

# Physics Doctorates Initial Employment

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

Garrett Anderson and Patrick Mulvey

## REPORTS ON PHYSICS DOCTORATES

[Physics Doctorates, One Year  
Later \(July 2012\)](#)

**Physics Doctorates, Initial  
Employment (July 2012)**

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

The market of potentially permanent jobs available to new physics PhDs in the U.S. constricted in the aftermath of the recent global recession. Consequently, more PhDs from the classes of 2009 and 2010 accepted postdocs than in preceding years. Having climbed above 60%, the proportion of PhDs who accepted postdocs approached previous highs in 2004 and in 1989 (see Figure 1 in [focus on Physics Doctorates, One Year Later](#)).

Of the physics PhDs from 2009 and 2010, we estimate that about 23% of non-U.S. citizens and 11% of U.S. citizens left the U.S. after earning their degrees. The analysis in this *focus on* is limited to PhDs who remained in the U.S. after earning their doctorates from a U.S. university.

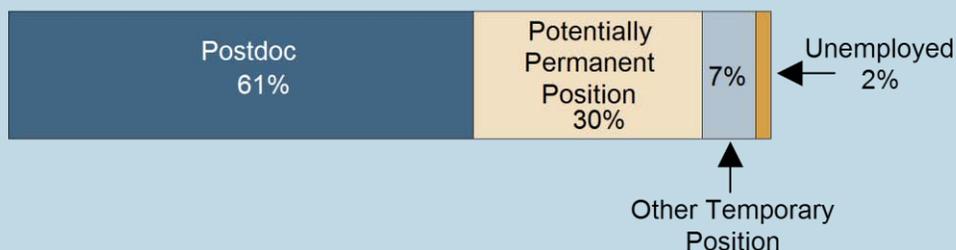
*More than two-thirds of physics PhDs from the classes of 2009 and 2010 accepted a temporary position after earning their doctorate.*

## 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 degrees. They are asked to share both objective and subjective information concerning their employment. This *focus on* series describes our findings.

**Figure 1**

### Initial Employment of Physics PhDs, Classes of 2009 & 2010.

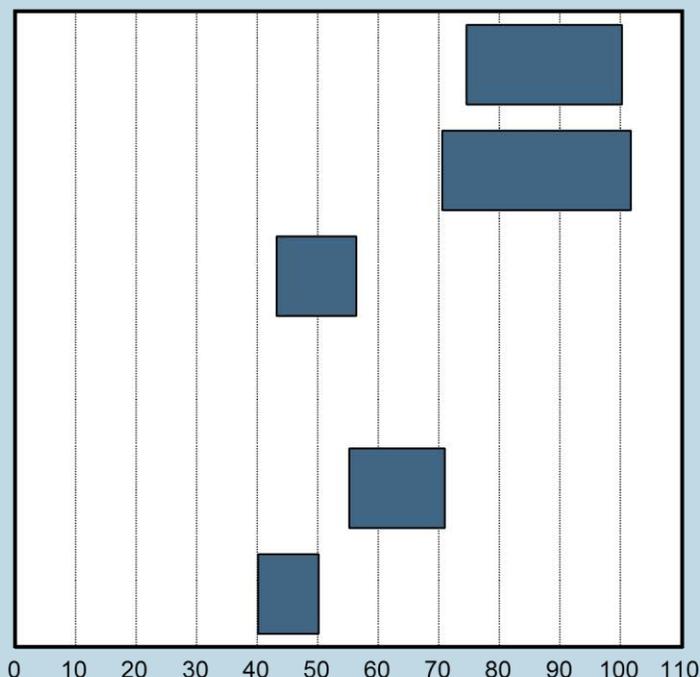


Data only include U.S.-educated physics PhDs who remained in the U.S. after earning their degrees.

<http://www.aip.org/statistics>

Figure 2

## Physics PhDs Starting Salaries, Classes of 2009 &amp; 2010.

*Potentially Permanent Positions*Private Sector  
(N=91)Government Lab  
(N=25)University & 4-Year College  
(N=38)*Postdocs*Government Lab  
(N=95)University & UARI  
(N=371)

Typical Annual Salaries in Thousands of Dollars

Data only include U.S.-educated PhDs who remained in the U.S. after earning their degrees. Typical salaries are the middle 50%, i.e. between the 25<sup>th</sup> and 75<sup>th</sup> percentiles. Government Lab includes Federally Funded Research and Development Centers, e.g. Los Alamos National Laboratory. UARI is University Affiliated Research Institute. The data for PhDs holding potentially permanent positions in academia include salaries based on 9-10 and 11-12 month commitments. "N" represents the number of individuals the salary data is based on.

<http://aip.org/statistics>

*Postdocs at government labs had a higher starting salary than postdocs in academe. The median starting salary for potentially permanent positions in the private sector was \$90,000.*

Employment sector and type of employment have a major impact on the typical starting salaries of new physics PhDs. The highest median starting salary was \$90,000 for potentially permanent positions in the private sector. The few PhDs who secured potentially permanent positions at government labs had the widest range of starting salaries, with a median of \$85,000. In academe, PhDs with potentially permanent positions earned only slightly higher starting salaries than postdocs. Typically, postdocs earned higher starting salaries at government labs than in academe. The median starting salary for postdocs at Federally Funded Research & Development Centers and other federally run research organizations such as NIST was \$63,400, while postdocs in academe earned a median starting salary of \$45,000.

**Table 1****Types of Positions Accepted by Employment Sector,  
Classes of 2009 & 2010.**

	Postdoc %	Potentially Permanent %	Other Temporary %	Overall %
Academic*	73	23	82	58
Private sector	1	57	9	19
Government	22	16	6	19
Other	4	4	3	4
N	740	365	89	1,194

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

\*Includes university affiliated research institutes.

<http://www.aip.org/statistics>

---

*New PhDs in potentially permanent positions were much more likely to be employed in the private sector than in academic institutions or in the U.S. government.*

---

Different types of initial employment are concentrated in different sectors of the economy. The private sector accounts for the majority (57%) of PhDs accepting potentially permanent positions, with about a quarter in academe and one-sixth in government (primarily in government labs). In fact, of new PhDs employed in the private sector, over 90% were in positions that were potentially permanent. “Other” sectors include not-for-profit organizations, medical facilities and hospitals, and others not elsewhere specified.

Postdocs are primarily employed in academic institutions and secondarily in government labs. Of the university-based postdocs, about three-quarters were in physics or astronomy departments. About 13% of university postdocs were in engineering departments and most of the rest were split between departments of biology and chemistry. PhDs accepting other temporary positions, mostly lecturers and visiting professors, were also concentrated in the academic sector.

The initial length of postdocs varied between one and three years. Over a quarter of postdoctoral positions accepted by new PhDs were one-year appointments. Just under half of the postdocs accepted had a duration of two years and about 20% were three-year appointments. While postdocs by definition have specific ending dates, PhDs often have the opportunity to extend or renew their first postdoc.

Whether new PhDs continued working in the subfield of their dissertation, in physics generally, or in a field other than physics was influenced by the type of initial employment they secured. Nearly three-quarters of postdocs continued working in the subfield of their dissertation and only 12% were in a field other than physics. In contrast, of those who accepted potentially permanent positions, 42% were in a field other than physics. These PhDs transitioned into a variety of other fields including engineering, business or finance, health or medical services, and other science, technology, engineering, or math (STEM) fields. Nearly 60% of PhDs who accepted potentially permanent positions and 76% of PhDs who accepted other temporary positions were working in the field of physics with about half of them persisting in the subfield of their dissertation.

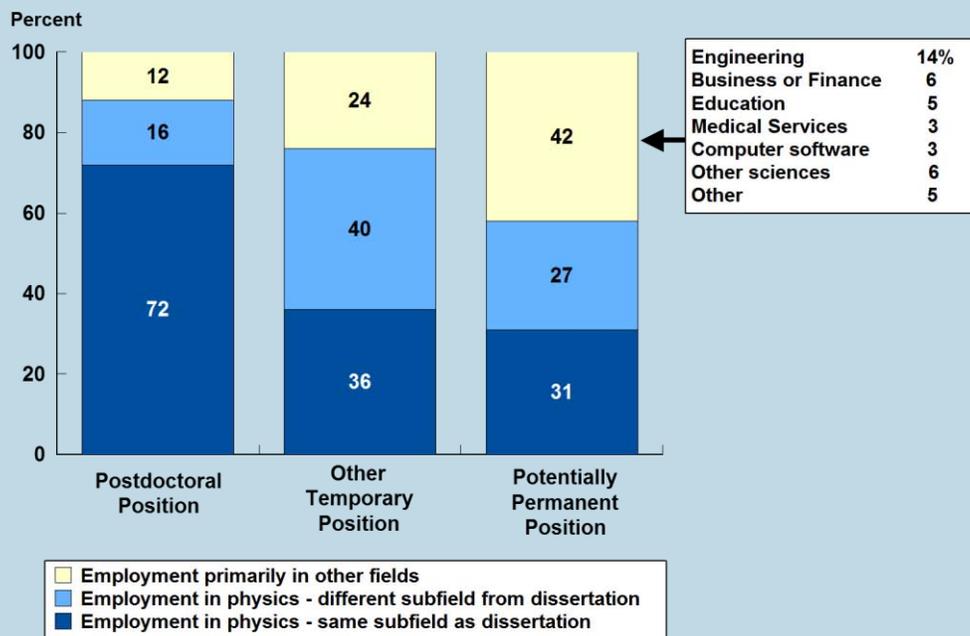
---

*Most new physics PhDs work in physics and nearly all work in STEM fields.*

---

**Figure 3**

**Initial Employment of Physics PhDs, Classes of 2009 & 2010.**



Employment in physics means an individual's primary or secondary employment field was in physics or astronomy. Data only include U.S.-educated physics PhDs who remained in the U.S. after earning their degrees.

<http://www.aip.org/statistics>

---

*There are viable ways for new PhDs to change subfields or to move into non-physics fields, should they desire.*

---

## 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 degrees 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.