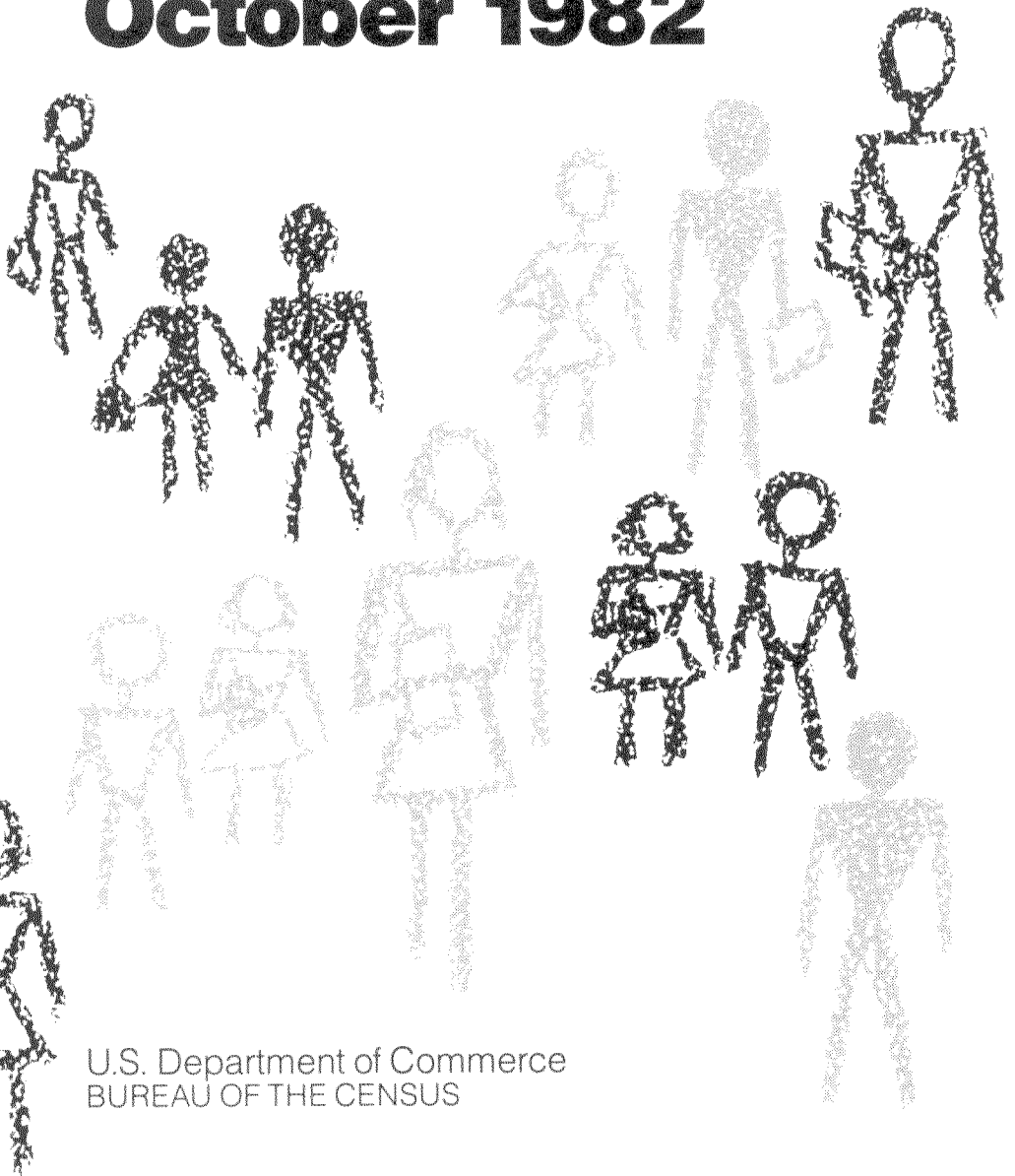


Population Characteristics

Series P-20, No. 408

School Enrollment— Social and Economic Characteristics of Students: October 1982



U.S. Department of Commerce
BUREAU OF THE CENSUS

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CURRENT POPULATION REPORTS

Population Characteristics

Series P-20, No. 408
Issued September 1986

**School Enrollment—
Social and Economic
Characteristics
of Students:
October 1982**

by Paul M. Siegel
and
Rosalind R. Bruno

U.S. Department of Commerce
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SYMBOLS USED IN TABLES

- Represents zero or rounds to zero.
 - B Base less than 75,000.
 - NA Not available.
 - X Not applicable.
 - r Revised.
-

School Enrollment—Social and Economic Characteristics of Students: October 1982

During the past decade, there were notable changes in enrollment at each level of school, except kindergarten, resulting from changes in the sizes of the relevant population groups and in enrollment patterns. In October 1982, there were 59.4 million persons 3 years old and over enrolled in regular school, about 1.7 million fewer persons than were enrolled in October 1972 (table A). This decline in total enrollment reflects declines of about 4.8 million students in elementary school and 1.1 million in high school offset by increases of 0.9 million nursery school students and 3.2 million college

students. In turn, these changes in the numbers of students reflect, to a varying extent, changes in the size of the population groups from which students are drawn and the proportion attending school.

NURSERY SCHOOL AND KINDERGARTEN¹

From 1972 to 1982, nursery school enrollment grew by about 68 percent (from 1.3 million to 2.2 million). The sharp rise in nursery school enrollment must have resulted entirely from the substantial increase in the enrollment rate of the eligible population, for the number of 3- to 5-year-olds declined by 3 percent over the decade (from 10.2 million to 9.9 million). As table B shows, there are several changes underlying the growth in the nursery school enrollment of 3- to 5-year olds over the decade. In both years, children whose mothers were in the labor force were more likely to attend nursery school than children whose mothers were not in the labor force.² However, with the nursery school enrollment rate in 1982 at 20 percent for children whose mothers were not in the labor force, nursery school cannot be regarded as solely an educational convenience for working mothers. Over the decade the enrollment rates for children with mothers in the labor force

Table A. Level of School Enrollment of Persons 3 Years Old and Over: October 1982 and 1972

(Numbers in thousands)

Level of enrollment	School enrollment (thousands)		Percent change
	1982	1972	
Total, all levels.....	59,358	61,065	-2.8
Nursery school.....	2,153	1,283	67.8
Kindergarten.....	3,299	3,135	5.2
Elementary school (grades 1-8).....	27,412	32,260	-15.0
High school.....	¹ 14,186	² 15,290	-7.2
College.....	12,308	9,096	35.3

¹Includes 63,000 students 35 years old and over enrolled below college level.

²Includes 38,000 students 35 years old and over who did not report grade.

Source: P-20, No. 260, table 16, and this report, table 4.

¹The National Center for Education Statistics (now the Center for Statistics of the Office for Educational Research and Improvement in the Department of Education) partially underwrote the collection of data on school enrollment of 3- and 4-year-old children. They are not responsible for the analysis reported here.

²The 95-percent confidence interval estimates of the differences in enrollment rates of children with mothers in and not in the labor force are 3.1 ± 2.77 in 1982 and 4.7 ± 2.27 in 1972. The two differences are statistically indistinguishable from each other. The difference of the differences is 1.6 ± 3.58 .

Table B. Nursery School Enrollment of 3- to 5-Year-Old Children, by Mother's Labor Force Status: October 1982 and 1972

(Numbers in thousands)

Status	1982				1972			
	Total	Enrolled in nursery school			Total	Enrolled in nursery school		
		Number	Percent	Standard error of percentage		Number	Percent	Standard error of percentage
Children 3 to 5 years old.....	9,873	2,151	21.8	0.683	10,166	1,277	12.6	0.505
Mother in labor force.....	4,850	1,136	23.4	0.999	3,319	523	15.8	0.971
Mother not in labor force.....	4,748	966	20.3	0.959	6,665	738	11.1	0.590
No mother present.....	275	49	18.0	3.805	182	16	8.8	3.219
Percent with mother in labor force.....	49.1	52.8	(X)	(X)	32.6	41.0	(X)	(X)

and for those with mothers not in the labor force increased by an average of 8.5 percent (the increases for the two groups are statistically indistinguishable),³ and this change is responsible for most (95 percent) of the change in the total enrollment rate for 3- to 5-year-old children. Despite the fact that the fraction of 3- to 5-year-olds whose mothers were in the labor force increased by about 50 percent over the decade, this shift accounts for no more than 10 percent of the increase in the nursery school enrollment rate for this age group, because the differences between nursery school enrollment rates between these two groups of mothers are relatively small.⁴ See appendix table A-7 for enrollment rates by age and mother's labor force status in 1982.

Although the size of the 4- to 6-year-old population decreased between 1972 and 1982, the difference between estimated kindergarten enrollments is so slight that we can't tell whether 1982 enrollment was larger than 1972.

ELEMENTARY AND SECONDARY SCHOOL

The decrease in elementary and high school enrollments is almost entirely due to the decrease in the size of the population of relevant ages. There is some evidence of a very slight decline in the fraction of 6- to 13-year-olds enrolled in elementary school. For 14- to 18-year-olds, the fraction enrolled in high school in 1982 is indistinguishable from the fraction enrolled in 1972.⁵

COLLEGE ENROLLMENT

From 1972 to 1982, college enrollment increased by 35.3 percent. Enrollment in college has followed a different path for men and women. There were 3.2 million more college students in 1982 than in 1972, and about 80 percent of this increase was in the number of women in college (table C).

The increase in the number of men enrolled was less than would have been observed if the age-specific enrollment rates observed in 1972 had applied to the population observed in 1982. Enrollment rates for 18- to 24-year-olds and 25 to 29-year-old men actually declined. To some extent, the decline in enrollment rates for 18- to 24-year-olds was related to the decline in the proportion of men in that age group who were in the Armed Forces—10.4 percent in 1972, while only 6.7 percent in 1982—since Armed Forces members are excluded from the base of the percentages reported. The decline in enrollment rates for men ages 25 to 29 may, in part, be due to the delimitation of veterans' training benefits. In 1982 there were 620,000 veterans and service personnel receiving college training using entitlements under the GI bill. In 1972, there were 1.1 million.⁶

The increase in the number of women enrolled in college is more than twice what would have been observed had age-specific enrollment rates been the same in 1982 as observed in 1972. Particularly noteworthy was the increase of a million women students in the "traditional college ages," where both enrollment and the percent enrolled among women are now indistinguishable from men. Women's enrollment rates increased at ages 25 to 29, 30 to 34, and 35 to 39, and now exceed those of men in the latter two age groups.

³The 95-percent confidence interval estimates of the 1972-82 increases in enrollment rates are 7.6 ± 2.79 percent for children with mothers in the labor force and 9.2 ± 2.25 percent for children with mothers not in the labor force. The difference of the differences is 1.6 ± 3.58 .

⁴See technical note on page 3 for these calculations.

⁵The 95-percent confidence interval estimate of the percentage of 6- to 13-year-olds enrolled in grades 1 to 8 is 97.3 ± 0.28 percent in 1972 and 96.9 ± 0.34 percent in 1982. For 14- to 18-year-olds, the estimated fractions in high school are 71.5 ± 0.90 percent and 71.6 ± 1.0 percent.

⁶Veterans Administration, Office of Management and Statistics, "Veterans benefits under current educational programs, FY 1982," tables 5 and 6.

Table C. College Enrollment of Persons 14 Years Old and Over, by Age and Sex: October 1982 and 1972

(Number in thousands)

Sex and age	Population 14 years old and over		Enrolled in college					
			Number			Percent		
	1982	1972	1982	1972	Increase	1982	1972	Increase
Total.....	180,031	152,382	12,308	9,096	3,212	6.8	6.0	0.8
Male.....	85,438	72,051	5,899	5,218	681	6.9	7.2	-0.3
14 to 17 years old.....	7,492	8,292	112	141	-29	1.5	1.7	-0.2
18 to 24 years old.....	14,083	11,712	3,837	3,534	303	27.2	30.2	-3.0
25 to 29 years old.....	9,881	7,094	968	848	120	9.8	12.0	-2.2
30 to 34 years old.....	9,000	5,848	492	330	162	5.5	5.6	-0.1
35 to 39 years old.....	7,533	5,188	222	189	33	2.9	3.6	-0.7
40 years old and over.....	37,449	33,917	268	177	91	0.7	0.5	0.2
Female.....	94,593	80,331	6,410	3,877	2,533	6.8	4.8	2.0
14 to 17 years old.....	7,258	8,067	141	153	-12	1.9	1.9	0.0
18 to 24 years old.....	14,763	12,867	3,841	2,724	1,117	26.0	21.2	4.8
25 to 29 years old.....	10,355	7,608	891	381	510	8.6	5.0	3.6
30 to 34 years old.....	9,448	6,284	637	200	437	6.7	3.2	3.5
35 to 39 years old.....	7,972	5,656	384	138	246	4.8	2.4	2.4
40 years old and over.....	44,797	39,849	516	280	236	1.2	0.7	0.5

Major Field of Study for College Students

Between 1966 and 1982, there were significant shifts in the distribution of fields of study pursued by college students (fig. 1). Field choices have changed over time as employment opportunities have changed, as the proportion of students enrolled in vocationally oriented major fields have increased and the proportion in traditional arts and sciences have decreased (table D and fig. 2).

By gender— Patterns of enrollment in major fields of study have been different for men and women. In 1982, there was no difference in the numbers of men and women under 35 years old enrolled in college, yet there were substantial differences in the numbers of each majoring in certain fields (table D). In engineering (including computer science and data processing), four out of five students were men; in physical sciences and in the vocational/technical area, two of three students were men (table A-5). Conversely, in the education and health fields, three of four students were women. The business area, which was once predominantly male, has attracted a large number of women in recent years. In 1966, three of four business students were men; about equal proportions were men and women in 1982.

Traditionally, women have been the vast majority of education majors (three of four in 1982). The number and proportion of persons majoring in education fell substantially between 1966 and 1982. It was the only field in which the number

declined significantly. The proportion of all students majoring in education dropped from 19 percent to 7 percent. Only 10 percent of men majored in education in 1966, while one-third of all women in college reported education as their major field. In 1982, only 1 in 10 women was majoring in education (fig. 2). One reason for the decline was a decreased demand for teachers which began in the early 1970's because of declining enrollment; another important reason was the increase in opportunities for women in other fields. As the number and proportion of women enrolled in college grew and the job opportunities for students majoring in education became fewer, women entered areas of study in which very few women had been enrolled before.

The business area, which engaged only 9 percent of all women students in 1966, was the major field for 23 percent of women students in 1982 (figure 2 and table D). The other area that increased substantially for women was biological sciences and health. In 1966, 12 percent of women were in biological sciences (including health fields not separately identified); in 1982, 20 percent of women were studying in that area. Combined, the two areas (business and biological sciences) rose from enrolling 21 percent of women in 1966 to 43 percent in 1982. Whereas for women there was a large shift out of education and into the business and biological sciences and health fields, for men the changes were more modest, with an increase in business enrollment and a corresponding decrease in education. The increase in enrollment

Table D. Major Field of Study of College Students 14 to 34 Years Old, by Sex and Race: October 1982 and 1966

(Numbers in thousands)

Field of study	1982				1966			
	All races			Black	All races			Black
	Both sexes	Male	Female		Both sexes	Male	Female	
Total, all fields.....	10,919	5,409	5,510	1,127	5,999	3,710	2,289	282
Agriculture.....	1,259	1,112	1,147	19	73	71	2	2
Biological sciences and health.....	1,623	501	1,122	211	602	334	268	27
Business, commerce.....	2,586	1,307	1,278	292	888	684	204	41
Education.....	732	189	543	65	1,118	359	760	65
Engineering.....	² 1,229	² 972	² 257	² 86	534	524	10	12
English, liberal arts, humanities.....	1,156	535	621	100	620	304	316	15
Mathematics, statistics.....	187	98	90	17	236	150	86	8
Physical science.....	258	177	81	10	226	200	25	12
Social science.....	763	352	411	69	642	401	241	48
Other, no major.....	1,365	774	590	134	461	335	126	17
Don't know, not reported.....	761	391	370	135	600	348	251	34
Percent.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture.....	¹ 2.4	¹ 2.1	¹ 2.7	¹ 0.8	1.2	1.9	0.1	0.7
Biological sciences and health.....	14.9	9.3	20.4	18.7	10.0	9.0	11.7	9.6
Business, commerce.....	23.7	24.2	23.2	25.9	14.8	18.4	8.9	14.5
Education.....	6.7	3.5	9.9	5.8	18.6	9.7	33.2	23.0
Engineering.....	² 11.3	² 18.0	² 4.7	² 7.6	8.9	14.1	0.4	4.3
English, liberal arts, humanities.....	10.6	9.9	11.3	8.9	10.3	8.2	13.8	5.3
Mathematics, statistics.....	1.7	1.8	1.6	1.5	3.9	4.0	3.8	2.8
Physical science.....	2.4	3.3	1.5	0.9	3.8	5.4	1.1	4.3
Social science.....	7.0	6.5	7.5	6.1	10.7	10.8	10.5	17.0
Other, no major.....	12.5	14.3	10.7	11.9	7.7	9.0	5.5	6.0
Don't know, not reported.....	7.0	7.2	6.7	12.0	10.0	9.4	11.0	12.1

¹Includes home economics.

²Includes computer science.

FIGURE 1. Enrollment in Major Fields of Study:
October 1982 and 1966

1982
1966

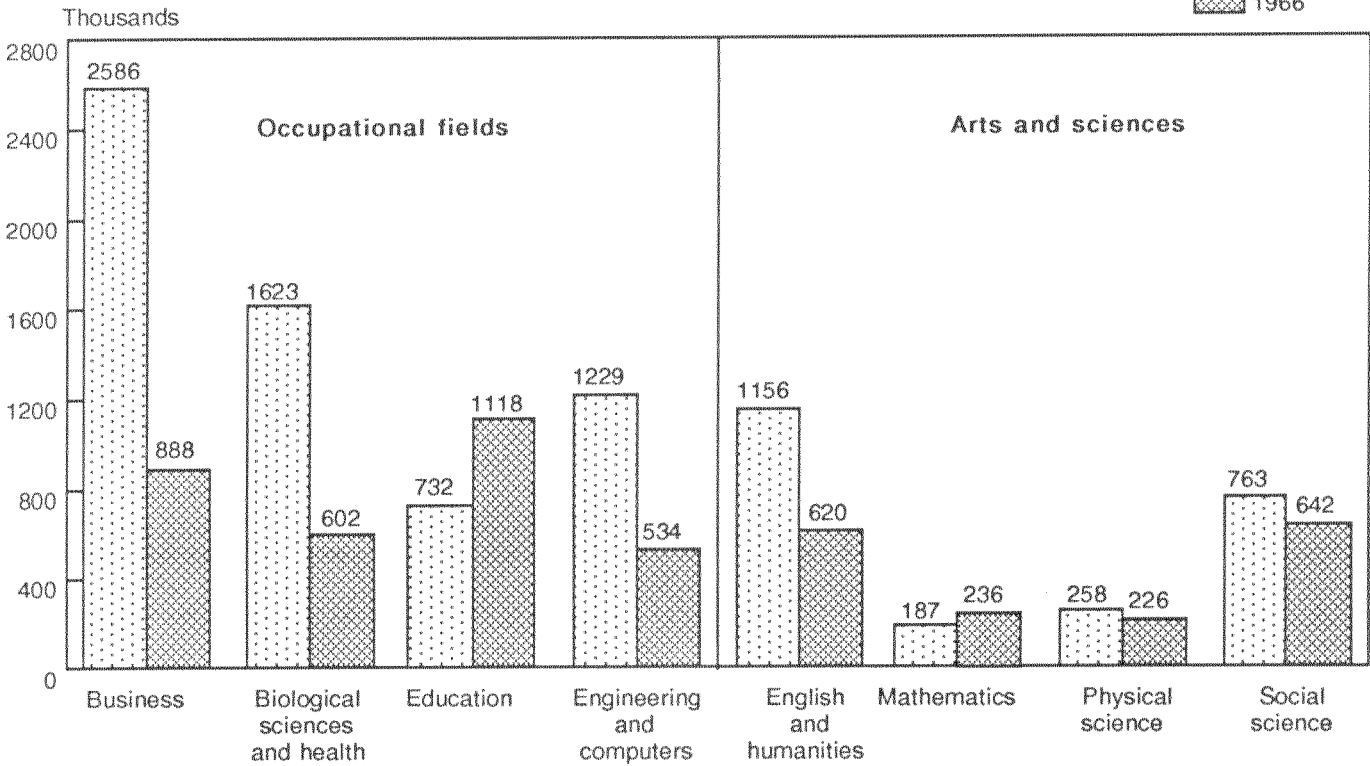
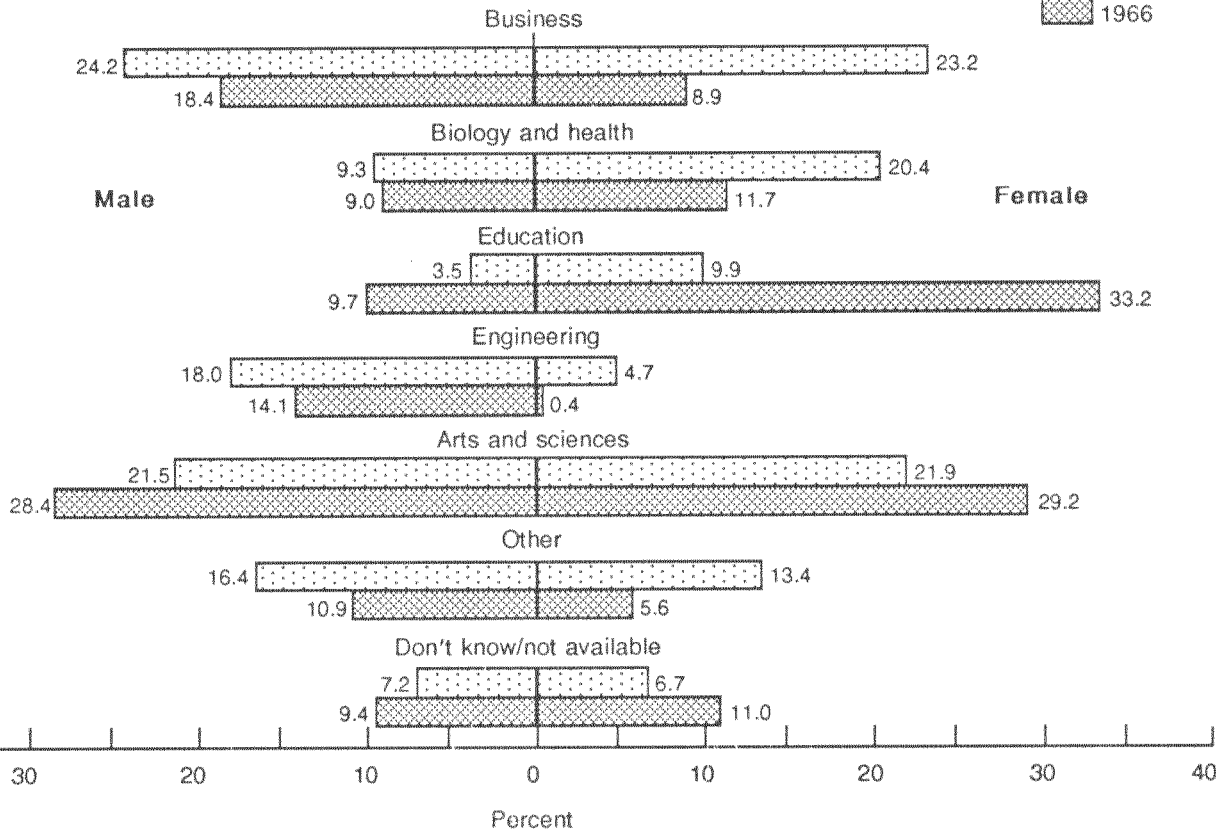


FIGURE 2. Major Fields of Study for College Students 14 to 34 Years Old,
by Sex: October 1982 and 1966

1982
1966



in business areas was so much greater for women than for men, however, that the proportion of business majors who were women rose from 23 to 49 percent in the 16-year period.

For Blacks—The number of Black college students quadrupled from 1966 to 1982 and the distribution among major fields changed markedly (table D). In 1966, 40 percent of Black students majored in education or the social sciences. In 1982, 12 percent were in those fields, but the numbers enrolled in education and the social sciences had not changed. In recent years, larger proportions of Black students were majoring in business and the biological sciences and health fields. The proportion in business rose from 15 to 26 percent; the proportion in the biological sciences and health fields rose from 10 to 19 percent.

By level—The distributions of major fields varied among undergraduates and graduate students in 1982 (table A-5). For example, 20 percent of undergraduate men majored in engineering or computer fields, compared with half that proportion of graduate students. Only 7 percent of undergraduate men majored in biological science and health fields, but 20 percent of graduate men majored in those fields. Among women, 8 percent of undergraduates were majoring in education compared with 23 percent of graduate students. The high proportion of women graduate students in education reflects the occupational requirement for continuing education among teachers and the larger share of education as an undergraduate major in earlier years.⁷

Among undergraduates, one-third of all enrollment was in 2-year colleges in 1982. More women than men attended 2-year colleges and the majority of women in those schools (55 percent) were in business or the biological sciences and health fields. Forty percent of undergraduate women in 4-year colleges were in these fields (table A-5). In both 2-year and 4-year colleges, less than 10 percent of undergraduate men were enrolled in the biological sciences and health areas; 45 percent were in business, engineering or computer science. There are both 2-year and 4-year degree programs in those major areas, within which the individual programs are quite different. Included in the engineering and computer science area are mechanical/engineering technology, computer operations, and data processing as well as 4-year engineering and computer science programs. The business area includes various levels of programs in marketing, management, accounting and secretarial science. The 2-year and 4-year programs were not separately identified in this survey. The only subject area in which there were more students in 2-year than 4-year colleges was vocational and technical programs.

For students 35 years old and over—Among the 1.4 million college students 35 years old and over, nearly two-thirds were

women and, like their younger counterparts, half of those were in the health, business or education fields (table D). One-third of all older women students were graduate students and one-third of them were in education. While most business and health majors were undergraduates, most education majors were graduate students. Half of male students 35 years old and over were graduate students and half were undergraduates, one-third were in business, followed distantly by proportions in engineering, liberal arts, social sciences, education and vocational/technical fields.

RELATED REPORTS

Other reports containing data on major field of study collected in earlier years in the Current Population Reports, P-20 series, are No. 351, "Major Field of Study of College Students: October 1978"; No. 289, "Major Field of Study of College Students: October 1974"; No. 260, "Social and Economic Characteristics of Students: October 1972"; and No. 183, "Characteristics of Students and Their Colleges: October 1966."

Major field data for 1982 have been compared with data for 1966 in this report. Although data on college majors were collected in the CPS for 1972, 1974, and 1978 and are available in the P-20 series, they are not sufficiently comparable with the data collected in 1982 to be published in this report. The lack of comparability was caused by the use of a flash card to aid interviewers in 1966 and 1982 but not in 1972, 1974, and 1978. The flash card contains the list of types of majors, from which the interviewer or respondent could categorize the major field. In 1966 and 1982 detailed lists of about 178 fields were used, while in the 1970's only the questionnaire list was available. See appendix B for 1982 question content. The result was that the interviewers were able to categorize more fields with the flash card list. The proportion of fields categorized as "other" or "don't know" was much larger when the flash card was not used. The combination of responses "other, no major, don't know and no response" was 27 percent in 1978, with no flash card, and 13 percent in 1982 when the flash card was used. Examination of write-in entries for "other" in 1978 revealed that many responses could have been included in existing categories if more complete instructions had been given. The number categorized as "other" was reduced from 11 percent to 4 percent from 1978 to 1982.

Data on preprimary enrollment of children and the labor force status of their mothers are published in the *Current Population Reports*, Series P-20, No. 318, "Nursery School and Kindergarten Enrollment of Children and Labor Force Status of Their Mothers: October 1967 to October 1976." Photocopies of a set of unpublished tabulations of preprimary school enrollment of 3- to 5-year-olds by age, race, and Hispanic origin by maternal demographic, social, and economic characteristics, comprising 65 pages of computer output, are available for \$20. Make checks payable to "Commerce-Census" and ask for the "preprimary tabulations." Direct requests and inquiries

⁷U.S. Department of Education, Center for Statistics (formerly National Center for Education Statistics), *Digest of Education Statistics* annual report series; data from surveys of "Earned Degrees Conferred."

to Paul Siegel, U.S. Bureau of the Census, Washington, DC 20233, (301/763-1154).

Public Use Microdata files for October School Enrollment Supplements to the Current Population Survey are available from Data User Services Division, U.S. Bureau of the Census, Washington, DC 20233. (301/763-4100).

TECHNICAL NOTE: Decomposition of Change in Nursery School Enrollment Rates

The text claims that 95 percent of the increase in the fraction of 3- to 5-year-olds enrolled in nursery school comes from increases in the separate enrollment rates of children with mothers in the labor force and with mothers not in the labor force, rather than from the increase in the fraction of children whose mothers are in the labor force. The analysis underlying that claim follows.

Using uppercase letters for 1982 and lowercase for 1972, we represent the *proportion* of 3- to 5-year-olds enrolled in nursery school (N or n) as a weighted average of the enrollment *rates* (E_j or e_j) of children with mothers in the labor force ($i=1$), children with mothers not in the labor force ($i=2$), and children with no mother present ($i=3$):

$$\text{for 1982: } N = E_1W_1 + E_2W_2 + E_3W_3$$

$$\text{for 1972: } n = e_1w_1 + e_2w_2 + e_3w_3$$

The weights (W_j or w_j) are the proportions of all 3- to 5-year-olds with mothers in the respective labor force statuses.

Algebraically, change in the proportion enrolled ($N-n$) can be reported as the sum of products of changes in the fraction of children with mothers in a particular status (W_i-w_i)

and changes in the fraction of children with mothers in those statuses who are enrolled in nursery school (E_i-e_i):

$$N-n = \sum_{i=1}^3 \left\{ e_i(W_i-w_i) + (E_i-e_i)w_i + (E_i-e_i)(W_i-w_i) \right\}$$

The values of the nine terms in this equation can be calculated from table B. Alternative analyses of change into components representing shifts in population versus changes in rates amount to different groupings of the terms of this equation. We restrict our analysis to groupings in which terms of the same algebraic form (differing only in subscripts) are in the same group:

Source	Term	Change	Percent of total change
Due to change in enrollment rates	$\sum_{i=1}^3 w_i(E_i - e_i)$.0874	94.8
Due to change in labor force status distribution of mothers	$\sum_{i=1}^3 e_i(W_i - w_i)$.0075	8.1
Due to coincident change in rates and distribution	$\sum_{i=1}^3 (E_i - e_i)(W_i - w_i)$	-.0027	-2.9
Total change in proportion enrolled in nursery school	$N-n$.0922	100.0%

Among these, the grouping *most* generous in the magnitude it assigns to change due to mothers moving into the labor force credits that source with only 8 percent of the total increase in the fraction of 3- to 5-year olds enrolled in nursery school.