An Overview of the NCSES Science and Engineering (S&E) Education Surveys

John M. Finamore
Program Director, Human Resources Statistics Program

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National Center for Science and Engineering Statistics
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National Center for Science and Engineering Statistics
- An organization within the National Science Foundation’s Directorate for Social Behavioral and Economic Sciences
- One of the nation’s thirteen principal statistical agencies
- NCSES’s primary role originated in the NSF Act of 1950:
  To provide a central clearinghouse for the collection, interpretation, and analysis of data on scientific and engineering resources and to provide a source of information for policy formulation by other agencies of the Federal Government

Human Resources Statistics Program (HRS)

- Postsecondary Enrollment Data
- Workforce Data
- Postsecondary Degree Data
Scope of Human Resources Data

At each stage, we are trying to understand:
- How many people are in this stage?
- What are their demographic characteristics?
- What are the short-term and long-term trends at that stage?
- How does performance at one stage relate to subsequent stages?

Availability of Human Resources Data

HRS Surveys

Education of Scientists and Engineers
- Survey of Graduate Students and Postdoctorates in Science and Engineering (GSS)
- Survey of Earned Doctorates (SED)

Science and Engineering Workforce
- Survey of Doctorate Recipients (SDR)
- National Survey of College Graduates (NSCG)
- Early Career Doctorates Survey (ECDS) (pilot)
HRS Surveys

Education of Scientists and Engineers
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Survey of Graduate Students and Postdoctorates in Science and Engineering (GSS)

Total Number of Graduate Students Enrolled in Science: 2015

GSS Overview
- Annual census since 1972 of all academic institutions in the U.S. that grant research-based master's degrees or doctorates in science, engineering and selected health (SEH) fields
- Response unit: Organizational units (academic departments, degree-granting programs, university-affiliated research centers, and health care facilities)
- Population size: 14,845 units at 706 U.S. academic institutions
- Sponsored by NSF and NIH
- Collects aggregate data about graduate students, postdoctoral appointees (postdocs), and other doctorate-holding non-faculty researchers (NFRs)
- Allows assessment of shifts in graduate enrollment, postdoc appointments, and trends in financial support
GSS Data Items

Graduate students
- Degree field: science, engineering, health
- Enrollment status: full- or part-time, first-time
- Demographics: sex, race/ethnicity, citizenship
- Major source of financial support: Federal, Non-Federal, self
- Major mechanism of financial support: fellowship, traineeship, research assistantship, teaching assistantship, other

Postdocs
- Type of doctorate: PhD, professional, dual
- Origin of doctorate: U.S., Foreign
- Demographic and financial support listed above

GSS Strengths and Challenges

Strengths
- Graduate student and postdoc counts detailed SEH fields by citizenship, ethnicity, race, and sex
- Primary source and mechanism of financial support for graduate students and postdocs by field
- Institution-level data for peer institution comparisons
- Since data are available only at the aggregate level, it limits confidentiality concerns
- High participation rate among academic institutions

Challenges
- Does not provide separate counts for master’s or doctorate students
- Data are available only at the aggregate level
SED Overview

• Annual census since 1958 of all new recipients of research doctorates in a given academic year
• Response unit: Research doctorate recipients in any field (not limited to S&E) from U.S. research doctorate-granting institutions
• Population size: In 2015, approximately 55,000 individuals from 432 U.S. academic institutions
• Collects degree history, educational debt, and post-graduation plans
• Allows assessment of characteristics for the doctoral population and of trends in doctoral education
• Sample frame for the Survey of Doctorate Recipients (SDR)

SED Data Items

• Degree history (type, year, field, institution)
• Financial support during graduate school
• Education-related debt incurred
• Time to degree
• Employment plans for coming year
  – Postgraduation status (e.g., definite commitment, searching for position)
  – Type of position (postdoc vs. employment)
  – Employment sector
  – Postgraduation location
  – Primary/secondary work activity
  – Salary
• Demographics
  – Sex
  – Race/ethnicity
  – Marital status
  – Citizenship
  – Disability status
  – Number of dependents

SED Strengths and Challenges

Strengths
• Reliable enumeration of U.S.-earned research doctorates by demographic and degree characteristics
• Reliable estimation of postgraduation plans for employment
• Data of all U.S.-earned research doctorates extending back to 1950s
• High participation rate among academic institutions

Challenges
• Increasingly difficult to maintain high response rate – both from institutions and individuals
• Desire for publicly accessible dataset and online analysis tools
Contact Information

John Finamore
Program Director, Human Resources Statistics Program
National Center for Science and Engineering Statistics
National Science Foundation

(703) 292-2258
jfinamor@nsf.gov