

Stay Rates of Foreign Doctorate Recipients from U.S. Universities, 2013

Prepared by:

Michael G. Finn
Scientific Assessment and Workforce Development
Oak Ridge Institute for Science and Education

Leigh Ann Pennington
Scientific Assessment and Workforce Development
Oak Ridge Institute for Science and Education

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Executive Summary

This report examines the residency of foreign doctorate recipients from U.S. academic institutions. It estimates the proportion who resided in the United States in 2013, for the classes of 2002-2004 (the 10-year stay rate), and the classes of 2007-2009 (the 5-year stay rate). The data sources are the 2013 Survey of Doctorates Recipients (SDR) and the 2013 Doctorate Records File (DRF). Since 2001 the SDR has been administered to those predicted to be living in the U.S., as well as those predicted to be living outside the U.S. during the survey period based on data from the DRF. This paper includes the following findings related to mobility of foreign nationals after their degree award:

- The 5-year stay rate for foreign students who had temporary visas at graduation was 70 percent in 2013, and the 10-year stay rate was 62 percent.
- Compared with estimates for earlier years, these latest stay rates indicate that the proportion of foreign doctorate recipients to stay in the United States after graduation is at its highest level.
- Few significant differences were found in stay rates by discipline, except that the social and related sciences continue to stay at a lower rate than other fields, e.g., a 10-year stay rate of only 42 percent for temporary residents receiving U.S. doctorates.
- By country of origin, China and India have the highest stay rates, around 84 to 86 percent. These two countries accounted for nearly half of estimated foreign doctorate recipients in the 2007-2009 time period.
- A small proportion of foreign doctorate recipients reported that their graduate education was financed with money from foreign sources and this group had stay rates in the 20 to 25 percent range.

In addition, we estimated the rate at which foreign doctorate recipients become U.S. citizens. It is very low for the first five to seven years after their degree award. Then the rate increases sharply with each year since graduation, rising to about 30 percent of foreign doctorates receiving degrees 12 years earlier. Though the rate may continue to increase with more years since graduation, the 2013 SDR data has no further international residency information on older cohorts with degrees awarded before 2001. This coverage issue for older cohorts does not exist in the 2015 SDR due to a sample redesign and size increase.

Introduction

This report provides estimates of stay rates for foreign students who received doctorates in science or engineering (S/E) from U.S. universities. For this paper, the stay rate represents the proportion of foreign doctorate recipients from U.S. universities who stayed in the United States after graduation for any reason and is always specific to a particular year. Each line in the tables 2-9 that follow describes a different group of these degree recipients.

Data and Methods

The data source for this report is different from previous reports on stay rates by Dr. Michael Finn. These earlier reports (e.g., Finn, 2014) used data from the National Science Foundation's Survey of Earned Doctorates (SED) in conjunction with administrative data from the Social Security Administration (SSA). The stay rate was derived using SED data to identify the U.S.-degreed, foreign national doctorate recipients matched with SSA data on the proportion who were paying taxes five or ten years after graduation. While these administrative data have a number of advantages, the number of doctorate recipients who chose not to share their social security number with the SED was rising over the years. Additionally, nearly 10 years ago the SED stopped asking doctorate recipients for full social security numbers, which made the use of administrative data much more difficult.

For this report, we make use of survey data from the 2013 Survey of Doctorate Recipients (SDR). The 2013 SDR included two sample components: The National Survey of Doctorate Recipients, which includes U.S.-degreed doctorate recipients predicted to be living in the United States after graduation, and the International Survey of Doctorate Recipients, which includes U.S.-degreed doctorate recipients predicted to be living outside the United States. The sample design incorporated a stratification factor based on last known location of the individual, integrating the national and international sample components. Thus the 2013 SDR sample of 47,078 cases consisted of 40,000 cases from the national component and 7,078 from the international component. The overall sampling rate was about 5 percent, and the overall response rate about 76 percent. Because this is a sample survey the estimates are subject to sampling error. The technical appendix provides more information on the reliability of estimates in the report. Tabulations from these surveys were performed by the National Opinion Research Center in response to a request by ORISE.

Use of the 2013 SDR served as a pilot study to evaluate this potential new data source. As this paper demonstrates, descriptive statistics derived from these surveys were very similar to those derived from the Social Security Administration data used historically. Updated Social Security Administration data have just recently become available, allowing us to do a more precise comparison by cohort with the 2013 and 2015 SDR in the near future. Therefore, we plan to use data from the 2015 SDR to produce updated long-term stay rates for the upcoming National Science Board's Science and Engineering Indicators 2018 report. This pilot report includes stay rate estimates from the 2013 SDR, providing some new information on this topic prior to the publication of the 2018 Indicators report.

The paper shows estimates for stay rates five and ten years after graduation. Usually, one would expect the 10-year stay rate in 2013 to give the proportion of the persons receiving S/E doctorates in the academic year ending in the summer of 2003. However, in an effort to reduce the impact of sampling error, we instead calculate a 10-year stay rate using not only the class of 2003 but also the classes of 2002 and 2004. That is, the reference group is not just those graduating during a 12-month period centered on 2003, but rather those graduating during a 36 month period centered on 2003. Similarly, the 5-year stay rate is calculated for persons receiving S/E doctorates not only in 2008, but also in 2007 and 2009. We do also present limited estimates of stay rates for every class from 2001 to 2011, in 2013. We caution, however, that such estimates have larger standard errors.

One of the advantages of using data from the combined Survey of Doctorate Recipients is that there is some interesting information that was not available when estimates were made from SSA administrative data. For example, because a question about citizenship in 2013 was asked, it is possible to measure the extent to which these foreign doctorate recipients not only stay in the United States but also become United States citizens.

Trends in Doctorate Awards

Table 1 shows the number of S/E doctorates awarded, by citizenship status at time of degree. The number of doctorate awards grew substantially in recent years. Most of the growth in doctorates awarded to foreign citizens occurred prior to 2008. Since then U.S. citizen doctorate awards have increased much faster than awards to foreign citizens, with the result that the proportion of all S/E doctorates awarded to foreigners has declined from a high of 45 percent in 2007 to 40 percent in 2013.

Table 1. Science and Engineering Doctorates Awarded from U.S. Universities, 2001-2013

	2001	2003	2005	2007	2008	2009	2010	2011	2012	2013
Temporary Visa	8,252	8,699	10,776	12,780	13,065	12,588	11,689	12,205	12,750	13,456
Permanent Visa	1,338	1,158	1,186	1,304	1,432	1,533	1,531	1,555	1,527	1,453
Total, Foreign Citizens	9,590	9,857	11,962	14,084	14,497	14,121	13,220	13,760	14,277	14,909
U.S. Citizens	16,089	15,737	16,060	17,421	18,510	19,665	19,964	20,522	21,434	22,111
Total, U.S. and Foreign	25,679	25,594	28,022	31,505	33,007	33,786	33,184	34,282	35,711	37,020
Percent Foreign	37%	39%	43%	45%	44%	42%	40%	40%	40%	40%

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates, 2001-2005, Integrated Science and Engineering Resources Data System (WebCASPAR) (<https://webcaspar.nsf.gov>) [January 31, 2018]; and National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates, 2007-2013, SED Tabulation Engine (<https://nces.norc.org/NSFTabEngine>) [January, 31, 2018].

Stay Rates of Recent Graduates

Table 2 shows that the 5-year stay rate for all foreign students receiving doctorates in 2007-2009 was 72 percent. As was found in earlier studies (Finn, 2014), the social and related sciences had a stay rate that was notably lower, 55 percent.

Table 2. Percentage of Foreign Students Receiving S/E Doctorates in 2007-2009 Who Were in the United States in 2013, by Degree Field
(includes temporary and permanent residents)

Degree Field	Foreign Doctorate Recipients	5-Year Stay Rate (Percent)
Physical and related sciences	6,600	72
Computer and mathematical sciences	5,500	77
Life (<i>biol., agri. & environ.</i>) and health sciences	10,800	73
Engineering	14,400	76
Social and related sciences	5,800	55
Total, all fields	43,200	72

Note: Numbers are rounded to nearest 100. Detail may not add to total due to rounding.

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

Studies of earlier cohorts have shown that stay rates tend to decline somewhat during the period from 5 to 10 years after graduation. Table 3 shows the 10-year stay rate for all foreign students receiving doctorates during 2002 to 2004. While this is a different cohort from the cohort shown in Table 2, it does show a somewhat lower stay rate of 65 percent after 10 years.

Table 3. Percentage of Foreign Students Receiving S/E Doctorates in 2002-2004 Who Were in the United States in 2013, by Degree Field
(includes temporary and permanent residents)

Degree Field	Foreign Doctorate Recipients	10-Year Stay Rate (Percent)
Physical and related sciences	4,700	71
Computer and mathematical sciences	3,400	67
Life (<i>biol., agri. & environ.</i>) and health sciences	7,800	67
Engineering	9,500	67
Social and related sciences	4,900	50
Total, all fields	30,300	65

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

Stay Rates for Temporary Residents

The previous discussion focused on the stay rate of all students who were foreign citizens at the time they received doctorates from U.S. universities. This definition includes both those who had temporary visas and those with permanent visas. Most discussions of foreign graduate students, however, refer only to those on temporary visas. For example, the National Science Foundation's Survey of Graduate Students and Postdoctorates in Science and Engineering is a source of information on total and foreign student enrollment in graduate S/E programs. However, it defines foreign students to include only those on temporary visas and combines those on permanent visas with U.S. citizens.

There is value in the calculation of a separate stay rate for temporary residents as it conforms to the more typical definition of "foreign student." Also, there are some historical statistics of stay rates by country of origin that were produced only for students on temporary visas, and a similar definition is needed to compare the data on recent cohorts with data from earlier cohorts. Thus, this section presents estimates of stay rates for foreign students on temporary visas at the time they received their doctorate degrees.

Table 4 shows the 5-year stay rates for temporary residents by broad degree field. Compared with Table 2, which included permanent residents, this table shows much the same pattern, with the highest stay rates in the natural sciences and engineering. The 5-year stay rate for all degree fields combined in Table 4 is 70 percent.

Table 5 shows the 10-year stay rates for temporary residents by broad degree field. Compared with Table 3, which included permanent residents, this table shows much the same pattern, with the highest stay rates in the natural sciences and engineering. The 10-year stay rate for all degree fields combined in Table 5 is 62 percent.

**Table 4. Temporary Residents Receiving S/E Doctorates in 2007-2009
Who Were in the United States in 2013, by Degree Field**

Degree Field	Foreign Doctorate Recipients	5-Year Stay Rate (Percent)
Physical and related sciences	6,100	70
Computer and mathematical sciences	4,900	75
Life (<i>biol., agri. & environ.</i>) and health sciences	9,300	69
Engineering	13,500	75
Social and related sciences	5,000	51
Total, all fields	38,800	70

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

**Table 5. Temporary Residents Receiving S/E Doctorates in 2002-2004
Who Were in the United States in 2013, by Degree Field**

Degree Field	Foreign Doctorate Recipients	10-Year Stay Rate (Percent)
Physical and related sciences	4,000	67
Computer and mathematical sciences	3,000	65
Life (<i>biol., agri. & environ.</i>) and health sciences	6,600	63
Engineering	8,900	67
Social and related sciences	3,900	42
Total, all fields	26,400	62

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

Past studies of stay rates have shown significant variation in stay rates by country of origin. Because of the limited sample size in the 2013 Survey of Doctorate Recipients used for this study, it is not possible to provide good estimates of stay rates for countries with relatively few doctorate recipients. Table 6 shows that China and India, two countries that are source of more S/E doctorate recipients than any other country, also have the highest 5-year rates.

Table 7 indicates the 10-year stay rate for the same countries/regions as the previous table. Again, China and India have the highest stay rates. One might note that the 5-year stay rates for China, India and Europe in Table 6 are lower than the 10-year stay rates for these countries in Table 7. The difference is too small to be statistically significant, i.e., is within the margin of error associated with these estimates. As expected, overall, the 10-year stay rate is lower than the 5-year rate.

**Table 6. Temporary Residents Receiving S/E Doctorates in 2007-2009
Who Were in the United States in 2013,
by Country/Region of Citizenship at Time of Doctorate**

Country/Region of Origin	Foreign Doctorate Recipients	5-Year Stay Rate (Percent)
China (<i>including Hong Kong</i>)	12,300	84
India	6,300	85
South Korea	3,200	54
West Asia	3,200	59
Europe	4,100	63
North and South America	3,600	55
All other	6,200	53
Total, all countries/regions	38,800	70

Note: Numbers are rounded to nearest 100. Detail may not add to total due to rounding.

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

**Table 7. Temporary Residents Receiving S/E Doctorates in 2002-2004
Who Were in the United States in 2013,
by Country/Region of Citizenship at Time of Doctorate**

Country/Region of Origin	Foreign Doctorate Recipients	10-Year Stay Rate (Percent)
China (<i>including Hong Kong</i>)	7,500	86
India	2,400	86
South Korea	2,400	32
West Asia	2,500	52
Europe	3,800	68
North and South America	3,100	49
All other	4,800	36
Total, all countries/regions	26,400	62

Note: Numbers are rounded to nearest 100. Detail may not add to total due to rounding.

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

It is noted that the more recent cohorts from China and India are larger than earlier cohorts, in both relative and absolute terms. In 2002-2004, these two countries accounted for 38 percent of the total doctorate recipients who were temporary residents at graduation. In 2007-2009 their share increased to 48 percent. Over time, changes in the relative share of these large source countries can impact the overall stay rates, in addition to changes in the behavior of individuals from these source countries.

Tables 8 and 9 show stay rates by sex. There appears to be little or no difference in stay rates between the sexes. Previous stay rate studies (Finn, 2014, 2012) showed little difference initially but showed the male stay rate falling off more with time since degree than did the female stay rate. The differences shown in Tables 8 and 9, produced by a sample survey, cannot be said to be statistically significant within a given cohort, but are consistent with the results of earlier studies.

Table 8. Temporary Residents Receiving S/E Doctorates in 2007-2009 Who Were in the United States in 2013, by Sex

	Foreign Doctorate Recipients	5-Year Stay Rate (Percent)
Male	27,200	70
Female	11,600	69
Total	38,800	70

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

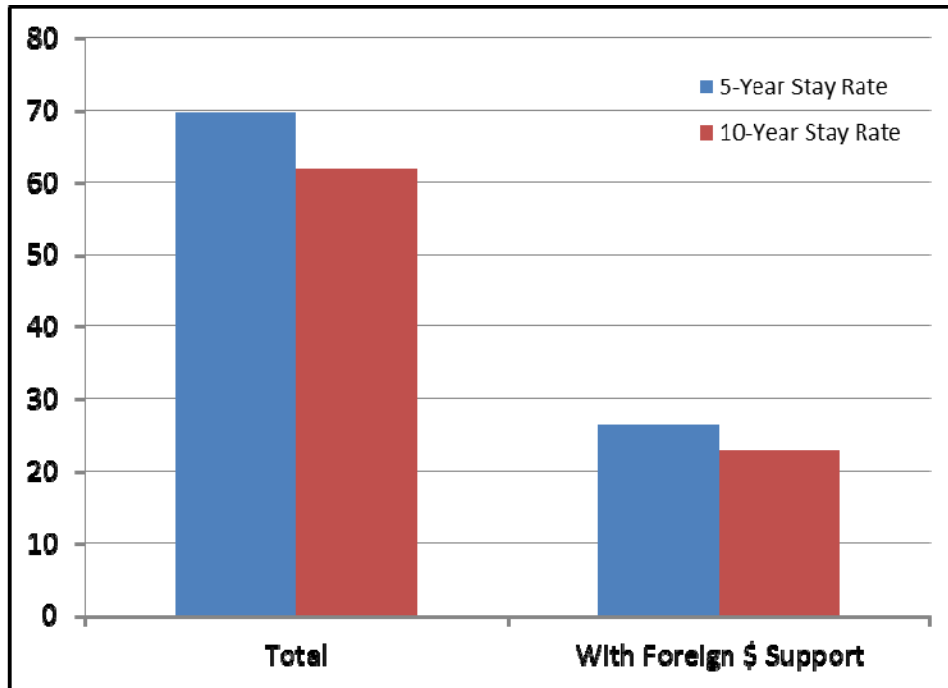
Table 9. Temporary Residents Receiving S/E Doctorates in 2002-2004 Who Were in the United States in 2013, by Sex

	Foreign Doctorate Recipients	10-Year Stay Rate (Percent)
Male	19,100	61
Female	7,300	64
Total	26,400	62

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

Figure 1 highlights a group of S/E doctorate recipients who had stay rates much lower than the average. It consists of those who indicated in their response to the Survey of Earned Doctorates that they had foreign financial support during graduate school. It is understandable that these doctorate recipients would have closer ties to a foreign country, presumably in most cases their home country, and might have both more opportunity and obligation to return home after completing their doctorate. The percentage reporting foreign support is relatively small. It was only about 9.5 percent of the total number of temporary residents receiving S/E doctorates in 2002-2004, and declined to only about 3.9 percent in 2007-2009. Having so few who received financial support from foreign sources in the most recent cohort tends to support the relatively high stay rate (70 percent) in that cohort.

Figure 1. Temporary Residents Receiving S/E Doctorates in 2002-2004 and 2007-2009 Who Were in the United States in 2013, Total vs. Those Whose Primary or Secondary Support Came from Foreign Sources

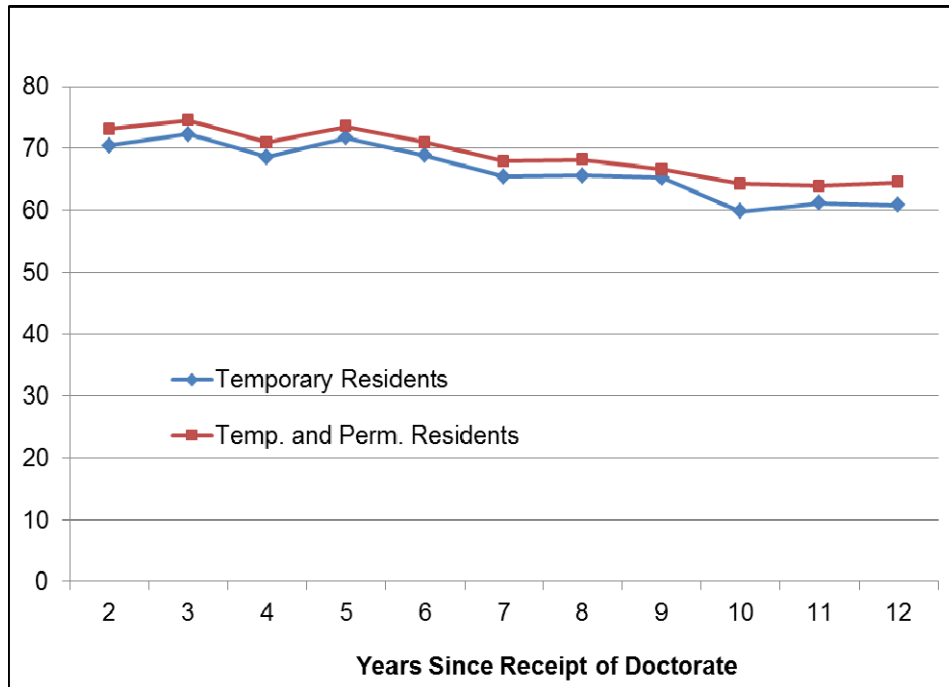


Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

All of the data presented above refer to stay rates (defined as the percentage present in the United States in 2013) for two groups of doctorate recipients, those graduating in 2002 to 2004 and those graduating in 2007 to 2009. By grouping three years of doctorate recipients together we can reduce the standard error of estimates and therefore look at sub-groups, such as those shown in the previous tables and graphs. Figure 2 takes a different approach by showing a stay rate in 2013 for S/E doctorates graduating in each year between 2001 and 2011. Again, the data indicate that stay rates for older cohorts tend to be lower than stay rates for the more recent cohorts.

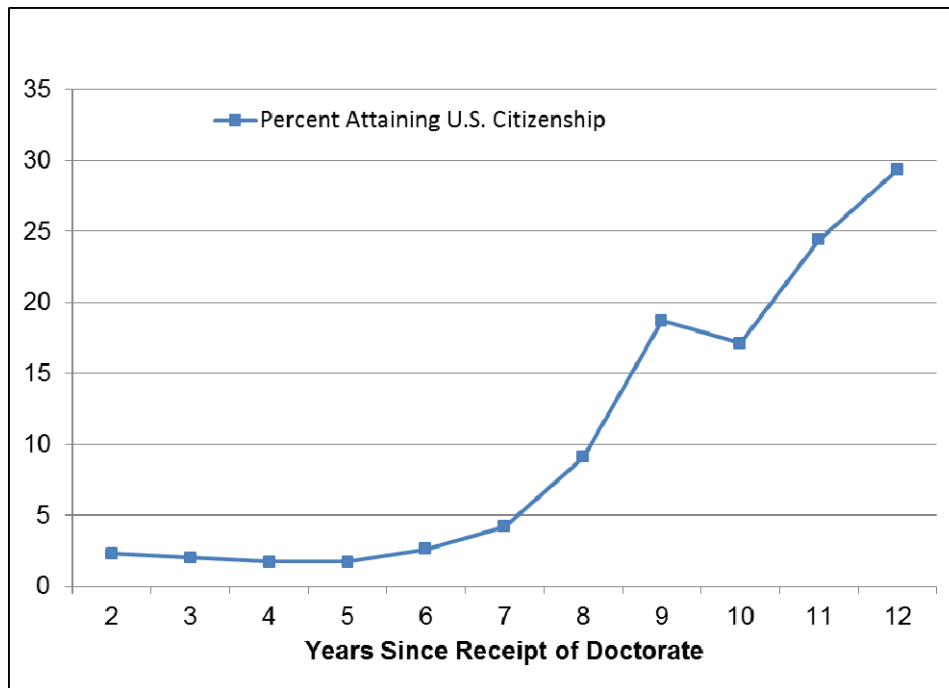
While this paper does not attempt to provide information about their activities in the United States or elsewhere, Figure 3 does show the extent to which those who were in the United States in 2013 acquired U.S. citizenship since receipt of their doctorate. Most immigrants have to wait five years after obtaining permanent residency status before they can become U.S. citizens. Figure 3 shows that after five to seven years the percentage reporting U.S. citizenship tends to rise sharply. However, even for the cohort graduating 12 years before the 2013 survey, the majority have not become U.S. citizens as of 2013.

Figure 2. Stay Rate in 2013 for Foreign Citizens Awarded Doctorate Degrees from 2001 to 2011, by Years Since Award of Doctorate



Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

Figure 3. Percentage of Temporary Residents Attaining U.S. Citizenship in 2013, by Years Since Award of Doctorate



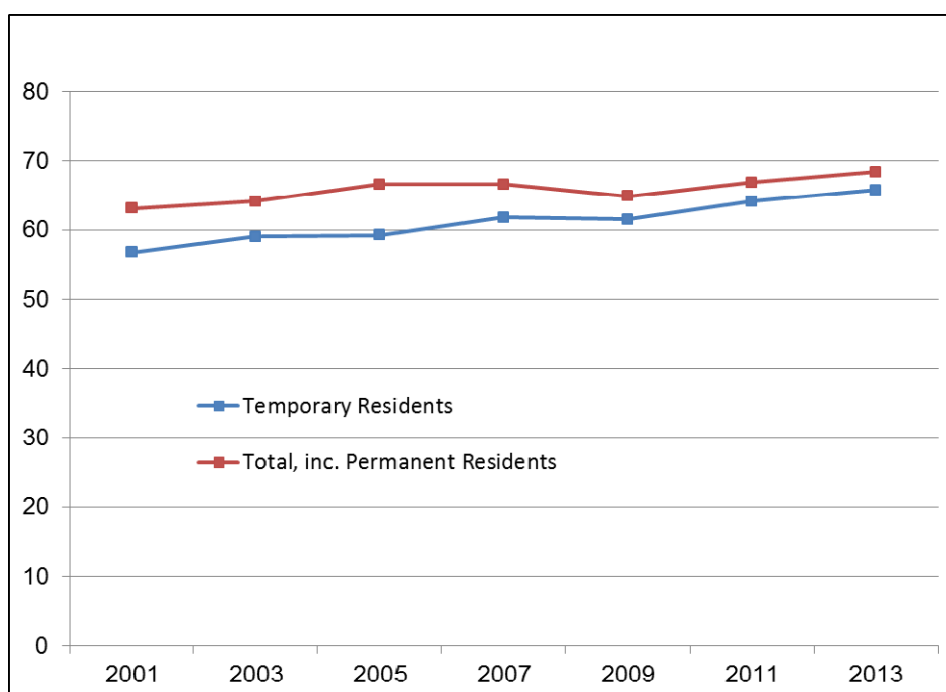
Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

Comparison with Earlier Stay Rate Estimates

How do these estimates of stay rates compare with those made earlier using SSA administrative data? The earlier estimates produced five and ten year stay rates in 2011 and earlier years. Conceptually, the estimates are measuring the same thing: the percentage of foreign S/E doctorate recipients from U.S. universities who reside in the United States five or ten years after graduation. Of course, the estimates cannot be expected to agree exactly because the stay rate for more recent cohorts may have declined or increased.

In an earlier report Finn compared stay rates in 2011 with earlier estimates to ask how stay rates had changed (Finn, 2014). He argued that since the five and ten year stay rates might have changed differently, the best way to examine a trend in stay rates overall is to take the average of the 5-year and the 10-year stay rates in 2011 and compare this with the same average for earlier times. Figure 4 is based on those earlier estimates for stay rates in 2001 to 2011, with data from this report added for 2013.

Figure 4. Average of 5-Year and 10-Year Stay Rates, 2001 to 2013



Source: Oak Ridge Institute for Science and Education for years 2001 through 2011; National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients for 2013.

The upward trend derived from taking the simple average of the five and ten year stay rates for each of the years is shown in Figure 4. The estimated stay rates for 2013 are at a new high, but less than 2 percentage points above the estimates for 2011, which were also at a new high. Of course, because of sampling error in the 2013 estimates, and possible errors in the earlier stay rate estimates, we cannot state with complete confidence that the stay rate has increased to a new high. However, as noted in the technical appendix, the 95 percent confidence interval for the average of the 5 and 10 year stay rates in 2013 is approximately +/-1 percentage point for both groups shown in the figure. This does provide evidence that stay rates may have never been higher.

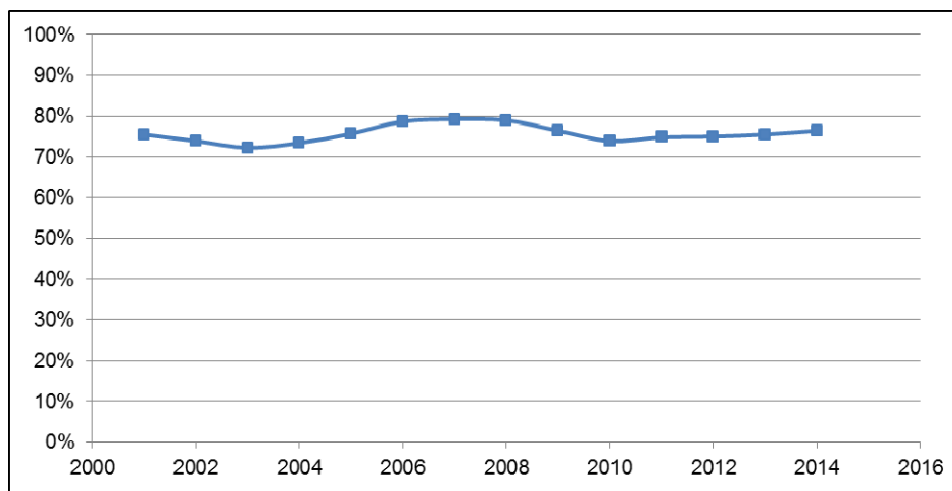
How Have Stay Rates Changed for Cohorts more Recent than 2009?

Estimates of 5-year and 10-year stay rates inevitably exclude the most recent cohorts. If there are concerns that the stay rate has changed for cohorts more recent than 2008, how is one to assess those concerns? We can point to two sources of data that are useful in this respect.

Stay rates in 2013 for the 2009, 2010 and 2011 cohorts of doctorate recipients are shown in Figure 2. The first data point in this figure refers to those graduating 2 years prior to 2013, i.e., in 2011. This would be a 2-year stay rate for the class of 2011. The figure does not suggest any significant change in stay rates for this most recent cohort, compared to the 2008 cohort or the average of the 2007-2009 cohorts.

A second way to inquire about the stay rates of more recent cohorts is to examine data on “plans to stay” from the *Survey of Earned Doctorates*. Historically, the data on plans to stay have shown a stay rate that is only slightly higher than 1-year stay rates estimated from SSA administrative data. (Finn, 2010, Fig. 5) Figure 5 shows plans to stay for S/E doctorate recipients from 2001 to 2014.

Figure 5. Percent of Temporary Resident Doctorate Recipients with Plans to Stay in U.S., 2001-2014



Source: NSF/NIH/USED/NEH/USDA/NASA, 2014 Survey of Earned Doctorates.

Of most interest in Figure 5 is the fact that the proportion who indicated plans to stay in the United States in 2014 (76 percent) is slightly lower than the percent who indicate plans to stay in 2007-2009 (78 percent). Thus, these intentions data show little evidence of change in the stay rate between the 2008 cohort reported on in this study and the most recent cohort for which data are available, 2014. The data do, however, indicate a slight decline in intentions to stay, so it makes sense to continue to monitor stay rates as newer data become available.

Conclusion

This report updates earlier stay rate estimates produced for 2011 and earlier years by Michael Finn. The main substantive conclusion is that stay-rates have not declined, and even appear to have increased slightly from 2011 to 2013. Other patterns, e.g. that China and India have the highest stay rates and that male and female stay rates differ very little, are consistent with earlier studies. This is significant because the stay rates in this study are measured with a completely different data source and method. The previous studies used SSA administrative data (tax records), while this study uses a sample survey of doctorate recipients from the SDR.

As shown in the technical appendix, it is very encouraging that the 95 percent confidence interval for the overall 5 and 10-year stay rate estimates is less than +/- 2 percentage points. Also encouraging is that the estimates of the overall 5 and 10-year stay rates in 2013 differ very little from the estimates made using administrative data in 2011. (Finn, 2014) However, the 2013 Survey of Doctorate Recipients is less useful when attempting to estimate stay rates for smaller subsets of the total. Here we see wider confidence intervals and less ability to know that observed differences are not due to sampling error. For this reason we did not attempt to estimate stay rates for any but the largest source countries. However, the survey based estimates produce some data that would be difficult to produce from administrative data, specifically, the data on acquisition of U.S. citizenship in years subsequent to graduation.

Technical Appendix

All estimated proportions presented in this paper (stay rates and U.S. citizenship acquisition) have been examined for reliability and have a coefficient of variation of ≤ 30 percent, with the exception of two values presented in Figure 3. The estimated proportions of temporary residents, 2 and 4 years since degree, obtaining U.S. citizenship in 2013 have coefficients of variation of 35.3 percent and 30.4 percent, respectively. Within the body of this document all comparative terms, such as lower, lowest and highest are based on statistical tests for significant difference at the 95 percent level.

Tables and figures included in the body of this report are reproduced in this appendix with the addition of 95 percent confidence intervals noted either numerically (for tables) or with bars (for figures). Note that Figure 2 is presented as two separate figures in this appendix, so confidence bars are more visible. Figure 4 includes data from previous stay rate calculations using data from the Social Security Administration for years 2001 through 2011. Confidence intervals are not available for these data series; therefore, no equivalent figure is included in this appendix. However, confidence intervals for the 2013 data points from the SDR data in this figure are: ± 1.1 percentage points for average 5-year and 10-year stay rate for temporary residents and ± 0.9 percentage point for the average 5-year and 10-year stay rate for the total of temporary and permanent residents. Figure 5 contains data from the *Survey of Earned Doctorates*, a population survey, so error bands are not appropriate; therefore, no equivalent figure is included in this appendix.

**Table A1. Percentage of Foreign Students Receiving S/E Doctorates in 2007-2009
Who Were in the United States in 2013, by Degree Field**
(includes temporary and permanent residents)

Degree Field	Foreign Doctorate Recipients	5-Year Stay Rate (Percent)	95% Confidence Interval (+/-)
Physical and related sciences	6,600	72	4.1
Computer and mathematical sciences	5,500	77	4.1
Life (<i>biol., agri. & environ.</i>) and health sciences	10,800	73	2.7
Engineering	14,400	76	2.4
Social and related sciences	5,800	55	3.3
Total, all fields	43,200	72	1.6

Note: Numbers are rounded to nearest 100. Detail may not add to total due to rounding.

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

Table A2. Percentage of Foreign Students Receiving S/E Doctorates in 2002-2004 Who Were in the United States in 2013, by Degree Field
(includes temporary and permanent residents)

Degree Field	Foreign Doctorate Recipients	10-Year Stay Rate (Percent)	95% Confidence Interval (+/-)
Physical and related sciences	4,700	71	4.9
Computer and mathematical sciences	3,400	67	6.7
Life (<i>biol., agri. & environ.</i>) and health sciences	7,800	67	4.5
Engineering	9,500	67	3.7
Social and related sciences	4,900	50	5.1
Total, all fields	30,300	65	1.0

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

Table A3. Temporary Residents Receiving S/E Doctorates in 2007-2009 Who Were in the United States in 2013, by Degree Field

Degree Field	Foreign Doctorate Recipients	5-Year Stay Rate (Percent)	95% Confidence Interval (+/-)
Physical and related sciences	6,100	70	4.5
Computer and mathematical sciences	4,900	75	4.9
Life (<i>biol., agri. & environ.</i>) and health sciences	9,300	69	3.1
Engineering	13,500	75	2.5
Social and related sciences	5,000	51	4.1
Total, all fields	38,800	70	1.2

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

**Table A4. Temporary Residents Receiving S/E Doctorates in 2002-2004
Who Were in the United States in 2013, by Degree Field**

Degree Field	Foreign Doctorate Recipients	10-Year Stay Rate (Percent)	95% Confidence Interval (+/-)
Physical and related sciences	4,000	67	5.5
Computer and mathematical sciences	3,000	65	7.1
Life (<i>biol., agri. & environ.</i>) and health sciences	6,600	63	5.3
Engineering	8,900	67	3.9
Social and related sciences	3,900	42	5.5
Total, all fields	26,400	62	1.8

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

**Table A5. Temporary Residents Receiving S/E Doctorates in 2007-2009
Who Were in the United States in 2013,
by Country/Region of Citizenship at Time of Doctorate**

Country/Region of Origin	Foreign Doctorate Recipients	5-Year Stay Rate (Percent)	95% Confidence Interval (+/-)
China (<i>including Hong Kong</i>)	12,300	84	2.7
India	6,300	85	3.7
South Korea	3,200	54	8.8
West Asia	3,200	59	6.9
Europe	4,100	63	5.5
North and South America	3,600	55	5.9
All other	6,200	53	5.5
Total, all countries/regions	38,800	70	1.2

Note: Numbers are rounded to nearest 100. Detail may not add to total due to rounding.

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

**Table A6. Temporary Residents Receiving S/E Doctorates in 2002-2004
Who Were in the United States in 2013,
by Country/Region of Citizenship at Time of Doctorate**

Country/Region of Origin	Foreign Doctorate Recipients	10-Year Stay Rate (Percent)	95% Confidence Interval (+/-)
China (<i>including Hong Kong</i>)	7,500	86	3.7
India	2,400	86	7.6
South Korea	2,400	32	10.0
West Asia	2,500	52	9.6
Europe	3,800	68	5.7
North and South America	3,100	49	6.7
All other	4,800	36	6.5
Total, all countries/regions	26,400	62	1.8

Note: Numbers are rounded to nearest 100. Detail may not add to total due to rounding.

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

**Table A7. Temporary Residents Receiving S/E Doctorates in 2007-2009
Who Were in the United States in 2013, by Sex**

	Foreign Doctorate Recipients	5-Year Stay Rate (Percent)	95% Confidence Interval (+/-)
Male	27,200	70	1.6
Female	11,600	69	2.5
Total	38,800	70	1.2

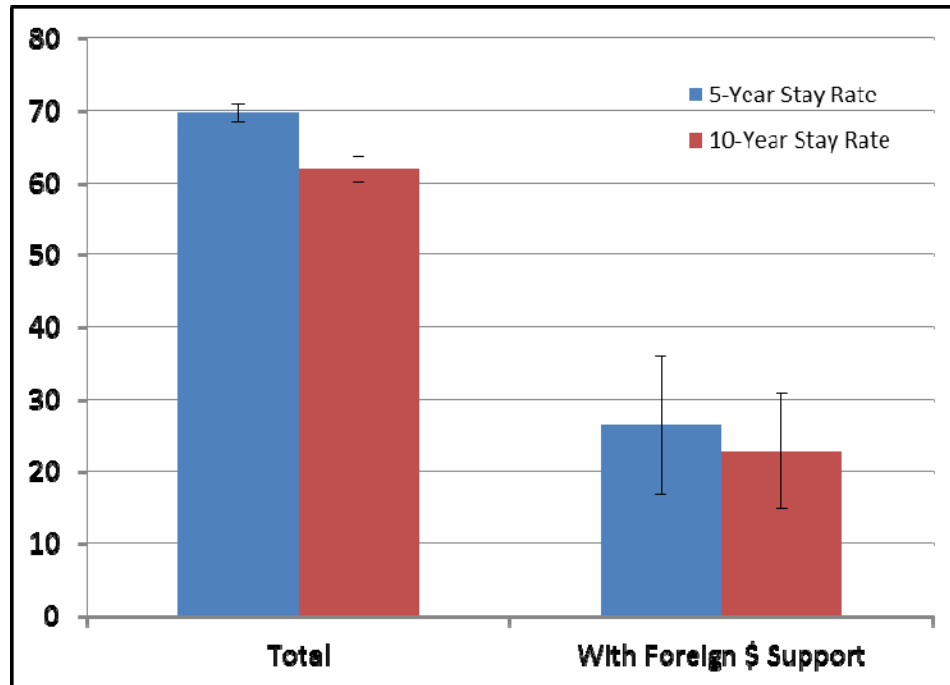
Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

**Table A8. Temporary Residents Receiving S/E Doctorates in 2002-2004
Who Were in the United States in 2013, by Sex**

	Foreign Doctorate Recipients	10-Year Stay Rate (Percent)	95% Confidence Interval (+/-)
Male	19,100	61	2.5
Female	7,300	64	4.1
Total	26,400	62	1.8

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.

Figure A1. Temporary Residents Receiving S/E Doctorates in 2002-2004 and 2007-2009 Who Were in the United States in 2013, Total vs. Those Whose Primary or Secondary Support Came from Foreign Sources



NOTE: Error bars represent 95% confidence intervals.

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients, 2013.