

# Physics Bachelor's Initial Employment

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

Casey Langer Tesfaye & Patrick Mulvey

**REPORTS ON  
PHYSICS  
BACHELOR'S**

[Physics Bachelor's, One  
Year Later \(June 2012\)](#)

**Physics Bachelor's,  
Initial Employment  
(August 2012)**

Physics Bachelor's Job  
Search (Forthcoming)

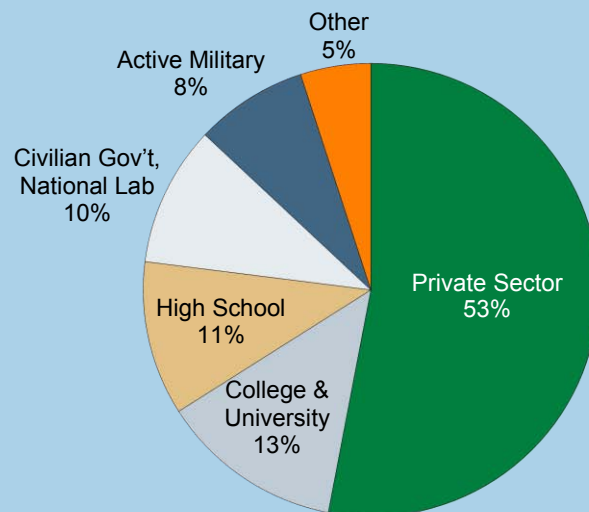
Physics Bachelor's,  
Demographic Profiles  
(Forthcoming)

After they graduate, physics bachelor's degree recipients choose whether to continue directly to graduate school or enter the workforce. Of the combined 2009 and 2010 classes of new physics' bachelor's, 60% were enrolled in graduate programs by the winter following their degrees, and the remaining 40% entered the workforce (to see how this compares to past years, visit: [Physics Bachelor's One Year Later](#)).

The majority of the employed physics bachelor's degree recipients from the combined classes of 2009 and 2010 worked in the private sector.

**Figure 1**

**Initial Employment Sectors of Physics Bachelor's,  
Classes of 2009 & 2010 Combined**



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

**THE 2009 AND 2010  
FOLLOW-UP SURVEYS OF  
PHYSICS BACHELOR'S**

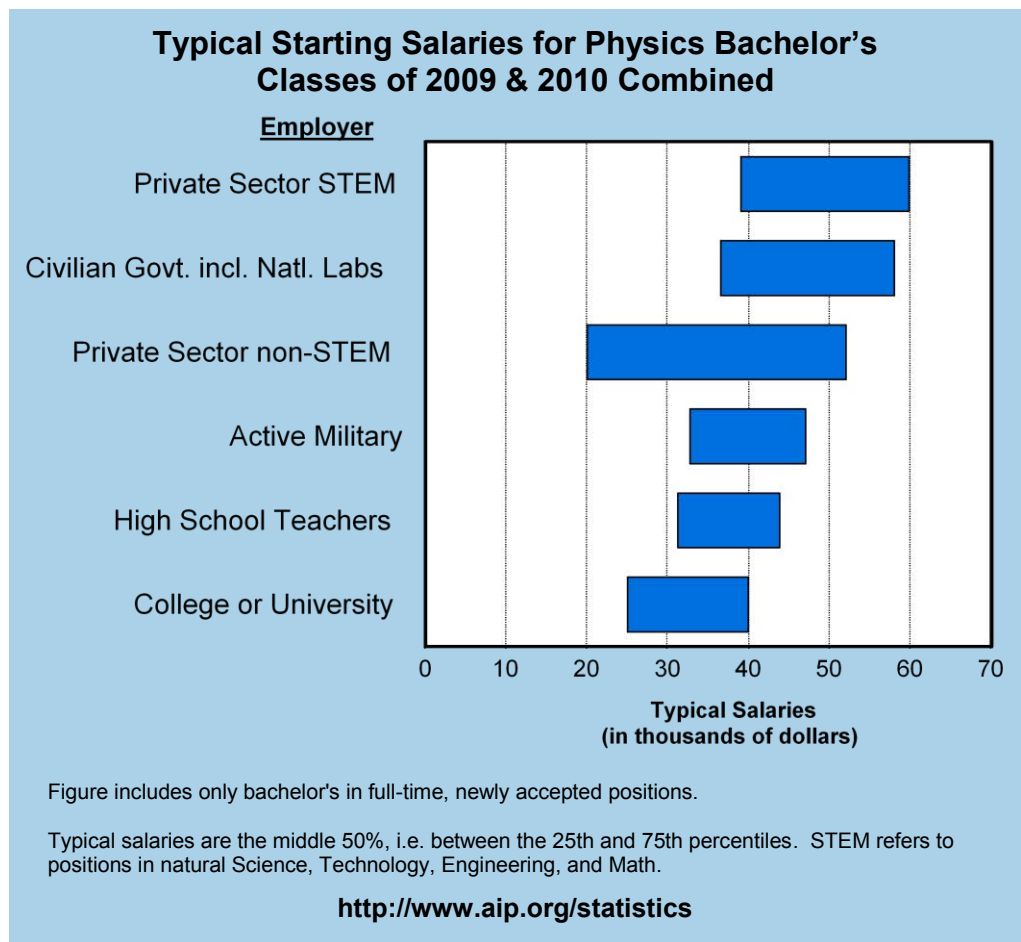
Physics bachelor's are contacted in the winter following the academic year in which they receive their degrees. They are asked to share their employment or graduate school experiences. These reports describe our findings.

The distinction between positions in STEM fields (natural Science, Technology, Engineering or Math) and non-STEM fields is important when discussing the employment of physics bachelor's. Overall, about three-quarters of employed physics bachelor's are working in STEM fields. The majority of non-STEM jobs are in the private sector.

Private sector positions in STEM fields tend to be the highest paid positions for recent physics bachelor's degree recipients, followed by positions in civilian government or national labs. In contrast to positions in STEM fields within the private sector, positions in private sector non-STEM fields offer a much wider range of salaries. Many of the higher salaries in the non-STEM range come from positions in finance or banking, which accounted for just over a quarter of all of the non-STEM positions accepted by physics bachelor's from the combined classes of 2009 and 2010. The lower salaries in the non-STEM range were spread over a variety of positions that traditionally entail hourly wages, such as sales, food service and manual labor. These jobs are often stepping stones or short term positions for physics bachelor's. One respondent who was working full-time as a receptionist and taking classes described her work: "It pays well and has steady hours so I can go to school at night."

*"Physics can land you in a wide variety of places."  
-respondent comment*

**Figure 2**



*Private sector STEM and civilian government positions tend to be the highest paying positions that physics bachelor's accept.*

## Subtleties of Initial Employment

The majority of physics bachelor's from the combined classes of 2009 and 2010 found jobs in all areas of the economy that were well-paying, intellectually rewarding and satisfying. However, it is important to note that students from these classes graduated at a time when a recession had just ended and a slow recovery was beginning. Thus, some struggled to find appropriate employment.

Page 1 of this *focus on* stated that of the combined physics bachelor's classes of 2009 and 2010, 60% enrolled in a graduate program and 40% entered the work force. The latter is comprised of 29% full-time employed, 6% part-time employed and 5% unemployed and seeking. Additionally a small portion of the new graduates did not enter the workforce or enroll in graduate school for a variety of reasons and are not included in these figures.

All the employment figures and tables in this report are based on new physics bachelor's who accepted full-time employment. It is important to note that a significant proportion of the bachelor's from the classes of 2009 and 2010 who were in the workforce were employed part-time. Bachelor's took part-time positions, defined as working less than 35 hours per week, for a variety of reasons. Some chose to accept these positions as they prepare for the next phase of their academic or professional careers and were happy with their employment status, while others would have preferred to secure full-time employment.

Half of the new degree recipients who were employed part-time planned to continue on to graduate school in the future, with the majority planning to enroll the next academic year.

## Private Sector

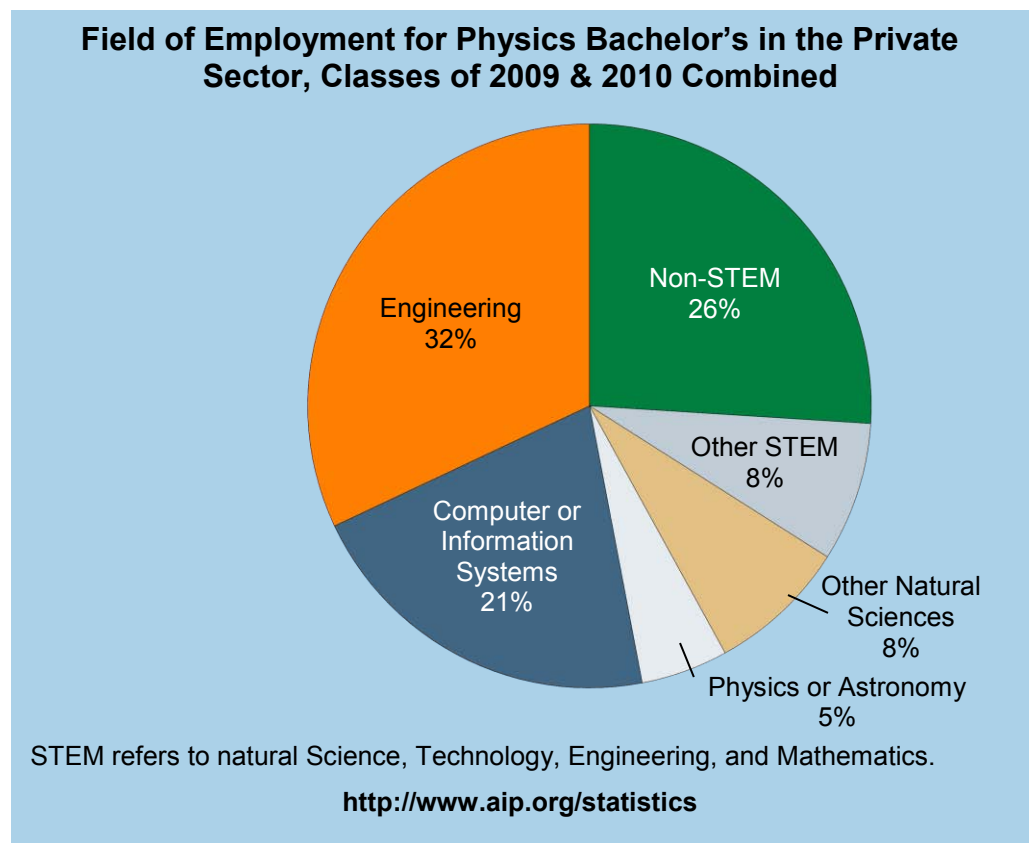
New physics bachelor's degree recipients who are employed in the private sector work across a wide variety of fields, in a wide variety of jobs. The largest private sector field of employment for physics bachelor's is engineering. About a quarter of the combined classes of 2009 and 2010 worked in non-STEM fields and a fifth worked in computer science. Only 5% are working primarily in the fields of physics or astronomy, although many physics bachelor's regularly use the knowledge and skills they acquired while pursuing their degrees.

---

*Over half of physics bachelor's who find jobs in the private sector work in the fields of engineering or computer science.*

---

### Figure 3




---

*“There are a lot of great paying jobs in the private sector looking for intelligent, highly motivated individuals with a mind that is focused on problem solving.”—respondent comment*

---

Physics bachelor's acquire the skills they use in their jobs from a variety of sources, both in and outside of the physics classroom. Physics study provides a good base of knowledge and skills for a wide variety of jobs, but recent bachelor's also acquired important professional skills through their other academic activities, their research experience, and through their work experience. When prompted to provide advice for current and future physics students, many stressed the value of their research experience. One respondent suggested: “Try to involve yourself in physics research as an undergrad. Get some practical experience in what you're interested in, rather than just classroom learning.” Some respondents stressed the importance of their classes in engineering and computer

science, which increased their marketable skills and gave them a boost in the job market and in their work. One engineer said: “programming skills open up many career options,” and another reported: “Consider some type of engineering minor. The different emphasis will broaden your fundamental physics skills, and it will increase your chances of finding meaningful employment with a bachelor’s degree if you decide that graduate school in physics is not for you.”

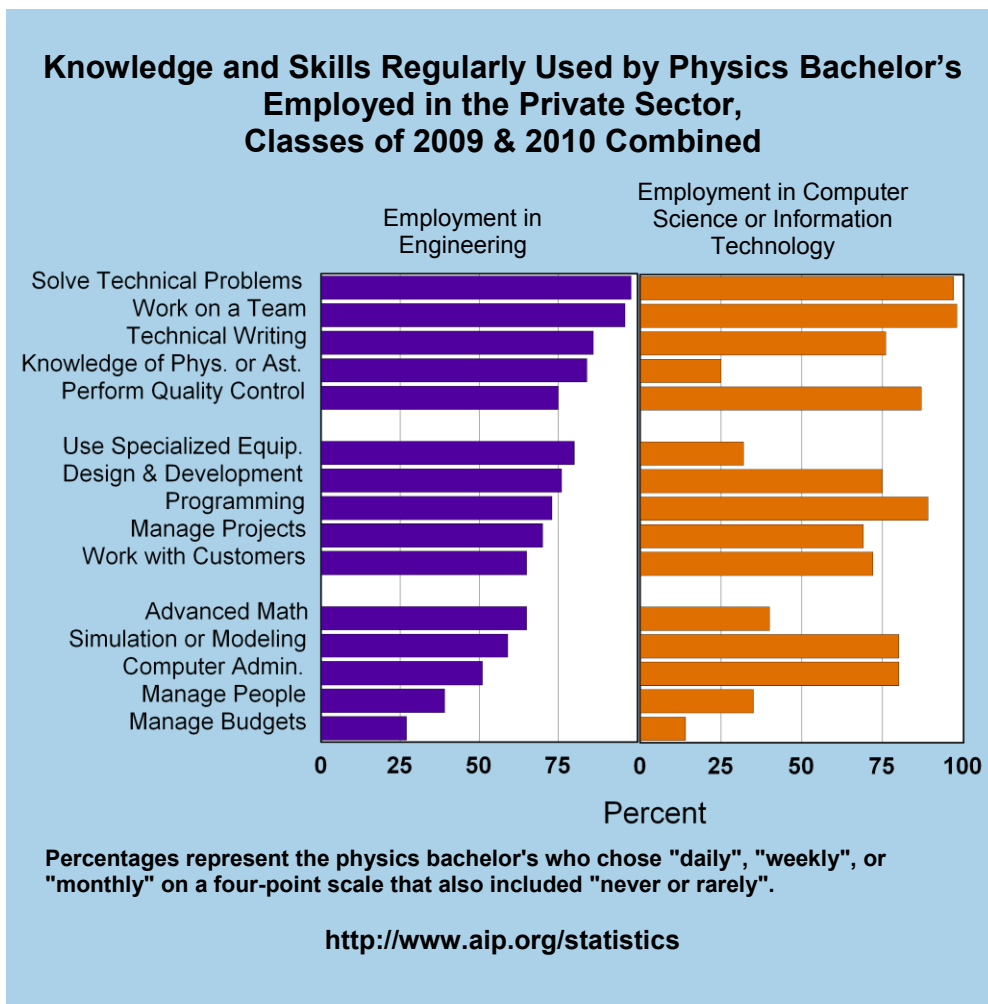
Figure 4 shows some of the skills and knowledge that new physics bachelor’s in two common fields of employment, engineering and computer science or information technology, regularly used in their positions. Almost all of the respondents from these fields regularly solved technical problems within their position. The vast majority were working on teams.

---

*“I’m actually doing science, not problem sets!” –respondent comment*

---

**Figure 4**



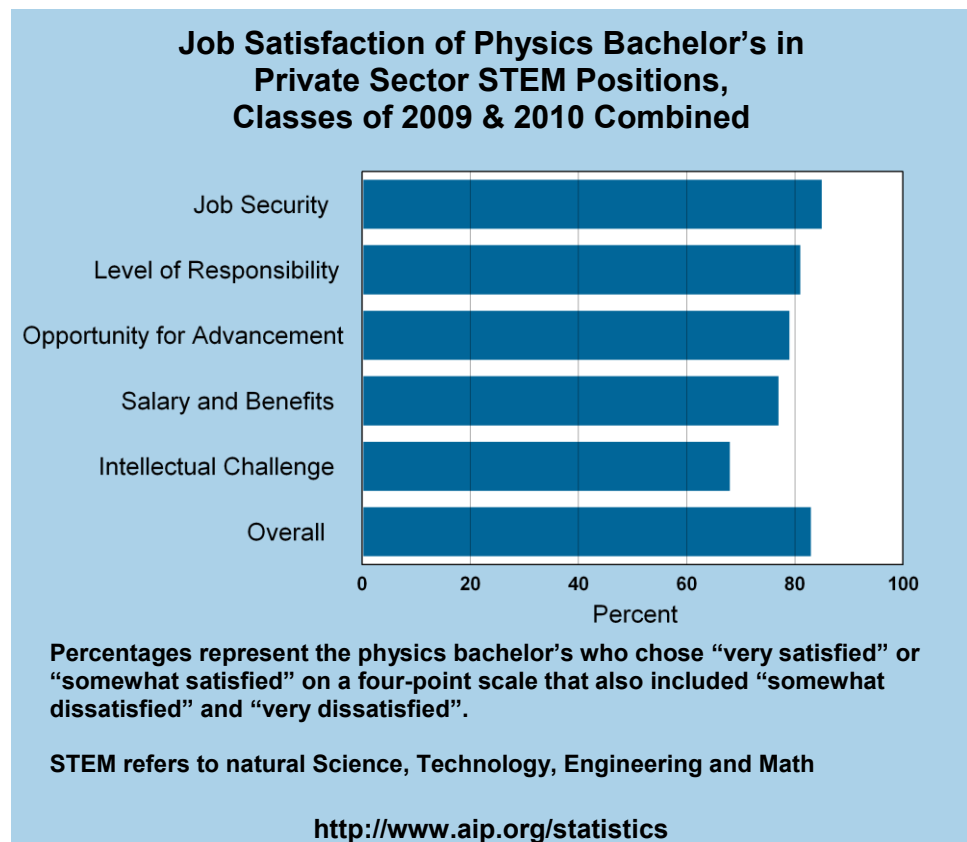

---

*Nearly all of the respondents in Engineering or Computer Science fields regularly solve technical problems in their work.*

---

New physics bachelor's in STEM fields in the private sector were satisfied with their jobs. Over 80% reported that they were “very satisfied” or “somewhat satisfied” with their positions overall. Four-fifths were satisfied with the level of responsibility they encountered in their position, and two-thirds were satisfied with the degree of intellectual challenge they encountered in their positions. Given the relatively poor economy that they encountered when they graduated, it is particularly important to note that 85% of these physics bachelor's were satisfied with their level of job security.

**Figure 5**



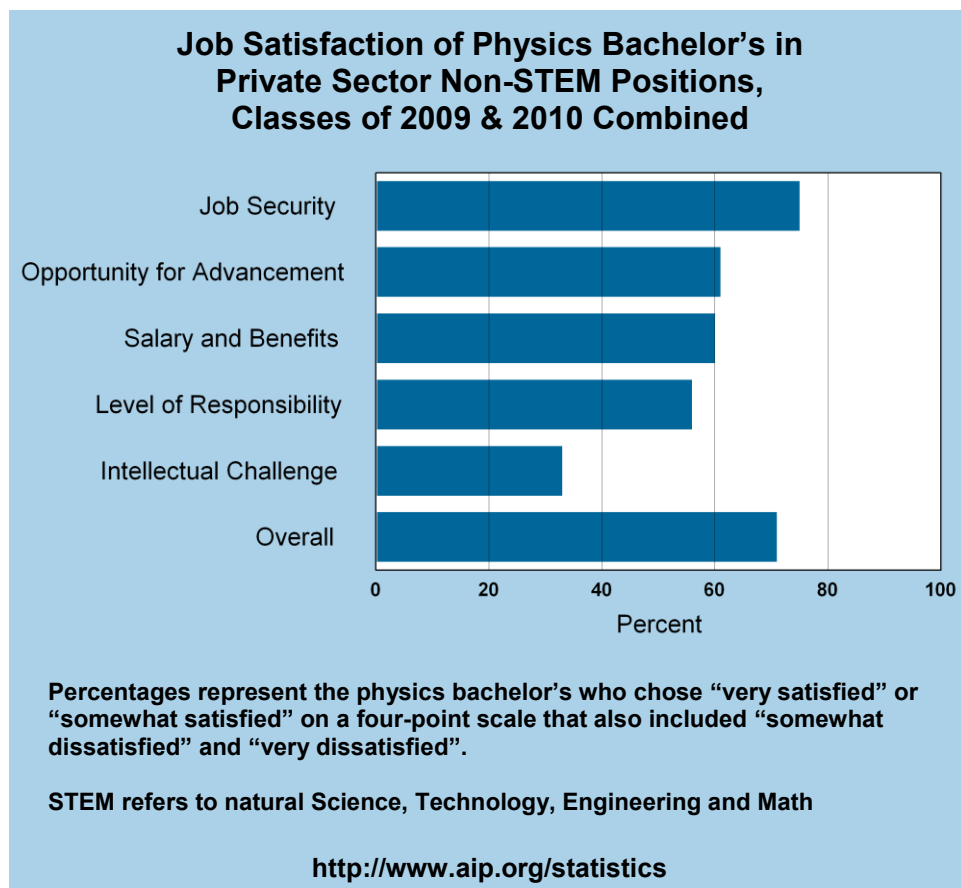
*Over 80% of physics bachelor's employed in private sector STEM positions were satisfied with their positions.*

Respondents were asked to discuss the aspects of their jobs they found most rewarding. Many mentioned their continued work in math or the gratification of working on practical, directly applicable problems. One respondent reported that he enjoyed “constantly learning applied/abstract math and using it in a real setting” and another respondent appreciated “producing a tangible product.” Some respondents mentioned the problem solving involved in their positions. One respondent said: “I have a high level of autonomy and get to solve challenging problems,” and another appreciated “the continuous learning opportunities and the variety of tasks involved” in their positions. Quite a few respondents enjoyed working in a team environment. One respondent reported that they “work with fun and interesting people” and another appreciated the “closeness to the team.”

On a more practical note, many respondents reported their gratitude to “receive a paycheck” and their appreciation for their sense of job security. One respondent explained that it was rewarding just “having a job in these economic times,” and another boasted “I get paid a lot of money.” One fortunate respondent reported that he was “loving everything about my job.”

The majority (71%) of physics bachelor's degree recipients who are employed in non-STEM positions in the private sector were satisfied with their position overall. However they tended to be comparatively less satisfied with their positions than those employed in STEM fields in the private sector. Only one-third of those in non-STEM fields were satisfied with the degree of intellectual challenge they encountered in their positions. The types of positions in this category vary widely. Some degree recipients find high paying and intellectually challenging careers outside of STEM fields, and some accept temporary positions either while they attend graduate school or because they weren't able to find the type of job they really wanted. Overall, less than a third wanted to be employed in non-STEM fields in ten years, and more than two-thirds were either enrolled part-time in graduate school or planning to attend graduate school. Graduate school plans will be covered in greater depth later in this report.

### Figure 6




---

*Physics bachelor's employed in non-STEM fields within the private sector tended to be less satisfied with their positions than physics bachelor's in other areas of the economy, but many use these positions as a stepping stone.*

---

## High School Teachers

Twelve percent of employed physics bachelor's degree recipients from the classes of 2009 and 2010 became high school teachers in the year after they earned their degrees. From the surveys we conduct of high school physics teachers, we know that other physics bachelor's will transition to high school teaching positions later on in their careers. Although attending physics classes alone cannot make one a great teacher, physics bachelor's degree recipients tend to feel well prepared for a career in physics teaching, and many supplement their physics classes with education classes in anticipation of their teaching careers. Many teachers enjoyed sharing their appreciation of physics with their students and enjoyed their students' "aha" moments. One teacher described her work as "watching my students learn and get excited about science," and another described his work as "getting to talk about physics and getting paid for it."

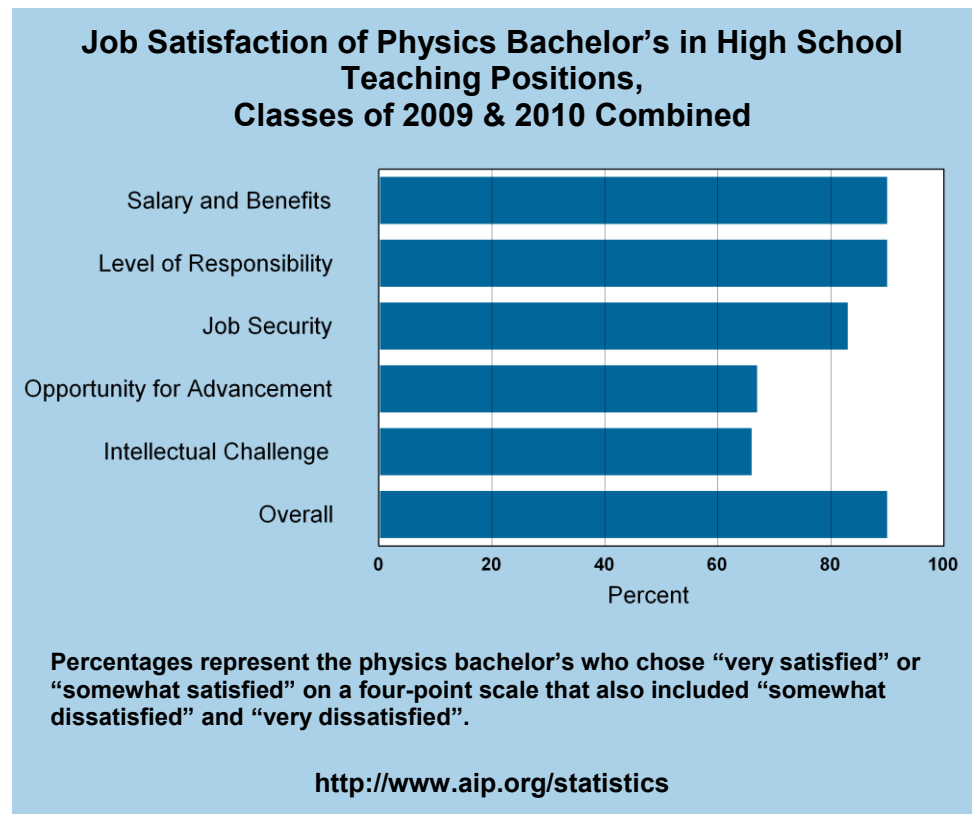
---

*One responding physics teacher described his work as "making a difference and getting students to be excited about physics"*

---

For more detailed information about high school physics teachers, please see the [AIP report series on physics in high schools](#).

### Figure 7



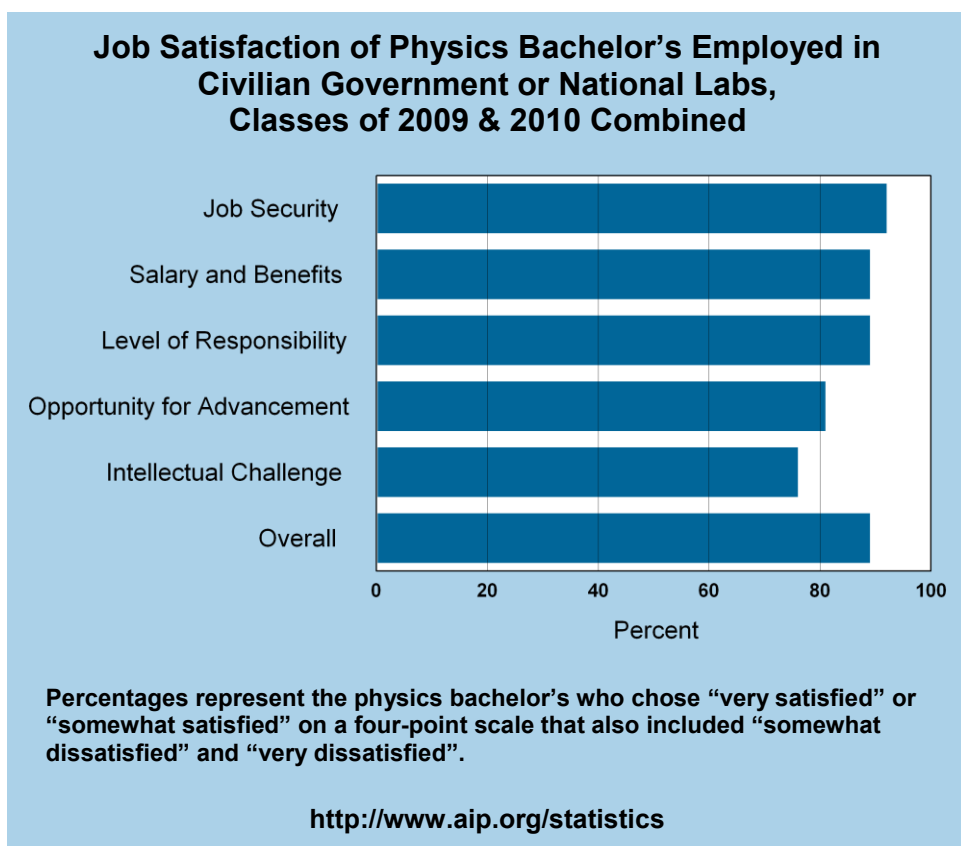


### Civilian Government or National Labs

A significant proportion (11%) of new physics bachelor's degree recipients found employment in the civilian government sector, including national labs. Over 80% of these positions are in STEM fields. These respondents were particularly likely to be excited about their fields of research, often defense or energy related. Some were working with advanced equipment, and some appreciated the immediate applicability or usefulness of their work.

As we explore some of the contributing factors to job satisfaction below, it is clear that those employed in these sectors tend to be especially satisfied with many aspects of their positions.

### Figure 8




---

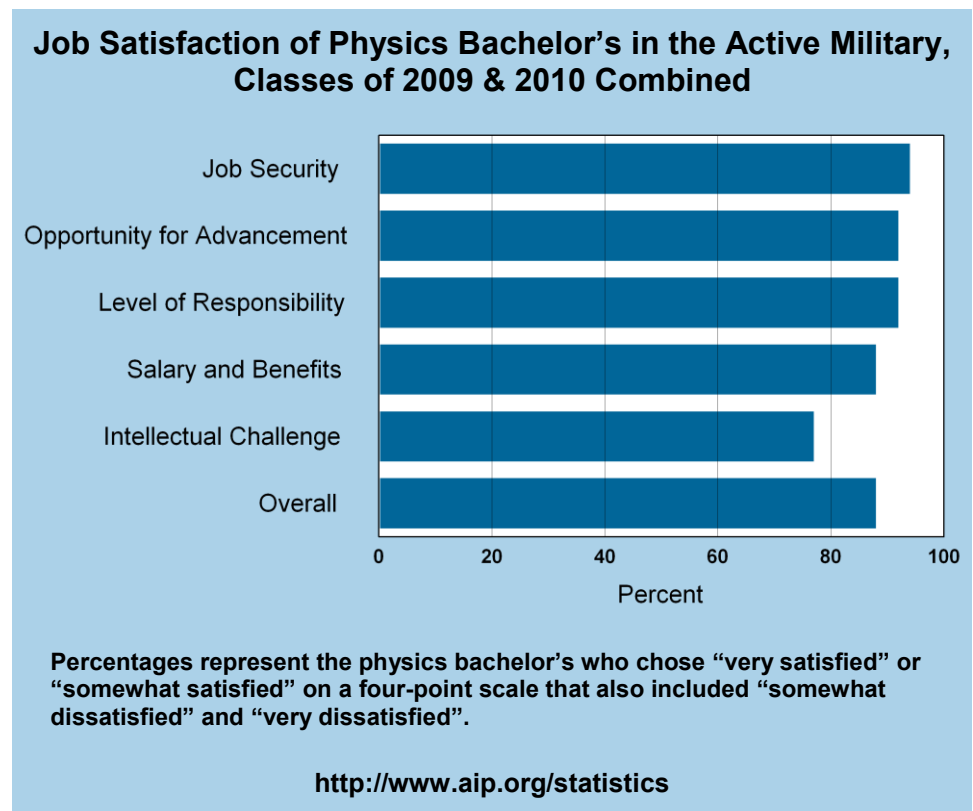
*Physics bachelor's who were employed in civilian government positions tended to be highly satisfied with many aspects of their new positions.*

---

## Active Military

New physics bachelor's degree recipients continue to serve in all branches of the military. Some of these respondents were enrolled in ROTC programs at their bachelor's institutions or received their bachelor's degrees from military academies, and some joined the military after they received their bachelor's degree. It is often difficult to disaggregate the post degree paths of enlisted respondents, because many balance both school and work to varying degrees. Some physics bachelor's degree recipients spoke of their pride in serving their country, and others spoke of the exciting research opportunities they encountered. They worked in aviation, nuclear power, and many other areas within the military.

### Figure 9




---

*"The discipline required to earn a high GPA in physics is more than enough discipline to make you an excellent soldier in the US Army." –respondent comment*

---

## College and Universities

Thirteen percent of physics bachelor's degree recipients found employment at colleges and universities upon graduation. Over half of these college and university employed bachelor's from the classes of 2009 and 2010 were working at the same institution that granted their bachelor's degree. Many of them were working in labs, working as research assistants or technicians, or working to meet their institution's technology needs.

This group was particularly likely to be interested in graduate school and careers in academia. One respondent described their work as a “taste of physics grad student life.” Although less than a quarter of employed physics bachelor’s overall hoped to work either at a university, college, or university affiliated research institute in ten years, a little over half of this group hoped to.

## Gender Differences

The representation of women among physics bachelor’s degree recipients has remained at about 21% in recent years. Although on the surface, women and men in the physics bachelor’s classes of 2009 and 2010 pursued graduate studies or employment in similar proportions, a deeper look reveals some differences by gender.

Of the physics bachelor’s who immediately enrolled in a graduate program, men were more likely to enroll in a graduate physics program than women, 55% and 47% respectively. An equal proportion of men and women enrolled in graduate engineering programs, a slightly larger proportion of women than men enrolled in graduate astronomy programs, and the remaining bachelor’s were spread widely across a variety of other graduate fields.

**Table 1**

**Initial Employment Sectors of Physics Bachelor’s by Sex, Classes of 2009 & 2010**

	Women %	Men %
Private Sector	45	57
Civilian Government*	16	8
High School	15	10
College & University	14	12
Active Military	3	9
Other	7	4
N	275	810

\* Includes Federally Funded Research and Development Centers

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

---

*Women were less likely than men to be employed in the private sector.*

---

Although recent physics bachelor's who were female entered the workforce in a similar proportion as male physics bachelor's, there were differences in which sectors of the economy they were employed. Women were less likely than men to be employed in the private sector or to be in the active military. Women were more likely to be employed in a civilian government position or as high school teachers.

The women who were employed in the private sector were far less likely than men to work in STEM fields, 59% and 75% respectively. This difference in field of employment did not hold true across all areas of the economy. Women in civilian government positions were equally likely as men to work in STEM fields.

## Graduate Studies

Employment does not preclude graduate school for new physics bachelor's degree recipients. Six percent of employed bachelor's were enrolled in graduate school part-time, and 37% planned to enroll in graduate school. Of those who intended to enroll in graduate school, 60% planned to enroll the following year, and one-third more planned to enroll in two or three years. Of those who planned to go to attend graduate school, 43% planned to study physics or astronomy. This is significantly different from physics bachelor's degree recipients who enrolled in graduate programs in the year following their degrees, over 60% of whom enrolled in physics or astronomy programs. Other common fields of study for physics bachelor's include engineering and medicine.

---

*Six percent of employed bachelor's degree recipients were enrolled in graduate school part-time, and 37% planned to enroll in graduate school.*

---

## Survey Methodology

Each fall, the Statistical Research Center conducts its Survey of Enrollments and Degrees which asks physics and astronomy departments 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.

Recent degree recipients can be very difficult to reach because they tend to move after receiving their degrees. Many times the department does 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 follow-up surveys for the classes of 2009 and 2010 were administered with a web-based form. Up to three e-mail survey invitations were sent to degree recipients. An invitation was sent by postal mail to individuals who did not respond to previous email notifications.

The physics classes of 2009 and 2010 consisted of 5,908 and 6,017 bachelor's respectively. We received post-degree information on 41% of these degree recipients with less than a quarter of the information coming from the student's advisor. Four percent of the bachelor's were pursuing employment or graduate study outside the US and were not included in the analysis.

Three groups of workforce bound physics bachelor's degree recipients are not included in this report: unemployed graduates (about 5% of new bachelor's), graduates who continue the jobs that they held while they were in school (7% of employed bachelor's), and graduates who are only employed part-time (roughly one-fifth of employed bachelor's).

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