NCSES Overview and Project Highlights

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SBE Advisory Committee
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National Science Foundation
National Center for Science and Engineering Statistics
www.nsf.gov/statistics/

The National Center for Science and Engineering Statistics

The National Center for Science and Engineering Statistics (NCSES) was established within the National Science Foundation by Section 505 of the America COMPETES Reauthorization Act of 2010.

NCSES is responsible for statistical data on:

- Research and development
- The science and engineering workforce
- U.S. competitiveness in science, engineering, technology, and R&D
- The condition and progress of STEM education in the United States

A Part of the Federal Statistical System

- NCSES is one of 13 Principal Statistical Agencies
- OMB's Office of Information and Regulatory Affairs coordinates the nation's decentralized federal statistical system
- Statistical and Science Policy Office US Chief Statistician promotes integration by chairing the Interagency Council on Statistical Policy (ICSP)

Staff and Contract Resources

NCSES has about 47 permanent staff:

- Survey managers
- Statisticians
- Analysts
- Publishing
- Web site and database development
- Administrative

Surveys are conducted under contract or interagency agreement, none are done in-house

Technical support for Web site and database development is provided by contract staff, some of whom work onsite

Education and Workforce Surveys

- Survey of Earned Doctorates (SED)
- Survey of Doctorate Recipients (SDR)
- National Survey of College Graduates (NSCG)
- Survey of Graduate Students and Postdoctorates in Science and Engineering (GSS)
- Survey of Postdocs at Federally Funded Research and Development Centers
- Early Career Doctorates Survey (ECD)

Research and Development Surveys

- Business R&D and Innovation Survey
- Higher Education Research and Development Survey
- FFRDC Research and Development Survey
- Survey of Federal Funds for Research and Development
- Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions
- Survey of Science and Engineering Research Facilities
- Survey of State Government Research and Development
- Microbusiness Innovation Science and Technology Survey
- Survey of Nonprofit Research and Development Performance and Funding

Additional Ongoing Programmatic Activities

- Research on the Science and Technology Enterprise: Statistics and Surveys
- Member of OIRA's Interagency Council on Statistical Policy
- Participate in the following ICSP-sponsored activities:
  - Federal Committee on Statistical Methods (FCSM)
  - Statistical Community of Practice and Engagement (SCOPE)
  - Joint Program in Statistical Methodology (JPSM)
  - Standard Occupational Classification revision
- OECD, National Experts on Science and Technology WG

Publications and Products

- InfoBriefs – Highlight results from recent surveys and analyses
- Detailed Statistical Tables – Data tabulations and technical material for each survey
- *Science and Engineering Indicators* (for the National Science Board)
- *Women, Minorities, and Persons with Disabilities in Science and Engineering*
- *National Patterns of R&D Resources*

Publications and Products (cont.)

Data-driven, online applications

- eTables
- Academic Institutional Profiles
- State Science and Engineering Profiles
- State Data Tool (*S&E Indicators*)

Online Databases, Table Generation, and Data Access Systems

- SESTAT
- WebCASPAR
- SED Tabulation Engine
- Secure Data Access Facility (Enclave)

Data files

- Public Use Files
- Restricted Use Data Files (licensed datasets)
- Census RDC network (BRDIS)

Selected Project Highlights

- Restructuring the collection of data on the S&E workforce as the NCSG transitions to a comprehensive sampling frame completely built from the American Community Survey (ACS)
- Collaborating with OECD to improve standardization, quality, and international comparability of data on education, workforce, and mobility, particularly data on doctorate holders
- Refining workforce questionnaires to enhance data on education and career pathways by adding questions on community college attendance and financial support, and considering questions on certifications, licenses and educational certificates
- Expanded coverage of the SDR by adding an international component that collects data for US doctorate-degree recipients residing abroad

Selected Project Highlights

- Establishing a new survey to fill the current gap in data for PhD and PhD-equivalent recipients, the Early Career Doctorates Survey. The pilot is currently in the field and the full data collection will start next year
- Enhanced GSS postdoc data by collecting additional information about demographics, financial support, citizenship, and origin and type of doctoral degree
- Discontinued the National Survey of Recent College Graduates and expanded the sample of young college graduates in the NSCG
- Developing longitudinal data sets to facilitate analysis of careers of the SEH workforce

Selected Project Highlights

- Developing and testing a survey of Microbusiness R&D and Innovation (MIST) --- intended to collect data on small start-ups (businesses fewer than 5 employees)
- Developing a new survey of Nonprofit R&D Performance and Funding
- Conducting an Administrative Records Project to assess the feasibility of utilizing administrative accounting records to supplement or replace R&D surveys of Federal agencies
- Cooperating with OMB to facilitate Government-wide standardization for reporting Federal R&D to OMB and NCSES data collections

Selected Project Highlights

- Partnered with the Bureau of Economic Analyses (BEA) to develop methodologies that treat R&D expenditures as investment within the National Income and Product Accounts framework
- Working with BEA and the Census Bureau, to match micro-data from BRDIS with micro-data from BEA's direct investment surveys to gain a better understanding of R&D globalization
- Providing extensive leadership and input to the ongoing multi-country review and revision of the OECD's *Frascati Manual: Proposed Standard Practice for Surveys on Research and Experimental Development*

Selected Project Highlights

- Developing a new publishing approach for *Science and Engineering Indicators* to make it a digitally born document
- Investigating a new Content Management System and Web Publishing platform to support NCSES publications, Web site, and *Science and Engineering Indicators*
- Developing standard NCSES taxonomies and formalizing taxonomy linkage across NCSES surveys
- Developing and testing a Secure Data Access Facility to provide direct researcher access to restricted use data
- Developing new capability to better support data matching activities

Selected Project Highlights

- Developing streamlined data dissemination and archiving processes
- Investigating new data dissemination methods, including interactive graphics and data exploration tools
- Introduced new, dynamically-generated tables to replace traditional table preparation and report publishing processes
- Staffing up to support NSF's new Evaluation and Assessment Capability

Key Project Highlights for Today's Discussion

- SDR Sample Expansion to support estimates of employment outcomes by detailed subfield, race, and gender
- Developing a response to the CNSTAT report, *Capturing Change in Science, Technology, and Innovation*
- American Community Survey Content Review Results and NCSES' National Survey of College Graduates: The Field of Degree question

The Issue

- The Census Bureau is conducting a top-to-bottom review of the American Community Survey
- With Phase I of its review now complete, the Census Bureau will recommend the Field of Degree question as a "candidate for removal"
- This recommendation jeopardizes NCSES' ability to conduct the National Survey of College Graduates, which depends on the Field of Degree question for its sampling frame
- We need your assistance to overturn this recommendation

National Survey of College Graduates

- Biennial longitudinal survey of individuals who hold at least a bachelor's degree, and are educated and/or employed in science, engineering and health fields
- Fulfills NSF's mandate to provide statistical data on the nation's science and engineering workforce
- Provides data on the "stock" of scientists and engineers, including immigrants
- Historically, sample selected from the once-a-decade decennial census long form
- Currently, the NSCG sample is selected from the American Community Survey

Simply Put...

- The Field of Degree question is the cornerstone of NCSES's program that produces the nation's only source of comprehensive information about the size and characteristics of the US science and engineering workforce

- Removal of the Field of Degree question will undermine years of effort invested to shape and improve this critically important data collection program

The Path Leading to the ACS as a Sample Frame

- NCSES used the decennial census long form for several decades, one of few surveys using the long form directly as a frame.

- Because the long form had no information about degree fields, NCSES conducted a costly, large screening survey (the postcensal survey) of the college-educated to identify the relatively small proportion of those with S&E/S&E-related degrees or occupations.

- ACS needed as sample frame because population of interest is rare—small domain estimates rather than small (geographic) area estimates

Field of Degree Information is Critically Important to the NSCG Sample Design

- Allows for the efficient identification of the rare population of individuals educated as or employed as scientists and engineers
- Allows timely access to hard to find scientists and engineers:
  - Recent graduates
  - Non-US citizens
- Eliminates the need for a large, expensive and expansive screening sample
- Reduces operational and respondent burden

Impact of Eliminating the Field of Degree Question

- Cost and Burden
  - Implications to taxpayers
  - Burden implication to public (i.e., increased sample size)
  - Operational and timeliness implication
  - Reliability implication

- Impact on the ability to provide reliable data on
  - Recent graduate population (may undo NSRCG discontinuation decision)
  - Labor market outcomes for foreign-earned degree recipients
  - Career pathways using educational and occupational history
  - Gender wage differences
  - Disability characteristics

Potential Alternative Sources?

There really AREN'T any

Some considerations:

- New survey with limited coverage
- Administrative records with limited coverage
- Use of a current demographic survey with operational limitations

Next Steps: We Need Your Assistance

- Respond to the Federal Register Notice (FRN) that announces the ACS content review findings
  - Scheduled for release later this month or early next
  - 60 day comment period

- Provide to NCSES specifics on your uses of the ACS Field of Degree question and of the NSCG
  - Why the data are important to you and the issues and questions they help to address

- Spread the Word and Reach Out to your Communities

Discussion—Questions to Get Started

- How best can the SBE Advisory Committee engage?
- Talking to the benefits: what significant policy questions are addressed by the NSCG and FOD data?
- Thoughts on strategies for effective outreach and response?
- Future sustainability—pursue legislation to mandate the FOD question on the ACS?

Refrain: We Need Your Assistance

- Respond to the Federal Register Notice. Focus on the Benefits of the Question. Additional weight given to examples of job creation, economic growth, and US competitiveness.
- Provide NCSES examples of specific uses of the NSCG and of the Field of Degree question; address why the data are important and what issues and questions they help to address.
- Spread the Word--Reach Out to your Communities
- ACS Content Review Web Site: http://www.census.gov/acs/www/about_the_survey/acs_content_review/

Thank You