

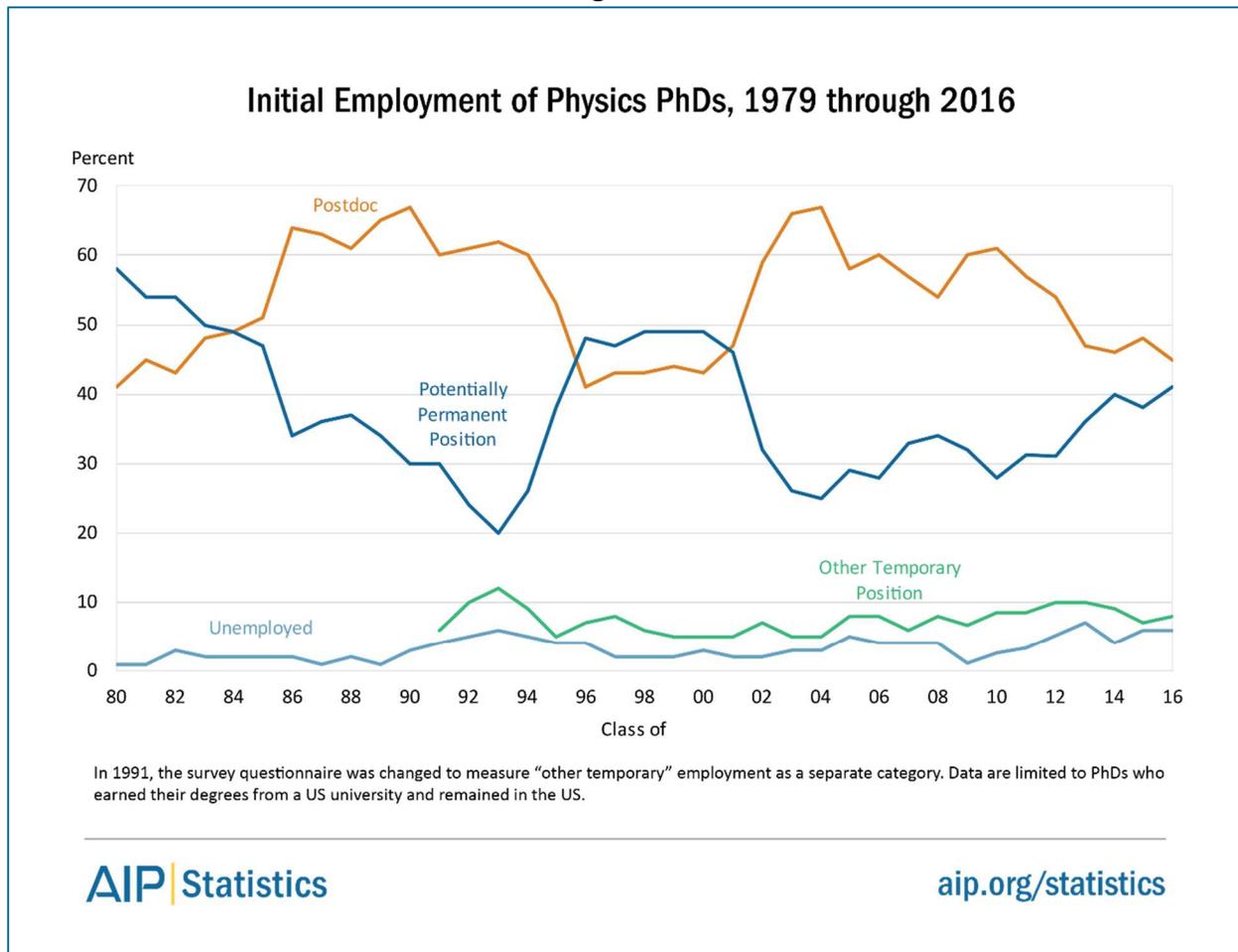
Physics Doctorates: One Year After Degree

Data from the degree recipient follow-up survey for the classes of 2015 and 2016

Patrick Mulvey and Jack Pold

We classify the first post-degree job of new physics PhDs into three main categories: potentially permanent positions, postdoctoral fellowships (postdocs), and other temporary positions. For most of the last two decades, the majority of new physics PhDs accepted a postdoc upon completing their degrees. A postdoc provides a temporary period of mentored research where new degree recipients can continue in their research and publish papers in the area of their dissertations or pursue other areas of research that might be of interest to them.

Figure 1



Although still the prevailing post-PhD outcome, the proportion of new physics doctorates accepting postdocs has been declining for the past decade or so (**Figure 1**). This decline in the

proportion accepting postdocs, 67% in 2004 to 45% for the class of 2016, has been offset by an increase in the fraction of new PhDs accepting potentially permanent positions.

We categorize the third, and least common, initial post-degree employment outcome as “Other Temporary Positions.” In recent years, 5 to 10 percent of the new physics PhDs have accepted these positions. The difference between potentially permanent positions and other temporary positions is that the temporary positions, which are mostly comprised of visiting professors, lecturers, and research scientists at colleges and universities, have a set ending date; the potentially permanent positions do not. Some PhDs indicated that they were unemployed and seeking employment. This category has averaged about 5 percent of the respondents in recent years.

The data used for tables and figures in this *focus on* include physics PhDs who received their PhD from a US institution and were still residing in the US in the winter following the academic year in which they received their degree. For the combined classes of 2015 and 2016, non-US citizens comprised 47% of the physics PhDs conferred. Survey response data indicates that 9% of US citizens and 19% non-US citizens left the US after receiving their doctorates. The most common type of initial employment for both US and non-US citizens who left the US was a postdoctoral fellowship.

Table 1

**Initial Employment of Physics PhDs by Citizenship,
Classes of 2015 & 2016 Combined**

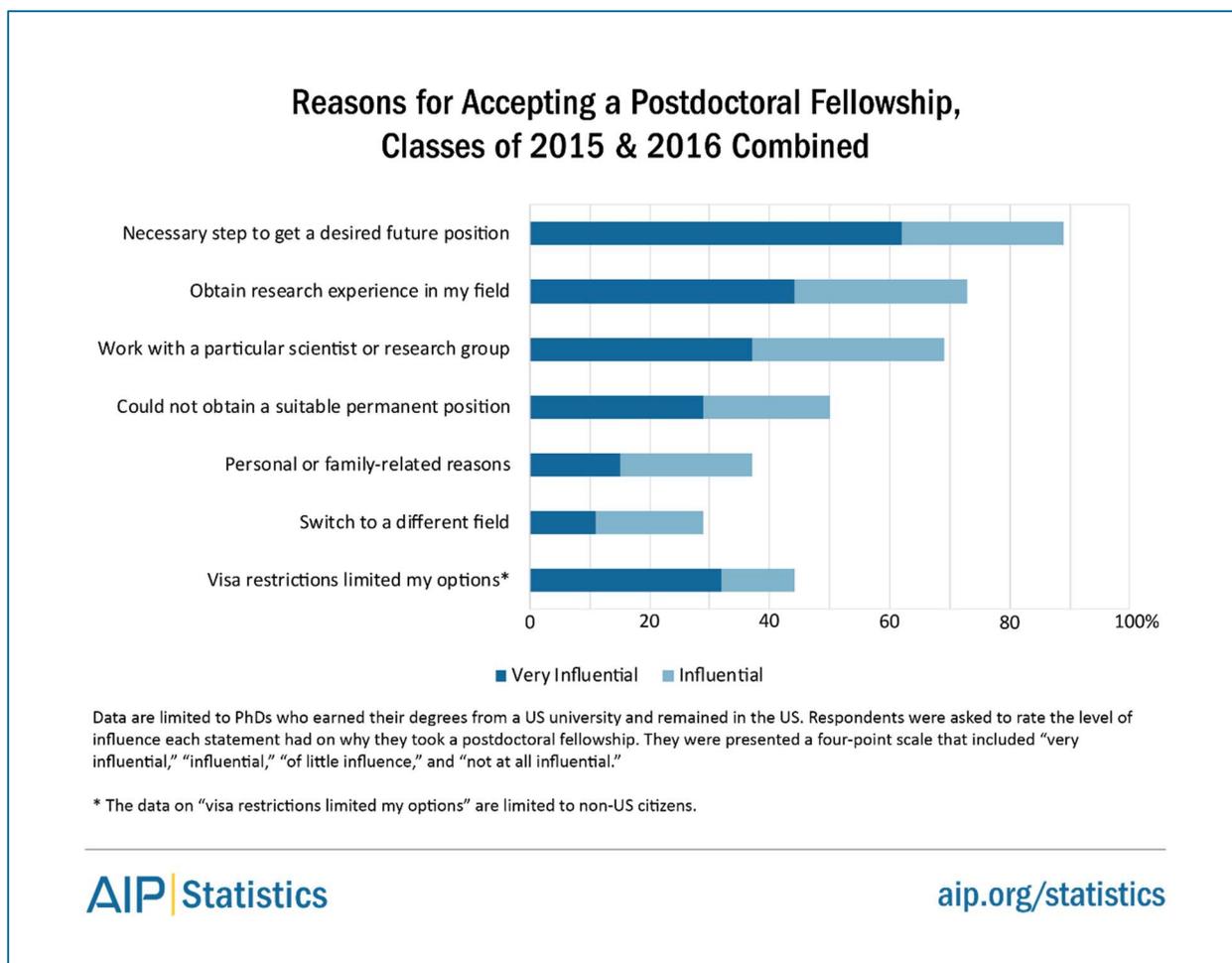
	US Citizens (%)	Non-US Citizens (%)	Overall (%)
Postdoc	42	54	47
Potentially Permanent	45	31	39
Other Temporary	6	9	8
Unemployed	7	6	6
	100%	100%	100%

Data are limited to PhDs who earned their degrees from a US university and remained in the US. Data are based on the responses of 1240 US citizens and 749 non-US citizens.

Initial post-degree outcome data for physics PhDs differ significantly by whether the degree recipients were US citizens or not. **Table 1** disaggregates initial outcomes by US citizenship for the combined classes of 2015 and 2016. Non-US citizens were more likely to accept a postdoctoral fellowship than their US citizen counterparts, 54% versus 42%.

There is a variety of reasons why new PhD recipients choose to accept temporary postdoctoral appointments. These decisions may be influenced by professional goals and personal circumstances. We asked new PhDs who accepted postdocs to indicate how much influence specific reasons had on their taking a postdoc. We have posed this question to new PhDs for a number of years, and the most consistently cited reason is that it is a “necessary step to get a future position.” This is not surprising, as having completed a postdoc is generally considered a prerequisite to getting a faculty position, especially at large research universities. The visa status of non-US citizens was an additional potential influence on their decisions to accept postdocs. Of the non-US citizens remaining in the US who accepted a postdoc, 44% indicated that visa restrictions limited their options.

Figure 2



Survey Methodology

Each fall the Statistical Research Center conducts a Survey of Enrollments and Degrees, which asks all degree-granting physics and astronomy departments in the US to provide information concerning the number of students they have enrolled and counts of recent degree recipients. At the same time, we ask for the names and contact information for recent degree recipients. This degree recipient information is used to conduct our follow-up survey in the winter following the academic year in which respondents received their degrees. The post-degree outcome data in this *focus on* come from that survey.

Recent degree recipients can be difficult to reach because they tend to relocate after receiving their degrees. Departments often do not provide or do not 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. The information obtained from the advisors is limited to citizenship, gender, employment status, sector of employment, location (in or out of the US), and subfield of dissertation for the PhDs.

The follow-up surveys for the classes of 2015 and 2016 were administered in a web-based format. Those who did not respond were contacted up to five times with invitations to participate in the survey. The physics PhD classes of 2015 and 2016 consisted of 1,860 and 1,819 graduates, respectively. We received post-degree information on 44 percent of these degree recipients. Sixty-five percent of these responses came from PhD recipients themselves, while the other 35 percent came from advisors. PhDs who left the US after receiving their degrees were not included in the analysis.

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

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