

# **SRS PUBLICATIONS LIST:**

**July 1995 through  
July 1998**

Division of Science Resources Studies  
Directorate for Social, Behavioral, and Economic Sciences



**NATIONAL SCIENCE FOUNDATION**

NSF 98-321

**SRS**  
**PUBLICATIONS**  
**LIST:**  
**July 1995 through**  
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**Julia Harriston and Tanya Gore, Project Officers**

Division of Science Resources Studies  
Directorate for Social, Behavioral, and Economic Sciences

**NATIONAL SCIENCE FOUNDATION**



**NSF 98-321**

**National Science Foundation**

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**DIVISION OF SCIENCE RESOURCES STUDIES**

The Division of Science Resources Studies ( SRS ) fulfills the legislative mandate of the National Science Foundation Act 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...*

To carry out this mandate, SRS designs, supports, and directs periodic surveys as well as a variety of other data collections and research projects. These surveys yield the materials for SRS staff to compile, analyze, and disseminate quantitative information about domestic and international resources devoted to science, engineering, and technology.

If you have any comments or suggestions about this or any other SRS product or report, we would like to hear from you. Please direct your comments to:

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August 1998

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SRS data are available through the World Wide Web (<http://www.nsf.gov/sbe/srs/stats.htm>). For more information about obtaining reports, contact [pubs@nsf.gov](mailto:pubs@nsf.gov) or call (301) 947-2722. For NSF's Telephonic Device for the Deaf, dial (703) 306-0090.

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## PREFACE

This publication lists reports issued by the National Science Foundation's (NSF's) Division of Science Resources Studies (SRS) from July 1995 through July 1998. For a prior listing of SRS publications, see *SRS Publications List: June 1995* (NSF 95-328), *Publications List: FY 1989-93* (NSF 93-321), and *Publications List: 1978-88* (NSF 88-335).

Each of the above-mentioned reports is organized by SRS' current four programs. Within each program, the reports are listed by type starting with the current report.

Anne M. Houghton, Publications Manager, edited this report. Julia H. Harriston compiled and copyedited the report. Tanya R. Gore and Julia H. Harriston provided final composition to report.

For copies of the reports listed above, call (301) 947-2722 and please allow four weeks for delivery. Most of the documents cited herein are obtainable through the NSF Web site, which is explained in further detail on page three.

# THE DIVISION OF SCIENCE RESOURCES STUDIES

The Division of Science Resources Studies (SRS) fulfills the legislative mandate of the National Science Foundation Act 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...*

To carry out this mandate, SRS designs, supports, and directs about 13 periodic surveys as well as a variety of other data collections and research projects. These surveys yield the materials for SRS staff to compile, analyze, and disseminate quantitative information about domestic and international resources devoted to science, engineering, and technology. Each year SRS produces about 35 publications, which can be roughly divided into the following categories:

- Detailed Statistical Tables reports from the surveys, and associated *Data Briefs*;
- *Issue Briefs* on various topics;
- Periodic “overview” reports, such as the *Science and Engineering Indicators* or *National Patterns of R&D Resources*;
- Periodic reports on focused topics such as *Women, Minorities, and Persons with Disabilities in Science and Engineering* and *International Science and Technology Data Update*; and
- Topical reports such as *Undergraduate Origins of Recent Science and Engineering Doctorate Recipients*, *Human Resources for Science and Technology: The Asian Region*,

*Human Resources for Science and Technology: The European Region*,

*The Science and Technology Resources of Japan: A Comparison with the United States*,

*Who Is Unemployed? Factors Affecting Unemployed in Science and Engineering*, and

*Using the Survey of Doctorate Recipients To Measure the Number of Academic Research Personnel*.

SRS activities often require close cooperation with other Federal agencies, such as the National Institutes of Health, the National Center for Education Statistics, the Bureaus of the Census and Labor Statistics, the Immigration and Naturalization Service, and the Department of Commerce’s Patent and Trademark Office and International Trade Administration. All of the Federal agencies that perform research and development (R&D) participate in providing data for the SRS *Federal Funds* reports. In addition, SRS staff work closely with universities, industrial firms, professional associations, and international organizations.

Upon completion of the data processing for the major surveys, SRS staff prepares and releases 2- to 4-page *Data Briefs* that summarize and highlight findings in the new data prior to the lengthier publishing process for the more detailed statistical reports and analyses. The data are also provided to users in a variety of formats and customized publications.

Our newest addition of reports, 2- to 4-page *Issue Briefs*, cover new analysis or extract information from our existing reports to inform our readers on important policy-related issues that are current in public debate on science and engineering.

In addition to the SRS surveys, which are designed and managed by SRS staff and conducted primarily by contractors, the Division also supports a small program of extramural research on such topics as methodologies and models for scientific and technological data collection, modeling for the scientific and engineering labor markets, changing patterns of national and international research

performance, and the relationship between science and technological development.

Publications are grouped according to the four programs that produces them, which are listed below:

- Research and Development Statistics Program
- Human Resources Statistics Program
- Science and Engineering Indicators Program
- Integrated Studies Program

# DISSEMINATION AND DATABASES

## ELECTRONIC DISSEMINATION

The full range of the Division of Science Resources Studies' (SRS) most recent publications is available from its site on the World Wide Web at:

**<http://www.nsf.gov/sbe/srs/stats.htm>**

Links from this page take you to electronic versions of publications containing our most current data and analyses, online databases, and supporting methodology for the surveys used to collect and compile the tabulated data.

Most publications are available in hypertext and .pdf formats. The hypertext format is preferable for direct, online viewing and for taking advantage of the navigational flexibility available in your web browser while the .pdf format will provide a near-exact copy of the original, printed publication for easier offline reading.

On the SRS web site, you will also find a search page offering three automated search mechanisms: search by publication title, search by survey name, and search by key word. All searches are limited to the information on the SRS web site.

## NSF'S ONLINE DOCUMENT SYSTEM

NSF encourages electronic dissemination of its documents. NSF's Online Document System includes all publications and forms available in electronic formats. The Online Document System allows users to search by document type, by NSF publication or form number, or by key word. Users can search the Online Document System at <http://www.nsf.gov> and click on "Documents" in the toolbar. Users can browse a list of current NSF documents at <http://www.nsf.gov/pubsys/index.htm>.

NSF publications are also available via e-mail. Requests can be sent to the NSF automated mailserver, [getpub@nsf.gov](mailto:getpub@nsf.gov). A list of the NSF's documents will be made available from GetPub, including file formats and sizes, by sending an e-mail to [getpub@nsf.gov](mailto:getpub@nsf.gov) with the words "get index" in the body of the message. The list of the GetPub commands and usage tips will be made available by sending an e-mail to [getpub@nsf.gov](mailto:getpub@nsf.gov) with the word "help" in the body of the message.

## PAPER DISSEMINATION

Paper copies of NSF reports can be obtained in three ways.

- 1) Go to <http://www.nsf.gov/home/orderpub.htm> and fill out the request form.
- 2) Send an e-mail to [paperpubs@nsf.gov](mailto:paperpubs@nsf.gov). Include the title of the publication, the NSF number, and your complete mailing address.
- 3) Telephone the NSF Publications Clearinghouse at 301-947-2722.

Also note that all publications are sent via 4th class mail and should take three to four weeks to arrive.

## ELECTRONIC DATABASES

### Computer-Aided Science Policy Analysis and Research (CASPAR)

The CASPAR database system is an easy-to-use tool for retrieval and analysis of statistical data on academic resources. CASPAR contains an extensive and growing data library with multiyear statistics on the state of higher education in general and on academic science and engineering resources specifically. This data library is based on a set of standardized institutional and discipline definitions across the multiple sources in the database. CASPAR data are drawn from a number of sources including data from surveys of universities and colleges conducted by SRS, by the National Center for Education Statistics (NCES) through its HEGIS and IPEDS data systems, and from the National Research Council (NRC) Doctorate Records File and summary data derived from the continuing NRC Survey of Earned Doctorates.

The CASPAR system is self-adapting. It can accommodate itself to whatever data are stored on the specific computer on which it is running. If only a few of the data files are present on the system, i.e., R&D Expenditures and Faculty Salaries, Tenure, and Fringe Benefits, CASPAR will list only those files on the menus shown. If additional files are added, CASPAR will incorporate those files into its menu lists.

CASPAR data are typically summarized by year. The user can, however, total data over a number of years or compute an average.

Financial data in the system are kept in actual dollars. If the user desires, these data can be converted automatically into current year constant dollars by using either the GNP implicit price deflators provided in the system or the user's own deflators.

CASPAR allows the user to define special groups of institutions, academic disciplines, or other categories. A number of such institutional groups are provided in the system including historically black institutions, feeder institutions, etc. Additional groups, such as land-grant institutions, AAU institutions, or a user's particular peer group can easily be added by the user.

CASPAR can display any requested data on the screen in tabular or simple graphic form or it can generate printed reports. CASPAR can produce Lotus 1-2-3 spreadsheets with the selected data in any desired format.

CASPAR is available to the public on CD-ROM and is now available over the Internet using anonymous FTP.

The price for the CD-ROM and user's guide is \$350.00 and may be purchased at the following address:

Quantum Research Corporation  
ATTN: CASPAR  
7315 Wisconsin Avenue, 631W  
Bethesda, MD 20814

Quantum Research Corporation also maintains the CASPAR program and data files on its FTP server (ftp.qrc.com) in the PUB/CASPAR directory.

To run CASPAR, you need an IBM or compatible computer with an Intel 80486, 80386 or 80286 micro-processor; 640K bytes of RAM; 1 megabyte of extra memory (XMS/EMS); at least a 30-megabyte hard disk (the complete system is approximately 225 megs and growing); a CD-ROM drive with Microsoft Extensions dated 4/89 or later, and a DOS 3.3 or later operating system.

### **Scientist and Engineers Statistical Data System (SESTAT system)**

The SESTAT system is an integrated database of survey data representing the demographic and employment characteristics of scientists and engineers in the United States. SESTAT contains data from three surveys, each focused on different aspects of the population of scientists and engineers. The surveys are listed below:

National Survey of College Graduates (NSCG),  
National Survey of Recent College Graduates  
(NSRCG) and,  
Survey of Doctorate Recipients (SDR).

The SESTAT system is available in both public use and complete, confidentially-protected versions. The public use version is available for general public access on the World Wide Web (WWW) at the following address:

**<http://srsstats.sbe.nsf.gov/>**

Questions or comments about the SESTAT system should be addressed to [sestat@nsf.gov](mailto:sestat@nsf.gov). Individuals interested in using more detailed data set may inquire about licensing agreements needed to have access to the confidentially-protected databases. Inquires may be addressed to Joanne Carr at email: [jcarr@nsf.gov](mailto:jcarr@nsf.gov).

# RESEARCH AND DEVELOPMENT STATISTICS PROGRAM

The Research and Development Statistics Program (RDS) is responsible for surveys, studies, reports, and analyses on the size and health of the U.S. research and development (R&D) enterprise and research infrastructure. RDS focuses on R&D funded and performed by industry, Government, universities and colleges, and other nonprofit organizations. Six surveys provide the core of information on these topics.

- ◆ The **Survey of Federal Funds for Research and Development** annually collects information on the composition, science and engineering (S&E) field, performers, and geographic distribution of all Federal R&D funding from the approximately 100 Federal agencies and subagencies that obligate funds for R&D.
  - ◆ The **Survey of Federal Science & Engineering Support to Universities, Colleges, and Nonprofit Institutions** serves as the basis for an annual report to the President and Congress on information about Federal S&E obligations (for example, for R&D, S&E instructional facilities, fellowships, and training grants) to individual academic and non-profit institutions by the 15 Federal agencies that provide virtually all Federal academic R&D funding.
  - ◆ The annual **Survey of Research & Development Expenditures at Universities and Colleges** collects data on R&D expenditures and research equipment, by funding source and S&E field, from a sample of about 700 institutions of higher education that grant S&E degrees or perform a minimum level of separately-budgeted R&D. Collection of information on R&D expenditures in non-S&E fields is planned for future surveys.
  - ◆ The biennial **Survey of Scientific & Engineering Research Facilities at Universities and Colleges** collects data on the availability, condition, need, cost, and funding sources of research facilities from a sample of more than 300 research-performing universities and colleges. Special coverage is provided for biomedical research facilities and facilities at historically black colleges and universities. Collection of information on instructional facilities is planned for future surveys.
  - ◆ The **Survey of Industrial Research and Development** annually collects information on the composition, funding sources, and location of industry's R&D expenditures and employment of scientists and engineers from a nationally representative sample of about 25,000 companies (starting with the 1992 survey), including both manufacturing and nonmanufacturing companies.
  - ◆ The **Survey of Science and Engineering Research and Development Funding and Performance by Nonprofit Organizations** is planned for 1998. The survey collects data on R&D expenditures by funding sources and S&E field and employment of scientists and engineers from a nationally representative sample of about 7,000 nonprofit organizations that fund and perform R&D. Comparable information was last surveyed for 1973.
- RDS prepares composite estimates of the nation's total R&D effort and provides projections of these activities in advance of available survey totals. These statistics are reported in periodic and topical analytical publications:
- ◆ *National Patterns of R&D Resources* presents historical trend data and projections on the nation's overall R&D spending. It includes information on R&D expenditures by sources of funds, sectors of performance, and character of work. It also presents data on defense and nondefense R&D trends, state distribution of R&D performance, number of scientists and engineers employed in R&D, and international comparisons.
  - ◆ *Federal R&D Funding by Budget Function* provides detailed data on the President's proposed Federal R&D budget authorizations, and historical R&D series, grouped within the Office of Management and Budget's functional categories such as defense, health, space, and energy. The data are collected from all Federal agencies that provide R&D information included in the President's annual Budget of the United States Government.
- RDS produces several **specialized products** to address needs of the S&E community:
- ◆ The Program maintains the **Master Government List of Federally Funded Research and Development Centers (FFRDCs)** and associated information mandated in the Federal Acquisition Regulations. RDS also publishes more detailed information on the specific areas of individual FFRDC expertise in its **Annotated List of FFRDCs**.

- ◆ RDS produces *Academic Institutional Profiles*, which include information about S&E research and education for individual doctorate-granting institutions and for individual schools with S&E departments that grant a master's degree.
- ◆ RDS annually updates its *Science & Engineering State Profiles*, which provide data and rankings for States' (and the District of Columbia and Puerto Rico) S&E resource base derived from SRS surveys, and for broader economic variables from non-SRS sources.

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## HUMAN RESOURCES STATISTICS PROGRAM

The Human Resources Statistics Program (HRS) is responsible for data on the educational system and the Nation's science and engineering (S&E) workforce and characteristics of those participating in education and workforce activities. HRS compiles data from SRS surveys and from other national sources and also analyzes data from special studies to produce the biennial congressionally mandated report *Women, Minorities, and Persons with Disabilities in Science and Engineering*. The program has responsibility for two annual and three biennial surveys:

- ◆ The annual **Survey of Graduate Students and Postdoctorates** collects data from all institutions in the United States offering postbaccalaureate programs in science and engineering. Information is collected on student status, demographic characteristics, and major source of Federal support. The universe is comprised of all doctorate-granting and master's-granting institutions.
- ◆ The annual **Survey of Earned Doctorates** collects responses from all new doctorate recipients at U.S. doctorate-granting institutions, including information about their field of study, demographic characteristics, sources of financial support, educational history, and future plans.

HRS derives core data on scientists and engineers from three biennial surveys. During the 1990's, these surveys have been conducted in 1993, 1995, and 1997.

- ◆ The **National Survey of College Graduates** is based on a sample of about 215,000 individuals (roughly 1 in 150) who reported on their 1990 Census returns that they had at least a bachelor's degree.
- ◆ The **Survey of Doctorate Recipients** samples about 50,000 holders (roughly 1 in 11) of S&E doctoral degrees.

- ◆ The **Survey of Recent College Graduates** (also known as the New Entrants Survey) uses a 2-stage probability sample of approximately 25,000 S&E bachelor's and master's degree recipients (roughly 1 in 40) to track activities of persons receiving these degrees in the 1990s.

Results from these three surveys are combined in a comprehensive system of data about scientists and engineers. Known as SESTAT (Scientists and Engineers Statistical Data System), the system includes data on education, occupation and demographic and other background characteristics. (See writeup on SESTAT in "Electronic Dissemination" section, on page 4.)

Occupational (SOC) data by detailed industry (SIC) are obtained from the U.S. Bureau of Labor Statistics, Occupational Employment Survey. Administratively collected data on immigrant scientists and engineers are assembled from Immigration and Naturalization Service records.

The program also assembles and publishes statistics on education and the workforce from other agencies. Regular reports provide data on degrees earned in science and engineering fields and on special topics such as *Foreign Participation in U.S. Science and Engineering* and *Undergraduate Origins of Science and Engineering Doctorates*.

Staff collaborate with the National Center for Education Statistics on surveys of higher education institutions; data on precollege science and mathematics education; and taxonomies of disciplines, institutions, and racial/ethnic categories. Staff work with the U.S. Bureaus of the Census and Labor Statistics, the U.S. Immigration and Naturalization Service and other Federal agencies to obtain data and to develop and prepare reports on aspects of the nation's S&E workforce.

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## SCIENCE AND ENGINEERING INDICATORS PROGRAM

The Science and Engineering Indicators Program (IND) is responsible for the Division's cross-cutting overview and international reports. IND compiles and analyzes data from special studies, Science Resources Studies Surveys, and other national and international sources to produce the biennial congressionally mandated report, *Science and Engineering Indicators*. The *Indicators* report is produced under the guidance of the National Science Board, and is the National Science Foundation's (NSF) flagship quantitative report.

In addition, the IND program develops and publishes a number of specialized indicator series, particularly in the area of science and technology (S&T) output and impact indicators. These series include patent data, bibliometric indicators, high-technology trade data, information on innovation activities, and survey data on public attitudes toward and understanding of science and technology.

A major aspect of the IND program involves the development of international comparisons for all the S&T indicators areas. The program is the focal point both in the Division and at NSF for international S&T indicators activities, plus reporting U.S. data to international organizations such as the Organisation for Economic Co-operation and Development and the United Nations Educational, Science and Cultural Organization. Periodic and special publications produced in the group include the following:

- ◆ *Science and Technology Pocket Data Book*  
The *Pocket Data Book* is a quick and portable reference to selected data series of the *Science and Engineering Indicators* report. The *Pocket Data Book* provides both charts and tables and complements the National Science Board's *Science and Engineering Indicators* report.

Other special and occasional reports

- ◆ *The Science and Technology Resources of Japan: A Comparison with the United States*  
This report provides some key trends on science investments and outcomes, particularly in human resources for science.
- ◆ *Human Resources for Science and Technology: The Asian Region*  
This report provides for the first time a consistent database on human resources for science and engineering in six Asian economies—the People's Republic of China (China), India, Japan, Singapore, the Republic of Korea (South Korea), and the Republic of China (Taiwan).
- ◆ *Human Resources for Science and Technology: The European Region*  
This report provides for the first time a consistent database on human resources for science and engineering in the European countries. It also provides a great deal of information and background on the research expenditures and areas of emphasis of the European Union and member countries.
- ◆ *Asia's New High-Tech Competitors*  
This report continues in a series of analytical reports that also provide new data and insights on foreign S&T capabilities. It examines technology and trade capabilities in nine Asian economies: Japan, Hong Kong, Singapore, South Korea, Taiwan, China, India, Indonesia, and Malaysia.

REPORT

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**Topical Reports**

*The Science and Technology Resources of Japan: A Comparison with the United States* ..... 97-324

*Science and Technology Pocket Data Book: 1996* ..... 96-325

*Human Resources for Science and Technology: The European Region* ..... 96-316

*Asia’s New High-Tech Competitors* ..... 95-309

**Data Brief**

“Western Europe Leads the United States and Asia in Science and Engineering Ph.D. Degree Production” ..... 96-330

**Issue Briefs**

“International Mobility of Scientists and Engineers in the United States—Brain Drain or Brain Circulation” ..... 98-316

“Japan Hopes to Double Its Government Spending” ..... 97-310

**Reports of the National Science Board**

*Science & Engineering Indicators:*

    1998 ..... NSB 98-1

    1996 ..... NSB 96-21

## INTEGRATED STUDIES PROGRAM

The Integrated Studies Program (ISP) is responsible for producing special analyses on science and engineering topics of interest to policy makers, the scientific community, or the informed public. The Program contributes to *Science and Engineering Indicators* and other SRS publications and from time to time provides analytical and data support to NSF senior staff, the National Science Board, and other science policy decision makers. ISP draws on surveys and data produced by SRS, other Federal agencies, and non-federal sources. The focus areas are-

- ◆ the system of universities and colleges that conduct science and engineering teaching, advanced training, and research,
- ◆ education, training, and employment of scientists and engineers,

- ◆ R&D outputs, including articles and patents, and the aspects of U.S. technology and innovation performance in the international setting.

ISP reports mainly consist of Issue Briefs and Topical Reports, depending on topic and primary audience.

The Program's work includes development of a U.S. industrial innovations survey, in coordination with other SRS programs, NSF, and other Federal and international agencies. ISP also manages the transition of a major analysis resource to a Web-based system. This database, WebCaspar, provides quick and easy access to a wide variety of national trend data on academic resources by institution and field of science. Data derive from SRS, the Department of Education's National Center for Education Statistics, the National Research Council, and the Carnegie Foundation for the Advancement of Teaching.

## REPORTS

## NSF NUMBER

### Data Brief

“R&D Continues to be an Important Part of the Innovation Process” ..... 96-313

### Issue Briefs

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“What is the Debt Burden of New Science and Engineering Ph.D.s?” ..... 98-318

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