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focus on

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One Physics Ellipse • College Park, MD 20740 • 301.209.3070 • stats@aip.org

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Physics Bachelor's Initial Employment

Data from the degree recipient follow-up survey for the classes of 2011 and 2012

Patrick Mulvey & Jack Pold

New physics bachelor's entering the workforce receive some of the highest starting salaries of any undergraduate majors (What's a bachelor's degree worth?). Bachelor's accepting STEM positions in the private sector had a median starting salary of $51,000.

REPORTS ON PHYSICS BACHELOR'S

Physics Bachelor's, One Year After Degree (September 2014)

Physics Bachelor's, Initial Employment (June 2015)

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

Figure 1

Typical Starting Salaries for Physics Bachelor's Classes of 2011 & 2012 Combined.

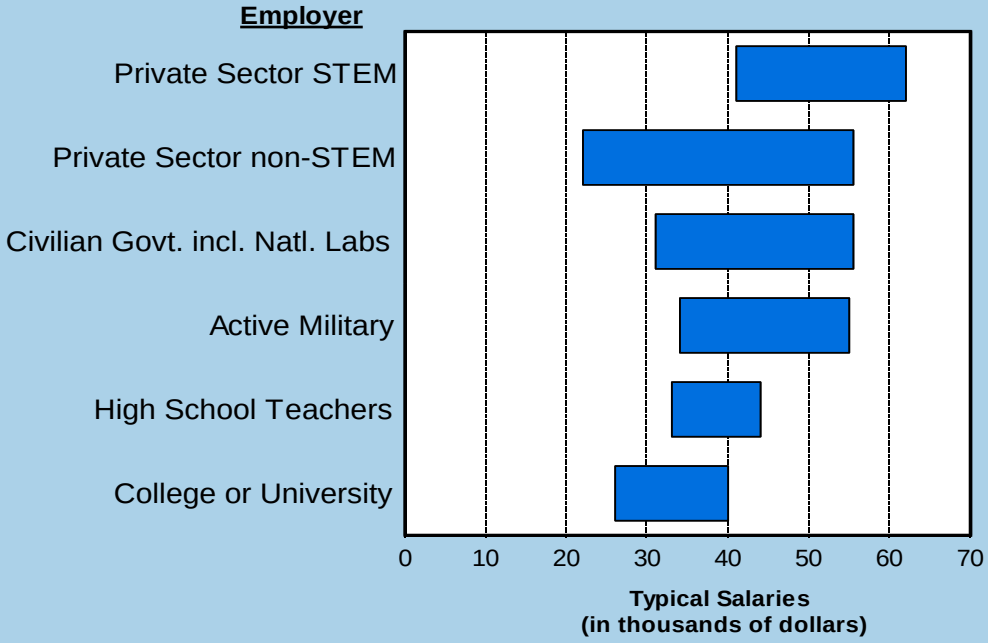

Figure includes only bachelor's in full-time, newly accepted positions. Typical salaries are the middle 50%, i.e. between the 25th and 75th percentiles. STEM refers to positions in natural science, technology, engineering, and math.

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THE 2011 AND 2012 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.

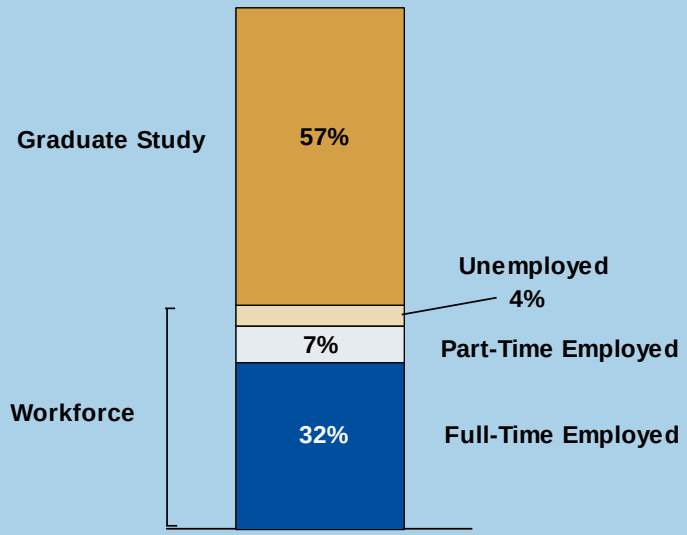
The range of salaries for physics bachelor's employed in non-STEM private sector positions was the widest of any employment sector. The lower salaries in this sector were often in hourly wage positions, such as those in the food industry or manual labor. The higher salaries within private sector non-STEM positions were often associated with more technical responsibilities. They included job titles containing "analyst" and "specialist" and were in areas of the economy related to banking and finance.

After receipt of their degrees, physics bachelor's either enter the workforce or continue on with their education. The majority (57%) of physics bachelor's degree recipients from the combined classes of 2011 and 2012 were enrolled in graduate school in the winter following the year they received their degrees. The remaining 43% entered the workforce. Three-quarters of those entering the workforce were employed full time. The remainder were either employed in part-time positions, or were seeking employment. About 5% of employed physics bachelor's indicated they accepted internships. The internships were mostly full-time paid positions, and were in a variety of fields. Five percent were continuing employment that they had held for at least a year before graduation.

43% of physics bachelor's degree recipients from the classes of 2011 and 2012 combined entered the workforce.

Figure 2

Initial Outcomes of Physics Bachelor's, Classes of 2011 & 2012 Combined.



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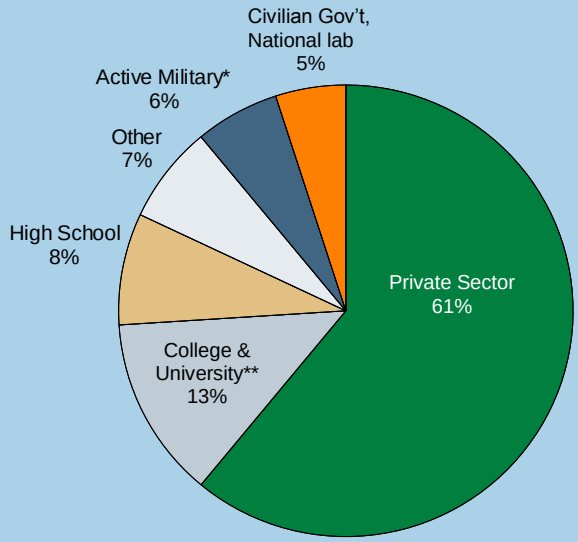
The majority of physics bachelor's degree recipients from the combined classes of 2011 and 2012 were employed in the private sector. The next largest employment sector was colleges and universities where over half worked at the same institution that they had attended as undergraduates.

Seventeen percent of employed physics bachelor's held part-time positions after receiving their degrees. Almost half of those who were employed part-time planned to continue on to graduate school in the future.

Figure 3

Initial Employment Sectors of Physics Bachelor's, Classes of 2011 & 2012 Combined.



*Data does not include degree recipients from the three military academies (US Naval Academy, US Military Academy, US Air Force Academy).

** Data include two- and four-year colleges, universities, and university affiliated research institutes.

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61% of employed physics bachelor's degree recipients from the combined classes of 2011 and 2012 worked in the private sector.

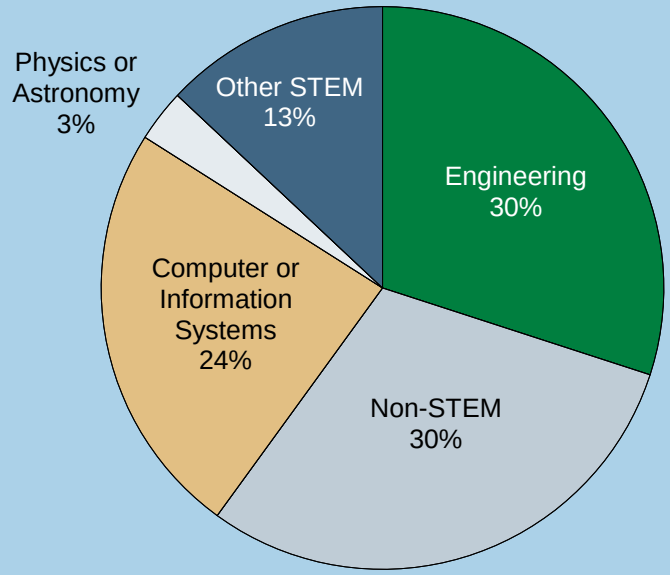
There are three military academies that award physics bachelor's degrees: US Military Academy (NY), US Air Force Academy (CO), and US Naval Academy (MD). The students attending these institutions are on a specific career path and are not subject to the initial employment conditions experienced by the vast majority of physics bachelor's. With the exception of **Figure 2**, data in this *focus on* do not include the degree recipients from these unique institutions.

The majority (70%) of physics bachelor's degree recipients employed in the private sector work in STEM fields. As has been historically true, the majority of physics bachelor's who secured employment in the private sector are working in the fields of engineering and computer or information science. Only a small fraction of the private sector employed bachelor's indicated they were working in the fields of physics or astronomy. Less than a third of the private sector employed physics bachelor's were working in non-STEM fields.

Over half of physics bachelor's who were employed in the private sector were working in the fields of engineering or computer science.

Figure 4

Field of Employment for Physics Bachelor's in the Private Sector, Classes of 2011 & 2012 Combined.



STEM refers to natural science, technology, engineering, and mathematics.

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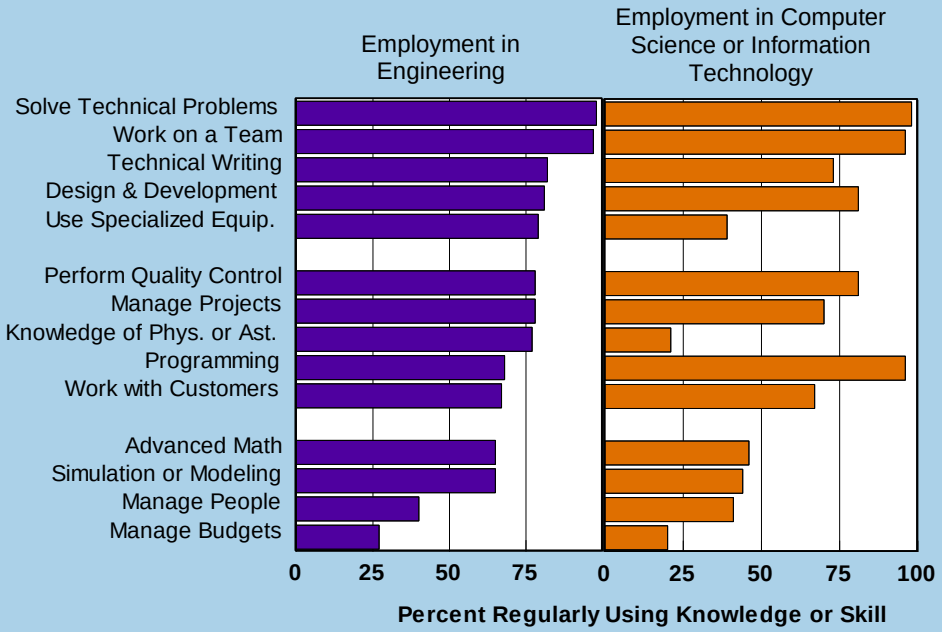
More than half (54%) of the private sector employed physics bachelor's degree recipients were working in the fields of engineering or computer science. **Figure 5** shows a comparison of the skills regularly used by physics bachelor's degree recipients who are full-time employed in the private sector in these two fields. Nearly all respondents solved technical problems and worked on teams on a regular basis. As would be expected, those employed in the field of computer science were significantly more likely to use programming skills than their engineering counterparts. Conversely, they were less likely to use physics knowledge regularly. More than 80% of those employed in computer science regularly performed quality control and performed tasks related to design and development.

Figure 5

Knowledge and Skills Regularly Used by Physics Bachelor's Employed in the Private Sector, Classes of 2011 & 2012 Combined.



Percentages represent the physics bachelor's who chose "daily," "weekly," or "monthly" on a four-point scale that also included "never or rarely."

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Nearly all of the respondents employed in Engineering or Computer Science fields regularly worked on teams and solved technical problems.

Private Sector STEM

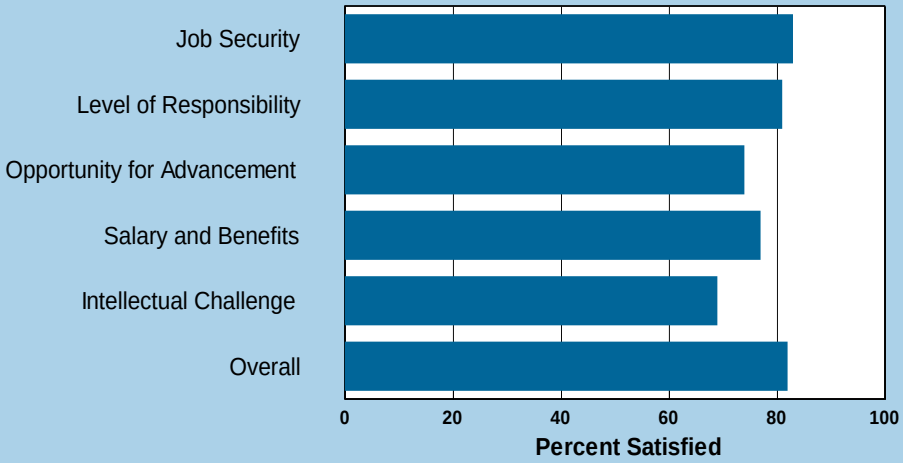
Physics bachelor's degree recipients were asked about their levels of satisfaction concerning different aspects of their employment. On a four point scale, those who responded that they were "very satisfied" or "somewhat satisfied" were counted as being satisfied. **Figures 6** through **11** show the levels of satisfaction with aspects of their positions within each large employment sector. More than 80% of physics bachelor's in private sector STEM positions reported that overall they were satisfied with their positions. Job security and level of responsibility also showed high levels of satisfaction. Around three-quarters were satisfied with their opportunity for advancement and with their salary and benefits.

Physics bachelor's employed in private sector STEM positions indicated high levels of satisfaction with all aspects of their positions.

One respondent indicated that "witnessing direct application of physics and materials science" was a part of their daily work.

Figure 6

Job Satisfaction of Physics Bachelor's in Private Sector STEM Positions, Classes of 2011 & 2012 Combined.



Percentages represent the physics bachelor's who chose "very satisfied" or "somewhat satisfied" on a four-point scale that also included "somewhat dissatisfied" and "very dissatisfied." STEM refers to natural science, technology, engineering and math.

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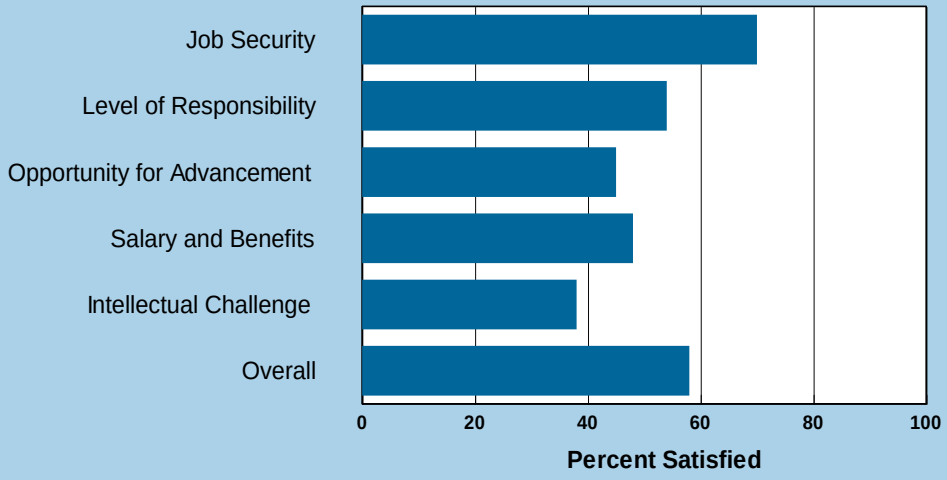
Physics bachelor's were asked to describe their work and many of their open ended responses involved what the degree recipients liked about their jobs. Physics bachelor's working in private sector STEM positions frequently used phrases such as "gaining experience" and made references to learning. Many respondents also indicated that they found their work "interesting" and enjoyed the "opportunities" that they were presented with. Some indicated that they enjoyed having a high level of autonomy or that they got to travel. Not all respondents chose to describe what they enjoyed about their work, some answered more pragmatically, with statements indicating they were happy to have found employment and were able to "pay the bills."

Private Sector non-STEM

Physics bachelor's degree recipients employed in private sector non-STEM positions were less satisfied with their jobs in each of the satisfaction categories than their STEM counterparts. Less than half of respondents employed in non-STEM fields reported being satisfied with their opportunity for advancement, their salary benefits, and their level of intellectual challenge. The types of jobs that respondents held in non-STEM fields varied greatly, with some being more technical than others. A number of respondents cited taking their jobs due to a lack of choice. Two-thirds of physics bachelor's employed in private sector non-STEM positions indicated that they were hoping to be employed in a STEM field in the future.

Figure 7

Job Satisfaction of Physics Bachelor's in Private Sector Non-STEM Positions, Classes of 2011 & 2012 Combined.



Percentages represent the physics bachelor's who chose "very satisfied" or "somewhat satisfied" on a four-point scale that also included "somewhat dissatisfied" and "very dissatisfied." STEM refers to natural science, technology, engineering and math.

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Just over half of physics bachelor's employed in non-STEM positions indicated overall satisfaction with their position.

"I feel like I am contributing to something valuable" – respondent comment.

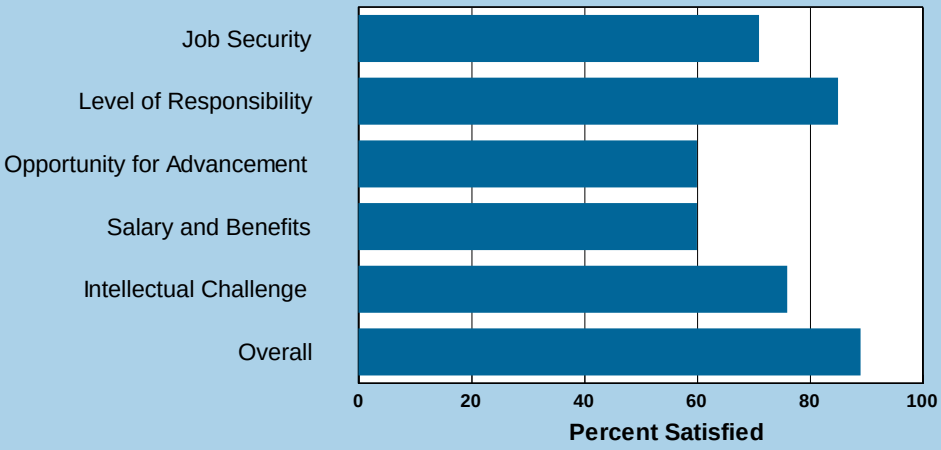
High School Teachers

Eight percent of physics bachelor's took jobs as high school teachers, with the majority teaching physics. The overall satisfaction level for high school teachers was very high, with 89% indicating that they were satisfied with their positions. High school teachers also reported high levels of satisfaction with the level of responsibility at their positions. Opportunity for advancement and salary and benefits had the lowest reported satisfaction levels, with just 60% being satisfied with these aspects of their positions. Many high school teachers indicated they enjoyed their work because they were making a positive impact on the lives of their students.

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

Figure 8

Job Satisfaction of Physics Bachelor's in High School Teaching Positions, Classes of 2011 & 2012 Combined.



Percentages represent the physics bachelor's who chose "very satisfied" or "somewhat satisfied" on a four-point scale that also included "somewhat dissatisfied" and "very dissatisfied."

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89% of high school teachers reported high levels of overall satisfaction with their positions.

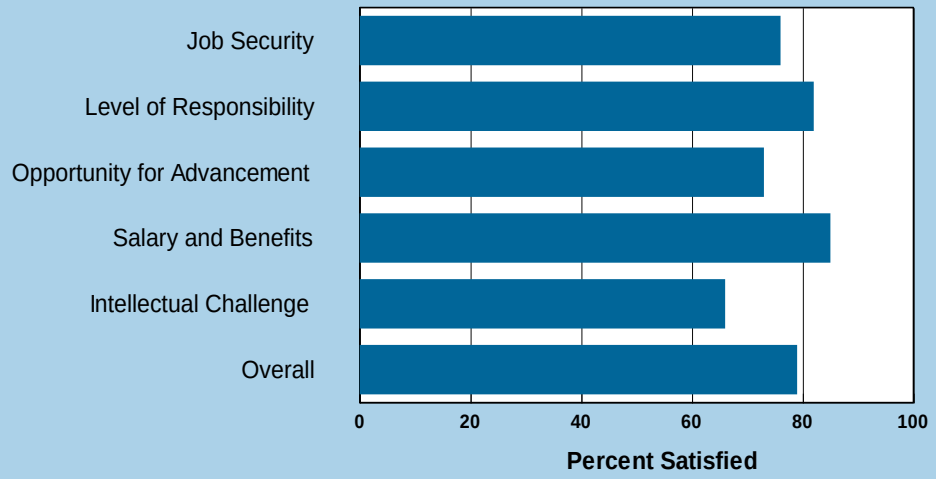
A physics bachelor working as a high school teacher enjoyed "inspiring kids and watching new concepts dawn upon them."

Civilian Government or National Labs

Five percent of newly employed physics bachelor's degree recipients worked in the civilian government or in national lab positions, of which more than three-quarters were in STEM fields. Civilian government and national lab employed bachelor's indicated high levels of satisfaction across all measures. The highest rates of satisfaction were reported in salary and benefits, and level of responsibility. Many respondents indicated that they enjoyed their positions because they were able to continue to learn on the job, and could apply the skills they learned during their undergraduate education.

Figure 9

Job Satisfaction of Physics Bachelor's Employed in Civilian Government or National Labs, Classes of 2011 & 2012 Combined.



Percentages represent the physics bachelor's who chose "very satisfied" or "somewhat satisfied" on a four-point scale that also included "somewhat dissatisfied" and "very dissatisfied."

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Physics bachelor's employed in civilian government or national lab positions indicated high levels of satisfaction across all measures.

A physics bachelor working in civilian government was "able to do cutting-edge research with top researchers."

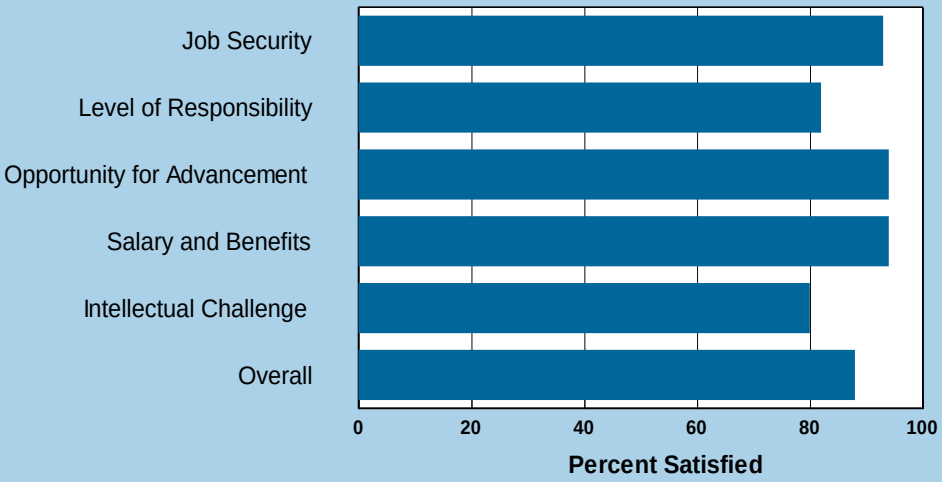
Active Military

Physics bachelor's degree recipients in the military had very high levels of satisfaction across the board. Almost all physics bachelor's in the active military had the rank of officer. Many cited their leadership role as one of the major reasons they enjoyed their positions. **Figure 10** includes graduates from military institutes that are not one of the three military academies and graduates from non-military schools who enlisted in the military following receipt of their degrees.

Almost all physics bachelor's in the active military had the rank of officer.

Figure 10

Job Satisfaction of Physics Bachelor's in the Active Military, Classes of 2011 & 2012 Combined.



Percentages represent the physics bachelor's who chose "very satisfied" or "somewhat satisfied" on a four-point scale that also included "somewhat dissatisfied" and "very dissatisfied."

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"The real world application of physics I do helps save lives."
- physics bachelor in the active military.

"I love going to work in the morning because I love what I do."
- physics bachelor in the active military.

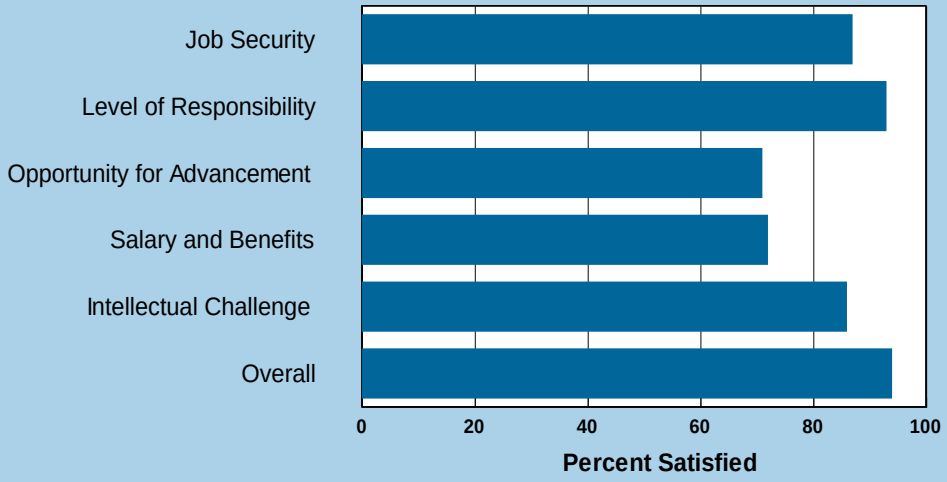
College and Universities

Thirteen percent of employed physics bachelor's degree recipients found jobs in colleges or universities. Common job titles for these positions included research assistants and specialists. Physics bachelor's in college and university positions indicated higher levels of overall satisfaction than any other employment sector.

This group was particularly likely to be interested in attending graduate school in the future and a little over half of this group hoped to work either at a college or university in ten years. One respondent described their work as a "taste of physics grad student life."

Figure 11

Job Satisfaction of Physics Bachelor's in Colleges & Universities, Classes of 2011 & 2012 Combined.



Percentages represent the physics bachelor's who chose "very satisfied" or "somewhat satisfied" on a four-point scale that also included "somewhat dissatisfied" and "very dissatisfied." Data includes two- and four-year colleges, universities, and university affiliated research institutes.

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Physics bachelor's employed at colleges and universities had very high overall levels of satisfaction.

A physics bachelor working in academia enjoyed "the seemingly limitless potential for the job."

Gender Differences

About a fifth of physics bachelor's degree recipients from the classes of 2011 and 2012 were female. A similar proportion of both men and women from these classes were in the workforce in the winter after receiving their degree.

Table 1

Initial Employment Sectors of Physics Bachelor's by Sex, Classes of 2011 & 2012.

	Women %	Men %
Private Sector	57	65
Civilian Government*	6	5
High School Teacher	11	6
College or University**	15	11
Active Military	2	6
Other	9	7
%	100%	100%

* Includes Federally Funded Research and Development Centers.
** Includes two- and four-year colleges, universities, and university affiliated research institutes.

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Women were more likely than men to accept jobs at either colleges or universities, or as high school teachers.

Gender differences do appear when looking at the sector of employment in which degree recipients work. As has been historically true, men were more likely to accept positions in the private sector or enter the military, while women were likely to accept positions at colleges or universities, or as high school teachers.

Future Graduate Studies

One out of 6 of the physics bachelor's in the combined classes of 2011 and 2012 who immediately entered the workforce indicated that they had plans to attend graduate school in the future and 3% were enrolled part-time while being employed full-time. Almost half (46%) of those planning to continue their education intended to study physics or astronomy. The majority of those with plans to continue their education anticipated working for a year before returning to 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.

The follow-up surveys for the classes of 2011 and 2012, on which the majority of the data in this report is taken, were administered with a web-based form. Up to four e-mail survey invitations were sent to degree recipients.

Recent degree recipients can be very difficult to reach because they tend to move after receiving their degrees. Many times the physics 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 physics classes of 2011 and 2012 consisted of 6,296 and 6,778 bachelor's respectively. We received post-degree information on 35% of these degree recipients with nearly a third of the information coming from the student's advisor. Seven percent of the bachelor's were pursuing employment or graduate study outside the US and were not included in the analysis.

There are three military academies that award physics bachelor's degrees: US Military Academy (NY), US Air Force Academy (CO), and US Naval Academy (MD). The students attending these institutions are on a specific career path and are not subject to the initial employment conditions experienced by the vast majority of physics bachelor's. The data in this *focus on* do not include the degree recipients from these unique institutions.

We thank the many physics and astronomy departments, degree recipients, and faculty advisors who made this publication possible. We also thank Casey Langer Tesafaye, who was responsible for administering the surveys and initial data verification.

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