributions are not exactly the same each year, they are relatively stable for the classes of admission and countries of citizenship with the largest contributions to the total.

Missing characteristics

The age, sex, state, or country fields were missing from some records[9] and were assumed to be missing completely at random. When missing, age, sex, and state were imputed based on the age, sex, and state distributions of nonimmigrants with the same class of admission and country of citizenship. Country was imputed based on the country of citizenship of persons with the same class of admission.

RESULTS

Overview

About 1.7 million resident-class nonimmigrants resided in the United States in 2014 (see Table 1). Nearly half were temporary workers, almost four in 10 were students, and slightly more than one in 10 were exchange visitors. Although the total number was somewhat smaller than when last reported (1.9 million in January

of 2012), the percentages by category of admission were largely unchanged (Baker, 2014).

The Student and Exchange Visitor Program, managed by DHS Immigration and Customs Enforcement, reported that there were 1.05 million nonimmigrants "studying in the United States" on student visas and 244,766 exchange visitors "in the United States" in July of 2015 (ICE, 2015). ICE also reported 152,553 student and exchange visitor dependents, but did not distinguish between the principal classes for those dependents. As the numbers reported by ICE are nearly 70 percent higher than the numbers reported here, it is important to note that the numbers reported by ICE are counts of persons with "active status" at a particular point in time, which is different from counting the number of *persons residing within the United States* and different from an *annual average*. For example, students may retain active status while abroad between semesters, may be in the United States for a period of study lasting only a few weeks, or may travel abroad too often to be considered residents. Further, "active status" may not terminate until sometime after the nonimmigrant departs from the United States. Lastly, "active status" for dependents is derived from the status of the principal nonimmigrant, regardless of whether or not the dependents ever travel to the United States.

Region and country of citizenship

More than half of the resident nonimmigrants were citizens of Asian countries (see Figure 1), led by India (about 25 percent), and China (nearly 15 percent).[10] The top sending country for

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[9] Country was missing from fewer than two percent of the records. Age, sex, and state were missing from fewer than three percent, nine percent, and five percent of the records, respectively.

[10] All percentages in the tables and text were calculated before rounding. Calculations based on rounded estimates may yield different results.
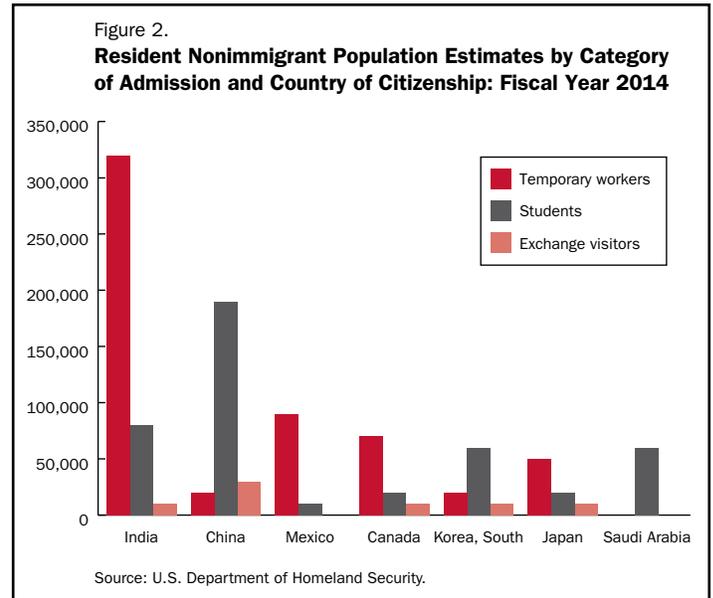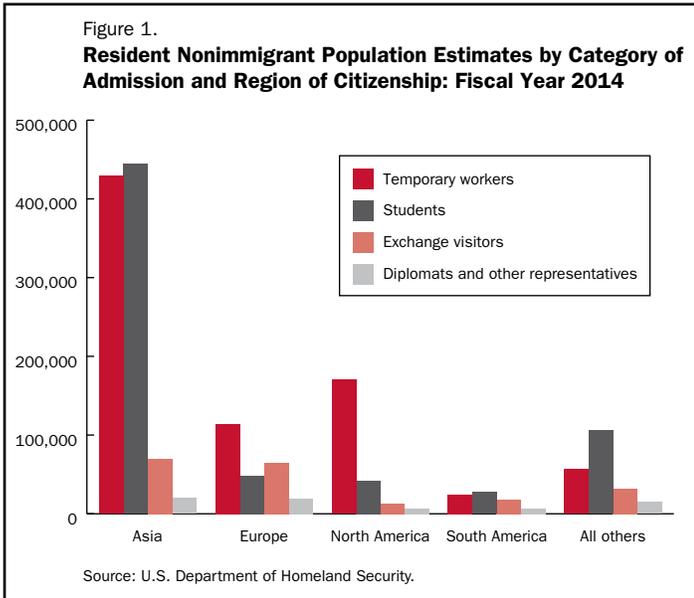

Table 1.

Resident Nonimmigrant Population Estimates by Category of Admission and Region and Top 10 Countries of Citizenship: Fiscal Year 2014

Region and country of citizenship	Total		Temporary workers		Students		Exchange visitors		Diplomats and other representatives	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
REGION										
Total	1,730,000	100%	790,000	100%	670,000	100%	200,000	100%	70,000	100%
Asia	960,000	56%	430,000	54%	440,000	67%	70,000	35%	20,000	30%
Europe	250,000	14%	110,000	14%	50,000	7%	60,000	33%	20,000	28%
North America .	230,000	13%	170,000	21%	40,000	6%	10,000	7%	10,000	10%
South America .	80,000	4%	20,000	3%	30,000	4%	20,000	9%	10,000	10%
Other.	210,000	12%	60,000	7%	110,000	16%	30,000	16%	10,000	22%
COUNTRY										
Total	1,730,000	100%	790,000	100%	670,000	100%	200,000	100%	70,000	100%
India	410,000	24%	320,000	40%	80,000	13%	10,000	4%	—	—
China	240,000	14%	20,000	3%	190,000	28%	30,000	14%	—	—
Mexico	100,000	6%	90,000	11%	10,000	2%	—	—	—	—
Canada	100,000	6%	70,000	9%	20,000	3%	10,000	3%	—	—
Korea, South . .	100,000	6%	20,000	3%	60,000	9%	10,000	6%	—	—
Japan	70,000	4%	50,000	6%	20,000	3%	10,000	4%	—	—
Saudi Arabia . .	70,000	4%	—	—	60,000	10%	—	—	—	—
United Kingdom	50,000	3%	30,000	4%	10,000	1%	10,000	4%	—	—
Germany	40,000	2%	20,000	2%	10,000	1%	10,000	7%	—	—
France.	30,000	2%	20,000	2%	10,000	1%	10,000	4%	—	—
All others.	500,000	29%	160,000	20%	190,000	29%	100,000	51%	40,000	62%

— Base number or percent rounds to zero.

Note: Detail may not sum to total due to rounding; percentages are column percentages; percentages and totals were calculated prior to rounding.

Source: U.S. Department of Homeland Security.

Figure 1.
Resident Nonimmigrant Population Estimates by Category of Admission and Region of Citizenship: Fiscal Year 2014

Source: U.S. Department of Homeland Security.

Figure 2.
Resident Nonimmigrant Population Estimates by Category of Admission and Country of Citizenship: Fiscal Year 2014

Source: U.S. Department of Homeland Security.

temporary workers was India, which sent 40 percent of all temporary workers; India was followed by Mexico and Canada with about 10 percent each. Among students, the leading countries were China (nearly 30 percent), India (nearly 15 percent), Saudi Arabia (10 percent), and South Korea (9 percent). The exchange visitor and diplomats and other representatives categories were relatively diverse; China was the only country to send more than 10 percent of the exchange visitors and no country sent more than 10 percent of the diplomats and other representatives.

In addition to being the top two sending countries overall, India and China also demonstrate how trends vary by geography (see Figure 2). For example, reading across the rows of Table 1 reveals that more than 75 percent of the Indian nationals were admitted as temporary workers, compared to only 10 percent of the Chinese

nationals. From another perspective, nearly 80 percent of the Chinese nationals were admitted as students, compared to only about 20 percent of the Indian nationals. Finally, about 10 percent of the Chinese nationals were admitted as exchange visitors, compared to fewer than 5 percent of Indian nationals.

The next leading countries were Mexico, Canada, South Korea, Japan, and Saudi Arabia. Mexico trended similarly to India, with more than 80 percent admitted as temporary workers and only about 10 percent as students. Canada and Japan also favored temporary workers, but to a lesser extent, with 60 to 70 percent admitted as workers and about 20 to 25 percent admitted as students. South Korea and Saudi Arabia were more like China and favored students. Nearly 65 percent of South Korean nationals were students and about 20 percent were temporary workers. Saudi Arabia was an

Table 2.

Resident Nonimmigrant Population Estimates by Category of Admission and State of Destination: Fiscal Year 2014

State of destination	Total		Temporary workers		Students		Exchange visitors		Diplomats and other representatives	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	1,730,000	100%	790,000	100%	670,000	100%	200,000	100%	70,000	100%
California.	290,000	17%	130,000	17%	120,000	18%	30,000	14%	—	—
New York	210,000	12%	80,000	11%	80,000	12%	30,000	13%	20,000	24%
Texas	140,000	8%	90,000	11%	40,000	6%	10,000	5%	—	—
Florida.	90,000	5%	50,000	6%	30,000	5%	10,000	4%	—	—
Massachusetts	90,000	5%	30,000	3%	50,000	7%	20,000	8%	—	—
New Jersey	80,000	4%	50,000	7%	20,000	2%	10,000	4%	—	—
Illinois	80,000	4%	40,000	5%	30,000	5%	10,000	4%	—	—
Pennsylvania	60,000	3%	30,000	4%	20,000	3%	—	—	—	—
Virginia	60,000	3%	20,000	3%	30,000	4%	10,000	3%	—	—
Washington	50,000	3%	30,000	3%	20,000	3%	10,000	3%	—	—
All others	590,000	34%	250,000	31%	230,000	34%	80,000	41%	30,000	52%

— Base number or percent rounds to zero.

Note: Detail may not sum to total due to rounding; percentages are column percentages; percentages and totals were calculated prior to rounding.

Source: U.S. Department of Homeland Security.

Table 3.

Resident Nonimmigrant Population Estimates by Category of Admission, Age, and Sex: Fiscal Year 2014

Characteristic	Total		Temporary workers		Students		Exchange visitors		Diplomats and other representatives	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Age group										
Total	1,730,000	100%	790,000	100%	670,000	100%	200,000	100%	70,000	100%
0–17	200,000	12%	100,000	12%	70,000	11%	20,000	12%	10,000	9%
18–24	530,000	30%	50,000	6%	390,000	59%	80,000	40%	—	—
25–34	620,000	36%	370,000	46%	180,000	26%	60,000	31%	10,000	21%
35–44	240,000	14%	180,000	23%	20,000	3%	20,000	12%	20,000	28%
45–54	100,000	6%	70,000	9%	—	—	10,000	3%	20,000	24%
55 and over	40,000	2%	20,000	3%	—	—	—	—	10,000	13%
Sex and age group										
Total	1,730,000		790,000		670,000		200,000		70,000	
Male	990,000	100%	480,000	100%	370,000	100%	90,000	100%	40,000	100%
0–17	100,000	10%	50,000	10%	40,000	11%	10,000	12%	—	—
18–24	280,000	29%	30,000	6%	220,000	59%	30,000	35%	—	—
25–34	350,000	35%	210,000	44%	100,000	27%	30,000	33%	10,000	20%
35–44	160,000	16%	120,000	25%	10,000	3%	10,000	14%	10,000	29%
45–54	70,000	7%	50,000	11%	—	—	—	—	10,000	25%
55 and over	30,000	3%	20,000	4%	—	—	—	—	10,000	14%
Female	740,000	100%	310,000	100%	300,000	100%	100,000	100%	20,000	100%
0–17	100,000	13%	50,000	15%	30,000	11%	10,000	13%	—	—
18–24	240,000	33%	20,000	6%	170,000	58%	50,000	45%	—	—
25–34	270,000	37%	160,000	51%	80,000	26%	30,000	29%	10,000	23%
35–44	90,000	12%	60,000	19%	10,000	3%	10,000	10%	10,000	26%
45–54	30,000	4%	20,000	6%	—	—	—	—	10,000	21%
55 and over	10,000	1%	10,000	2%	—	—	—	—	—	—

— Base number or percent rounds to zero.

Note: Detail may not sum to total due to rounding; percentages are column percentages; percentages and totals were calculated prior to rounding.
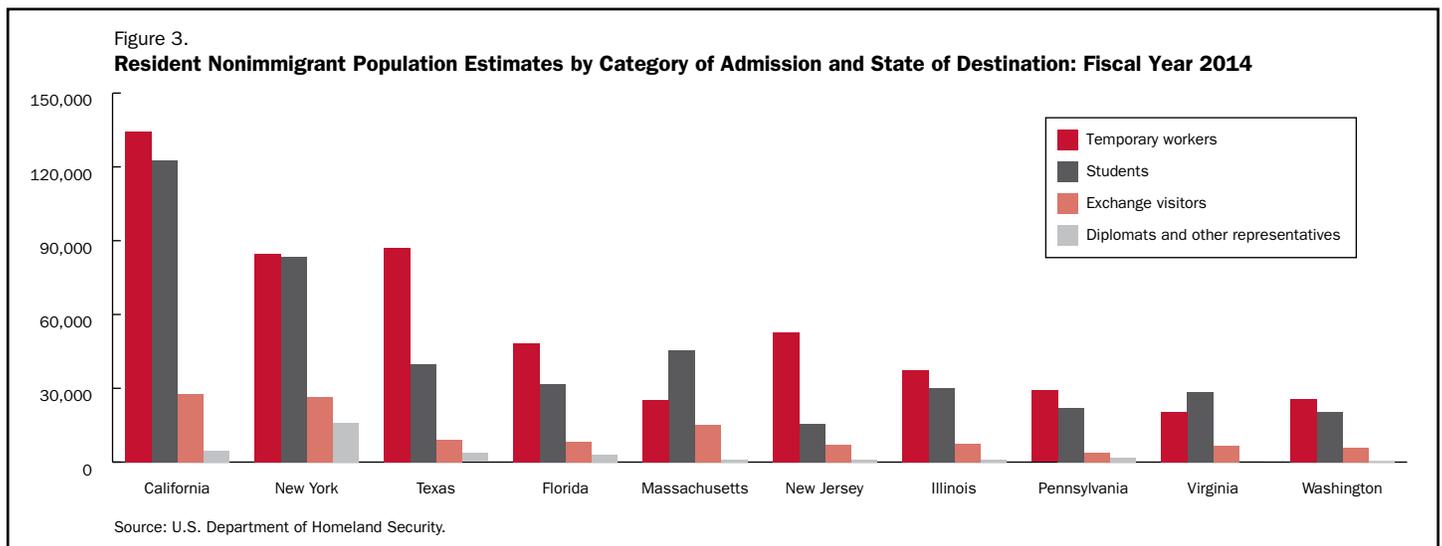
Source: U.S. Department of Homeland Security.

extreme with more than 90 percent students and making up 10 percent of the student total despite comprising fewer than 5 percent of the overall total.

State of destination

California was the leading destination state overall (290,000 persons, slightly more than 15 percent of the total) and the leading state for both temporary workers and students (15 to 20 percent of the total numbers) (see Table 2). The next leading states for temporary workers were Texas and New York, with slightly more than 10 percent of the total, each. The next leading states for students were New York and Massachusetts, with 12 percent and 7 percent of the total, respectively. California and New York were the leading states for exchange visitors, with more than 25 percent of

Figure 3.
Resident Nonimmigrant Population Estimates by Category of Admission and State of Destination: Fiscal Year 2014

Source: U.S. Department of Homeland Security.

the total going to those two states. Nearly 25 percent of diplomats and other representatives of foreign governments and international organizations went to New York.

Most of the top 10 destinations states had higher concentrations of workers than students (see Figure 3). The notable exceptions were Massachusetts and Virginia, where slightly more than 50 percent of the resident nonimmigrants were students (compared to about 40 percent nationwide).

Age and sex

About 80 percent of all resident nonimmigrants were ages 18 to 44 and nearly 60 percent were male (see Table 3). Temporary

workers tended to be slightly older than average, with nearly 70 percent ages 25 to 44 (see Figure 4). Students were younger, with nearly 60 percent ages 18 to 24 and 85 percent ages 18 to 34. Exchange visitors, many of whom are also students, resembled the student population with slightly more than 70 percent ages 18 to 34. Diplomats tended to be older, with nearly 25 percent ages 45 to 54 and nearly 75 percent ages 25 to 54. The proportions were generally similar for males and females for each category of admission, though the female diplomats and other representatives trended younger than the males. Slightly more than 60 percent of temporary workers and diplomats were male, 55 percent of students were male, and a slim majority of exchange visitors were female.

Figure 4.
Resident Nonimmigrant Population Estimates by Category of Admission and Age Group: Fiscal Year 2014

Source: U.S. Department of Homeland Security.

REFERENCES

Baker, Bryan, 2014. "Estimates of the Size and Characteristics of the Resident Nonimmigrant Population in the United States: January 2012," Office of Immigration Statistics, Policy Directorate, U.S. Department of Homeland Security, https://www.dhs.gov/publication/estimates-resident-nonimmigrant-population-january-2012

Hoefer, Michael, Nancy Rytina, and Bryan Baker, 2012. "Estimates of the Unauthorized Immigrant Population Residing in the United States: January 2011," Office of Immigration Statistics, Policy Directorate, U.S. Department of Homeland Security, http://www.dhs.gov/xlibrary/assets/statistics/publications/ois_ill_pe_2011.pdf

U.S. Department of Homeland Security, 2015. "SEVIS by the Numbers, General Summary Quarterly Review, July 2015," Student and Exchange Visitor Program, Immigration and Customs Enforcement, U.S. Department of Homeland Security, https://www.ice.gov/doclib/sevis/pdf/by-the-numbers1.pdf
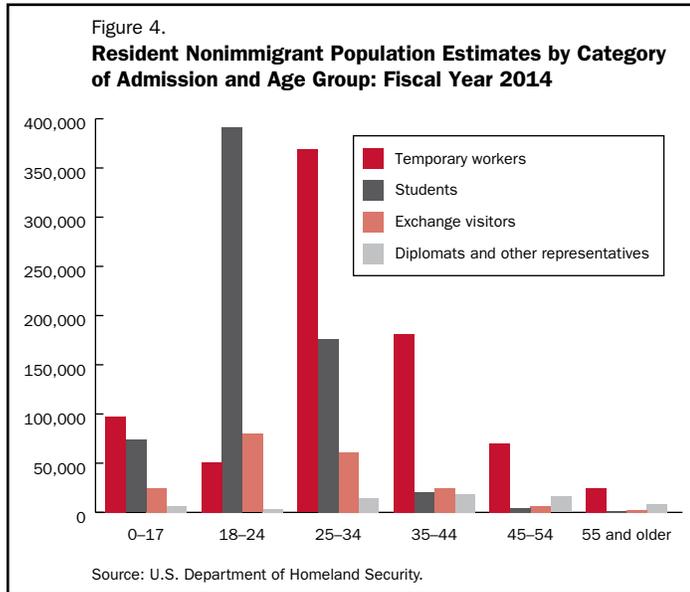
APPENDIX 1

Resident Nonimmigrant Classes of Admission

Class	Description
Temporary workers and families	
Temporary workers and trainees	
H1B	Workers in specialty occupations
H1B1	Chile and Singapore Free Trade Agreement aliens
H1C	Registered nurses participating in the Nursing Relief for Disadvantaged Areas
H2A	Temporary agricultural workers
H2B	Temporary skilled workers
H2R	Returning H2B workers
H3	Trainees and participants in a special educational exchange program
H4	Spouses and children of H1, H2, or H3
O1	Workers with extraordinary ability or achievement
O2	Workers accompanying and assisting in performance of O1 workers
O3	Spouses and children of O1 and O2
P1	Internationally recognized athletes or entertainers and their essential support personnel
P2	Artists or entertainers in reciprocal exchange programs and their essential support personnel
P3	Artists or entertainers in culturally unique programs and their essential support personnel
P4	Spouses and children of P1, P2, or P3
Q1	Participants in international cultural exchange programs
R1	Workers in religious vocations or occupations
R2	Spouses and children of R1
TN	North American Free Trade Agreement (NAFTA) professional workers
TD	Spouses and children of TN
Intracompany transferees	
L1	Intracompany transferees
L2	Spouses and children of L1
Treaty traders and investors	
E1	Treaty traders and their spouses and children
E2	Treaty investors and their spouses and children
E3	Australian Free Trade Agreement principals, spouses and children
Representatives of foreign information media	
I1	Representatives of foreign information media and spouses and children
Students	
F1	Academic students
F2	Spouses and children of F1
M1	Vocational students
M2	Spouses and children of M1
Exchange visitors	
J1	Exchange visitors
J2	Spouses and children of J1
Diplomats and other representatives	
A1	Ambassadors, public ministers, career diplomatic or consular officers and their families
A2	Other foreign government officials or employees and immediate family
A3	Attendants, servants, or personal employees of A1 and A2 and immediate family
G1	Principals of recognized foreign governments and immediate family
G2	Other representatives of recognized foreign governments and immediate family
G3	Representatives of nonrecognized or nonmember foreign governments and immediate family
G4	International organization officers or employees and immediate family
G5	Attendants, servants, or personal employees of representatives and immediate family
N1 to N7	North Atlantic Treaty Organization (NATO) officials, immediate family, and dependents

Note: All class categories include both principals and dependents.
Source: U.S. Department of Homeland Security.