

Commission on Professionals in Science and Technology

STEM Workforce Data Project: White Paper No. 1

A Half-Century Snapshot of the STEM Workforce, 1950 to 2000

Produced for the
Commission on Professionals in Science and Technology by:

Dr. B. Lindsay Lowell,
Institute for the Study of International Migration,
Georgetown University,

and

Dr. Mark Regets,
Institute for the Study of Labor (IZA) Bonn, Germany
and National Science Foundation, Arlington, Virginia

August 2006



**Commission on Professionals
in Science and Technology**

1200 New York Avenue, NW, Suite 113

Washington, DC 20005

Tel: (202) 326-7080

Fax: (202) 842-1603

info@cpst.org

<http://www.cpst.org>

A Half-Century Snapshot of the STEM Workforce, 1950 to 2000

Dr. B. Lindsay Lowell and Dr. Mark Regets

August 2006

ABSTRACT

The first report in the STEM Workforce Data Project series, "Twenty Years of Scientific and Technical Employment," used data from the U.S. Bureau of Labor Statistics (BLS) to document trends in the number of jobs from 1983 through 2003 in more than 40 scientific, technological, engineering and mathematical (STEM) occupations. Subsequent reports in this series addressed the participation of women, minorities and the foreign born in STEM occupations. These reports and data archives can be found at <http://www.cpst.org>.

This report documents the significant growth of the STEM workforce and looks at the major STEM occupational groups from 1950 to 2000. While the total labor force grew 130 percent to 139 million during this period, the STEM workforce grew 669 percent to reach 6.9 million. The report shows the total number of STEM workers, as well as the percentage of those who are women, minorities and foreign born. The growth of the STEM workforce has been greater than that of other major professional occupations since the 1950s. Women increased from 8 percent of STEM workers in 1950 to 26 percent in 2000. Despite these strong gains, they remain underrepresented in STEM relative to their 47 percent share of all U.S. workers. Minorities in STEM occupations were too few in number to be reliably counted in Census data until about 1970. They continue to be underrepresented in STEM jobs, with the exception of Asians who in 2000 made up 10 percent of STEM workers and 4 percent of the total U.S. labor force. Foreign-born STEM workers made significant gains across time, especially in the 1990s. During that decade they contributed one third of STEM employment growth and their representation in the life and physical sciences doubled to roughly 24 percent of each workforce. Among foreign-born STEM workers, the shift has been to those from Asian origins. In 1970, 54 percent of foreign-born workers were from Europe; by 2000 about 59 percent were from Asia.

INTRODUCTION

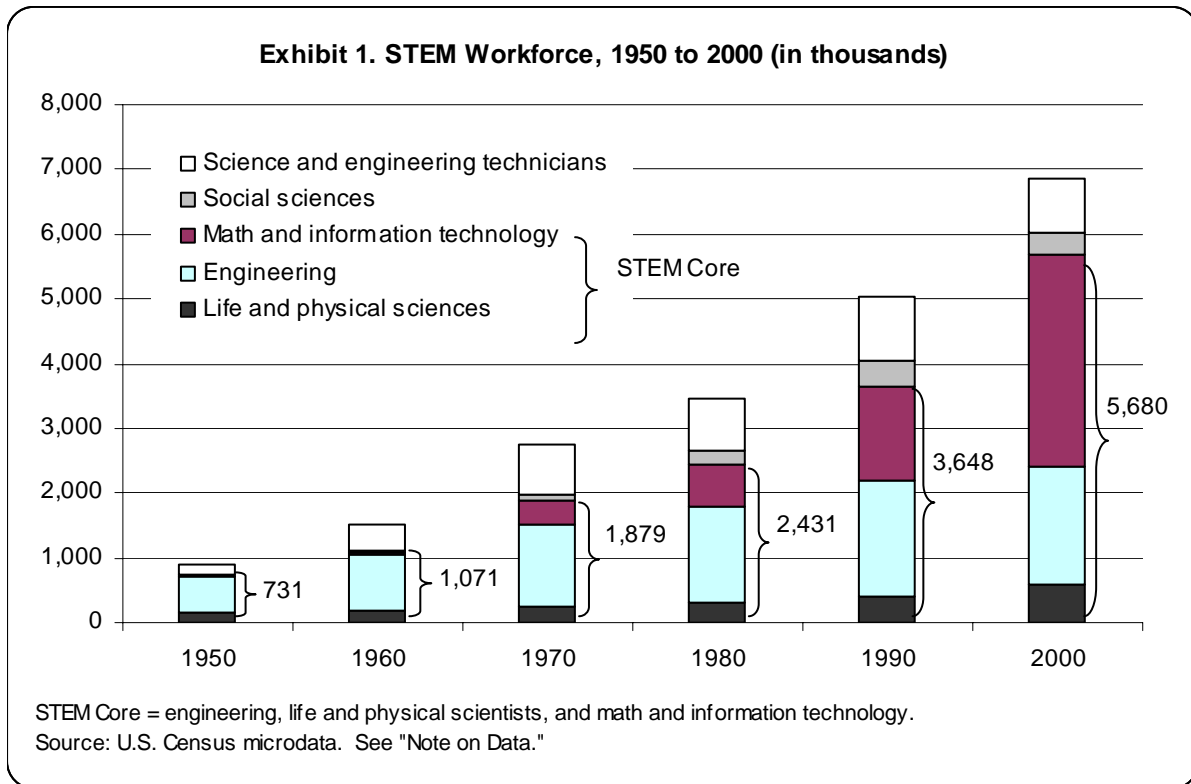
The decennial U.S. Census is the only data source for a long view of the STEM workforce. However, published Census data do not present the same occupations over time, nor do they further tabulate the data with precisely the same minority classifications. We use public use data in this report to generate estimates for the seven major STEM occupational groupings – life sciences, physical sciences, engineering, science technicians, engineering technicians, mathematicians and information technology, and the social sciences. More detailed occupations are somewhat unreliable because occupational definitions may change and new occupations emerge. For example, computer occupations did not exist before 1970 and as of 2000 many economists appear to have been classified as market researchers. However, the major STEM occupational groupings are meaningful because the process of aggregation "smooths" the potential effects of occupational change. The six Censuses used in this report tell a story of long-term growth and the increasing representation of women, minorities and the foreign born among the seven major categories of STEM workers. This paper includes the basic details on these changes and more complete numbers by occupational grouping are available in Appendices 3 through 10. Appendix 1 includes the list of occupations included in each broad category used in this paper.

GROWTH IN STEM OCCUPATIONS

The STEM workforce grew significantly during the five decades covered by these data. It was 7.7 times larger in 2000 than in 1950. The growth of the STEM workforce far outstripped that of the total labor force which grew 2.3 times. It even outstripped the growth of all managers and professionals, which grew 4.9 times larger from 1950 to 2000. Of course, the rapid growth of these highly skilled occupations is no surprise because the United States has been transitioning from an industrial to a knowledge-based economy since the end of World War II.

While STEM workers went from just 1.5 percent of all workers in 1950 to 5 percent in the year 2000, they remain a rather small percentage of the U.S. labor force. It is remarkable that such a small percentage of the U.S. labor force plays a leading role in generating today's knowledge-based economy.

The most rapid growth of the number of STEM workers occurred in the 1950s and 1960s, 68 percent and 84 percent in each decade respectively.¹ Growth slowed during the 1970s to 25 percent, only to pick up to 46 percent growth in the 1980s. The 1990s growth of 36 percent seems somewhat slow compared with these historical trends. Yet, because the STEM workforce began from small numbers, its *rate* of growth is necessarily slower as it has gained in size. In fact, the growth of the STEM workforce significantly outstripped that of all workers, as well as that of managers and professionals in almost all decades. The STEM growth rate in the 1990s was a little more than three times that of the overall labor force.



¹ See yearly growth rates estimated from these data in the National Science Foundation's 2006 report on *Science and Engineering Indicators*.

Exhibit 2.

Employed Persons in Broad STEM Occupations, 1950 to 2000

	1950	1960	1970	1980	1990	2000
<u>Number of workers, in thousands</u>						
Larger aggregates for comparisons:						
All workers reporting an occupation	60,288	69,053	81,540	105,665	124,773	138,754
All managerial & professional specialty occupations	10,303	12,766	18,125	27,749	39,315	50,044
All professional specialty occupations	5,166	5,440	6,117	10,386	15,220	18,953
STEM summaries:						
All STEM occupations combined	894	1,503	2,764	3,459	5,046	6,871
STEM, except social scientists	875	1,469	2,657	3,239	4,648	6,520
STEM, except science, engineering technicians	750	1,105	1,986	2,651	4,046	6,032
STEM, except social scientists and technicians	731	1,071	1,879	2,431	3,648	5,680
STEM occupational groupings:						
Life sciences	43	55	86	126	159	222
Physical sciences	100	119	167	188	251	372
Engineering	562	869	1,250	1,470	1,781	1,820
Science technicians	116	255	516	190	215	299
Engineering technicians	28	143	262	618	785	540
Mathematicians and information technology	26	28	377	646	1,457	3,267
Social sciences	18	34	107	220	398	351
<u>Occupational workforce of all workers, percent</u>						
Larger aggregates for comparisons:						
All workers reporting an occupation	100.0	100.0	100.0	100.0	100.0	100.0
All managerial & professional specialty occupations	17.1	18.5	22.2	26.3	31.5	36.1
All professional specialty occupations	8.6	7.9	7.5	9.8	12.2	13.7
STEM summaries:						
All STEM occupations combined	1.5	2.2	3.4	3.3	4.0	5.0
STEM, except social scientists	1.5	2.1	3.3	3.1	3.7	4.7
STEM, except science, engineering technicians	1.2	1.6	2.4	2.5	3.2	4.3
STEM, except social scientists and technicians	1.2	1.6	2.3	2.3	2.9	4.1
STEM occupational groupings:						
Life sciences	0.1	0.1	0.1	0.1	0.1	0.2
Physical sciences	0.2	0.2	0.2	0.2	0.2	0.3
Engineering	0.9	1.3	1.5	1.4	1.4	1.3
Science technicians	0.2	0.4	0.6	0.2	0.2	0.2
Engineering technicians	0.0	0.2	0.3	0.6	0.6	0.4
Mathematicians and information technology	0.0	0.0	0.5	0.6	1.2	2.4
Social sciences	0.0	0.0	0.1	0.2	0.3	0.3

Source: Tabulations of U.S. Census microdata. See "Note on Data" in this report.

The STEM occupational groupings also showed steady numerical growth for the most part. Most notable was the explosive growth of mathematics and information technology, particularly after 1970 which was the first year that computer occupations were included. Some portion of the 1990-2000 change for the information technology occupations probably results from changes in the Census occupational definitions. But by 1990 mathematicians and especially information technology workers comprised 29 percent of all STEM workers and nearly half (48 percent) by 2000. Note that some 98 percent of workers in this occupational grouping in 2000 were in newly classified and expanded information and technology occupations. Engineering historically has been the biggest STEM field. It retained 27 percent of all STEM workers in 2000, even though it

grew only 2 percent in the 1990s. Life sciences have shown solid growth decade to decade. Physical sciences, where past Census growth has been less steady, grew 48 percent in the 1990s. However, there is notable variation in the decade to decade growth of science technicians, some of which may reflect shifts in the way occupations are defined from census to census.² Likewise, social scientists showed significant growth in the 1970s and 1980s, only to decline in numbers during the 1990s, which might have been partially due to definitional shifts.

WOMEN IN STEM

Women have made steady gains in STEM employment over the years. Yet, with the exception of the social sciences, women are outnumbered by men and underrepresented compared with their share of the total labor force. As shown in Exhibit 3, in 1950, women made up 27 percent of the U.S. labor force, but just 8 percent of the STEM workforce. By 2000, women were 47 percent of all workers and 26 percent of STEM.

While women’s representation in STEM has increased most in the social sciences (from 19 percent in 1970 to 54 percent in 2000) these fields account for relatively few STEM workers. Likewise, in 2000 women accounted for 41 percent of science technicians and 38 percent of life scientists, which also employ just over a tenth of all STEM workers, combined. Women remain most underrepresented among engineers, accounting for just under 11 percent of these STEM workers.

In terms of relative numbers, however, the mathematics and information technology fields have witnessed the largest increase among STEM fields. While women’s representation in these fields

Exhibit 3.

Percentages of Women in STEM Occupations, 1950 to 2000

	1950	1960	1970	1980	1990	2000
Larger aggregates for comparisons:						
All workers reporting an occupation	27.4	32.1	37.4	42.2	45.2	46.5
All managerial & professional specialty occupations	26.4	28.1	32.3	38.5	45.6	48.4
All professional specialty occupations	13.3	14.6	16.1	26.3	36.4	38.6
STEM summaries:						
All STEM occupations combined	7.6	5.5	8.1	16.3	23.3	25.8
STEM, except social scientists	7.0	5.2	7.7	14.8	21.1	24.2
STEM, except science, engineering technicians	5.3	3.3	7.1	15.0	23.8	25.7
STEM, except social scientists and technicians	4.5	2.7	6.4	12.9	21.0	24.0
STEM occupational groupings:						
Life sciences	--	--	15.1	26.1	32.7	38.3
Physical sciences	8.9	6.6	9.7	16.4	22.5	30.1
Engineering	1.8	0.9	1.6	4.5	9.0	10.6
Science technicians	21.6	15.5	13.2	31.1	32.2	41.3
Engineering technicians	--	5.2	5.8	17.2	18.6	17.3
Mathematicians and information technology	--	--	18.7	28.3	34.1	29.8
Social sciences	--	--	18.6	38.1	49.5	54.1

Source: Tabulations of U.S. Census microdata. See "Note on Data" in this report.

Note: -- , for excluded cells with samples less than 50 observations. **See also Appendix 3.**

² See "Science and Technology Salaries: Trends and Details, 1995-2005" Commission on Professionals in Science and Technology, STEM Workforce Data Project: Report No. 5, August, 2006.

is still below “parity” (i.e., women account for 47 percent of the U.S. paid labor force) they were 30 percent of the incumbents in 2000 in these large and growing occupations. The 973,000 women employed in these occupations represent over half (55 percent) of all female STEM workers.

Appendix 2 shows four pie graphs for women’s and men’s distribution across each of five categories of STEM fields in 1950 as compared to 2000. These illustrate the ways in which there have been larger structural changes in occupations as well as changes related to gender and occupational distributions. More comprehensive data are available in Appendix 3.

MINORITY WORKERS IN STEM

Just as the U.S. labor force has become more racially and ethnically diverse since 1950, so too has the STEM workforce. In 1950, essentially all STEM workers were non-Hispanic white, but by 2000 that share declined to 78 percent (note that all non-Hispanic groups discussed here exclude Hispanics, but for convenience sake “non-Hispanic” is not repeated).³ Yet, the STEM workforce in 2000 was not quite as diverse as the total labor force, in which 74 percent of all workers were white. Thus, white workers were marginally overrepresented in STEM jobs compared with their share of all U.S. workers. Minority workers, on the other hand, were too few in number to even be reliably counted in Census data until about 1970. They remain underrepresented in STEM jobs, with the exception of Asian STEM workers.

About 12 percent of Asians work in STEM jobs in which they have been overrepresented compared with their share of all U.S. workers. They range from 1.5 to 2.5 times more likely to be employed in STEM compared with their share of all U.S. workers. In 1960, Asians were just less than 1 percent of STEM workers but just 0.5 percent of all U.S. workers. By 2000, Asians were 10 percent of STEM workers and 4 percent of the total U.S. labor force. Asians greatest representation (14 percent) is in the life and physical sciences. Indeed, Asians are overrepresented in all STEM occupational groupings with the exception of the social sciences in which they are slightly underrepresented relative to their share of all U.S. workers.

The number of black workers employed in STEM jobs has increased over time, albeit only 3 percent of all black workers were employed in STEM in the year 2000. They remained about half as likely to be employed in STEM jobs compared with their rate of employment in the total labor force. As of 2000, blacks made up 6 percent of STEM workers and 11 percent of all U.S. workers. Within STEM occupations, the greatest representation of blacks was among science technicians in which they made up 9 percent of workers. They were least represented among life scientists, making up less than 3 percent of the life sciences occupation.

Only about 2 percent of all Hispanics worked in STEM jobs and they too are underrepresented with respect to their share of the overall labor force. In 2000, Hispanics were not quite 5 percent of the STEM workforce while they had attained an 11 percent share of the total labor force. Their STEM numbers were about half of what might be expected if they were employed in STEM commensurate with their general employment. Within STEM occupational groupings, Hispanics reached their greatest workforce share, a little more than 7 percent, as either science or

³ Race and ethnicity are captured differently over time. For example, Latinos are identified by surname only prior to 1980 and thereafter by self-reporting in answer to a “Hispanic origin” question, which follows the Census question used to identify race categories of white, black, or Asian. The race classifications were reasonably comparable from 1950 to 1990, while in 2000 we use the primary race identifier of the new ‘multiple race’ self-identifier.

Exhibit 4.

Percentages of Workers by Race-Ethnicity in STEM Occupations, 1950 to 2000

	1950	1960	1970	1980	1990	2000
Larger aggregates for comparisons:						
All workers reporting an occupation	100.0	100.0	100.0	100.0	100.0	100.0
White	88.4	87.8	87.2	82.0	77.9	73.7
Black	9.8	9.7	9.8	10.1	10.5	10.9
Hispanic*	1.4	1.6	1.9	5.7	8.1	10.7
Asian	0.2	0.5	0.8	1.6	2.8	3.9
Other & Multi	0.2	0.3	0.4	0.6	0.7	0.8
All managerial & professional specialty occupations	100.0	100.0	100.0	100.0	100.0	100.0
White	96.2	95.6	93.2	88.1	84.9	80.6
Black	2.9	3.0	4.6	6.0	6.6	7.7
Hispanic*	0.7	0.7	0.9	3.2	4.5	6.1
Asian	0.3	0.6	1.1	2.2	3.4	5.0
Other & Multi	0.0	0.1	0.3	0.5	0.5	0.6
All professional specialty occupations	100.0	100.0	100.0	100.0	100.0	100.0
White	96.9	97.1	95.7	90.8	86.8	82.2
Black	2.0	1.6	2.5	4.0	5.2	6.6
Hispanic*	0.7	0.7	1.0	3.3	4.7	6.8
Asian	0.3	0.5	0.7	1.5	2.7	3.8
Other & Multi	0.0	0.1	0.2	0.4	0.5	0.6
STEM summaries:						
All STEM occupations combined	100.0	100.0	100.0	100.0	100.0	100.0
White	98.3	97.3	94.3	88.9	84.6	78.4
Black	1.1	1.1	2.1	4.2	5.3	5.9
Hispanic	0.6	0.7	1.9	2.7	3.7	4.6
Asian	--	0.8	1.5	3.8	6.0	9.9
Other & Multi	--	--	0.3	0.4	0.4	1.2
STEM, except social scientists	100.0	100.0	100.0	100.0	100.0	100.0
White	98.4	97.3	94.3	88.9	84.3	77.9
Black	1.0	1.1	2.1	4.1	5.3	6.0
Hispanic	0.6	0.7	1.9	2.8	3.7	4.6
Asian	--	0.8	1.5	3.9	6.3	10.2
Other & Multi	--	--	0.3	0.4	0.4	1.2
STEM, except science, engineering technicians	100.0	100.0	100.0	100.0	100.0	100.0
White	98.7	97.8	95.0	89.6	85.4	78.5
Black	0.7	0.8	1.8	3.6	4.7	5.6
Hispanic	0.6	0.6	1.5	2.3	3.2	4.2
Asian	--	0.8	1.5	4.1	6.3	10.4
Other & Multi	--	--	0.3	0.4	0.3	1.2
STEM, except social scientists and technicians	100.0	100.0	100.0	100.0	100.0	100.0
White	98.8	97.8	95.0	89.6	85.1	78.0
Black	0.7	0.8	1.7	3.4	4.7	5.7
Hispanic	0.5	0.6	1.4	2.3	3.2	4.2
Asian	--	0.8	1.5	4.3	6.8	10.9
Other & Multi	--	--	0.3	0.4	0.3	1.2

Source: Tabulations of U.S. Census microdata. See "Note on Data" in this report.

Note: "--" for excluded cells with samples less than 50 observations. All racial groups above exclude Hispanics (e.g., so White is non-Hispanic White, etc.). Also Hispanics in 1950, 1960 and 1970 are proxied from the variable 'spanish surname' so their number may be underestimated. **See also Appendices 4 through 6.**

engineering technicians. Their lowest shares of workers, roughly 3.5 percent, were in either the life or physical sciences.

A little more than 1 percent of workers who are other than white, black, or Hispanic were employed in STEM jobs, compared with their just less than 1 percent of the total U.S. labor force in 2000. Historically, the non-Hispanic "other" racial category has been primarily made up of American Indigenous persons, while in 2000 the Census permitted individuals to report multiple races. Consequently, the increase in this group's STEM employment between 1990 and 2000 is mainly because of this change in the definition of the other race categories.

Finally, minorities' greatest numerical gain in employment, as has been the case for women and indeed all STEM workers, has been in the mathematics and information technology occupations. Roughly 55 percent of black and Asian STEM workers were employed in these occupations in 2000, and roughly 46 percent of whites and Hispanics. Once again, engineering is the other major STEM occupation. About 28 percent of white workers, but only 18 percent of blacks, were employed as engineers in 2000. Hispanics and Asians were intermediate, with about 23 percent of these groups' STEM workforce concentrated in engineering. Interestingly, 13 percent of Hispanic STEM workers were found in engineering technician jobs.

FOREIGN-BORN WORKERS IN STEM

The percent of foreign-born STEM workers grew from a low of 6 percent in 1960 to 17 percent in the year 2000. This was a substantial gain, albeit all foreign-born STEM workers were only 1.3 times more likely to be employed in STEM as they were in the total labor force. Yet, the foreign born have been underrepresented in managerial and professional occupations, so highly skilled foreign-born workers historically have been more likely to find employment in STEM than other types of occupations.

Exhibit 5.

Percentages of Foreign Born in STEM Occupations, 1950 to 2000

	1950	1960	1970	1980	1990	2000
Larger aggregates for comparisons:						
All workers reporting an occupation	9.1	7.0	6.3	6.7	9.3	12.4
All managerial & professional specialty occupations	10.0	6.8	6.2	6.4	8.0	10.6
All professional specialty occupations	12.8	7.8	5.8	6.0	7.6	10.0
STEM summaries:						
All STEM occupations combined	7.1	6.1	6.8	8.2	10.7	16.7
STEM, except social scientists	6.9	5.1	6.8	8.3	11.1	17.1
STEM, except science, engineering technicians	7.4	6.8	7.1	8.8	11.2	17.4
STEM, except social scientists and technicians	7.2	6.8	7.1	9.0	11.7	17.9
STEM occupational groupings:						
Life sciences	--	--	5.5	8.2	11.8	23.2
Physical sciences	6.9	9.1	11.4	11.3	13.5	24.4
Engineering	7.3	6.7	7.4	9.6	12.1	16.1
Science technicians	6.2	4.4	6.9	7.0	10.8	12.8
Engineering technicians	--	4.2	4.0	6.0	8.4	11.2
Mathematicians and information technology	--	--	4.7	7.1	10.8	17.8
Social sciences	--	--	6.9	7.1	6.9	9.9

Source: Tabulations of U.S. Census microdata. See "Note on Data" in this report.

Note: -- , for excluded cells with samples less than 50 observations. **See also Appendix 7.**

The foreign born have made significant employment gains across time, particularly in the 1990s. Their representation in the life and physical sciences doubled during that decade: by 2000 the foreign born made up roughly 24 percent of the life and physical sciences workforces. Indeed, the foreign born have historically had their greatest representation in the physical sciences. Their next greatest concentrations today are in engineering (16 percent), and mathematics and information technology (18 percent). The foreign born have been and continue to be somewhat underrepresented as STEM technicians. They are least represented in the social sciences, where they have made the least employment gains over time.

Exhibit 6.

Percentages of Foreign Born by Region of Birth in STEM Occupations, 1950 to 2000

	1950	1960	1970	1980	1990	2000
Larger aggregates for comparisons:						
All foreign-born workers reporting an occupation	100.0	100.0	100.0	100.0	100.0	100.0
Europe	74.0	69.4	53.0	32.4	18.9	15.0
Latin America	5.4	9.2	17.8	29.7	39.2	44.3
Asia	3.0	5.7	10.3	18.8	25.4	27.2
All Other	17.6	15.7	18.9	19.1	16.5	13.5
All managerial & professional specialty occupations	100.0	100.0	100.0	100.0	100.0	100.0
Europe	74.1	69.2	53.1	37.2	25.3	21.1
Latin America	2.9	4.1	10.2	15.7	19.6	21.6
Asia	3.8	7.7	16.7	28.0	37.5	42.0
All Other	19.3	19.0	19.9	19.2	17.7	15.3
All professional specialty occupations	100.0	100.0	100.0	100.0	100.0	100.0
Europe	79.6	74.6	62.5	43.9	28.7	22.0
Latin America	2.4	3.5	9.1	17.5	22.8	28.2
Asia	4.5	6.5	9.7	20.7	32.4	35.5
All Other	13.5	15.4	18.7	17.9	16.0	14.3
STEM summaries:						
All STEM occupations combined	--	--	100.0	100.0	100.0	100.0
Europe	--	--	54.0	35.1	23.8	20.2
Latin America	--	--	9.5	10.4	11.9	10.6
Asia	--	--	21.2	39.3	50.8	58.5
All Other	--	--	15.4	15.2	13.5	10.7
STEM, except social scientists	--	--	100.0	100.0	100.0	100.0
Europe	--	--	53.9	34.6	23.1	20.0
Latin America	--	--	9.3	10.4	11.7	10.4
Asia	--	--	21.5	40.1	52.1	59.2
All Other	--	--	15.3	14.8	13.0	10.4
STEM, except science, engineering technicians	--	--	100.0	100.0	100.0	100.0
Europe	--	--	52.9	35.6	24.8	20.6
Latin America	--	--	8.0	8.8	10.1	9.4
Asia	--	--	23.7	40.9	51.8	59.4
All Other	--	--	15.4	14.7	13.3	10.6
STEM, except social scientists and technicians	--	--	100.0	100.0	100.0	100.0
Europe	--	--	52.8	35.1	24.1	20.3
Latin America	--	--	7.7	8.7	9.7	9.2
Asia	--	--	24.3	42.1	53.4	60.2
All Other	--	--	15.3	14.1	12.7	10.3

Source: Tabulations of U.S. Census microdata. See "Note on Data" in this report.

Note: -- , for excluded cells with samples less than 50 observations.

See also Appendices 8 through 10.

Since the 1950s there has been a significant shift in where foreign-born workers come from – primarily a shift from European origins to Latin American origins among low-skilled workers, and a shift to Asian origins among higher-skilled workers. These shifts are concordant with major U.S. immigration policy changes in 1965. In the 1950s, about 74 percent of all foreign-born workers in the total U.S. labor force were from European origins, but by 2000 only 15 percent were European and 44 percent were from Latin America. However, among foreign-born STEM workers, the shift was from workers from European origins to a majority from Asian origins. The STEM sample is large enough to start tracing that shift in 1970 when 54 percent of foreign-born workers were from Europe, but by 2000 about 59 percent were from Asia. Europeans still made up 20 percent of foreign-born STEM workers in 2000, while Latin American workers were just 11 percent of the foreign-born STEM workforce. Asian foreign-born STEM workers in 2000 were most concentrated in core STEM occupations in which they were 60 percent of the foreign-born employed. Asians are a lesser 48 percent of workers in the STEM technician jobs, and just 36 percent of foreign-born workers in social science jobs.

SUMMARY

The STEM workforce during the past five decades has grown more rapidly in percentage terms than the labor force generally, as well as most other highly skilled occupations. In 1950, STEM workers were predominantly native-born, white males. In the ensuing half of a century the STEM workforce diversified substantially with a greater representation of women, minorities and foreign-born workers, albeit with substantial variations in group representation across the seven STEM categories. For example, by 2000 while women outnumbered men in the social sciences, they remained highly underrepresented in engineering and other STEM occupations. Considering their rate of employment in other highly skilled occupations, the potential shift of more women into STEM occupations could powerfully change the composition of the STEM workforce.

On the one hand, minorities also remain underrepresented in STEM occupations despite equally strong gains over the past 50 years. Indeed, in 2000 both black and Hispanic workers were about half as likely to be found in STEM jobs compared with their participation rate in the U.S. labor force, a rate of underrepresentation similar to that of women. On the other hand, Asian workers were overrepresented in STEM occupations both relative to their participation rate in the total U.S. labor force, as well as to other professional occupations. In 2000 Asian workers were more than three times as likely to be found in life and physical science employment as they were the overall U.S. labor force.

Another significant compositional shift in the STEM workforce has been the growth in employment of foreign born workers. The percentage growth of foreign born STEM workers decade to decade was greatest between 1950 and 1970, but the foreign born made large numerical impacts in the 1990s. In fact, the foreign born comprised one-third of STEM labor force growth during the 1990s and they doubled their share of life and physical science workers. Foreign-born workers were predominantly from Asia with relatively fewer from Latin America, Europe, or elsewhere. Other than women, foreign born and especially Asian-origin workers have been one of the more important contributors to the growth of the STEM workforce.

Note on Data

This paper uses special tabulations of U.S. Census microdata for each decade from 1950 to the 2000 Census. Other reports in the STEM Workforce Data Project have drawn on the Current Population Survey (CPS), a monthly labor force survey conducted by the Bureau of Labor Statistics (BLS). The Census occupations are defined somewhat differently and, because different samples generate different estimates, the figures presented here are not fully compatible with those CPS-based reports. In addition, because detailed occupational definitions vary from Census to Census, this report aggregates detailed occupations into their major occupational groupings, including, for example, chemists into the physical sciences. In other words, while the conceptual definition of occupational groupings is fairly stable over time, that of detailed occupations may or may not be. Importantly, the figures shown here do not include science teachers because they were not identified in Census 2000. Nevertheless, as this report demonstrates, changes in occupational definitions and sampling variations, particularly in the small Census samples in 1950 and 1960, may still lead to small but uneven estimates of growth even with aggregated occupational groupings. For a parallel set of Census occupation comparisons generated by the same authors, but screening by minimal education, see National Science Board. 2006. *Science and Engineering Indicators 2006*. Arlington, VA: National Science Foundation, NSB 06-01.

About the STEM Workforce Data Project

The purpose of the STEM Workforce Data Project is to identify and distribute reliable statistics on scientific, technological, engineering and mathematical workers in the United States. Like the similar IT Workforce Data Project (see <http://www.cpst.org> for those reports), the STEM project uses the full range of statistical resources offered by U.S. federal agencies as well as other private sources of information.

This is a project of the Commission on Professionals in Science and Technology (CPST) in Washington, D.C., supported by a grant from the Alfred P. Sloan Foundation. Queries about the STEM project are welcome. The principal investigators are Eleanor Babco, who recently retired as CPST's executive director (202-326-7080; babco@cpst.org), and Richard Ellis of Ellis Research Services in Carlisle, PA (717-218-9818; raellis@earthlink.net). Nathan Bell, CPST's associate director is the project's manager (nbell@cpst.org). This paper was produced by Dr. B. Lindsay Lowell (lowellbl@georgetown.edu) of the Institute for the Study of International Migration at Georgetown University and Dr. Mark Regets of the Institute for the Study of Labor (IZA) in Bonn, Germany and the National Science Foundation in Arlington, Virginia. Dr. Lisa M. Frehill, CPST's new executive director (lfrehill@cpst.org), reviewed this paper. Robert Weatherall, the retired past director of the Office of Career Services at MIT, is participating in the project as a reviewer of draft reports. Dr. Ronil Hira of the Rochester Institute of Technology will comment on policy implications of STEM workforce data.

Appendix 1: Occupational Groupings

Life and physical sciences

Life sciences

- Agricultural and Food Scientists
- Forestry and Conservation Scientists
- Biological Scientists
- Medical Scientists

Physical sciences

- Chemists
- Physicists and Astronomers
- Geologists and Geodesists
- Atmospheric and Space Scientists
- Physical Scientists, All Other (1)

Engineers

- Electrical and Electronics
- Mechanical
- Civil
- Industrial
- Aerospace
- Chemical
- Materials
- Mining and Geological
- Petroleum (and mining in 2000)(2)
- Sales
- Surveyors and Mapping Scientists
- Marine (3)
- Nuclear
- Agricultural (4)
- Environmental
- Computer Hardware
- Miscellaneous (4)

Technicians, science and engineering

Science technicians

- Biological
- Chemical
- Agricultural and Food Science
- Geological and Petroleum
- Miscellaneous Physical

Engineering technicians

- Surveying and Mapping
- Electrical and Electronic
- Industrial Engineering
- Mechanical Engineering
- Engineering Technicians, n.e.c. (5)

Mathematicians and information technology

Mathematicians

- Statisticians (incl. actuaries 1950 and 1960)

- Actuaries
- Mathematicians Miscellaneous Mathematical Scientists (6)
- Computer scientists and engineers
 - Computer Systems Analysts and Scientists
 - Operations Research Analysts
 - Computer Software Engineers
 - Computer Programmers
 - Computer technicians and support
 - Database Administrators
 - Network and Computer Systems Administrators
 - Network Systems and Data Communication Analysts
 - Computer Support Specialists

Social sciences

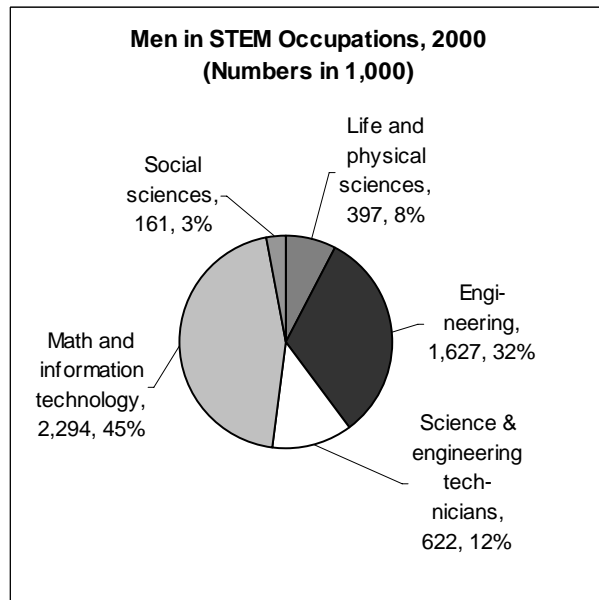
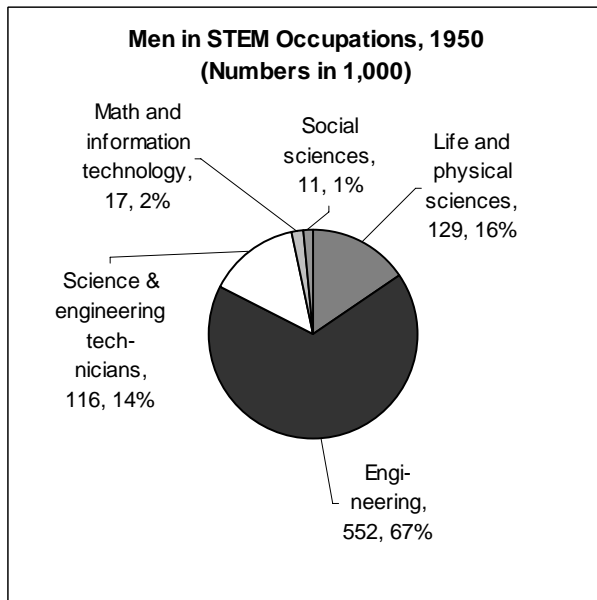
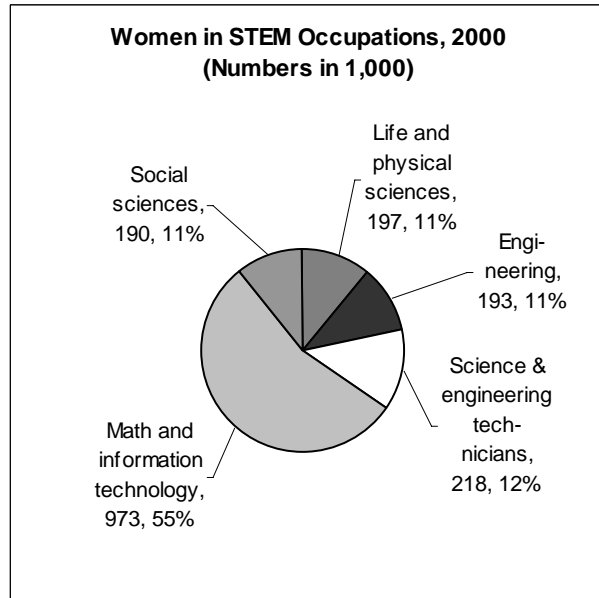
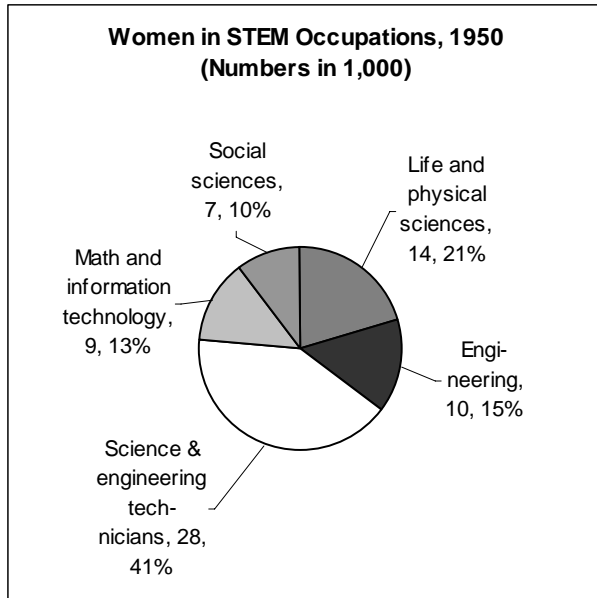
- Economists
- Market and Survey Researchers
- Psychologists
- Sociologists
- Urban and Regional Planners
- Social Scientists, n.e.c. (7)

Note: This appendix provides a general sense of what is included in each aggregate group, but some occupational categories have changed over time. See STEM Workforce Data Project Report No. 5, *Science and Technology Salaries: Trends and Details, 1995-2005* (online at <http://www.cpst.org>) for a succinct description of how some of these changes affect STEM occupations.

Footnotes:

- (1) Includes marine and life other life scientists in 1970.
- (2) Contains other mining and geological engineers in 2000
- (3) Includes marine and navel architects in 1990 and 1980.
- (4) Includes agricultural and biomedical engineers in 2000.
- (5) Includes nuclear technicians in 2000.
- (6) Includes mathematicians & statisticians in 2000.
- (7) Includes sociologists in 2000.

Appendix 2. Women's and Men's STEM Occupational Distributions, 1950 and 2000



Appendix 3

Estimated Number of Males and Females Reporting STEM Occupations, 1950 to 2000 (thousands)

	1950	1960	1970	1980	1990	2000
Larger aggregates for comparisons:						
All workers reporting an occupation	60,288	69,053	81,540	105,665	124,773	138,754
Male	43,791	46,866	51,040	61,110	68,366	74,268
Female	16,497	22,187	30,500	44,555	56,406	64,486
All managerial and professional specialty occupations	10,303	12,766	18,125	27,749	39,315	50,044
Male	7,583	9,185	12,263	17,057	21,391	25,809
Female	2,721	3,581	5,863	10,692	17,924	24,235
All professional specialty occupations	5,166	5,440	6,117	10,386	15,220	18,953
Male	4,478	4,645	5,130	7,652	9,672	11,642
Female	689	795	986	2,735	5,547	7,311
STEM summaries by sex:						
All STEM occupations combined	894	1,503	2,764	3,459	5,046	6,871
Male	826	1,420	2,541	2,896	3,869	5,101
Female	68	83	223	563	1,177	1,770
STEM, except social scientists	875	1,469	2,657	3,239	4,648	6,520
Male	815	1,393	2,454	2,760	3,668	4,940
Female	61	76	204	479	980	1,580
STEM, except science, engineering technicians	750	1,105	1,986	2,651	4,046	6,032
Male	710	1,069	1,846	2,254	3,084	4,479
Female	40	36	140	397	963	1,553
STEM, except social scientists and technicians	731	1,071	1,879	2,431	3,648	5,680
Male	699	1,042	1,759	2,118	2,883	4,318
Female	33	29	120	313	765	1,363
STEM occupational groupings by sex:						
Life sciences	43	55	86	126	159	222
Male	38	51	73	93	107	137
Female	--	--	13	33	52	85
Physical sciences	100	119	167	188	251	372
Male	91	111	150	157	195	260
Female	9	8	16	31	56	112
Engineering	562	869	1,250	1,470	1,781	1,820
Male	552	862	1,229	1,404	1,621	1,627
Female	10	7	20	67	160	193
Science technicians	116	255	516	190	215	299
Male	91	216	448	131	146	176
Female	25	40	68	59	69	124
Engineering technicians	28	143	262	618	785	540
Male	25	135	247	511	639	446
Female	--	7	15	106	146	94
Mathematicians and information technology	26	28	377	646	1,457	3,267
Male	17	19	307	463	961	2,294
Female	--	--	71	183	496	973
Social sciences	18	34	107	220	398	351
Male	11	27	87	136	201	161
Female	--	--	20	84	197	190

Source: Tabulations of U.S. Census microdata. See "Note on Data" in this report.

Note: -- , for excluded cells with samples less than 50 observations.

Appendix 4

Estimated Number of Workers by Race-Ethnicity, 1950 to 2000

	1950	1960	1970	1980	1990	2000
Larger aggregates for comparisons:						
All workers reporting an occupation	60,288	69,053	81,540	105,665	124,773	138,754
White	53,295	60,648	71,070	86,607	97,231	102,256
Black	5,891	6,706	7,975	10,627	13,043	15,087
Hispanic*	861	1,134	1,534	6,054	10,103	14,834
Asian	148	379	675	1,735	3,512	5,469
Other & Multi	93	186	287	641	883	1,109
All managerial & professional specialty occupations	10,303	12,766	18,125	27,749	39,315	50,044
White	9,909	12,199	16,893	24,449	33,386	40,341
Black	296	381	828	1,663	2,607	3,838
Hispanic*	67	88	165	895	1,784	3,031
Asian	26	79	191	610	1,346	2,517
Other & Multi	5	19	49	131	192	316
All professional specialty occupations	5,166	5,440	6,117	10,386	15,220	18,953
White	5,004	5,280	5,855	9,429	13,212	15,579
Black	105	87	151	417	798	1,243
Hispanic*	38	40	58	338	721	1,290
Asian	18	29	43	158	413	725
Other & Multi	2	4	9	46	76	117
STEM summaries:						
All STEM occupations combined	892	1,500	2,764	3,459	5,046	6,871
White	877	1,459	2,605	3,076	4,270	5,384
Black	10	17	59	144	266	408
Hispanic	6	11	52	95	186	317
Asian	--	12	40	130	303	680
Other & Multi	--	--	8	14	21	83
STEM, except social scientists	874	1,466	2,657	3,239	4,648	6,520
White	860	1,427	2,505	2,879	3,917	5,079
Black	9	17	56	132	244	392
Hispanic	5	11	49	89	173	303
Asian	--	12	39	125	294	667
Other & Multi	--	--	8	13	20	79
STEM, except science, engineering technicians	748	1,103	1,986	2,651	4,046	6,032
White	738	1,078	1,886	2,375	3,456	4,737
Black	5	9	36	95	192	341
Hispanic	4	6	29	62	129	255
Asian	--	9	30	109	256	630
Other & Multi	--	--	5	10	14	70
STEM, except social scientists and technicians	730	1,069	1,879	2,431	3,648	5,680
White	721	1,046	1,786	2,178	3,103	4,432
Black	5	8	32	83	170	325
Hispanic	4	6	27	56	115	241
Asian	--	9	29	104	247	616
Other & Multi	--	--	5	9	12	66

Source: Tabulations of U.S. Census microdata. See "Note on Data" in this report.

Note: "--" for excluded cells with samples less than 50 observations. All racial groups above exclude Hispanics (e.g., so White is non-Hispanic White, etc.). Also Hispanics in 1950, 1960 and 1970 are proxied from the variable 'spanish surname' so their number may be underestimated. The use of the ethnic identifier may also generate slightly different numbers than those based solely on all workers.

Appendix 5

Estimated Percentage of Workers by Race-Ethnicity in STEM Occupations, 1950 to 2000

	1950	1960	1970	1980	1990	2000
STEM occupational groupings:						
Life sciences	100.0	100.0	100.0	100.0	100.0	100.0
White	100.0	100.0	96.8	88.9	85.9	78.2
Black	--	--	3.2	3.8	3.9	2.9
Hispanic	--	--	--	2.5	3.1	3.7
Asian	--	--	--	3.9	6.4	13.8
Other & Multi	--	--	--	0.9	0.6	1.4
Physical sciences	100.0	100.0	100.0	100.0	100.0	100.0
White	100.0	100.0	92.5	88.7	85.9	77.3
Black	--	--	2.9	3.7	4.4	4.0
Hispanic	--	--	1.7	2.1	2.9	3.5
Asian	--	--	2.8	5.5	6.8	13.9
Other & Multi	--	--	--	--	--	1.3
Engineering	100.0	100.0	100.0	100.0	100.0	100.0
White	100.0	99.2	95.8	90.6	86.2	82.2
Black	--	--	1.1	2.5	3.5	4.0
Hispanic	--	--	1.4	2.2	3.2	3.9
Asian	--	0.8	1.5	4.3	6.8	8.9
Other & Multi	--	--	0.2	0.3	0.3	1.1
Science technicians	100.0	100.0	100.0	100.0	100.0	100.0
White	100.0	97.7	92.5	85.5	78.4	75.0
Black	--	--	3.1	7.2	9.0	9.1
Hispanic	--	--	3.0	4.4	6.5	7.3
Asian	--	--	1.4	2.9	5.2	6.9
Other & Multi	--	--	--	--	0.8	1.7
Engineering technicians	100.0	100.0	100.0	100.0	100.0	100.0
White	100.0	100.0	93.3	87.2	82.2	78.2
Black	--	--	2.9	5.7	7.0	7.5
Hispanic	--	--	2.7	4.0	5.5	7.4
Asian	--	--	1.2	2.5	4.6	5.5
Other & Multi	--	--	--	0.5	0.7	1.5
Mathematicians and information technology	100.0	100.0	100.0	100.0	100.0	100.0
White	100.0	100.0	94.4	87.7	83.5	75.8
Black	--	--	2.9	5.4	6.3	7.1
Hispanic	--	--	1.4	2.6	3.2	4.5
Asian	--	--	1.2	3.9	6.7	11.4
Other & Multi	--	--	--	0.4	0.3	1.2
Social sciences	100.0	100.0	100.0	100.0	100.0	100.0
White	100.0	100.0	94.7	89.8	88.6	86.8
Black	--	--	3.2	5.3	5.4	4.6
Hispanic	--	--	2.1	2.4	3.4	4.0
Asian	--	--	--	2.0	2.2	3.7
Other & Multi	--	--	--	0.5	0.3	0.9

Source: Tabulations of U.S. Census microdata. See "Note on Data" in this report.

Note: "--" for excluded cells with samples less than 50 observations. Also Hispanics in 1950, 1960 and 1970 are proxied from the variable 'spanish surname' so their number may be underestimated.

Appendix 6

Number of Workers (in thousands) by Race-Ethnicity in STEM Occupations, 1950 to 2000

	1950	1960	1970	1980	1990	2000
STEM occupational groupings:						
Life sciences	42	52	82	126	159	222
White	42	52	80	112	137	174
Black	--	--	3	5	6	6
Hispanic	--	--	--	3	5	8
Asian	--	--	--	5	10	31
Other & Multi	--	--	--	1	1	3
Physical sciences	98	115	166	188	250	372
White	98	115	154	166	215	287
Black	--	--	5	7	11	15
Hispanic	--	--	3	4	7	13
Asian	--	--	5	10	17	52
Other & Multi	--	--	--	--	--	5
Engineering	556	859	1,250	1,470	1,781	1,820
White	556	852	1,197	1,332	1,536	1,495
Black	--	--	14	36	62	73
Hispanic	--	--	17	33	56	71
Asian	--	7	18	64	122	161
Other & Multi	--	--	3	5	6	19
Science technicians	112	251	514	190	215	299
White	112	245	476	162	168	224
Black	--	--	16	14	19	27
Hispanic	--	--	16	8	14	22
Asian	--	--	7	5	11	21
Other & Multi	--	--	--	--	2	5
Engineering technicians	27	136	261	618	785	540
White	27	136	243	539	645	423
Black	--	--	8	35	55	40
Hispanic	--	--	7	24	43	40
Asian	--	--	3	16	36	29
Other & Multi	--	--	--	3	5	8
Mathematicians and information technology	25	27	377	646	1,457	3,267
White	25	27	356	567	1,216	2,476
Black	--	--	11	35	91	230
Hispanic	--	--	5	17	47	148
Asian	--	--	5	25	98	373
Other & Multi	--	--	--	2	5	39
Social sciences	17	33	106	220	398	351
White	17	33	100	197	353	305
Black	--	--	3	12	22	16
Hispanic	--	--	2	5	14	14
Asian	--	--	--	4	9	13
Other & Multi	--	--	--	1	1	3

Source: Tabulations of U.S. Census microdata. See "Note on Data" in this report.

Note: "--" for excluded cells with samples less than 50 observations. Also Hispanics in 1950, 1960 and 1970 are proxied from the variable 'spanish surname' so their number may be underestimated. The use of the ethnic identifier may also generate slightly different numbers than those based solely on all workers.

Appendix 7

Estimated Number of Workers by Place of Birth, 1950 to 2000 (thousands)

	1950	1960	1970	1980	1990	2000
Larger aggregates for comparisons (thousands):						
All workers reporting an occupation	60,288	69,053	81,540	105,665	124,773	138,754
Native Born	54,817	64,251	76,436	98,570	113,195	121,481
Foreign Born	5,470	4,802	5,104	7,095	11,578	17,274
All managerial & professional specialty occupations	10,303	12,766	18,125	27,749	39,315	50,044
Native Born	9,273	11,899	17,005	25,967	36,183	44,715
Foreign Born	1,031	867	1,120	1,782	3,132	5,328
All professional specialty occupations	5,166	5,440	6,117	10,386	15,220	18,953
Native Born	4,503	5,015	5,762	9,762	14,063	17,056
Foreign Born	663	425	354	625	1,157	1,897
STEM summaries:						
All STEM occupations combined	894	1,503	2,764	3,459	5,046	6,871
Native Born	831	1,411	2,577	3,175	4,504	5,722
Foreign Born	63	92	187	284	542	1,150
STEM, except social scientists	875	1,469	2,657	3,239	4,648	6,520
Native Born	815	1,379	2,478	2,971	4,133	5,405
Foreign Born	61	75	180	268	515	1,115
STEM, except science, engineering technicians	750	1,105	1,986	2,651	4,046	6,032
Native Born	694	1,030	1,845	2,417	3,593	4,981
Foreign Born	55	75	141	234	453	1,051
STEM, except social scientists and technicians	731	1,071	1,879	2,431	3,648	5,680
Native Born	679	998	1,746	2,213	3,222	4,664
Foreign Born	53	73	134	218	426	1,016
STEM occupational groupings:						
Life sciences	43	55	86	126	159	222
Native Born	40	53	81	116	140	171
Foreign Born	--	--	5	10	19	52
Physical sciences	100	119	167	188	251	372
Native Born	93	108	148	167	217	281
Foreign Born	7	11	19	21	34	91
Engineering	562	869	1,250	1,470	1,781	1,820
Native Born	521	811	1,157	1,330	1,565	1,527
Foreign Born	41	58	92	141	216	293
Science technicians	116	255	516	190	215	299
Native Born	109	244	480	177	192	261
Foreign Born	7	11	36	13	23	38
Engineering technicians	28	143	262	618	785	540
Native Born	27	137	252	580	719	480
Foreign Born	--	6	10	37	66	61
Mathematicians and information technology	26	28	377	646	1,457	3,267
Native Born	24	27	360	600	1,300	2,686
Foreign Born	--	--	18	46	157	581
Social sciences	18	34	107	220	398	351
Native Born	16	31	99	204	371	317
Foreign Born	--	--	7	16	27	35

Source: Tabulations of U.S. Census microdata. See "Note on Data" in this report.

Note: -- , for excluded cells with samples less than 50 observations.

Appendix 8

Estimated Number of Foreign-Born Workers by Region of Birth (thousands)

	1950	1960	1970	1980	1990	2000
Larger aggregates for comparisons:						
All foreign-born workers reporting an occupation	5,470	4,488	4,725	7,095	11,578	17,274
Europe	4,050	3,116	2,505	2,295	2,183	2,587
Latin America	295	411	843	2,106	4,539	7,649
Asia	163	256	485	1,336	2,942	4,702
All Other	963	706	892	1,358	1,914	2,336
All managerial & professional specialty occupations	1,031	852	1,088	1,782	3,132	5,328
Europe	763	589	577	662	791	1,125
Latin America	29	35	111	279	614	1,149
Asia	39	66	182	499	1,173	2,237
All Other	199	162	217	342	553	818
All professional specialty occupations	663	417	344	625	1,157	1,897
Europe	528	311	215	274	333	417
Latin America	16	15	31	109	264	536
Asia	30	27	33	129	375	673
All Other	90	64	64	112	185	271
STEM summaries:						
All STEM occupations combined	--	--	187	284	542	1,149
Europe	--	--	101	100	129	233
Latin America	--	--	18	29	65	122
Asia	--	--	40	111	276	672
All Other	--	--	29	43	73	123
STEM, except social scientists	--	--	180	268	515	1,115
Europe	--	--	97	93	119	223
Latin America	--	--	17	28	60	116
Asia	--	--	39	108	268	660
All Other	--	--	27	40	67	116
STEM, except science, engineering technicians	--	--	141	233	453	1,051
Europe	--	--	75	83	112	216
Latin America	--	--	11	21	46	99
Asia	--	--	33	95	235	624
All Other	--	--	22	34	60	111
STEM, except social scientists and technicians	--	--	134	218	426	1,016
Europe	--	--	70	76	103	206
Latin America	--	--	10	19	41	93
Asia	--	--	32	92	228	612
All Other	--	--	20	31	54	105

Source: Tabulations of U.S. Census microdata. See "Note on Data" in this report.

Note: -- , for excluded cells with samples less than 50 observations.

Appendix 9

Estimated Percentages of Foreign Born by Region of Birth in STEM Occupations, 1950 to 2000

	1950	1960	1970	1980	1990	2000
STEM occupational groupings:						
Life sciences	--	--	100.0	100.0	100.0	100.0
Europe	--	--	100.0	39.8	26.4	23.7
Latin America	--	--	--	--	10.8	7.9
Asia	--	--	--	42.4	48.2	58.6
All Other	--	--	--	17.8	14.5	9.7
Physical sciences	--	--	100.0	100.0	100.0	100.0
Europe	--	--	54.9	33.0	29.2	26.0
Latin America	--	--	--	6.6	7.5	6.1
Asia	--	--	30.4	46.7	49.0	58.0
All Other	--	--	14.7	13.8	14.4	10.0
Engineering	--	--	100.0	100.0	100.0	100.0
Europe	--	--	54.5	37.0	24.9	20.9
Latin America	--	--	7.1	8.3	9.8	10.1
Asia	--	--	24.2	41.1	54.0	57.8
All Other	--	--	14.2	13.6	11.3	11.1
Science technicians	--	--	100.0	100.0	100.0	100.0
Europe	--	--	58.4	31.1	19.4	17.8
Latin America	--	--	13.9	18.2	25.0	21.3
Asia	--	--	14.1	32.8	43.0	48.5
All Other	--	--	13.6	17.9	12.6	12.5
Engineering technicians	--	--	100.0	100.0	100.0	100.0
Europe	--	--	72.2	33.3	18.3	16.1
Latin America	--	--	--	17.7	19.8	24.4
Asia	--	--	--	31.3	46.9	48.2
All Other	--	--	27.8	17.7	15.0	11.3
Mathematicians and information technology	--	--	100.0	100.0	100.0	100.0
Europe	--	--	47.3	29.8	21.6	18.8
Latin America	--	--	10.4	11.1	9.9	9.3
Asia	--	--	21.3	43.7	54.3	62.0
All Other	--	--	21.1	15.4	14.1	10.0
Social sciences	--	--	100.0	100.0	100.0	100.0
Europe	--	--	100.0	43.3	35.7	29.3
Latin America	--	--	--	9.4	15.6	16.1
Asia	--	--	--	24.5	26.4	36.0
All Other	--	--	--	22.8	22.3	18.6

Source: Tabulations of U.S. Census microdata. See "Note on Data" in this report.

Note: -- , for excluded cells with samples less than 50 observations.

Appendix 10

**Estimated Numbers of Foreign Born by Region of Birth in STEM Occupations, 1950 to 2000
(in thousands)**

	1950	1960	1970	1980	1990	2000
STEM occupational groupings:						
Life sciences	--	--	2	9	19	52
Europe	--	--	2	4	5	12
Latin America	--	--	--	--	2	4
Asia	--	--	--	4	9	30
All Other	--	--	--	2	3	5
Physical sciences	--	--	17	21	34	91
Europe	--	--	10	7	10	24
Latin America	--	--	--	1	3	6
Asia	--	--	5	10	17	53
All Other	--	--	3	3	5	9
Engineering	--	--	92	141	216	293
Europe	--	--	50	52	54	61
Latin America	--	--	7	12	21	30
Asia	--	--	22	58	117	169
All Other	--	--	13	19	24	33
Science technicians	--	--	36	13	23	38
Europe	--	--	21	4	4	7
Latin America	--	--	5	2	6	8
Asia	--	--	5	4	10	19
All Other	--	--	5	2	3	5
Engineering technicians	--	--	8	37	66	60
Europe	--	--	6	12	12	10
Latin America	--	--	--	7	13	15
Asia	--	--	--	12	31	29
All Other	--	--	2	7	10	7
Mathematicians and information technology	--	--	18	46	157	581
Europe	--	--	8	14	34	109
Latin America	--	--	2	5	16	54
Asia	--	--	4	20	85	360
All Other	--	--	4	7	22	58
Social sciences	--	--	4	16	27	35
Europe	--	--	4	7	10	10
Latin America	--	--	--	1	4	6
Asia	--	--	--	4	7	12
All Other	--	--	--	4	6	6

Source: Tabulations of U.S. Census microdata. See "Note on Data" in this report.

Note: -- , for excluded cells with samples less than 50 observations.