



National Science Foundation

Division of Science Resources Statistics

Introducing the New Higher Education R&D Survey

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Council of Graduate Schools
Education Research & Policy Forum
September 22, 2010

National Science Foundation
Division of Science Resources Statistics
www.nsf.gov/statistics



Presentation Outline

- Academic R&D Survey overview
- Survey redesign
- FY 2009 pilot test
- FY 2010 Higher Education R&D Survey
- Q & A



Academic R&D Survey

Overview

- Has been a census of all universities and colleges with minimum of \$150,000 of R&D spending (N = 725 in FY 2009)
- Conducted annually since Fiscal Year (FY) 1972
- Web-based
- Voluntary (response rates regularly over 95%)
- Requests expenditures for all separately budgeted R&D performed at institutions during previous FY
- Detailed statistical tables published at the institution level



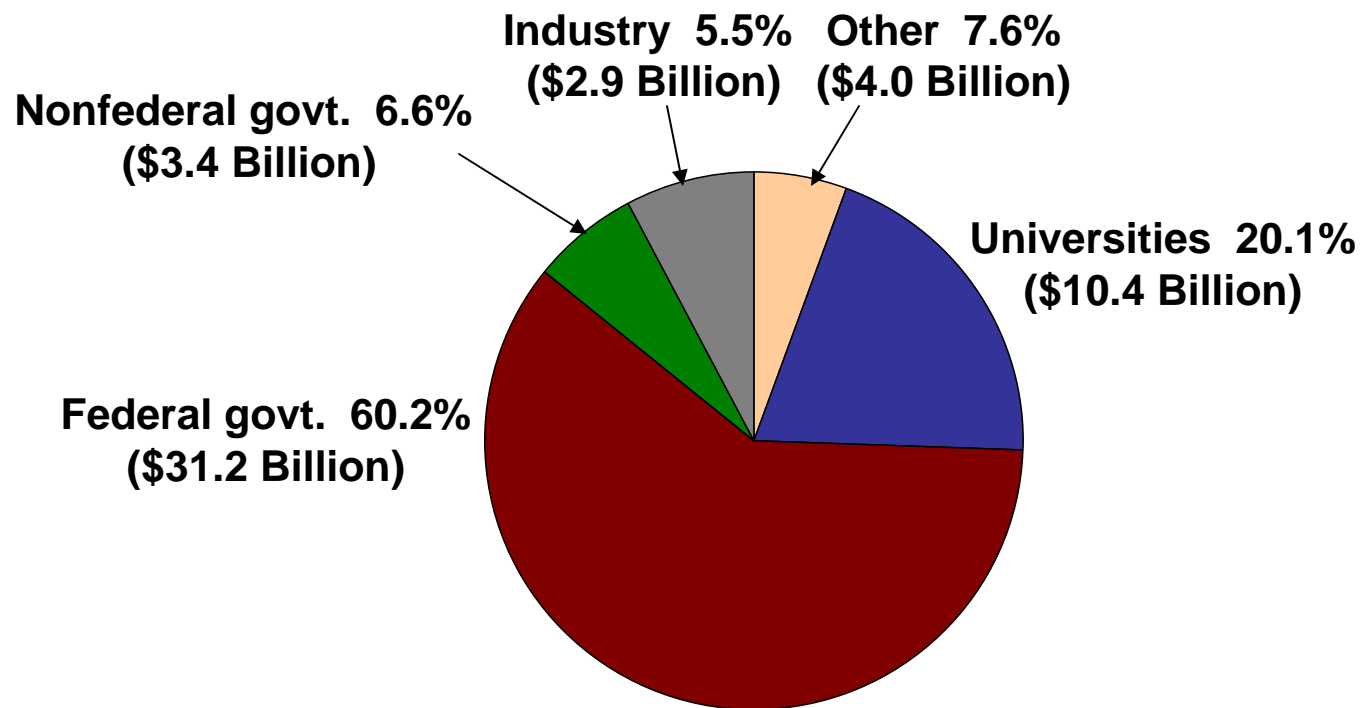
Academic R&D Survey

Types of Data Collected

- R&D expenditures at institution level by
 - ✓ Source of funds (federal—including individual agencies, state/local government, industry, institution, other)
 - ✓ Character of work (what percent is basic research?)
 - ✓ Field of science & engineering (S&E)
 - ✓ Federal agency sponsor and S&E field
 - ✓ Amount expended on research equipment, by S&E field
 - ✓ Amount passed through to subrecipients or received as a subrecipient
 - ✓ Non-S&E field (data kept separate from S&E R&D totals)



Academic R&D Expenditures, by Source of Funds: FY 2008 (\$51.9 Billion)



Note: Detail may not add to total due to rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics,
Survey of Research and Development Expenditures at Universities and Colleges, FY 2008.



Survey Redesign Background

- National Academies' Committee on National Statistics (CNSTAT) recommended revisions to the Academic R&D survey in their 2005 report "Measuring Research and Development Expenditures in the US Economy"
- Survey redesign project launched in March 2007
- First broad investigation into new and revised content since survey began
- Existing survey has continued "as is" during redesign



Survey Redesign

2007 Exploratory Activities

- Literature review to determine uses of existing data
- Workshop with over 30 data users to discuss top data needs
- Synthesis of previous cognitive research to determine current content issues
- Methodological review of survey population issues
- Expert panel meeting to determine top priorities for redesign



Survey Redesign

2008 Exploratory Activities

- 16 institution visits to discuss recordkeeping and possible new content areas
- Special survey of respondents to solicit input for updating fields of R&D
- Questionnaire redesign
- Second expert panel meeting to obtain input on new survey items



Survey Redesign

Top Data Needs (1)

- Include non-S&E R&D in the totals for institution rankings
- Capture field detail for each source of funding
- Collect separate data on R&D within medical schools
- Collect campus-level data
- Collect R&D expenditures by detailed cost categories (salaries, equipment, supplies, etc.)



Survey Redesign

Top Data Needs (2)

- Collect patents and licenses by S&E field
- Update list of fields to capture emerging disciplines
- Collect data on collaboration with industry
- Collect data on multi/interdisciplinary R&D
- Collect counts of R&D personnel



Survey Redesign

2009 Testing Activities

- Cognitive testing of new questionnaire with 16 institutions
- Web survey development and usability testing with 15 institutions
- Notice of upcoming changes to all current survey respondents in summer 2009
- FY 2009 pilot test with 40 randomly selected institutions



FY 2009 Pilot Test (1)

- 40 institutions completed pilot instead of FY 2009 Academic R&D survey
- Stratified to provide mix of large, small, public, private, medical schools, etc.
- Collection period: November 2009 – April 2010, 2 hour phone debriefings conducted as surveys were completed
- 100% unit response rate
- Average hours to complete (excluding 2 outliers): 60



FY 2009 Pilot Test (2)

- Tested question expansions:
 - Total R&D by sources of funding: nonprofit organizations and institutional cost sharing added as separate categories
 - Basic research: question now asks for expenditures associated with basic research, applied research, and development
 - Expenditures by field and source: information on expenditures is collected by S&E and non-S&E field of R&D for EACH source of funds



FY 2009 Pilot Test (3)

- Tested new questions on different components of R&D total:
 - Total R&D funded by foreign sources
 - Total R&D by cost elements (salaries, software, equipment, etc.)
 - Medical school R&D expenditures
 - Clinical trial R&D expenditures (human and veterinary)
 - Total R&D funded through contracts vs. grants
 - Total R&D within interdisciplinary research centers



FY 2009 Pilot Test (4)

- Tested questions on counts of personnel and postdocs paid out of R&D accounts
- Tested new questions on proposals and awards
- **No** questions added on commercialization, outcomes, or technology transfer due to problems during cognitive testing phase



FY 2009 Pilot Test Results

- Question expansions worked well
- Needed to provide additional definitions and/or clarifications for several new questions
- Questions on proposals and awards did not work well due to different definitions used across institutions (e.g. differences in how renewals and multi-year awards are tracked)
- Most institutions unable to track interdisciplinary R&D and did not have confidence in their estimates



FY 2010 Higher Education R&D Survey

Changes to Questions

- All fields of R&D (both S&E and non-S&E) are included in all survey items
- Clinical trials and research training grants are now included in the definition of R&D
- Sources of funding: Separate categories have been created for nonprofit organizations and for institutional cost sharing
- Basic research: question now asks for expenditures associated with basic research, applied research, and development
- Expenditures by field and source: information on expenditures is collected by field of R&D for EACH individual source of funds



FY 2010 Higher Education R&D Survey

New Questions (1)

- Total R&D expenditures with funds from foreign sources
- Total R&D expenditures within a medical school
- Total federal and nonfederal **human** clinical trial R&D expenditures (veterinary not included)
- R&D expenditures by type of funding agreement: contracts vs. grants
- Agency names and R&D expenditures totals for top ten federal agency sources within “Other agencies” category



FY 2010 Higher Education R&D Survey

New Questions (2)

- Total R&D expenditures from ARRA awards
- Specific cost elements of R&D expenditures (salaries, software, equipment, etc)
- Headcounts of personnel and postdocs paid from R&D accounts
- **No** questions on interdisciplinary R&D
- **No** questions on proposals and awards



FY 2010 Higher Education R&D Survey

Methodology Changes

- Separate reporting for all institution campuses headed by a president or chancellor
- Dollar threshold for inclusion in survey now includes both S&E and non-S&E R&D expenditures
- Population screener survey will be sent to over 2,000 4-year and above institutions later this year to identify previously unknown R&D performers now eligible to participate in HERD survey



FY 2010 Higher Education R&D Survey

Next Steps

- Advance copy of survey sent to all institutions – soon!
- HERD survey begins for all institutions in late 2010 (reporting academic FY 2010 data)
- FY 2010 HERD data expected to be released in late 2011
- Work continues on revising taxonomy of S&E and non-S&E fields and effectively measuring interdisciplinary R&D (SRS-wide projects)
- Work continues on developing appropriate commercialization and outcome questions (possibly to be fielded as a separate survey)



Questions?

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