Postdoc Data Project / Early Career Doctorates

Kelly Phou
Council of Graduate Schools (CGS)
Research and Policy Forum
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National Science Foundation (NSF)
Division of Science Resources Statistics (SRS)
www.nsf.gov/statistics
Background

• Limited and incomplete statistical data exists on a major component of the science and engineering (S&E) research workforce

• To address this gap, SRS engaged in a multi-year project

• Project leaders: Jeri Mulrow and Kelly Phou
Gaps in SRS Postdoctoral Researcher (Postdoc)-Related Data

• No widely agreed-upon definition of “postdoc” exists
• Incomplete coverage by
  • Employment sector (academic, government, nonprofit organizations, private industry)
  • Citizenship status and country of doctorate
  • Degree type (PhD, PhD-equivalent degree (MD/PhD))
• Incomplete and missing data on:
  • Population and employment characteristics
  • Postdoc quality and the postdoc experience
  • Pipeline issues and career transitions
What We Can’t Answer

• How many postdocs are there in the U.S.?
• What are their educational and demographic characteristics?
• How many postdocs employed in the U.S. are temporary visa holders?
• Why are doctorates doing postdocs?
• What are they doing?
• What are the characteristics of their employment?
From a Survey of Postdocs to a Survey of Early Career Doctorates (ECD)

Postdoc Data Project

Phase 1: Needs assessment
Phase 2: Feasibility assessment

Early Career Doctorates Project

Phase 3: Implementation
From a Survey of Postdocs to the ECD (cont’d)

• Target population is all persons receiving their doctorates within the last 10 years including postdocs in S&E fields or S&E occupations

• Have one survey of recent doctorate recipients that allows comparisons of postdocs (by various definitions) and non-postdocs

• Contact early career researchers including postdocs who are:
  • U.S. & Non-U.S. degree, or
  • U.S. & Non-U.S. citizens, or
  • Doctorate, doctorate-equivalent degree (MD/PhD)
Data Content Wish List

Employment Statistics

• Counts by sector, discipline, degree type, degree source, benefits
• To monitor trends in the number, type, and status of early career researchers

Quality and Experience Indicators

• Amount/type of training, opportunities for independent research and author publications
• To understand how experiences and research funding impacts the quality of the S&E workforce
Data Content Wish List (cont’d)

Career Transitions

• Longitudinal information regarding career aspirations, career progression, and career outcomes

• To understand the linkage between early career experiences, particularly postdoctoral experiences, and longer-term career achievements
Pretest Questionnaire

• Topics - see handout

• Goals
  • Willingness to complete
  • Ability to complete
  • Test question content
Pretest Population

Population of Interest

- Doctorate researchers within 10 years of having received their highest degree

Pretest Population

- 2006 NSF and NIH grantee databases
  - NSF list of all 2006 grantees
  - NIH list of 2006 grantees from three grants: T32, F32, and K99

Population characteristics

- Early career researchers, including postdocs
- Foreign-degreed
- Non-U.S. citizens
- Doctorate, doctorate-equivalent degreeed
Respondent Characteristics Pretest

Source: SRS Methodological Pretest
Note: Detail may not add to total due to rounding.
Respondent Characteristics Pretest (cont’d)

Marital Status

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<th>Status</th>
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<tbody>
<tr>
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<tr>
<td>Living in a marriage-like relationship</td>
<td>5.3</td>
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<tr>
<td>Separated</td>
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<tr>
<td>Divorced</td>
<td>9.3</td>
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<tr>
<td>Never married</td>
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Have Children

<table>
<thead>
<tr>
<th>Have Children</th>
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</thead>
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</tr>
<tr>
<td>No</td>
<td>58.8</td>
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</table>

Source: SRS Methodological Pretest
Note: Detail may not add to total due to rounding.
Respondent Characteristics
Pretest (cont’d)

Source: SRS Methodological Pretest
Note: Detail may not add to total due to rounding.
Pretest Observations

- Very few doctorate researchers and social scientists in the grant databases frame
- Feasible that questionnaire is not salient to some groups of interest not in the grant databases frame
- Too much time between database update and date of pretest
# Break-offs

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<thead>
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<th>Description</th>
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<th>% of Total Break-offs</th>
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<td>1.3</td>
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<td>A</td>
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<tr>
<td>B</td>
<td>First Position</td>
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<tr>
<td>C</td>
<td>Current Employment Status</td>
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<td></td>
</tr>
<tr>
<td>E</td>
<td>Postdoc Definition</td>
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<td>6.7</td>
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<tr>
<td>D</td>
<td>Professional Activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Current Employer Demographics</td>
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<td>18.7</td>
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<tr>
<td>G</td>
<td>Compensation</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>H</td>
<td>Decision to Take Current Position</td>
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<td>8.0</td>
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<tr>
<td>K</td>
<td>Evaluation of Current Position</td>
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<td>1.3</td>
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<tr>
<td>L</td>
<td>Work-Life Balance</td>
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<td>M</td>
<td>Mentoring</td>
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<td>Future Career Plans</td>
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<td>0.0</td>
</tr>
<tr>
<td>Q</td>
<td>Demographics</td>
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<td>6.7</td>
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<tr>
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## Time to Complete

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<th>Section Description</th>
<th>Median Completion Time in Minutes</th>
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<td>A</td>
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<tr>
<td>B</td>
<td>First Position</td>
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<td>C</td>
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<td>E</td>
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<td>D</td>
<td>Professional Activities</td>
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<td>F</td>
<td>Current Employer Demographics</td>
<td>4.3</td>
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<tr>
<td>G</td>
<td>Compensation</td>
<td>0.6</td>
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<td>H</td>
<td>Decision to Take Current Position</td>
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<tr>
<td>K</td>
<td>Evaluation of Current Position</td>
<td>0.5</td>
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<tr>
<td>L</td>
<td>Work-Life Balance</td>
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<tr>
<td>M</td>
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<tr>
<td>N</td>
<td>Funding</td>
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<tr>
<td>P</td>
<td>Future Career Plans</td>
<td>1.0</td>
</tr>
<tr>
<td>Q</td>
<td>Demographics</td>
<td>2.2</td>
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<tr>
<td>R</td>
<td>Recontact</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td><strong>Entire survey</strong></td>
<td><strong>25.3</strong></td>
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</tbody>
</table>
What We Learned

- Questionnaire was not too long
- Most questions seem to be working
  - Item nonresponse was not an issue (only a few questions skipped)
  - Patent questions had low response
  - Education Background section led to the most break-offs
- Good response to write-in questions
Next Steps: Immediate

**Academic and Government Sectors**

- Tailor the pretest questionnaire to meet the needs of individual ECDs working in the academic and government sectors
  - Conduct cognitive interviews, expert reviews and internal evaluations
  - Develop a pilot questionnaire

- Develop a strategy to reach individual ECDs through the *Survey of Graduate Students and Postdoctorates in Science and Engineering*
Next Steps: Immediate (cont’d)

Academic and Government Sectors

• Conduct a pilot of individual ECDs working in the academic and government sectors, including those ECDs working in:
  • Federally-Funded Research and Development Centers (FFRDCs)
  • Target group of six government agencies
Next Steps

All Sectors

• Finalize a questionnaire that meets the needs of all data users

• Create a sampling frame that covers all groups of interest

• Conduct a pretest of the survey
What should we know?

• Total number of postdocs in the U.S.
  – Missing Non-U.S. Degreed Postdocs outside of academia
  – Missing Non-U.S. Citizens
  – Missing doctorate-equivalent professional degrees

• The reasons for doing a postdoc?

• What are they doing? Research, training, other?

• Who are they by age, sex, national origin, field, etc?
What else should we know?

• What is the quality and experience of the work?
  – Amount of training and guidance
  – Opportunities to conduct independent research and author publications

• Are there any pipeline issues?

• What are the career transitions?
  – Longitudinal information on career aspirations, career progression, and career outcomes
Questions?

We ARE listening!

For more information contact:

Kelly Phou  
Survey Manager  
703-292-4722  
kphou@nsf.gov

Jeri Mulrow  
Senior Mathematical Statistician  
703-272-4784  
jmulrow@nsf.gov

Emilda Rivers  
Program Director, HRS Program  
703-292-7773  
erivers@nsf.gov