Results from the Longitudinal Study of Astronomy Graduate Students

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Background

• All respondents were graduate students in astronomy or astrophysics during the 2006-2007 academic year.
• First survey data collected 2007-2008.
• Second survey data collected 2012-13.
Outcomes of Those Without PhDs

- PhDs: 83%
- Not PhD: 17%
- Left without grad degree: 9%
- Astro or Physics Students: 7%
- Other Students: 1%
Outcomes of Those With PhDs

- PhDs: 83%
- Not PhDs: 17%

- Never Postdoc: 23%
- Completed Postdoc: 15%
- Current Postdoc: 40%
- Postdoc no details: 5%
Comparing Those Who Did Not Take Postdocs to Those Who Completed Postdocs

• Completed postdocs:
  ▪ Median degree year is 2008.
  ▪ Most (73%) had one postdoc.

• Took no postdoc:
  ▪ Median degree year is 2010.
## Employment Sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Never Postdoc</th>
<th>Completed Postdoc</th>
</tr>
</thead>
<tbody>
<tr>
<td>University</td>
<td>47%</td>
<td>61%</td>
</tr>
<tr>
<td>Federal agency (not lab)</td>
<td>4%</td>
<td>10%</td>
</tr>
<tr>
<td>Observatory</td>
<td>3%</td>
<td>9%</td>
</tr>
<tr>
<td>National lab</td>
<td>4%</td>
<td>8%</td>
</tr>
<tr>
<td>For profit</td>
<td>19%</td>
<td>6%</td>
</tr>
<tr>
<td>Non-profit</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>UARI</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>Government contractor</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Two-year College</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
# Field of Employment

<table>
<thead>
<tr>
<th>Field of Employment</th>
<th>Never Postdoc</th>
<th>Completed Postdoc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astronomy</td>
<td>38%</td>
<td>70%</td>
</tr>
<tr>
<td>Physics</td>
<td>18%</td>
<td>11%</td>
</tr>
<tr>
<td>Medical or Health</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>Hardware</td>
<td>7%</td>
<td>4%</td>
</tr>
<tr>
<td>Engineering</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>Earth Science or Geology</td>
<td>8%</td>
<td>4%</td>
</tr>
<tr>
<td>Business and Finance</td>
<td>9%</td>
<td>2%</td>
</tr>
<tr>
<td>Education, formal and informal</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Software</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Current Postdocs

• Median degree year is 2010.
• Most (61%) are in first postdoc.
• 35% are in second postdoc.
Postdoc funding sources for current and completed postdocs

Percentages add to more than 100% because respondents could have more than one answer.
Different job experiences

• Never took a postdoc
• Completed a postdoc
• Currently a postdoc
Percentage who do research in primary position

- Never postdoc
- Completed postdoc
- Current postdoc

The chart shows the percentage of researchers in different postdoc categories, with the highest percentage among those currently working as postdocs.
What determines research agenda?

- **Current postdoc**
  - All or mostly others' needs: 10%
  - Both: 30%
  - All or mostly my own expertise and curiosity: 60%

- **Complete postdoc**
  - All or mostly others' needs: 20%
  - Both: 10%
  - All or mostly my own expertise and curiosity: 70%

- **Never postdoc**
  - All or mostly others' needs: 20%
  - Both: 40%
  - All or mostly my own expertise and curiosity: 40%
Time available for research

- **Current Postdoc**
  - Less than half
  - About half
  - More than half

- **Completed Postdoc**
  - Less than half
  - About half
  - More than half

- **Never Postdoc**
  - Less than half
  - About half
  - More than half
How intellectually challenging is current job?

![Bar chart showing the percentage of respondents who find their current job not at all challenging, challenging or somewhat challenging, and extremely challenging, categorized by postdoc status (Never Postdoc, Completed Postdoc, Current Postdoc)].

- Not at all challenging
- Challenging or somewhat challenging
- Extremely challenging
Astronomy graduate degree is appropriate background for primary position
Working Outside Astronomy

- Never Postdoc
- Completed Postdoc
- No PhD

- Astronomy or Physics
- Not Astronomy or Physics
Next Steps: Factors Contributing to Leaving Astronomy

- Examine attrition rates for women and men
- Look for effects of
  - Mentoring
  - The imposter syndrome
  - Access to career opportunities and resources
  - Funding, such as “soft money”
  - Factors such as intellectually challenging work
  - Discrimination
  - “Two-body” problem
Thanks to my colleagues
Susan White and Raymond Y. Chu

For more information

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