Postdoc Data Project / Early Career Doctorates

Kelly Phou
Council of Graduate Schools (CGS)
Research and Policy Forum
September 22, 2010

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
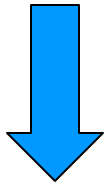 - Pipeline issues and career transitions

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. degreed, 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
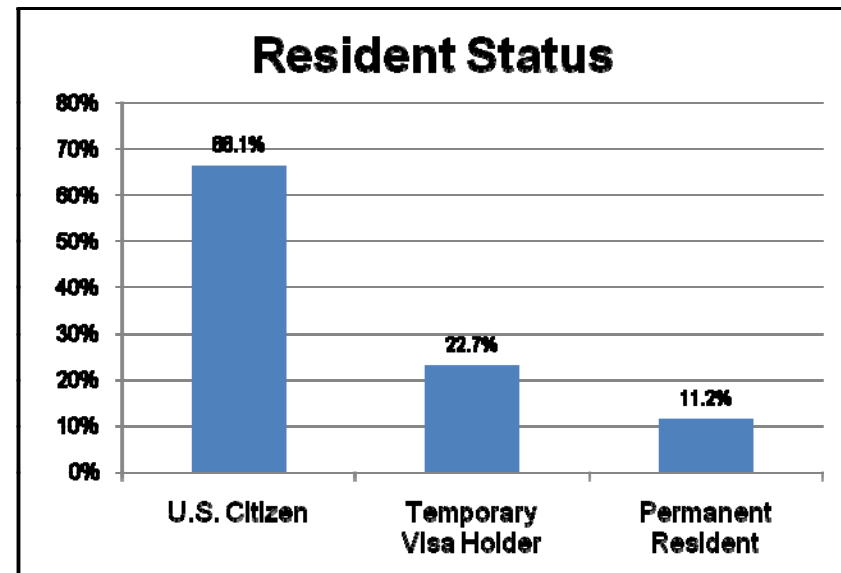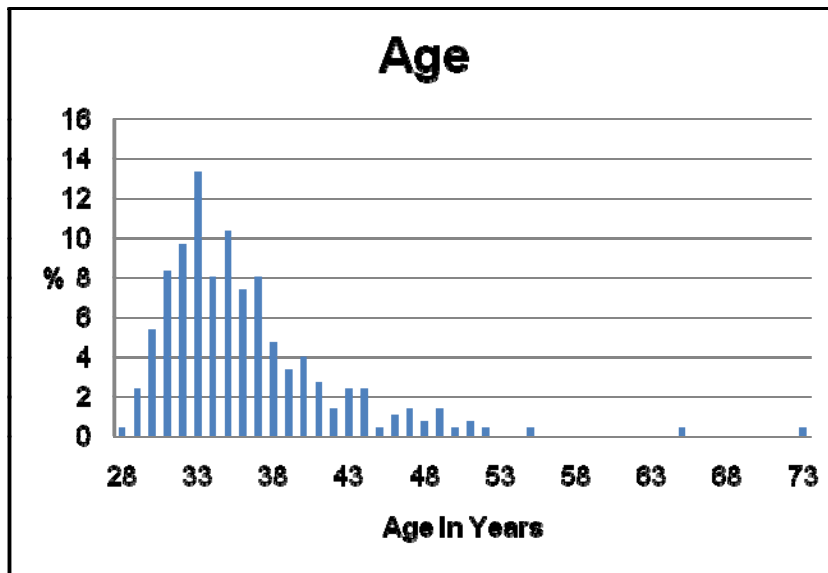
Pretest Population

- 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
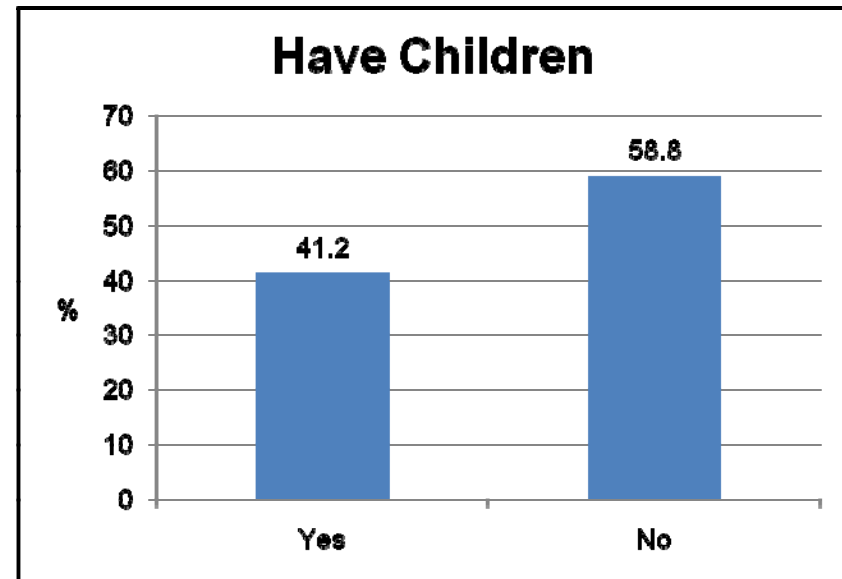- Doctorate, doctorate-equivalent degreed

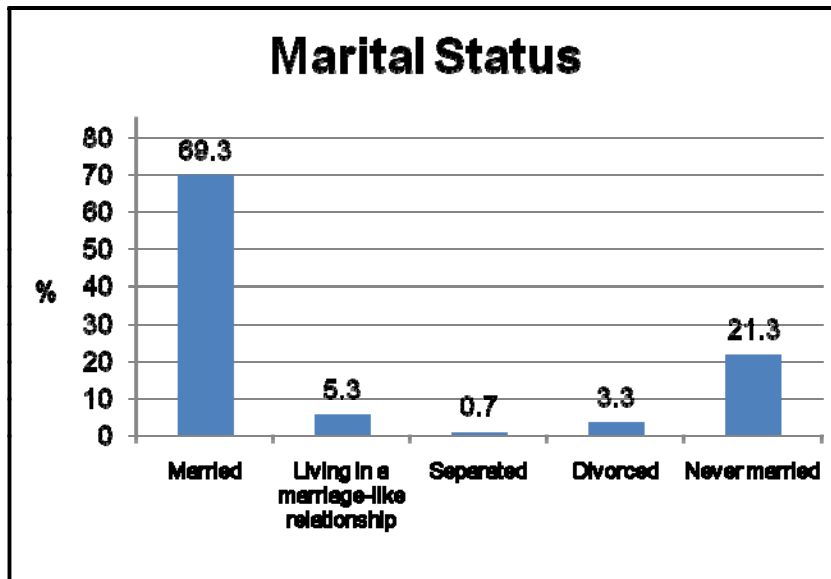# Respondent Characteristics Pretest

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.

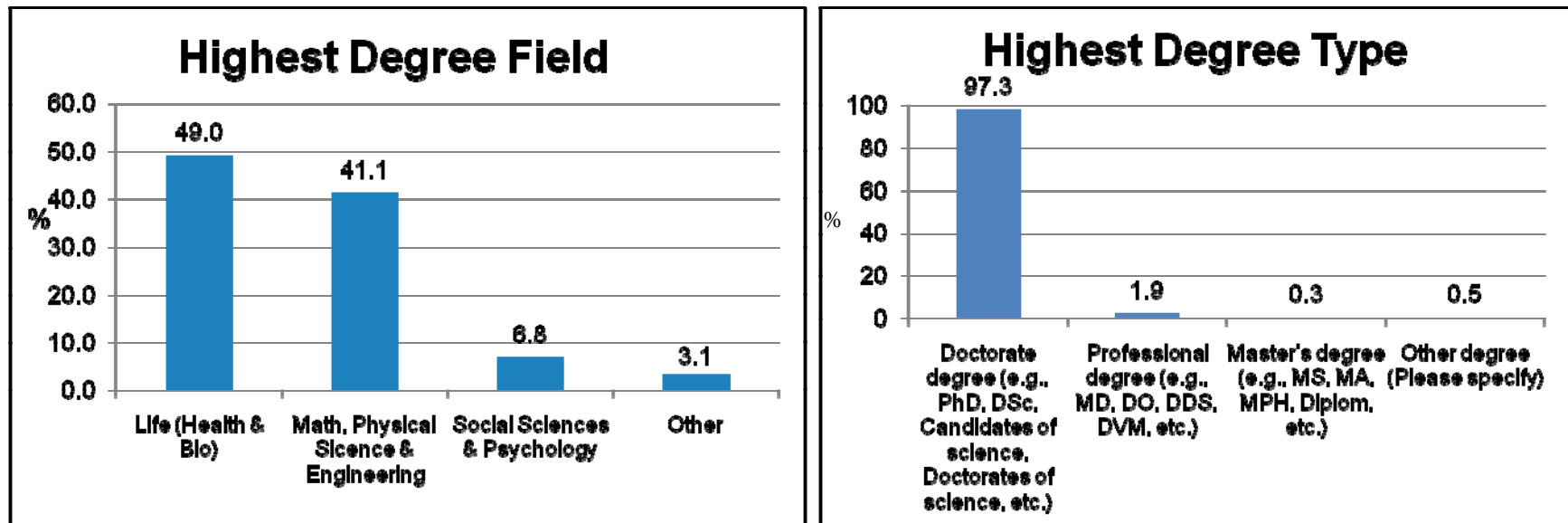# Respondent Characteristics Pretest (cont'd)

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

Section	Section Description	N	% of Total Break-offs
Intro	Introductory Screen	1	1.3
A	Educational Background	23	30.7
B	First Position	11	14.7
C	Current Employment Status		
E	Postdoc Definition	5	6.7
D	Professional Activities		
F	Current Employer Demographics	14	18.7
G	Compensation	1	1.3
H	Decision to Take Current Position	6	8.0
K	Evaluation of Current Position	1	1.3
L	Work-Life Balance	3	4.0
M	Mentoring	2	2.7
N	Funding	0	0.0
P	Future Career Plans	0	0.0
Q	Demographics	5	6.7
R	Recontact	3	4.0
Total		**75**	**100.0**

Time to Complete

Section	Section Description	Median Completion Time in Minutes
A	Educational Background	3.6
B	First Position	2.9
C	Current Employment Status	
E	Postdoc Definition	3.6
D	Professional Activities	
F	Current Employer Demographics	4.3
G	Compensation	0.6
H	Decision to Take Current Position	3.5
K	Evaluation of Current Position	0.5
L	Work-Life Balance	1.2
M	Mentoring	1.5
N	Funding	0.5
P	Future Career Plans	1.0
Q	Demographics	2.2
R	Recontact	1.7
	Entire survey	**25.3**

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	Jeri Mulrow	Emilda Rivers
Survey Manager	Senior Mathematical Statistician	Program Director, HRS Program
703-292-4722	703-272-4784	703-292-7773
kphou@nsf.gov	jmulrow@nsf.gov	erivers@nsf.gov