

Careers in Astronomy

Applications in Pedagogy



Sources

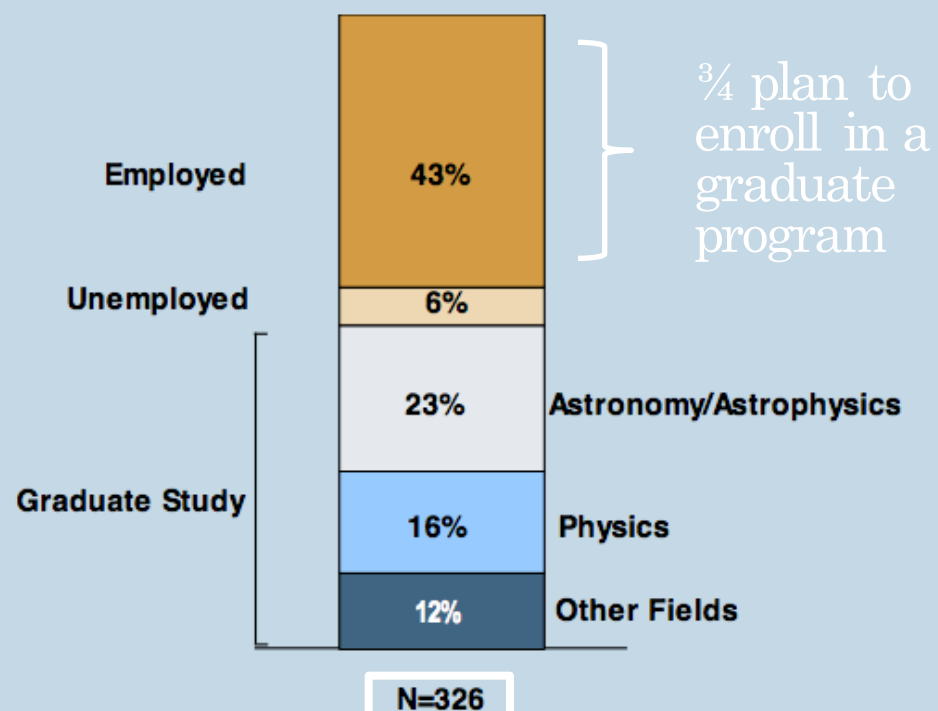
<https://aas.org/learn/careers-astronomy>

<https://www.aip.org/statistics/employment>

“Astronomy Career Profiles from the AAS Newsletter Archives”, arxiv 2011

Where do Bachelor Recipients Go

Status of Astronomy Bachelor's One Year After Degree,
Classes of 2010, 2011 & 2012 Combined.



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

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

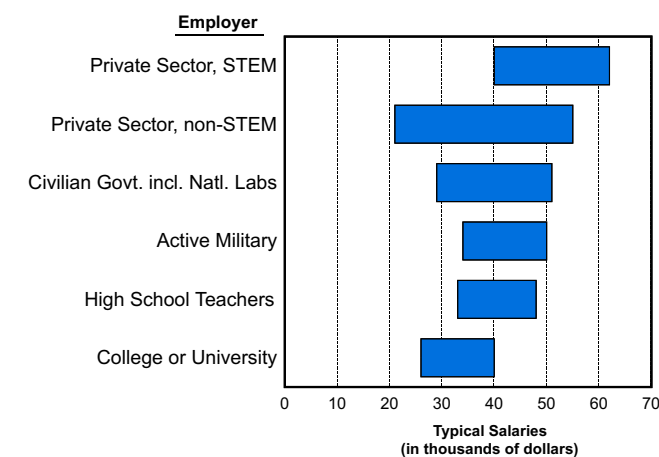


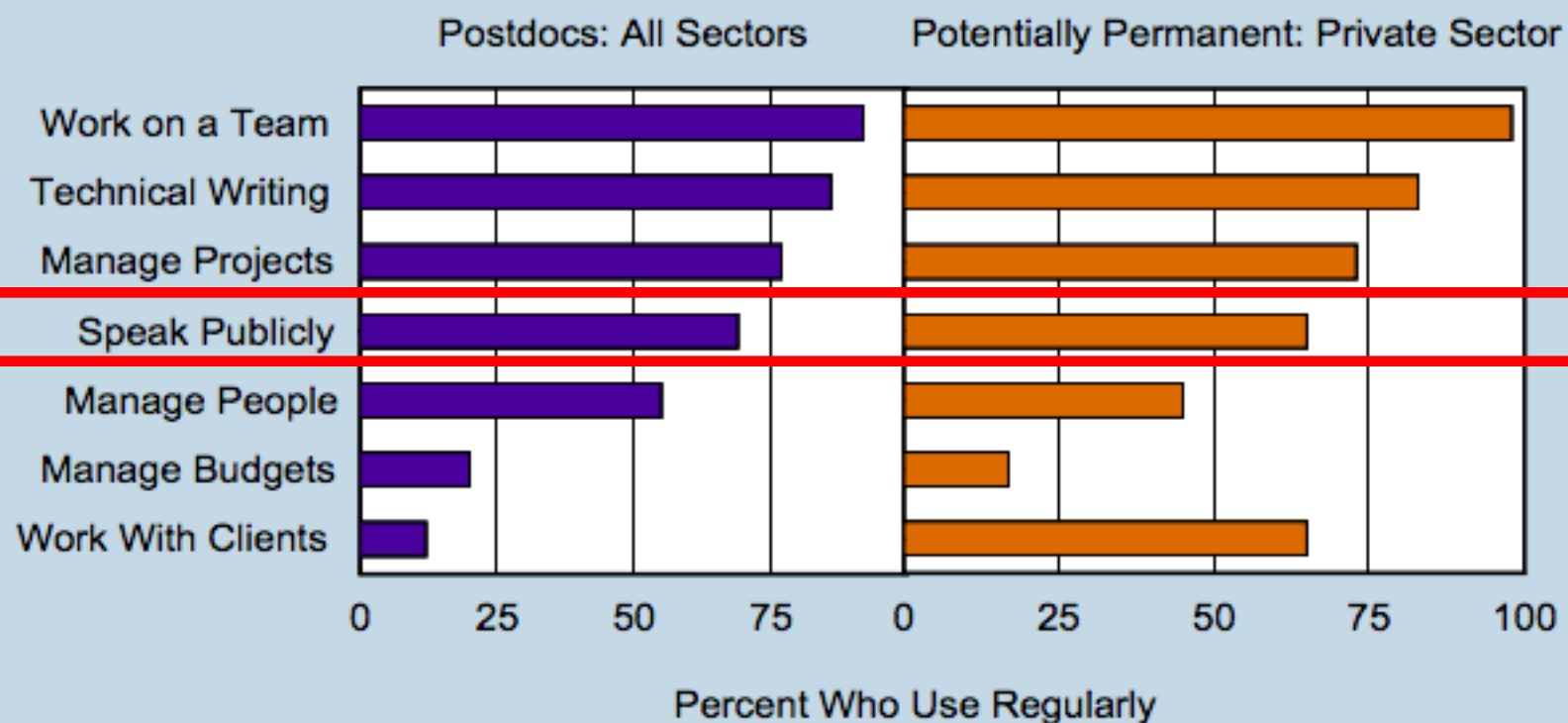
Figure includes only bachelor's in full-time, newly accepted positions.

Note: 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.

Where do PhD Recipients Go

- 6,000 to 7,000 professional astronomers in North America
 - ~150 new PhDs awarded each year
- 200 to 300 jobs advertised each year in the AAS job register
 - 150 to 200 of these are temporary post-docs
 - 75% of PhD students accept postdoc positions
 - 50 to 100 are permanent research or teaching positions
- By 8 years past their PhD, 85% have permanent jobs
 - Half in research, half in other fields such as teaching or administration
 - 55% - University/college
 - 33% - Federal government (NASA, observatories)
 - 10% - Business, private industry
 - 2% - Planetariums, EPO (education, public outreach)

Interpersonal and Management Skills Regularly Used by New Physics PhDs, Classes of 2013 & 2014 Combined.



Public Outreach and Education

- Planetarium, Science Museum
 - Designing and implementing public facing programs
 - Engage in original research which is showcased in the facilities
- Example : “Astronomy Coordinator”
 - Oversee maintenance on the observatory
 - Develop new projects for classes
 - Astronomy media contact for the local area
 - Run the observatory for popular public viewings
 - On location to dark sky star parties for students
 - Create curricula for astronomy classes
- K-12 Classroom Teacher
 - Direct impact, meaningful contribution but difficult hours and pay



Public Outreach and Education

- Public Relations
 - Communicate complex ideas in compelling ways for organizations like NASA centers (Goddard, Spitzer, etc.) and space manufacturers
 - Major universities and museums have public affairs offices for science
- Example: “Public Information Officer”
 - Share information about the lab with reporters, local residents and the general public
 - Writing press releases and web features to publicize discoveries
- Science Journalism
 - In-house or freelance science writer for publications (*Sky & Telescope*, *Astronomy*) or newspapers
 - National Science Writers Association
 - 2200 member organization, gives grants and awards, holds meetings where science writers can network

Public Outreach and Education

- Public Policy
 - Serve as a legislative assistant in state or federal governments
 - American Association for the Advancement of Science (AAAS) coordinates the congressional fellowship program
 - One-third of AAAS participations end up in policy-related positions

MOOSE: Menu of Outreach Opportunities for Science Education



I. How to Be an AAS Astronomy Ambassador

I.A. Outreach Training Programs at Other Scientific Organizations

- American Chemical Society
 - Science Coaches Program (chemists doing outreach)
- American Geological Institute
 - Visiting Geoscientists: An Educational Outreach Guide for Geoscience Professionals (a useful booklet, with nice checklists for going into classrooms)
- American Physical Society
 - Outreach Guide (ideas and tips for physicists who want to do outreach)
- Astronomical Society of the Pacific
 - Project ASTRO (a program to train professional and amateur astronomers to adopt a classroom for a year and partner with 4th – 9th grade teachers)
 - Family ASTRO (trains leaders to work with families using astronomy games and activity kits)
 - Astronomy from the Ground Up (trains museum, nature center, and natural parks educators to do astronomy activities)
 - Night Sky Network (program to train amateur astronomers to do outreach)
- Biological Sciences Curriculum Study (BSCS)
 - Scientists in Science Education (detailed booklet on how scientists can help in the nation's schools)
- Center for Ocean Science Excellence in Education
 - Telling Your Story (materials to help scientists be comfortable and prepared in the classroom)
- Cooperative Institute for Research in Environmental Sciences
 - Resources for Scientists in Partnership with Education (no longer active)
- National Academies
 - Project HITS: Resources for Involving Scientists in Education; no longer active, but with interesting examples)
 - Sharing Science with Children: Survival Tips for Your Classroom Visit (a very nice couple of pages on specific things to think about if you go into a classroom)
- National Girls Collaborative Project (a national network working to encourage girls to get involved in science and math)
- Oceanography Society
 - Education and Public Outreach (helpful booklet for scientists)
- Pacific Science Center
 - Portal to the Public (a national project started by the Pacific Science Center on training scientists to be effective outreach partners for science museums)
- PBS SciGirls Program
 - SciGirls Seven (a colorful and thought-provoking booklet from the PBS TV program on techniques for getting girls involved in science; the ideas apply to everyone. The booklet can be downloaded in sections from this overall page)
- Retired Scientists, Engineers and Technicians
 - Handy Guide to Classroom Visits (program similar to Project ASTRO, but with an engineering and physics emphasis; booklet with hints and checklists for going into schools)
- Sandia National Laboratory
 - Science Education in Our Elementary and Secondary Schools: A Guide for Technical Professionals Who Want to Help (a comprehensive guide that discusses the realities and pros and cons of different roles for scientists in our schools)
- Society of Physics Students
 - Science Outreach Catalyst Kits (SOCKS) Program
- Society of Toxicology
 - Outreach Page (see especially the section of PDFs for School Mentors)
- TechBridge (a program that connects scientists and girl-scout groups; founded by Chabot Science Center in Oakland)

Astronomy Education Research



PORTICO

Access

= Perpetual Access
 = Not ingested

DOWNLOAD HOLDINGS

COMPARE HOLDINGS

Search Publication Titles & I

- Journal Titles
- Book Titles
- E-Reference Titles
- All Metadata

Multi-line
Search

SEARCH

ELECTRONIC
JOURNALS

ELECTRONIC
BOOKS

DIGITIZED
COLLECTIONS

E-REFERENCE

ASTRONOMY EDUCATION REVIEW

Astronomy Education Review v. 12, n. 1

Publisher	American Astronomical Society
Agreement Name	American Astronomical Society Agreement, Version 1.0 (April 4, 2008)
PCA allowed	No
Identifiers	ISSN 15391515 Portico Journal ID ISSN_15391515

Table of Contents

Astro 101 Students' Perceptions of Science: Results from the Thinking About Science Survey Instrument

Colin S. Wallace, Edward E. Prather, Benjamin M. Mendelsohn
Astronomy Education Review v. 12, n. 1 (December 2013)
 DOI: [10.3847/AER2012042](https://doi.org/10.3847/AER2012042)
 Portico Content Set: ISSN_15391515, (American Astronomical Society)
 ISSN: 15391515
 Portico Item ID: [ark:/27927/pgg3ztfctx1](https://nbn-resolving.org/urn:nbn:org:portico:ark:/27927/pgg3ztfctx1)
[PDF](#) | [HTML](#)

Investigating Student Ideas about Cosmology I: Distances and Structure

Kim Coble, Carmen T. Camarillo, Laura E. Trouille, Janelle M. Bailey, Geraldine L. Cochran, Melissa D. Nickerson, Lynn R. Cominsky
Astronomy Education Review v. 12, n. 1 (December 2013)
 DOI: [10.3847/AER2012038](https://doi.org/10.3847/AER2012038)
 Portico Content Set: ISSN_15391515, (American Astronomical Society)
 ISSN: 15391515
 Portico Item ID: [ark:/27927/pgg3ztfcvsb](https://nbn-resolving.org/urn:nbn:org:portico:ark:/27927/pgg3ztfcvsb)
[PDF](#) | [HTML](#)

Increasing Student Participation in Online Group Discussions Via Facebook

Scott T. Miller
Astronomy Education Review v. 12, n. 1 (December 2013)

Informal Science Educators' Pedagogical Choices and Goals for Learners: The Case of Planetarium Professionals

Plummer, Small; American Astronomical Society, 2013

Table 1. Planetarium professionals' goals for audiences

General goals	General n = 28	Children n = 30	Combined ^a n = 30
Interest/engage	19 (68%)	18 (60%)	23 (77%)
Education about content ^b	20 (71%)	17 (57%)	22 (73%)
Provide an educational experience	8 (29%)	5 (17%)	8 (27%)
Not just facts	6 (21%)	4 (13%)	8 (27%)
Entertainment	6 (21%)	0 (0%)	6 (20%)
Education about scientific reasoning	5 (18%)	6 (20%)	8 (27%)
Knowledge of the sky	4 (14%)	7 (23%)	10 (33%)
Teach State or National standards	2 (7%)	13(43%)	12 (40%)

Note: Individual participants may have been coded in more than one possible goal. A portion of this table appeared originally in [Small and Plummer \(2010\)](#).

*“In summary, many planetarium professionals draw on aspects of a **learner-centered, constructivist, educator** in their goals and beliefs about planetarium design. This primarily arises as planetarium professionals attempt to engage audiences through **active strategies going as far as to suggest that the learners need to do so to construct their own meaning**. However, participants are less likely to discuss making specific connections to prior knowledge.”*

A survey of over 11,000 undergraduate students' knowledge and attitudes related to science and technology over a 22-year period included statements that probed faith-based beliefs and various aspects of pseudoscience belief and superstition. The results reveal that **nonscientific ways of thinking are resistant to formal instruction, changing surprisingly little over the course of a college career that typically includes three science courses. The level of basic science knowledge among undergraduates is only weakly coupled to attitudes towards pseudoscience, and it coexists with attitudes and beliefs that are faith-based.**

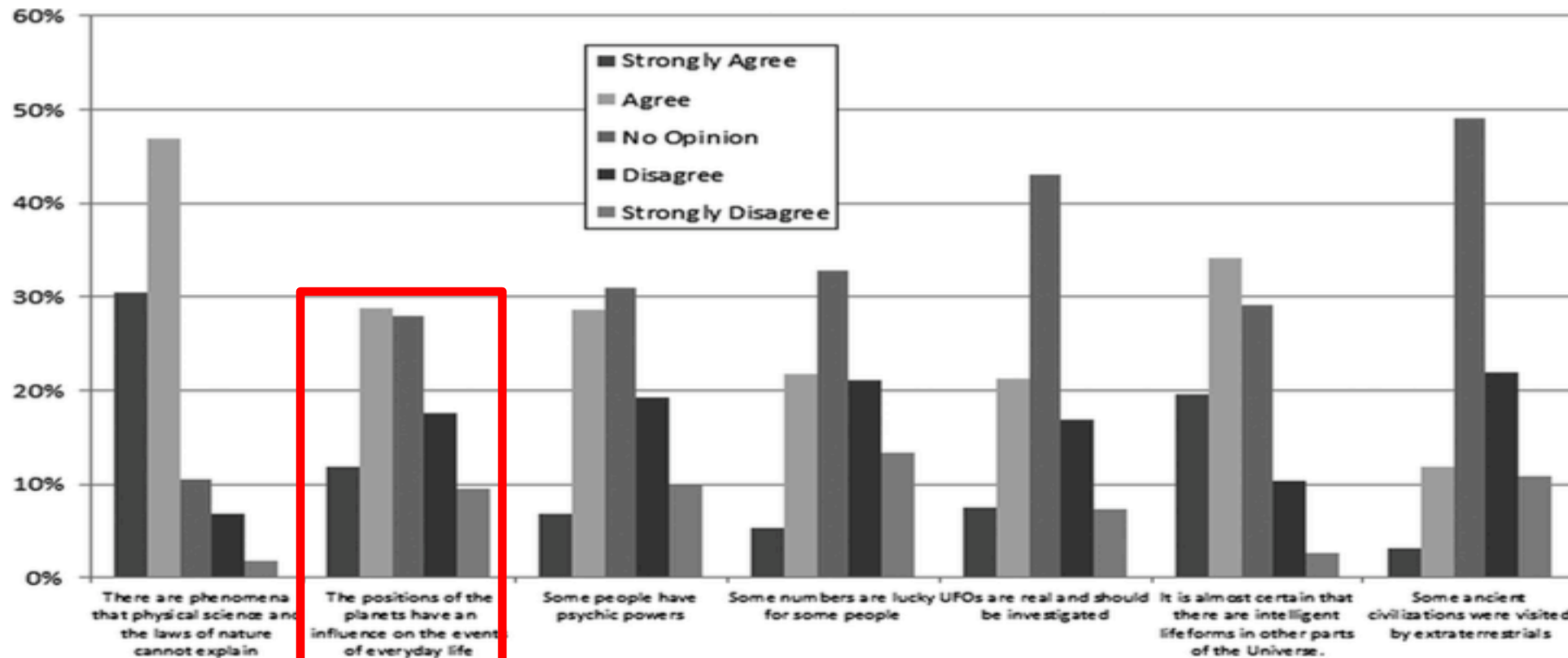


Figure 3. Distribution of student responses to pseudoscience and astrology related questions.

Non-Scientific Beliefs Among Undergraduate Students
Impey, Buxnr, Antonellis;
American Astronomical Society, 2012

What responsibilities do scientists have to shape public knowledge and opinion?

How are you able to give back the knowledge you're acquiring from UC Berkeley, a public institution?