



FACT SHEET 2003–6

SCIENTISTS AND ENGINEERS: VITAL STATISTICS

Current Numbers, Recent Growth

- In 2002, scientists numbered 2,524,000 and engineers 2,003,000. Together they accounted for 21% of the professional labor force.¹
- Technicians and technologists were more than 7% of the white collar work force in 2002; science and engineering technicians and computer programmers accounted for 1,846,000, or almost 42% of them.²
- From 1992–2002 the number of jobs in the U.S. increased by 14%, while:
 - Mathematical and computer scientists increased by 213% and computer systems analysts and scientists increased by 246%.³
 - All natural scientists increased by almost 17%; medical scientists grew by 32%.⁴
 - Engineering jobs increased by 14%. Electrical and electronics engineers increased by 31% and civil engineers by 21%.⁵
 - Engineering and related technologists and technicians increased by 5%. Electrical and electronic technologists increased by 30%. Drafting occupations declined.⁶
 - Science technicians increased overall by 20%. Biological technicians increased by 66%. The number of chemical technicians declined.⁷

2000–2010: IT Boom Projected

- Jobs for scientists (excluding social scientists) and engineers are expected to increase by 44% from 2000–2010.⁸
- Eight of the 10 fastest-growing occupations are computer-related, according to the Bureau of Labor Statistics.⁹

BLS projected increases also included these:

- Applications software engineers will double and systems software engineers will increase by 90%.¹⁰
- Computer support specialists will increase by 97%, while network and systems administrators will increase by 82%.¹¹
- Network systems and data communications analysts will increase by 77%, while desktop publishers, database administrators, and computer systems analysts will increase by 60–67%.¹²
- Computer programmers will increase by only 16.2%, and computer hardware engineers by 25%.¹³
- The economy's fastest growing industry, and the second largest in terms of employment, is computer and data processing services, where employment of computer and mathematical occupations is projected to more than double. In almost all industries, employment of these workers is projected to grow much faster than average.¹⁴

Other Employment Changes, 2000–2010

- Life, physical, and mathematical science occupations are expected to increase more modestly. Life and physical scientists will increase by about 18% and mathematical scientists by less than 6%. The largest increases in these areas are expected in medical science (26%), biological science (21%), and environmental and geoscience (21.5%).¹⁵
- Employment growth for engineers is projected at 9.4%, less than the 15.2% anticipated for the work force as a whole. The greatest increases are expected in biomedical engineering (31.4%), environmental engineering (26%). Losses in petroleum engineering and mining and geological engineering are projected.¹⁶
- Engineering technicians, excluding drafters, will increase by 12%; drafters will increase by 19.5%.¹⁷
- Life, physical, and social science technicians are projected to increase by 19%. Biological technicians are expected to increase by more than 26%.¹⁸

Median Weekly Earnings Vary

- Median weekly earnings for engineers ranged from a high of \$1,366 for aerospace engineers to a low of \$1,034 for industrial engineers in 2002.¹⁹
- For scientists, median weekly earnings for mathematical and computer scientists ranged from a high of \$1,125 for computer systems analysts and scientists to a low of \$1,028 for statisticians. Among natural scientists, physicists and astronomers earned the high of \$1,525, while agricultural and food scientists earned the low of \$750.²⁰
- Among engineering and related technologists and technicians, those in mechanical engineering earned the most (\$897) while industrial engineering technicians earned the least (\$638).²¹
- Among science technicians, those who were other than chemical or biological technicians earned the most (\$714), while biological technicians earned the least (\$597).²²
- More women and minorities are in lower than in higher paying technical occupations.²³

Women's Situation

- Women's participation in science, engineering, and technical occupations increased from 1995–2002, although they are still underrepresented in many fields, particularly in mathematical and computer science and engineering.
 - From 1995–2002, female natural scientists increased by 15%. In 2002, they comprised 35% of the field.²⁴
 - Women are well-represented in medical and biological sciences, where they were 61% and 44% of the scientists in 2002. However, they accounted for less than 30% of chemists in 2002.²⁵
 - Women mathematical and computer scientists grew by 41% from 1995–2002; the number of men increased by 51%. Women were 30.5% of math and computer scientists in 2002.²⁶
 - The number of women engineers increased by 25% from 1995–2002, but they still held only 10.8% of all engineering jobs (up from 8.4% in 1995).²⁷
 - The number of female engineering technicians increased by 28%. Female science technicians increased by 5%. In 2002, women were almost 21% of engineering technicians, and 47% of science technicians.²⁸
- The percentage of women earning bachelor's, master's, and doctoral degrees in the sciences, engineering, and related technologies increased from 1990–2000, except for a slight decline in bachelor's degrees in computer sciences. In 2000 as in 1990, women earned the majority of bachelor's and master's degrees in biological/life sciences.²⁹
- In almost every field, men's weekly median earnings were approximately 20% higher than women's.³⁰
- The gap in pay between male and female operations and systems researchers and analysts and between male and female computer programmers increased from 1995–2002. In these years,

Congress greatly increased the number of (mostly male) H-1B guest workers permitted to enter the country, mostly to work in I.T. This exacerbated the underrepresentation and wage gap for women, Blacks and Hispanics in these occupations.³¹

Blacks and Hispanics: Underrepresented

- Blacks and Hispanics are severely underrepresented in science and engineering:
 - In 2002, Blacks were 11.3% of the labor force, but only 4.2% of natural scientists, 7.6% of math and computer scientists, and 4.6% of engineers.³²
 - Blacks held 6.8% of science technician positions and 8% of engineering technician positions.³³
 - Participation in science and engineering occupations is even lower for persons of Hispanic origin. Hispanics were 11.1% of the labor force in 2002, but only 2.7% of natural scientists, 4.5% of math and computer scientists, and 3.6% of engineers.³⁴
 - Hispanics were more equally represented in technician and technologist occupations, at 6.9% of science technicians, and almost 6.1% of engineering technicians in 2002.³⁵
- In nearly every science and engineering occupation, white men's median weekly earnings were higher in 2001 than those of Black men and women, Hispanic men and women, and white women.
 - Among math and computer scientists, white men earned 11.7% more than Black men, almost 19% more than Hispanic men, 23% more than white women, 29.4% more than Black women, and 23.1% more than Hispanic women.³⁶
- Among scientists and engineers, Blacks and Hispanics were more likely than whites to be unemployed in 2002. Among technicians and technologists, Blacks were more likely to be unemployed than either whites or Hispanics.³⁷

Union Membership

- Union membership fluctuated between 1990 and 2002 within these occupations, increasing slightly among scientists and declining slightly among engineers and technicians.³⁸
 - In 2002, the highest union membership rate in the sciences was among forestry and conservation scientists (11%); in engineering, among metallurgical and materials engineers (19.4%); and among technicians and chemical technicians (15.5%).³⁹
 - Among technologists and technicians, unionized workers earned an average of \$23.78 an hour, compared to an average hourly wage of \$18.52 for non-unionized workers.⁴⁰
- In some cases, scientists and engineers who are nonunion earn more than those who are union members. This is because a far greater proportion of scientists and engineers in government and academia are organized than in the higher paying private industry where most scientists and engineers work.⁴¹

^{1&2} U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings*, Volume 50, No. 1.

³⁻⁷ U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings*, Volume 50, No. 1; Volume 40, No. 1.

⁸⁻¹⁸ Hecker, Daniel, "Occupational Employment Projections to 2010," U.S. Department of Labor, *Monthly Labor Review*, November 2001.

¹⁹⁻²³ U.S. Department of Labor, Bureau of Labor Statistics, Current Population Survey, Unpublished Earnings Table A-26.

²⁴⁻²⁸ U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings*, Volume 50, No. 1; Volume 40, No. 1.

²⁹ National Science Foundation, Scientists and Engineers Statistical Data System (SESTAT), www.nsf.gov/sbe/srs/srsdata.htm#SESTAT.

³⁰ U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings*, Volume 50, No. 1.

³¹ Ibid; *Employment and Earnings*, Volume 43.

³²⁻³⁵ *Employment and Earnings*, Volume 50, No. 1, *op. cit.*

^{36&37} Scientists and Engineers Statistical Data System (SESTAT), *op. cit.*

³⁸⁻⁴¹ BNA Plus, *Union Membership and Earnings: Compilations from the Current Population Survey*, 2001 and 2003 editions.

For more information on scientists and engineers, see DPE's publication, *Current Statistics on Scientists, Engineers and Technical Workers* and check out our Website: www.dpeaflcio.org.

The Department for Professional Employees, AFL-CIO (DPE) comprises 25 AFL-CIO unions representing four million people working in professional, technical and administrative support occupations. DPE-affiliated unions represent: scientists, engineers, and IT workers; journalists and writers, broadcast technicians, and communications specialists; librarians, teachers, college professors, and school administrators; nurses, doctors, and other health care professionals; performing and visual artists; professional athletes, social workers, psychologists, and many others. DPE was chartered in 1977 in recognition of the fast-growing professional, technical and other highly skilled white collar occupations.

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