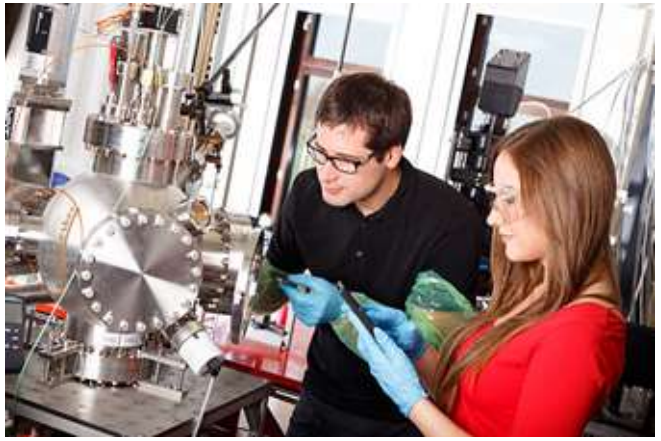


Physics & Astronomy Career Workshop #1

Career Formation:

What Do Physicists Do, and What Should I Do?

20 January 2022

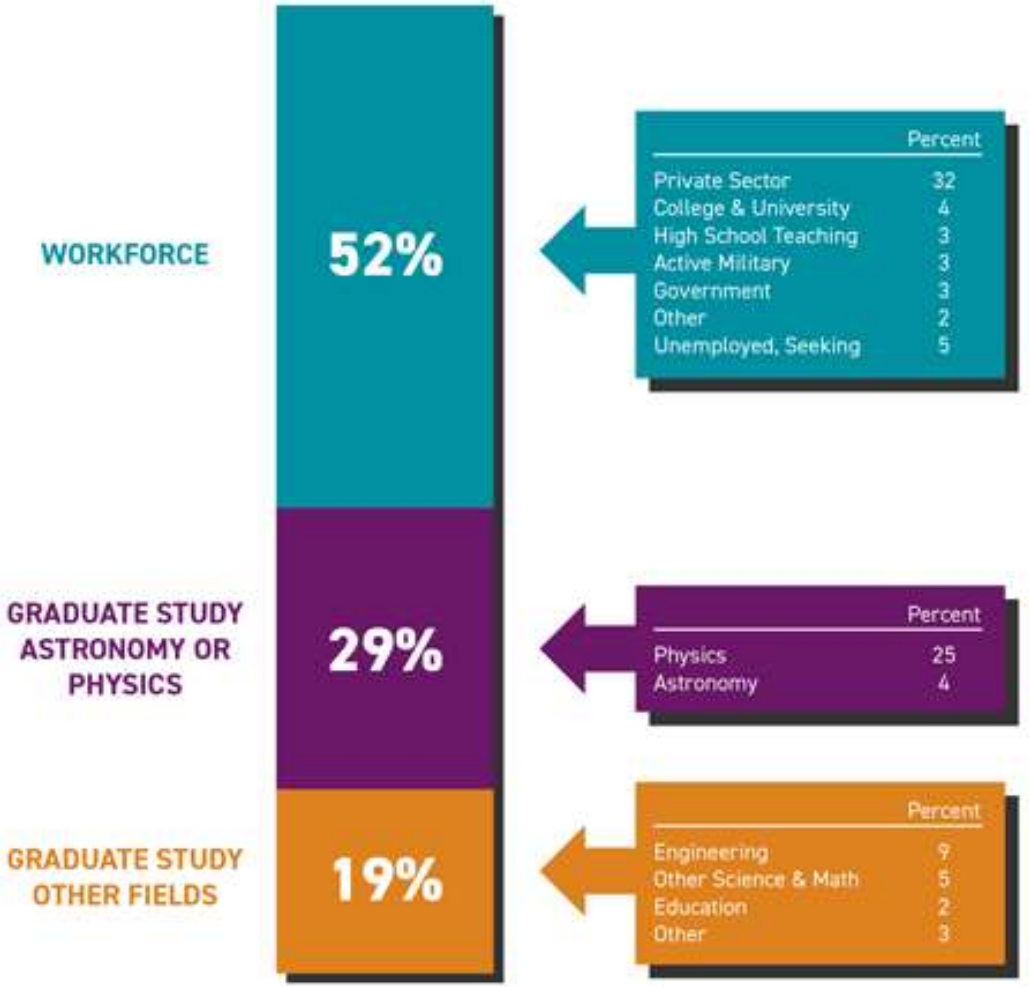
A FEW FACTS: PHYSICS DEGREES IN THE US

- 9300 people graduated with bachelor's degrees in physics last year
- 1829 people graduated with PhDs in physics last year
- 434 people were hired as full-time physics faculty members in 2018/19
- 5% of all physics bachelor's eventually end up as physics professors

Various reports, AIP Statistical Research Center

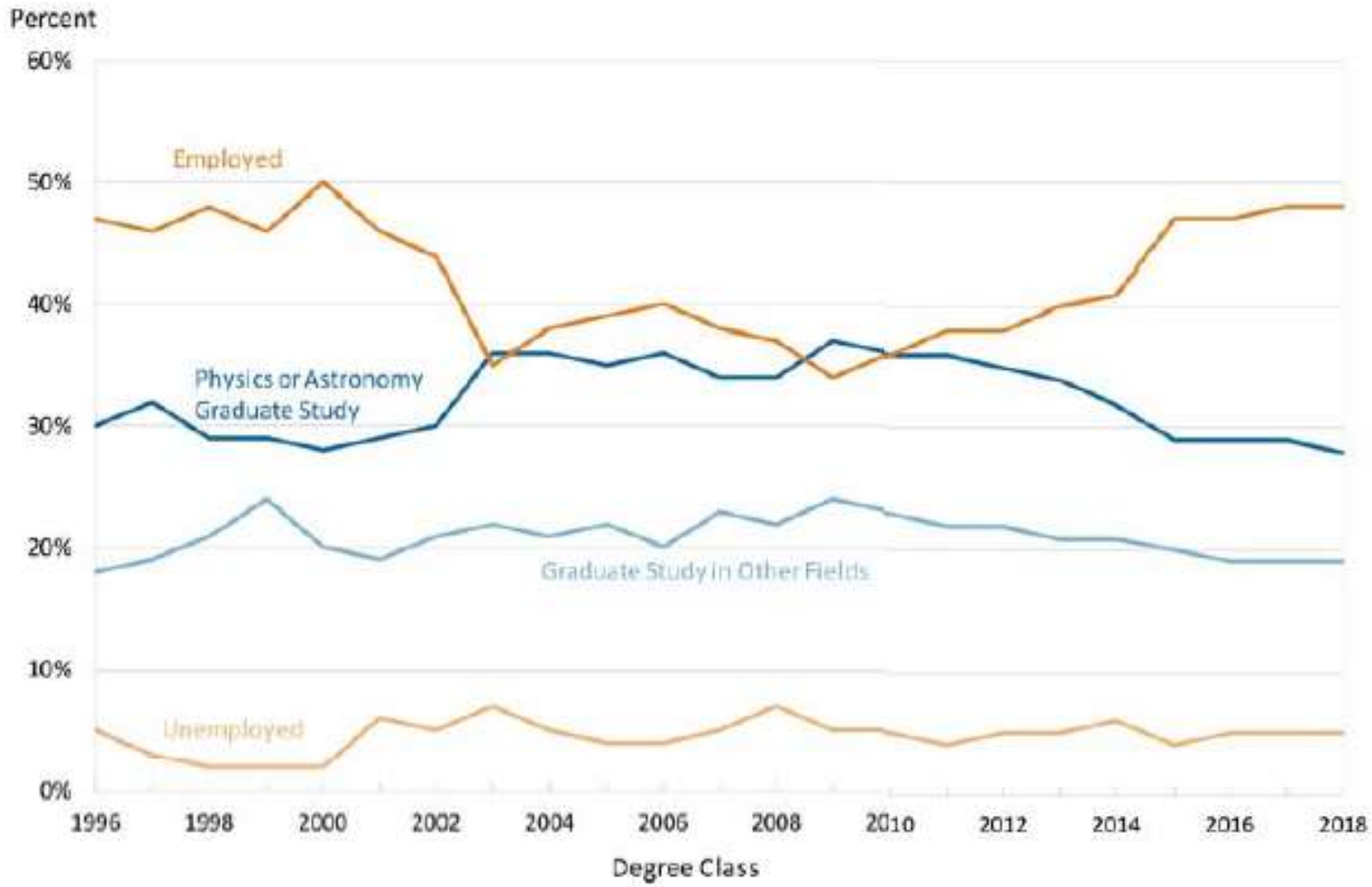
Physics Bachelors 1 Year Later

8,800 Recent Degree Recipients



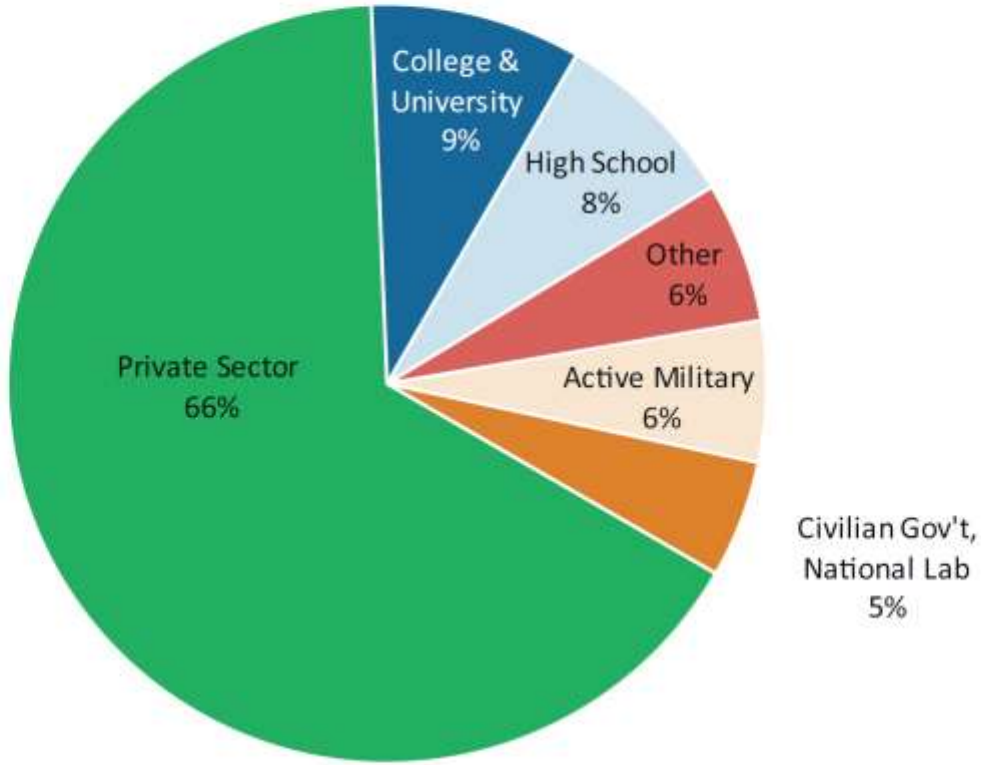
AIP Statistical Research Center

Status of Physics Bachelors One Year After Degree, Classes of 1996 through 2018



AIP Statistical Research Center

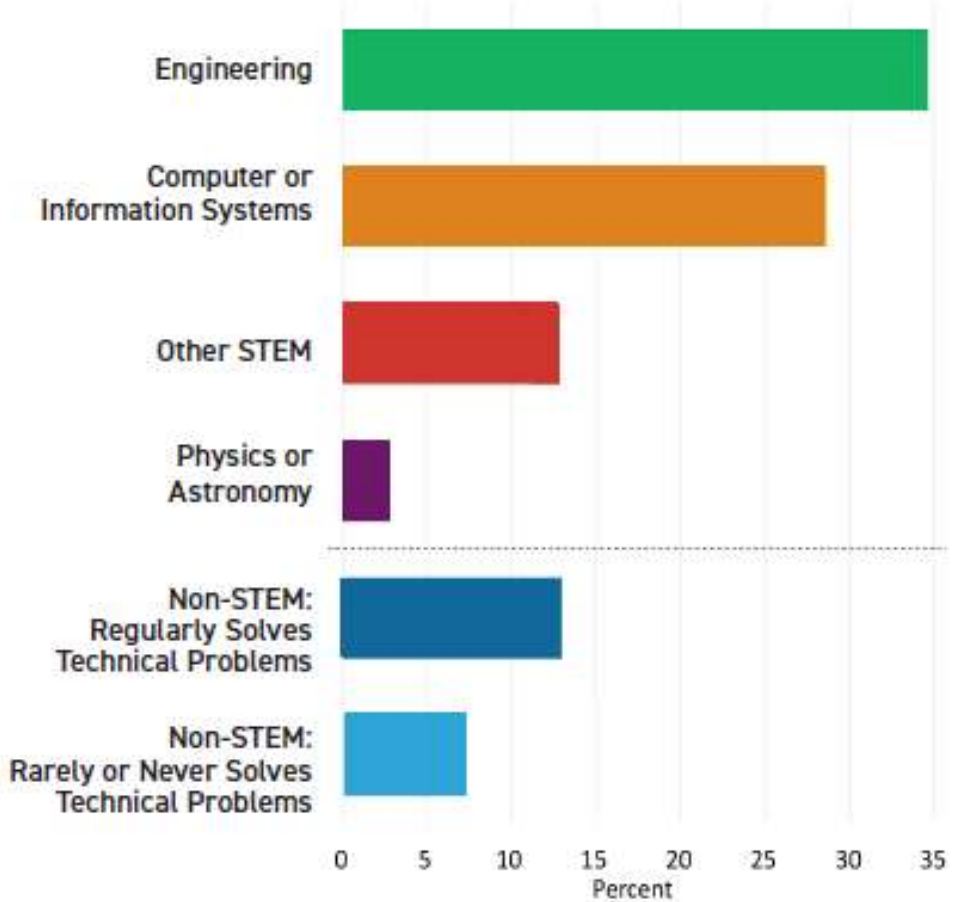
Initial Employment* Sectors of New Physics Bachelors, Classes of 2015 & 2016 Combined



* 47% of new physics bachelors were employed in the winter following the year in which they received their degree.

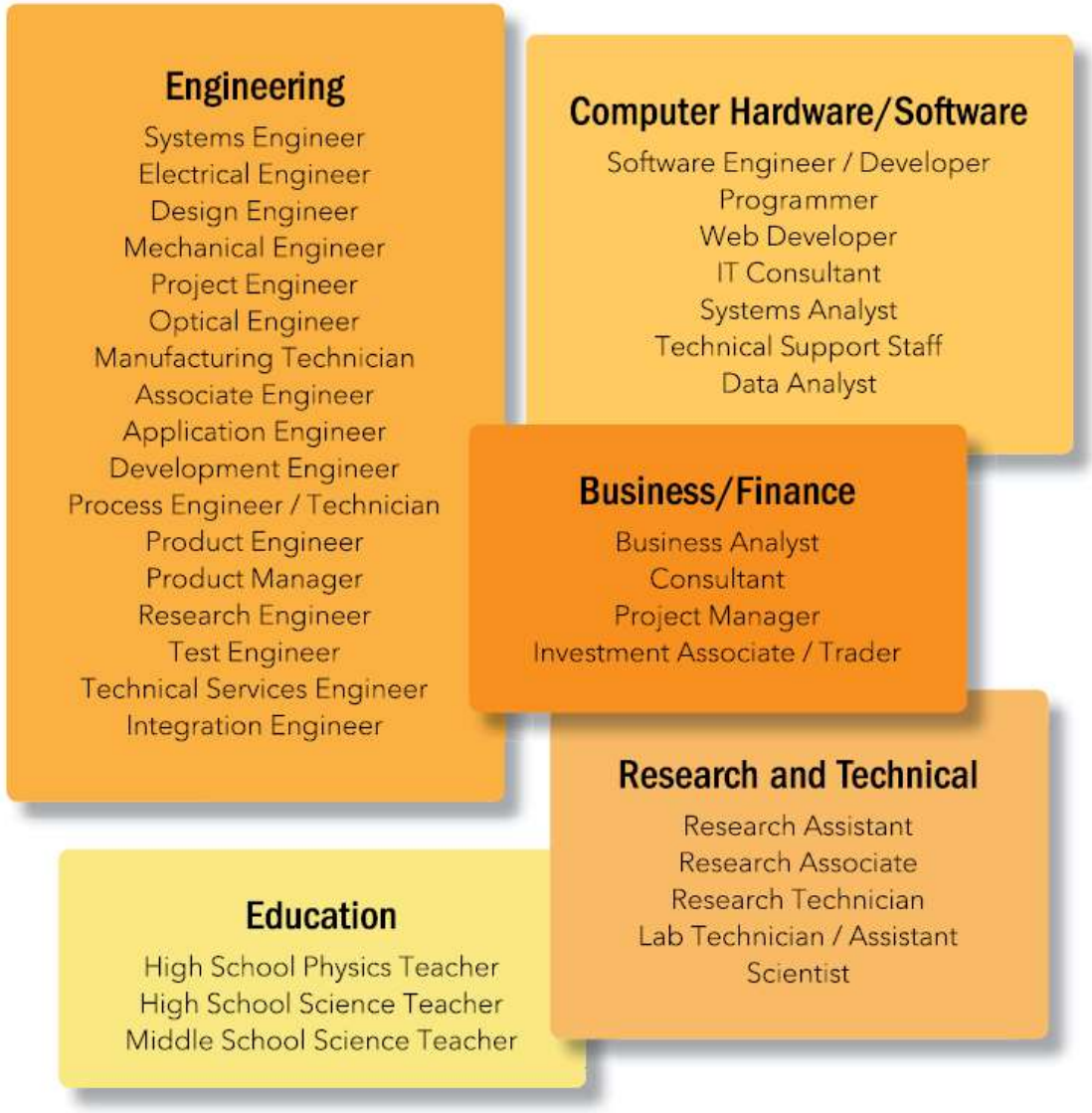
Field of Employment for New Physics Bachelors

Employed in the Private Sector



AIP Statistical Research Center

Common Job Titles of New Physics Bachelors

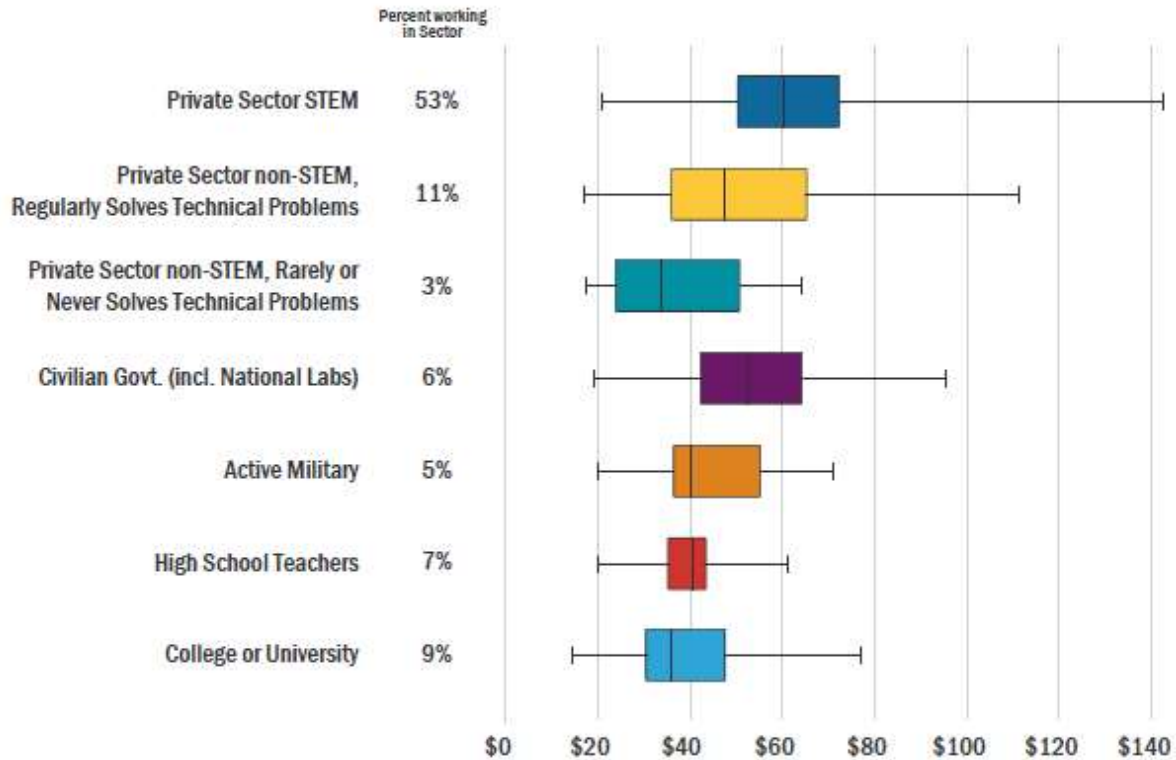


AIP Statistical Research Center

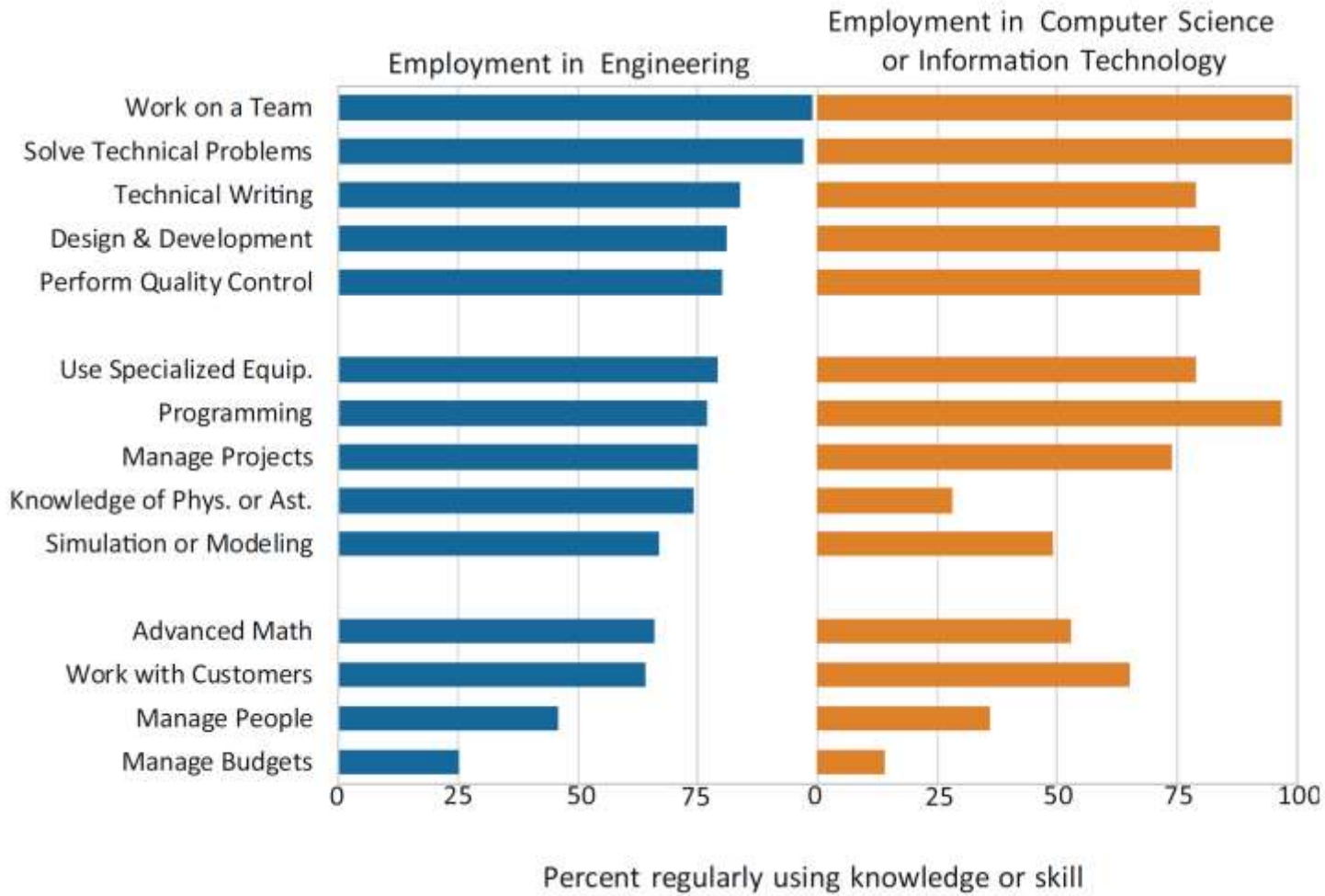
Source: AIP Follow-up Survey of Physics Bachelors, classes of 2015 and 2016.

Starting Salaries for Physics Bachelors

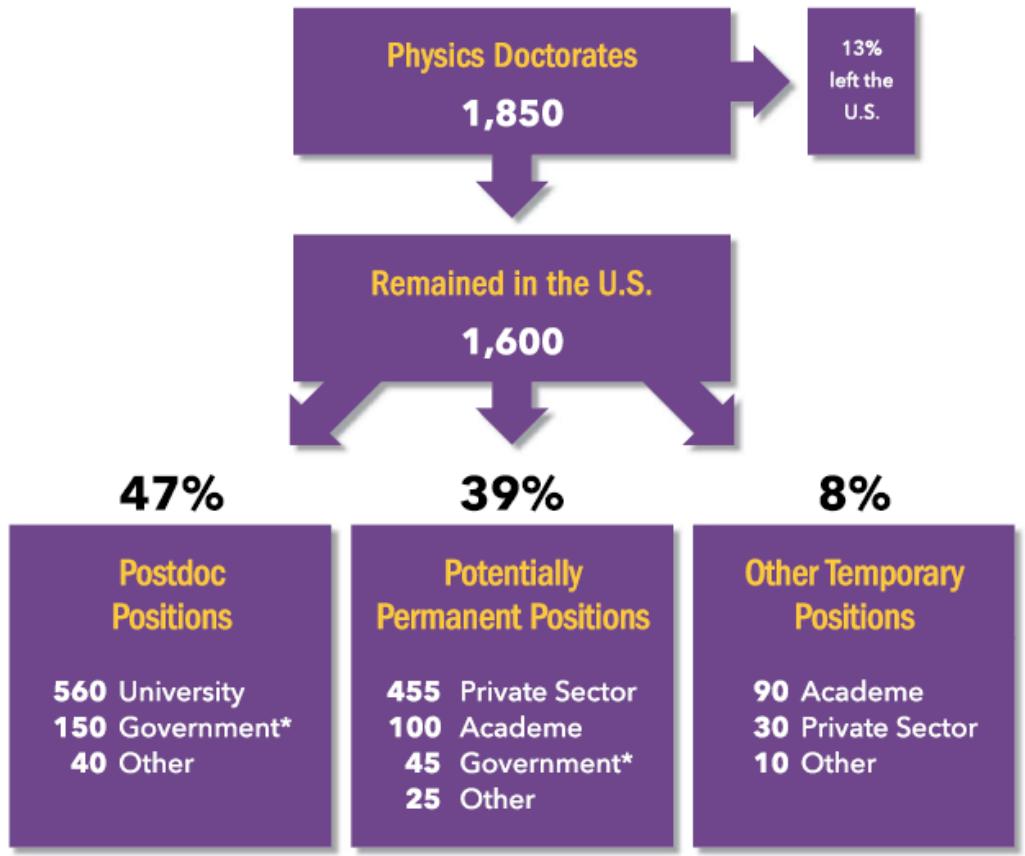
Classes of 2017 & 2018



Knowledge and Skills Regularly Used by New Physics Bachelors Employed in the Private Sector, Classes of 2015 & 2016 Combined



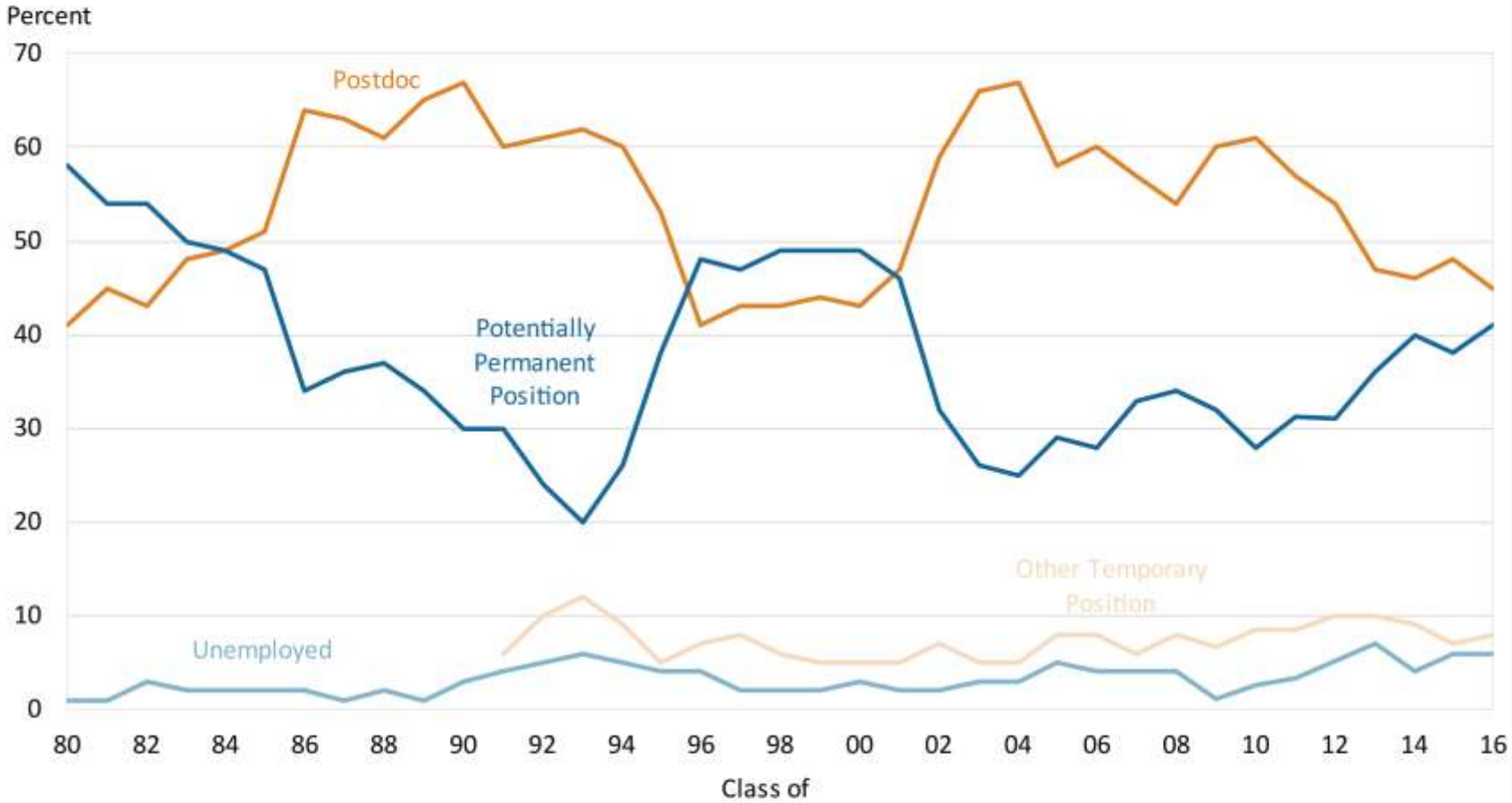
Physics PhDs 1 Year Later



6% of those in the U.S. were unemployed the winter after receiving their degrees.
<1% of those in the U.S. were not employed and not seeking employment.

Source: Outcome data comes from the AIP Follow-up Survey of Physics PhDs, the classes of 2015 and 2016 combined. The 1,850 physics doctorates is an average of the two degree classes. *Government includes: local and federal government, government labs, and Federally Funded Research and Development Centers.*

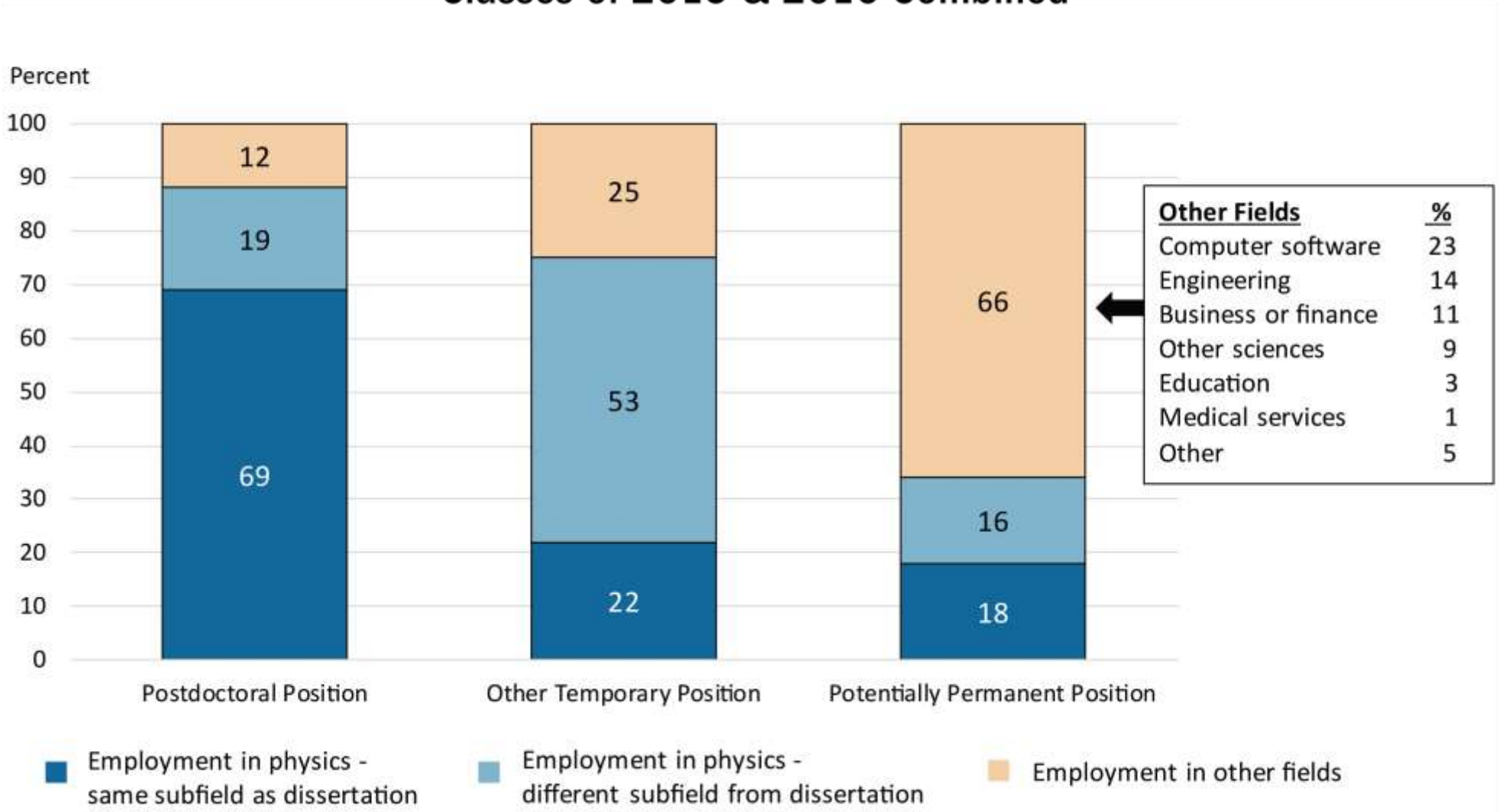
Initial Employment of Physics PhDs, 1979 through 2016



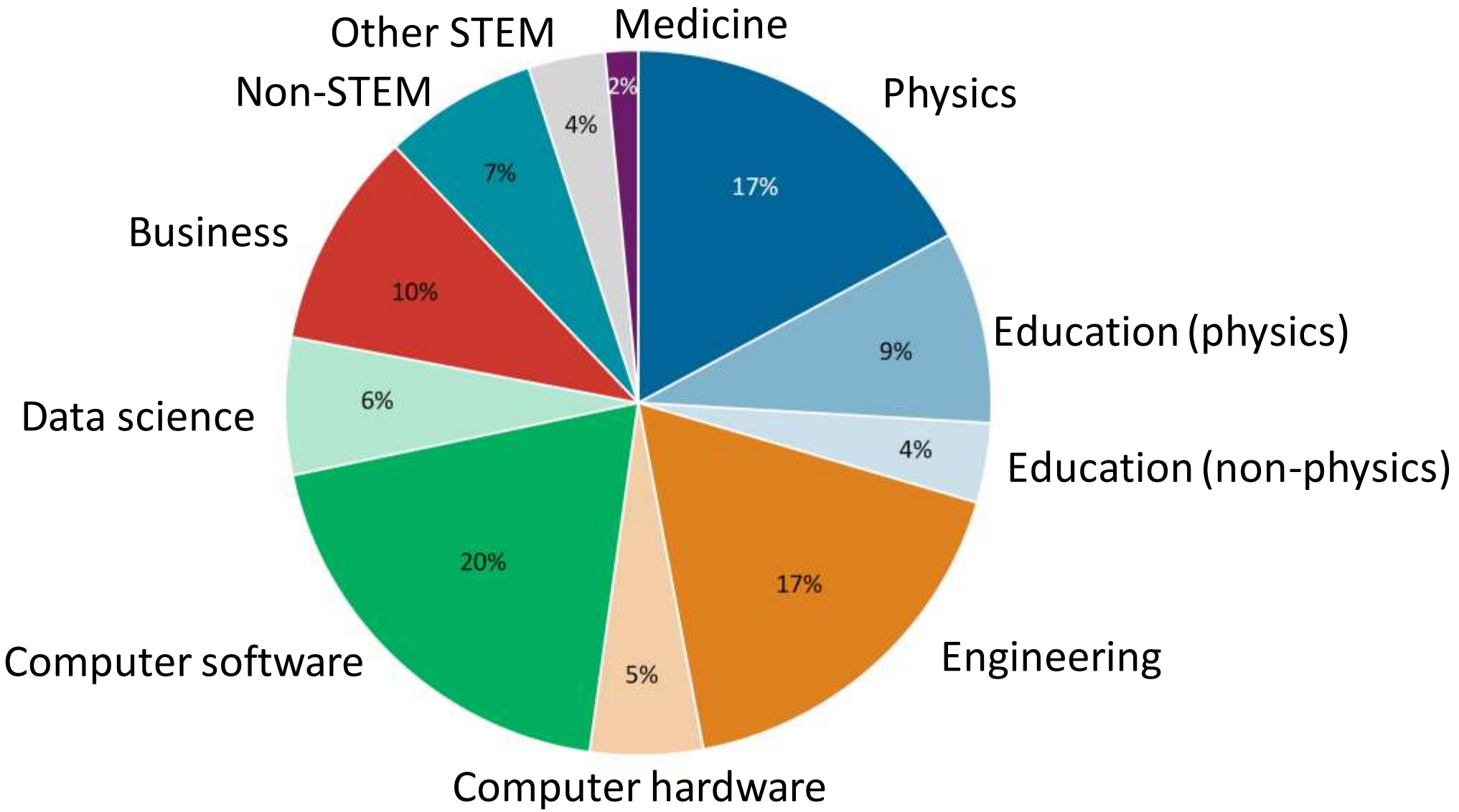
In 1991, the survey questionnaire was changed to measure "other temporary" employment as a separate category. Data are limited to PhDs who earned their degrees from a US university and remained in the US.

Reasons for Accepting a Postdoctoral Fellowship, Classes of 2015 & 2016 Combined

Employment Field of New Physics PhDs, Classes of 2015 & 2016 Combined



Field of employment for new physics PhDs (potentially-permanent positions)



Common job titles for new physics PhDs

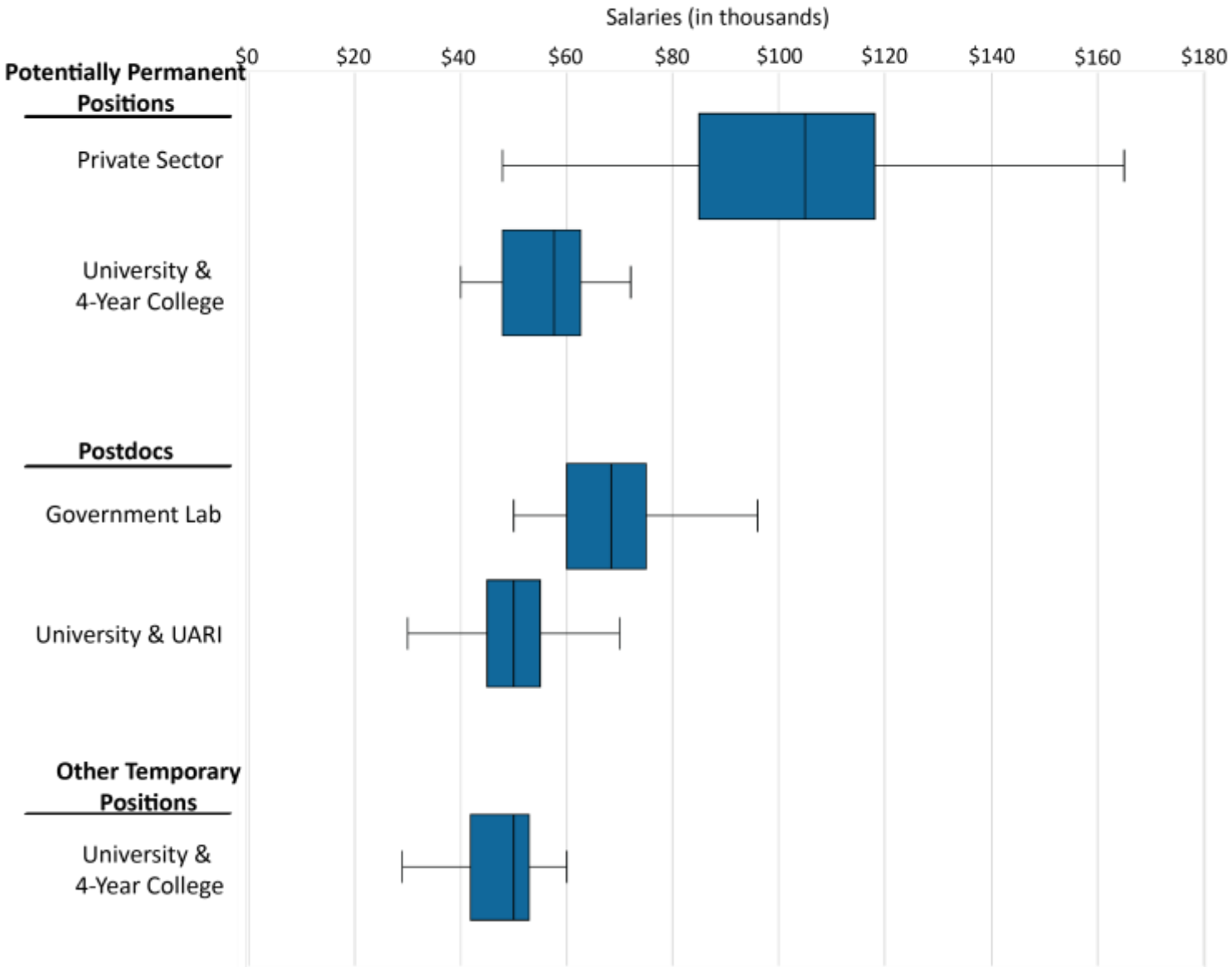
Engineering
Aeronautical Engineer
Applications Engineer
Battery Test Engineer
Characterization Engineer
Development Engineer
Device Modeling and Testing Engineer
Laser and Optics Engineer
Process Technology Development Engineer
R&D Engineer
Systems Analyst
Systems Engineer
Technical Specialist
Senior Design Engineer
Sensor System Engineer

Computer software
Analyst / Programmer
Application Developer
Associate Software Engineer
Autonomy Engineer
Flight Software Engineer II
Mathematical Analyst and Developer
Scientific Programmer

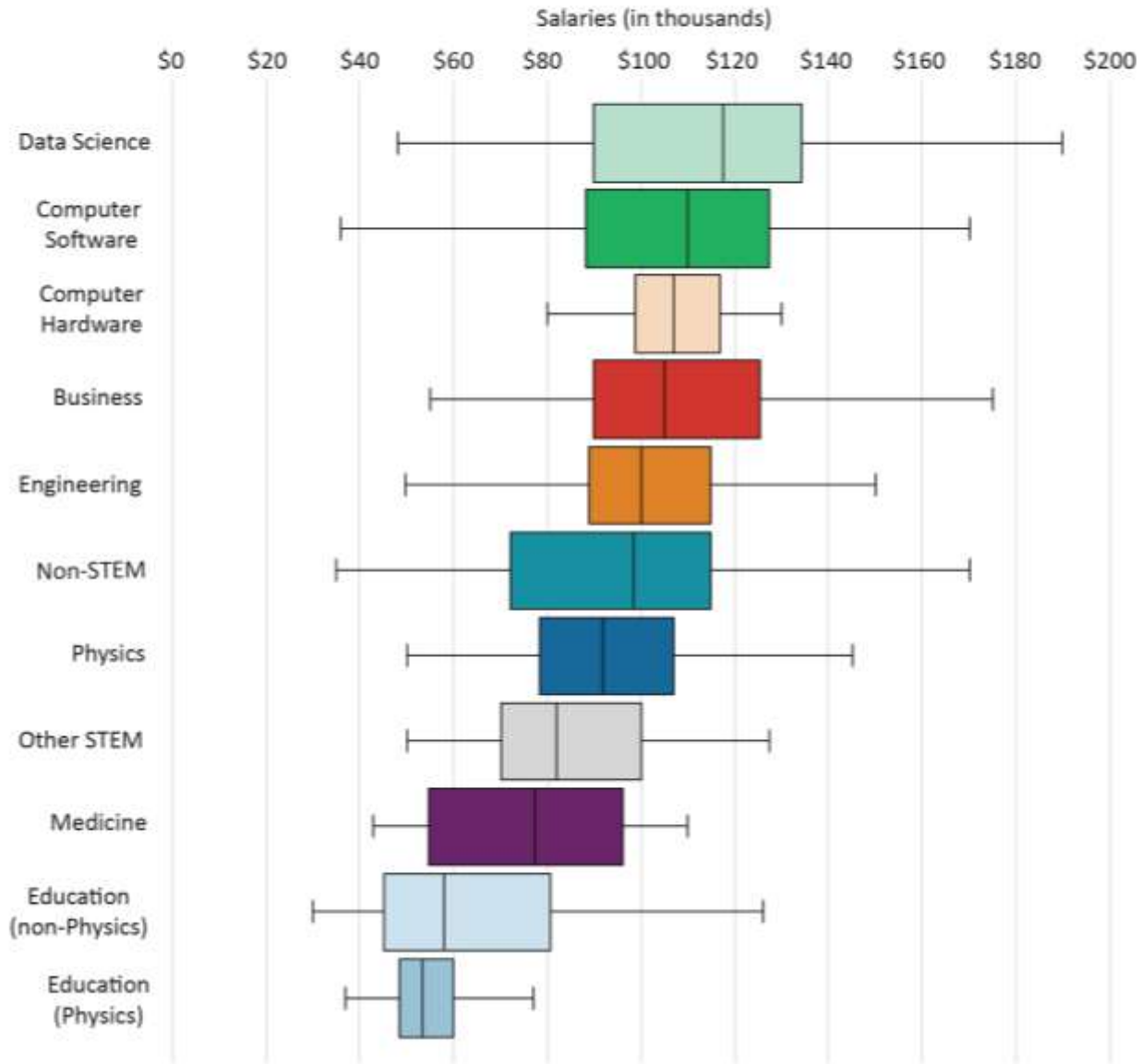
Data science
Data Analyst
Machine Learning Engineer
Research Analytics Consultant
Tech Data Scientist II

Business
Algorithm Developer
Credit Research Associate
Data Analyst
Quantitative Financial Analyst
Risk Insights Analyst
Senior Analytics Consultant

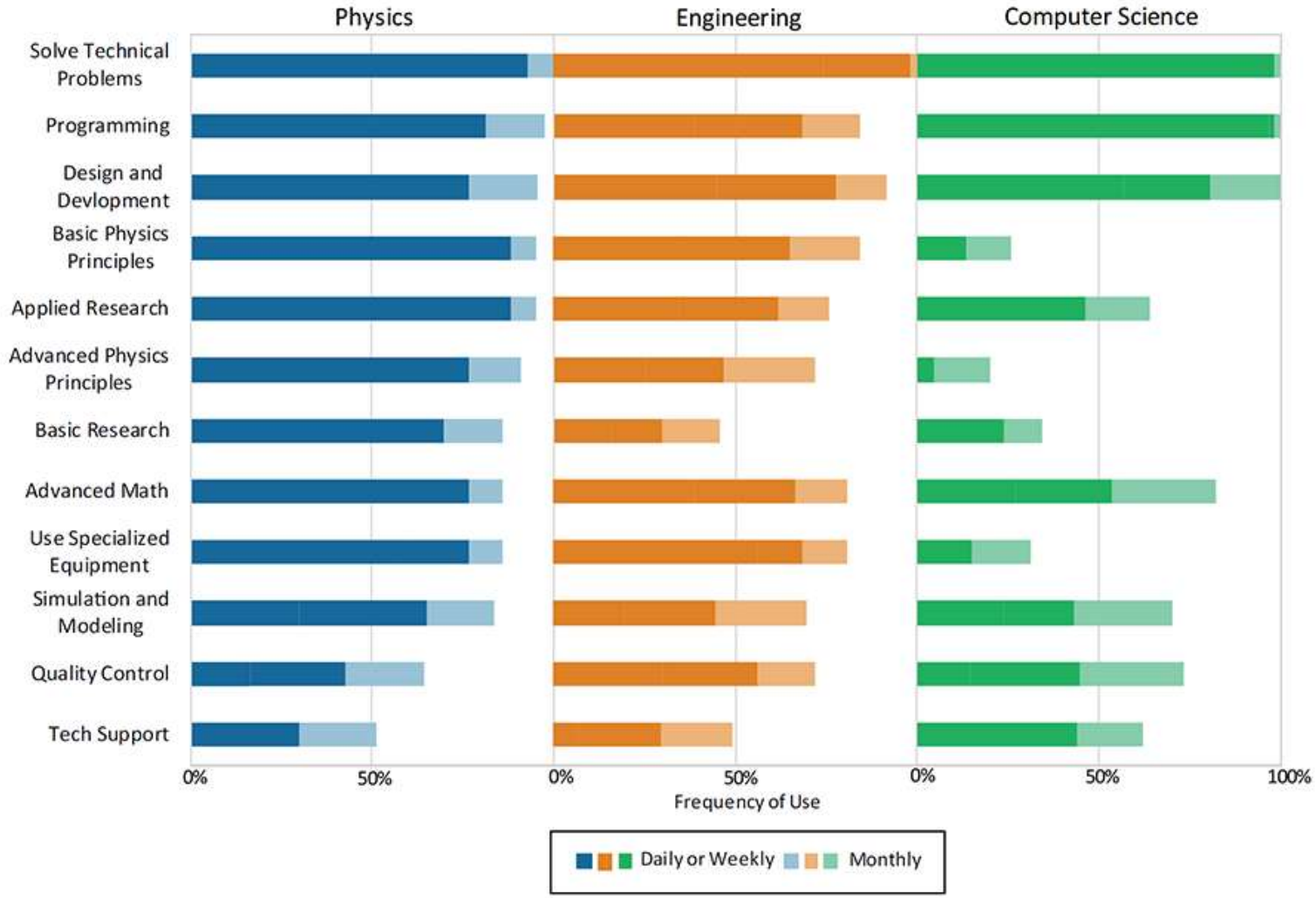
Starting Salaries for New Physics PhDs, Classes of 2015 & 2016 Combined



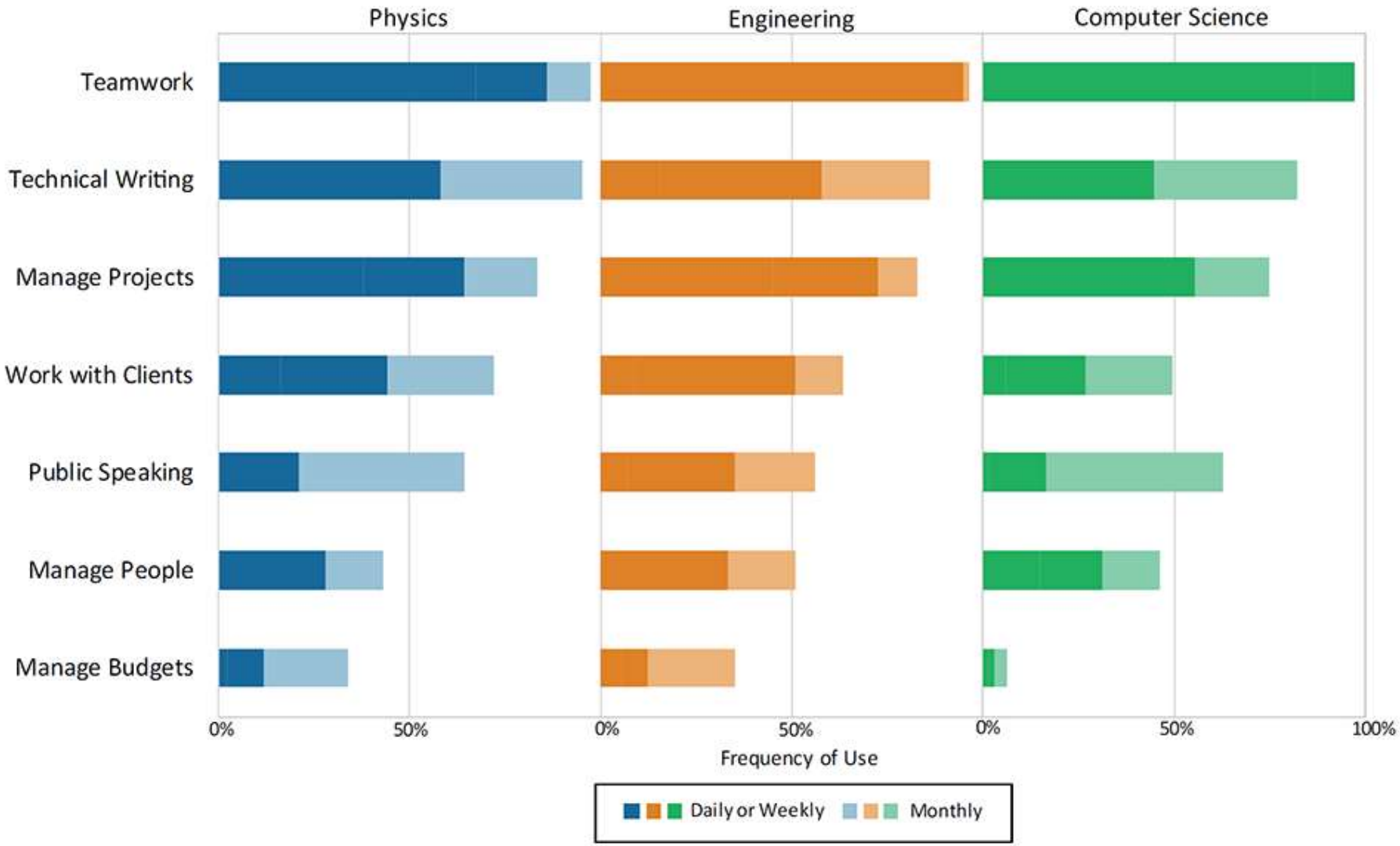
Starting Salary Ranges for New Physics PhDs in Potentially Permanent Positions, Classes of 2014 through 2018



Scientific and Technical Knowledge Used by New Physics PhDs Employed in Potentially Permanent Positions, Classes of 2015 & 2016 Combined



Interpersonal and Management Skills Used by New Physics PhDs Employed in Potentially Permanent Positions, Classes of 2015 & 2016 Combined



Career Planning Process

Foundational activities: before you need a job

- Self-knowledge: what are my goals, interests, and values?
- Self-assessment: what are my skills and knowledge?
- Exploration: what kinds of careers are out there and whom can I talk to about them?

Workshops #1 and #2 concentrate on these

Focused activities: when you need a job

- Finding available positions
- Researching companies
- Writing a resumé to respond to a job ad
- Interviewing

Workshops #3 and #4 concentrate on these

University Career Services

https://careers.unc.edu/

UCS offers services for students at all degree levels and at all stages of the career planning process. Let's hear from Stephenie McIntyre, Director of Career Education…

Foundational activities

Keep a career journal

Goals: what is important to me?

- Make the world better
- Make a lot of money
- Live in Colorado
- Work-life balance/time for family or hobbies
- Traveling (post-pandemic!)

Interests: how do I like to spend my time?

- Tinkering with equipment
- Coding
- Analyzing data/figuring out the Universe
- Writing
- Working with other people

Strengths: what am I really good at?

- Keeping track of details
- Seeing the big picture
- Writing
- Working with diverse teams
- Writing code
- Making equipment work

Foundational activities

Skills inventory: what can I do, and when have I done it?

Identify skills and an example of where you have used them

Technical skills

- Solving complex technical problems
- Teaching: conceptualizing & explaining
- Programming
- Documentation
- Data and error analysis
- Advanced mathematics
- Simulation and modeling
- Using (and repairing) specialized equipment
- Quality control
- Machining

Non-technical skills

- Functioning in a variety of environments and roles
- Writing concisely and accurately
- Presenting information orally
- Tailoring your message to an audience
- Supporting a position with argumentation, logic, data
- Conceiving/designing complex projects
- Implementing and managing to completion
- Managing/leading groups of people
- Managing projects (creating task lists, developing timelines, setting goals, etc.)
- Planning for and obtaining necessary resources (e.g. funding)
- Developing and managing budgets
- Working on a team

You will use this when you write a resumé in workshop #3

Foundational activities

Exploration: what careers am I interested in and whom can I talk to about them?

What careers?

Many resources on the department's (new!) Career Info webpage: https://physics.unc.edu/career-info/

Google sheet with alums (name, job, company): https://docs.google.com/spreadsheets/d/1OOxqWLSxJK1VeWKF84kigCPcu9ok2a3Us-MEMaQnP6g/edit

Whom to talk to?

Many physicists can be found on LinkedIn—you need to be there too! https://www.linkedin.com/

For info on how to join, see https://careers.unc.edu/students/networking-and-social-media/how-build-your-linkedin-presence

Foundational activities homework

Self-knowledge
Revisit your list of goals, interests, and strengths; incorporate Clifton and discuss with others

Self-assessment
Keep working on your skills inventory—what else have you done?

Exploration
Watch an APS webinar on a career sector that interests you: https://www.aps.org/webinars/ (OK to do at 2X speed!)

Exploration
Look through profiles (including on LinkedIn—join now!) and use your goals/interests/strengths to identify career paths that sound appealing

Exploration
Identify individuals who have jobs that interest you whom you would like to contact

You will use these in workshop #2