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ABSTRACT

The Task Force on Women, Minorities, and the Handicapped in Science and Technology was established by the U.S. Congress in Public Law 99-383 with the purpose of developing a long-range plan for broadening participation in science and engineering. Public hearings were held in Albuquerque (New Mexico), Atlanta (Georgia), Baltimore (Maryland), Boston (Massachusetts), Chicago (Illinois), Kansas City (Missouri), and Los Angeles (California) between Fall 1987 and Spring 1988. Six goals for the nation dealing with change in the United States, precollege education, higher education, federal research and development, employment, and cultural influences are suggested. Actions are recommended for (1) the President; (2) governors; (3) state legislators; (4) industry; (5) the federal government; (6) universities; (7) school boards; (8) educators; (9) parents; (10) professional societies; (11) the media; and (12) "all Americans" to help alleviate the "looming crisis in the science and engineering workforce." Specific strategies to promote greater participation among Blacks, Hispanics, American Indians, people with disabilities, and White women in the science and engineering workforce are included. Population statistics and predictions are included in several parts of this document. A list of 40 exemplary programs is included. Appendices include lists of the Task Force members, hearing witnesses at the various sites, and a copy of Public Law 99-383. (CW)

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Changing America: The New Face of Science and Engineering

Final Report

The Task Force on Women, Minorities, and the Handicapped in Science and Technology

December 1989

ACTIONS

SE 051 244

Changing America: The New Face of Science and Engineering

Final Report

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Introduction

To the President, Congress, and the American People:

It is time for action. Our Interim Report and many other studies have detailed the looming crisis in the science and engineering workforce. America faces a shortfall of scientists and engineers by the year 2000. We can meet these shortfalls only by utilizing all our talent, especially those traditionally underrepresented in science and engineering—women, minorities and people with disabilities. Without this kind of world-class science and technical excellence, America's competitive prospects dim.

Clearly, actions must be taken now by key players in American society. Those key players are:

The President	Governors
Industry	Federal Government
State Legislators	Universities and Colleges
School Boards	PreK-12 Educators
Parents	Professional Societies
Media	All Americans

The situation is recognized. The urgency is obvious. Remedies are available. Fast action, long-term commitment, and new partnerships are needed now. Our Interim Report presented six goals for the Nation. As our Final Report, the Task Force on Women, Minorities, and the Handicapped in Science and Technology offers specific ACTIONS for each of the key players. We have the knowledge to accomplish these. We now call upon you for the leadership and the will.

Goals for the Nation

Goal #1.
Changing America: The Nation should adopt the goal that all children born today, from all backgrounds, have a quality education, including mathematics and science education, and the opportunity to participate in the science and engineering workforce to their fullest potential.

Goal #2.
PreK-12 Education: The Nation should reform the preK-12 education pipeline so that our children's mathematics and science competence is better than that of students in countries with which we compete.

Goal #3.
Higher Education: The Nation should increase the number and diversity of American students graduating in science and engineering. By the year 2000, we should produce enough professionals in these fields, including more from underrepresented groups, to meet the demand for faculty and for industry and Federal personnel.

Goal #4.
Federal Research and Development: Federal research and development funds influence the Nation's entire science and engineering effort. They generate new knowledge, and employ and train scientists and engineers. These funds should be leveraged to help develop a more diverse world-class generation of scientific and engineering workers by the year 2000.

Goal #5.
Employment: Employers should continue to develop a work environment that is accessible, equitable, and favorable to attracting and advancing young people, especially women, minorities, and people with disabilities, to careers in science and engineering.

Goal #6.
Influence of Culture: Our Nation's future hinges on having an ample supply of people who achieve in mathematics and science, are science-literate, and perform technical jobs with world-class competence. The entertainment industry and the mass media — powerful forces in shaping society's values — must participate in reshaping popular attitudes toward science and engineering.

6

Actions

President
Governors
State Legislators
Industry
Federal Government
Universities
School Boards
Educators
Parents
Professional Societies
Media
All Americans

The President

The President leads. His influence is broad, strong, and immediate. The Task Force respectfully requests the President to:

Action: Take the lead in developing specific national education goals, performance standards, and timetables needed for meeting them: Special emphasis should be placed on mathematics and science capabilities of all students.

Action: Create a National Action Council of our country's highest leaders to ensure that all sectors of society broaden participation in the Nation's science and engineering workforce. Council members should include chiefs of Federal agencies, chief executive officers of industry, presidents of universities, heads of school systems, chairs of foundations and State Governors.

Action: Direct the White House Office of Science and Technology Policy to establish a Federal Coordination Committee for Science, Engineering and Technology to provide visibility, coordination and accountability for Federal agency plans to strengthen the science and engineering workforce.

Action: Convene an annual meeting of chief executive officers of leading U.S. corporations to report on the state of the Nation's science and engineering enterprise and the efforts of the business sector to develop a fully competitive workforce for the 21st century.

Action: Establish the long-term national agenda for ensuring that all young people in our country will be prepared for and encouraged to pursue careers in science and engineering.

Governors

The Governors are responsible for the delivery of education within their states. No other officials have such direct impact or manage such important programs. The Task Force respectfully requests the Governors to:

Action: Organize and motivate the coalition of business, education, community and political leaders necessary to achieve education reform in their states.

Action: Inspire the education reform effort within their states especially to reach women, minorities and disabled citizens, to prepare them for and encourage them into mathematics and science careers.

Action: Establish performance standards and greater accountability from the education agencies and institutions of higher education within their states.

Action: Ensure that their colleges and universities recruit and graduate sufficient numbers of science and engineering students, especially those traditionally underrepresented in these fields. More state scholarships should be offered in science and engineering, as well as in science and mathematics education.

Action: Coordinate transfer programs from 2-year to 4-year institutions to increase the number of 2-year college students going on to earn bachelors' degrees in science and engineering.

Action: Direct their states' vocational rehabilitation systems to recognize and develop career opportunities in science and technology for people with disabilities.

State Legislators

State legislators are responsible for the majority of the funds that go to education. They set graduation standards and teacher qualifications. The Task Force respectfully requests the state legislators to :

Action: Ensure adequate funding levels for each school district in their state.

Action: Raise the prestige and professionalism of teaching as a career through bolstering teachers' salaries and rewarding their performance.

Action: Support and stimulate career-long continuing education programs for precollege teachers of mathematics and science.

Action: Encourage new talent to enter the teaching profession through effective alternative certification procedures.

Action: Encourage and fully fund the teacher preparation programs in the universities and colleges. Give special financial incentives to those students who plan to teach mathematics and science.

Action: Require high standards for high school graduation, including four years of mathematics and four years of laboratory science.

Action: Provide financial support for intervention programs designed to increase the number of women, minorities and people with disabilities who complete training in mathematics, science and engineering.

Industry

Industry is the Nation's largest research performer, consuming three-fourths of all research and development dollars and employing two-thirds of our scientists and engineers. Through programs, employees, and product advertising, industry has tremendous influence. The Task Force respectfully requests industry to:

Action: Continue to sound the alarm about how poor science and mathematics education contributes to the declining economic competitiveness of the United States. Devote long-term, sustained effort to supporting education.

Action: Mobilize a national campaign to increase science literacy and show that mathematics, science and technical knowledge are important to our country's well being and valuable in everyone's life and career.

Action: Forge partnerships with schools, especially those with large percentages of minority or disabled students, and commit to ensuring that those schools succeed. Finances, equipment, management expertise, and time spent in class by industry employees — all will contribute to that success.

Action: Encourage retirees to assist in repair to the preK-12 pipeline by donating their time and talents to local school systems.

Action: Provide summer work and research opportunities to teachers and to high school students, especially those from underrepresented groups, so they can see the applications of theories taught in the classroom.

Action: Provide scholarships and fellowships to women, minorities and people with disabilities who major in science and engineering, or who plan to become science and mathematics teachers.

Action: Finance in-service teacher training and sponsor teachers to attend professional conferences, such as meetings of the National Science Teachers Association and the National Council of Teachers of Mathematics.

Action: Encourage employees to teach or to assist teachers at precollege and college levels. Provide paid leave so they can do so.

Action: Open career paths widely and visibly to encourage women, minorities and people with disabilities in science and engineering.

Action: Provide dependent care services to all employees.

Federal Government

The Federal Government is the largest single employer of scientists and engineers. It finances one-half of all research and development performed in the United States. It has a special responsibility to be a pacesetter. The Task Force respectfully requests the Federal agencies to :

Action: Use their research and development programs to bring about a more diverse, world-class science and engineering workforce. Programs should affect preK-12 education, higher education, research and development awards, and employment.

Action: Collect and maintain data to evaluate the participation of minorities, women, and persons with disabilities in their research and development programs.

Action: Continue to hire and advance talented scientists and engineers, including those from underrepresented groups.

Action: Provide dependent care services to all employees.

Action: Open their laboratory facilities to provide hands-on experiences to students and teachers, especially those traditionally underrepresented in science and engineering.

Action: Establish a National Research Scholars Program in Science and Engineering which enables high school students to have early research experiences and go on to earn bachelors' degrees in science and engineering. This should link with support for graduate study and offer a clear path to the Ph.D. It should be tailored to attract minority and women students and students with disabilities, and to encourage more students to become mathematics and science teachers.

Action: Provide stable and substantial support for effective intervention programs that graduate quality scientists and engineers who are members of underrepresented groups.

Action: Encourage employees and retirees to donate time and expertise to their local schools.

Action: Establish a competitive grants program for school districts to implement locally-developed plans to improve education in science and mathematics for underrepresented groups.

Action: Expand Project Head Start so that all eligible children are served.

Universities and Colleges

American universities and colleges remain the best in the world. They prepare both our scientists and engineers and our mathematics and science teachers. The Task Force respectfully requests universities and colleges to:

Action: Take the lead in creating a climate of action and accountability that accelerates the participation of women, minorities and people with disabilities as science and engineering faculty and students.

Action: Set quantitative goals for recruiting and graduating more U.S. students in the sciences and engineering, especially from underrepresented groups. Three times more bachelors' degrees and ten times more Ph.D.s must be earned by underrepresented groups during the next decade.

Action: Improve retention programs aimed at underrepresented groups. Group support, peer study, tutoring and mentoring should be available to all.

Action: Provide dependent care services to students and faculty.

Action: Make laboratories accessible and adapted to persons with disabilities.

Action: Offer forgivable educational loans to students from underrepresented groups who agree to pursue faculty careers.

Action: Ensure that all teachers, especially elementary level, have a strong background in mathematics and science.

Action: Ensure that all teacher education programs emphasize teaching techniques free of cultural and gender biases.

Action: Build effective partnerships between research universities and institutions with large enrollments from underrepresented groups, so students have access to advanced coursework and equipment.

Action: Establish transfer centers with qualified counselors in 2-year colleges and vocational schools to maximize the number of students who go on to earn bachelors' degrees in science and engineering.

School Boards

Local school boards determine educational direction, style and content. The Task Force respectfully requests school boards to:

Action: Pay teachers adequately and encourage them to improve their own educations by studying at universities and working with industry.

Action: Set higher graduation requirements, including 4 years of mathematics and 4 years of science. Mathematics and science should be a part of every grade's curriculum, PreK-12.

Action: Ensure that the maximum number of students — especially minority, women and the disabled — take college preparatory mathematics and science.

Action: Recruit more women, minorities, and people with disabilities for faculty positions.

Action: Encourage teaching techniques which are free of cultural and gender biases.

Action: Insist on the best teaching aids and techniques. Up-to-date textbooks, computers, good laboratory equipment and frequent field trips are essential tools of science.

Action: Expand counseling services to encourage all students to consider careers in science and engineering, and to emphasize the importance of mathematics and science proficiency in the job market and democratic society of the future.

Action: Encourage local industry and Federal laboratories to take an active part in the total educational process.

Action: Provide a science and mathmatics specialist in each elementary school, both to teach and to be a resource to other teachers.

Action: Expand innovations which produce better educated students, especially women, minorities and the disabled. Where necessary restructure schools, curricula, teaching practices, and educational experiences.

PreK-12 Educators

Teachers, counselors, principals and superintendents have direct responsibility for our students' academic preparation. The Task Force respectfully requests these educators to:

Action: Emphasize science and mathematics — both for their educational values and career potential — as the best way "up" for students from disadvantaged backgrounds.

Action: Raise expectations for all students. Don't foreclose career options of women, minorities or people with disabilities by short-changing their preparation in mathematics and science.

Action: Treat every student with a physical disability as a potential scientist or engineer, and provide the necessary technical aids to minimize physical obstacles.

Action: Build partnerships with parents to help students set high career goals and complete rigorous coursework .

Action: Integrate computer technology into the classroom so that every student is proficient in use of this tool.

Action: Forge effective ties with local industry, universities, and Federal scientists and engineers. Welcome visitors and volunteers in the classroom to serve as teachers, assistants, mentors and role models.

Action: Continue working to enhance the professionalism of mathematics and science teaching, through teacher workshops, internships, retraining, participation in research projects, and attendance at professional meetings.

Action: Make science hands-on. Ensure that all students do science as well as read about it.

Parents

The family is the Nation's most important social unit. The parents' influence on their children should be the most profound. The Task Force respectfully requests parents to:

Action: Encourage their children's interest in mathematics and science, through their own attitudes and actions. Be sure their children consider careers in science and engineering, and pursue the necessary coursework to be prepared for them.

Action: Hold schools accountable for adopting higher standards and raising student achievement levels in mathematics and science.

Action: Request schools to provide workshops for parents to support and encourage their children's interest in science and mathematics.

Action: Set high expectations for their children's academic performance, and help them each day to attain these goals.

Action: Get to know their children's teachers, learn about teachers' expectations, and observe classes. Volunteer to help school and youth programs.

Action: Motivate their employers to donate equipment, money, and personnel to their children's school.

Action: Share informal education activities with their children frequently. Visits to museums, zoos and local high technology companies are particularly useful.

Professional Societies

Professional societies have traditionally worked to further their science and assist their members. Their influence on the present and future science and engineering workforce is significant. The Task Force respectfully requests professional societies to:

Action: Make education their priority, and become education advocacy groups. Play an active role in encouraging young people, especially women, minorities and people with disabilities, to pursue the study of mathematics and science.

Action: Make financial assistance, summer work experience, mentoring and career guidance available to a wider range of students and teachers.

Action: Encourage their members to teach, especially in schools that enroll many minority and disabled students. Teaching should be made a requirement for earning professional recognition and leadership positions.

Action: Recruit women, minorities, and people with disabilities to join and take leadership positions in their professional society.

Action: Sponsor teachers and students to attend their annual conferences.

Action: Facilitate faculty exchanges, especially between research universities and minority colleges.

Action: Make use of student chapters to encourage students, especially women, minorities and those with disabilities, in their studies and career plans.

Action: Use their publications to keep attention on the importance of science and mathematics education which serves all students. Publicize their sucessful programs as encouragement to others.

Media

The media — especially TV, radio, movies and advertising — exercises an enormous influence on America's young people. The Task Force respectfully requests members of the media to:

Action: Make videos, recordings and other entertainment and informational materials that awaken interest in science and engineering readily available to schools, libraries, museums and community groups, especially in low income areas.

Action: Explore how to spark the imagination of all young people to pursue science and engineering careers.

Action: Promote success in school and the opportunities of science and engineering careers. Be sensitive to perpetuating the negative stereotypes of scientists and engineers.

Action: Recognize and publicize successful students and teachers as a way to encourage others. Likewise, spread stories of successful women, minorities and people with disabilities in science and technology in order to increase the visibility and attractiveness of these careers to all young people.

All Americans

Every American citizen will ultimately benefit from increasing the participation of women, minorities and people with disabilities in the science and engineering workforce. The Task Force respectfully requests all Americans to:

Action: Become involved, by offering to support their local public schools, teachers, and students.

Action: Develop local coalitions of community leaders, businesses, educators and government officials to improve education, particularly in mathematics and science.

Action: Encourage members of underrepresented groups to become scientists and engineers, through serving as a tutor, mentor or role model.

Action: Participate in community projects that guide our young people toward success in school and careers in science and engineering.

Action: Vote for elected officials with a proven commitment to education.

Specific Strategies

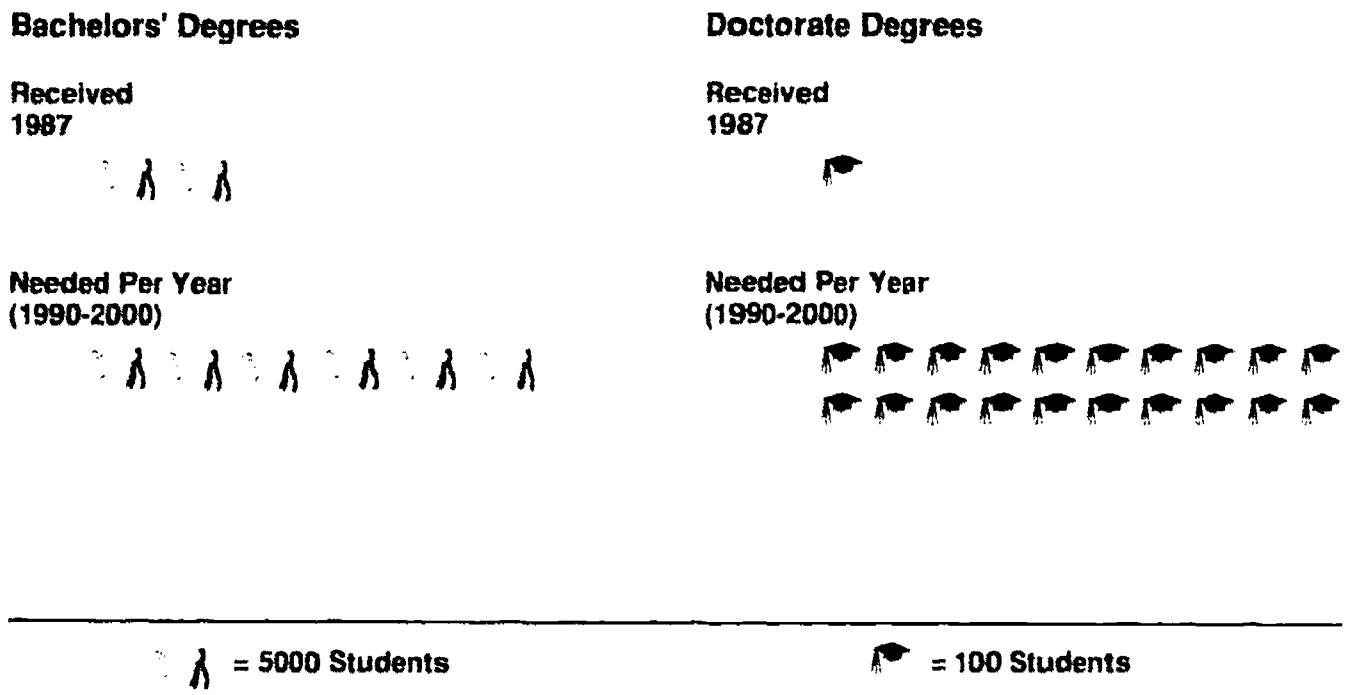
Blacks
Hispanics
American Indians
People with Disabilities
White Women

Blacks

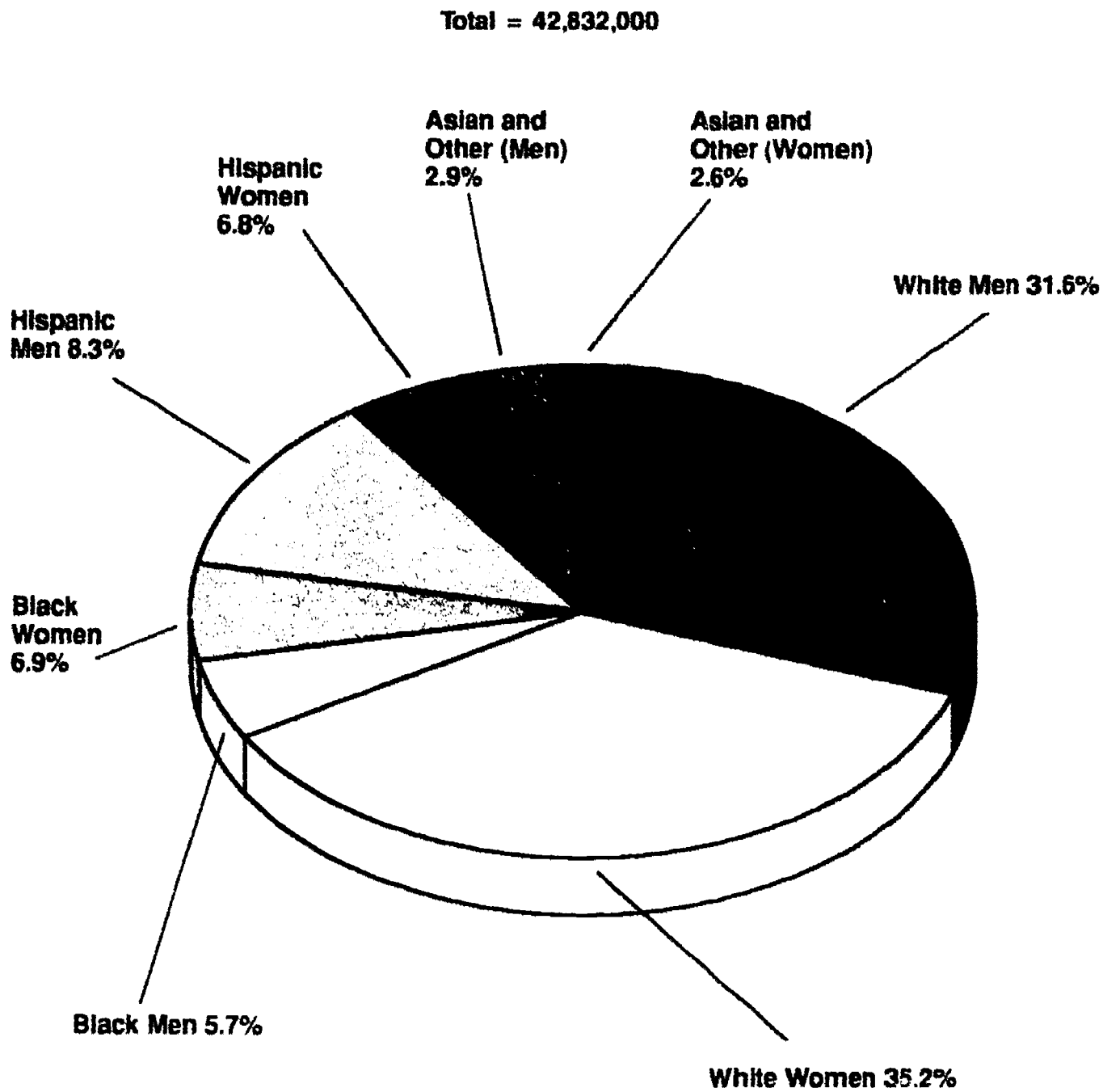
Background.
Blacks comprise only 2 percent of all employed scientists and engineers, even though they are 12 percent of the general population. They earn 5 percent of the baccalaureates and 1 percent of the Ph.D.s in science and engineering. In 1988 only 47 U.S. Blacks earned science Ph.D.s; only 15 earned Ph.D.s in engineering. Black participation in science and engineering has risen since the 1970s, when minority engineering programs were launched by several institutions. Black women earn more bachelors' degrees in science than Black men, but only a third as many bachelors' degrees in engineering.

The Pipeline.
Many Blacks turn away from science and mathematics courses early in life, partly because most go to large city schools where education is often poor. In 1986, the 25 largest U.S. school districts were 45 percent Black. Large urban school districts must be helped to prepare Black young people for careers in science and engineering. Financial limitations also deter Blacks from pursuing higher education as many avoid the prospect of assuming college loans which can equal their families' entire incomes. Most who do earn advanced degrees did their undergraduate work at Historically Black Colleges and Universities.

Scientists and Engineers Needed



New Entrants Into Labor Force 1988-2000



Our pool of talent for new scientists and engineers is predominantly female or minority or disabled—the very segments of our population we have not attracted to science and engineering careers in the past.

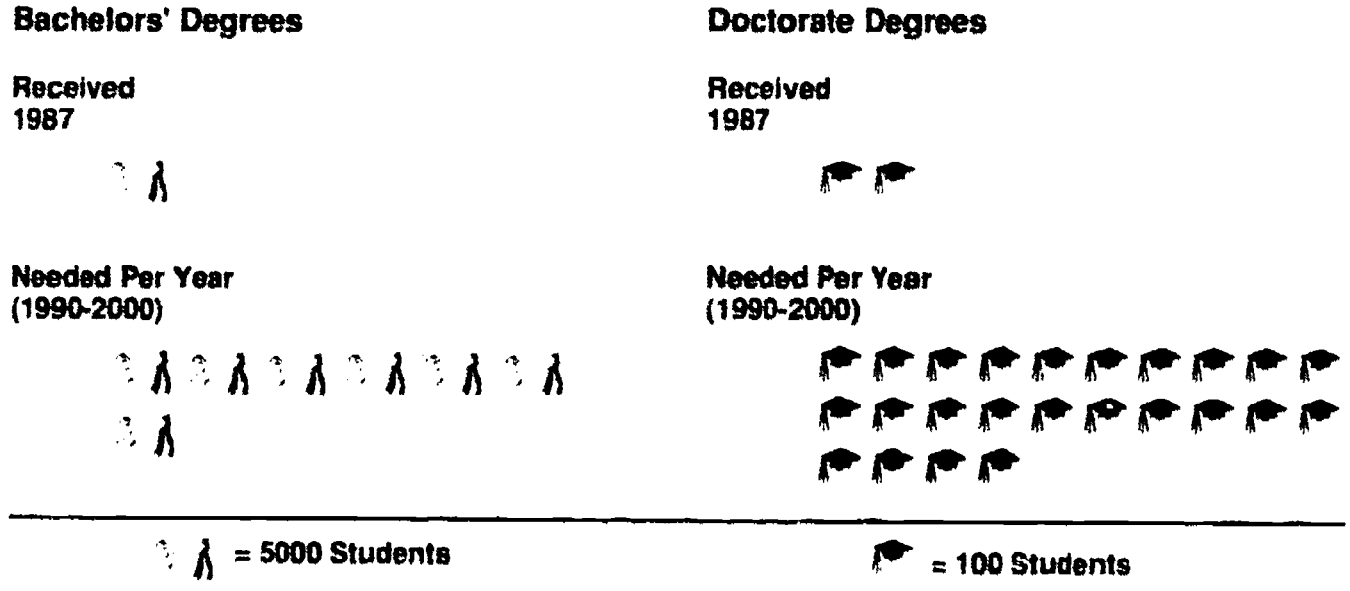
Source: U.S. Bureau of Labor Statistics

Hispanics

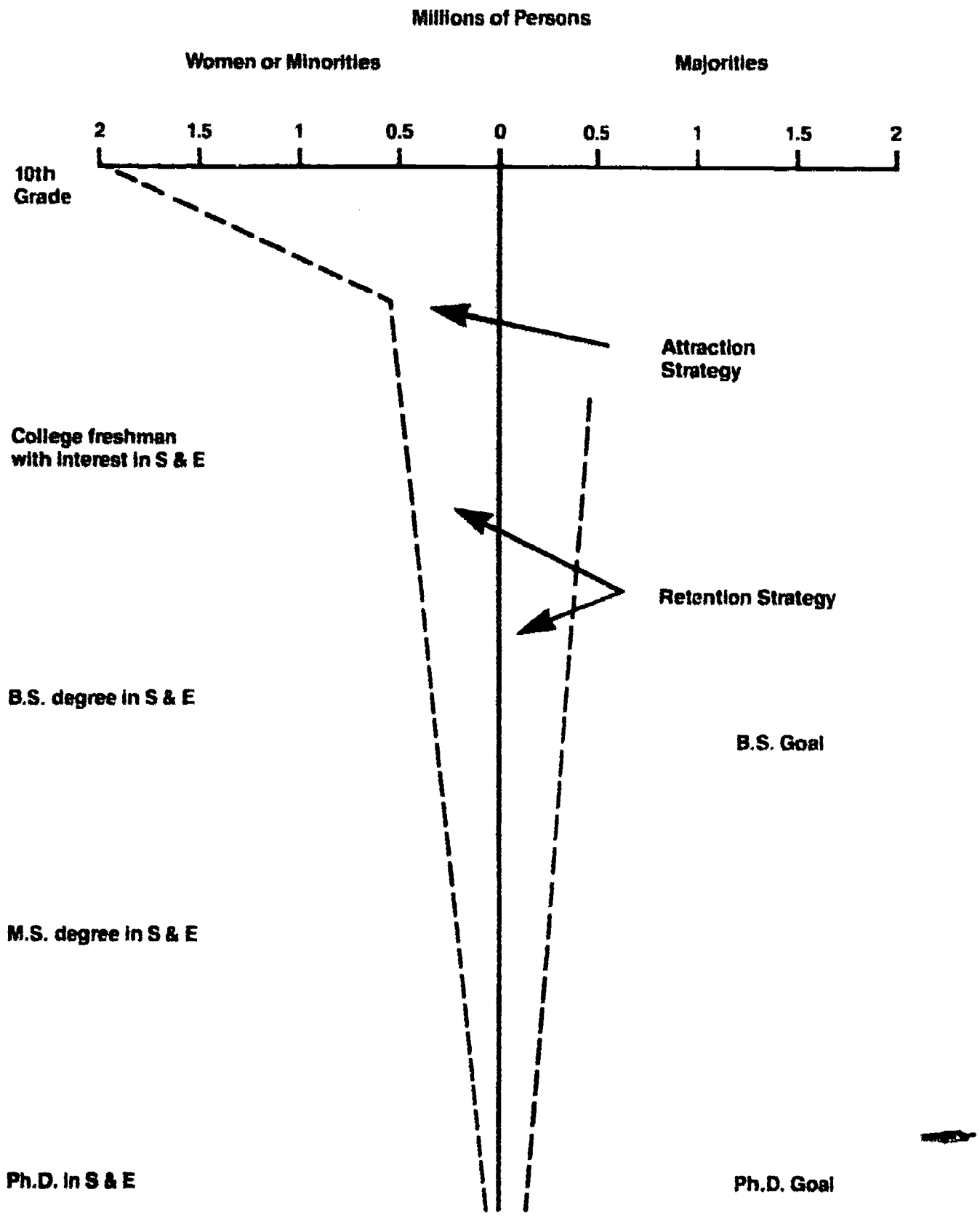
Background.
America's fastest growing minority group, Hispanics comprise 9 percent of the population, but only 2 percent of all employed scientists and engineers. They hold 3 percent of all bachelors' degrees and 2 percent of all Ph.D.s in science and engineering. Hispanic women earn slightly fewer bachelors' degrees in science than Hispanic men, but only one-sixth as many bachelors' degrees in engineering. Hispanics include Cuban immigrants who tend to belong to the middle class and Mexican-Americans and Puerto Ricans who frequently belong to lower socio-economic groups. Forty percent of Hispanic children live in poverty.

The Pipeline.
Overwhelmingly, in schools in poverty areas, many Hispanic children receive an inadequate basic education, including poor instruction in mathematics and science. High school completion rates must be increased and early mathematical and science instruction must be improved to attract more Hispanic students to careers in science and engineering. Of Hispanic youth who study past high school, the majority go to 2-year colleges. Hispanics do not have a network of 4-year colleges, as do Blacks with the Historically Black Colleges and Universities. Many Hispanic parents have high hopes for their children but often do not encourage them to go to college, especially if this requires that they move from home.

Scientists and Engineers Needed



Strategies for Maintaining the Flow of Natural Scientists and Engineers



Our goal is to attract and retain more students, particularly women, minorities and people with disabilities to complete degrees in science and engineering.

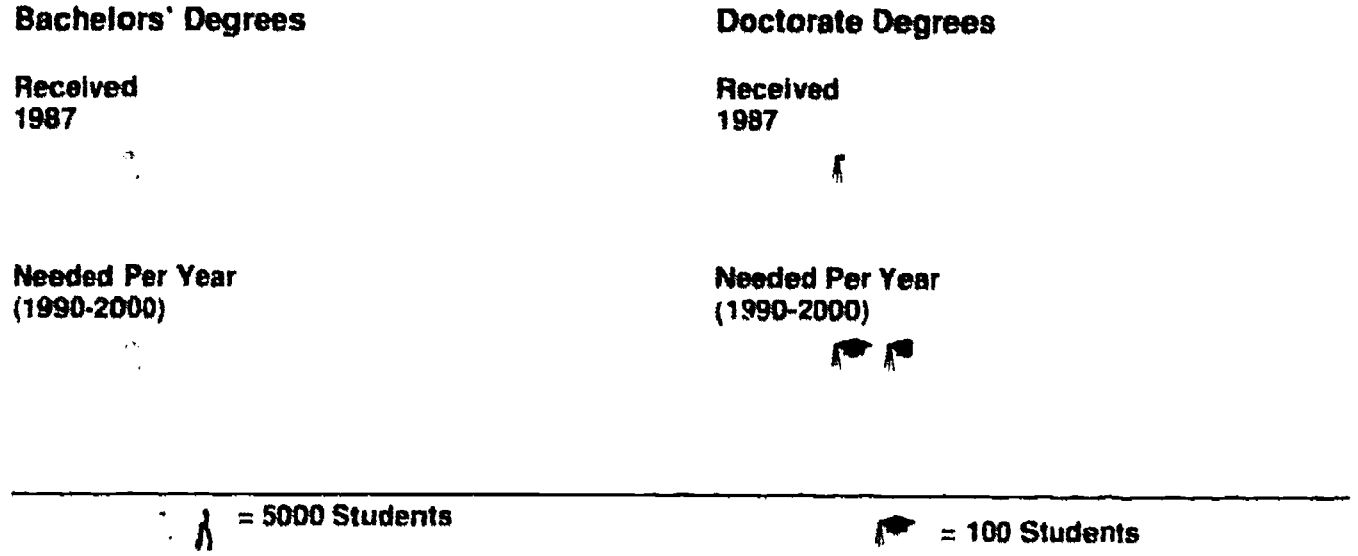
Source: National Science Foundation

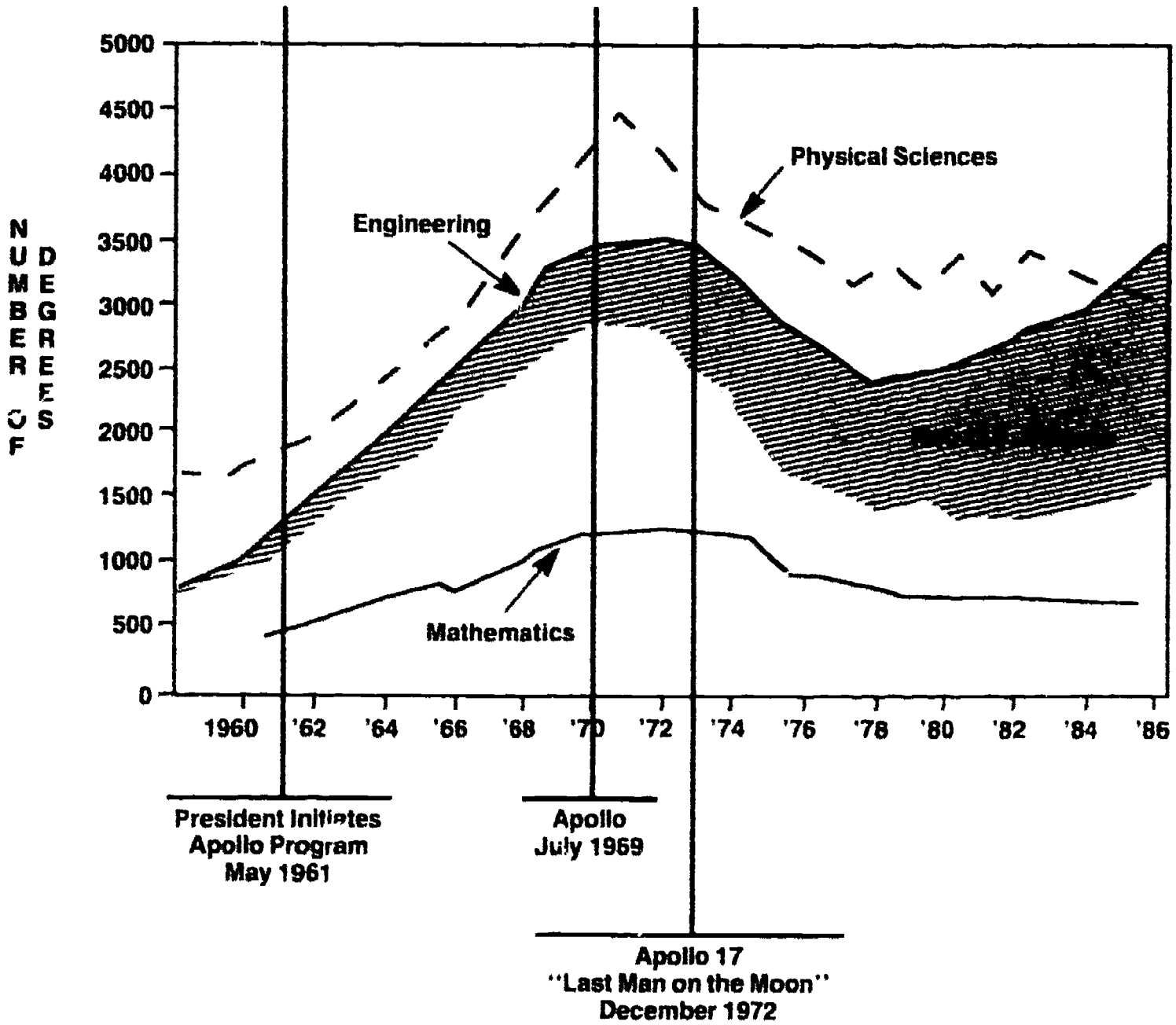
American Indians

Background.
There are 1.4 million Americans enrolled in the 278 recognized tribes and 300 Aleut and Eskimo villages. Many American Indians, including those who hold degrees and professional jobs, prefer to maintain their separate tribal identity. American Indians make up 0.6 percent of the U.S. population, and are 0.5 percent of all employed scientists and engineers. They hold 0.3 percent of all bachelors' degrees and 0.11 percent of all Ph.D.s in science and engineering. American Indian women earn two-thirds as many bachelors' degrees in science as American Indian men and only one-sixth as many degrees in engineering.

The Pipeline.
About half of American Indians enrolled in tribes are younger than 21 and most receive a generally poor mathematics and science education. In Bureau of Indian Affairs schools, teacher turnover is high and Indian role models are few. Less than 16 percent of teachers are American Indians. Many students who enroll in college return home before they graduate. Positive early and middle school experiences are essential to preparing Indian young people for science and engineering careers. Then strong support programs which respect family and tribal ties are crucial to success in college.

Scientists and Engineers Needed





Students' choice of science and engineering careers is clearly related to the technological challenges on our national agenda, as this chart showing the history of the space program indicates.

Source: National Aeronautics and Space Administration

People With Disabilities

Background.
An estimated 22 million Americans of working age have some physical disability, yet only 7.2 million of these are employed. The National Science Foundation found only 94,000 disabled scientists and engineers working in 1986. Today, people with disabilities live longer, and are able to pursue careers because of improving medical technology. People with disabilities are a large and growing segment of our population.

The Pipeline.
Low expectations and lack of encouragement are keeping students with disabilities from participating fully in mathematics and science, particularly in science laboratory courses. Parents, teachers and counselors must encourage students with disabilities to pursue study of and careers in science and engineering. In 1987, over 1.3 million of the 12.5 million students (or 10.5 percent) enrolled in postsecondary education institutions reported having at least one disability, which makes them the largest "minority".

Unfortunately no one collects Nationwide statistics on degrees earned by people with disabilities so we cannot present the same analysis as for the other groups. We do note that, at 10.5 percent of the postsecondary education students, people with disabilities represent a large untapped pool of talent for science and engineering.

Selected Federal Research and Development Agencies' Investments in the Development of New Scientists and Engineers

	1990 ($ in M) Focused	Mainstream
Precollege, Total	11.3	138.8
(a) curriculum	0.2	21.8
(b) teacher training	0.0	75.0
(c) students	3.4	14.5
(d) general	7.7	27.5
High-school to Undergraduate, Total	1.3	1.1
(a) academic programs	0.3	0.1
(b) career awareness	1.0	1.0
Undergraduate, Total	43.8	142.3
(a) curriculum	1.0	16.1
(b) faculty	0.7	10.0
(c) student support	30.0	32.0
(d) general	12.1	84.2
Graduate, Total	15.2	287.4
(a) student support	15.2	143.4
(b) general	0.0	144.0
Research, Total	137.5	8536.5
(a) postdoctoral	3.7	390.9
(b) faculty	56.1	6723.1
(c) institutional development	36.1	311.5
(d) general	41.6	1111.0
TOTAL, ALL CATEGORIES	209.1	9106.1

In 1989, the Nation invested $132 billion, or 2.6 percent of the gross national product, in research and development. Of this amount, the Federal Government spent approximately 50 percent or 63 billion. Federal agencies invested in numerous programs that contributed directly and indirectly to the development of new scientists and engineers.

For Fiscal Year 1990, Federal agencies will continue, expand, or initiate some specific extramural programs which help meet the national need. Estimated amounts are shown in the figure for eight agencies (Departments of Agriculture, Defense, Energy, and Interior; Environmental Protection Agency; National Aeronautics and Space Administration; National Institutes of Health; and National Science Foundation). The dollar amounts do not include all of the efforts currently underway in these or other Federal agencies, nor do they include the value of staff time devoted to activities such as being role models and mentors to students, or partners to educators. Nevertheless, they are illustrative of ways the Federal research and development enterprise may be used as leverage to help develop future talent, and to increase the participation of those who traditionally have been underrepresented in science and engineering.

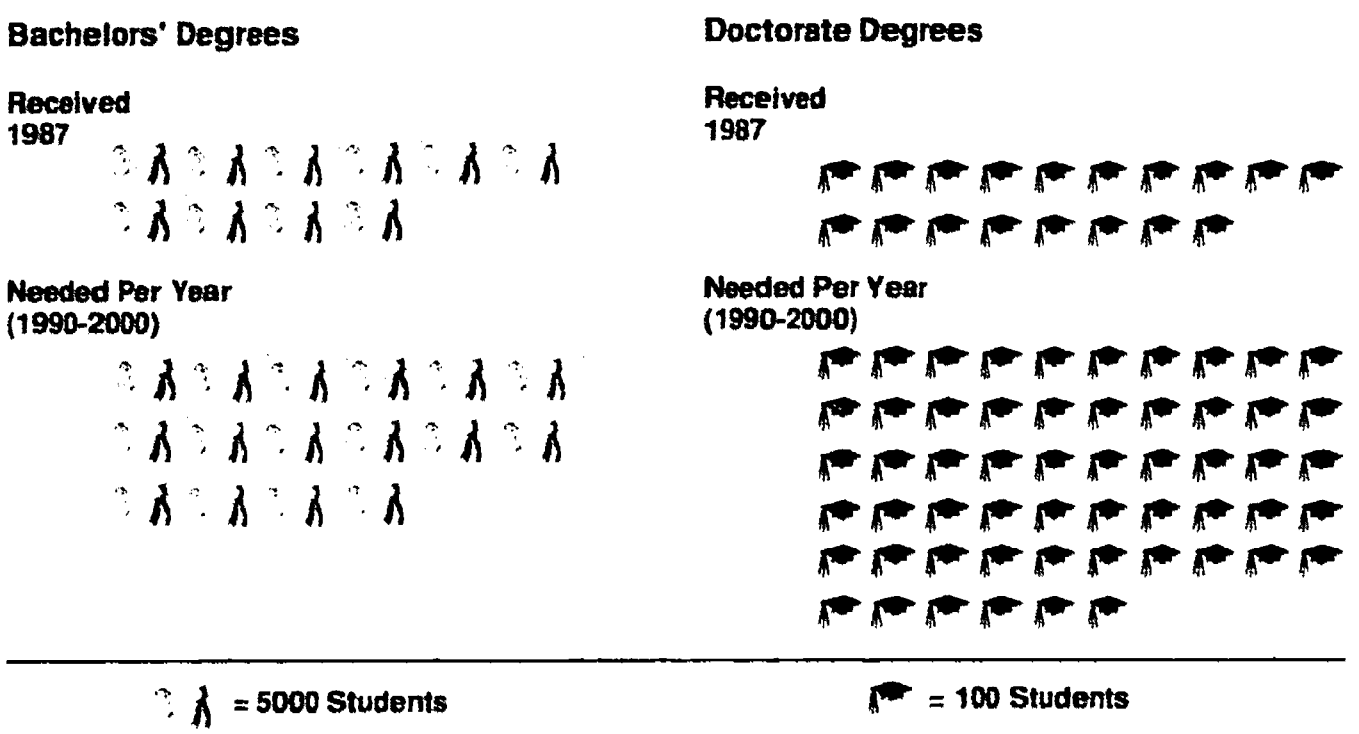
In the chart, the amounts for specifically selected programs are summarized and arrayed along the educational continuum. Focused programs, which are designed specifically to enhance the participation of those underrepresented in science and engineering, total $209 million in 1990 or 2 percent of mainstream programs. Mainstream programs, in which anyone can participate, total over $9 billion. The Federal research and development agencies are committed to increasing the representation of women, minorities, and people with disabilities in both focused and mainstream programs.

White Women

Background.
White women comprise only 10 percent of all employed scientists and engineers, although they account for 43 percent of the U.S. population. In 1987 white women earned 22 percent of all bachelors' degrees and only 13 percent of the Ph.D.s in science and engineering. At the undergraduate level they are twice as likely to be in the life sciences as in engineering, and at the graduate level they are eight times more likely to be in life sciences than in engineering. Despite gains, women are not choosing careers in science and engineering in the same proportions as in other professional areas. Women who do enter science and engineering tend to be paid less and promoted less than white men.

The Pipeline.
Young women must be encouraged to pursue science and engineering studies at every point along the education pipeline, especially because negative attitudes toward women in these careers are prevalent. Re-entry programs are important to tap the large number of women who have been deflected from science and engineering study in their earlier educational experiences. Special efforts should be focused on support to complete graduate training and to achieve tenured faculty positions. Policies which assist women in balancing career and family responsibilities are essential. Obviously, all of these factors also pertain to minority and disabled women.

Scientists and Engineers Needed



Exemplary Programs

Exemplary efforts to increase the participation by underrepresented groups in the science and engineering workforce include:

American Business. Many companies provide exemplary programs to support schools, teachers and students. They are too numerous to mention in detail here, so we refer you to: The Business Roundtable publication Business Means Business About Education, which describes 186 successful educational partnerships, and gives the name and phone number of the contact person in each company. We also commend Business Week magazine for its October 20, 1989 special 137-page insert and the National Alliance of Business Blueprint report, which show how business can participate in education reform. Contact: Sandra Byrne, National Alliance of Business, 1201 New York Avenue, N.W., Washington, DC 20005, (202) 289-2906.

The American Indian Science and Engineering Society (AISES). Encourages American Indian students to pursue college science and engineering majors. On-campus chapters provide peer support, job finding assistance, and tutoring. Contact: Mr. Norbert Hill, AISES, 1085 14th Street, Suite 1506, Boulder, CO 80302, (303) 492-8658.

The Association of Science-Technology Centers. Promotes special outreach efforts to young women and minorities through science museum hands-on experience. Contact: Ms. Bonnie Van Dorn, 1413 K Street, N.W., 10th Floor, Washington, DC 20005-3405, (202) 371-1171.

The California State University System. "Growing their own," future teachers by establishing the Forgivable Loan Doctoral Incentive Program, and accommodating disabled students and employees through the Assistive Device Program. Contact: Dr. Lee Kerschner, Vice Chancellor, California State University, 400 Golden Shore, Suite 316, Long Beach, CA 90802-4275, (213) 590-5708.

"Clearinghouse on Implementation of Child Care and Eldercare Services" A computer database program provides employers with information and technical assistance to develop policies to assist their employees in the area of dependent care, alternative work schedules and other benefits to improve work productivity, and attract and retain skilled and professional workers. Contact: CHOICES, Women's Bureau, U.S. Department of Labor, 200 Constitution Ave, NW, Room S3306, Washington, DC 20210, 1-800-827-5335.

Comprehensive Mathematics and Science Program. Challenges minority high school students to excel in mathematics. Contact: Dr. Gilbert J. Lopez, Columbia University, 510 Mudd Building, New York, NY 10027, (212) 228-0950.

Cooperative (CO-OP) Education Programs. Co-op programs have been used extensively by DOD, NASA, and Department of Energy for many years to attract minority and female students as entry level science or technology professionals. For instance, the Department of the Navy has a centralized Co-operative Education Program for long-range planned intake of professional employees (primarily women and minorities) with mathematics, science and engineering skills. A recently implemented adjunct is a special initiative to recruit Hispanic baccalaureate students. Contact: Mr. Frank Cipolla, Director of Personnel Management, ODASD(CPP), Department of Defense, Washington, DC 20301, (202) 695-5348.

Department of Defense Science and Engineering Apprenticeship Program. Designed to appeal to talented women and minority high school students, the apprenticeship encourages them to seek careers in science and technology, and provides them support and an 8-week working experience in a scientific or engineering environment. Originated in 1979, the program has expanded to include almost all of the DOD Laboratories and nearly 1,000 students each summer. Contact: Ms. Jeanne Carney, Staff Specialist, Office of Research and Laboratory Management, Department of Defense, Washington, DC 20301, (202) 694-0205

El Ingeniero. Increases 7th and 8th grade Hispanic youths' interest in and ability to pursue careers in math and science. Students are exposed to program components that focus on: self-awareness; career exploration; classroom lectures; project assembly; and hands-on laboratory experimentation. An alumni component offers SAT preparation, college selection assistance and other services. Over 50 percent of the first two cohorts are now enrolled in college engineering/science programs. Contact: Lucy Negron-Evelyn, Montgomery County Hispanic Coalition, Silver Spring, MD 20902, (301) 942-6628.

Family Math. Developed at the Lawrence Hall of Science, Berkeley. Family Math gets parents and young children to learn math together and involves parents in their children's schools. In the last five years, Family Math has reached 34,000 families. Contact: Ms. Nancy Kreinberg, Lawrence Hall of Science, University of California, Berkeley, CA 94720, (415) 642-1823.

"Get Into the Equation". Encourages minority families to set college as a goal and gives practical advice on how to prepare for science and engineering majors. Contact: Office of Academic Affairs, The College Board, 45 Columbus Avenue, New York, NY 10023-6992, (212) 713-0000.

Graduate Student Researchers Program (Underrepresented Minority Focus). Students collaborate with university investigators working on NASA-funded projects and spend a period of residency at a NASA field center conducting research on aerospace-related projects. The program offers up to $18,000 per year of support for 3 years. Contact: Dr. Yvonne B. Freeman, NASA Headquarters, Code U, Washington, DC 20546, (202) 453-2171.

The Hispanic Mother-Daughter Project. This Arizona State University project focuses on eighth grade girls, building on the strong mother-daughter relationships intrinsic to Hispanic families. In some cases, mothers pursue college degrees along with their daughters. Contact: Dr. Nancy Felipe Russo, Arizona State University, Tempe, AZ 85287-1801, (602) 965-2358.

Illinois Institute of Technology Minority Engineering Program. Succeeds in attracting and graduating minority students in engineering. Contact: Mr. Mark Angelini or Mr. Leroy Kennedy, Illinois Institute of Technology, Perlstein Hall, Room 222, 10 W. 33rd Street, Chicago, IL 60612, (312) 567-6976.

International Business Machines (IBM). IBM makes special efforts to hire people with disabilities, and has instituted many programs and policies designed to facilitate their employment and productivity. Contact: Mr. James G. Breene, IBM, P.O. Box 2150, Atlanta, GA 30055, (404) 988-2638 or Mr. Juan Sabater, IBM, 2000 Purchase Street, Purchase, NY 10577, (914) 697-6730.

Linkages. Developed by the American Association for the Advancement of Science, Linkages forms partnerships between schools, parents, community organizations and even churches. Its aim is to improve the math and science achievement of at-risk children. In three years, Linkages has reached an estimated 30,000 parents. Contact: Dr. Shirley Malcom, American Association for the Advancement of Science, 1333 H Street, N.W., Washington, DC 20005, (202) 326-6680.

Math, Engineering and Science Achievement Programs (MESA). This partnership between schools, universities, industry and parents identifies talent, offers tutoring and counseling, and provides role models from industry to encourage students to maintain good grades. MESA centers work with 131 high schools and reach about 4,000 students a year. Ninety percent of these students go to a college or university, and 66 percent major in science or engineering. Contact: Mr. Fred Easter, Lawrence Hall of Science, University of California, Berkeley, CA 94720, (415) 642-5064.

Math Science Network. Started at Mills College and expanded throughout the Nation, the Network encourages young women to take a full complement of math courses and exposes them to science and engineering careers. About 70,000 students participate annually. Contact: Ms. Cherrill Spencer, Resonex, Inc., 610 Palomar Avenue, Sunnyvale, CA 94086, (408) 720-8600.

Mathematical Sciences Education Board of the National Academy of Sciences. Building a national coalition to improve mathematics education for all children but with special emphasis on minority students. Contact: Dr. Ken Hoffman, Mathematical Sciences Education Board, 818 Connecticut Avenue, N.W., Suite 500, Washington, DC 20006, (202) 334-3294.

Minority Access to Research Careers (MARC). Supports minority students all the way to Ph.D. completion. Contact: Dr. Ruth L. Kirschstein, National Institutes of Health, 9000 Rockville Pike, Bethesda, MD 20892, (301) 496-5231.

National Action Council for Minorities in Engineering (NACME). Provides a forum for business, government and educational leaders to help achieve a world-class science and engineering workforce for the year 2000. Contact: Dr. George Campbell, 3 West 34th Street, New York, NY 10001-2281, (212) 279-2626.

National Consortium for Graduate Degrees in Engineering (GEM). Attracts minority students to, and supports them in, graduate study in engineering and the natural sciences. Contact: Dr. Howard Adams, P.O. Box 537, Notre Dame, IN 46556, (219) 287-1097.

National Laboratory/Minority Educational Institution Collaborative Programs. Supports joint scientific research/science education programs involving Department of Energy national laboratories and predominantly minority universities/colleges. Includes summer and academic year research internships for faculty and students, technical assistance from laboratory scientists to university faculty, joint research programs, scientific equipment loans, computer access and student mentoring and counselling. Contact: Mr. Richard E. Stephens, Director of University and Science Education Programs, Department of Energy, Washington, DC 20585, (202) 586-8949.

The National Parent-Teachers Association. Provides materials on mathematics education to every elementary school PTA president in the United States. Contact: Ms. Ann Kahn, 818 Connecticut Avenue, N.W., Suite 500, Washington, DC 20006, (202) 334-3294.

Office of Naval Research. Sponsors a $14 million program at six Historically Black Colleges and Universities to underwrite efforts to increase the quality and numbers of minority undergraduates in science and engineering over the next 5 to 6 years. Contact: Dr. Bruce B. Robinson, Director, Contract Research Department, OCNR-11, Arlington, VA, (202) 696-4101.

Professional Development Program. Raises minority students' achievement in college mathematics through peer tutoring and group study techniques. Contact: Dr. Uri Treisman, Lawrence Hall of Science, University of California, Berkeley, CA 94720. (415) 642-2115.

Professional Societies, such as the **Society of Automotive Engineers.** Focus new attention on what they can contribute to improving mathematics and science education, especially for underrepresented groups. Contact: Mr. Ray Morris, Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096, (412) 776-4841.

Purdue Engineering School. Purdue's Engineering School's support program for women has helped raise the proportion of female engineering students from 2 percent to 21 percent. Purdue retains women engineering students at the same rate as men. Contact: Dr. Jane Daniels, Purdue University, West Lafayette, IN 47907, (317) 494-3889.

Recruitment and Retention Program for Excellence in Engineering. Freshmen students receive scholarships, and previous years' students serve as mentors. They are also prepared for and agree to accept NASA Co-op assignments. Mentors' own benefit is evidenced by their 3.47 GPA in upper-level engineering courses. Contact: Mr. Michael Lee, NASA Project Director, U. of New Mexico, Farris Engr. Center #345, Albuquerque, NM 87137, (505) 277-5997.

Research at Historically Black Colleges and Universities. Principal investigators who are interested in conducting aeronautical and space science research, and in developing student researchers are provided funds by NASA. More than eighty principal investigators and over five hundred students participate in this research annually. Contact: Dr. Yvonne Freeman, NASA Headquarters, Code U, Washington, DC 20546, (202) 453-2171

Research Improvement in Minority Institutions (RIMI). Provides support for improvement in the research and training capabilities at minority institutions with graduate programs in science and/or undergraduate programs in engineering. Contact: Dr. Roosevelt Calbert, National Science Foundation, 1800 G Street, NW, Room 1225, Washington, DC 20550, (202) 357-7350.

The Saturday Academy. A cooperative effort between AETNA Life and Casualty, the District of Columbia Public Schools, and the

U.S. Office of Personnel Management, the Academy is an enrichment program for seventh grade students. Sixty seventh graders participate in each session which consists of ten consecutive Saturdays. Structured learning experience in mathematics, science, oral and written communication, and computer science are provided. Simultaneously, parents attend workshops and visit their children's classes. For more information, contact: Dr. Cheri Bridgeforth, Employee Development Specialist, U. S. Office of Personnel Management, 1900 E Street, NW, Washington, DC 20415, (202) 632-7370.

Smith College. Smith conducts summer workshops for teams of teachers and counselors to help them advise young women to enter science fields. Contact: Dr. Elizabeth Ivey, Smith College, McConnell Hall, Room 301, Northampton, MA 01063, (413) 584-2700.

Southern Consortium for Minorities in Engineering (SECME). Coordinates intervention programs across the Southeast United States to provide career guidance and preparation for engineering careers to 15,000 minority students a year. Contact: Mr. Guy Vickers, Georgia Institute of Technology, Atlanta, GA 30332-0270, (404) 894-3314.

Spelman Women Science and Engineering Scholars Program (WISE). Encourages Black women to pursue graduate training and research careers in engineering and science. The program features a six-week prefreshman summer academic session, research at NASA installations during subsequent summers and continuous exposure to a large potential network of women researchers. Women receive scholarships ranging from 80-100%. Contact: Dr. Etta Falconer, Chairperson, Division of Natural Sciences, Spelman College, Atlanta, GA 30314, (404) 681-3643.

The State of North Carolina. Established the University of North Carolina Mathematics and Science Network, which combines the resources of the state and federal governments and universities to bring students and teachers to research laboratories during the summer, and to provide daily enrichment activities for middle and high school students throughout the school year. Contact: Dr.Verna Benzler, Assistant Director, Pre-College Program, CB#3345, 201 Peabody Hall, UNC-Chapel Hill, Chapel Hill, NC 27599-3345, (919) 966-3256.

Summer High School Apprenticeship Program (SHARP). Provides an eight-week summer employment experience at NASA field installations for academically achieving underrepresented minority students, with mentors who are scientists, engineers or other technical specialists. Contact: NASA's Elementary and Secondary Program Branch, Educational Affairs Division, Mail Code XEE, Washington, DC 20546, (202) 453-8386

Uninitiated Introduction to Engineering (UNITE) Program. Provides special instruction in science and mathematics for socially and economically disadvantaged high school students. Universities annually hold four 6-week sessions between June and mid-August. Total annual participation is approximately 215, mostly minority students. Application is made through guidance counselors and other student advisors for awards which may include costs of travel and room and board. Contact: Mr. John Nelson, Office of Small and Disadvantaged Business, Department of the Army, Washington, DC 20310, (202) 697-2868.

Visiting Professorships for Women (VPW). Provides support to women scientists and engineers to advance their careers, and to encourage women students to pursue careers in science and engineering. Contact: Dr. Gretchen Klein, National Science Foundation, 1800 G Street, NW, Room 1225, Washington, DC 20550, (202) 357-7734.

"Women in Non-Traditional Careers." A curriculum guide designed to assist schools and training programs to help young people broaden their career horizons, make long-range career plans, understand the school-to-work connection, and explore issues related to sex equity and non-traditional careers such as science occupations. Contact: Director, Women's Bureau, U.S. Department of Labor, 200 Constitution Avenue, NW, Room S3002, Washington, DC 20210, (202) 523-6652.

About the Task Force

- The Task Force was established by the U.S. Congress in Public Law 99-383, Section 8, to report to the President, the head of each participating Federal agency, and the Congress;

- Members are from 15 Federal agencies and leaders in the private sector and education;

- Purpose is to develop a long-range plan for broadening participation in science and engineering;

- Public hearings were held in Albuquerque, Atlanta, Baltimore, Boston, Chicago, Kansas City, and Los Angeles between Fall 1987 and Spring 1988;

- An interim report with recommendations was issued in September, 1988; 55,000 copies were distributed and significant discussions and actions were instigated;

- The final report reiterates our goals, and calls for the long-term commitment to fulfill them;

- Co-chairs of the Task Force are:

  Dr. W. Ann Reynolds,
  Chancellor of the California State University System and

  Mr. Jaime Oaxaca,
  Vice Chairman of the Board,
  Coronado Communications;

- Executive Director is Sue Kemnitzer;

- The Task Force terminates on January 31, 1990. For information after that date contact the Director of the National Science Foundation.

Task Force Members

Co-Chairs

Mr. Jaime Oaxaca
Vice Chairman
Coronado Communications

Dr. W. Ann Reynolds
Chancellor
California State University System

Members

Dr. Howard G. Adams
National Consortium for Graduate Degrees in Engineering, Inc.

Dr. Kenneth Bell
Delaware State College

Dr. E. Ann Berman
Tri-Space, Inc.

Mr. James A. Blaglow
National Aeronautics and Space Administration

Ms. Ferial Bishop
Environmental Protection Agency

Jo Anne Brasel, M.D.
Harbor UCLA Medical Center

Dr. Mary E. Carter
Department of Agriculture

Dr. Alan Clive
Federal Emergency Management Agency

Dr. Mary E. Clutter
National Science Foundation

Dr. Joseph G. Danek
National Science Foundation

Mrs. Jill Emery
Department of Labor

Mr. Herbert Fernandez
Department of Defense

Dr. Essex E. Finney, Jr.
Department of Agriculture

Ms. Claire E. Freeman
Department of Housing and Urban Development

Ms. Stella Guerra
Department of the Interior

Dr. Ruth A. Haines
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Ms. Penelope M. Hanshaw
Department of the Interior

Mr. Norbert Hill
American Indian Science and Engineering Society

Ms. Amoretta H. Hoeber
TRW, Inc.

Mr. M. Carl Holman*
National Urban Coalition

Mr. James Jeffers
State of Maryland

Dr. Harriett G. Jenkins
National Aeronautics and Space Administration

Ms. Antionette G. Joseph
Department of Energy

Mrs. Minnie M. Kenny
Department of Defense

Dr. Ruth L. Kirschstein
Dept. of Health and Human Services

Dr. Mary Harley Kruter
White House Office of Science and Technology Policy

Mr. Robert Cyrus Laughter
Laughter Corporation

Ms. Fran Lopes
Office of Personnel Management

Dr. Shirley Malcom
American Association for the Advancement of Science

Ms. Stephanie Lee-Miller
Department of Transportation

Ms. Barbara Morgan
Teachers in Space Program

Mr. Robert H. Morris
Federal Emergency Management Agency

Dr. Norine Noonan
Office of Management and Budget

Ms. Kathleen Peery
Department of Energy

Mrs. Shirley Peterson
Northrop Corporation

Mr. Raul Ernesto Reyes
National Aeronautics and Space Administration

Dr. Miguel Rios, Jr.
Orion International Technologies, Inc.

Miss Gloria R. Sabatini
Health and Public Affairs Consultants

Dr. Lawrence Scadden
Electronic Industries Foundation

Ms. Selma Sierra
Department of the Interior

Mr. Nathaniel Scurry
Environmental Protection Agency

Mr. Curtis J. Smith
Office of Personnel Management

Mrs. Patricia McGill Smith
Department of Education

Ms. JoAnn Sondey-Hersh
Department of Commerce

Mr. Alvin Thomas
Department of Transportation

Ms. Sonia Mejia-Walgreen
Southeastern Massachusetts University

Dr. Luther Williams
National Science Foundation

* The Task Fo grets the death of its esteemed member, M. Carl Holman on August 9, 1986.

Public Hearings Witnesses

Albuquerque, New Mexico - September 22, 1987

Ms. Connie Alexander
National Aeronautics and Space Administration

Mr. Ted L. Barber
U.S. Army Atmospheric Science

Ms. Teresa Barts

Dr. Henry Casso
Project Uplift

Dr. Jack Cole
University of Arizona

Honorable Pete Domenici
U.S. Senate (Represented by Mr. Tony Gallegos)

Dr. Ann Erickson
Salt Lake Community College

Dr. John Foley
Los Alamos National Laboratory

Ms. Rosemary Frederickson
EG&G

Ms. Elizabeth Gallegos
Office of Senator Jeff Bingaman

Mr. John Garcia
Hispanic Chamber of Commerce

Dr. Leo Gomez
Sandia National Laboratory

Dr. Richard J. Griego
University of New Mexico

Mr. Francisco A. Guevara
Mexican American Engineering Society

Mr. Norbert Hill
American Indian Science and Engineering Society

Mr. Richard Jimenez
Society of Hispanic Professional Engineers

Dr. Nina Kay
Huston-Tillotson College

Mr. Gregory Kennedy
Alamogordo Space Center

Dr. Robert L. Knutilla
U.S. Geological Survey

Dr. Julie Hayes Lutz
Washington State University

Dr. Kirk MacGugan
Protection and Advocacy System

Ms. Louella Marr
Luna Vocational Technical Institute

Dr. Dewayne Matthews
New Mexico Commission on Higher Education

Mr. Matthew D. Padilla
University of New Mexico

Honorable William Richardson
U.S. House of Representatives
(Represented by Mr.Gary Townsend)

Ms. Rose Marie Rodriquez
American GI Forum of New Mexico

Dr. Nancy Felipe Russo
Arizona State University

Mr. Jim Tarro
Digital Equipment Corporation

Ms. Katherine H. Tijerina
New Mexico State University

Ms. Sheila Tobias

Ms. Barbara Torres
BDM Corporation

Mr. Jerry Watkins
New Mexico School for the Visually Handicapped

Chicago, Illinois - October 29, 1987

Dr. Ted Ansbacher
Museum of Science and Industry

Dr. Elaine J. Copeland
University of Illinois-Urbana

Mr. Cecil Curtwright
National Association of Minority Engineering Program Administrators

Ms. Jane Daniels
Purdue University

Ms. Patricia Finn
Association for Women in Science

Dr. Jane Butler Kahle
Purdue University

Mr. Thomas Kucera
American Chemical Society

Ms. Christa Lane-Larsen
3-M Company

Dr. Donald N. Langenberg
University of Illinois at Chicago

Dr. William K. LeBold
Purdue University

Dr. Arlene Lennox
Fermi Laboratory

Dr. Thomas L. Martin, Jr.
Illinois Institute of Technology

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Northern Illinois University

Dr. Richard Neblett
National Action Council for Minorities in Engineering

Dr. Robert W. Springer
Argonne National Laboratories

Ms. Carolyn Stern
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Mr. Anibal Taboas
Argonne National Laboratories

Honorable James Thompson
Governor of Illinois
(Represented by Ms. Vicki Sebela)

Dr. Marion C. Thurnauer
Association for Women in Science

Mr. William T. Trent
University of Illinois-Urbana

Dr. Yvonne Walker-Taylor
Wilberforce University

Dr. Izaak Wirszup
University of Chicago

Kansas City, Missouri - December 1, 1987

Dr. Don Ahshapanek
Haskell Indian Junior College

Dr. Elizabeth Berman Appelbaum

Honorable John Ashcroft
Governor of Missouri
(Represented by Ms. JoeAnn Platt)

Dr. Manuel Berriozabal
University of Texas- San Antonio

Mr. Jose de Jesus Esteban
National Weather Service

Dr. Joseph L. Estrada
Department of Health and Human Services

Ms. Cheryl Fisher
Parkview High School

Dr. Gene Hampton
Science Pioneers, Inc.

Dr. Diana G. Heisel
University of Missouri-Columbia

Ms. Karen Hummel and
Mr. Tom Cummings
Mid-America Consortium for Engineering and Science Achievement

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Dawn Cunningham
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National Medical Association

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Dr. Patricia MacCorquodale
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Ms. Ruth Margolin
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Mr. John P. McTague
Ford Motor Company

Dr. Charles Rankin
Kansas State University

Dr. Walter S. Smith
University of Kansas

Mr. Nate Thomas
National Association of Minority Engineering Program Administrators

Los Angeles, California - January 14, 1988

Mr. Raul Alvarado, Jr.
Rockwell International

Ms. Eva W. Bien
Naval Weapons Center, China Lake

Mr. Ralph Casarez and
Mr. Robert Cole
Casarez and Cole

Ms. Helena Christofferson
Lawrence Livermore Laboratory

Dr. Eugene H. Cota-Robles
University of California, Berkeley

Dr. Stuart E. Gothold
Los Angeles County Office of Education

Ms. Nancy Guitterez
Pacific Bell

Ms. Dorothy Hudig
University of Nevada

Ms. Nancy Kreinberg
University of California, Berkeley

Dr. Raymond B. Landis
California State University, Los Angeles

4c

Ms. Frances Manion
Santa Monica Community College

Dr. Diane Ross
California State University, Fullerton

Dr. James M. Rosser
California State University, Los Angeles

Mr. Jesse Rubalcaba
California Institute of Technology

Ms. Syvila Weatherford
National Council of Black Engineers and Scientists

Atlanta, Georgia - March 2, 1988

Ms. Debbie Baldridge
Discovery Learning

Mr. James G. Breene
International Business Machines Corporation

Ms. Iris M. Carl
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Ms. Carolyn C. Chesnutt
Southeastern Consortium for Minorities in Engineering

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Ms. Chandra French
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Dr. Joe Johnson
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Centers for Disease Control

Dr. Charles Meredith
Atlanta University Center

Mr. Juan Sabater
International Business Machines Corporation

Mr. William Shackelford
Industry Education Connection, Enterprises

Dr. Melvin R. Webb
Clark College

Boston, Massachusetts - April 7, 1988

Mr. Elmer C. Bartels
Massachusetts Rehabilitation Commission

Dr. Janice Button-Shafer
American Physical Society

Dr. Valerie Crane
Research Communications, Ltd.

Ms. Patsy Dickinson
Radcliffe College

Ms. Phyllis Dohanian
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Middlesex Community College

Ms. Andrea Shlipak
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Dr. Harlee Strauss
Gradient Corporation

Dr. Norma Ware
Radcliffe College

Dr. Sheila Widnall
Massachusetts Institute of Technology

Baltimore, Maryland - May 4, 1988

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Uniformed Services University

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Naval Research Laboratory

Dr. Rita Colwell
University of Maryland

Mr. Thomas E. Daniels
National Technical Association

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Many thanks to the staff of the Task Force:

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Executive Director
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Deputy Executive Director
Faye Brown,
Secretary
Denise Wallace,
Secretary

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Frank Collea
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Clay Morgan
Mary Ann Orlando
Clara Schiffer
Deborah Shapley
Bonney Sheahan
Diane Sheahan

Law Establishing the Task Force

Public Law 99-383

Sec. 8. (a) It is the purpose of this section to establish a task force on women, minorities, and the handicapped in science and technology to:

(1) examine the current status of women, minorities, and the handicapped in science and engineering positions in the Federal Government and in federally assisted research programs;

(2) coordinate existing Federal programs designed to promote the employment of women, minorities, and the handicapped in such positions;

(3) suggest cooperative interagency programs for promoting such employment;

(4) identify exemplary State, local, or private sector programs designed to promote such employment; and

(5) develop a long-range plan to advance opportunities for women, minorities, and the handicapped in Federal scientific and technical positions in federally assisted research, and to coordinate the activities of participating agencies with the Committee on Equal Opportunities in Science and Engineering established by section 36 of the National Science Foundation Authorization and Science and Technology Equal Opportunities Act (42 U.S.C. 1885c), after the termination of the task force established by this section.

(b) For purposes of this section, the term "participating agency" means

(1) the National Science Foundation;

(2) the Department of Health and Human Services;

(3) the National Aeronautics and Space Administration;

(4) the Environmental Protection Agency;

(5) the Department of Agriculture;

(6) the Department of Defense;

(7) the Department of Education;

(8) the Department of Energy;

(9) the Department of Commerce; and

(10) the Department of the Interior.

(c) (1) The task force on women, minorities, and the handicapped in science and technology shall be composed of individuals appointed by participating agencies pursuant to this subsection.

(2) The head of each participating agency shall appoint two individuals to serve as members of the task force. If an appointed member is unable to serve for the duration of the task force, the head of the participating agency who appointed that member shall appoint another individual to fill the vacancy.

(3) Task force members may be appointed from private business, academia, professional associations, or nonprofit foundations.

(d) The task force shall prepare and submit a report on its findings and recommendations to the President, the Congress, and the head of each participating agency not later than December 31, 1989.

(e) The Office of Science and Technology Policy shall call the first meeting of the task force not later than 90 days after the date of enactment of this Act, shall ensure that each participating agency has appointed two members, and shall assist the task force to meet its objectives.

(f) (1) Members of the task force not otherwise employed by the Federal Government shall be reimbursed for travel, subsistence, and other necessary expenses incurred by them in carrying out the duties of the task force.

(2) The Director of the National Science Foundation shall make provision for administrative support of the task force, and may enter into agreements with the heads of other participating agencies to facilitate the work of the task force.

(g) The task force shall terminate on January 31, 1990.