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focus on

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Physics Doctorates One Year Later

Data from the follow-up survey of degree recipients from the classes of 2009 and 2010

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REPORTS ON PHYSICS DOCTORATES

Physics Doctorates, One Year Later (July 2012)

Physics Doctorates, Initial Employment (*forthcoming*)

Physics Doctorates, Skills Used and Satisfaction with Employment (*forthcoming*)

The proportion of new physics PhDs accepting a postdoc climbed in the aftermath of the recent recession

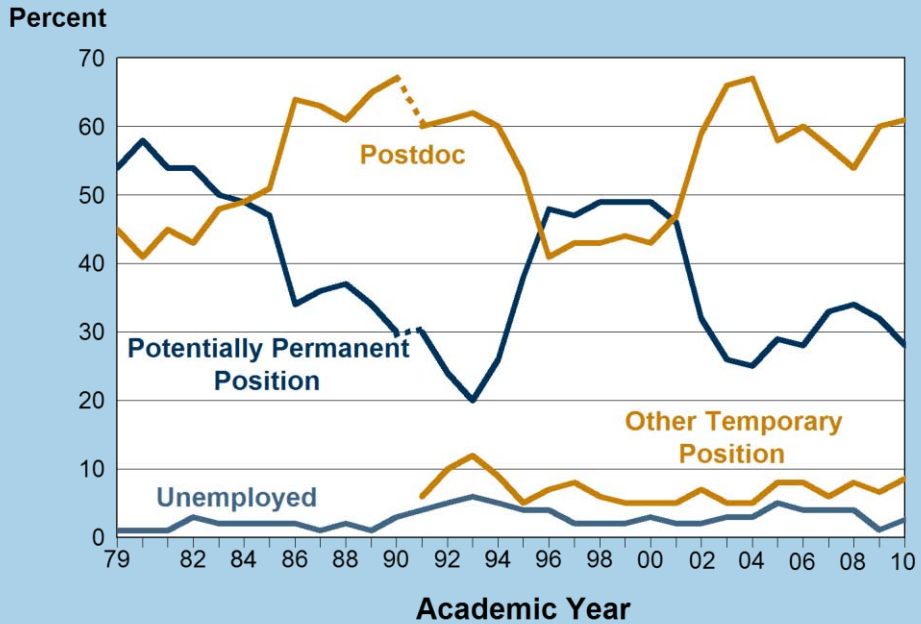
THE 2009 AND 2010 FOLLOW-UP SURVEYS OF PHYSICS DOCTORATES

Physics doctorate recipients are contacted in the winter following the academic year in which they receive their degree. They are asked to share both objective and subjective information concerning their employment. This ***focus on*** series describes our findings.

The job market for physics PhDs was adversely impacted by the persistent economic slump of the recent recession. The proportion of physics PhDs who accepted postdoctoral positions rose to over 60% for the classes of 2009 and 2010. Relatively fewer PhDs accepted potentially permanent positions, dropping below 30% and tempering the short upward trend from 2004 - 2008. A fairly small and consistent proportion of new PhDs accepted other temporary jobs.

Figure 1

Initial Employment of Physics PhDs in the U.S. 1979 through 2010.



In 1991, the survey questionnaire was changed to measure "other temporary" employment as a separate category. Data only include U.S.-educated PhDs who remained in the U.S. after earning their degrees.

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Because the unemployment rate of new physics PhDs is consistently low, it is not a particularly useful indicator of job market demand. Instead, trends in the proportions of new PhDs accepting postdocs versus potentially permanent positions better reflect job market strength. Surges in the proportion of new PhDs accepting potentially permanent positions reflect higher demand for new physics PhDs in the economy.

The analysis in this *focus on* is limited to PhDs who received their degree from a U.S. physics department and remained in the U.S. This excludes about 23% of non-U.S. citizens and 11% of U.S. citizens who left the U.S. after earning their doctorates.

More than two-thirds of non-U.S. citizens who remained in the U.S. took a postdoc

Table 1

Initial Employment Status of Physics PhDs by Citizenship, Classes of 2009 & 2010 Combined.

	U.S. Citizens %	Non-U.S. Citizens %	Overall %
Postdoc	56	68	61
Potentially permanent	34	25	30
Other temporary	8	5	7
Unemployed	2	2	2
N=	645	540	1,235

Data only include U.S.-educated physics PhDs who remained in the U.S. after earning their degrees.

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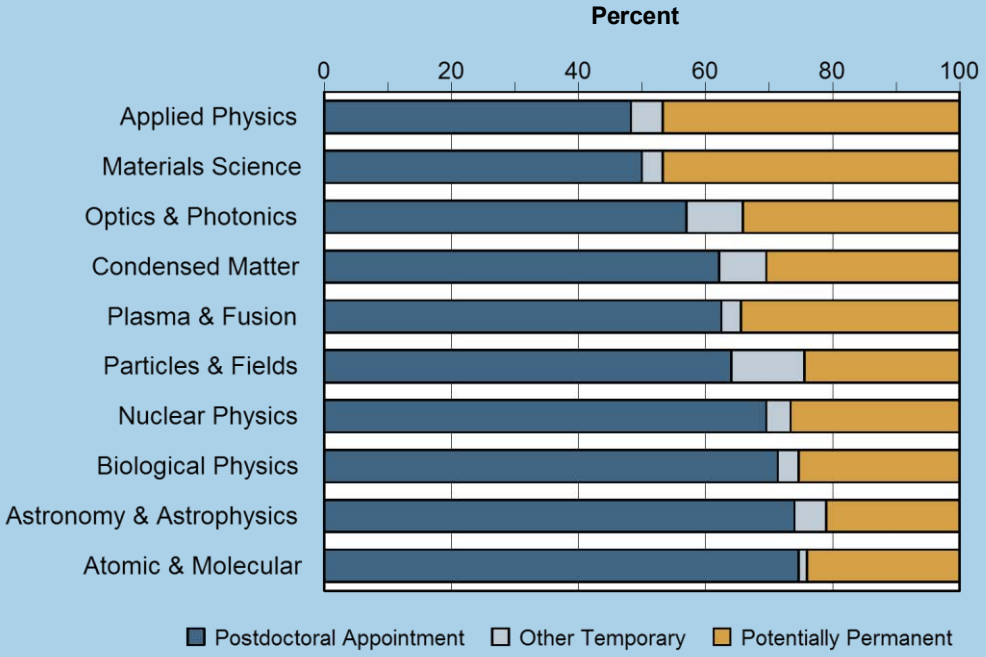
Compared to recent years, higher proportions of both U.S. and non-U.S. citizens accepted postdoctoral positions. It remained true that relatively more non-U.S. citizens accepted postdocs than did U.S. citizens. Of non-U.S. citizens accepting postdocs, about 40% held H1-B visas and just under 10% were permanent residents. Of non-U.S. citizens accepting potentially permanent positions, about 60% held H1-B visas and 16% were permanent residents.

About 7% of new physics PhDs accepted temporary positions other than postdocs. Sixty percent of these were visiting professors or lecturers primarily in physics departments of universities and colleges (both two- and four- year). These other temporary positions are also located at other educational institutions, hospitals, the private sector, and national labs.

Subfield of research impacts new physics PhDs' initial employment options. Of all subfields, PhDs who did research in astronomy and astrophysics, nuclear physics, and biological physics were more likely to proceed to postdoctoral positions. On the other hand, relatively more PhDs who did research in applied physics and materials science accepted potentially permanent positions than PhDs who studied other subfields.

Figure 2

Initial Employment of Physics and Astronomy PhDs by Subfield of Dissertation, Classes of 2009 & 2010 Combined.



Data only include U.S.-educated physics PhDs who remained in the U.S. after earning their degrees.

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Initial employment of new physics PhDs is affected by their subfield of research

Table 2

Postdocs From the Classes of 2009 & 2010: "What Was the Most Important Reason for Taking This Temporary Position?"

	Percent
Necessary step to get desired future position	34
To obtain research experience in my field	22
To work with a particular scientist or research group	17
Could not obtain a suitable permanent position	13
To switch to a different field	6
Personal or family-related reasons	4
Visa restrictions limited my options	3
Other	1
N=	520

Data only include U.S.-educated physics PhDs who remained in the U.S. after earning their degrees.

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Though accepting a postdoc is most often a strategic career decision, 13% of postdocs from the classes of 2009 and 2010 accepted their postdocs because they could not obtain suitable permanent positions

The majority of new PhDs working in postdoctoral positions considered their decision to accept a postdoc as an investment in their long-term career. As has consistently been the case, the most commonly cited reason is: "It is a necessary step to get a desired future position." However, the proportion of postdocs whose primary reason was the inability to obtain a suitable permanent position grew to 13%, up from 7% for the classes of 2007 & 2008.

In contrast, 44% of PhDs accepting other temporary positions responded that they accepted such a position because they "could not obtain a suitable permanent position" and only 18% cited that it was a necessary step for the future.

Seven percent of non-U.S. citizens with temporary visas indicated that they took a postdoc because of visa restrictions.

Survey Methodology

Each fall the Statistical Research Center conducts its Survey of Enrollments and Degrees, which asks all degree-granting physics and astronomy departments in the U.S. to provide information concerning the numbers of students they have enrolled and counts of recent degree recipients. In connection with this survey, we ask for the names and contact information for their recent degree recipients. This degree recipient information is used to conduct our follow-up survey in the winter following the academic year in which they received their degrees. The data in this *focus on* comes from that survey.

Recent degree recipients can be very difficult to reach because they tend to move after receiving their degrees. Many times the departments do not provide or don't have accurate contact information for their alumni. To assist us in determining outcome information and to help obtain updated contact information, we contact the advisors of non-responding degree recipients, when possible.

The follow-up surveys for the classes of 2009 and 2010 were administered in a web-based format. Non-responding degree recipients were contacted up to four times with invitations to participate in the survey. The physics PhD classes of 2009 and 2010 consisted of 1,554 and 1,558 PhDs, respectively. We received post-degree information on 60% of these degree recipients. Thirty-two percent of our responses came from advisors, and the remainder came from the PhD recipients themselves. The information obtained from the advisors is limited to subfield of dissertation, citizenship, sex, employment status, sector of employment, and location (in or out of the U.S.). PhDs who left the U.S. after receiving their degree are not included in the analysis.

In this report the notation "N" represents the number of individuals for whom we had data on a particular item.

We thank the many physics and astronomy departments, degree recipients, and faculty advisors who made this publication possible.