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ABSTRACT

In five chapters, 47 tables, and 26 figures, the authors describe national educational trends from 1968 to 1978 and project trends for 1978 to 1989. The report covers enrollments at all educational levels, numbers of high school graduates and earners of higher education degrees, numbers of instructional staff and educational expenditures at all levels, and costs charged to higher education students. The authors predict decreases through the 1980s in elementary, secondary, and postsecondary enrollments, high school graduates, baccalaureate degrees granted, and employed higher education teachers; but they foresee increases in elementary and secondary teachers and in expenditures at all levels. The data on enrollments, graduates, degrees, and teachers are controlled for several other variables, including age, sex, full- or part-time teaching or attendance, public or private control, field of study, two- or four-year program, graduate or undergraduate status, type of postsecondary degree, and teachers' academic rank. The financial data cover teacher salaries, capital outlays, interest payments, and sources of funds and control for current and constant (1978-1979) dollars. The report's six appendices (with 3 figures and 52 tables) discuss the authors' methods and definitions and supply supporting demographic and financial data. (RW)

Projections of Education Statistics to 1988-89

by

Martin M. Frankel
Debra E. Gerald

National Center for
Education Statistics

NCES 80-402

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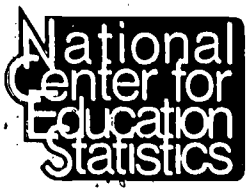

National Center for Education Statistics

"The purpose of the Center shall be to collect and disseminate statistics and other data related to education in the United States and in other nations. The Center shall . . . collect, collate, and, from time to time, report full and complete statistics on the conditions of education in the United States; conduct and publish reports on specialized analyses of the meaning and significance of such statistics; . . . and review and report on education activities in foreign countries."—Section 406(b) of the General Education Provisions Act, as amended (20 U.S.C. 1221e-1).

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Foreword

This edition is the first biennial report of *Projections of Education Statistics*. This publication provides projections of statistics for elementary and secondary schools and institutions of higher education and includes statistics on enrollments, graduates, teachers, and expenditures for the period of 1979-80 to 1988-89. The projections in this edition supersede those shown in the *Projections of Education Statistics to 1986-87*, 1978 edition.

The projections in this edition are revisions based on an age-specific enrollment model and econometric models. The enrollment model uses population estimates and projections and estimates of age-specific enrollment obtained from the Bureau of the Census. The econometric models use forecasts of exogenous variables obtained from Data Resources, Inc.'s Macro-Economic Forecasting Model of the U.S. Economy.

For most of the series in this publication, high, intermediate, and low alternative projections are presented. These are based on three alternative sets of explicitly stated assumptions. Although the intermediate projections are the "preferred" set of projections, the high and low alternatives supply a range of possible future outcomes.

A summary of these projections is available separately in a pocket-sized folder entitled *Trends in Education, 1968-69 to 1988-89*.

Nancy Jane Stubbs
Assistant Administrator for
Statistical Services
April 1980

Acknowledgments

The *Projections of Education Statistics to 1988-89* was prepared by the National Center for Education Statistics (NCES) in the Division of Statistical Services under the supervision of Nancy-Jane Stubbs, Assistant Administrator for Statistical Services, and Forrest W. Harrison, Statistical Information Branch, Chief.

Project Director Martin M. Frankel and Associate Project Director Debra E. Gerald were responsible for the development and preparation of the report. Patricia L. Kuch prepared the chapter on expenditures of educational institutions and assisted Warren Dahlstrom in preparation of the chapter on student charges by institutions of higher education. Loraine C. Simpson was responsible for the development and verification of statistical tables.

In addition to reviewing portions of the report, William A. Combs was responsible for the development of the computerized interactive forecasting system used to produce enrollment projections; William Fetters assisted in the development of the methodology and assumption sections; and Eugene P. McLoone assisted in methodological development in the area of expenditures and student charges.

Valuable assistance was also provided by other persons within NCES. Thomas Hill, writer/editor, was responsible for the editorial review and designed the format; and Phil Carr, graphic artist, designed the cover. Nancy Dearman, Valena White Plisko and Leo Eiden reviewed sections of the manuscript, and Brenda M. Wade was responsible for typing the tables and the manuscript.

How to Obtain More Information

Information about the Center's statistical program and a catalog of NCES publications may be obtained from the Statistical Information Office, National Center for Education Statistics, 1001 Presidential Building, 400 Maryland Avenue SW., Washington, D. C. 20202, telephone (301)436-7900.

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A.1 Enrollment

Highlights

If present trends continue, decreases can be expected in:

- Enrollment in all regular public and private elementary and secondary schools:
  —From 47.6 million in 1978 to 45.0 million in 1988.
- Enrollment in institutions of higher education:
  —From 11.3 million in 1978 to 11.0 million in 1988.
- High School graduates from all public and private secondary schools:
  —From 3.1 million in 1977-78 to 2.7 million in 1988-89.
- Bachelor's degrees granted by institutions of higher education:
  —From 921,000 in 1977-78 to 892,000 in 1988-89.
- Full-time-equivalent instructional staff for resident courses in institutions of higher education:
  —From 597,000 in 1978 to 557,000 in 1988.

and increases can be expected in:

- Full-time-equivalent teachers in all regular public and private elementary and secondary schools:
  —From 2,460,000 in 1978 to 2,501,000 in 1988.
- Total expenditures of all regular public and private elementary and secondary schools:
  —From 100.0 billion in 1978-79 to 114.6 billion in 1988-89 (in 1978-79 dollars).
- Total expenditures of institutions of higher education:
  —From 55.0 billion in 1978-79 to 60.7 billion in 1988-89 (in 1978-79 dollars).

Introduction

Guide to the Publication

This is the 15th edition of *Projections* which provides a consistent set of projections for most key education statistics.

Projections contains a variety of tables, charts, and narrative presenting enrollment, teacher, graduate and expenditure data for the past 11 years and projections for the next 10 years.

The tables and charts in each chapter are preceded by a narrative detailing inclusions and exclusions of the statistical universe for each series, the basic assumptions and methodology underlying the projections, the rationale for selecting the methodology and assumptions used, and caveats that should be considered in using individual projections.

The footnotes to the tables provide published sources of the data (usually NCES surveys) and references to tables and other information in the appendixes.

Appendix A gives detailed technical explanations of methods used in developing projections; appendix B states the assumptions underlying the projections; appendix C contains estimation methods; appendix D - classification of degrees by field of study; appendix E is a glossary of terms; and appendix F contains tables of population projections and other tables of data used in making projections.

Table 1 and figure 1 show summaries of percent changes from 1968-69 to 1978-79 and from 1978-79 to 1988-89 for most key statistics.

Changes in This Edition

This is the first edition of *Projections* published on a biennial basis. The projections in this publication supersede those in *Projections of Education Statistics to 1986-87.*

A biennial cycle was selected in order to allow for increased coverage, analysis, and model development. As a result, this publication includes projections of the following statistics that were not included in previous editions: (1) nursery and kindergarten enrollment by age and sex; (2) enrollment in institutions of higher education by age, sex, and attendance status; (3) enrollment in institutions of higher education by sex, attendance status and level enrolled of students, and by type and control of institution; (4) full-time-equivalent enrollment by level enrolled and type and control of institution; and (5) earned degrees by level and field of study and by sex of recipient.

Much of this increased coverage is a result of large scale forecasting models developed during the past 7 years. Enrollment projections are based on IFMOD, an interactive forecasting model based on age-specific enrollment rates by sex and by enrollment levels, nursery school through college. Degree projections by level and sex are based on demographic models relating degree output to college enrollments by year enrolled, attendance status, and age of degree recipient. Projections of expenditures for both elementary and secondary schools and for colleges are based on econometric models. Forecasts of exogenous economic variables were obtained from Data Resources, Inc.'s Macro-Economic Forecasting Model for the Nation.

The increased coverage of these models, and the incorporation of forecasts of economic variables in expenditure projections allow for greater analysis in each chapter.

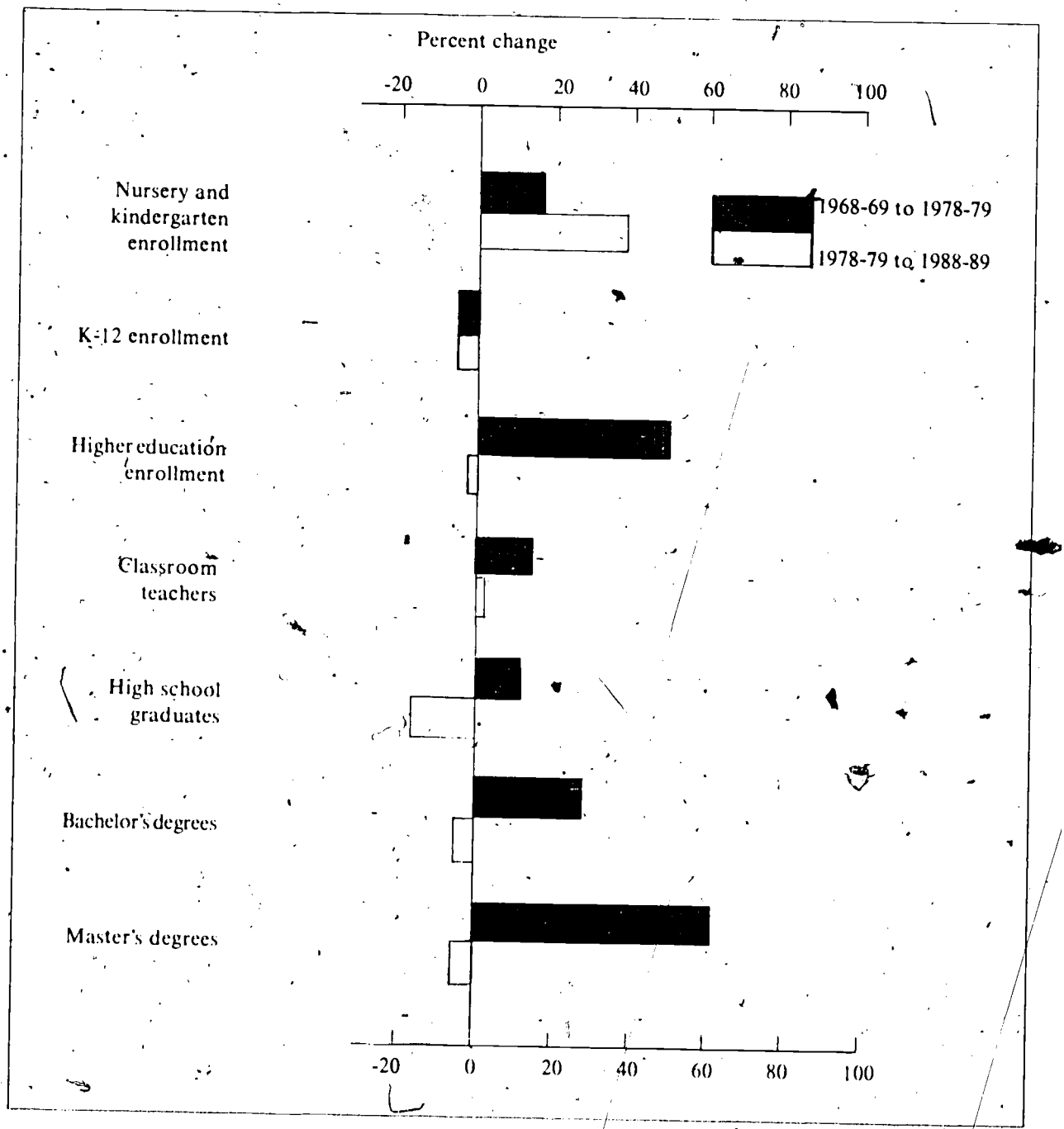
Caveats

Because of the inherent nature of the statistical universes from which the basic data are obtained and the properties of the projection methodologies, which depend on the validity of many assumptions, projections of time series into the future are subject to errors from many sources. Therefore, those using projections are cautioned against placing too much confidence in the accuracy of the numerical values of

the projections. To emphasize this fact, alternative projections are shown for most statistical series.

In addition, a separate appendix section on assumptions (appendix B) is included in this publication. It is imperative that users of these projections review the underlying assumptions in order to evaluate the suitability of the projections for their purposes.

Figure 1.—Percent change in selected education statistics United States, 1968-69 to 1978-79 and 1978-79 to 1988-89



Source: Table 1.

Table 1.—Summary of trends in education: United States, 1968-69 to 1988-89

Characteristic	1968-69 (000s)	1978-79 (000s)	Percent change 1968-69 to 1978-79	1988-89[1] (projected) (000s)	Percent change 1978-79 to 1988-89
School-age population:					
3-4	7,645	6,059	-21	7,708[2]	27
5-13	36,805	31,383	-15	30,944[2]	-1
14-17	15,173	16,649	10	13,480[2]	-19
Average of 17 and 18	3,612	4,237	17	3,646	-14
College-age population:					
18-24	22,883	28,980	27	25,967	-10
25-29	12,800	18,055	41	20,631	14
30-34	11,190	15,894	42	20,487	29
Public school districts	20.4	16.0	-22	...	...
Operating	19.3	15.7	-19	...	...
Nonoperating	1.1	0.3	-73	...	...
College and Universities[3]:					
Total	2,495	2,897	16	...	...
Public	1,015	1,257	24	...	...
4-year	420	463	10	...	...
2-year	595	794	33	...	...
Private	1,480	1,640	11	...	...
4-year	1,208	1,369	13	...	...
2-year	272	271	0	...	...
Enrollment:					
Nursery and kindergarten	4,070	4,813	18	6,682	39
K-grade 12	50,744	47,611	-6	44,974	-6
K-8	36,626	32,055	-12	32,259	1
9-12	14,118	15,556	10	12,715	-18
Public	44,944	42,611	-5	39,374	-8
K-8	32,226	28,455	-12	28,259	-1
9-12	12,718	14,156	11	11,115	-21
Nonpublic	5,800	5,000	-14	5,600	12
K-8	4,400	3,600	-18	4,000	11
9-12	1,400	1,400	0	1,600	14
Higher education:					
Total	7,513	11,259	50	11,048	-2
Public	5,431	8,784	62	8,754	0
4-year	3,784	4,911	30	4,557	-7
2-year	1,646	3,873	135	4,197	8
Men	3,198	4,331	35	4,373	1
Women	2,232	4,453	100	4,381	-2
Full-time	3,657	4,873	33	4,586	-6
Part-time	1,773	3,911	121	4,168	7
Undergraduate	4,782	7,786	63	7,708	-1
Graduate	548	894	63	930	4
First-professional	64	105	64	116	10
Full-time-equivalent	4,228[4]	6,291	49	6,101	-3

See footnotes at end of table.

Table 1.—Summary of trends in education: United States, 1968-69 to 1988-89—Cont.

Characteristic	1968-69 (000s)	1978-79 (000s)	Percent change 1968-69 to 1978-79	1988-89[1] (projected) (000s)	Percent change 1978-79 to 1988-89
Private	2,083	2,475	19	2,294	-7
4-year	1,937	2,320	20	2,137	-8
2-year	146	155	6	157	1
Men	1,280	1,309	2	1,258	-4
Women	803	1,166	45	1,036	-11
Full-time	1,553	1,794	16	1,599	-11
Part-time	530	681	28	695	2
Undergraduate	1,694	1,905	12	1,709	-10
Graduate	301	418	39	428	2
First-profesional	88	152	73	157	3
Full-time-equivalent	1,726	2,070	20	1,866	-10
Instructional staff:					
Elementary and secondary					
Classroom teachers	2,161	2,460	14	2,501	2
Elementary	1,223	1,352	11	1,529	13
Secondary	938	1,108	18	971	-12
Public	1,936	2,199	14	2,194	0
Elementary	1,076	1,178	9	1,318	12
Secondary	860	1,021	19	876	-14
Nonpublic	225	261	16	306	17
Elementary	147	174	18	211	21
Secondary	78	87	12	95	9
Higher education:					
Instructional staff	523	809	55	759	-6
Full-time-equivalent	412	597	45	557	-7
High School graduates[5]	2,829	3,149	11	2,651	-16
Public	2,529	2,829	12	2,341	-17
Nonpublic	300	320	7	310	-3
Boys	1,402	1,546	10	1,305	-16
Girls	1,427	1,603	12	1,346	-16
Earned degrees[5]					
Bachelor's	729	933	28	892	-4
Men	411	495	20	458	-7
Women	318	439	38	433	-1
First-professional	35	68	94	75	10
Men	34	53	56	53	0
Women	2	15	650	21	40
Master's	194	314	62	295	-6
Men	122	159	30	146	-8
Women	72	155	115	149	-4
Doctor's	26	32	23	28	-13
Men	23	23	0	20	-13
Women	3	9	200	8	-11

See footnotes at end of table.

Table 1.—Summary of trends in education: United States, 1968-69 to 1988-89—Cont.

Characteristic	Current unadjusted dollars		Constant 1978-79 dollars
	1968-69	1978-79	1988-89
	(Billions of dollars)		
Total expenditures by regular educational institutions:[4]			
All levels	61.2	155.0	175.3
Public	49.2	126.4	142.3
Nonpublic	12.0	28.6	33.0
Elementary and secondary schools	39.2	100.0	114.6
Public	35.2	89.4	100.6
Nonpublic	4.0	10.6	14.0
Institutions of higher education	22.0	55.0	60.7
Public	14.0	37.0	41.7
Nonpublic	8.0	18.0	19.0
	(Dollars)		
Current expenditure per pupil in average daily attendance in public elementary secondary schools	696	2,036	2,504

Characteristic	Current unadjusted dollars		Constant 1978-79 dollars
	1968-69	1978-79	1988-89
	(Dollars)		
Estimated average charges per full-time-equivalent student:			
Tuition and required fees:			
Public	295[4]	554	554
Nonpublic	1,383[4]	2,793	2,793
Board:			
Public	485[4]	796	847
Private	534[4]	904	939
Dormitory room:			
Public	337[4]	659	662
Private	404[4]	780	770

[1]Intermediate alternative projections are based on assumptions and methodology shown in appendixes A and B of *Projections of Education Statistics to 1988-89*. Users should check the acceptability of these assumptions for their purposes.

[2]Population projections are series II projections from the Bureau of the Census.

[3]Excludes branch campuses.

[4]From 1977 edition of *Projections*.

[5]Projected in 1978-79.

[6]Includes current expenditures, interest, and capital outlay.

NOTE.—Data are for the 50 States and the District of Columbia. Because of rounding, details may not add to totals.

Chapter I
ENROLLMENT

All Levels

Total fall enrollment (elementary, secondary, and higher education) increased from 58.3 million in 1968 to a high of 61.1 million in 1975. Since then enrollment has declined to 58.9 million in 1978 and is expected to continue declining through 1985 when it will reach a low of 55.1 million. By 1988 enrollment is expected to increase slightly to 55.9 million (table 2). These totals include daytime enrollment in all regular public and nonpublic (church affiliated and nonsectarian) elementary and secondary schools; degree-credit enrollment in publicly and privately controlled institutions of higher education in programs leading to a bachelor's or higher degree; and non-degree-credit enrollment in programs that extend not more than 3 years beyond high school and are designed to prepare students for technical, semiprofessional, or craftsman-clerical positions.

Excluded from the enrollments in institutions of higher education are noncredit courses of regular length; short courses of any kind; and correspondence, television, or radio courses, some of which are degree credit courses. Also excluded are enrollments in "special" (mostly private business and trade) schools. Excluded from the enrollments in elementary and secondary schools are those in "other" elementary and secondary schools which are defined as (1) enrollments in public and nonpublic subcollegiate, vocational, technical, and trade schools, unless they are a part of the regular school system; (2) enrollments in evening classes in regular public schools; (3) enrollments in elementary and secondary grades in public and nonpublic residential schools for exceptional children, Federal schools for Indians, federally operated schools on Federal installations, and subcollegiate departments of public and nonpublic institutions, and (4) enrollments in independent public and nonpublic nursery schools and kindergartens (exclusively preprimary schools).

Enrollment in Nursery Schools and Kindergartens

Enrollment in nursery schools and kindergartens increased from 4.1 million in 1968 to 5.1 million in 1975 and has since dropped to 4.8 million. Although the 3-to-5-year old population decreased throughout most of the period from 1968 to 1975, increased enrollment rates more than offset the population declines, resulting in increased enrollments. However, from 1975 to 1978 the population declines were too great to be counteracted by increases in enrollment rates. As a result, enrollment decreased during this period.

Starting in 1980, the 3-to-5-year old population is expected to begin increasing. This population increase combined with enrollment rate increases equal to half the increase expected on the basis of past trends resulted in the intermediate alternative projections shown in table 3. Nursery and kindergarten enrollment is expected to increase from 4.8 million in 1978 to 6.7 million in 1988. For 3-and 4-year olds, most of the increases are expected in nonpublic schools, while for 5-year olds most of the increases will be in public schools.

The low alternative asssumes that the age-specific enrollment rates will remain constant at levels consistent with the most recent observations. Under this assumption the increase will be only about 60 percent as large, from 4.8 million in 1978 to 5.9 million in 1988.

The high alternative assumes that past trends in enrollment rates will continue throughout the projected period. Under this assumption nursery and kindergarten enrollment will increase to 7.5 million

in 1988, an increase over 40 percent larger than the increase projected in the intermediate alternative projection. The high alternative shows a larger portion of the enrollment being made up of 3-and 4-year olds than the intermediate projection. This occurs because the enrollment rate of 5-year olds is so close to 100 percent that there is little room for additional increases. However, 3-and 4-year olds have a large potential for growth in enrollment rates.

Regular Elementary and Secondary Schools

Enrollment in regular elementary and secondary schools reached a peak of 51.3 million in 1970 (table 4 and 5). Since then enrollment has declined steadily reaching 47.6 million in 1978. These enrollments are expected to continue decreasing until they reach a low point of 43.6 million in 1984 and then begin a gradual climb, reaching 45.0 million in 1988.

Projections of enrollments in both public and nonpublic elementary and secondary schools are based primarily on the assumption that age-specific enrollment rates by sex will remain constant throughout the projected period. The enrollment rates for most of the school-age population (5-to-17-year-olds) are all approximately 100 percent. As a result, K-8 enrollments closely reflect the 5-to 13-year old population, and 9-12 enrollments tend to reflect the 14-to-17-year old population.

Since the enrollment rates for individuals aged 5 through 17 are approximately 100 percent, alternative enrollment rate projections were not computed. The single set of projected enrollment rates was applied to Bureau of the Census Series II population projections to obtain projections of enrollments in elementary and secondary schools (appendix table F-1). At the present time, the Series II population projections are holding up, whereas the alternative projections, series I and III, are already obsolete, especially for the relatively short-range projections considered in this publication. Therefore, the projected enrollment rates are only applied to series II population projections, and alternative projections of enrollment in elementary and secondary schools are not shown.

Enrollment in regular public elementary and secondary schools reached a peak of 46.1 million in 1971 and have since declined to 42.6 million in 1978. Enrollments in these schools are expected to continue declining, reaching 38.5 million in 1984, before increasing to 39.4 million in 1988.

Projections of enrollments in regular public elementary and secondary schools (tables 4 and 5) are computed by using a grade-retention method. This method depends mainly on assumptions about the entrance of 6-year olds into the first grade and their subsequent progress through elementary and secondary schools as determined by projected grade-retention rates. These projections are based primarily on the assumption that grade-retention rates will hold constant throughout the projected period. The retention rates for grades 2 through 10 are all close to 100 percent. In fact, the retention rates for grades 6 to 7 and grades 8 to 9 are significantly over 100 percent. Traditionally, these are the grades at which large numbers of nonpublic elementary students transfer to public secondary schools.

The retention rates for grades 10 to 11 and grades 11 to 12 are about 90 percent, allowing for increased retention that would result in increased enrollment at the secondary level. Since these rates have not increased during the past 10 years, they are projected to remain constant throughout the projection period.

Enrollment in regular nonpublic elementary and secondary schools decreased from 5.8 million in 1968 to 4.9 million in 1973. Since that time, nonpublic enrollment has fluctuated around 5.0 million and is expected to continue doing so for the next few years before beginning a gradual increase in 1983. By 1988, enrollment in nonpublic schools is expected to reach 5.6 million. In contrast, enrollment in public schools is not expected to begin increasing until 1985, and should not increase as rapidly as nonpublic schools.

Projections of enrollments in nonpublic schools are computed as the differences between projections of total enrollment and projections of public enrollment. The major disadvantage of this method is that relatively small errors in public enrollment projections may result in relatively large nonpublic enrollment errors. However, it is not possible to project systematically nonpublic enrollment independently because of the scarcity of nonpublic enrollment data. The nonpublic enrollment projections in this edition, although subject to the types of errors already mentioned, should prove to be more useful than the constant nonpublic enrollment projections in earlier editions.

Grade Group

Enrollment in grades K-8 of public and nonpublic schools decreased from a high of 36.8 million in 1969 to 32.1 million in 1978 (table 4). This decline is expected to continue through 1984 when K-8 will

bottom out at 30.1 million. By 1988, K-8 enrollment will reach 32.3 million, sightly more than the 1978 level. In contrast, 9-12 enrollment increased throughout most of the past ten years, from 14.1 million in 1968 to a high of 15.7 million in 1976. Only slight decreases occurred in 1977 and 1978, but significant decreases are expected throughout the projection period as the low birth cohorts of the 1960's and early 1970's move through grades K-8 into grades 9-12. By 1988, 9-12 enrollment is expected to drop to 12.7 million (figure 2).

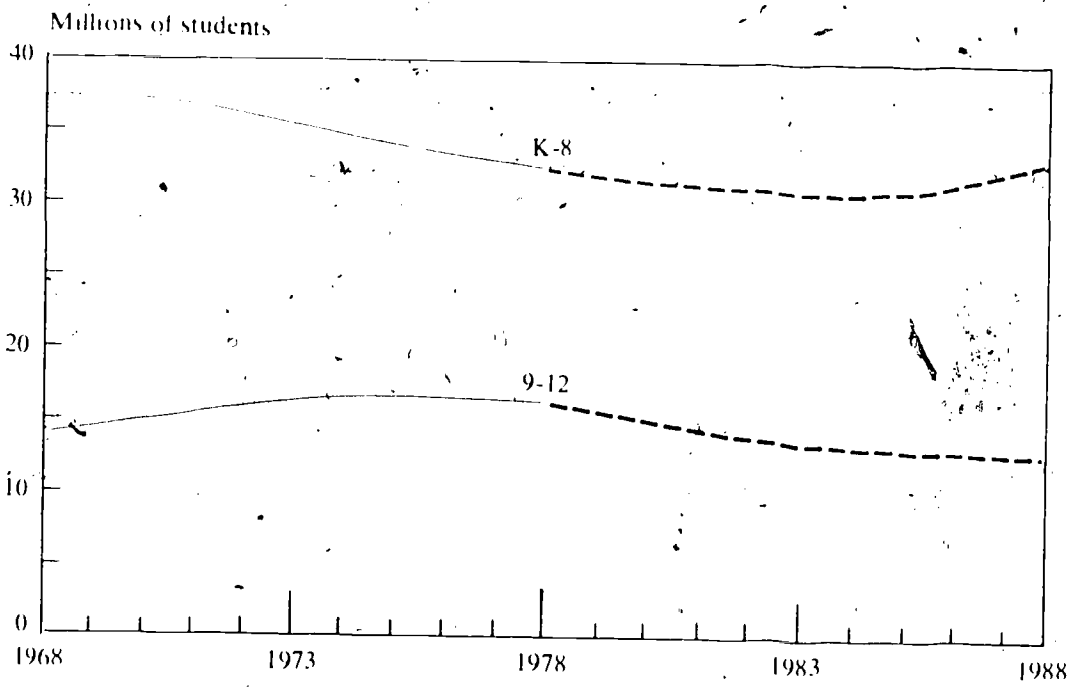
Organizational Level

Students in 7th and 8th grade in K-8 schools are considered elementary students, while those in junior high schools or high schools are considered secondary students. However in many cases, students are reported strictly by grade group. As a result, the past and projected enrollments by organizational levels in table 5, should be used with caution.

Enrollments in elementary schools decreased from 31.8 million in 1968 to 28.7 million in 1978. This decline is expected to continue through 1983 when enrollment reaches 26.5 million. By 1988, elementary enrollment is expected to be 28.9 million.

Secondary enrollment increased from 19.0 million in 1968 to 20.6 million in 1975. By 1978, enrollment in these schools dropped to 19.0 million and is expected to continue decreasing, reaching 16.1 million in 1988.

Figure 2.—Enrollment in grades K-8 and 9-12 of regular schools: United States, fall 1968 to 1988



Source: Table 4.

Institutions of Higher Education

Enrollments in institutions of higher education increased from 7.5 million in 1968 to 11.3 million in 1978. Enrollments in these institutions are expected to increase slightly over the next few years, reaching 11.7 million in 1981 before decreasing to 11.0 million in 1988 (figure 3). These enrollment projections are consistent with population projections for the traditional college-age population, 18-to-24-year olds. Enrollment for this age group will decrease for the first time in 1982, the first year that a decline is projected.

However, college enrollment is not expected to decline as rapidly as the 18-to-24-year-old population because large numbers of students, 25 years old and over are also enrolled in college. The large birth cohorts of the late 1940's and 1950's will be in the 25 to 34 age group throughout most of the projected period. Enrollments in this age group are expected to offset partially the effects of the decline of traditional college age population. But, many of these older students will be enrolled part-time, whereas traditional-age students are more likely enrolled full-time. Therefore, full-time-equivalent enrollment will decline more rapidly than total enrollment.

Enrollments by Age

Table 6 shows college enrollments by age, sex, and attendance status. Table 6a shows low alternative projections and table 6b shows high alternative projections. The intermediate projections are based primarily on the assumptions that age-specific enrollment rates by sex and attendance status will remain constant throughout the projection period and primarily reflect shifts in the age-distribution of the population. As a result, men should continue to make up a slight majority of total college enrollment through 1988. Enrollments in younger age groups (less than 25 years old) will decrease from 1978 to 1988, while the older age groups will increase. Since older students are more likely to enroll part-time, full-time enrollment is expected to decrease from 6.7 million in 1978 to 6.2 million in 1988 and part-time enrollment is expected to increase from 4.6 million to 4.9 million (figures 4 and 5).

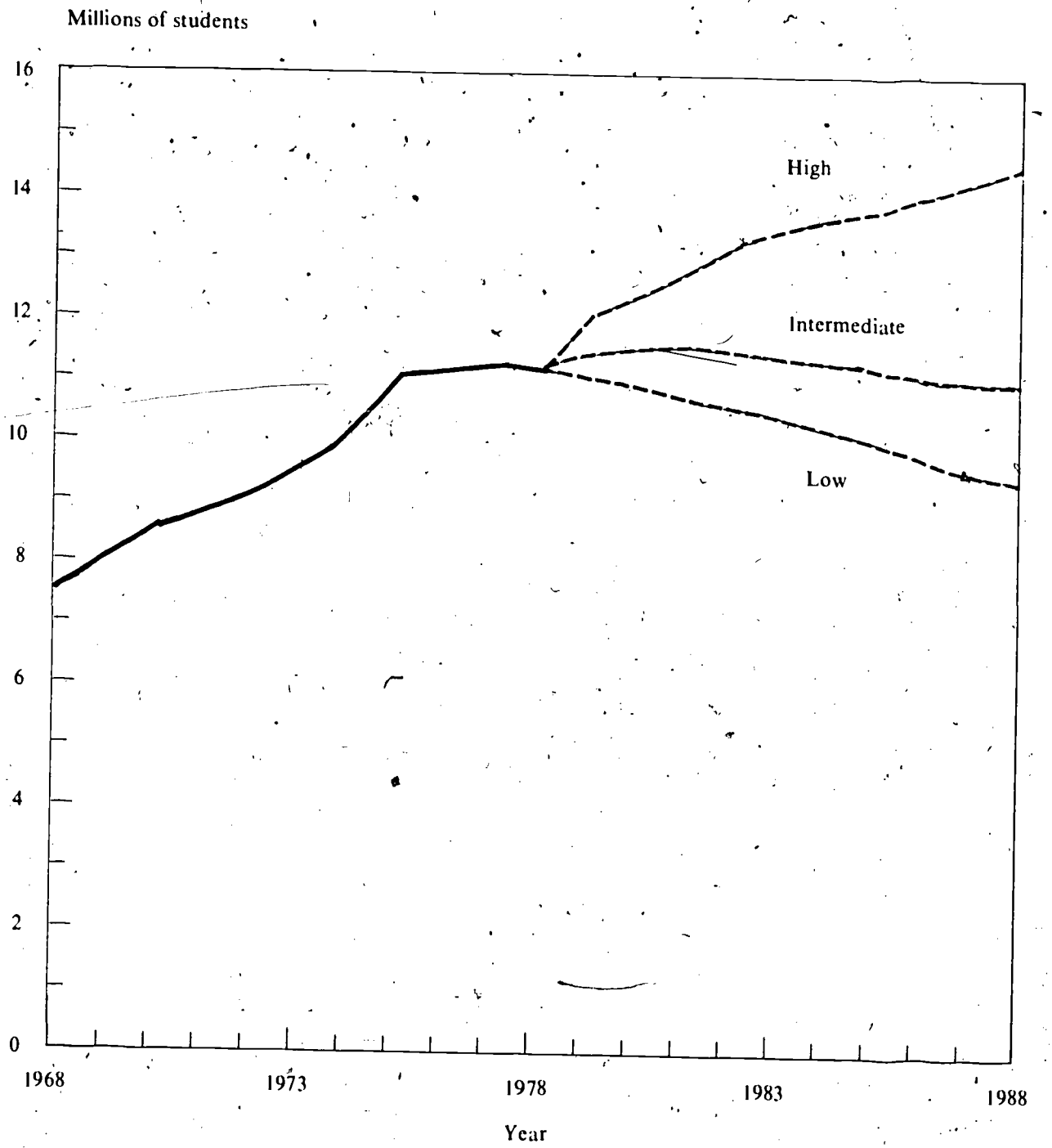
The low alternative projections (table 6a) are based primarily on the assumptions that age-specific enrollment rates by attendance status for men will continue to decline as they have during the past few years, and that enrollment rates for women will decline proportionally for each age by attendance status. This alternative shows a decrease from 11.3 million in 1978 to 9.5 million in 1988. Most of the decrease is in full-time enrollments, which will decrease under this alternative from 6.7 million to 5.2 million, while part-time enrollment will decrease slightly from 4.6 million to 4.4 million.

The high alternative projections (table 6b) are based primarily on the assumptions that age-specific enrollment rates by attendance status for women will continue to increase as they have throughout most of the past 10 years, and for men will stop their recent decreases and climb back to the high level experienced in 1970. Under this alternative, college enrollment will increase from 11.3 million in 1978 to 14.5 million in 1988, with full-time enrollment increasing from 6.7 million to 8.0 million and part-time enrollment increasing from 4.6 million to 6.5 million.

The high and low alternative projections, which vary by 5.0 million in 1988, are shown primarily to indicate the level of uncertainty involved in making higher education enrollment projections. There is little uncertainty involved in projecting college-age populations for the next 10 years, since those projections are based on actual past births. However, there is a great deal of uncertainty involved in projecting enrollment rates since they are affected by many social and economic factors such as unemployment levels, the cost of a college education, family income, levels of student aid, the economic value of a college education, etc.

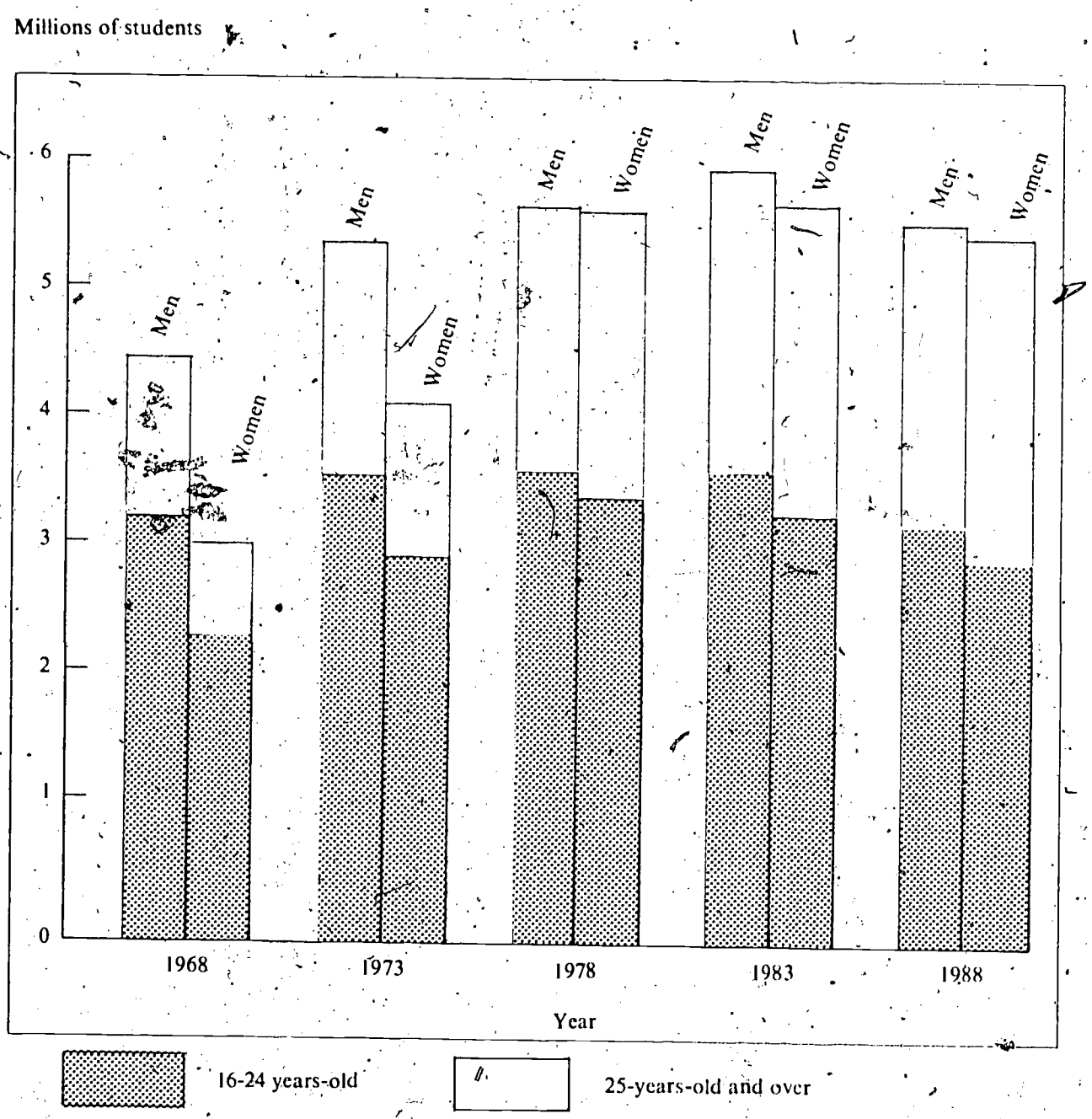
Projections takes the approach that the uncertainty involved in dealing explicitly with these economic and social factors is so great, that it is preferable simply to extrapolate the enrollment rates themselves. However, the enrollment rates have been separated by age, sex, and attendance status to reflect the varying propensity of people in these different categories to enroll in college. For college enrollment projections, 48 separate enrollment rates were projected (12 age and age-groups by sex and by attendance status). NCES is currently investigating alternative techniques to use in projecting enrollment rates, especially econometric models. Projections based on alternative techniques will be included in future editions of *Projections* for those techniques which prove to be useful.

Figure 3.—Total enrollment in institutions of higher education, with alternative projections: United States, fall 1968 to 1988



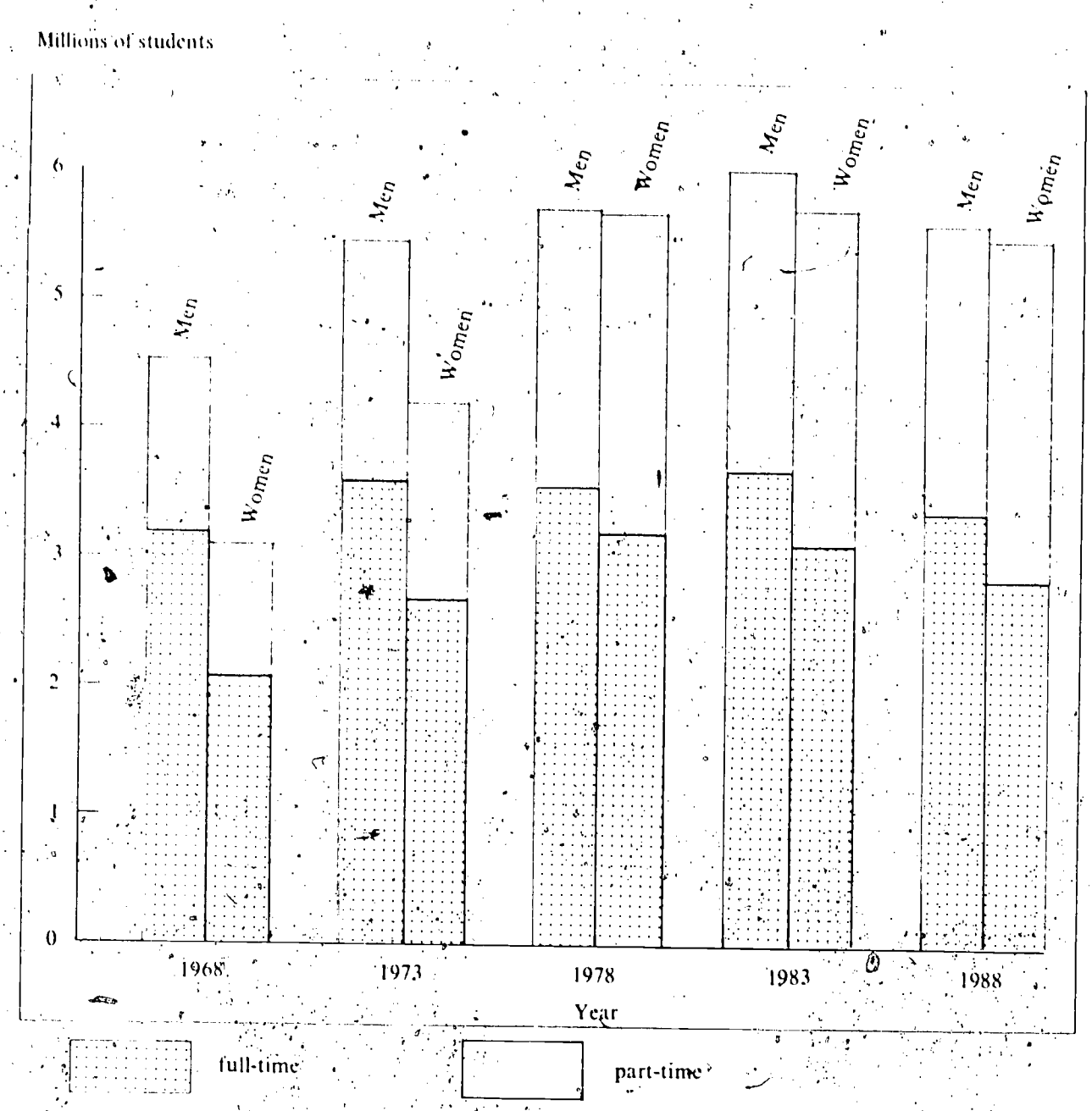
Source: Table 7.

Figure 4.—Total enrollment in institutions of higher education, by age and sex: United States, fall 1968, 1973, 1978, 1983, and 1988



Source: Table 6

Figure 5.—Total enrollment in institutions of higher education, by sex and attendance status: United Status, fall 1968, 1973, 1978, 1983, and 1988



Source: Table 6.

Intermediate Alternative Projections

Most of the following sections in this chapter discuss intermediate projections. As already noted, these projections are based primarily on the assumption that age-specific enrollment rates by sex and attendance status will remain constant throughout the projection period. This assumption was made for the following reasons: (1) enrollment rates for men, which have declined during most of the past 10 years, seem to have leveled off during the past few years; (2) enrollment rates for women, which have increased during most of the past 10 years, seem to have leveled off during the past few years; (3) projections made in the 1979 edition of this publication based on the assumption of constant enrollment rates have corresponded closely to actual enrollment counts; and (4) enrollment projections based on constant enrollment rates measure the effects of population changes alone. Deviations from these projections can be directly related to changing enrollment rates.

Enrollment by Type of Institution

As already noted, the traditional college-age population (18-to-24-year olds) is expected to decrease beginning in 1982. Undoubtedly, this will have an adverse effect on the ability of institutions to maintain or increase their enrollments. However, not all categories of institutions of higher education are likely to be affected equally. For while the 18-to-24-year old population will decrease from 29.5 million in 1981 to 26.0 million in 1988, the 25-to-34-year old population will increase from 37.5 million to 41.1 million. Therefore, those institutions that are able to attract older students will not be as adversely affected by the projected decline in traditional college-age students.

NCES estimates that in 1977, only 22 percent of the undergraduates enrolled in 4-year institutions were 25 years old or over. In contrast, in 2-year institutions, where almost all of the enrollments is at the undergraduate level, 39 percent of those enrolled were 25 years old or over.

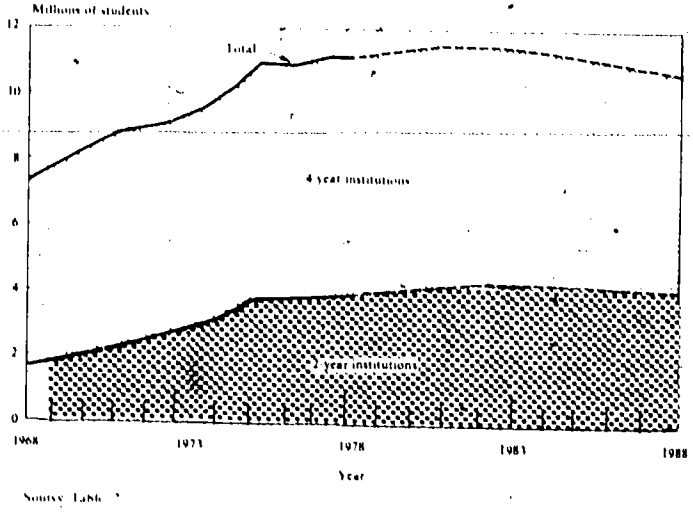
The heavier reliance of 4-year institutions on traditional college-age students for enrollments is reflected in future projections. Table 7A shows that enrollment in these institutions is expected to increase only slightly from 7.2 million in 1978 to 7.3 million in 1981 before decreasing to 6.7 million in 1988. In contrast, table 7B shows that enrollment in 2-year institutions are expected to increase from 4.0 million in 1978 to 4.4 million in 1983 and then decrease to slightly less than 4.4 million in 1988 (figure 6).

Enrollment by Control of Institution

Enrollment in private institutions is expected to decrease from 2.5 million in 1978 to 2.3 million in 1988. Enrollment in public institutions is expected to increase from 8.8 million in 1978 to 9.2 million in 1981 before dropping back to 8.8 million in 1988. Public institutions are expected to fare better than private institutions because most 2-year institutions are public and 96 percent of enrollment in 2-year institutions is in public colleges. This means that the expected decline of 181,000 students in private institutions will occur primarily in 4-year institutions. Table 8C shows that the expected decline in full-time enrollments in 4-year private institutions is even larger, 195,000 from 1978 to 1988, and table 9C shows that almost all of the full-time decline will be in undergraduate enrollments. Private 4-year institutions that rely heavily on the enrollments of full-time undergraduate students may have more difficulty in maintaining their enrollment levels than schools that are able to attract significant numbers of part-time and post-baccalaureate students. One analysis of the expected decline in full-time undergraduate enrollment even predicted that a fairly large number of small, primarily private colleges will close over the next decade.[1]

[1]Robert D. Behn, "The End of the Growth Era in Higher Education." A prepared statement presented to the Committee on Labor and Human Resources, United States Senate, June 7, 1979.

Figure 6.—Total enrollment in institutions of higher education, by type of institution: United States, fall 1968 to 1988



Source: Table

Full-Time-Equivalent Enrollment

During the past few years, part-time enrollments have been primarily responsible for the high enrollment levels. From 1974 to 1978 total enrollment increased by slightly over 1 million students. Over 700,000 of that increase occurred in part-time enrollments. In contrast full-time-equivalent-enrollment increased by only 556,000. In the 1980's the expected enrollment declines of traditional college-age, mostly full-time students will be offset to a large degree by increases in older, mostly part-time students. However, when these increases in part-time enrollment are converted to full-time equivalents, they will not be large enough to counteract the declines in traditional college-age enrollments.

Full-time-equivalent enrollment increased from 6.7 million in 1970 to 8.5 million in 1975. From 1975 to 1978, full-time-equivalent enrollment fluctuated around 8.4 million and is expected to increase to 8.6 million in 1981. By 1988, full-time-equivalent enrollment is expected to drop to less than 8.0 million (figure 7).

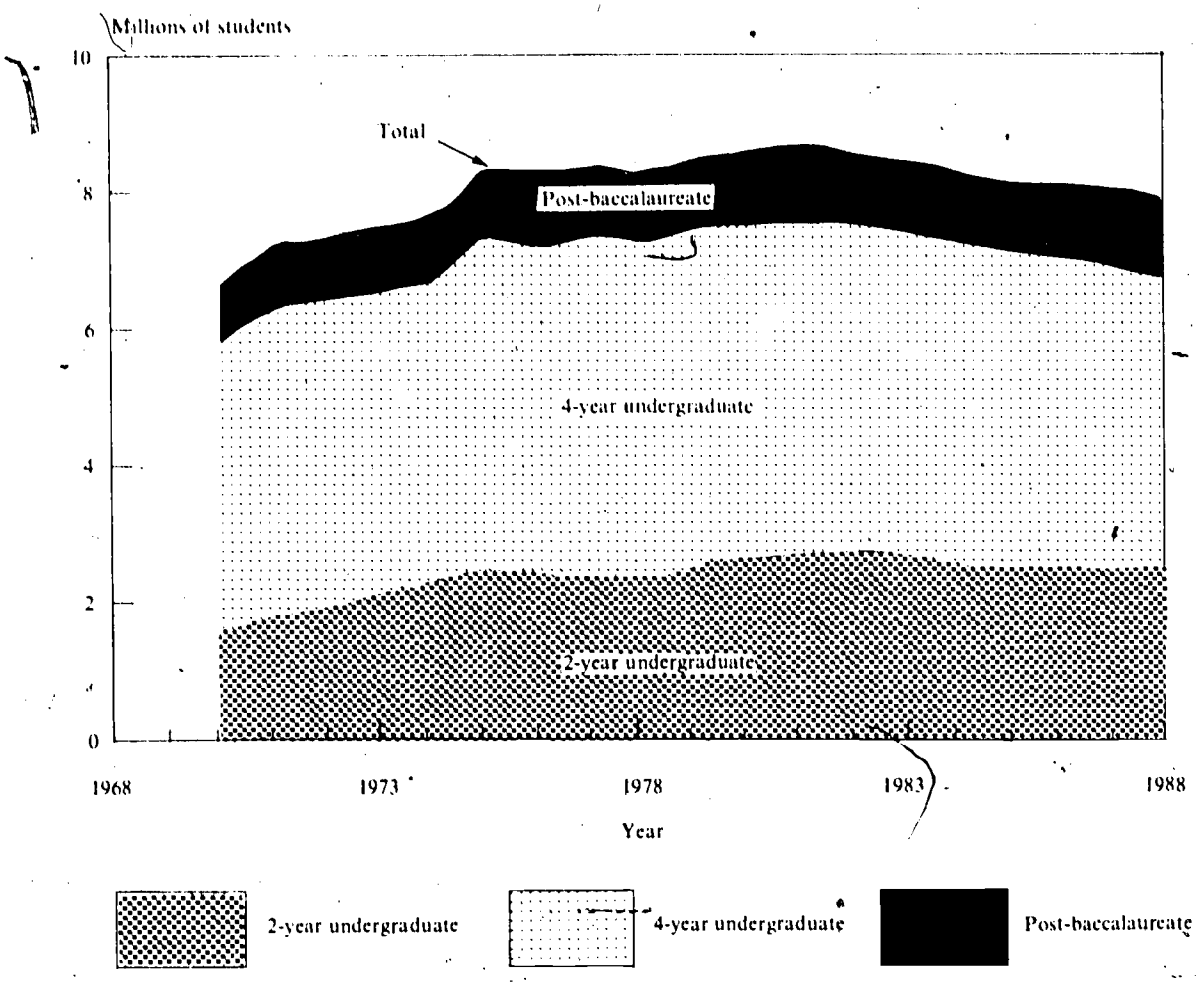
Total enrollment is expected to decrease 211,000 from 1978 to 1988 (table 7). During the same period, table 12 shows a decrease in full-time-equivalent enrollment of 394,000, nearly double the decrease in total enrollment. Table 12 also shows that the decrease in the full-time equivalent of undergraduate enrollment in 4-year institutions is more than 50 percent larger than the total drop in full-time-equivalent enrollment.

Full-time-equivalent enrollment in 2-year institutions is expected to increase by over 200,000, offsetting somewhat the over 600,000 decline in full-time-equivalent-undergraduate enrollment in 4-year institutions. Table 12a shows that two-thirds of the 600,000 decline will occur in public institutions. Since public institutions generally are larger than private institutions and can rely on State and local governments for financial support, most public 4-year schools will be able to survive the coming enrollment decline. However, private 4-year institutions, which face a smaller absolute decline in full-time-equivalent enrollment, but a slightly larger relative decrease, may not fare as well since they cannot rely on public financial support.

The Carnegie Council on Policy Studies in Higher Education[2] lists only 11 public institutions (average enrollment 1,800) in the Liberal Arts College II category compared to 449 private institutions, with an average enrollment of about 800 students. Should the bulk of the expected drop of 202,000 full-time-equivalent-students occur in the small private liberal arts colleges, many could face closure.

[2]Carnegie Council on Policy Studies in Higher Education, *A Classification of Institutions of Higher Education*, 1976.

Figure 7.—Full-time-equivalent enrollment in institutions of higher education, by level enrolled: United States, fall 1968 to 1988



Source: Table 12.

Post Baccalaureate Enrollment

Graduate and first-professional enrollments are expected to increase slightly throughout most of the next 10 years and then decrease slightly at the end of the projected period. Table 10 shows that graduate enrollment increased from 885,000 in 1968 to 1,312,000 in 1978. In 1988 graduate enrollment is expected to be 1,358,000. First-professional enrollment (table 11) increased from 152,000 in 1968 to 257,000 in 1978 and is expected to increase slightly to 273,000 in 1988.

Since 1972, women accounted for most of the increases in first-professional enrollment. The number of women enrolled increased from 24,000 in 1972 to 65,000 in 1978, while the number of men increased only slightly, from 183,000 to 192,000 over the same period. Although, women only made up 25 percent of first-professional enrollment in 1978, they more than doubled the proportion they represented in 1972. By 1988, first-professional enrollment of women is expected to increase to 81,000, increasing their share of first-professional enrollment to nearly 30 percent. During the same period, first-professional enrollment of men is expected to remain fairly constant at about 190,000.

Table 2.—Summary of enrollment in educational institutions, with alternative projections, by level and control of institution: United States, fall 1968 to 1988[1]

(In thousands)

Year (fall)	Total enrollment			Institutions of higher education		Regular elementary and secondary schools			
						Grades K-8		Grades 9-12	
	Total	Public	Nonpublic	Public	Nonpublic	Public	Nonpublic	Public	Nonpublic
1968	58,288	50,375	7,913	5,431	2,082	32,226	4,431	12,718	1,400
1969	59,140	51,516	7,624	5,897	2,108	32,597	4,217	13,022	1,299
1970	59,899	52,337	7,562	6,428	2,153	32,577	4,109	13,332	1,300
1971	60,152	52,885	7,267	6,804	2,144	32,265	3,823	13,816	1,300
1972	60,000	52,815	7,185	7,071	2,144	31,831	3,738	13,913	1,303
1973	59,982	52,850	7,132	7,420	2,183	31,353	3,646	14,077	1,303
1974	60,340	53,042	7,298	7,989	2,235	30,921	3,663	14,132	1,400
1975	61,063	53,626	7,437	8,835	2,350	30,487	3,687	14,304	1,400
1976	60,507	52,969	7,538	8,653	2,359	30,006	3,762	14,310	1,417
1977	59,955	52,423	7,532	8,847	2,437	29,336	3,615	14,240	1,480
1978	58,948	51,395	7,553	8,784	2,475	28,455	3,606	14,156	1,472
Intermediate alternative projections									
1979	58,129	50,587	7,542	9,030	2,478	27,822	3,554	13,735	1,510
1980	57,382	49,820	7,562	9,124	2,487	27,389	3,585	13,307	1,490
1981	56,602	49,058	7,544	9,200	2,490	27,037	3,577	12,821	1,477
1982	55,695	48,305	7,390	9,194	2,476	26,795	3,422	12,316	1,492
1983	55,381	47,825	7,556	9,159	2,454	26,601	3,672	12,065	1,430
1984	55,122	47,563	7,559	9,072	2,420	26,428	3,780	12,063	1,359
1985	55,111	47,522	7,589	8,974	2,384	26,448	3,809	12,100	1,396
1986	55,292	47,652	7,640	8,872	2,343	26,851	3,824	11,929	1,473
1987	55,576	47,866	7,710	8,793	2,311	27,495	3,874	11,578	1,525
1988	55,938	48,128	7,810	8,754	2,294	28,259	3,964	11,115	1,552
Low alternative projections									
1979	57,760	50,303	7,457	8,746	2,393	27,822	3,554	13,735	1,510
1980	56,840	49,404	7,436	8,708	2,361	27,389	3,585	13,307	1,490
1981	55,897	48,517	7,380	8,659	2,326	27,037	3,577	12,821	1,477
1982	54,842	47,651	7,191	8,540	2,277	26,795	3,422	12,316	1,492
1983	54,386	47,060	7,326	8,394	2,224	26,601	3,672	12,065	1,430
1984	54,004	46,703	7,301	8,212	2,162	26,428	3,780	12,063	1,359
1985	53,881	46,577	7,304	8,029	2,099	26,448	3,809	12,100	1,396
1986	53,963	46,625	7,338	7,845	2,041	26,851	3,824	11,929	1,473
1987	54,156	46,766	7,390	7,693	1,991	27,495	3,874	11,578	1,525
1988	54,417	46,948	7,469	7,574	1,953	28,259	3,964	11,115	1,552
High alternative projections									
1979	58,799	51,106	7,693	9,549	2,629	27,822	3,554	13,735	1,510
1980	58,339	50,566	7,773	9,870	2,698	27,389	3,585	13,307	1,490
1981	57,887	50,063	7,824	10,205	2,770	27,037	3,577	12,821	1,477
1982	57,306	49,570	7,736	10,459	2,822	26,795	3,422	12,316	1,492
1983	57,319	49,350	7,969	10,684	2,867	26,601	3,672	12,065	1,430
1984	57,382	49,345	8,037	10,854	2,898	26,428	3,780	12,063	1,359
1985	57,682	49,555	8,127	11,007	2,922	26,448	3,809	12,100	1,396
1986	58,168	49,929	8,239	11,149	2,942	26,851	3,824	11,929	1,473
1987	58,759	50,389	8,370	11,316	2,971	27,495	3,874	11,578	1,525
1988	59,429	50,901	8,528	11,527	3,012	28,259	3,964	11,115	1,552

[1]Grade K-8 and 9-12 enrollment numbers are from table 4. Enrollment of higher education numbers are from table 7.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

Table 3.—Nursery and kindergarten enrollment, with alternative projections, by age and sex of student and by control of school: United States, fall 1968 to 1988[1]

(In thousands)

Age	Total	Public					Nonpublic				
		Total	3 Years old	4 Years old	5 Years old	6 Years old	Total	3 Years old	4 Years old	5 Years old	6 Years old
1968	4,071	2,963	92	474	2,265	132	1,108	226	437	435	10
1969	4,136	2,927	77	420	2,268	162	1,209	239	459	486	25
1970	4,278	2,980	122	494	2,214	150	1,298	332	512	429	25
1971	4,330	3,007	107	486	2,254	160	1,323	323	562	417	21
1972	4,417	3,036	150	532	2,188	166	1,381	385	588	387	21
1973	4,399	2,982	137	518	2,175	152	1,417	378	659	368	12
1974	4,858	3,149	178	543	2,280	148	1,709	506	778	413	12
1975	5,141	3,425	191	645	2,417	172	1,716	492	773	437	14
1976	4,996	3,418	180	608	2,451	179	1,578	422	740	389	27
1977	4,806	3,225	198	591	2,242	194	1,581	447	699	400	35
1978	4,813	3,080	234	533	2,114	199	1,733	525	780	397	31
Intermediate alternative projections[2]											
1979	4,774	3,071	228	568	2,088	187	1,703	504	790	380	29
1980	4,890	3,136	245	566	2,142	183	1,754	533	803	390	28
1981	4,986	3,158	265	583	2,123	187	1,828	569	844	386	29
1982	5,176	3,256	284	609	2,179	184	1,920	601	894	396	29
1983	5,403	3,376	307	634	2,247	188	2,027	639	949	409	30
1984	5,706	3,540	334	673	2,339	194	2,166	689	1,021	425	31
1985	6,024	3,729	358	703	2,466	202	2,295	731	1,083	449	32
1986	6,290	3,892	373	733	2,574	212	2,398	755	1,142	468	33
1987	6,530	4,032	393	755	2,663	221	2,498	787	1,191	485	35
1988	6,682	4,114	404	773	2,709	228	2,568	805	1,234	493	36
Low alternative projections[2]											
1979	4,669	3,017	219	549	2,062	187	1,652	485	763	375	29
1980	4,723	3,059	226	534	2,116	183	1,664	492	759	385	28
1981	4,740	3,048	236	540	2,085	187	1,692	505	779	379	29
1982	4,856	3,108	247	550	2,127	184	1,748	523	809	387	29
1983	5,032	3,209	262	567	2,192	188	1,823	546	848	399	30
1984	5,249	3,341	275	590	2,282	194	1,908	568	894	415	31
1985	5,476	3,488	285	610	2,391	202	1,988	582	939	435	32
1986	5,672	3,623	292	622	2,497	212	2,049	591	971	454	33
1987	5,806	3,716	298	628	2,569	221	2,090	596	992	467	35
1988	5,892	3,773	301	632	2,612	228	2,119	600	1,008	475	36
High alternative projections[2]											
1979	4,881	3,117	242	587	2,101	187	1,764	536	817	382	29
1980	5,057	3,213	265	597	2,168	183	1,844	575	847	394	28
1981	5,205	3,261	291	621	2,162	187	1,944	623	899	393	29
1982	5,468	3,385	322	660	2,219	184	2,083	679	972	403	29
1983	5,805	3,554	357	708	2,301	188	2,251	744	1,058	419	30
1984	6,198	3,759	399	756	2,410	194	2,439	823	1,147	438	31
1985	6,570	3,971	425	805	2,539	202	2,599	868	1,237	462	32
1986	6,945	4,174	460	850	2,652	212	2,771	930	1,325	483	33
1987	7,234	4,332	488	880	2,743	221	2,902	979	1,389	499	35
1988	7,489	4,462	514	914	2,806	228	3,027	1,022	1,459	510	36

[1]Includes nursery and kindergarten enrollments in regular schools and enrollments in independent nursery schools and kindergartens.
[2]For methodological details, see appendix A, section A-1. For primary asumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: (1) U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Preprimary Enrollment*, and (2) U.S. Department of Commerce, Bureau of the Census, *Current Population Reports, Nursery School and Kindergarten Enrollment*, Series P-20.

Table 4.—Enrollment in grades K-8 and 9-12 of regular schools, by control of institution: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total public and nonpublic			Public			Nonpublic		
	K-12	K-8	9-12	K-12	K-8	9-12	K-12	K-8	9-12
1968	50,744	36,626	14,118	44,944	32,226	12,718	5,800	4,400	1,400
1969	51,119	36,797	14,322	45,619	32,597	13,022	5,500	4,200	1,300
1970	51,309	36,677	14,632	45,909	32,577	13,332	5,400	4,100	1,300
1971	51,181	36,065	15,116	46,081	32,265	13,816	5,100	3,800	1,300
1972	50,744	35,531	15,213	45,744	31,831	13,913	5,000	3,700	1,300
1973	50,329	34,953	15,377	45,429	31,353	14,077	4,900	3,600	1,300
1974	50,053	34,521	15,532	45,053	30,921	14,132	5,000	3,600	1,400
1975	49,791	34,087	15,704	44,791	30,487	14,304	5,000	3,600	1,400
1976	49,316	33,606	15,710	44,316	30,006	14,310	5,000	3,600	1,400
1977	48,577	32,936	15,640	43,577	29,336	14,240	5,000	3,600	1,400
1978	47,611	32,055	15,556	42,611	28,455	14,156	5,000	3,600	1,400
				Projected[2]					
1979	46,657	31,422	15,235	41,557	27,822	13,735	5,100	3,600	1,500
1980	45,796	30,989	14,807	40,696	27,389	13,307	5,100	3,600	1,500
1981	44,958	30,637	14,321	39,858	27,037	12,821	5,100	3,600	1,500
1982	44,111	30,395	13,716	39,111	26,795	12,316	5,000	3,600	1,400
1983	43,766	30,301	13,465	38,666	26,601	12,065	5,100	3,700	1,400
1984	43,591	30,128	13,463	38,491	26,428	12,063	5,100	3,700	1,400
1985	43,748	30,248	13,500	38,548	26,448	12,100	5,200	3,800	1,400
1986	44,080	30,651	13,429	38,780	26,851	11,929	5,300	3,800	1,500
1987	44,473	31,395	13,078	39,073	27,495	11,578	5,400	3,900	1,500
1988	44,974	32,259	12,715	39,374	28,259	11,115	5,600	4,000	1,600

[1]Estimated.

[2]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publications: (1) *Statistics of Public Elementary and Secondary Day Schools*, (2) *Bulletin: Selected Public and Private Elementary and Secondary Education Statistics*, October 23, 1979, and (3) *Statistics of Nonpublic Elementary and Secondary Schools*.

Table 5.—Enrollment in regular elementary and secondary schools, by control and organizational level of institution: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total public and nonpublic			Public			Nonpublic		
	K-12	Elementary	Secondary	K-12	Elementary	Secondary	K-12	Elementary	Secondary
1968	50,744	31,763	18,981	44,944	27,363	17,581	5,800	4,400	1,400
1969	51,119	31,655	19,463	45,619	27,455	18,163	[1]5,500	4,200	1,300
1970	51,309	31,601	19,708	45,909	27,501	18,408	5,400	4,100	1,300
1971	51,181	31,488	19,693	46,081	27,688	18,393	[1]5,100	3,800	1,300
1972	50,744	31,023	19,721	45,744	27,323	18,421	[1]5,000	3,700	1,300
1973	50,329	30,035	20,295	45,429	26,435	18,995	[1]4,900	3,600	1,300
1974	50,053	29,982	20,071	45,053	26,382	18,671	[1]5,000	3,600	1,400
1975	49,791	29,240	20,551	44,791	25,640	19,151	[1]5,000	3,600	1,400
1976	49,316	29,029	20,287	44,316	25,429	18,887	5,000	3,600	1,400
1977	48,577	28,554	20,023	43,577	24,954	18,623	5,000	3,600	1,400
1978	47,611	28,652	18,959	42,611	25,052	17,559	5,000	3,600	1,400
				Projected[2]					
1979	46,657	27,575	19,082	41,557	23,975	17,582	5,100	3,600	1,500
1980	45,796	27,243	18,553	40,696	23,643	17,053	5,100	3,600	1,500
1981	44,958	26,896	18,062	39,858	23,296	16,562	5,100	3,600	1,500
1982	44,111	26,568	17,543	39,111	22,968	16,143	5,000	3,600	1,400
1983	43,766	26,451	17,315	38,666	22,751	15,915	5,100	3,700	1,400
1984	43,591	26,451	17,140	38,491	22,751	15,740	5,100	3,700	1,400
1985	43,748	26,794	16,954	38,548	22,994	15,554	5,200	3,800	1,400
1986	44,080	27,317	16,763	38,780	23,517	15,263	5,300	3,800	1,500
1987	44,473	28,056	16,417	39,073	24,156	14,917	5,400	3,900	1,500
1988	44,974	28,902	16,072	39,374	24,902	14,472	5,600	4,000	1,600

[1]Estimated.

[2]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publications: (1) *Statistics of Public Elementary and Secondary Day Schools*, (2) Bulletin: *Selected Public and Private Elementary and Secondary Education Statistics*, October 23, 1979, and (3) *Statistics of Nonpublic Elementary and Secondary Schools*.

Table 6A.—Total enrollment in all institutions of higher education, by age, sex and attendance status, with intermediate alternative projections: United States, fall 1968, 1973, 1978, 1983, and 1988

(In thousands)

Age	1968 (Estimated)			1973 (Estimated)			1978 (Estimated)			1983 (Intermediate projections)[1]			1988 (Intermediate projections)[1]		
	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time
Total	7,513	5,210	2,303	9,602	6,189	3,411	11,259	6,667	4,592	11,612	6,733	4,879	11,047	6,185	4,862
16 and 17 years	272	250	22	291	262	29	263	241	22	224	201	23	225	202	23
18 and 19 years	2,419	2,260	159	2,526	2,322	204	2,755	2,422	333	2,587	2,287	300	2,335	2,063	272
20 and 21 years	1,794	1,564	230	2,109	1,806	303	2,212	1,817	395	2,223	1,845	378	1,897	1,575	322
22 to 24 years	1,086	638	448	1,585	970	615	1,804	1,131	673	1,910	1,178	732	1,739	1,072	667
25 to 29 years	889	290	599	1,485	484	1,001	1,730	600	1,130	1,984	715	1,269	2,030	731	1,299
30 to 34 years	429	102	327	659	153	506	1,038	268	770	1,201	305	896	1,338	340	998
35 years and over	627	107	520	947	194	753	1,458	188	1,270	1,483	202	1,281	1,483	202	1,281
Men	4,478	3,169	1,309	5,371	3,579	1,792	5,640	3,527	2,113	5,925	3,641	2,284	5,631	3,350	2,281
16 and 17 years	130	118	12	122	111	11	107	96	11	92	81	11	93	82	11
18 and 19 years	1,306	1,243	63	1,299	1,197	102	1,326	1,170	156	1,257	1,119	138	1,134	1,009	125
20 and 21 years	1,064	960	104	1,149	992	157	1,158	977	181	1,174	993	181	1,002	848	154
22 to 24 years	725	474	251	994	682	312	1,027	694	333	1,097	738	359	999	672	327
25 to 29 years	669	239	430	993	368	625	984	377	607	1,152	461	691	1,178	471	707
30 to 34 years	268	70	198	388	107	281	523	133	390	621	163	458	693	182	511
35 years and over	317	65	252	428	123	305	515	81	434	532	86	446	532	86	446
Women	3,035	2,041	994	4,231	2,612	1,621	5,619	3,140	2,479	5,687	3,092	2,595	5,416	2,835	2,581
16 and 17 years	142	132	10	169	151	18	156	145	11	132	120	12	132	120	12
18 and 19 years	1,113	1,017	96	1,227	1,125	102	1,429	1,252	177	1,330	1,168	162	1,201	1,054	147
20 and 21 years	730	604	126	960	814	146	1,054	840	214	1,049	852	197	895	727	168
22 to 24 years	361	164	197	591	288	303	777	437	340	813	440	373	740	400	340
25 to 29 years	220	51	169	492	116	376	746	223	523	832	254	578	852	260	592
30 to 34 years	161	32	129	271	46	225	514	135	379	580	142	438	645	158	487
35 years and over	310	42	268	519	71	448	942	107	835	951	116	835	951	116	835

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: (1) U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education*, and (2) U.S. Department of Commerce, Bureau of the Census, *Current Population Reports, School Enrollment - Social and Economic Characteristics of Students*, Series P-20.

Table 6B. —Total enrollment in all institutions of higher education, by age, sex and attendance status, with low alternative projections: United States, fall 1968, 1973, 1978, 1983, and 1988

(In thousands)

Age	1968 (Estimated)			1973 (Estimated)			1978 (Estimated)			1983 (Low projections)[1]			1988 (Low projections)[1]		
	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time
Total	7,513	5,210	2,303	9,602	6,189	3,411	11,259	6,667	4,592	10,618	5,998	4,620	9,529	5,152	4,377
16 and 17 years	272	250	22	291	262	29	263	241	22	202	179	23	200	177	23
18 and 19 years	2,419	2,260	159	2,526	2,322	204	2,755	2,422	333	2,376	2,076	300	2,035	1,763	272
20 and 21 years	1,794	1,564	230	2,109	1,806	303	2,212	1,817	395	1,955	1,586	369	1,550	1,248	302
22 to 24 years	1,086	638	448	1,585	970	615	1,804	1,131	673	1,800	1,118	682	1,548	984	564
22 to 29 years	889	290	599	1,485	484	1,001	1,730	600	1,130	1,797	601	1,196	1,694	557	1,137
30 to 34 years	429	102	327	659	153	506	1,038	268	770	1,126	276	850	1,169	274	895
35 years and over	627	107	520	947	194	753	1,458	188	1,270	1,362	162	1,200	1,333	149	1,184
Men	4,478	3,169	1,309	5,371	3,579	1,792	5,640	3,527	2,113	5,365	3,203	2,162	4,784	2,751	2,033
16 and 17 years	130	118	12	122	111	11	107	96	11	82	71	11	82	71	11
18 and 19 years	1,306	1,243	63	1,299	1,197	102	1,326	1,170	156	1,146	1,008	138	980	855	125
20 and 21 years	1,064	960	104	1,149	992	157	1,158	977	181	1,025	853	172	811	671	140
22 to 24 years	725	474	251	994	682	312	1,027	694	333	1,024	686	338	883	604	279
25 to 29 years	669	239	430	993	368	625	984	377	607	1,021	378	643	961	350	611
30 to 34 years	268	70	198	388	107	281	523	133	390	569	137	432	591	136	455
35 years and over	317	65	252	428	123	305	515	81	434	498	70	428	476	64	412
Women	3,035	2,041	994	4,231	2,612	1,621	5,619	3,140	2,479	5,253	2,795	2,458	4,745	2,401	2,344
16 and 17 years	142	132	10	169	151	18	156	145	11	120	108	12	118	106	12
18 and 19 years	1,113	1,017	96	1,227	1,125	102	1,429	1,252	177	1,230	1,068	162	1,055	908	147
20 and 21 years	730	604	126	960	814	146	1,054	840	214	930	733	197	739	577	162
22 to 24 years	361	164	197	591	288	303	777	437	340	776	432	344	665	380	285
25 to 29 years	220	51	169	492	116	376	746	223	523	776	223	553	733	207	526
30 to 34 years	161	32	129	271	46	225	514	135	379	557	139	418	578	138	440
35 years and over	310	42	268	519	71	448	942	107	835	864	92	772	857	85	772

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: (1) U.S. Department of Health, Education, and Welfare, National Center for Education Statistics. *Fall Enrollment in Higher Education*, and (2) U.S. Department of Commerce, Bureau of the Census, *Current Population Reports, School Enrollment - Social and Economic Characteristics of Students*, Series P-20.

Table 6C.—Total enrollment in all institutions of higher education, by age, sex and attendance status, with high alternative projections: United States, fall 1968, 1973, 1978, 1983, and 1988

(In thousands)

Age	1968 (Estimated)			1973 (Estimated)			1978 (Estimated)			1983 (High projections)[1]			1988 (High projections)[1]		
	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time
Total	7,513	5,211	2,303	9,602	6,189	3,411	11,259	6,667	4,592	13,553	7,805	5,748	14,535	7,991	6,544
16 and 17 years	272	250	22	291	262	29	263	241	22	258	227	31	280	245	35
18 and 19 years	2,419	2,260	159	2,526	2,322	204	2,755	2,422	333	2,846	2,504	342	2,759	2,404	355
20 and 21 years	1,794	1,564	230	2,109	1,806	303	2,212	1,817	395	2,427	2,006	421	2,229	1,845	384
22 to 24 years	1,086	638	448	1,585	970	615	1,804	1,131	673	2,153	1,354	799	2,122	1,358	764
25 to 29 years	889	290	599	1,485	484	1,001	1,730	600	1,130	2,490	1,033	1,457	2,914	1,274	1,640
30 to 34 years	429	102	327	659	153	506	1,038	268	770	1,504	387	1,117	1,954	508	1,446
35 years and over	627	107	520	947	194	753	1,458	188	1,270	1,875	294	1,581	2,277	357	1,920
Men	4,478	3,169	1,309	5,371	3,579	1,793	5,640	3,527	2,113	6,833	4,189	2,644	7,217	4,327	2,890
16 and 17 years	130	118	12	122	111	11	107	96	11	113	102	11	132	121	11
18 and 19 years	1,306	1,243	63	1,299	1,197	102	1,326	1,170	156	1,402	1,233	169	1,406	1,225	181
20 and 21 years	1,064	960	104	1,149	992	157	1,158	977	181	1,271	1,063	208	1,188	994	194
22 to 24 years	725	474	251	994	682	312	1,027	694	333	1,155	776	379	1,105	750	355
25 to 29 years	669	239	430	993	368	625	984	377	607	1,427	659	768	1,611	789	822
30 to 34 years	268	70	198	388	107	281	523	133	390	737	223	514	909	290	619
35 years and over	317	65	252	428	123	305	515	81	434	728	133	595	866	158	708
Women	3,035	2,042	994	4,231	2,612	1,621	5,619	3,140	2,479	6,720	3,616	3,104	7,318	3,664	3,654
16 and 17 years	142	132	10	169	151	18	156	145	11	145	125	20	148	124	24
18 and 19 years	1,113	1,017	96	1,227	1,125	102	1,429	1,252	177	1,444	1,271	173	1,353	1,179	174
20 and 21 years	730	604	126	960	814	146	1,054	840	214	1,156	943	213	1,041	851	190
22 to 24 years	361	164	197	591	288	303	777	437	340	998	578	420	1,017	608	409
25 to 29 years	220	51	169	492	116	376	746	223	523	1,063	374	689	1,303	485	818
30 to 34 years	161	32	129	271	46	225	514	135	379	767	164	603	1,045	218	827
35 years and over	310	42	268	519	71	448	942	107	835	1,147	161	986	1,411	199	1,212

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: (1) U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education*, and (2) U.S. Department of Commerce, Bureau of the Census, *Current Population Reports, School Enrollment - Social and Economic Characteristics of Students*, Series P-20.

Table7.—Total enrollment in all institutions of higher education, with alternative projections, by sex and attendance status of student and control of institution: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total enrollment	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
1968	7,513	4,478	3,035	5,210	2,303	5,431	2,082
1969	8,005	4,746	3,258	5,499	2,506	5,897	2,108
1970	8,581	5,044	3,537	5,815	2,766	6,428	2,153
1971	8,949	5,207	3,742	6,077	2,871	6,804	2,144
1972	9,215	5,239	3,976	6,072	3,142	7,071	2,144
1973	9,602	5,371	4,231	6,189	3,413	7,420	2,183
1974	10,224	5,622	4,601	6,370	3,853	7,989	2,235
1975	11,185	6,149	5,036	6,841	4,344	8,835	2,350
1976	11,012	5,811	5,201	6,717	4,295	8,653	2,359
1977	11,286	5,789	5,497	6,793	4,493	8,847	2,437
1978	11,259	5,640	5,619	6,667	4,592	8,784	2,475
Intermediate alternative projections[1]							
1979	11,508	5,845	5,663	6,817	4,691	9,030	2,478
1980	11,611	5,907	5,704	6,847	4,764	9,124	2,487
1981	11,690	5,954	5,736	6,853	4,837	9,200	2,490
1982	11,670	5,948	5,722	6,815	4,855	9,194	2,476
1983	11,613	5,925	5,688	6,732	4,881	9,159	2,454
1984	11,492	5,868	5,624	6,601	4,891	9,072	2,420
1985	11,358	5,802	5,556	6,460	4,898	8,974	2,384
1986	11,215	5,729	5,486	6,321	4,894	8,872	2,343
1987	11,104	5,667	5,437	6,225	4,879	8,793	2,311
1988	11,048	5,631	5,417	6,185	4,863	8,754	2,294
Low alternative projections[1]							
1979	11,139	5,643	5,496	6,549	4,590	8,746	2,393
1980	11,069	5,601	5,468	6,441	4,628	8,708	2,361
1981	10,985	5,555	5,430	6,323	4,662	8,659	2,326
1982	10,817	5,466	5,351	6,175	4,642	8,540	2,277
1983	10,618	5,364	5,254	5,998	4,620	8,394	2,224
1984	10,374	5,240	5,134	5,788	4,586	8,212	2,162
1985	10,128	5,114	5,014	5,582	4,546	8,029	2,099
1986	9,886	4,984	4,902	5,391	4,495	7,845	2,041
1987	9,684	4,873	4,811	5,245	4,439	7,693	1,991
1988	9,527	4,784	4,743	5,152	4,375	7,574	1,953
High alternative projections[1]							
1979	12,178	6,185	5,993	7,212	4,966	9,549	2,629
1980	12,568	6,381	6,187	7,413	5,155	9,870	2,698
1981	12,975	6,572	6,403	7,589	5,386	10,205	2,770
1982	13,281	6,709	6,572	7,720	5,561	10,459	2,822
1983	13,551	6,831	6,720	7,803	5,748	10,684	2,867
1984	13,752	6,915	6,837	7,830	5,922	10,854	2,898
1985	13,929	6,984	6,945	7,837	6,092	11,007	2,922
1986	14,091	7,043	7,048	7,841	6,250	11,149	2,942
1987	14,287	7,115	7,172	7,886	6,401	11,316	2,971
1988	14,539	7,219	7,320	7,991	6,548	11,527	3,012

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education.*

Table 7A.—Total enrollment in 4-year institutions of higher education, with alternative projections, by sex and attendance status of student and control of institution: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total enrollment	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
1968	5,721	3,387	2,333	4,235	1,486	3,784	1,937
1969	6,028	3,555	2,473	4,442	1,586	4,050	1,978
1970	6,358	3,726	2,631	4,650	1,708	4,326	2,032
1971	6,463	3,758	2,705	4,787	1,676	4,438	2,024
1972	6,459	3,695	2,764	4,732	1,727	4,430	2,029
1973	6,590	3,718	2,872	4,757	1,833	4,530	2,060
1974	6,820	3,791	3,029	4,861	1,959	4,703	2,117
1975	7,215	3,984	3,231	5,080	2,134	4,998	2,217
1976	7,129	3,831	3,298	5,053	2,076	4,902	2,227
1977	7,242	3,823	3,419	5,138	2,104	4,945	2,297
1978	7,232	3,756	3,476	5,109	2,123	4,912	2,320
Intermediate alternative projections[1]							
1979	7,292	3,857	3,435	5,114	2,178	4,971	2,321
1980	7,302	3,880	3,422	5,113	2,189	4,976	2,326
1981	7,309	3,898	3,411	5,103	2,206	4,981	2,328
1982	7,258	3,882	3,376	5,058	2,200	4,945	2,313
1983	7,187	3,855	3,332	4,985	2,202	4,896	2,291
1984	7,082	3,808	3,274	4,883	2,199	4,823	2,259
1985	6,968	3,754	3,214	4,771	2,197	4,744	2,224
1986	6,846	3,693	3,153	4,654	2,192	4,661	2,185
1987	6,751	3,644	3,107	4,570	2,181	4,596	2,155
1988	6,694	3,613	3,081	4,524	2,170	4,557	2,137
Low alternative projections[1]							
1979	7,042	3,708	3,334	4,911	2,131	4,802	2,240
1980	6,935	3,659	3,276	4,808	2,127	4,727	2,208
1981	6,828	3,611	3,217	4,704	2,124	4,655	2,173
1982	6,680	3,539	3,141	4,580	2,100	4,554	2,126
1983	6,518	3,459	3,059	4,438	2,080	4,442	2,076
1984	6,336	3,370	2,966	4,278	2,058	4,317	2,019
1985	6,152	3,277	2,875	4,118	2,034	4,193	1,959
1986	5,974	3,182	2,792	3,967	2,007	4,070	1,904
1987	5,824	3,102	2,722	3,846	1,978	3,968	1,856
1988	5,707	3,038	2,669	3,764	1,943	3,889	1,818
High alternative projections[1]							
1979	7,719	4,073	3,646	5,410	2,309	5,257	2,462
1980	7,909	4,182	3,727	5,653	2,373	5,385	2,524
1981	8,111	4,292	3,819	5,653	2,458	5,520	2,591
1982	8,254	4,368	3,886	5,733	2,521	5,617	2,637
1983	8,374	4,434	3,940	5,783	2,591	5,697	2,677
1984	8,456	4,477	3,979	5,798	2,658	5,750	2,706
1985	8,521	4,510	4,011	5,796	2,725	5,793	2,728
1986	8,574	4,534	4,040	5,786	2,788	5,828	2,746
1987	8,651	4,568	4,083	5,803	2,848	5,879	2,772
1988	8,766	4,625	4,141	5,863	2,903	5,958	2,808

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education.*

Table 7B.—Total enrollment in 2-year institutions of higher education, with alternative projections, by sex and attendance status of student and control of institution: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total enrollment	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
1968	1,792	1,090	702	976	817	1,646	146
1969	1,977	1,191	786	1,057	920	1,847	130
1970	2,223	1,317	906	1,165	1,058	2,102	121
1971	2,486	1,449	1,037	1,291	1,195	2,366	120
1972	2,756	1,544	1,212	1,340	1,416	2,641	115
1973	3,012	1,653	1,360	1,432	1,580	2,890	122
1974	3,404	1,832	1,572	1,509	1,895	3,285	119
1975	3,970	2,165	1,805	1,761	2,209	3,836	134
1976	3,883	1,980	1,903	1,664	2,219	3,752	132
1977	4,042	1,965	2,077	1,654	2,388	3,902	140
1978	4,028	1,885	2,143	1,558	2,470	3,873	155
Intermediate alternative projections[1]							
1979	4,216	1,988	2,228	1,703	2,513	4,059	157
1980	4,309	2,027	2,282	1,734	2,575	4,148	161
1981	4,381	2,056	2,325	1,750	2,631	4,219	162
1982	4,412	2,066	2,346	1,757	2,655	4,249	163
1983	4,426	2,070	2,356	1,747	2,679	4,263	163
1984	4,410	2,060	2,350	1,718	2,692	4,249	161
1985	4,390	2,048	2,342	1,689	2,701	4,230	160
1986	4,369	2,036	2,333	1,667	2,702	4,211	158
1987	4,353	2,023	2,330	1,655	2,698	4,197	156
1988	4,354	2,018	2,336	1,661	2,693	4,197	157
Low alternative projections[1]							
1979	4,097	1,935	2,162	1,638	2,459	3,944	153
1980	4,134	1,942	2,192	1,633	2,501	3,981	153
1981	4,157	1,944	2,213	1,619	2,538	4,004	153
1982	4,137	1,927	2,210	1,595	2,542	3,986	151
1983	4,100	1,905	2,195	1,560	2,540	3,952	148
1984	4,038	1,870	2,168	1,510	2,528	3,895	143
1985	3,976	1,837	2,139	1,464	2,512	3,836	140
1986	3,912	1,802	2,110	1,424	2,488	3,775	137
1987	3,860	1,771	2,089	1,399	2,461	3,725	135
1988	3,820	1,746	2,074	1,388	2,432	3,685	135
High alternative projections[1]							
1979	4,459	2,112	2,347	1,802	2,657	4,292	167
1980	4,659	2,199	2,460	1,877	2,782	4,485	174
1981	4,864	2,280	2,584	1,936	2,928	4,685	179
1982	5,027	2,341	2,686	1,987	3,040	4,842	185
1983	5,177	2,397	2,780	2,020	3,157	4,987	190
1984	5,296	2,438	2,858	2,032	3,264	5,104	192
1985	5,408	2,474	2,934	2,041	3,367	5,214	194
1986	5,517	2,509	3,008	2,055	3,462	5,321	196
1987	5,636	2,547	3,089	2,083	3,553	5,437	199
1988	5,773	2,594	3,179	2,128	3,645	5,569	204

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education.*

Table 8.—Total enrollment in all institutions of higher education, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	7,513	3,169	1,309	2,041	994
1969	8,005	3,335	1,411	2,162	1,095
1970	8,581	3,505	1,540	2,311	1,225
1971	8,949	3,630	1,578	2,447	1,293
1972	9,215	3,557	1,681	2,514	1,461
1973	9,602	3,579	1,792	2,612	1,621
1974	10,224	3,646	1,976	2,724	1,877
1975	11,185	3,926	2,226	2,915	2,120
1976	11,012	3,704	2,107	3,014	2,188
1977	11,286	3,650	2,138	3,142	2,354
1978	11,259	3,527	2,113	3,140	2,479
Intermediate alternative projections[1]					
1979	11,508	3,663	2,182	3,154	2,509
1980	11,611	3,685	2,222	3,162	2,542
1981	11,690	3,694	2,260	3,159	2,577
1982	11,670	3,678	2,270	3,137	2,585
1983	11,613	3,641	2,284	3,091	2,597
1984	11,492	3,577	2,291	3,024	2,600
1985	11,358	3,505	2,297	2,955	2,601
1986	11,215	3,433	2,296	2,888	2,598
1987	11,104	3,378	2,289	2,847	2,590
1988	11,048	3,350	2,281	2,835	2,582
Low alternative projections[1]					
1979	11,139	3,486	2,157	3,063	2,433
1980	11,069	3,428	2,173	3,013	2,455
1981	10,985	3,368	2,187	2,955	2,475
1982	10,817	3,291	2,175	2,884	2,467
1983	10,618	3,202	2,162	2,796	2,458
1984	10,374	3,095	2,145	2,693	2,441
1985	10,128	2,990	2,124	2,592	2,422
1986	9,886	2,887	2,097	2,504	2,398
1987	9,684	2,806	2,067	2,439	2,372
1988	9,527	2,751	2,033	2,401	2,342
High alternative projections[1]					
1979	12,178	3,850	2,335	3,362	2,631
1980	12,568	3,957	2,424	3,456	2,731
1981	12,975	4,057	2,515	3,532	2,871
1982	13,281	4,132	2,577	3,588	2,984
1983	13,551	4,188	2,643	3,615	3,105
1984	13,752	4,213	2,702	3,617	3,220
1985	13,929	4,226	2,758	3,611	3,334
1986	14,091	4,237	2,806	3,604	3,444
1987	14,287	4,266	2,849	3,620	3,552
1988	14,539	4,327	2,892	3,664	3,656

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education*.

Table 8A.—Total enrollment in public 4-year institutions, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	3,784	1,663	525	1,137	459
1969	4,050	1,754	577	1,213	506
1970	4,326	1,853	626	1,295	552
1971	4,438	1,918	613	1,355	553
1972	4,430	1,860	626	1,358	586
1973	4,530	1,851	658	1,394	627
1974	4,703	1,870	694	1,448	691
1975	4,998	1,947	764	1,522	767
1976	4,902	1,879	709	1,554	759
1977	4,945	1,873	696	1,606	770
1978	4,911	1,822	687	1,613	789
Intermediate alternative projections[1]					
1979	4,971	1,867	720	1,584	800
1980	4,976	1,873	728	1,576	799
1981	4,981	1,876	738	1,566	801
1982	4,945	1,864	738	1,547	796
1983	4,896	1,842	742	1,518	794
1984	4,823	1,808	744	1,482	789
1985	4,744	1,768	746	1,445	785
1986	4,661	1,726	747	1,407	781
1987	4,596	1,694	745	1,382	775
1988	4,557	1,676	743	1,369	769
Low alternative projections[1]					
1979	4,802	1,777	711	1,538	776
1980	4,727	1,743	711	1,501	772
1981	4,655	1,709	713	1,464	769
1982	4,554	1,668	706	1,421	759
1983	4,442	1,619	700	1,373	750
1984	4,317	1,564	695	1,319	739
1985	4,193	1,508	688	1,267	730
1986	4,070	1,452	680	1,220	718
1987	3,968	1,407	671	1,183	707
1988	3,889	1,376	660	1,159	694
High alternative projections[1]					
1979	5,257	1,956	771	1,691	839
1980	5,385	2,004	796	1,726	859
1981	5,520	2,050	822	1,756	892
1982	5,617	2,083	840	1,776	918
1983	5,697	2,106	859	1,784	948
1984	5,750	2,114	878	1,782	976
1985	5,793	2,116	897	1,776	1,004
1986	5,828	2,114	913	1,769	1,032
1987	5,879	2,121	928	1,771	1,059
1988	5,958	2,146	941	1,787	1,084

[1]For methodological details see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education*.

Table 8B.—Total enrollment in public 2-year institutions, with alternative projections, by sex and attendanc status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	1,646	559	451	298	338
1969	1,847	619	503	332	392
1970	2,102	682	573	386	461
1971	2,366	746	642	448	529
1972	2,641	750	737	500	654
1973	2,890	793	800	545	751
1974	3,285	833	941	586	925
1975	3,836	989	1,108	674	1,066
1976	3,752	858	1,061	704	1,129
1977	3,902	805	1,098	739	1,259
1978	3,873	738	1,084	700	1,351
Intermediate alternative projections[1]					
1979	4,059	816	1,107	764	1,372
1980	4,148	827	1,133	782	1,406
1981	4,219	832	1,157	792	1,438
1982	4,249	833	1,166	797	1,453
1983	4,263	828	1,175	793	1,467
1984	4,249	815	1,179	779	1,476
1985	4,230	802	1,180	765	1,483
1986	4,211	792	1,179	754	1,486
1987	4,197	785	1,174	751	1,487
1988	4,197	785	1,169	756	1,487
Low alternative projections[1]					
1979	3,944	777	1,095	742	1,330
1980	3,981	770	1,109	745	1,357
1981	4,004	760	1,121	741	1,382
1982	3,986	746	1,119	733	1,388
1983	3,952	730	1,114	717	1,391
1984	3,895	707	1,105	694	1,389
1985	3,836	686	1,094	672	1,384
1986	3,775	667	1,079	654	1,375
1987	3,725	654	1,062	644	1,365
1988	3,685	646	1,045	641	1,353
High alternative projections[1]					
1979	4,292	861	1,181	811	1,439
1980	4,485	893	1,234	848	1,510
1981	4,685	921	1,285	876	1,603
1982	4,842	944	1,321	899	1,678
1983	4,987	962	1,357	912	1,756
1984	5,104	971	1,388	914	1,831
1985	5,214	979	1,415	915	1,905
1986	5,321	989	1,439	918	1,975
1987	5,437	1,005	1,460	928	2,044
1988	5,569	1,028	1,482	947	2,112

[1] For methodological, details see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education.*

Table 8C.—Total enrollment in private 4-year institutions, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	1,937	883	318	553	185
1969	1,978	908	317	567	186
1970	2,032	921	327	582	202
1971	2,024	918	310	596	200
1972	2,029	904	305	609	210
1973	2,060	890	319	623	229
1974	2,117	902	325	641	248
1975	2,217	943	332	667	274
1976	2,227	921	322	699	286
1977	2,297	925	329	734	309
1978	2,320	919	327	755	319
Intermediate alternative projections[1]					
1979	2,321	930	340	733	318
1980	2,326	934	345	730	317
1981	2,328	935	349	726	318
1982	2,313	930	350	717	316
1983	2,291	920	351	705	315
1984	2,259	904	352	689	314
1985	2,224	886	354	672	312
1986	2,185	866	354	655	310
1987	2,155	851	354	643	307
1988	2,137	841	353	638	305
Low alternative projections[1]					
1979	2,240	884	336	712	308
1980	2,208	868	337	696	307
1981	2,173	852	337	679	305
1982	2,126	831	334	660	301
1983	2,076	808	332	638	298
1984	2,019	781	330	614	294
1985	1,959	754	327	589	289
1986	1,904	727	323	568	286
1987	1,856	705	319	551	281
1988	1,818	689	313	540	276
High alternative projections[1]					
1979	2,462	980	366	783	333
1980	2,524	1,005	377	801	341
1981	2,591	1,030	390	817	354
1982	2,637	1,047	398	827	365
1983	2,677	1,061	408	832	376
1984	2,706	1,068	417	834	387
1985	2,728	1,071	426	833	398
1986	2,746	1,073	434	830	409
1987	2,772	1,078	441	833	420
1988	2,808	1,090	448	840	430

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education.*

Table 8D.—Total enrollment in private 2-year institutions, with alternative projections, by sex and attendance status: United States, 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	146	65	15	53	12
1969	130	54	14	50	11
1970	121	49	14	48	10
1971	120	48	13	48	11
1972	115	43	13	47	11
1973	122	45	15	50	14
1974	119	41	16	49	13
1975	134	47	22	52	13
1976	132	46	15	57	14
1977	141	47	14	63	16
1978	155	48	15	72	20
Intermediate alternative projections[1]					
1979	157	50	15	73	19
1980	161	51	16	74	20
1981	162	51	16	75	20
1982	163	51	16	76	20
1983	163	51	16	75	21
1984	161	50	16	74	21
1985	160	49	17	73	21
1986	158	49	16	72	21
1987	156	48	16	71	21
1988	157	48	16	72	21
Low alternative projections[1]					
1979	153	48	15	71	19
1980	153	47	16	71	19
1981	153	47	16	71	19
1982	151	46	16	70	19
1983	148	45	16	68	19
1984	143	43	15	66	19
1985	140	42	15	64	19
1986	137	41	15	62	19
1987	135	40	15	61	19
1988	135	40	15	61	19
High alternative projections[1]					
1979	167	53	17	77	20
1980	174	55	17	81	21
1981	179	56	18	83	22
1982	185	58	18	86	23
1983	190	59	19	87	25
1984	192	60	19	87	26
1985	194	60	20	87	27
1986	196	61	20	87	28
1987	199	62	20	88	29
1988	204	63	21	90	30

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education*.

Table 9.—Undergraduate enrollment in all institutions of higher education, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	6,476	2,811	971	1,930	764
1969	6,884	2,952	1,056	2,039	837
1970	7,376	3,097	1,157	2,183	939
1971	7,743	3,201	1,217	2,311	1,014
1972	7,941	3,121	1,308	2,367	1,145
1973	8,261	3,135	1,403	2,445	1,278
1974	8,798	3,191	1,574	2,535	1,498
1975	9,679	3,459	1,798	2,710	1,712
1976	9,429	3,242	1,660	2,788	1,739
1977	9,714	3,188	1,708	2,905	1,913
1978	9,691	3,072	1,694	2,895	2,030
Intermediate alternative projections[1]					
1979	9,892	3,211	1,734	2,904	2,043
1980	9,981	3,229	1,767	2,909	2,076
1981	10,040	3,233	1,798	2,901	2,108
1982	10,022	3,219	1,806	2,878	2,119
1983	9,958	3,180	1,817	2,830	2,131
1984	9,833	3,116	1,821	2,761	2,135
1985	9,698	3,046	1,824	2,691	2,137
1986	9,558	2,976	1,821	2,625	2,136
1987	9,457	2,926	1,814	2,586	2,131
1988	9,417	2,907	1,806	2,577	2,127
Low alternative projections[1]					
1979	9,569	3,057	1,714	2,816	1,982
1980	9,506	3,006	1,729	2,766	2,005
1981	9,487	2,951	1,741	2,708	2,027
1982	9,436	2,883	1,732	2,640	2,024
1983	9,096	2,801	1,722	2,554	2,019
1984	8,868	2,701	1,706	2,454	2,007
1985	8,641	2,603	1,688	2,357	1,993
1986	8,421	2,509	1,665	2,272	1,975
1987	8,244	2,438	1,639	2,212	1,955
1988	8,120	2,395	1,612	2,180	1,933
High alternative projections[1]					
1979	10,421	3,340	1,853	3,085	2,143
1980	10,740	3,428	1,925	3,158	2,229
1981	11,067	3,507	1,998	3,213	2,349
1982	11,311	3,567	2,048	3,252	2,444
1983	11,511	3,605	2,099	3,261	2,546
1984	11,645	3,614	2,144	3,245	2,642
1985	11,758	3,611	2,186	3,223	2,738
1986	11,860	3,608	2,221	3,202	2,829
1987	12,006	3,628	2,253	3,205	2,920
1988	12,217	3,682	2,286	3,240	3,009

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education.*

Table 9A.—Undergraduate enrollment in public 4-year institutions, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	3,136	1,456	322	1,065	293
1969	3,313	1,529	346	1,130	308
1970	3,526	1,612	374	1,208	332
1971	3,642	1,662	377	1,264	339
1972	3,583	1,602	378	1,261	342
1973	3,634	1,587	399	1,284	364
1974	3,747	1,600	425	1,323	399
1975	3,994	1,673	477	1,389	455
1976	3,871	1,614	419	1,412	426
1977	3,942	1,608	426	1,458	450
1978	3,918	1,564	428	1,461	465
Intermediate alternative projections[1]					
1979	3,934	1,609	438	1,428	459
1980	3,931	1,613	442	1,418	458
1981	3,923	1,613	447	1,405	458
1982	3,888	1,602	446	1,385	455
1983	3,835	1,579	448	1,355	453
1984	3,760	1,545	448	1,318	449
1985	3,680	1,506	448	1,280	446
1986	3,599	1,465	448	1,243	443
1987	3,540	1,436	446	1,219	439
1988	3,511	1,423	444	1,208	436
Low alternative projections[1]					
1979	3,794	1,532	432	1,384	446
1980	3,724	1,502	432	1,347	443
1981	3,654	1,471	432	1,310	441
1982	3,566	1,435	427	1,269	435
1983	3,464	1,390	423	1,222	429
1984	3,350	1,339	419	1,170	422
1985	3,237	1,287	414	1,120	416
1986	3,128	1,236	408	1,075	409
1987	3,042	1,197	402	1,041	402
1988	2,984	1,173	395	1,021	395
High alternative projections[1]					
1979	4,133	1,665	468	1,518	482
1980	4,216	1,702	482	1,540	492
1981	4,300	1,736	497	1,557	510
1982	4,356	1,760	507	1,566	523
1983	4,392	1,773	517	1,563	539
1984	4,402	1,772	527	1,550	553
1985	4,404	1,765	537	1,534	568
1986	4,400	1,755	545	1,518	582
1987	4,419	1,757	553	1,512	597
1988	4,471	1,778	560	1,522	611

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education.*

Table 9B.—Undergraduate enrollment in public 2-year institutions, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	1,646	559	451	298	338
1969	1,846	619	503	332	392
1970	2,102	682	573	386	461
1971	2,365	746	642	448	529
1972	2,640	750	737	500	653
1973	2,888	793	800	545	750
1974	3,284	833	941	586	924
1975	3,832	989	1,106	674	1,063
1976	3,746	857	1,059	703	1,127
1977	3,900	805	1,098	739	1,258
1978	3,868	738	1,082	700	1,348
Intermediate alternative projections[1]					
1979	4,059	816	1,107	764	1,372
1980	4,148	827	1,133	782	1,406
1981	4,219	832	1,157	792	1,438
1982	4,249	833	1,166	797	1,453
1983	4,263	828	1,175	793	1,467
1984	4,249	815	1,179	779	1,476
1985	4,230	802	1,180	765	1,483
1986	4,211	792	1,179	754	1,486
1987	4,197	785	1,174	751	1,487
1988	4,197	785	1,169	756	1,487
Low alternative projections[1]					
1979	3,944	777	1,095	742	1,330
1980	3,981	770	1,109	745	1,357
1981	4,004	760	1,121	741	1,382
1982	3,986	746	1,119	733	1,388
1983	3,952	730	1,114	717	1,391
1984	3,895	707	1,105	694	1,389
1985	3,836	686	1,094	672	1,384
1986	3,775	667	1,079	654	1,375
1987	3,725	654	1,062	644	1,365
1988	3,685	646	1,045	641	1,353
High alternative projections[1]					
1979	4,292	861	1,181	811	1,439
1980	4,485	893	1,234	848	1,510
1981	4,685	921	1,285	876	1,603
1982	4,842	944	1,321	899	1,678
1983	4,987	962	1,357	912	1,756
1984	5,104	971	1,388	914	1,831
1985	5,214	979	1,415	915	1,905
1986	5,321	989	1,439	918	1,975
1987	5,437	1,005	1,460	928	2,044
1988	5,569	1,028	1,482	947	2,112

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education.*

Table 9C.—Undergraduate enrollment in private 4-year institutions, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	1,549	731	183	514	121
1969	1,596	750	193	527	126
1970	1,627	754	196	541	136
1971	1,616	745	185	551	135
1972	1,604	726	180	559	139
1973	1,615	710	189	566	150
1974	1,648	717	192	577	162
1975	1,719	750	193	595	181
1976	1,680	725	167	616	172
1977	1,732	728	170	645	189
1978	1,750	722	169	662	197
Intermediate alternative projections					
1979	1,742	736	174	639	193
1980	1,741	738	176	635	192
1981	1,736	737	178	629	192
1982	1,722	733	178	620	191
1983	1,697	722	178	607	190
1984	1,663	706	178	590	189
1985	1,628	689	179	573	187
1986	1,590	670	178	556	186
1987	1,564	657	178	545	184
1988	1,552	651	177	541	183
Low alternative projections[1]					
1979	1,678	700	172	619	187
1980	1,648	687	172	603	186
1981	1,616	673	172	586	185
1982	1,576	656	170	568	182
1983	1,532	636	169	547	180
1984	1,480	612	167	524	177
1985	1,428	588	165	501	174
1986	1,381	565	163	481	172
1987	1,342	547	160	466	169
1988	1,316	536	157	457	166
High alternative projections[1]					
1979	1,829	761	187	679	202
1980	1,865	778	192	689	206
1981	1,903	794	198	697	214
1982	1,928	805	202	701	220
1983	1,942	811	206	699	226
1984	1,947	811	210	694	232
1985	1,946	807	214	687	238
1986	1,943	803	217	679	244
1987	1,951	804	220	677	250
1988	1,973	813	223	681	256

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education*.

Table 9D.—Undergraduate enrollment in private 2-year institutions, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	145	65	15	53	12
1969	129	54	14	50	11
1970	121	49	14	48	10
1971	120	48	13	48	11
1972	114	43	13	47	11
1973	124	45	15	50	14
1974	119	41	16	49	13
1975	134	47	22	52	13
1976	132	46	15	57	14
1977	140	47	14	63	16
1978	155	48	15	72	20
Intermediate alternative projections[1]					
1979	157	50	15	73	19
1980	161	51	16	74	20
1981	162	51	16	75	20
1982	163	51	16	76	20
1983	163	51	16	75	21
1984	161	50	16	74	21
1985	160	49	17	73	21
1986	158	49	16	72	21
1987	156	48	16	71	21
1988	157	48	16	72	21
Low alternative projections[1]					
1979	153	48	15	71	19
1980	153	47	16	71	19
1981	153	47	16	71	19
1982	151	46	16	70	19
1983	148	45	16	68	19
1984	143	43	15	66	19
1985	140	42	15	64	19
1986	137	41	15	62	19
1987	135	40	15	61	19
1988	135	40	15	61	19
High alternative projections[1]					
1979	167	53	17	77	20
1980	174	55	17	81	21
1981	179	56	18	83	22
1982	185	58	18	86	23
1983	190	59	19	87	25
1984	192	60	19	87	26
1985	194	60	20	87	27
1986	196	61	20	87	28
1987	199	62	20	88	29
1988	204	63	21	90	30

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education*.

Table 10.—Graduate enrollment in all institutions of higher education, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	885	240	318	97	230
1969	955	252	338	111	255
1970	1,031	264	366	115	285
1971	1,012	269	346	119	277
1972	1,066	268	358	126	313
1973	1,123	273	375	137	340
1974	1,190	276	387	151	375
1975	1,263	290	410	163	400
1976	1,333	287	427	176	443
1977	1,318	289	411	183	434
1978	1,312	280	402	188	442
Intermediate alternative projections[1]					
1979	1,355	278	429	190	458
1980	1,365	281	436	190	458
1981	1,379	283	443	192	461
1982	1,376	282	444	192	458
1983	1,380	283	447	192	458
1984	1,382	283	450	192	457
1985	1,382	281	453	192	456
1986	1,380	280	455	191	454
1987	1,371	277	455	188	451
1988	1,358	271	455	185	447
Low alternative projections[1]					
1979	1,318	264	424	187	443
1980	1,312	260	425	185	442
1981	1,308	257	427	184	440
1982	1,293	251	424	181	437
1983	1,278	246	421	178	433
1984	1,265	242	420	173	428
1985	1,248	237	417	171	423
1986	1,230	231	414	168	417
1987	1,210	225	410	164	411
1988	1,183	218	403	159	403
High alternative projections[1]					
1979	1,467	315	462	210	480
1980	1,521	326	478	223	494
1981	1,586	339	495	238	514
1982	1,634	348	506	249	531
1983	1,689	358	521	260	550
1984	1,743	368	534	272	569
1985	1,794	377	548	282	587
1986	1,841	385	560	291	605
1987	1,882	390	571	299	622
1988	1,917	394	581	305	637

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education*.

Table 10A.—Graduate enrollment in public institutions, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	584	154	200	65	165
1969	666	166	227	77	196
1970	724	175	248	81	220
1971	712	183	232	83	213
1972	757	182	245	87	243
1973	799	185	257	95	263
1974	852	189	265	106	292
1975	906	198	283	114	311
1976	932	190	287	120	334
1977	900	190	267	124	319
1978	894	183	258	127	326
Intermediate alternative projections[1]					
1979	929	183	278	129	339
1980	935	185	282	129	339
1981	945	186	287	131	341
1982	943	185	288	131	339
1983	946	186	290	131	339
1984	947	186	292	131	338
1985	947	185	294	131	337
1986	945	184	295	130	336
1987	939	182	295	128	334
1988	930	178	295	126	331
Low alternative projections[1]					
1979	904	174	275	127	328
1980	899	171	275	126	327
1981	897	169	277	125	326
1982	886	165	275	123	323
1983	876	162	273	121	320
1984	866	159	272	119	316
1985	856	156	270	117	313
1986	843	152	268	115	308
1987	829	148	265	112	304
1988	810	143	261	108	298
High alternative projections[1]					
1979	1,004	207	299	143	355
1980	1,041	214	310	152	365
1981	1,085	223	320	162	380
1982	1,120	229	328	170	393
1983	1,156	235	337	177	407
1984	1,194	242	346	185	421
1985	1,229	248	355	192	434
1986	1,262	253	363	198	448
1987	1,290	256	370	204	460
1988	1,314	259	376	208	471

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education*.

Table 10B.—Graduate enrollment in private institutions, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year, (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	301	86	118	32	65
1969	289	86	111	34	59
1970	307	89	118	34	65
1971	300	86	114	36	64
1972	308	86	113	39	70
1973	324	88	118	42	77
1974	338	87	122	45	83
1975	357	92	127	49	89
1976	401	97	140	56	109
1977	416	98	144	59	115
1978	418	97	144	61	116
Intermediate alternative projections[1]					
1979	426	95	151	61	119
1980	430	96	154	61	119
1981	434	97	156	61	120
1982	433	97	156	61	119
1983	434	97	157	61	119
1984	435	97	158	61	119
1985	435	96	159	61	119
1986	435	96	160	61	118
1987	432	95	160	60	117
1988	428	93	160	59	116
Low alternative projections[1]					
1979	414	90	149	60	115
1980	413	89	150	59	115
1981	411	88	150	59	114
1982	407	86	149	58	114
1983	402	84	148	57	113
1984	399	83	148	56	112
1985	392	81	147	54	110
1986	387	79	146	53	109
1987	381	77	145	52	107
1988	373	75	142	51	105
High alternative projections[1]					
1979	463	108	163	67	125
1980	480	112	168	71	129
1981	501	116	175	76	134
1982	514	119	178	79	138
1983	533	123	184	83	143
1984	549	126	188	87	148
1985	565	129	193	90	153
1986	579	132	197	93	157
1987	592	134	201	95	162
1988	603	135	205	97	166

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education.*

Table 11.—First-professional enrollment in all institutions of higher education, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	152	118	20	14	0
1969	163	131	17	12	3
1970	175	144	17	13	1
1971	194	160	15	17	2
1972	207	168	15	21	3
1973	218	171	14	30	3
1974	236	179	15	38	4
1975	245	177	18	42	8
1976	251	175	20	50	6
1977	251	173	18	53	7
1978	257	175	17	58	7
Intermediate alternative projections[1]					
1979	261	174	19	60	8
1980	265	175	19	63	8
1981	271	178	19	66	8
1982	272	177	20	67	8
1983	275	178	20	69	8
1984	277	178	20	71	8
1985	278	178	20	72	8
1986	277	177	20	72	8
1987	276	175	20	73	8
1988	273	172	20	73	8
Low alternative projections[1]					
1979	252	165	19	60	8
1980	251	162	19	62	8
1981	250	160	19	63	8
1982	245	157	19	63	6
1983	244	155	19	64	6
1984	241	152	19	64	6
1985	239	150	19	64	6
1986	235	147	18	64	6
1987	230	143	18	63	6
1988	224	138	18	62	6
High alternative projections[1]					
1979	290	195	20	67	8
1980	307	203	21	75	8
1981	322	211	22	81	8
1982	336	217	23	87	9
1983	351	225	23	94	9
1984	364	231	24	100	9
1985	377	238	24	106	9
1986	390	244	25	111	10
1987	399	248	25	116	10
1988	405	251	25	119	10

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education.*

Table 11A.—First-professional enrollment in public institutions, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	64	53	3	7	1
1969	71	59	4	6	2
1970	76	66	4	6	0
1971	86	73	4	8	1
1972	91	76	3	10	2
1973	97	79	2	15	1
1974	105	81	4	19	1
1975	105	76	6	19	4
1976	105	76	5	23	1
1977	103	74	4	24	1
1978	105	75	3	26	1
Intermediate alternative projections[1]					
1979	108	75	4	27	2
1980	110	75	4	29	2
1981	113	77	4	30	2
1982	114	77	4	31	2
1983	115	77	4	32	2
1984	116	77	4	33	2
1985	117	77	4	34	2
1986	117	77	4	34	2
1987	117	76	4	35	2
1988	116	75	4	35	2
Low alternative projections[1]					
1979	104	71	4	27	2
1980	104	70	4	28	2
1981	104	69	4	29	2
1982	102	68	4	29	1
1983	102	67	4	30	1
1984	101	66	4	30	1
1985	100	65	4	30	1
1986	99	64	4	30	1
1987	97	62	4	30	1
1988	95	60	4	30	1
High alternative projections[1]					
1979	120	84	4	30	2
1980	128	88	4	34	2
1981	135	91	5	37	2
1982	141	94	5	40	2
1983	149	98	5	44	2
1984	154	100	5	47	2
1985	160	103	5	50	2
1986	166	106	5	53	2
1987	170	108	5	55	2
1988	173	109	5	57	2

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education*.

Table 11B.—First-professional enrollment in private institutions, with alternative projections, by sex and attendance status: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1968	88	65	17	7	0
1969	92	72	13	6	1
1970	99	78	13	7	1
1971	108	87	11	9	1
1972	116	92	12	11	1
1973	121	92	12	15	2
1974	131	98	11	19	3
1975	140	101	12	23	4
1976	146	99	15	27	5
1977	148	99	15	30	5
1978	152	100	15	32	6
Intermediate alternative projections[1]					
1979	153	99	15	33	6
1980	155	100	15	34	6
1981	158	101	15	36	6
1982	158	100	16	36	6
1983	160	101	16	37	6
1984	161	101	16	38	6
1985	161	101	16	38	6
1986	160	100	16	38	6
1987	159	99	16	38	6
1988	157	97	16	38	6
Low alternative projections[1]					
1979	148	94	15	33	6
1980	147	92	15	34	6
1981	146	91	15	34	6
1982	143	89	15	34	5
1983	142	88	15	34	5
1984	140	86	15	34	5
1985	139	85	15	34	5
1986	136	83	14	34	5
1987	133	81	14	33	5
1988	129	78	14	32	5
High alternative projections[1]					
1979	170	111	16	37	6
1980	179	115	17	41	6
1981	187	120	17	44	6
1982	195	123	18	47	7
1983	202	127	18	50	7
1984	210	131	19	53	7
1985	217	135	19	56	7
1986	224	138	20	58	8
1987	229	140	20	61	8
1988	232	142	20	62	8

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education.*

Table 12.—Full-time-equivalent enrollment in all institutions of higher education, with alternative projections, by enrollment level of student and type of institution: United States, fall 1970 to 1988

(In thousands)

Year (fall)	Total	Undergraduate		Graduate		First-professional	
		4-Year	2-Year	4-Year	2-Year	4-Year	2-Year
1970	6,737	4,458	1,518	599	0	163	1
1971	7,149	4,632	1,719	613	0	185	0
1972	7,254	4,587	1,847	622	0	198	0
1973	7,453	4,560	2,014	669	0	210	0
1974	7,805	4,670	2,199	710	0	226	0
1975	8,481	4,914	2,579	756	2	229	0
1976	8,313	4,838	2,461	780	1	234	2
1977	8,415	4,919	2,479	775	1	240	0
1978	8,361	4,924	2,410	778	1	248	0
Intermediate alternative projections[1]							
1979	8,539	4,916	2,587	788	0	248	0
1980	8,595	4,909	2,640	794	0	252	0
1981	8,627	4,892	2,675	802	0	258	0
1982	8,595	4,846	2,691	800	0	259	0
1983	8,521	4,769	2,689	802	0	262	0
1984	8,394	4,663	2,665	803	0	264	0
1985	8,255	4,550	2,639	801	0	265	0
1986	8,114	4,434	2,617	799	0	264	0
1987	8,013	4,354	2,604	792	0	263	0
1988	7,967	4,317	2,608	782	0	260	0
Low alternative projections[1]							
1979	8,234	4,728	2,503	764	0	239	0
1980	8,139	4,630	2,513	758	0	238	0
1981	8,033	4,530	2,512	754	0	237	0
1982	7,877	4,412	2,489	743	0	233	0
1983	7,691	4,273	2,453	733	0	232	0
1984	7,469	4,117	2,399	723	0	229	0
1985	7,248	3,962	2,347	712	0	227	0
1986	7,038	3,816	2,299	699	0	224	0
1987	6,871	3,702	2,264	686	0	219	0
1988	6,754	3,630	2,243	668	0	213	0
High alternative projections[1]							
1979	9,035	5,156	2,736	865	0	277	0
1980	9,304	5,256	2,855	900	0	293	0
1981	9,564	5,349	2,966	942	0	308	0
1982	9,759	5,410	3,056	972	0	321	0
1983	9,910	5,439	3,130	1,005	0	336	0
1984	10,000	5,433	3,180	1,039	0	348	0
1985	10,069	5,413	3,225	1,069	0	361	0
1986	10,130	5,388	3,273	1,097	0	373	0
1987	10,230	5,395	3,333	1,120	0	382	0
1988	10,389	5,451	3,410	1,139	0	388	0

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education.*

Table 12A.—Full-time-equivalent enrollment in public institutions, with alternative projections, by enrollment level of student and type of institution: United States, fall 1970 to 1988

(In thousands)

Year (fall)	Total	Undergraduate		Graduate		First-professional	
		4-Year	2-Year	4-Year	2-Year	4-Year	2-Year
1970	4,953	3,053	1,413	414	0	73	0
1971	5,344	3,219	1,613	427	0	85	0
1972	5,453	3,187	1,747	431	0	88	0
1973	5,630	3,158	1,909	467	0	96	0
1974	5,945	3,245	2,097	501	0	102	0
1975	6,523	3,428	2,465	530	2	98	0
1976	6,350	3,369	2,348	534	1	99	2
1977	6,396	3,416	2,356	522	1	101	0
1978	6,291	3,393	2,276	519	1	102	0
Intermediate alternative projections[1]							
1979	6,487	3,401	2,450	532	0	105	0
1980	6,538	3,396	2,500	535	0	107	0
1981	6,570	3,385	2,535	540	0	110	0
1982	6,552	3,353	2,549	539	0	111	0
1983	6,500	3,300	2,548	541	0	112	0
1984	6,407	3,227	2,526	541	0	113	0
1985	6,305	3,149	2,502	541	0	114	0
1986	6,203	3,070	2,481	539	0	114	0
1987	6,132	3,014	2,470	534	0	114	0
1988	6,101	2,988	2,473	527	0	113	0
Low alternative projections[1]							
1979	6,259	3,272	2,370	516	0	101	0
1980	6,197	3,204	2,381	511	0	101	0
1981	6,124	3,135	2,380	509	0	101	0
1982	6,013	3,054	2,359	501	0	99	0
1983	5,877	2,958	2,326	494	0	99	0
1984	5,712	2,850	2,276	487	0	98	0
1985	5,549	2,744	2,228	480	0	97	0
1986	5,393	2,643	2,182	472	0	96	0
1987	5,271	2,564	2,150	462	0	94	0
1988	5,185	2,515	2,129	450	0	92	0
High alternative projeections[1]							
1979	6,860	3,569	2,592	583	0	117	0
1980	7,072	3,637	2,704	606	0	125	0
1981	7,278	3,702	2,811	634	0	131	0
1982	7,432	3,744	2,896	656	0	137	0
1983	7,553	3,765	2,967	677	0	145	0
1984	7,625	3,760	3,015	700	0	150	0
1985	7,684	3,747	3,059	721	0	156	0
1986	7,737	3,730	3,105	740	0	162	0
1987	7,820	3,736	3,163	755	0	166	0
1988	7,949	3,775	3,236	768	0	169	0

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education*.

Table 12B.—Full-time-equivalent enrollment in private institutions, with alternative projections, by enrollment level of student and type of institution: United States, fall 1970 to 1988

(In thousands)

Year (fall)	Total	Undergraduate		Graduate		First-professional	
		4-Year	2-Year	4-Year	2-Year	4-Year	2-Year
1970	1,784	1,407	105	184	0	89	0
1971	1,804	1,412	106	186	0	100	0
1972	1,801	1,400	100	191	0	110	0
1973	1,824	1,403	106	201	0	114	0
1974	1,861	1,425	102	208	0	124	0
1975	1,958	1,486	114	226	0	131	0
1976	1,963	1,469	113	246	0	135	0
1977	2,018	1,503	123	253	0	139	0
1978	2,070	1,531	134	259	0	146	0
Intermediate alternative projections[1]							
1979	2,051	1,515	137	257	0	143	0
1980	2,057	1,513	139	259	0	145	0
1981	2,057	1,507	140	261	0	148	0
1982	2,043	1,493	141	261	0	148	0
1983	2,021	1,469	141	261	0	150	0
1984	1,987	1,436	139	262	0	151	0
1985	1,950	1,401	137	261	0	151	0
1986	1,911	1,364	136	261	0	150	0
1987	1,881	1,329	134	259	0	149	0
1988	1,866	1,329	135	255	0	147	0
Low alternative projections[1]							
1979	1,975	1,455	133	249	0	138	0
1980	1,943	1,426	132	247	0	137	0
1981	1,909	1,395	132	246	0	136	0
1982	1,864	1,358	130	242	0	134	0
1983	1,814	1,316	127	239	0	133	0
1984	1,756	1,267	123	236	0	131	0
1985	1,698	1,218	120	231	0	130	0
1986	1,645	1,173	117	227	0	127	0
1987	1,600	1,138	115	223	0	124	0
1988	1,569	1,116	115	218	0	120	0
High alternative projections[1]							
1979	2,175	1,588	145	283	0	160	0
1980	2,232	1,618	151	294	0	168	0
1981	2,287	1,648	155	308	0	176	0
1982	2,327	1,666	160	316	0	184	0
1983	2,357	1,674	164	328	0	191	0
1984	2,375	1,673	165	339	0	198	0
1985	2,385	1,666	166	348	0	205	0
1986	2,393	1,657	167	357	0	211	0
1987	2,410	1,660	170	365	0	216	0
1988	2,439	1,676	173	371	0	219	0

[1]For methodological details, see appendix A, section A-1. For primary assumptions made, see appendix B, table B-1.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Fall Enrollment in Higher Education.*

Chapter II
HIGH SCHOOL GRADUATES AND EARNED DEGREES

High School Graduates

The number of high school graduates increased from 2.8 million in 1968-69 to 3.2 million in 1976-77, an increase of 14.3 percent (table 13). High school graduates decreased slightly in 1977-78 to 3.1 million and are expected to continue decreasing in most years reaching 2.7 million in 1988-89 (figure 8). The expected decrease of 15.8 percent between 1977-78 and 1988-89 reflects the projected 15.5 percent decrease in the average of the 17- and 18-year old population over the same period.

Unlike enrollment data in Chapter I, table 13 includes graduates of regular public and nonpublic schools as well as graduates of "other" schools such as residential schools for exceptional children, subcollegiate departments of institutions of higher education, Federal schools for Indians, and federally operated schools on Federal installations (less than one percent of all high school graduates were in this category). However, 381,067[1] high school equivalency credentials issued by State education departments[2] in 1978 are excluded.

The projections of public high school graduates are based on annual data submitted each fall by State education agencies.

Nonpublic high school graduates are based on limited reports from the domain of private schools. The most recent report on nonpublic high school graduates covers the period from 1975-76 to 1977-78[3].

Projections of high school graduates by control of school are based on a demographic model which utilizes estimates and projections of the average of the 17- and 18-year old population from the Bureau of the Census and projections of enrollment in grade 12 in regular public secondary schools from the first component of IFMOD[4]. Projections of high school graduates by sex are based on the assumption that, high school graduates expressed as a percentage of the average of the 17- and 18-year old population will remain constant at levels consistent with the most recent rates. These rates were increasing in the early 1960's but, they began to level off in the late 1960's. In the decade of the 1970's, these rates have been stable and have not shifted appreciably from their levels in the late 1960's.

Projections of high school graduates of public schools are based on the assumption that the rate of graduates of grade 12 enrollment will remain consistent with most recent rates through 1988-89. High school graduates from nonpublic schools are assumed to be equal to the difference between total and public high school graduates.

The use of minimal competency tests might cause additional decreases in the number of high school graduates, if students who might otherwise graduate

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[1]Does not include outlying areas.

[2]American Council on Education, *GED Annual Statistical Report*, Washington, D.C., 1978

[3]Department of Health Education and Welfare, National Center for Education Statistics, "Selected Public and Private Elementary and Secondary Education Statistics", October 1979.

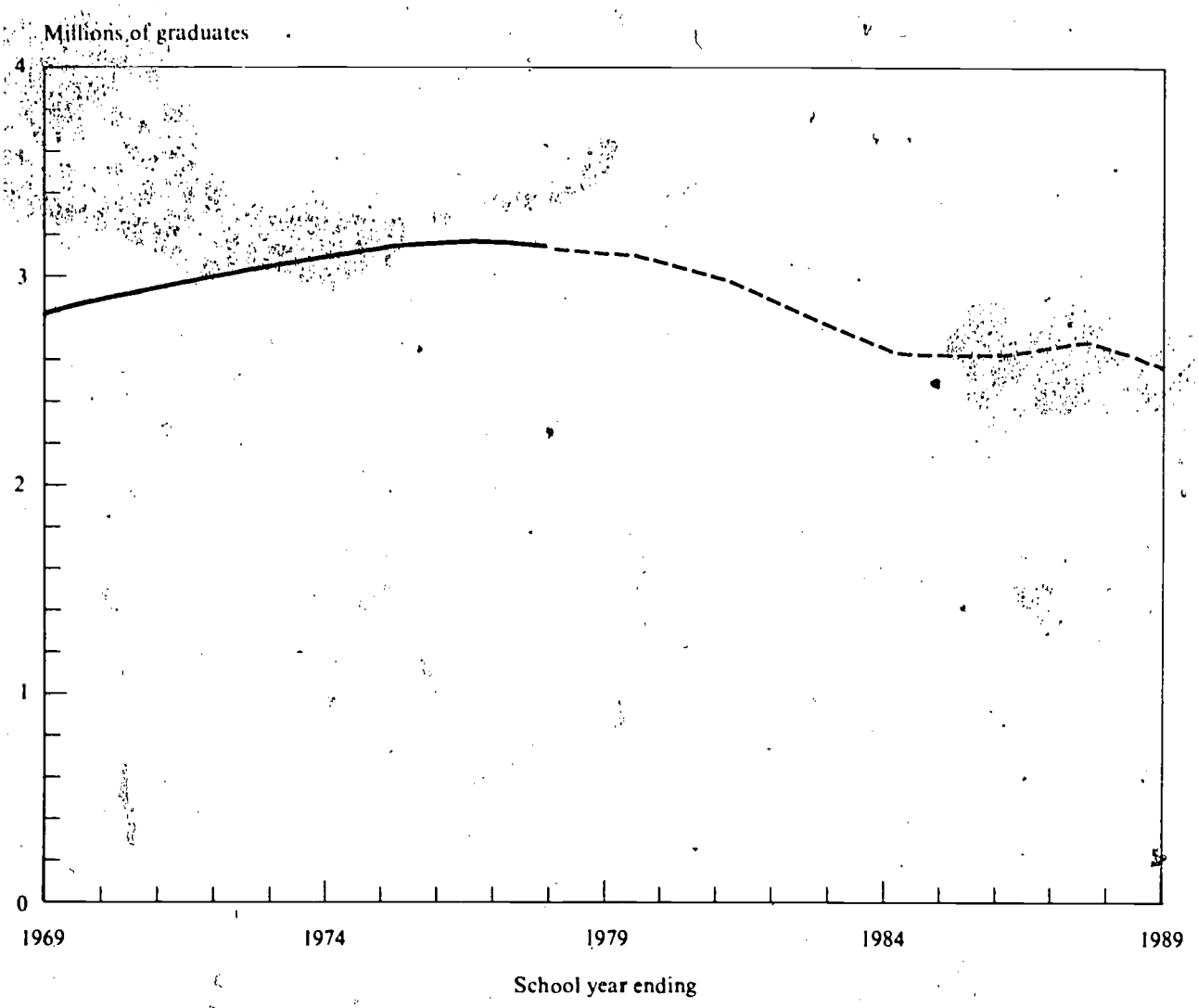
[4]See appendix A, section A. 1.

cannot pass the tests. Of the 38 states[5] which reported plans to institute minimal competency tests, nearly half of these states reported that they intended to use them for graduation purposes. In 1978, these 38 states represented less than half of public high school graduates[6]. In addition, most of the 38 states listed remedial assistance at various grade levels as an ongoing activity of their competency testing programs. However the effects of such activities are not clear at this time.

[5]Education Commission of the States, "State Activity, Minimal Competency Testings", July 1979.

[6]Department of Education, National Center for Education Statistics. *Statistics of Public Elementary and Secondary Day Schools, Fall 1978, October 1980.*

Figure 8.—High school graduates, with projections: United States, 1968-69 to 1988-89



Source: Table 13.

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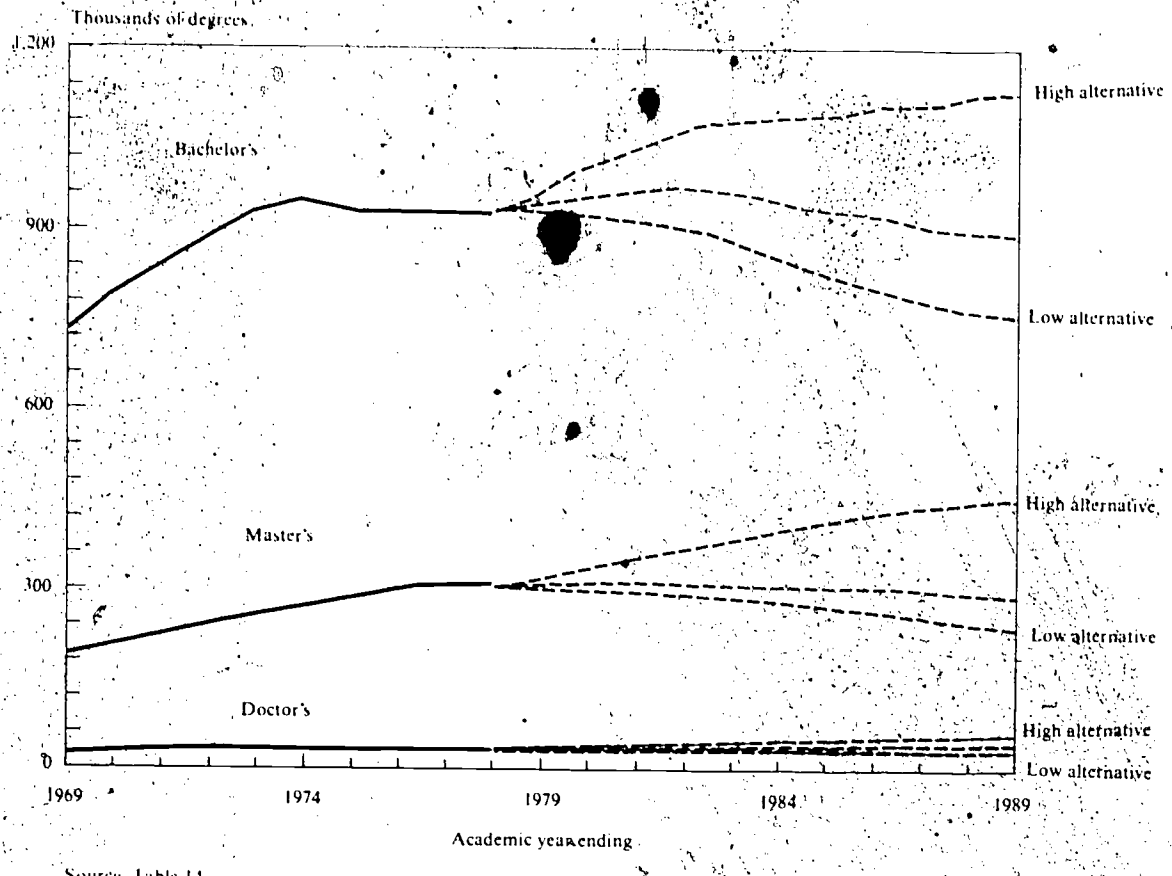
Earned Degrees

The 1979 projections of degrees by sex of recipient, by field of study, and level of degree are based on data from the *Earned Degrees Conferred* reports from accredited institutions of higher education listed in NCES' *Education Directory, Colleges & Universities*. The data cover degrees granted during the academic year ending in June and include degrees earned in the prior summer. Although NCES surveys and reports provided the major portion of the data used in developing these projections, other information from education and professional associations, experts in other academic areas, and other agencies in the Federal Government were also taken into account.

Projections by sex are shown for college graduates at each of the four levels—bachelor's, master's, doctor's and first-professional. Also, degree projections by sex and field of study are presented for all levels. Alternative projections are shown for degrees by level and sex (table 14 and figure 9). Alternative projections of degrees by field, level, and sex can be estimated by multiplying the percentages from appendix tables A-19 to A-30 by the low and high alternative projections of total degrees by level and sex in table 14.

IFMOD was used in developing degree models by level and by field of study. As a result, the degree projections in this publication are based on a revised methodology. The demographic models relate degree outcomes to enrollment by year enrolled and attendance status and enrollment by age of recipients. The basic assumption made is that projections based on these models will portray the future direction of college graduates by level and by field of study if past relationships remain stable throughout the projection period. Although more students will be enrolled in college in the future, decreasing full-time enrollment is expected to lead to lower degree outcomes in the late 1980's.

Figure 9.—Earned degrees, with alternative projections: United States, 1968-69 to 1988-89



Source: Table 14.

Bachelor's Degrees by Sex

The number of bachelor's degrees granted increased from 729,071 in 1968-69 to 945,776 in 1973-74, an increase of 29.7 percent. Then bachelor's degrees declined to 919,549 in 1976-77 before increasing slightly to 921,204 in 1977-78. Despite the fluctuation between 1973-74 and 1977-78, bachelor's degrees are expected to increase to 965,100 by 1981-82 and then decline to 891,800 by 1988-89. The expected source of increase in bachelor's degrees is due to the continued increase in the traditional college-age population (18-24 years) in the early 1980's. However, the expected decline in this population in the late 1980's is expected to lead to lower degree outcomes toward the end of the projection period.

For both men and women, bachelor's degrees are expected to peak in 1981-82 at 503,600 for men and 461,500 for women. By 1988-89, bachelor's degrees for men are expected to decrease to 458,400, while, degrees for women are expected to decrease at a slower rate to 433,400 (figure 10). In 1988-89 women will be awarded 48.6 percent of all bachelor's degrees.

Master's Degrees by Sex

The number of master's degrees increased from 193,756 in 1968-69 to 311,620 in 1977-78. Master's degrees are expected to increase to 316,300 by 1982-83 and then decrease to 295,410 by 1988-89. For the first time, the number of master's degrees decreased by over 5,500 degrees in 1977-78 from the number granted in 1976-77 (317,164). Since master's degrees awarded to women have been increasing steadily, the decrease is largely due to a 3.9 percent decrease in the number of men receiving degrees in 1977-78 (from 167,783 in 1976-77 to 161,212 in 1977-78). However, the percentage increase in degrees awarded to women from 1976-77 to 1977-78 was less than one percent. The decrease in degrees awarded to men can be attributed to decreases in first-year graduate enrollment in 1976 when both full-time and first-year graduate enrollment decreased 7.3 percent and 3.9 percent, respectively.

For men, the projections of master's degrees are expected to decrease from 161,212 in 1977-78 to 146,240 in 1988-89. On the other hand, degrees awarded to women are expected to decrease slightly from 150,408 to 149,170 by 1988-89 (figure 11). By 1979-80, the number of master's degrees granted to women are expected to reach parity with men and exceed slightly the number of expected degrees for men for the remainder of the period.

Doctor's Degrees by Sex

Doctor's degrees increased from 26,188 in 1968-69 to 34,777 in 1972-73 and then declined for most years to 32,131 in 1977-78. Projections of doctor's degrees are expected to increase only slightly to 32,980 in 1980-81 before declining to 27,950 in 1988-89. The number of men receiving doctor's degrees increased from 22,752 in 1968-69 to 23,658 in 1977-78. Doctor's degrees awarded to men are expected to decrease to 19,860 in 1988-89. The number of women receiving doctor's degrees increased greatly from 3,436 in 1968-69 to 8,473 in 1977-78. The number of degrees awarded to women are expected to increase to 9,270 by 1980-81, before declining to 8,090 by 1988-89 (figure 12). In 1977-78, 26.4 percent of all doctor's degrees were awarded to women compared to only 13.1 percent in 1968-69. By 1988-89, this percentage is expected to increase to 28.9 percent.

In 1977-78, doctor's degrees in engineering, health, and life sciences made up over 36 percent of doctor's degrees conferred; while, 11.5 percent of the doctor's degrees were awarded in the humanities. Information from the 1977 profile[7] of scientists, engineers, and humanists in the United States revealed several characteristics of persons employed in the sciences, who obtained doctorates within a span of four decades. The study showed that more than 55 percent of the scientists and engineers and nearly 90 percent of the humanists were employed in educational institutions (excluding post doctorates).

Projections of the demand for additional full-time equivalent instructional staff indicate a large decrease in the demand for faculty in the 1980's. Also, the Bureau of Labor Statistics reports that the demand for employment[8] of college and university faculty (excluding part-time junior instructors) is expected to decline 9.2 percent from its 1978 level and concludes that in the future, many doctoral graduates, whose first choice would be to teach in college, will probably have to pursue jobs in the nonacademic sector.

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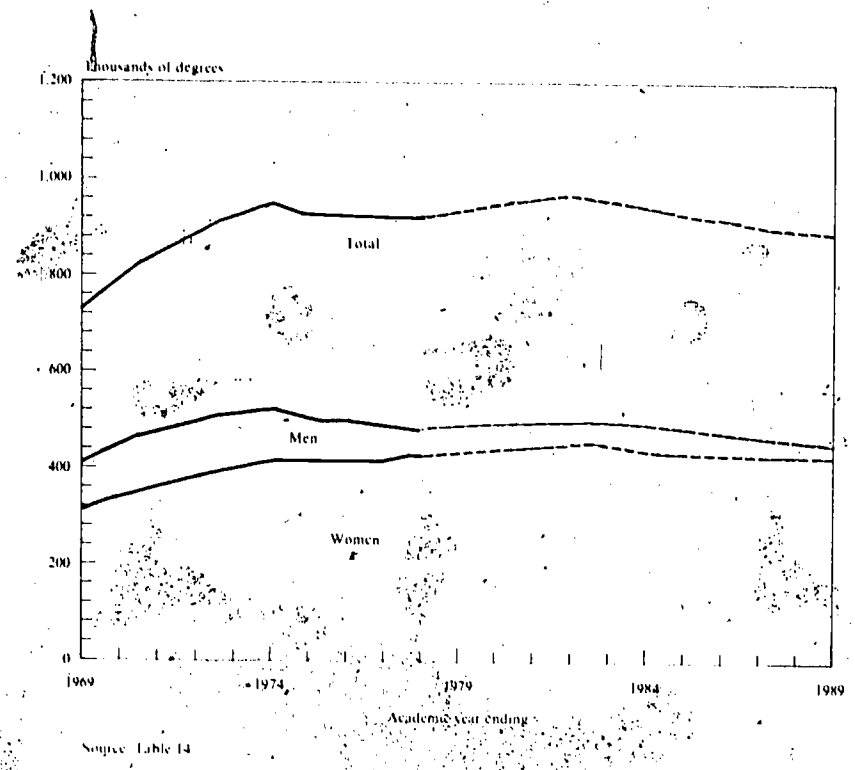
[7]National Research Council, *Science, Engineering, and Humanities Doctorates in the United States: 1977 Profile* (Washington, D. C.), 1978.

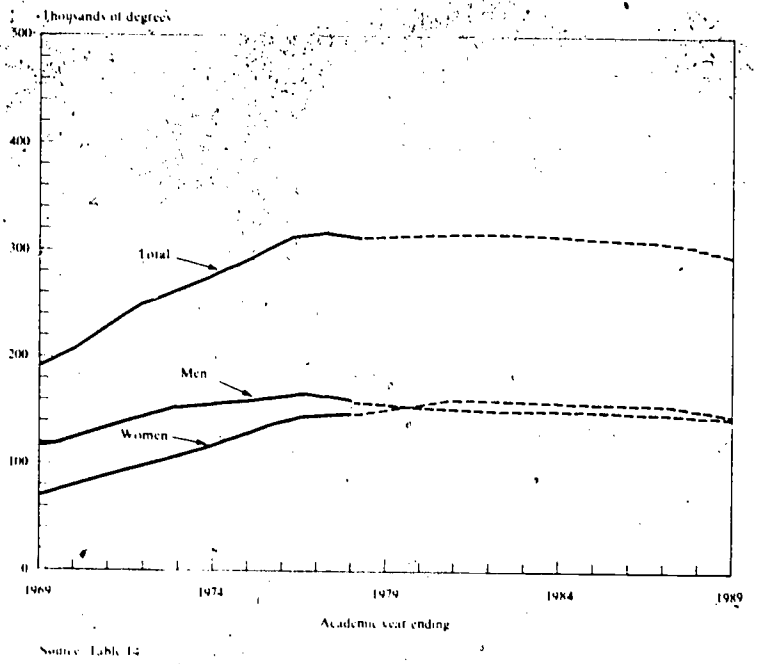
[8]U.S. Department of Labor, Bureau of Labor Statistics, *Occupational Projections and Training Data*, bulletin 2020 (Washington, D.C.), April 1979.

Figure 10.—Earned bachelor's degrees, with intermediate alternative projections, by sex: United States, 1968-69 to 1988-89



Source: Table 14

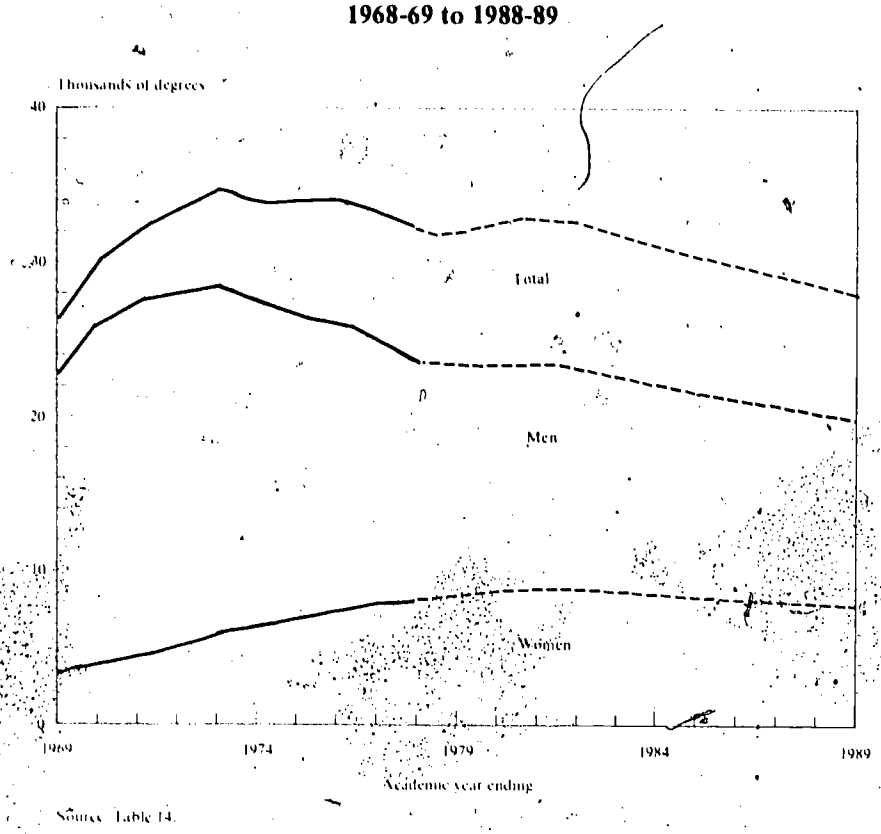
Figure 11.—Earned master's degrees, with intermediate alternative projections, by sex: United States, 1968-69 to 1988-89



Source: Table 14

C.1

Figure 12.—Earned doctor's degrees, with intermediate alternative projections, by sex: United States, 1968-69 to 1988-89



Source: Table 14.

First-Professional Degrees by Sex

First-professional degrees increased from 35,114 in 1968-69 to 66,581 in 1977-78, an increase of 89.6 percent. Projections of first-professional degrees are expected to increase 12 percent to 74,570 by 1988-89. This increase will be largely due to the continuation of rapid increases in the number of first-professional degrees awarded to women, which has increased from 3,529 in 1972-73 to 14,311 in 1977-78. Projections of first-professional degrees awarded to women are expected to increase to 21,210 in 1988-89. For men, first-professional degrees increased from 46,489 in 1972-73 to 52,270 in 1977-78. Gains in the future are expected to be slight, reaching only 53,360 in 1988-89 (figure 13). In 1977-78, women accounted for 21.5 percent of all first-professional degrees awarded, compared to only 4.3 percent in 1968-69. By 1988-89, this percentage is expected to increase to 28.4 percent.

Percent Distribution of Degrees by Level and Field

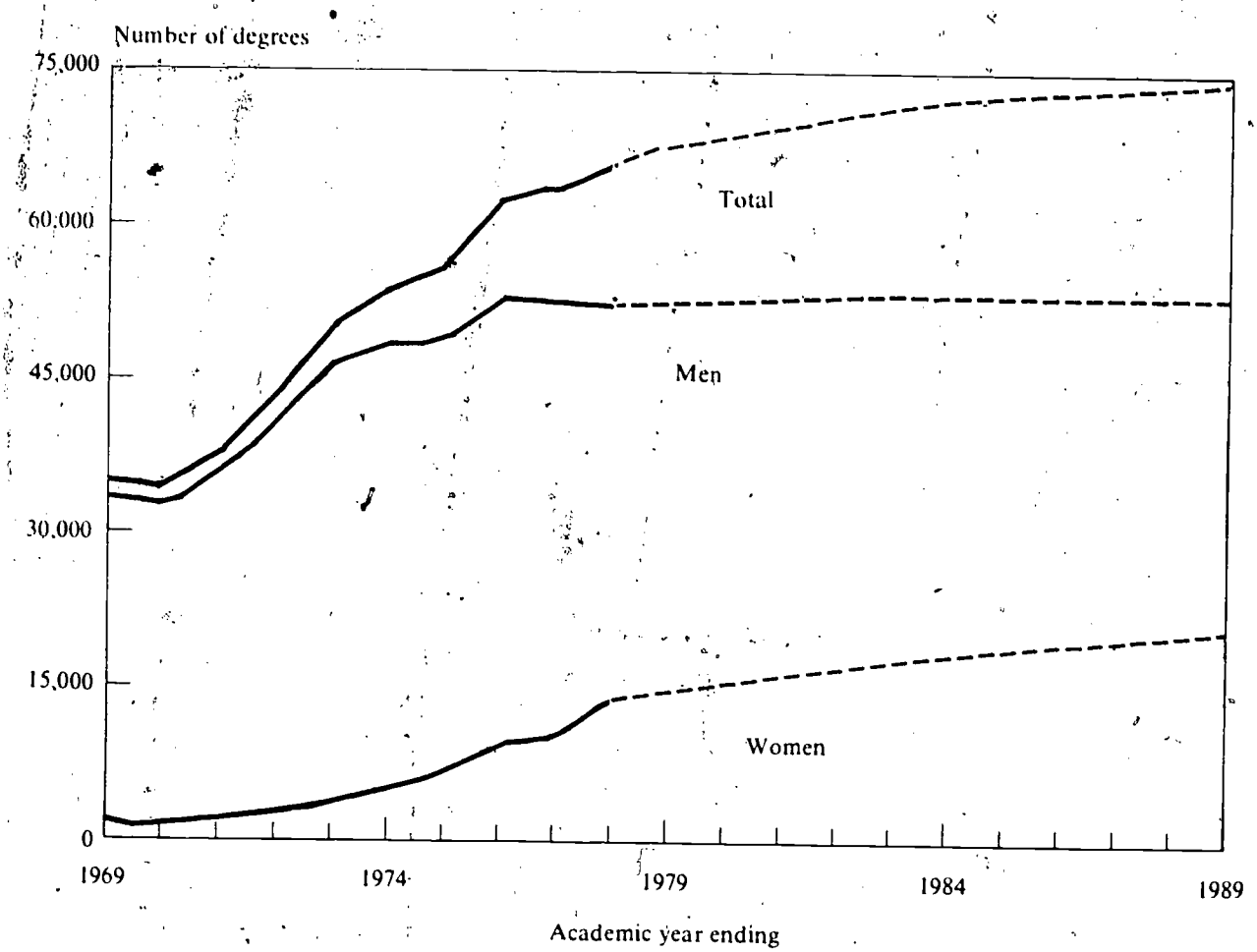
Percent distributions by field of study are shown for bachelor's, master's, doctor's and first-professional degrees for the years 1968-69, 1973-74, 1978-79, 1983-84, and 1988-89 in tables 15 through 17 and by selected fields for the years 1968-69, 1977-78 and 1988-89 in figures 14 through 17. Several fields are expected to show significant increases in their percentages of total bachelor's degrees. From 1977-78 to 1988-89, business and management is expected to increase from 13.1 to 16.7 percent, communications from 2.8 to 4.0 percent, engineering from 5.1 to 7.2 percent, health professions from 6.5 to 8.2 and physical sciences from 2.5 to 2.8. Education is expected to decrease sharply from 14.8 of total bachelor's degrees in 1977-78 to 8.2 percent in 1988-89. Additional decreases are expected in social sciences (12.6 to 8.6) and letters (4.8 to 3.2) from 1977-78 to 1988-89 (figure 14).

The largest master's degree field, education which constituted more than one-third of all master's degrees in 1977-78 is expected to decrease from 38.1 in 1977-78 to 30.3 in 1988-89. The next largest field, business and management, is expected to increase from 14.5 to 16.4 percent. Other increases are expected in psychology (2.6 to 3.4) and public affairs and services (6.4 to 9.3). Decreases in percentages are expected in social sciences (5.0 to 3.6), letters (3.2 to 2.6), and foreign languages (0.9 to 0.6) (figure 15). The remaining fields are expected to remain fairly constant.

At the doctorate level, the fields expected to increase are psychology (8.1 to 8.4), public affairs and services (1.2 to 1.9), agriculture and natural resources (3.0 to 3.8) and health professions (2.0 to 2.5). Decreases are expected to occur in social sciences (11.6 to 10.9), letters (6.4 to 5.2), physical sciences (9.8 to 8.8), and biological sciences (10.3 to 9.9). Other decreases are expected in mathematics and statistics (2.5 to 2.0), and engineering (7.6 to 7.2) (figure 16). The computer and information sciences, education, and accounting are expected to remain fairly constant.

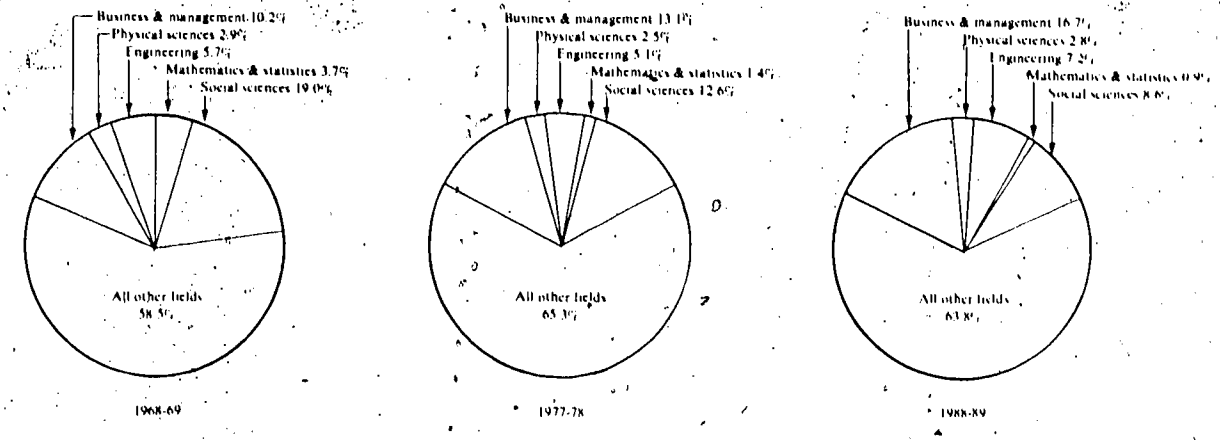
At the first-professional level, the fields expected to show increases are medicine (21.4 to 23.9), veterinary medicine (2.5 to 3.3), and theology (9.6 to 10.4). Decreases are expected in dentistry (7.8 to 7.3) and law (51.7 to 47.8) (figure 17).

Figure 13.—Earned first-professional degrees, with intermediate alternative projections, by sex: United States, 1968-69 to 1988-89



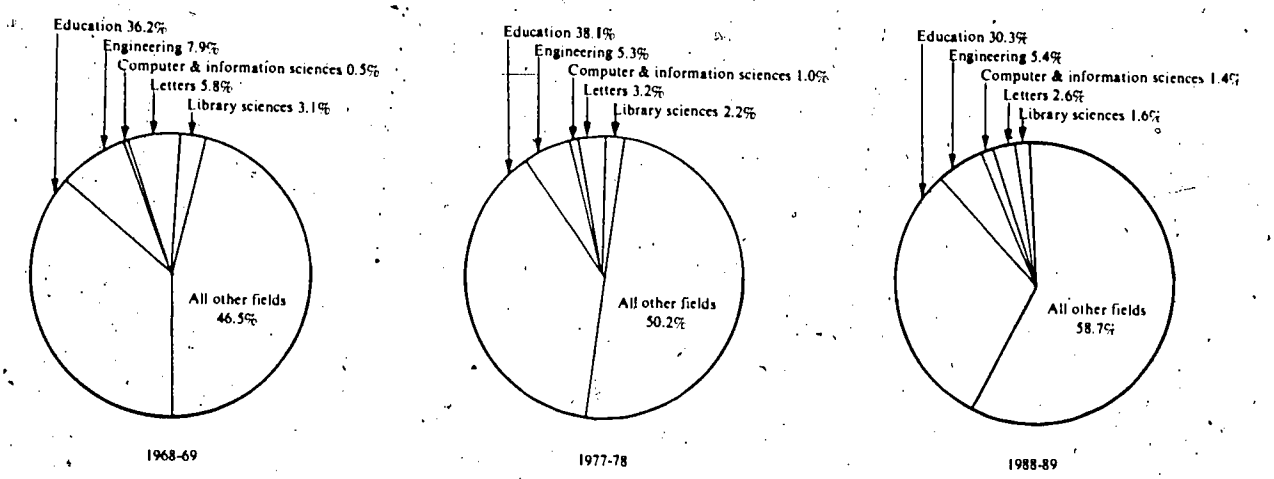
Source: Table 14.

Figure 14.—Percent distribution of bachelor's degrees, by field of study: 1968-69 to 1988-89



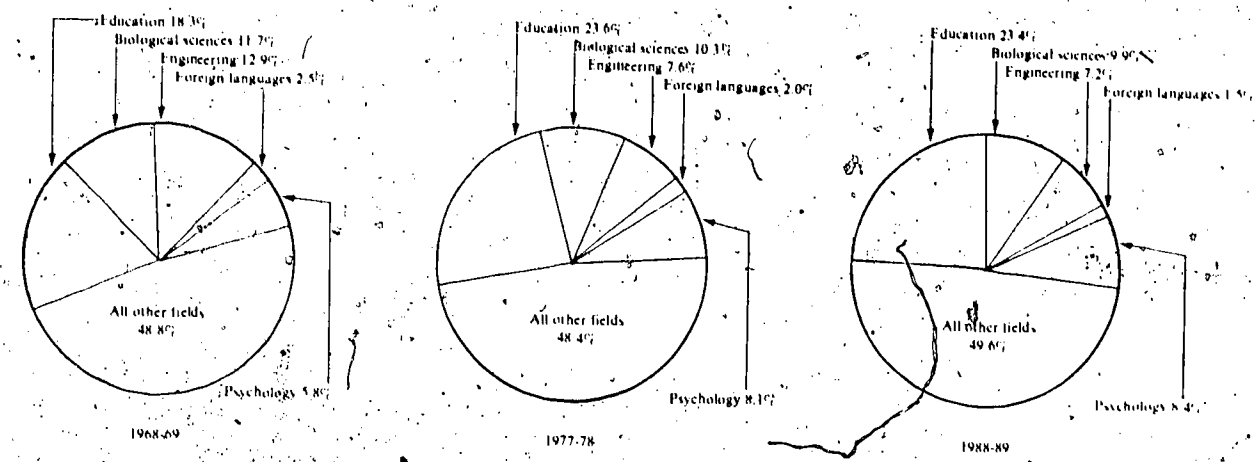
Source: Table 15.

Figure 15.—Percent distribution of master's degrees, by field of study: 1968-69 to 1988-89



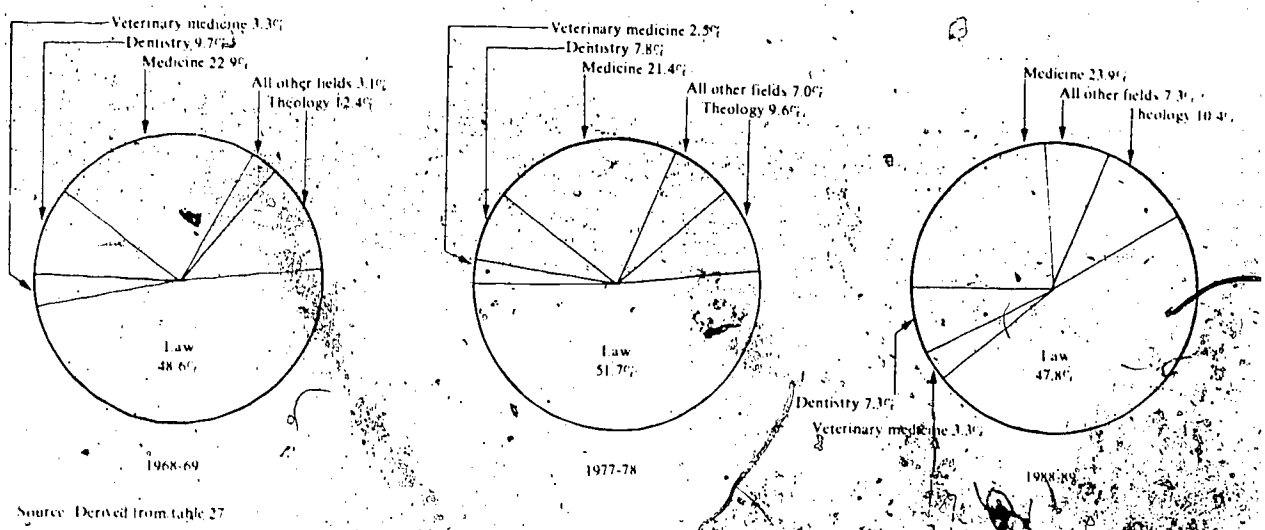
Source: Table 16.

Figure 16.—Percent distribution of doctor's degrees, by field of study: 1968-69 to 1988-89



Source: Table 12.

Figure 17.—Percent distribution of first professional degrees, by field of study: 1968-69 to 1988-89



Source: Derived from table 27.

Degrees by Field

Projections of bachelor's, master's, and doctor's degrees for the 20 major fields of study by sex are shown in tables 18 through 26. Projections of first-professional degrees are shown in table 27.

Thirteen of the 21 fields at the bachelor's level are expected to increase between 1977-78 and 1988-89. The largest increases are expected in computer and information sciences, 40.4 percent (7,201 to 10,110); communications, 39.0 percent (25,400 to 35,300); engineering, 37.3 percent (46,869 to 64,340); and engineering technologies, 36.2 percent (8,785 to 11,970). Other increases are expected in health professions, 23.6 percent (59,434 to 73,470) and agriculture and natural resources, 26.1 percent (22,650 to 28,550).

Significant decreases from 1977-78 to 1988-89 are expected in education, 46.0 percent (136,079 to 73,530); library sciences, 39.4 percent (693 to 420); letters, 35.4 percent (44,334 to 28,640); mathematics and statistics, 34.9 percent (12,569 to 8,180); and social sciences, 33.9 percent (116,084 to 76,720) (figure 18).

The largest increases at the master's level are expected in public affairs and services, 37.7 percent (19,953 to 27,480); computer and information sciences, 36.3 percent (3,038 to 4,140); health professions, 34.9 percent (14,325 to 19,330); and agriculture and natural resources, 27.3 percent (4,023 to 5,120). Significant decreases are expected in foreign languages, 33.2 percent (2,726 to 1,820); library sciences, 29.6 percent (6,914 to 4,870); mathematics and statistics, 28.2 percent (3,373 to 2,420); education, 24.6 percent (118,582 to 89,460); and letters, 23.0 percent (10,011 to 7,710) (figure 19).

Between 1977-78 and 1988-89, doctor's degrees are expected to increase in public affairs and services, 36.7 percent (395 to 540); agriculture and natural resources, 9.2 percent (971 to 1,060); and health professions, 5.5 percent (654 to 690). Significant decreases are expected in foreign languages, 35.3 percent (649 to 420); mathematics and statistics, 31.7 percent (805 to 550); and letters, 29.9 percent (2,069 to 1,450) (figure 20).

Several fields beyond the bachelor's level are expected to experience decreases toward the end of the projection period. However, a large determinant of this trend is the expected decline of total degrees across all levels.

At the bachelor's level, the decrease in the number of traditional college-age students is expected to result in reduced numbers of bachelor's degrees. Some bachelor's fields will continue to decline due to decreased enrollments in these fields; while, other fields such as engineering, physical sciences, and computer and information sciences will increase as enrollment expands due to increased job availability and high salaries. Although the first-year graduate enrollment is declining in engineering and physical sciences, it may be that graduates in these fields are postponing graduate studies to accept attractive salary offers. For example information from the National Science Foundation[9] reports that for the years 1973, 1975, and 1977, median salaries for engineers, computer and physical scientists were high relative to other salaries.

Methodology and assumptions underlying the projections of degrees by field of study are shown in appendixes A and B, section A.2 and section B.2. Independent data sources considered in making these projections were survey data from Engineers Joint Council for engineering degrees; survey data from the American Institute of Certified Public Accountants for bachelor's degrees in accounting, and data from the Health Resources Administration, Bureau of Health Manpower, for first-professional degrees in the health fields.

Bachelor's Degrees by Field

Although the bachelor's degree projections are not empirically linked to market demands, most field expectations are in line with the results from a NCES survey on recent college graduates, *Survey of 1976-77 Recent College Graduates*[10]. According to this survey, those who majored in engineering, computer and information sciences, and health professions had the lowest underemployment rate. Underemployed college graduates were defined in this study as "those not working in an occupation for which their credentials would seem to qualify them and who report that, in their opinion, their jobs do not require a college degree." The underemployment rate for graduates in the health professions was less than 2.5 percent. Degrees in the health profession are expected to increase 23.6 percent (59,434 to 73,470) between 1977-78 and 1988-89. The Bureau of Labor Statistics reports that the demand for nurses is expected to increase 49.6 percent by 1990.

[9]National Science Foundation, *Detailed Statistics Tables, Characteristics of Doctoral Scientist and Engineers in the United States*: 1977, Washington, D. C.

[10]National Center for Education Statistics, *op. cit.*

Figure 18.—Percent change of selected bachelor's fields from 1977-78 to 1988-89

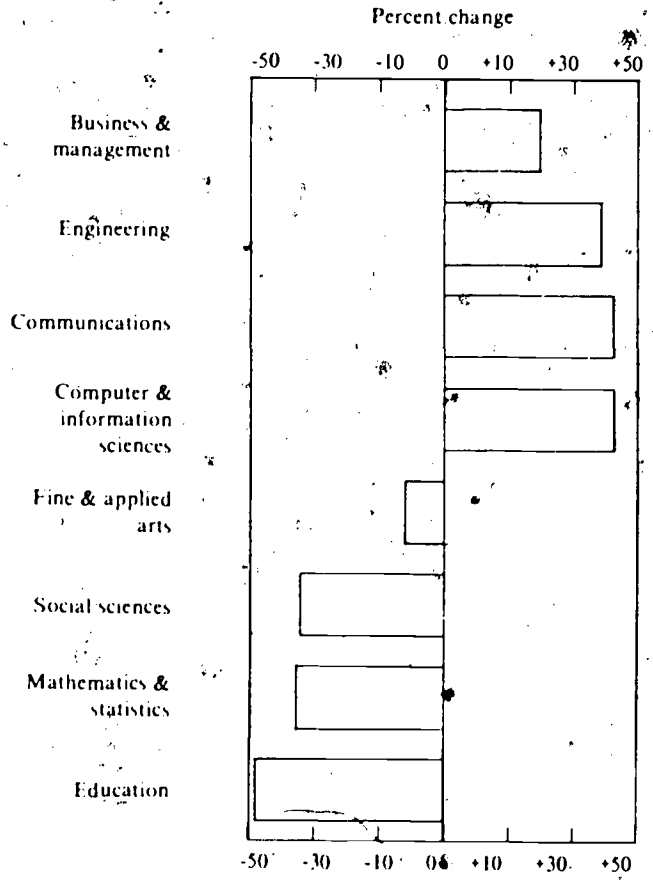


Figure 19.—Percent change of selected master's fields from 1977-78 to 1988-89

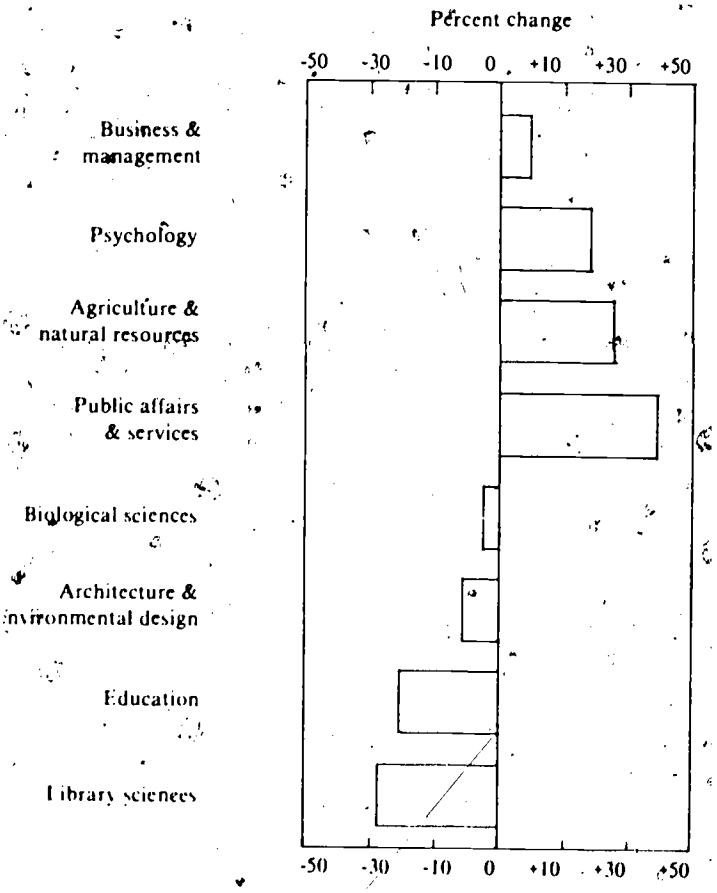
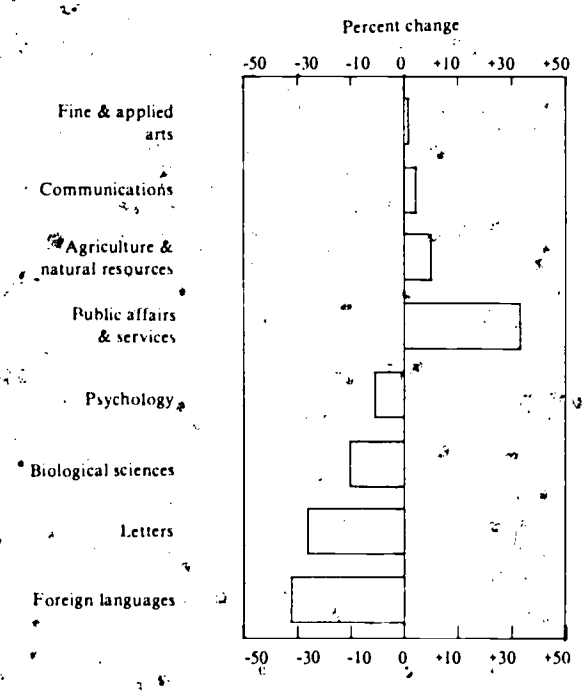


Figure 20.—Percent change of selected doctor's fields from 1977-78 to 1988-89



Engineering graduates, in addition to having a low underemployment rate (6 percent) also received the highest average salary of graduates in the NCES survey. Engineering degrees are expected to increase 37.3 percent from 1977-78 to 1988-89 (46,869 to 64,340) with a peak of 76,060 in 1981-82. Over the same period, degrees in engineering technologies are expected to increase 36.2 percent (8,785 to 11,970).

The underemployment rates for business and management and education were lower than the average rate for all fields and less than half the rate for psychology and social sciences. While business and management degrees are expected to increase 22.9 percent, education degrees are expected to decrease 46.0 percent (136,079 to 73,530). The projected decreases in education are a continuation of decreases from 1973-74 to 1977-78 which undoubtedly resulted in part from the large amount of publicity given to teacher surpluses (see chapter III for a more detailed analysis of teacher supply and demand.) Thus, students were aware of the decreased demand for teachers and subsequently reacted to the oversupply. However, as the job outlook for teachers improves in the 1980's, projections of education degrees based on rapid decreases in this field (table 18), might prove to be too low, especially in the late 1980's.

Graduates in the social sciences and public affairs and services fields had a high underemployment rate (33 percent). From 1977-78 to 1988-89, the number of degrees in social sciences is expected to decrease approximately the same percentage (33.9 percent). However, the number of degrees in public affairs and services is expected to increase 23.3 percent because of significant increases in the subfields, law enforcement and corrections and social work. According to Bureau of Labor Statistics, job opportunities are expected to be good in social work. In recent years, law enforcement and corrections increased greatly and is expected to contribute to the overall increases in public affairs and services in the future.

Graduates in psychology and several humanities fields experienced high underemployment rates (35 percent or more). The underemployment rates for foreign languages, letters, and fine and applied arts were more than 40 percent. In line with these job market statistics, psychology degrees are expected to decrease 23.4 percent, from 44,559 in 1977-78 to 34,110 in 1988-89 and the total for the humanities fields are expected to decrease 10.4 percent from 132,665 to 118,890. Within humanities, decreases are expected in foreign languages, 32.8 percent (12,730 to 8,550); letters, 35.4 percent (44,334 to 28,640); and fine and applied arts, 9.4 percent (40,951 to 37,100).

Graduates in mathematics and statistics had an average underemployment rate of about 20 percent. But degrees in mathematics and statistics are expected to decrease 34.9 percent (12,569 to 8,180). This field has decreased continually since 1968-69. Graduates unable to find jobs as mathematicians usually opt for jobs in actuary, statistics, or computer work. In spite of these other choices, BLS reports that graduates seeking jobs as mathematicians will face keen competition in the 1980's.

The underemployment rates for graduates in the physical sciences and biological sciences were much lower than the humanities and social sciences. Slight increases are expected in physical sciences, 7.6 percent (22,986 to 24,740) and biological sciences, 6.8 percent (51,502 to 55,030). For graduates in the biological sciences, BLS reports that demand for life scientists is high. However, at the bachelor's level, competition will be keen as the number of graduates will exceed openings.

Master's Degrees by Field

Education is the largest single master's degree field, comprising 38 percent of all master's degrees in 1977-78. The number of master's degrees granted in education increased from 70,231 in 1968-69 to 127,948 in 1975-76, an increase of 82.2 percent and decreased to 118,582 by 1977-78, a decrease of 7.3 percent. The number of degrees in education are expected to further decrease 24.6 percent to 89,460 in 1988-89. The decline in the number of master's degrees granted in education is not as rapid as bachelor's degrees in this field because many of the new teachers hired in the late 1960's and early 1970's continued to work toward master's degrees on a part-time basis. However, the decreased number of new teachers hired in the mid and late 1970's has already resulted in fewer master's degrees earned in education and this trend is expected to continue, at least through the mid-1980's.

The second largest master's field, business and management, is projected to increase 7.3 percent (45,130 to 48,410) from 1977-78 to 1988-89, with a peak of 52,090 by 1982-83. Much of this increase can be attributed to increased job opportunities in this field, especially for business administration graduates with master's degrees.

Increases are also expected in psychology, health professions, and public affairs and services during the projected period. For psychology and health professions, these increases are in line with the results of the NCES survey on recent college graduates that also measured the underemployment rates of graduates with master's degrees. Those who earned master's degrees in psychology had a low underemployment rate (less than 2.0 percent). The number of psychology degrees is expected to increase, 21.7 percent (8,160 to 9,930). The number of degrees in the health professions (where master's degree recipients had an underemployment rate of less than 1.5 percent) is expected to increase 34.9 percent (14,325 to 19,330) from 1977-78 to 1988-89. The job outlook for graduates with master's degrees in social sciences, public affairs and services, and humanities fields is not very good. Degrees in social sciences are expected to decrease 32.5 percent (15,559 to 10,500) over the projection period. In contrast, projections of degrees in public affairs and services are expected to increase 37.7 percent (19,953 to 27,480) reflecting the increased job opportunites in social work. For graduates in the humanities who had the highest underemployment rate (slightly more than 10.0 percent) degrees are expected to decrease 10.2 percent (28,184 to 25,300). With the exception of slight increases in fine and applied arts (9,036 to 9,540) and communications (3,296 to 3,400), the other fields in the humanities are expected to decrease over the projection period—letters (10,011 to 7,170); foreign languages (2,726 to 1,820); and architecture and environmental design (3,115 to 2,830).

Doctor's Degrees by Field

The overall decline expected in doctor's degrees from 1977-78 to 1988-89 is expected to effect 12 of the 20 fields. Toward the end of the projection period, significant decreases are expected in foreign languages, mathematics and statistics, letters, computer and information sciences, and engineering.

Doctor's degrees in engineering are expected to decrease from 2,440 in 1977-78 to 2,000 by 1988-89 and doctor's degrees in the physical sciences are expected to decrease from 3,133 to 2,450. However, degrees in these fields are not expected to change in their percentages of total doctor's degrees from the mid-80's to the end of the projection period. In light of increased research and development activities[11] and increased undergraduate enrollments in these fields, doctoral outputs in these fields may exceed the levels shown in these projections.

Despite overall declines in doctoral production,

[11] National Science Foundation, *Federal R&D Funding by Budget Function: Fiscal Year 1979-80*, Washington, D.C. 1979.

biological sciences and business and management are expected to increase in the early 1980's before declining toward the end of the projection period. Similarly, degrees in fine and applied arts and psychology are expected to experience slight growth before beginning to decline in the mid 1980's.

First-Professional Degrees by Field

All fields at the first-professional level are expected to increase from 1977-78 to 1988-89. First-professional degrees in medicine are expected to increase from 14,279 to 17,840. Other expected increases are dentistry, 5.2 percent (5,189 to 5,460); podiatric medicine, 14.2 percent (543 to 620); veterinary medicine, 51.7 percent (1,635 to 2,480); law, 3.6 percent (34,402 to 35,630); and theology, 21.6 percent (6,367 to 7,740). Increases are also expected in the remainder of the first-professional fields: optometry, osteopathic medicine, pharmacy, and chiropractic.

Table 13.—High school graduates, with projections, by sex of student and control of institution: United States, 1968-69 to 1988-89

(In thousands)

Year	Total high school graduates	Sex		Control	
		Boys	Girls	Public	Private (estimated)
1968-69	2,829	1,402	1,427	2,529	300
1969-70	2,896	1,433	1,463	2,596	300
1970-71	2,944	1,457	1,487	2,644	300
1971-72	3,008	1,490	1,518	2,706	302
1972-73	3,043	1,503	1,540	2,737	306
1973-74	3,080	1,515	1,565	2,771	310
1974-75	3,140	1,545	1,595	2,830	310
1975-76	3,155	1,554	1,601	2,844	311
1976-77	3,161	1,550	1,611	2,846	315
1977-78	3,147	1,540	1,607	2,832	315
		Projected[1]			
1978-79	3,149	1,546	1,603	2,829	320
1979-80	3,093	1,519	1,574	2,773	320
1980-81	3,048	1,498	1,550	2,728	320
1981-82	2,963	1,455	1,508	2,653	310
1982-83	2,822	1,385	1,437	2,502	320
1983-84	2,705	1,328	1,377	2,385	320
1984-85	2,638	1,296	1,342	2,318	320
1985-86	2,625	1,290	1,335	2,315	310
1986-87	2,673	1,314	1,359	2,373	300
1987-88	2,735	1,346	1,389	2,435	300
1988-89	2,651	1,305	1,346	2,341	310

[1]For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for the years 1978-79 to 1988-89 differ from projections shown in earlier NCES reports.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publications: (1) *Statistics of Public Elementary and Secondary Day Schools*, (2) *Statistics of Nonpublic Elementary and Secondary Day Schools*, and (3) *Selected Public and Private Elementary and Secondary Education Statistics*, October 1979.

Table 14.—Earned degrees, with alternative projections by level and sex of student: United States, 1968-69 to 1988-89

Year	Bachelor's			Master's			Doctor's (except first-professional)			First-professional		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
1968-69	729,071	410,785	318,286	193,756	121,531	72,225	26,188	22,752	3,436	35,114	33,595	1,519
1969-70	792,656	451,380	341,276	208,291	125,624	82,667	29,866	25,890	3,976	34,578	32,794	1,784
1970-71	839,730	475,594	364,136	230,509	138,146	92,363	32,107	27,530	4,577	37,946	35,544	2,402
1971-72	887,273	500,590	386,683	251,633	149,550	102,083	33,363	28,090	5,273	43,411	40,723	2,688
1972-73	922,362	518,181	404,171	263,371	154,468	108,903	34,777	28,571	6,206	50,018	46,489	3,529
1973-74	945,776	527,313	418,463	277,033	157,842	119,191	33,816	27,365	6,451	53,816	48,530	5,286
1974-75	922,933	504,841	418,092	292,450	161,570	130,880	34,083	26,817	7,266	55,916	48,956	6,960
1975-76	925,746	504,925	420,821	311,771	167,248	144,523	34,064	26,267	7,797	62,649	52,892	9,757
1976-77	919,549	495,545	424,004	317,164	167,783	149,381	33,232	25,142	8,090	63,359	52,374	10,985
1977-78	921,204	487,347	433,857	311,620	161,212	150,408	32,131	23,658	8,473	66,581	52,270	14,311
Intermediate alternative projections[1]												
1978-79	933,400	494,800	438,600	314,250	158,770	155,480	32,000	23,380	8,620	67,830	52,590	15,240
1979-80	948,800	499,700	449,100	315,090	155,130	159,960	32,750	23,600	9,150	68,450	52,540	15,910
1980-81	951,900	502,400	449,500	315,850	152,710	163,140	32,980	23,710	9,270	69,560	53,030	16,530
1981-82	965,100	503,600	461,500	315,930	153,890	162,040	32,650	23,440	9,210	70,660	53,330	17,330
1982-83	956,200	501,700	454,500	316,300	154,250	162,050	31,700	22,710	8,990	71,710	53,580	18,130
1983-84	941,900	496,300	445,600	313,240	152,880	160,360	31,020	22,180	8,840	72,360	53,520	18,840
1984-85	921,300	488,400	432,900	313,240	152,780	160,460	30,410	21,710	8,700	72,860	53,330	19,530
1985-86	918,600	478,900	439,700	311,940	151,750	160,190	29,830	21,270	8,560	73,340	53,390	19,950
1986-87	896,900	468,300	428,600	310,470	150,890	159,580	29,240	20,830	8,410	73,780	53,410	20,370
1987-88	892,800	462,000	430,800	301,040	148,540	152,500	28,630	20,370	8,260	74,200	53,400	20,800
1988-89	891,800	458,400	433,400	295,410	146,240	149,170	27,950	19,860	8,090	74,570	53,360	21,210
Low alternative projections[1]												
1978-79	927,400	490,800	436,600	300,250	150,160	150,090	31,800	23,300	8,500	61,930	47,130	14,800
1979-80	917,400	480,500	436,900	304,590	145,490	159,100	31,490	22,610	8,880	62,340	47,160	15,180
1980-81	908,400	473,400	435,000	304,320	144,660	159,660	30,740	21,980	8,760	63,290	47,810	15,480
1981-82	898,800	465,400	433,400	297,800	141,070	156,730	29,440	20,970	8,470	64,200	48,260	15,940
1982-83	875,700	456,400	419,300	293,640	138,670	154,970	28,420	20,180	8,240	65,020	48,610	16,410
1983-84	848,200	445,000	403,200	285,990	133,510	150,480	27,480	19,450	8,030	65,440	48,660	16,780
1984-85	818,900	432,800	386,100	278,230	130,880	147,350	26,560	18,700	7,860	65,690	48,580	17,110
1985-86	805,100	419,600	385,500	269,830	127,160	142,670	25,760	18,130	7,630	65,910	48,740	17,170
1986-87	776,400	406,500	369,900	261,180	123,200	137,980	24,920	17,490	7,430	66,080	48,860	17,220
1987-88	770,000	396,500	373,500	253,820	119,360	134,460	23,990	16,790	7,200	66,220	48,960	17,260
1988-89	755,600	390,600	365,000	242,740	114,330	128,410	23,100	16,120	6,980	66,300	49,020	17,280
High alternative projections[1]												
1978-79	951,400	500,800	450,600	325,250	160,160	165,090	36,910	27,020	9,890	67,450	52,630	15,820
1979-80	998,500	514,800	483,700	342,200	170,100	172,100	37,480	27,330	10,150	69,690	52,560	17,130
1980-81	1,018,300	525,500	492,800	356,550	175,600	180,950	38,300	27,690	10,610	71,710	53,310	18,400
1981-82	1,059,900	534,500	525,400	369,280	180,320	188,960	39,140	28,570	10,570	73,570	53,740	19,830
1982-83	1,073,200	541,700	531,500	389,430	189,150	200,280	38,810	27,640	11,170	75,400	54,230	21,170
1983-84	1,079,200	545,700	533,500	400,350	193,230	207,120	39,140	27,670	11,470	76,610	54,410	22,200
1984-85	1,077,900	545,500	532,400	414,350	198,630	215,720	39,470	27,710	11,760	77,190	54,470	22,720
1985-86	1,097,500	544,500	553,000	426,780	204,030	222,750	39,750	27,710	12,040	77,580	54,760	22,820
1986-87	1,100,900	542,700	558,200	438,010	208,230	229,780	39,900	27,620	12,280	77,960	55,020	22,940
1987-88	1,117,700	544,100	573,600	447,680	212,420	235,260	39,970	27,490	12,480	78,140	55,260	23,000
1988-89	1,130,400	549,700	580,700	453,550	213,990	239,560	39,550	27,110	12,440	78,580	55,420	23,160

[1] For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: (1) U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Earned Degrees Conferred by Institutions of Higher Education*, and (2) U.S. Department of Commerce, Bureau of the Census, *Current Population Reports, School Enrollments - Social and Economic Characteristics of Students*, Series P-20, No. 346, October 1979.

Table 15.—Percent distribution of bachelor's degrees, by field of study and sex: 1968-69 to 1988-89

Field	Reported		Projected		
	1968-69	1973-74	1978-79	1983-84	1988-89
Table 15A.—Total					
Social sciences	19.0	16.3	12.0	9.7	8.6
Psychology	4.0	5.5	4.9	4.3	3.8
Public affairs & services	0.5	2.5	4.1	4.7	5.1
Library sciences	0.1	0.1	0.1		
Architecture & environmental design	0.5	0.8	1.0	1.0	1.0
Fine and applied arts	4.3	4.2	4.3	4.3	4.2
Foreign languages	2.9	2.0	1.2	0.8	1.0
Communications	0.7	1.8	2.9	3.5	4.0
Letters	9.1	6.9	4.5	3.3	3.2
Mathematics & statistics	3.7	2.3	1.2	0.8	0.9
Computer & information sciences	0.1	0.5	0.8	1.0	1.1
Engineering	5.7	4.5	6.2	7.8	7.2
Engineering technologies	0.6	0.8	1.0	1.2	1.3
Physical sciences	2.9	2.2	2.5	2.8	2.8
Biological sciences	4.8	5.1	5.7	6.1	6.2
Agriculture & natural resources	1.5	1.7	2.5	2.9	3.5
Health professions	2.8	4.4	6.4	7.4	8.2
Accounting	2.7	3.1	4.7	5.2	4.9
Business & management	10.2	10.9	13.2	14.7	16.7
Education	20.4	19.6	14.3	10.7	8.2
Other	3.3	4.8	6.7	7.6	8.2
Table 15B.—Men					
Social sciences	21.5	18.9	13.2	10.4	9.8
Psychology	4.1	4.4	3.8	3.1	2.3
Public affairs & services	0.3	2.1	3.8	3.9	4.4
Library sciences[1]					
Architecture & environmental design	0.8	1.3	1.4	1.4	1.3
Fine and applied arts	3.1	3.0		3.0	2.6
Foreign languages	3.4	1.9		0.4	0.4
Communications	0.7	2.0		3.3	3.5
Letters	5.9	5.2		2.9	2.8
Mathematics & statistics	4.1	2.4		1.0	1.0
Computer & information sciences	0.2	0.7	1.1	1.5	1.6
Engineering	10.0	8.0	10.9	13.4	12.6
Engineering technologies	1.0	1.4	1.8	2.2	2.5
Physical sciences	4.5	3.3	3.7	3.9	3.7
Biological sciences	6.1	6.3	6.6	6.9	6.8
Agriculture & natural resources	2.6	2.8	3.5	4.0	4.4
Health professions	1.1	1.4	2.4	2.7	3.2
Accounting	4.5	5.6	6.1	6.5	6.0
Business & management	16.5	16.8	18.1	18.6	20.1
Education	8.7	6.8	7.0	5.1	4.7
Other	2.8	4.2	5.2	5.9	6.2
Table 15C.—Women					
Social sciences	15.8	13.5	10.7	8.9	7.3
Psychology	4.0	6.2	6.1	5.7	5.4
Public affairs & services	0.9	2.5	4.4	5.5	5.9
Library sciences	0.3	0.3	0.1	0.1	0.1
Architecture & environmental design	[1]	0.3	0.5	0.6	0.7
Fine and applied arts	5.9	5.7	5.6	5.8	5.8
Foreign languages	4.9	3.4	2.0	1.3	1.6
Communications	0.7	1.6	2.9	3.8	4.5
Letters	13.2	9.0	5.1	3.9	3.7
Mathematics & statistics	3.2	2.1	1.0	0.7	0.9
Computer & information sciences	[1]	0.2	0.5	0.6	0.7
Engineering	0.1	0.2	1.0	1.6	1.5
Engineering technologies	[1]	[1]	0.1	0.1	0.1
Physical sciences	0.9	0.8	1.2	1.5	1.7
Biological sciences	3.1	3.6	4.7	5.1	5.5
Agriculture & natural resources	0.1	0.4	1.3	1.7	1.9
Health professions	4.9	7.7	11.0	12.6	13.6
Accounting	0.5	1.0	3.0	3.7	3.7
Business & management	2.1	3.1	7.7	10.4	13.1
Education	35.4	32.5	22.5	17.0	12.0
Other	4.0	6.0	8.4	9.5	10.4

[1] Less than 0.05.

NOTE.—Data are for 50 States and the District of Columbia for all years.

Table 16.—Percent distribution of master's degrees, by field of study and sex: 1968-69 to 1988-89

Field	Reported		Projected		
	1968-69	1973-74	1978-79	1983-84	1988-89
Table 16A.—Total					
Social sciences	8.5	6.6	4.9	4.2	3.6
Psychology	1.9	2.4	2.7	3.0	3.4
Public affairs & services	3.1	4.5	6.2	7.6	9.3
Library sciences	3.1	2.9	2.0	1.7	1.6
Architecture & environmental design	0.6	1.0	1.0	1.0	1.0
Fine and applied arts	3.8	2.9	3.0	3.2	3.2
Foreign languages	2.4	1.4	0.8	0.6	0.6
Communications	0.4	1.0	1.1	1.2	1.2
Letters	5.8	4.4	3.1	2.8	2.6
Mathematics & statistics	3.0	1.7	1.0	0.8	0.8
Computer & information sciences	0.5	0.8	1.0	1.3	1.4
Engineering	7.9	5.6	5.2	5.2	5.4
Physical sciences	3.0	2.2	1.8	1.9	2.0
Biological sciences	3.0	2.4	2.2	2.3	2.2
Agriculture & natural resources	1.3	1.1	1.3	1.5	1.7
Health professions	2.1	3.5	4.7	5.5	6.5
Accounting	0.7	0.6	1.1	1.4	1.3
Business & management	9.4	11.2	14.8	16.5	16.4
Education	36.2	40.5	37.9	33.5	30.3
Other	3.2	3.4	4.1	4.7	5.5
Table 16B.—Men					
Social sciences	10.1	8.2	6.2	5.3	4.2
Psychology	2.1	2.5	2.5	2.7	2.7
Public affairs & services	2.4	4.4	6.1	7.9	9.7
Library sciences	0.9	1.1	0.8	0.7	0.7
Architecture & environmental design	0.8	1.4	1.4	1.2	1.2
Fine and applied arts	3.4	2.7	2.7	3.0	3.2
Foreign languages	1.6	0.8	0.4	0.3	0.3
Communications	0.5	1.1	1.1	1.1	1.1
Letters	4.0	3.4	2.3	2.0	2.1
Mathematics & statistics	3.5	2.1	1.2	1.1	1.1
Computer & information sciences	0.8	1.3	1.6	2.1	2.2
Engineering	12.6	9.5	9.8	9.9	10.1
Physical sciences	4.3	3.3	3.0	3.1	3.2
Biological sciences	3.4	2.9	2.7	2.7	2.6
Agriculture & natural resources	2.0	1.7	2.0	2.4	2.7
Health professions	1.6	2.4	2.7	3.0	3.3
Accounting	1.0	1.0	1.6	2.0	1.8
Business & management	14.5	18.4	24.1	26.2	26.1
Education	27.3	28.5	23.5	18.1	15.5
Other	3.3	3.3	4.4	5.2	6.2
Table 16C.—Women					
Social sciences	5.9	4.5	3.5	3.2	2.9
Psychology	1.6	2.2	2.9	3.3	4.0
Public affairs & services	4.2	4.7	6.4	7.4	8.9
Library sciences	6.6	5.3	3.3	2.6	2.6
Architecture & environmental design	0.2	0.4	0.6	0.7	0.7
Fine and applied arts	4.6	3.1	3.3	3.4	3.3
Foreign languages	3.8	2.2	1.2	0.9	0.9
Communications	0.3	0.8	1.1	1.3	1.2
Letters	8.8	5.7	3.9	3.5	3.2
Mathematics & statistics	2.1	1.3	0.7	0.6	0.6
Computer & information sciences	0.1	0.2	0.4	0.6	0.6
Engineering	0.2	0.3	0.6	0.7	0.7
Physical sciences	0.9	0.7	0.6	0.7	0.8
Biological sciences	2.3	1.7	1.7	1.9	1.9
Agriculture & natural resources	0.2	0.2	0.6	0.8	0.7
Health professions	2.9	4.9	6.8	8.0	9.8
Accounting	0.1	0.2	0.6	0.8	0.8
Business & management	6.8	1.6	5.4	7.2	6.8
Education	51.4	56.4	52.5	48.3	44.8
Other	3.1	3.5	3.7	4.2	4.9

NOTE: Data are for the 50 States and the District of Columbia for all years.

Table 17.—Percent distribution of doctor's degrees, by field of study and sex: 1968-69 to 1988-89

Field	Reported		Projected		
	1968-69	1973-74	1978-79	1983-84	1988-89
Table 17A.—Total					
Social sciences	11.3	12.7	11.6	10.9	10.9
Psychology	5.8	6.9	8.2	8.4	8.4
Public affairs & services	0.5	0.7	1.3	1.7	1.9
Library sciences	0.1	0.2	0.2	0.2	0.3
Architecture & environmental design	0.1	0.2	0.3	0.2	0.3
Fine and applied arts	2.6	1.7	2.2	2.6	2.6
Foreign languages	2.5	2.7	2.0	1.5	1.5
Communications	0.1	0.5	0.6	0.7	0.7
Letters	6.6	7.8	6.4	5.4	5.2
Mathematics & statistics	4.2	3.0	2.3	2.0	2.0
Computer & information sciences	0.2	0.6	0.6	0.6	0.6
Engineering	12.9	9.8	7.3	7.2	7.2
Physical sciences	14.7	10.7	9.5	8.8	8.8
Biological sciences	11.7	10.2	10.5	10.5	9.9
Agriculture & natural resources	3.4	2.8	3.1	3.6	3.8
Health professions	1.1	1.7	2.1	2.5	2.5
Accounting	0.2	0.2	0.2	0.1	0.1
Business & management	1.9	2.7	2.7	2.8	2.8
Education	18.3	21.6	23.4	23.3	23.4
Other	1.9	3.3	5.6	7.0	7.2
Table 17B.—Men					
Social sciences	11.4	12.8	12.0	11.4	11.4
Psychology	5.1	6.0	6.9	7.4	7.4
Public affairs & services	0.4	0.7	1.2	1.5	1.8
Library sciences	0.1	0.1	0.2	0.2	0.2
Architecture & environmental design	0.1	0.2	0.3	0.2	0.3
Fine and applied arts	2.5	1.6	1.9	2.1	2.1
Foreign languages	1.9	1.9	1.2	0.9	0.9
Communications	0.1	0.5	0.6	0.6	0.7
Letters	5.6	6.5	5.3	4.4	4.4
Mathematics & statistics	4.5	3.4	2.7	2.3	2.3
Computer & information sciences	0.3	0.7	0.8	0.7	0.7
Engineering	14.8	11.9	9.7	9.8	9.8
Physical sciences	16.1	12.3	11.7	11.0	10.9
Biological sciences	11.3	10.0	10.8	11.0	10.1
Agriculture & natural resources	3.8	3.3	4.0	4.6	4.9
Health professions	1.1	1.6	1.8	2.0	2.0
Accounting	0.2	0.2	0.2	0.1	0.2
Business & management	2.2	3.2	3.3	3.6	3.5
Education	16.9	19.4	19.3	18.1	18.1
Other	1.7	3.5	6.2	8.0	8.3
Table 17C.—Women					
Social sciences	10.7	12.2	10.7	9.8	9.9
Psychology	10.0	10.7	11.7	11.0	11.0
Public affairs & services	1.0	0.8	1.6	2.3	2.2
Library sciences	0.1	0.4	0.3	0.3	0.4
Architecture & environmental design	—	0.1	0.2	0.2	0.2
Fine and applied arts	3.5	2.2	3.0	3.6	3.7
Foreign languages	6.8	6.3	4.1	3.1	3.1
Communications	0.1	0.4	0.7	0.8	0.7
Letters	13.1	13.1	9.3	7.8	7.2
Mathematics & statistics	2.0	1.6	1.4	1.2	1.1
Computer & information sciences	0.1	0.1	0.2	0.2	0.2
Engineering	0.3	0.9	0.7	0.6	0.6
Physical sciences	6.0	3.9	3.6	3.4	3.5
Biological sciences	13.6	10.8	9.5	9.3	9.3
Agriculture & natural resources	0.4	0.5	0.7	0.8	1.0
Health professions	1.0	2.0	2.9	3.6	3.6
Accounting	0.1	0.1	0.1	0.1	0.1
Business & management	0.3	0.7	0.9	0.9	1.0
Education	27.9	30.6	34.6	36.4	36.6
Other	2.9	2.5	3.7	4.5	4.6

—Less than 0.05.

NOTE.—Data are for the 50 States and the District of Columbia for all years.

Table 18.—Earned bachelor's degrees, with projections, by field of study: Uni[redacted]es, 1968-69 to 1988-89

Table 18A.—Social sciences

Year	Total	Social sciences	Psychology	Public affairs & services	Library sciences
1968-69	172,616	138,478	29,295	3,843	1,000
1969-70	190,395	151,391	33,536	4,414	1,054
1970-71	205,931	157,818	37,880	9,220	1,013
1971-72	217,768	161,081	43,093	12,605	989
1972-73	226,131	159,434	47,695	17,843	1,159
1973-74	230,954	154,019	51,821	23,950	1,164
1974-75	218,926	138,709	50,988	28,160	1,069
1975-76	213,853	129,864	49,908	33,238	843
1976-77	204,824	120,329	47,373	36,341	781
1977-78	198,576	116,084	44,559	37,240	693
			Projected[1]		
1978-79	196,250	111,870	45,500	38,210	670
1979-80	193,730	107,710	45,320	40,080	620
1980-81	189,240	102,020	44,350	42,320	550
1981-82	185,590	97,500	44,300	43,290	500
1982-83	181,900	94,730	42,780	43,910	480
1983-84	176,710	91,210	40,950	44,080	470
1984-85	170,420	87,210	38,890	43,870	450
1985-86	167,850	84,700	37,940	44,760	450
1986-87	161,750	80,860	36,020	44,440	430
1987-88	159,140	78,580	34,980	45,160	420
1988-89	157,170	76,720	34,110	45,920	420

Table 18B.—Humanities

Year	Total	Architecture & environmental design	Fine and applied arts	Foreign languages	Communications	Letters
1968-69	127,905	3,477	31,588	21,493	5,197	66,150
1969-70	134,675	4,105	35,901	20,895	5,959	67,815
1970-71	139,833	5,570	30,394	19,945	10,802	73,122
1971-72	144,713	6,440	33,831	18,849	12,340	73,252
1972-73	147,220	6,962	36,017	18,964	14,317	70,960
1973-74	148,445	7,822	39,730	18,840	17,096	64,957
1974-75	143,439	8,226	40,782	17,606	19,248	57,577
1975-76	139,552	9,146	42,138	15,471	21,282	51,515
1976-77	135,244	9,222	41,793	13,944	23,214	47,071
1977-78	132,665	9,250	40,951	12,730	25,400	44,334
			Projected[1]			
1978-79	129,060	9,350	40,050	11,440	26,670	41,550
1979-80	128,580	9,570	41,020	10,330	28,820	38,840
1980-81	125,780	9,700	41,160	8,910	30,560	35,450
1981-82	125,210	9,870	42,110	9,010	31,440	32,780
1982-83	123,750	9,850	41,530	7,720	32,400	32,250
1983-84	122,440	9,730	40,530	7,750	32,920	31,510
1984-85	120,160	9,540	39,220	7,750	33,070	30,580
1985-86	120,560	9,480	38,880	7,990	33,790	30,420
1986-87	118,380	9,380	37,650	8,020	33,800	29,530
1987-88	118,670	9,340	37,290	8,220	34,540	29,280
1988-89	118,890	9,300	37,100	8,550	35,300	28,640

See footnotes at end of table.

Table 18.—Earned bachelor's degrees, with projections, by field of study: United States, 1968-69 to 1988-89—Cont.

Table 18C.—Engineering, mathematics, and physical sciences

Year	Total	Mathematics & statistics	Computer & information sciences	Engineering	Engineering technologies	Physical sciences
1968-69	95,139	27,209	933	41,248	4,269	21,480
1969-70	100,103	27,442	1,544	44,479	5,199	21,439
1970-71	98,647	24,801	2,388	44,898	5,148	21,412
1971-72	99,024	23,713	3,402	45,392	5,772	20,745
1972-73	99,332	23,067	4,304	46,411	4,854	20,696
1973-74	97,855	21,635	4,756	42,840	7,446	21,178
1974-75	90,844	18,181	5,033	39,388	7,464	20,778
1975-76	89,432	15,984	5,652	38,388	7,943	21,465
1976-77	92,383	14,196	6,407	40,936	8,347	22,497
1977-78	98,410	12,569	7,201	46,869	8,785	22,986
			Projected[1]			
1978-79	108,560	10,790	7,480	58,010	8,960	23,320
1979-80	115,080	9,260	8,040	64,200	9,570	24,010
1980-81	119,830	8,120	8,730	68,210	10,110	24,660
1981-82	129,090	7,940	9,130	76,060	10,550	25,410
1982-83	130,030	7,960	9,660	75,130	10,910	26,370
1983-84	128,500	7,940	9,810	73,400	11,160	26,190
1984-85	126,140	7,900	9,830	71,470	11,330	25,610
1985-86	123,940	8,020	9,800	69,330	11,480	25,310
1986-87	121,180	8,000	9,780	67,060	11,560	24,780
1987-88	119,850	8,100	9,940	65,490	11,730	24,590
1988-89	119,340	8,180	10,110	64,340	11,970	24,740

Table 18D.—Life sciences & miscellaneous fields

Year	Total life sciences	Biological sciences	Agriculture & natural resources	Health professions	Total miscellaneous fields	Business & management: Accounting	Business & management	Education	Other[2]
1968-69	66,184	34,989	10,965	20,230	267,227	20,032	74,501	148,554	24,140
1969-70	71,594	37,031	12,382	22,181	295,889	21,183	84,871	161,904	27,931
1970-71	73,641	35,743	12,672	25,226	321,678	22,099	93,428	176,571	29,580
1971-72	79,420	37,293	13,516	28,611	346,348	24,801	97,208	191,172	33,167
1972-73	90,553	42,233	14,756	33,564	359,126	27,947	98,883	194,210	38,086
1973-74	106,052	48,340	16,253	41,459	362,470	29,341	103,043	185,181	44,905
1974-75	118,359	51,741	17,528	49,090	351,365	31,116	102,706	166,969	50,574
1975-76	127,635	54,275	19,402	53,958	355,274	35,806	107,630	154,758	57,080
1976-77	132,400	53,605	21,467	57,328	354,698	39,183	112,905	143,658	58,952
1977-78	133,586	51,502	22,650	59,434	357,967	40,145	121,126	136,079	60,617
					Projected[1]				
1978-79	136,240	53,070	23,210	59,960	363,290	43,420	123,560	133,620	62,690
1979-80	142,080	54,800	24,580	62,700	369,330	46,470	127,990	129,130	65,740
1980-81	148,330	55,890	25,740	66,700	368,720	48,490	131,170	121,470	67,590
1981-82	152,130	57,480	26,430	68,220	373,080	50,070	135,100	117,140	70,770
1982-83	153,740	57,570	27,080	69,090	366,780	50,120	137,010	108,430	71,520
1983-84	153,920	57,080	27,550	69,290	360,330	48,880	138,930	100,940	71,580
1984-85	152,820	56,140	27,800	68,880	351,760	47,350	140,000	93,390	71,020
1985-86	154,800	55,980	27,920	70,900	351,450	46,360	144,160	88,840	72,090
1986-87	153,350	54,910	28,000	70,440	342,240	44,810	144,040	81,950	71,440
1987-88	154,830	54,870	28,070	71,890	340,310	44,040	146,680	77,270	72,320
1988-89	157,050	55,030	28,550	73,470	339,350	43,520	148,820	73,530	73,480

[1]For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.

[2]Includes home economics, law, military science, theology, and interdisciplinary studies.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: (1) U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publications: (a) *Earned Degrees Conferred by Institutions of Higher Education*, (b) *A Taxonomy of Instructional Programs in Higher Education*; (2) Engineering Manpower Commission, Engineers Joint Council publication: *Engineering and Technology Enrollments Fall 1978*; and (3) American Institute of Certified Public Accountants publication: *The Supply of Accounting Graduates and the Demand for Public Accounting Recruits*, Spring 1979.

Table 19.—Earned bachelor's degrees conferred on men, with projections, by field of study: United States 1968-69 to 1988-89

Table 19A.—Social sciences

Year	Total	Social sciences	Psychology	Public affairs & services	Library sciences
1968-69	106,114	88,241	16,714	1,093	64
1969-70	117,026	96,697	18,996	1,247	86
1970-71	125,152	99,319	21,029	4,723	81
1971-72	132,196	102,365	23,159	6,606	66
1972-73	135,956	101,373	24,976	9,520	87
1973-74	136,767	97,348	25,705	13,628	86
1974-75	126,214	86,450	24,190	15,494	80
1975-76	121,943	80,235	22,832	18,818	58
1976-77	113,267	72,542	20,553	20,101	71
1977-78	105,788	68,506	18,348	18,854	80
			Projected[1]		
1978-79	102,880	65,100	18,870	18,830	80
1979-80	99,000	61,560	18,380	18,980	80
1980-81	94,880	57,830	17,840	19,130	80
1981-82	89,820	53,340	17,120	19,280	80
1982-83	88,650	52,840	16,300	19,430	80
1983-84	86,740	51,740	15,340	19,580	80
1984-85	84,490	50,350	14,330	19,730	80
1985-86	81,970	48,690	13,320	19,880	80
1986-87	79,520	47,100	12,320	20,030	70
1987-88	77,680	45,970	11,460	20,180	70
1988-89	76,240	45,150	10,690	20,330	70

Table 19B.—Humanities

Year	Total	Architecture & environmental design	Fine and applied arts	Foreign languages	Communications	Letters
1968-69	49,241	3,327	12,933	5,778	3,003	24,200
1969-70	53,272	3,888	15,347	5,531	3,533	24,973
1970-71	57,772	4,906	12,256	5,075	6,989	28,546
1971-72	61,254	5,667	13,580	4,748	7,964	29,295
1972-73	63,224	6,042	14,267	4,608	9,074	29,233
1973-74	64,885	6,665	15,821	4,529	10,536	27,334
1974-75	62,572	6,791	15,532	4,121	11,455	24,673
1975-76	62,424	7,396	16,491	3,664	12,458	22,415
1976-77	60,182	7,249	16,166	3,371	12,932	20,464
1977-78	58,205	7,054	15,572	3,074	13,480	19,025
				Projected[1]		
1978-79	57,310	7,150	15,410	2,820	13,810	18,120
1979-80	57,170	7,320	15,610	2,580	14,660	17,000
1980-81	56,770	7,310	15,790	2,320	15,490	15,860
1981-82	55,540	7,330	15,650	2,310	15,730	14,520
1982-83	55,050	7,160	15,360	2,020	16,100	14,410
1983-84	54,080	6,890	14,830	1,980	16,210	14,170
1984-85	52,700	6,560	14,190	1,930	16,170	13,850
1985-86	51,170	6,500	13,370	1,880	15,920	13,500
1986-87	49,710	6,280	12,710	1,820	15,780	13,120
1987-88	48,830	6,230	12,170	1,800	15,760	12,870
1988-89	48,290	6,150	11,760	1,800	15,890	12,690

See footnote at end of table.

Table 19.—Earned bachelor's degrees conferred on men, with projections, by field of study: United States 1968-69 to 1988-89—Cont.

Table 19C.—Engineering, mathematics, and physical sciences

Year	Total	Mathematics & statistics	Computer & information sciences	Engineering	Engineering technologies	Physical sciences
1968-69	81,600	17,040	812	40,939	4,249	18,560
1969-70	86,340	17,177	1,345	44,149	5,147	18,522
1970-71	85,538	15,369	2,064	44,540	5,106	18,459
1971-72	85,696	14,454	2,941	44,912	5,726	17,663
1972-73	85,738	13,796	3,664	45,850	4,802	17,626
1973-74	83,931	12,791	3,976	42,149	7,341	17,674
1974-75	77,496	10,586	4,080	38,566	7,272	16,992
1975-76	76,233	9,473	4,534	37,093	7,778	17,353
1976-77	78,240	8,303	4,876	38,914	8,151	17,996
1977-78	82,782	7,398	5,349	43,405	8,540	18,090
			Projected[1]			
1978-79	92,300	6,340	5,380	53,780	8,700	18,100
1979-80	97,740	5,380	5,900	58,730	9,280	18,450
1980-81	102,120	5,000	6,510	62,000	9,790	18,820
1981-82	109,280	4,860	6,720	68,450	10,200	19,050
1982-83	110,130	4,840	7,210	67,740	10,550	19,790
1983-84	108,630	4,780	7,350	66,270	10,780	19,450
1984-85	106,490	4,710	7,190	64,660	10,940	18,990
1985-86	103,590	4,630	7,060	62,520	11,060	18,320
1986-87	100,980	4,540	6,970	60,530	11,140	17,800
1987-88	99,260	4,480	7,030	59,030	11,300	17,420
1988-89	98,230	4,440	7,180	57,920	11,510	17,180

Table 19D.—Life sciences and miscellaneous fields

Year	Total life sciences	Biological sciences	Agriculture & natural resources	Health professions	Total miscellaneous fields	Business & Accounting management	Education	Other[2]
1968-69	40,402	25,183	10,550	4,669	133,428	18,460 67,737	35,901	11,330
1969-70	43,663	26,660	11,876	5,127	151,079	19,343 77,472	40,969	13,295
1970-71	43,257	25,333	12,136	5,788	163,875	20,036 85,024	45,089	13,726
1971-72	46,107	26,323	12,779	7,005	175,337	22,307 88,110	49,531	15,389
1972-73	51,051	29,636	13,661	7,754	182,222	24,710 88,735	51,433	17,344
1973-74	57,317	33,245	14,684	9,388	184,413	25,313 90,125	49,141	19,834
1974-75	60,603	34,612	15,061	10,930	177,956	25,601 86,557	44,547	21,251
1975-76	62,821	35,520	15,845	11,456	181,504	28,161 87,064	42,046	24,233
1976-77	62,855	34,218	16,690	11,947	181,001	29,241 87,264	39,918	24,578
1977-78	60,367	31,705	17,069	11,593	180,205	28,345 89,166	37,463	25,231
				Projected[1]				
1978-79	61,890	32,450	17,530	11,910	180,420	30,270 89,610	34,820	25,720
1979-80	63,810	33,390	18,250	12,170	181,980	31,900 90,240	32,950	26,890
1980-81	65,630	34,260	18,950	12,420	183,000	33,110 90,850	31,000	28,040
1981-82	66,760	34,610	19,480	12,670	182,200	33,340 91,550	28,550	28,760
1982-83	67,480	34,670	19,870	12,940	180,390	33,010 92,270	25,890	29,220
1983-84	67,520	34,280	20,050	13,190	179,330	32,250 92,530	25,250	29,300
1984-85	67,220	33,650	20,120	13,450	177,500	31,300 92,580	24,460	29,160
1985-86	66,560	32,750	20,110	13,700	175,610	30,120 93,360	23,350	28,780
1986-87	65,900	31,910	20,040	13,950	172,190	29,050 92,310	22,370	28,460
1987-88	65,740	31,390	20,140	14,210	170,490	28,270 92,230	21,610	28,380
1988-89	65,860	31,070	20,320	14,470	169,780	27,700 92,150	21,430	28,500

[1] For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.

[2] Includes home economics, law, military science, theology, and interdisciplinary studies.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: (1) U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publications: (a) *Earned Degrees Conferred by Institutions of Higher Education*, (b) *A Taxonomy of Instructional Programs in Higher Education*; (2) Engineering Manpower Commission, Engineers Joint Council publication: *Engineering and Technology Enrollments, Fall 1978*; and (3) American Institute of Certified Public Accountants publication: *The Supply of Accounting Graduates and the Demand for Public Accounting Recruits*, Spring 1979.

Table 20.—Earned bachelor's degrees conferred on women, with projections, by field of study: United States, 1968-69 to 1988-89

Table 20A.—Social sciences

Year	Total	Social sciences	Psychology	Public affairs & services	Library sciences
1968-69	66,502	50,235	12,581	2,750	936
1969-70	73,369	54,694	14,540	3,167	968
1970-71	80,779	58,499	16,851	4,497	932
1971-72	85,572	58,716	19,934	5,999	923
1972-73	90,175	58,061	22,719	8,323	1,072
1973-74	94,187	56,671	26,116	10,322	1,078
1974-75	92,712	52,259	26,798	12,666	989
1975-76	91,910	49,629	27,076	14,420	785
1976-77	91,557	47,787	26,820	16,240	710
1977-78	92,788	47,578	26,211	18,386	613
Projected[1]					
1978-79	93,370	46,770	26,630	19,380	590
1979-80	94,730	46,150	26,940	21,100	540
1980-81	94,360	44,190	26,510	23,190	470
1981-82	95,770	44,160	27,180	24,010	420
1982-83	93,250	41,890	26,480	24,480	400
1983-84	89,970	39,470	25,610	24,500	390
1984-85	85,930	36,860	24,560	24,140	370
1985-86	85,880	36,010	24,620	24,880	370
1986-87	82,230	33,760	23,700	24,410	360
1987-88	81,460	32,610	23,520	24,980	350
1988-89	80,930	31,570	23,420	25,590	350

Table 20B.—Humanities

Year	Total	Architecture & environmental design	Fine and applied arts	Foreign languages	Communications	Letters
1968-69	78,664	150	18,655	15,715	2,194	41,950
1969-70	81,403	217	20,554	15,364	2,426	42,842
1970-71	82,061	664	18,138	14,870	3,813	44,576
1971-72	84,459	773	20,251	14,101	4,376	43,958
1972-73	83,996	920	21,750	14,356	5,243	41,727
1973-74	83,560	1,157	23,909	14,311	6,560	37,623
1974-75	80,867	1,435	25,250	13,485	7,793	32,904
1975-76	77,128	1,750	25,647	11,807	8,824	29,100
1976-77	75,062	1,973	25,627	10,573	10,282	26,607
1977-78	74,460	2,196	25,379	9,656	11,920	25,309
Projected[1]						
1978-79	71,750	2,200	24,640	8,620	12,860	23,430
1979-80	71,410	2,250	25,410	7,750	14,160	21,840
1980-81	69,010	2,390	25,370	6,590	15,070	19,590
1981-82	69,670	2,540	26,460	6,700	15,710	18,260
1982-83	68,700	2,690	26,170	5,700	16,300	17,840
1983-84	68,360	2,840	25,700	5,770	16,710	17,340
1984-85	67,460	2,980	25,030	5,820	16,900	16,730
1985-86	69,390	2,980	25,510	6,110	17,870	16,920
1986-87	68,670	3,100	24,940	6,200	18,020	16,410
1987-88	69,840	3,110	25,120	6,420	18,780	16,410
1988-89	70,600	3,150	25,340	6,750	19,410	15,950

See footnotes at end of table.

Table 20.—Earned bachelor's degrees conferred on women, with projections, by field of study: United States, 1968-69 to 1988-89—Cont.

Table 20C.—Engineering, mathematics, and physical sciences

Year	Total	Mathematics & statistics	Computer & information sciences	Engineering	Engineering technologies	Physical sciences
1968-69	13,539	10,169	121	309	20	2,920
1969-70	13,763	10,265	199	330	52	2,917
1970-71	13,109	9,432	324	358	42	2,953
1971-72	13,328	9,259	461	480	46	3,082
1972-73	13,594	9,274	640	561	52	3,070
1973-74	13,924	8,844	780	691	105	3,504
1974-75	13,348	7,595	953	822	192	3,786
1975-76	13,199	6,509	1,318	1,295	165	4,512
1976-77	14,143	5,893	1,531	2,022	196	4,501
1977-78	15,628	5,171	1,852	3,464	245	4,896
Projected[1]						
1978-79	16,260	4,450	2,100	4,230	260	5,220
1979-80	17,340	3,880	2,140	5,470	290	5,560
1980-81	17,710	3,120	2,220	6,210	320	5,840
1981-82	19,810	3,080	2,410	7,610	350	6,360
1982-83	19,900	3,120	2,450	7,390	360	6,580
1983-84	19,870	3,160	2,460	7,130	380	6,740
1984-85	19,650	3,190	2,640	6,810	390	6,620
1985-86	20,350	3,390	2,740	6,810	420	6,990
1986-87	20,200	3,460	2,810	6,530	420	6,980
1987-88	20,590	3,620	2,910	6,460	430	7,170
1988-89	21,110	3,740	2,930	6,420	460	7,560

Table 20D.—Life sciences and miscellaneous fields

Year	Total life sciences	Biological sciences	Agriculture & natural resources	Health professions	Total miscellaneous fields	Business & Accounting	Business & management	Education	Other[2]
1968-69	25,782	9,806	415	15,561	133,799	1,572	6,764	112,653	12,810
1969-70	27,931	10,371	506	17,054	144,810	1,840	7,399	120,935	14,636
1970-71	30,384	10,410	536	19,438	157,803	2,063	8,404	131,482	15,854
1971-72	33,313	10,970	737	21,606	171,011	2,494	9,098	141,641	17,778
1972-73	39,502	12,597	1,095	25,810	176,904	3,237	10,148	142,777	20,742
1973-74	48,735	15,095	1,569	32,071	178,057	4,028	12,918	136,040	25,071
1974-75	57,756	17,129	2,467	38,160	173,409	5,515	16,149	122,422	29,323
1975-76	64,814	18,755	3,557	42,502	173,770	7,645	20,566	112,712	32,847
1976-77	69,545	19,387	4,777	45,381	173,697	9,942	25,641	103,740	34,374
1977-78	73,219	19,797	5,581	47,841	177,762	11,800	31,960	98,616	35,386
Projected[1]									
1978-79	74,350	20,620	5,680	48,050	182,870	13,150	33,950	98,800	36,970
1979-80	78,270	21,410	6,330	50,530	187,350	14,570	37,750	96,180	38,850
1980-81	82,700	21,630	6,790	54,280	185,720	15,380	40,320	90,470	39,550
1981-82	85,370	22,870	6,950	55,550	190,880	16,730	43,550	88,590	42,010
1982-83	86,260	22,900	7,210	56,150	186,390	17,110	44,740	82,240	42,300
1983-84	86,400	22,800	7,500	56,100	181,000	16,630	46,400	75,690	42,280
1984-85	85,600	22,490	7,680	55,430	174,260	16,050	47,420	68,930	41,860
1985-86	88,240	23,230	7,810	57,200	175,850	16,240	50,800	65,490	43,310
1986-87	87,450	23,000	7,960	56,490	170,050	15,760	51,730	59,580	42,980
1987-88	89,090	23,480	7,930	57,680	169,820	15,770	54,450	55,660	43,940
1988-89	91,190	23,960	8,230	59,000	169,570	15,820	56,670	52,100	44,980

[1]For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.

[2]Includes home economics, law, military science, theology, and interdisciplinary studies.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publication, *Earned Degrees Conferred by Institutions of Higher Education*.

Table 21.—Earned master's degrees, with projections, by field of study: United States, 1968-69 to 1988-89

Table 21A.—Social sciences

Year	Total	Social sciences	Psychology	Public affairs & services	Library sciences
1968-69	32,169	16,514	3,736	5,987	5,932
1969-70	33,878	16,659	3,953	6,755	6,511
1970-71	37,200	17,508	4,431	8,260	7,001
1971-72	40,454	18,417	5,289	9,365	7,383
1972-73	42,858	18,341	5,831	10,990	7,696
1973-74	45,591	18,409	6,588	12,460	8,134
1974-75	48,514	18,058	7,066	15,299	8,091
1975-76	49,773	16,819	7,811	17,106	8,037
1976-77	51,774	16,447	8,301	19,454	7,572
1977-78	50,586	15,559	8,160	19,953	6,914
			Projected[1]		
1978-79	49,790	15,420	8,470	19,510	6,390
1979-80	49,890	14,980	8,680	20,140	6,090
1980-81	51,180	14,450	8,850	20,960	6,920
1981-82	50,870	14,080	9,080	21,990	5,720
1982-83	51,540	13,670	9,290	23,020	5,560
1983-84	51,860	13,200	9,460	23,950	5,250
1984-85	52,830	12,830	9,690	25,060	5,250
1985-86	53,270	12,320	9,830	25,910	5,210
1986-87	53,660	11,820	9,940	26,710	5,190
1987-88	52,810	11,100	9,900	26,870	4,940
1988-89	52,780	10,500	9,930	27,480	4,870

Table 21B.—Humanities

Year	Total	Architecture & environmental design	Fine and applied arts	Foreign languages	Communications	Letters
1968-69	25,256	1,143	7,418	4,691	785	11,224
1969-70	26,305	1,427	7,849	4,803	862	11,364
1970-71	27,701	1,705	6,675	4,755	1,856	12,710
1971-72	28,975	1,899	7,537	4,616	2,200	12,723
1972-73	28,605	2,307	7,254	4,289	2,406	12,349
1973-74	29,433	2,702	8,001	3,964	2,640	12,126
1974-75	29,762	2,938	8,362	3,807	2,794	11,861
1975-76	29,982	3,215	8,817	3,531	3,126	11,293
1976-77	28,538	3,213	8,636	3,147	3,091	10,451
1977-78	28,184	3,115	9,036	2,726	3,296	10,011
			Projected[1]			
1978-79	28,400	3,080	9,450	2,600	3,470	9,800
1979-80	28,170	3,050	9,650	2,390	3,580	9,500
1980-81	27,910	2,990	9,880	2,130	3,700	9,210
1981-82	27,580	2,960	9,900	1,980	3,780	8,960
1982-83	27,580	2,940	9,940	1,980	3,780	8,940
1983-84	27,400	3,010	9,930	1,960	3,730	8,770
1984-85	27,330	3,030	9,980	1,960	3,700	8,660
1985-86	27,060	3,000	9,950	1,940	3,660	8,510
1986-87	26,830	2,980	9,940	1,930	3,630	8,350
1987-88	25,870	2,900	9,670	1,850	3,480	7,970
1988-89	25,300	2,830	9,540	1,820	3,400	7,710

See footnotes at end of table

Table 21.—Earned master's degrees, with projections, by field of study: United States, 1968-69 to 1988-89—Cont.

Table 21C.—Engineering, mathematics, and physical sciences

Year	Total	Mathematics & statistics	Computer & information sciences	Engineering	Physical sciences
1968-69	27,992	5,713	1,012	15,372	5,895
1969-70	28,753	5,636	1,459	15,723	5,935
1970-71	29,589	5,191	1,588	16,443	6,367
1971-72	30,422	5,198	1,977	16,960	6,287
1972-73	30,017	5,028	2,113	16,619	6,257
1973-74	28,551	4,834	2,276	15,379	6,062
1974-75	27,781	4,327	2,299	15,348	5,807
1975-76	28,268	3,857	2,603	16,342	5,466
1976-77	28,069	3,695	2,798	16,245	5,331
1977-78	28,370	3,373	3,038	16,398	5,561
			Projected[1]		
1978-79	28,520	3,100	3,220	16,470	5,730
1979-80	28,660	2,850	3,420	16,610	5,780
1980-81	28,240	2,540	3,580	16,380	5,740
1981-82	28,550	2,550	3,840	16,340	5,820
1982-83	28,920	2,550	4,050	16,440	5,880
1983-84	28,940	2,550	4,180	16,310	5,900
1984-85	29,200	2,560	4,340	16,310	5,990
1985-86	29,040	2,540	4,320	16,200	5,980
1986-87	28,990	2,530	4,280	16,200	5,980
1987-88	28,620	2,460	4,200	16,060	5,900
1988-89	28,340	2,420	4,140	15,930	5,850

Table 21D.—Life sciences and miscellaneous fields

Year	Total life sciences	Biological sciences	Agriculture & natural resources	Health professions	Total miscellaneous fields	Business & management: Accounting	Business & management	Education	Other[2]
1968-69	12,304	5,743	2,496	4,065	96,035	1,333	18,279	70,231	6,192
1969-70	12,485	5,800	2,197	4,488	106,870	1,083	20,516	78,275	6,996
1970-71	13,934	5,728	2,457	5,749	122,085	1,097	25,447	88,716	6,825
1971-72	15,988	6,101	2,680	7,207	135,794	1,377	29,056	97,880	7,481
1972-73	17,432	6,263	2,807	8,362	144,459	1,621	29,545	105,242	8,051
1973-74	19,079	6,552	2,928	9,599	154,379	1,798	30,955	112,252	9,374
1974-75	20,309	6,550	3,067	10,692	166,084	2,227	34,137	119,778	9,942
1975-76	22,478	6,582	3,340	12,556	181,270	2,730	39,890	127,948	10,702
1976-77	23,789	7,114	3,724	12,951	184,994	3,278	43,267	126,375	12,074
1977-78	25,154	6,806	4,023	14,325	179,326	3,354	45,130	118,582	12,260
					Projected[1]				
1978-79	25,810	6,840	4,060	14,910	181,730	3,380	46,560	119,000	12,790
1979-80	25,400	6,250	4,240	14,910	182,970	3,450	49,620	117,020	12,880
1980-81	26,870	6,880	4,370	15,620	181,650	3,760	50,680	113,910	13,300
1981-82	27,800	7,020	4,570	16,210	181,130	4,060	51,390	111,870	13,810
1982-83	28,730	7,120	4,760	16,850	179,530	4,310	52,090	108,820	14,310
1983-84	29,370	7,160	4,850	17,360	175,670	4,330	51,570	105,030	14,740
1984-85	30,200	7,170	4,990	18,040	173,680	4,330	51,940	102,120	15,290
1985-86	30,750	7,090	5,050	18,610	171,820	4,240	51,550	100,350	15,680
1986-87	31,260	6,990	5,100	19,170	169,730	4,130	51,130	98,390	16,080
1987-88	30,950	6,760	5,100	19,090	162,790	3,940	49,640	93,110	16,100
1988-89	31,020	6,570	5,120	19,330	157,970	3,790	48,410	89,460	16,310

[1]For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.

[2]Includes home economics, law, military science, theology, and interdisciplinary studies.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publication, *Earned Degrees Conferred by Institutions of Higher Education*.

Table 22.—Earned master's degrees conferred on men, with projections, by field of study: United States 1968-69 to 1988-89

Table 22A.—Social sciences

Year	Total	Social sciences	Psychology	Public affairs & services	Library sciences
1968-69	18,873	12,229	2,582	2,926	1,136
1969-70	18,631	11,865	2,479	3,183	1,104
1970-71	20,784	12,416	2,783	4,274	1,311
1971-72	22,855	13,107	3,259	5,005	1,484
1972-73	24,247	13,193	3,495	5,883	1,676
1973-74	25,635	12,998	3,971	6,863	1,803
1974-75	26,768	12,489	4,044	8,516	1,719
1975-76	26,694	11,374	4,171	9,408	1,741
1976-77	27,416	10,894	4,313	10,663	1,546
1977-78	26,015	10,267	3,919	10,445	1,384
			Projected[1]		
1978-79	24,730	9,910	4,010	9,610	1,200
1979-80	24,730	9,550	4,050	10,080	1,050
1980-81	24,410	9,040	4,040	10,290	1,040
1981-82	24,890	8,800	4,100	10,940	1,050
1982-83	25,170	8,480	4,130	11,500	1,060
1983-84	25,390	8,140	4,130	12,060	1,060
1984-85	25,820	7,850	4,190	12,710	1,070
1985-86	25,770	7,420	4,180	13,110	1,060
1986-87	25,760	7,010	4,210	13,480	1,060
1987-88	25,470	6,560	4,100	13,770	1,040
1988-89	25,280	6,120	3,920	14,210	1,030

Table 22B.—Humanities

Year	Total	Architecture & environmental design	Fine and applied arts	Foreign languages	Communications	Letters
1968-69	12,506	1,022	4,093	1,936	553	4,902
1969-70	12,404	1,260	4,158	1,755	561	4,670
1970-71	13,242	1,469	3,510	1,642	1,214	5,407
1971-72	14,117	1,626	4,049	1,616	1,443	5,383
1972-73	14,331	1,943	4,005	1,536	1,546	5,301
1973-74	14,825	2,208	4,325	1,344	1,668	5,280
1974-75	14,559	2,343	4,448	1,258	1,618	4,892
1975-76	14,760	2,545	4,507	1,178	1,818	4,712
1976-77	13,621	2,489	4,211	965	1,719	4,237
1977-78	12,929	2,304	4,327	795	1,673	3,830
			Projected[1]			
1978-79	12,600	2,210	4,300	700	1,690	3,700
1979-80	12,240	2,110	4,350	580	1,700	3,500
1980-81	11,680	1,980	4,310	450	1,710	3,230
1981-82	11,560	1,900	4,410	460	1,730	3,060
1982-83	11,570	1,810	4,480	460	1,740	3,080
1983-84	11,640	1,830	4,540	460	1,720	3,090
1984-85	11,770	1,850	4,620	470	1,710	3,120
1985-86	11,690	1,830	4,620	460	1,680	3,100
1986-87	11,660	1,820	4,640	460	1,660	3,080
1987-88	11,530	1,800	4,620	450	1,620	3,040
1988-89	11,420	1,760	4,610	450	1,600	3,000

See footnotes at end of table.

Table 22.—Earned master's degrees conferred on men, with projections, by field of study: United States 1968-69 to 1988-89—Cont.

Table 22C.—Engineering, mathematics, and physical sciences

Year	Total	Mathematics & statistics	Computer & information sciences	Engineering	Physical sciences
1968-69	25,652	4,222	939	15,259	5,232
1969-70	25,930	3,966	1,324	15,547	5,093
1970-71	26,876	3,673	1,424	16,258	5,521
1971-72	27,499	3,655	1,752	16,688	5,404
1972-73	27,168	3,525	1,768	16,341	5,414
1973-74	25,529	3,337	1,969	15,023	5,186
1974-75	24,808	2,905	1,934	14,973	4,969
1975-76	25,181	2,547	2,214	15,760	4,648
1976-77	24,703	2,396	2,332	15,525	4,450
1977-78	24,852	2,228	2,471	15,533	4,620
			Projected[1]		
1978-79	24,810	1,990	2,550		4,730
1979-80	24,780	1,820	2,680		4,750
1980-81	24,240	1,600	2,760		4,680
1981-82	24,510	1,620	2,940		4,850
1982-83	24,800	1,630	3,090		4,780
1983-84	24,870	1,620	3,230		4,800
1984-85	25,120	1,630	3,400		4,860
1985-86	24,950	1,610	3,380		4,830
1986-87	24,890	1,600	3,350	15,100	4,810
1987-88	24,640	1,590	3,310	14,960	4,760
1988-89	24,400	1,580	3,270	14,830	4,720

Table 22D.—[illegible] and miscellaneous fields

Year	Total life sciences	Biological sciences	Agriculture & natural resources	Health professions	Total miscellaneous fields	Accounting	Business & management	Education	Other[2]
1968-69	8,470	4,087	2,384	1,999	56,030	1,254	17,881	33,132	3,963
1969-70	8,187	3,975	2,059	2,153	60,472	1,004	19,826	35,251	4,391
1970-71	8,685	3,805	2,313	2,567	68,559	994	24,512	38,899	4,154
1971-72	9,718	4,087	2,490	3,141	75,361	1,269	27,963	41,728	4,401
1972-73	10,509	4,354	2,588	3,567	78,213	1,480	28,158	44,022	4,553
1973-74	11,014	4,555	2,640	3,819	80,839	1,610	28,990	45,004	5,235
1974-75	11,382	4,587	2,703	4,092	84,053	1,948	31,353	45,309	5,443
1975-76	11,576	4,493	2,862	4,217	88,037	2,252	35,410	45,659	5,716
1976-77	12,058	4,518	3,177	4,163	89,985	2,642	37,239	43,174	6,930
1977-78	11,933	4,400	3,268	4,263	85,483	2,633	37,668	38,281	6,901
					Projected[1]				
1978-79	11,630	4,220	3,130	4,280	85,000	2,500	38,230	37,300	6,970
1979-80	11,080	3,550	3,230	4,300	82,300	2,460	38,000	35,000	6,840
1980-81	11,640	4,060	3,280	4,300	80,740	2,460	38,600	32,500	6,990
1981-82	11,980	4,140	3,420	4,420	80,950	2,860	39,510	31,230	7,350
1982-83	12,200	4,160	3,530	4,510	80,510	3,000	40,220	29,830	7,660
1983-84	12,360	4,140	3,640	4,580	78,620	3,040	40,030	27,600	7,950
1984-85	12,640	4,160	3,780	4,700	77,430	3,040	40,450	25,640	8,300
1985-86	12,670	4,100	3,840	4,730	76,670	2,960	40,160	25,050	8,500
1986-87	12,700	4,020	3,910	4,770	75,880	2,860	39,890	24,410	8,720
1987-88	12,660	3,920	3,960	4,780	74,240	2,730	39,090	23,550	8,870
1988-89	12,600	3,800	4,010	4,790	72,540	2,600	38,230	22,680	9,030

[1]For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.

[2]Includes home economics, law, military science, theology, and interdisciplinary studies.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: U.S. Department of Health, Education and Welfare, National Center for Education Statistics, published annually: *Earned Degrees Conferred by Institutions of Higher Education*.

Table 23.—Earned master's degrees conferred on women, with projections, by field of study: United States 1968-69 to 1988-89

Table 23A.—Social sciences

Year	Total	Social sciences	Psychology	Public affairs & services	Library sciences
1968-69	13,296	4,285	1,054	3,061	4,796
1969-70	15,247	4,794	1,674	3,572	5,407
1970-71	16,416	5,092	1,648	3,986	5,690
1971-72	17,599	5,310	2,030	4,360	5,899
1972-73	18,611	5,148	2,336	5,107	6,020
1973-74	19,956	5,411	2,617	5,597	6,331
1974-75	21,746	5,569	3,022	6,783	6,372
1975-76	23,079	5,445	3,640	7,698	6,296
1976-77	24,358	5,553	3,988	8,791	6,026
1977-78	24,571	5,292	4,241	9,508	5,530
			Projected[1]		
1978-79	25,060	5,510	4,460	9,900	5,190
1979-80	25,160	5,430	4,630	10,060	5,040
1980-81	26,770	5,410	4,810	10,670	5,880
1981-82	25,980	5,280	4,980	11,050	4,670
1982-83	26,370	5,190	5,160	11,520	4,500
1983-84	26,470	5,060	5,230	11,890	4,190
1984-85	27,010	4,980	5,500	12,350	4,180
1985-86	27,500	4,900	5,650	12,800	4,150
1986-87	27,900	4,810	5,730	13,230	4,130
1987-88	27,340	4,540	5,800	13,100	3,900
1988-89	27,500	4,380	6,010	13,270	3,840

Table 23B.—Humanities

Year	Total	Architecture & environmental design	Fine and applied arts	Foreign languages	Communications	Letters
1968-69	12,750	121	1,220	2,235	232	6,322
1969-70	13,901	167	3,691	3,048	301	6,694
1970-71	14,459	236	3,165	3,113	642	7,303
1971-72	14,858	273	3,488	3,000	757	7,340
1972-73	14,274	364	3,249	2,753	860	7,048
1973-74	14,608	494	3,376	2,620	972	6,846
1974-75	15,203	595	3,914	2,549	1,176	6,969
1975-76	15,222	670	4,390	2,353	1,308	6,581
1976-77	14,917	724	4,425	2,182	1,372	6,214
1977-78	15,255	811	4,709	1,931	1,623	6,181
			Projected[1]			
1978-79	15,800	870	5,150	1,900	1,780	6,100
1979-80	15,930	940	5,300	1,810	1,880	6,000
1980-81	16,230	1,010	5,570	1,680	1,990	5,980
1981-82	16,020	1,060	5,490	1,520	2,050	5,900
1982-83	16,010	1,130	5,460	1,520	2,040	5,860
1983-84	15,760	1,180	5,390	1,500	2,010	5,680
1984-85	15,560	1,180	5,360	1,490	1,990	5,540
1985-86	15,370	1,170	5,330	1,480	1,980	5,410
1986-87	15,170	1,160	5,300	1,470	1,970	5,270
1987-88	14,340	1,100	5,050	1,400	1,860	4,930
1988-89	13,880	1,070	4,930	1,370	1,800	4,710

See footnotes at end of table.

Table 23.—Earned master's degrees conferred on women with projections, by field of study: United States, 1968-69 to 1988-89—Cont.

Table 23C.—Engineering, mathematics, and physical sciences

Year	Total	Mathematics & statistics	Computer & information sciences	Engineering	Physical sciences
1968-69	2,340	1,491	73	113	663
1969-70	2,823	1,670	135	176	842
1970-71	2,713	1,518	164	185	846
1971-72	2,923	1,543	225	272	883
1972-73	2,849	1,503	225	278	843
1973-74	3,022	1,497	293	356	876
1974-75	2,973	1,422	338	375	838
1975-76	3,087	1,310	377	582	818
1976-77	3,366	1,299	466	720	881
1977-78	3,518	1,145	567	865	941
Projected[1]					
1978-79	3,710	1,110	670	930	1,000
1979-80	3,880	1,030	740	1,080	1,030
1980-81	4,000	940	820	1,180	1,060
1981-82	4,040	930	900	1,140	1,070
1982-83	4,120	920	960	1,140	1,100
1983-84	4,070	910	950	1,110	1,100
1984-85	4,080	900	940	1,110	1,130
1985-86	4,090	900	940	1,100	1,150
1986-87	4,100	900	930	1,100	1,170
1987-88	4,080	850	890	1,100	1,140
1988-89	3,940	830	870	1,100	1,140

Table 23D.—Life sciences and miscellaneous fields

Year	Total life sciences	Biological sciences	Agriculture & natural resources	Health professions	Total miscellaneous fields	Business & management	Accounting	Education	Other[2]
1968-69	3,834	1,656	112	2,066	40,005	79	598	37,099	2,229
1969-70	4,298	1,825	138	2,335	46,398	52	690	43,024	2,605
1970-71	5,249	1,923	144	3,182	53,526	103	935	49,817	2,671
1971-72	6,270	2,014	190	4,066	60,433	108	1,093	56,152	3,080
1972-73	6,923	1,909	219	4,795	66,246	141	1,387	61,220	3,498
1973-74	8,065	1,997	288	5,780	73,540	188	1,965	67,248	4,139
1974-75	8,927	1,963	364	6,600	82,031	279	2,784	74,469	4,499
1975-76	10,902	2,085	478	8,339	92,233	478	4,480	82,289	4,986
1976-77	11,731	2,396	547	8,788	95,009	636	6,028	83,201	5,144
1977-78	13,221	2,406	755	10,060	93,843	721	7,462	80,301	5,359
Projected[1]									
1978-79	14,180	2,620	930	10,630	96,730	880	8,330	81,700	5,820
1979-80	14,320	2,700	1,010	10,610	100,670	990	11,620	82,020	6,040
1980-81	15,230	2,820	1,090	11,320	100,910	1,110	12,080	81,410	6,310
1981-82	15,820	2,880	1,150	11,790	100,180	1,200	11,880	80,640	6,460
1982-83	16,530	2,960	1,230	12,340	99,020	1,310	11,870	79,190	6,650
1983-84	17,010	3,020	1,210	12,780	97,050	1,290	11,540	77,430	6,790
1984-85	17,560	3,010	1,210	13,340	96,250	1,290	11,490	76,480	6,990
1985-86	18,080	2,990	1,210	13,880	95,150	1,280	11,390	75,300	7,180
1986-87	18,560	2,970	1,190	14,400	93,850	1,270	11,240	73,980	7,360
1987-88	18,290	2,840	1,140	14,310	88,550	1,210	10,550	69,560	7,230
1988-89	18,420	2,770	1,110	14,540	85,430	1,190	10,180	66,780	7,280

[1]For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.

[2]Includes home economics, law, military science, theology, and interdisciplinary studies.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publication, *Earned Degrees Conferred by Institutions of Higher Education*.

Table 24.—Earned doctor's degrees (except first-professional), with projections, by field of study: United States, 1968-69 to 1988-89

Table 24A.—Social sciences

Year	Total	Social sciences	Psychology	Public affairs & services	Library sciences
1968-69	4,599	2,953	1,508	121	17
1969-70	5,383	3,492	1,620	131	40
1970-71	5,802	3,803	1,782	178	39
1971-72	6,389	4,233	1,881	211	64
1972-73	6,803	4,393	2,089	219	102
1973-74	6,914	4,288	2,336	230	60
1974-75	7,157	4,374	2,442	285	56
1975-76	7,313	4,342	2,581	319	71
1976-77	7,108	3,937	2,761	335	75
1977-78	6,777	3,728	2,587	395	67
			Projected[1]		
1978-79	6,830	3,720	2,630	410	70
1979-80	6,970	3,780	2,670	450	70
1980-81	7,100	3,820	2,740	470	70
1981-82	7,070	3,750	2,740	510	70
1982-83	6,790	3,550	2,660	510	70
1983-84	6,600	3,390	2,610	530	70
1984-85	6,480	3,320	2,560	530	70
1985-86	6,370	3,250	2,510	540	70
1986-87	6,270	3,190	2,470	540	70
1987-88	6,150	3,130	2,410	540	70
1988-89	6,030	3,060	2,360	540	70

Table 24B.—Humanities

Year	Total	Architecture & environmental design	Fine and applied arts	Foreign languages	Communications	Letters
1968-69	3,124	32	684	659	22	1,727
1969-70	3,476	35	734	760	17	1,930
1970-71	3,999	36	621	781	145	2,416
1971-72	4,163	50	572	841	111	2,589
1972-73	4,558	58	616	991	139	2,754
1973-74	4,385	69	585	923	175	2,633
1974-75	4,238	69	649	857	165	2,498
1975-76	4,217	82	620	864	204	2,447
1976-77	3,857	73	662	752	171	2,199
1977-78	3,690	73	708	649	191	2,069
			Projected[1]			
1978-79	3,670	80	710	640	200	2,040
1979-80	3,720	70	770	610	210	2,060
1980-81	3,580	70	780	560	210	1,960
1981-82	3,430	70	800	490	220	1,850
1982-83	3,270	70	800	470	220	1,710
1984-85	3,110	70	770	450	210	1,610
1985-86	3,050	70	760	440	210	1,570
1986-87	2,980	70	740	440	200	1,530
1987-88	2,910	70	730	420	200	1,490
1988-89	2,860	70	720	420	200	1,450

See footnotes at end of table.

Table 24.—Earned doctor's degrees (except first-professional), with projections, by field of study: United States, 1968-69 to 1988-89—Cont.

Table 24C.—Engineering, mathematics, and physical sciences

Year	Total	Mathematics & statistics	Computer & information sciences	Engineering	Physical sciences
1968-69	8,411	1,097	64	3,391	3,859
1969-70	9,346	1,236	107	3,691	4,312
1970-71	9,355	1,199	128	3,638	4,390
1971-72	9,069	1,128	167	3,671	4,103
1972-73	8,762	1,068	196	3,492	4,006
1973-74	8,167	1,031	198	3,312	3,626
1974-75	7,922	975	213	3,108	3,626
1975-76	7,352	856	244	2,821	3,431
1976-77	6,966	823	216	2,586	3,341
1977-78	6,574	805	196	2,440	3,133
			Projected[1]		
1978-79	6,310	750	200	2,320	3,040
1979-80	6,340	760	200	2,290	3,090
1980-81	6,150	700	190	2,300	2,960
1981-82	6,010	650	180	2,330	2,850
1982-83	5,860	630	180	2,270	2,780
1983-84	5,760	620	180	2,230	2,730
1984-85	5,610	610	170	2,170	2,660
1985-86	5,510	600	170	2,130	2,610
1986-87	5,400	580	170	2,090	2,560
1987-88	5,290	570	160	2,050	2,510
1988-89	5,160	550	160	2,000	2,450

Table 24D.—Life sciences and miscellaneous fields

Year	Total life sciences	Biological sciences	Agriculture & natural resources	Health professions	Total miscellaneous fields	Accounting	Business & management	Education	Other[2]
1968-69	4,220	3,051	886	283	5,834	40	506	4,793	495
1969-70	4,650	3,289	1,004	357	7,011	56	566	5,830	559
1970-71	5,197	3,645	1,086	466	7,754	61	749	6,398	546
1971-72	5,066	3,653	971	442	8,676	51	851	7,041	733
1972-73	5,341	3,636	1,059	646	9,313	83	849	7,314	1,067
1973-74	4,947	3,439	930	578	9,403	70	913	7,293	1,127
1974-75	4,993	3,384	991	618	9,773	60	951	7,443	1,319
1975-76	4,897	3,392	928	577	10,285	55	901	7,769	1,560
1976-77	4,828	3,397	893	538	10,473	53	816	7,955	1,649
1977-78	4,934	3,309	971	654	10,156	44	823	7,586	1,703
					Projected[1]				
1978-79	5,010	3,350	1,000	660	10,180	50	860	7,490	1,780
1979-80	5,240	3,420	1,080	740	10,480	50	870	7,610	1,950
1980-81	5,370	3,510	1,100	760	10,780	50	930	7,760	2,040
1981-82	5,380	3,480	1,120	780	10,760	40	930	7,640	2,150
1982-83	5,240	3,350	1,110	780	10,540	40	900	7,420	2,180
1983-84	5,120	3,250	1,100	770	10,340	40	880	7,240	2,180
1984-85	4,970	3,140	1,080	750	10,240	40	860	7,140	2,200
1985-86	4,860	3,040	1,080	740	10,040	40	830	7,010	2,160
1986-87	4,740	2,950	1,070	720	9,850	40	820	6,880	2,110
1987-88	4,630	2,850	1,070	710	9,650	40	800	6,740	2,070
1988-89	4,510	2,760	1,060	690	9,390	40	780	6,550	2,020

[1]For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.
[2]Includes home economics, law, military science, theology, and interdisciplinary studies.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publication, *Earned Degrees Conferred by Institutions of Higher Education*.

Table 25.—Earned doctor's degrees (except first-professional) conferred on men, with projections, by field of study: United States, 1968-69 to 1988-89

Table 25A.—Social sciences

Year	Total	Social sciences	Psychology	Public affairs & services	Library sciences
1968-69	3,846	2,584	1,163	87	12
1969-70	4,515	3,131	1,263	97	24
1970-71	4,790	3,272	1,355	135	28
1971-72	5,222	3,607	1,414	165	36
1972-73	5,407	3,686	1,484	177	60
1973-74	5,359	3,499	1,645	179	36
1974-75	5,396	3,459	1,688	216	33
1975-76	5,402	3,384	1,762	217	39
1976-77	5,083	3,053	1,770	225	35
1977-78	4,744	2,813	1,621	267	43
Projected[1]					
1978-79	4,730	2,800	1,620	270	40
1979-80	4,730	2,800	1,600	290	40
1980-81	4,910	2,880	1,690	300	40
1981-82	4,930	2,840	1,720	330	40
1982-83	4,710	2,670	1,670	330	40
1983-84	4,530	2,520	1,640	330	40
1984-85	4,440	2,460	1,600	340	40
1985-86	4,370	2,410	1,570	350	40
1986-87	4,290	2,360	1,540	350	40
1987-88	4,210	2,310	1,500	360	40
1988-89	4,130	2,260	1,470	360	40

Table 25B.—Humanities

Year	Total	Architecture & environmental design	Fine and applied arts	Foreign languages	Communications	Letters
1968-69	2,318	31	565	424	20	1,278
1969-70	2,591	33	592	493	17	1,456
1970-71	2,975	33	483	484	126	1,849
1971-72	2,979	43	428	526	96	1,886
1972-73	3,134	54	449	592	114	1,925
1973-74	2,960	65	440	520	146	1,789
1974-75	2,726	58	446	455	119	1,648
1975-76	2,674	69	447	450	154	1,554
1976-77	2,362	62	447	365	130	1,358
1977-78	2,198	57	448	294	138	1,261
Projected[1]						
1978-79	2,180	60	450	290	140	1,240
1979-80	2,170	50	480	260	150	1,230
1980-81	2,090	50	480	240	150	1,170
1981-82	1,990	50	490	200	150	1,100
1982-83	1,870	50	480	190	150	1,000
1983-84	1,830	50	470	190	140	980
1984-85	1,790	50	460	180	150	950
1985-86	1,760	50	450	180	150	930
1986-87	1,720	50	440	180	140	910
1987-88	1,680	50	430	170	140	890
1988-89	1,650	50	420	170	140	870

See footnotes at end of table.

Table 25.—Earned doctor's degrees (except first-professional) conferred on men, with projections, by field of study: United States, 1968-69 to 1988-89—Cont.

Table 25C.—Engineering, mathematics, and physical sciences

Year	Total	Mathematics & statistics	Computer & information sciences	Engineering	Physical sciences
1968-69	8,123	1,029	62	3,379	3,653
1969-70	8,989	1,140	105	3,667	4,077
1970-71	8,990	1,106	125	3,615	4,144
1971-72	8,673	1,039	155	3,649	3,830
1972-73	8,323	966	181	3,438	3,738
1973-74	7,750	931	189	3,257	3,373
1974-75	7,431	865	199	3,042	3,325
1975-76	6,870	762	221	2,755	3,132
1976-77	6,446	714	197	2,513	3,022
1977-78	6,066	681	181	2,383	2,821
			Projected[1]		
1978-79	5,800	630	180	2,260	2,730
1979-80	5,800	630	180	2,230	2,760
1980-81	5,640	580	170	2,250	2,640
1981-82	5,510	530	160	2,280	2,540
1982-83	5,380	520	160	2,220	2,480
1983-84	5,280	510	160	2,180	2,430
1984-85	5,140	500	150	2,120	2,370
1985-86	5,040	490	150	2,080	2,320
1986-87	4,950	480	150	2,040	2,280
1987-88	4,840	470	140	2,000	2,230
1988-89	4,720	460	140	1,950	2,170

Table 25D.—Life sciences and miscellaneous fields

Year	Total life sciences	Biological sciences	Agricultore & natoral resoorces	Health professions	Total miscellaneous fields	Business & Accounting management		Edocation	Other[2]
1968-69	3,702	2,582	873	247	4,763	38	494	3,834	397
1969-70	4,095	2,820	976	299	5,700	53	559	4,638	450
1970-71	4,494	3,050	1,055	389	6,281	58	729	5,043	451
1971-72	4,338	3,031	945	362	6,878	51	831	5,381	615
1972-73	4,442	2,926	1,031	485	7,265	82	797	5,501	885
1973-74	4,084	2,740	897	447	7,212	66	867	5,316	963
1974-75	4,040	2,641	958	441	7,224	56	914	5,147	1,107
1975-76	3,941	2,663	867	411	7,380	50	854	5,176	1,300
1976-77	3,868	2,671	831	366	7,383	49	765	5,186	1,383
1977-78	3,822	2,511	909	402	6,828	41	754	4,630	1,403
					Projected[1]				
1978-79	3,880	2,530	940	410	6,790	40	780	4,510	1,460
1979-80	4,000	2,540	1,010	450	6,900	40	790	4,490	1,580
1980-81	4,120	2,630	1,030	460	6,950	40	840	4,400	1,670
1981-82	4,150	2,630	1,050	470	6,860	30	840	4,230	1,760
1982-83	4,020	2,520	1,040	460	6,730	30	820	4,110	1,770
1983-84	3,910	2,430	1,030	450	6,630	30	800	4,020	1,780
1984-85	3,790	2,340	1,010	440	6,550	30	780	3,940	1,800
1985-86	3,690	2,250	1,010	430	6,410	30	750	3,860	1,770
1986-87	3,590	2,170	1,000	420	6,280	30	740	3,780	1,730
1987-88	3,490	2,090	990	410	6,150	30	720	3,710	1,690
1988-89	3,390	2,010	980	400	5,970	30	700	3,590	1,650

[1]For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.

[2]Includes home economics, law, military science, theology, and interdisciplinary studies.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publication, *Earned Degrees Conferred by Institutions of Higher Education.*

Table 26.—Earned doctor's degrees (except first-professional) conferred on women, with projections, by field of study: United States, 1968-69 to 1988-89

Table 26A.—Social sciences

Year	Total	Social sciences	Psychology	Public affairs & services	Library sciences
1968-69	753	369	345	34	5
1969-70	868	461	357	34	16
1970-71	1,012	531	427	43	11
1971-72	1,167	626	467	46	28
1972-73	1,396	707	605	42	42
1973-74	1,555	789	691	51	24
1974-75	1,761	915	754	69	23
1975-76	1,911	958	819	102	32
1976-77	2,025	884	991	110	40
1977-78	2,033	915	966	128	24
			Projected[1]		
1978-79	2,100	920	1,010	140	30
1979-80	2,240	980	1,070	160	30
1980-81	2,190	940	1,050	170	30
1981-82	2,140	910	1,020	180	30
1982-83	2,080	880	990	180	30
1983-84	2,070	870	970	200	30
1984-85	2,040	860	960	190	30
1985-86	2,000	840	940	190	30
1986-87	1,980	830	930	190	30
1987-88	1,940	820	910	180	30
1988-89	1,900	800	890	180	30

Table 26B.—Humanities

Year	Total	Architecture & environmental design	Fine and applied arts	Foreign languages	Communications	Letters
1968-69	806	1	119	235	2	449
1969-70	885	2	142	267	0	474
1970-71	1,024	3	138	297	19	567
1971-72	1,184	7	144	315	15	703
1972-73	1,424	4	167	399	25	829
1973-74	1,425	4	145	403	29	844
1974-75	1,512	11	203	402	46	850
1975-76	1,543	13	173	414	50	893
1976-77	1,495	11	215	387	41	841
1977-78	1,452	16	260	355	53	808
			Projected[1]			
1978-79	1,490	20	260	350	60	800
1979-80	1,550	20	290	350	60	830
1980-81	1,490	20	300	320	60	790
1981-82	1,440	20	310	290	70	750
1982-83	1,400	20	320	280	70	710
1983-84	1,370	20	320	270	70	690
1984-85	1,320	20	310	270	60	660
1985-86	1,290	20	310	260	60	640
1986-87	1,260	20	300	260	60	620
1987-88	1,230	20	300	250	60	600
1988-89	1,210	20	300	250	60	580

See footnotes at end of table.

Table 26.—Earned doctor's degrees (except first-professional) conferred on women, with projections, by field of study: United States, 1968-69 to 1988-89—Cont.

Table 26C.—Engineering, mathematics, and physical sciences

Year	Total	Mathematics & statistics	Computer & information sciences	Engineering	Physical sciences[2]
1968-69	288	68	2	12	206
1969-70	357	96	2	24	235
1970-71	365	93	3	23	246
1971-72	396	89	12	22	273
1972-73	439	102	15	54	268
1973-74	417	100	9	55	253
1974-75	491	110	14	66	301
1975-76	482	94	23	66	299
1976-77	520	109	19	73	319
1977-78	508	124	15	57	312
Projected[1]					
1978-79	510	120	20	60	310
1979-80	540	130	20	60	330
1980-81	510	120	20	60	320
1981-82	500	120	20	50	310
1982-83	480	110	20	50	300
1983-84	480	110	20	50	300
1984-85	470	110	20	50	290
1985-86	470	110	20	50	290
1986-87	450	100	20	50	280
1987-88	450	100	20	50	280
1988-89	440	90	20	50	280

Table 26D.—Life sciences and miscellaneous fields

Year	Total life sciences	Biological sciences	Agriculture & natural resources	Health professions	Total miscellaneous fields	Business & management: Accounting	Business & management: Other	Education	Other[2]
1968-69	518	469	13	36	1,071	2	12	959	98
1969-70	555	469	28	58	1,311	3	7	1,192	109
1970-71	703	595	31	77	1,473	3	20	1,355	95
1971-72	728	622	26	80	1,798	0	20	1,660	118
1972-73	899	710	28	161	2,048	1	52	1,813	182
1973-74	863	699	33	131	2,191	4	46	1,937	164
1974-75	953	743	33	177	2,549	4	37	2,296	212
1975-76	956	729	61	166	2,905	5	47	2,593	260
1976-77	960	726	62	172	3,090	4	51	2,769	266
1977-78	1,112	798	62	252	3,328	3	69	2,956	300
Projected[1]									
1978-79	1,130	820	60	250	3,390	10	80	2,980	320
1979-80	1,240	880	70	290	3,580	10	80	3,120	370
1980-81	1,250	880	70	300	3,830	10	90	3,360	370
1981-82	1,230	850	70	310	3,900	10	90	3,410	390
1982-83	1,220	830	70	320	3,810	10	80	3,310	410
1983-84	1,210	820	70	320	3,710	10	80	3,220	400
1984-85	1,180	800	70	310	3,690	10	80	3,200	400
1985-86	1,170	790	70	310	3,630	10	80	3,150	390
1986-87	1,150	780	70	300	3,570	10	80	3,100	380
1987-88	1,140	760	80	300	3,500	10	80	3,030	380
1988-89	1,120	750	80	290	3,420	10	80	2,960	370

[1]For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.
[2]Includes home economics, law, military science, theology, and interdisciplinary studies.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publication, *Earned Degrees Conferred by Institutions of Higher Education*.

Table 27.—First-professional degrees, with projections, by field of study: United States 1968-69 to 1988-89

Table 27A.—Total

Year	Total	Medicine[1]	Dentistry[2]	Optometry	Osteopathic medicine	Pharmacy	Podiatric medicine	Veterinary medicine	Chiropractic	Law[3]	Theology[4]	Other
1968-69	35,114	8,025	3,408	463	427	...	254	1,146	...	17,053	4,338	...
1969-70	34,578	8,314	3,718	445	431	...	250	1,206	...	14,916	5,298	...
1970-71	37,946	8,919	3,745	531	472	...	240	1,252	...	17,421	5,055	311
1971-72	43,411	9,253	3,862	670	484	...	279	1,247	...	21,764	5,568	284
1972-73	50,018	10,307	4,047	771	523	...	278	1,299	...	27,205	5,283	305
1973-74	53,816	11,356	4,440	791	685	...	371	1,384	...	29,326	5,041	422
1974-75	55,916	12,447	4,773	792	665	...	351	1,415	...	29,296	5,095	1,082
1975-76	62,649	13,426	5,425	975	818	439	428	1,532	1,577	32,293	5,706	30
1976-77	63,359	12,461	5,138	953	852	527	486	1,586	1,368	34,104	5,861	23
1977-78	66,581	14,279	5,189	1,014	944	547	543	1,635	1,661	34,402	6,367	...
Projected[5]												
1978-79	67,830	15,010	5,310	1,000	1,030	580	570	1,650	1,680	34,600	6,400	...
1979-80	68,450	15,280	5,210	1,000	1,090	600	570	1,800	1,690	34,660	6,550	...
1980-81	69,560	15,830	5,380	1,020	1,170	620	580	1,890	1,700	34,770	6,600	...
1981-82	70,660	16,410	5,460	1,050	1,250	640	600	1,980	1,710	34,810	6,750	...
1982-83	71,710	17,030	5,460	1,050	1,300	660	600	2,110	1,710	34,900	6,890	...
1983-84	72,360	17,370	5,460	1,050	1,330	660	600	2,160	1,710	35,000	7,020	...
1984-85	72,860	17,480	5,460	1,070	1,340	660	620	2,250	1,710	35,100	7,170	...
1985-86	73,340	17,590	5,460	1,070	1,340	660	620	2,360	1,710	35,220	7,310	...
1986-87	73,780	17,690	5,460	1,070	1,350	660	620	2,420	1,710	35,350	7,450	...
1987-88	74,200	17,780	5,460	1,070	1,360	660	620	2,460	1,710	35,480	7,600	...
1988-89	74,570	17,840	5,460	1,070	1,360	660	620	2,480	1,710	35,630	7,740	...

[1] M.D. degrees only.
[2] D.D.S. or D.M.D. degrees.
[3] L.L.B. or J.D. degrees.
[4] B.D., M.Div., Rabbi or the first-professional degree in theology.
[5] For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publication, *Earned Degrees Conferred by Institutions of Higher Education*.

Table 27.—First-professional degrees, with projections, by field of study: United States 1968-69 to 1988-89—Cont.

Table 27B.—Men

Year	Total	Medicine[1]	Dentistry[2]	Optometry	Osteopathic medicine	Pharmacy	Podiatric medicine	Veterinary medicine	Chiropractic	Law[3]	Theology[4]	Other[5]
1968-69	33,595	7,415	3,376	455	419	...	251	1,079	...	16,373	4,227	...
1969-70	32,794	7,615	3,684	422	419	...	248	1,116	...	14,115	5,175	...
1970-71	35,544	8,110	3,703	518	461	...	235	1,154	...	16,181	4,937	245
1971-72	40,723	8,423	3,819	655	467	...	278	1,130	...	20,266	5,460	225
1972-73	46,489	9,388	3,992	751	508	...	277	1,166	...	25,037	5,101	269
1973-74	48,530	10,093	4,355	758	666	...	367	1,229	...	25,986	4,764	312
1974-75	48,956	10,818	4,627	752	630	...	347	1,190	...	24,881	4,748	963
1975-76	52,892	11,252	5,187	900	759	309	417	1,255	1,430	26,085	5,271	27
1976-77	52,374	10,891	4,764	848	777	382	470	1,224	1,252	26,447	5,307	12
1977-78	52,270	11,210	4,623	881	826	382	517	1,234	1,495	25,457	5,645	...
Projected[6]												
1978-79	52,590	11,500	4,660	850	890	400	540	1,190	1,500	25,390	5,670	...
1979-80	52,540	11,540	4,530	840	910	400	540	1,300	1,500	25,170	5,810	...
1980-81	53,030	11,890	4,680	860	980	400	540	1,360	1,500	25,000	5,820	...
1981-82	53,330	12,080	4,750	890	1,050	400	560	1,430	1,500	24,740	5,930	...
1982-83	53,580	12,300	4,750	890	1,090	400	560	1,520	1,500	24,530	6,040	...
1983-84	53,520	12,280	4,750	890	1,120	400	560	1,560	1,500	24,320	6,140	...
1984-85	53,330	12,110	4,750	900	1,120	400	580	1,620	1,500	24,100	6,250	...
1985-86	53,390	12,190	4,750	900	1,120	400	580	1,700	1,500	23,890	6,360	...
1986-87	53,410	12,260	4,750	900	1,130	400	580	1,740	1,500	23,680	6,470	...
1987-88	53,400	12,320	4,750	900	1,140	400	580	1,770	1,500	23,460	6,580	...
1988-89	53,360	12,360	4,750	900	1,140	400	580	1,790	1,500	23,250	6,690	...

[1] M.D. degrees only.
[2] D.D.S. or D.M.D. degrees.
[3] L.L.B. or J.D. degrees.
[4] B.D., M.Div., Rabbi or the first-professional degree in theology.
[5] For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publication, *Earned Degrees Conferred by Institutions of Higher Education*.

Table 27.—First-professional degrees, with projections, by field of study: United States 1968-69 to 1988-89—Cont.

Table 27C.—Women

Year	Total	Medicine[1]	Dentistry[2]	Optometry	Osteopathic medicine	Pharmacy	Podiatric medicine	Veterinary medicine	Chiropractic	Law[3]	Theology[4]	Other
1968-69	1,519	610	32	8	8	...	3	67	...	680	111	...
1969-70	1,784	699	34	23	12	...	2	90	...	801	123	...
1970-71	2,402	809	42	13	11	...	5	98	...	1,240	118	66
1971-72	2,688	830	43	15	17	...	1	117	...	1,498	108	59
1972-73	3,529	919	55	20	15	...	1	133	...	2,168	182	36
1973-74	5,286	1,263	85	33	19	...	4	155	...	3,340	277	110
1974-75	6,960	1,629	146	40	35	...	4	225	...	4,415	347	119
1975-76	9,757	2,174	258	75	59	130	11	277	147	6,208	435	3
1976-77	10,985	1,570	374	105	75	145	16	362	116	7,657	554	11
1977-78	14,311	3,069	566	133	118	165	26	401	166	8,945	722	...
Projected[5]												
1978-79	15,240	3,510	650	150	140	180	30	460	180	9,210	730	...
1979-80	15,910	3,740	680	160	180	200	30	500	190	9,490	740	...
1980-81	16,530	3,940	700	160	190	220	40	530	200	9,770	780	...
1981-82	17,330	4,330	710	160	200	240	40	550	210	10,070	820	...
1982-83	18,130	4,730	710	160	210	260	40	590	210	10,370	850	...
1983-84	18,840	5,090	710	160	210	260	40	600	210	10,680	880	...
1984-85	19,530	5,370	710	170	220	260	40	630	210	11,000	920	...
1985-86	19,950	5,400	710	170	220	260	40	660	210	11,330	950	...
1986-87	20,370	5,430	710	170	220	260	40	680	210	11,670	980	...
1987-88	20,800	5,460	710	170	220	260	40	690	210	12,020	1,020	...
1988-89	21,210	5,480	710	170	220	260	40	690	210	12,380	1,050	...

[1] M.D. degrees only
[2] D.D.S. or D.M.D. degrees
[3] L.L.B. or J.D. degrees
[4] B.D., M.Div., Rabbi or the first-professional degree in theology
[5] For methodological details, see appendix A, section A-2. For primary assumptions made, see appendix B, table B-2.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publication, *Earned Degrees Conferred by Institutions of Higher Education*.

Chapter III
INSTRUCTIONAL STAFF

Regular Elementary and Secondary Schools

Classroom teachers increased from 2.16 million in 1968 to 2.46 million in 1978. The number is expected to decrease to 2.36 million in 1982 and then begin increasing, reaching 2.50 million in 1988 (figure 21).

Enrollment in public elementary schools reached a peak of 27.7 million in 1971 and then began decreasing, reaching 25.1 million in 1978. But decreases in pupil-teacher ratios[1] over the same period (from 24.9 to 21.3) have more than offset the enrollment declines. As a result, there were 1.18 million teachers in public elementary schools in 1978, nearly 70,000 more than in 1971.

Over the next 5 years, enrollments are expected to continue to decrease from 25.1 million in 1978 to 22.8 million in 1983. However, pupil-teacher ratios in public elementary schools are not expected to decrease rapidly enough during the same period (from 21.3 in 1978 to 20.0 in 1983) to offset the drop of more than 2 million students. As a result, teachers are expected to drop to 1.14 million in 1983, 41,000 less than the 1978 number, but still 26,000 more than the number employed in 1971 when enrollment reached its peak.

Beginning in 1984, enrollment is expected to increase by more than 2 million, reaching 24.9 million in 1988. When combined with a continued gradual decline in pupil-teacher ratios (from 20.0 in 1983 to 18.9 in 1988), the number of classroom teachers should reach 1.32 million in 1988, an increase of 181,000 teachers over the 1983 level and 140,000 teachers over the 1978 level.

The above intermediate alternative classroom teacher projections are based primarily upon the assumption that pupil-teacher ratios will equal the average of the high and low alternative pupil-teacher projections. The high alternative pupil-teacher ratio projection, which yields low alternative teacher projections, is based on the assumption that pupil-teacher ratios will remain at about the 1978 level through 1988. The low alternative pupil-teacher ratio projection, which yields high classroom teacher projections, is based primarily on the assumption that pupil-teacher ratios will continue to decrease according to past trends, with the restriction that ratios cannot decrease below a lower limit (15.0 for secondary schools and 16.0 for elementary schools).

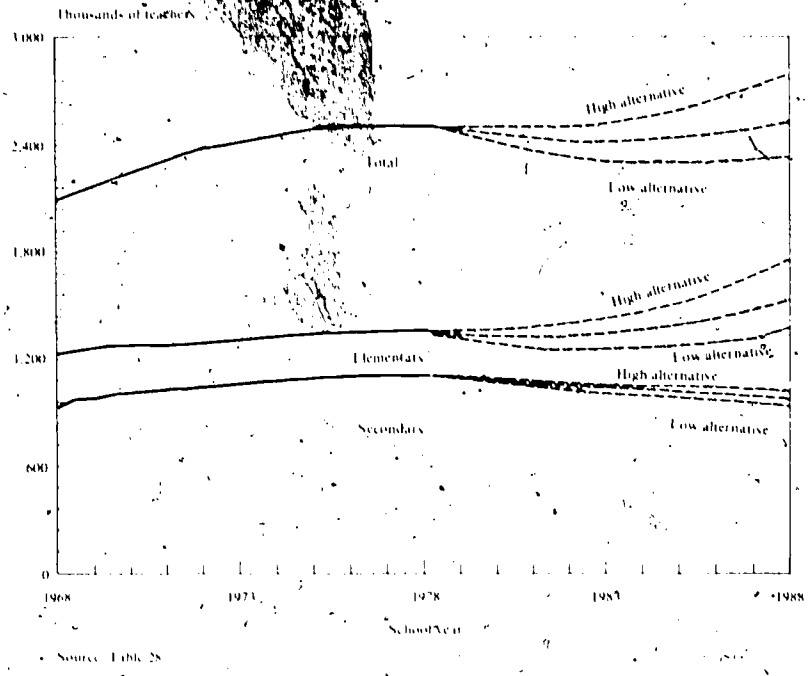
If pupil-teacher ratios remain at 1978 levels (low alternative classroom teacher projection) then the number of classroom teachers in public elementary schools will only reach 1.17 million in 1988, 149,000 fewer teachers than under the intermediate alternative. Under the high alternative classroom teacher projection, there will be 1.5 million teachers in 1988, 192,000 more than under the intermediate alternative and 341,000 more than under the low alternative.

Enrollment in public secondary schools increased from 17.6 million in 1968 to 19.2 million in 1975. Since then, enrollments have decreased back to the 1968 level of 17.6 million. However, during the 1968 to 1978 period, pupil-teacher ratios decreased from 20.4 to 17.2, as the number of classroom teachers increased from 860,000 in 1968 to 1,021,000 in 1978.

Throughout the next 10 years, enrollments in secondary schools are expected to decline, as the low birth cohorts of the 1960's and early 1970's move through elementary school into secondary schools. Although pupil-teacher ratios are expected to continue decreasing under the intermediate alternative,

[1] Decreasing pupil-teacher ratios do not imply decreasing class sizes, since many additional teachers have been hired to meet the special needs of students. The teaching of special students typically requires small pupil-teacher ratios, resulting in nominal decreases in overall class size.

Figure 21.—Classroom teachers in elementary and secondary schools, with alternative projections: United States, fall 1968 to 1988



Source: Table 28

the pupil-teacher ratio in public secondary schools is already at such a low level, that it seems unreasonable to expect large decreases in the future. Therefore, decreases in pupil-teacher ratios will not be nearly enough to offset the expected decrease of over 3 million students in public secondary schools over the next ten years. As a result, the number of classroom teachers in public secondary schools is expected to be 876,000 in 1988, 145,000 fewer teachers than in 1978.

Under the low alternative projection (constant pupil-teacher ratios), the number of teachers in public secondary schools will drop by 180,000 to 841,000 in 1988. Under the high alternative projection, the decrease is expected to be only 107,000 bringing the total number of teachers in public secondary schools to 914,000 in 1988.

Large enrollment declines in Catholic elementary schools resulted in an enrollment decline in all regular nonpublic elementary schools from 4.4 million in 1968 to 3.6 million in 1973. But the number of teachers in Catholic elementary schools remained at about the same level throughout this period. As a result, pupil-teacher ratios in nonpublic schools decreased from 29.8 in 1968 to 23.6 in 1973. While enrollments were dropping by 800,000 students, the number of teachers in nonpublic elementary schools actually increased from 147,000 in 1968 to 153,000 in 1973.

Beginning in 1974, enrollments in nonpublic elementary schools leveled off at 3.6 million while pupil-teacher ratios continued declining. By 1978, the number of classroom teachers in these schools increased to 174,000, over 20,000 more teachers than in 1973.

Enrollments in nonpublic elementary schools are expected to remain fairly constant over the next 4 years and then begin a gradual increase. Over the same 10 year period, pupil-teacher ratios are expected to decrease from 20.1 to 18.8. In 1988, the number of teachers in these schools is expected to be 211,000 an increase of nearly 40,000 teachers.

Should the 1978 pupil-teacher ratio in nonpublic elementary schools hold constant (low alternative classroom teacher projection) then the number of teachers will increase by only 20,000 teachers, reaching 194,000 in 1988. If pupil-teacher ratios continue their past steep decline, reaching 17.1 by 1988, then nonpublic elementary teachers will increase by nearly 60,000 teachers, to 232,000 in 1988 (high alternative classroom teacher projection).

Since pupil-teacher ratios in nonpublic secondary schools have remained constant at 16.4 for most of

the past 10 years, the only projection considered for the 1979 to 1988 projection period is 1.4. For most of the past 10 years, enrollment has fluctuated around 1.4 million and this is expected to continue until the last few years of the projection period when enrollments are expected to increase to 1.6 million in 1988.

Projections of classroom teachers in nonpublic secondary schools, show the same pattern as enrollment projections, fluctuating around 90,000 for most of the projected period before increasing to 95,000 in 1988.

Demand for Additional Teachers

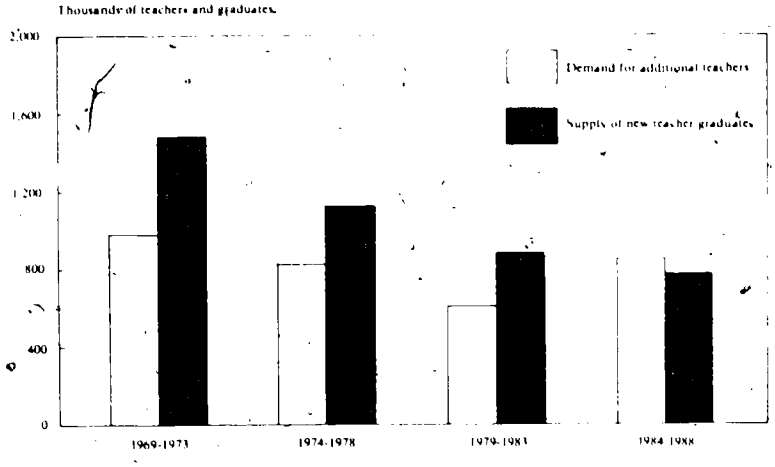
Public Schools

The total demand for additional public elementary and secondary school teachers (not employed in the public schools the previous year) includes those needed to allow for enrollment changes, for lowering pupil-teacher ratios, and for replacement of teachers leaving the profession (turnover). The cumulative demand for additional public school teachers (including returnees to the profession), during the 5-year period fall 1969 to fall 1973, was estimated at 912,000 (table 30) and during the next 5-year period (1974 to 1978) was estimated to have dropped to 716,000. For the current 5-year period (1979 to 1983), the demand for additional teachers is expected to decrease further to 526,000; and for the following 5-year period 1984 to 1988, it will increase to 745,000 (figure 22). Therefore, about 1,271,000 new teachers or returnees to the profession are expected to be hired during the next 10 years, 1979 to 1988. This is about 360,000 fewer teachers than were hired during the period 1969 to 1978.

Table 30 includes alternative projections of the demand for additional public school teachers based on high and low turnover rates. But, all three demand projections are based on intermediate classroom teacher projections. The number of teachers necessary to respond to enrollment changes and pupil-teacher ratio changes was computed for each year as the difference between the total employed for the current year and the total employed for the previous year. The turnover estimate for 1969 was based on the assumption that eight percent of total classroom teachers had left the profession either temporarily or permanently.[3] Eight percent is the historical turnover rate. However, enrollment decreases combined with increased numbers of college graduates prepared to teach led to significant changes in the job market for

[3] A. Stafford Metz and Howard L. Fleischman, U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Teacher Turnover in Public Schools, Fall 1968 to Fall 1969* (Washington, D.C., U.S. Government Printing Office, 1974)

Figure 22.—Estimated demand for additional teachers in regular elementary and secondary schools, and estimated supply of new teacher graduates, 5-year totals: United States, fall 1969 to 1988



Source: Table 32

teachers in the early 1970's. Therefore, it was estimated that the turnover rate decreased by one-half of 1 percent per year until it reached 6 percent in 1973. This 6 percent turnover rate was used for the intermediate alternative projections through 1988.

Although data on teacher turnover were not collected since the NCES study in 1969, several factors support the assumption that the turnover rate declined to 6 percent: (1) enrollment began decreasing in 1971 and is expected to continue decreasing through 1984; (2) as the demand for additional teachers decreased, the supply of new teachers rose from 233,000 in 1968 to 317,000 in 1972 resulting in a large surplus of teachers; (3) as the surplus of teachers grew, the job market for college graduates in general tightened; and (4) budgetary constraints were imposed more severely on school systems.

One reaction to the budgetary constraints was the hiring predominantly of beginning teachers or teachers with few years of experience, since years of teaching experience is often a key element in determining teacher's salaries. This occurred because opportunities in other fields were limited by a tight job market and the ability of experienced teachers to return to the profession was limited by the scarcity of teaching jobs, the oversupply of teachers, and the reluctance on the part of school systems to hire experienced teachers.

At first glance with fewer teachers leaving the profession, it seems reasonable that the average age of the teaching force would increase. However, the table below based on unpublished sample data from the Bureau of Labor Statistics indicates that just the opposite has occurred.

Percent of teachers, by age

Year	24 and under	25-34	35-44	45-54	55 and over
1968	16.4	26.2	22.4	17.1	18.0
1969	17.5	26.6	22.3	17.3	16.2
1970	17.3	27.3	22.9	17.0	15.5
1971	16.9	30.9	22.2	16.1	14.1
1972	16.4	34.5	21.4	15.1	12.7
1973	17.2	35.6	19.9	16.1	11.2
1974	14.7	38.4	20.9	17.1	8.9
1975	13.0	38.7	22.1	15.9	10.1
1976	11.8	38.4	23.0	16.4	10.3
1977	11.8	36.8	23.2	17.9	10.3
1978	9.8	40.9	22.5	16.9	10.2

This table shows that the proportion of teachers 55-years-old and over has decreased about 8 percent from 1968 to 1978 while the proportion of teachers 34-years-old and under has increased 8 percent. This increase in the proportion of teachers 34-years-old and under is due to the large number of new college graduates hired during the peak enrollment period of the late 1960's and early 1970's.

If we take 55-years-old as minimal retirement age, then 73 percent of the teaching force in 1978 were more than 10 years away from the minimum retirement age, compared to only 65 percent in 1968.

The age distribution of the teaching force in conjunction with an expected continued tight job market for college graduates in the 1980's and a significant teacher surplus throughout most of the next 10 years would seem to argue in favor of the continued use of the 6 percent turnover rate.

Nonpublic Schools

The demand for additional nonpublic elementary and secondary teachers increased from 78,000 in the 1969 to 1973 period to 103,000 during the 1974 to 1978 period (table 31). During the next 5 years, 1979 to 1983, the demand is expected to decrease slightly to 96,000 and then increase to 116,000 in the 1983 to 1988 period as enrollments begin climbing.

The numbers needed to allow for enrollment changes and pupil-teacher ratio changes have been computed in the same manner as for public schools. The turnover rate for nonpublic schools has been estimated at 6 percent for both the past and projected periods. In 1968 and 1969, when the public turnover rate was 8 percent, 56 percent of the teaching staff in Catholic schools (70 percent of all nonpublic teachers) were religious teachers. Since religious teachers are assumed to have a lower turnover rate than lay teachers, it was estimated that the turnover rate in nonpublic schools in 1968 and 1969 was 6 percent.

During the 1970's, the percentage of religious teachers declined in Catholic schools. In 1978, when teachers in Catholic schools made up 60 percent of teachers in nonpublic schools, religious teachers only accounted for 33 percent of the teachers in Catholic schools. Therefore, the 6 percent turnover rate used for public teachers in the 1970's and 1980's was applied to nonpublic teachers also.

Supply of Additional Teachers

The supply of additional teachers consists of new teacher graduates and former teacher graduates who were not employed as teachers in the previous year.

New teacher graduates are those graduates of institutions of higher education in a given year who are prepared to teach for the first time. Former teacher graduates are those who graduated in preceding years and are prepared to teach, but did not hold teaching positions in the previous year. Some of these former teacher graduates are former teachers; the remainder have never been employed as teachers.

New Teacher Graduates

Data on new teacher graduates have been collected by the National Education Association for many years. The number of new teacher graduates increased from 264,000 in 1969 to 317,000 in 1972 (table 32). Since 1972, the number has decreased each year reaching 190,000 in 1978[1]. As a percent of bachelor's degree recipients, new teacher graduates have declined from 36 percent in 1969 to 21 percent in 1978. According to a recent sample survey carried out by the Higher Education Panel,[2] the number of new teacher graduates was anticipated to drop another 3 percent in 1979.

Undoubtedly, these decreases are in part the result of the publicity give to the surplus of teachers since the early 1970's. However, a recent NCES sample survey of college graduates indicates that in May 1978, the underemployment rate for 1976-77 education graduates was lower than the average for all 1976-77 college-graduates[3]. As defined in chapter II, underemployed college graduates are those not working in an occupation for which their credentials would seem to qualify them and who reported that, in their opinion, their job does not require a college degree. The underemployment rate for education graduates was about the same as the rates for graduates in architecture, mathematics, business and commerce, and physical sciences; significantly lower than graduates in agriculture, biological sciences, and communications, and much lower than in fine and applied arts, foreign languages, letters, social sciences, and psychology. Only graduates in computer sciences, engineering, and health professions had significantly lower underemployment rates.

When survey results of 1976-77 graduates are compared to those of 1974-75 graduates, the outlook for education graduates has appreciably improved. In May 1976, only about half of the 1974-75 graduates seeking teaching jobs were employed as full-time teachers. While in May 1978, 65 percent of the 1976-77 graduates seeking teaching jobs were employed as full-time teachers.

Although job opportunities for new teacher graduates have improved, there still is a fairly large number who are unable to find teaching jobs. And this situation will probably continue for the next 3 or 4 years as enrollments continue to decline. However, when enrollments start increasing in the mid 1980's the job outlook for new teacher graduates should improve greatly.

Table 32 shows the estimated supply of new teacher graduates, the estimated demand for additional teachers, and the percent of supply of new teacher graduates to the demand for additional teachers. Table 32 is not a comparison of the supply of and demand for additional teachers because it does not take into account: (1) new teacher graduates who do not seek teaching jobs, (2) former teacher graduates not currently in the labor force who are seeking teaching jobs, (3) unemployed teachers, and (4) former teacher graduates employed in other occupations who are seeking teaching jobs. In addition, the comparisons in table 32 do not attempt to take into account the interaction of supply and demand nor the effects of exogenous variables such as state and local expenditures. Some factors were not included in the analysis because data for these variables are not available. The inclusion of other factors involves the development of econometric models which are planned for inclusion in future editions of *Projections*. However, the comparisons in table 32 have proven useful as a barometer of supply and demand imbalances.

On the basis of these comparisons, it appears that the job outlook for new teacher graduates will be quite favorable in the late 1980's. Should the percent of teacher graduates to all bachelor's degree recipients drop to 13 percent by 1988, while the turnover rate increases back to 8 percent, then teacher shortages may result in the late 1980's (low supply projection-high demand projection). However, as

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[1] Published and unpublished data from William S. Graybeal, National Education Association, *Teacher Supply and Demand in Public Schools* Washington, D.C., 1969 to 1978.

[2] Frank J. Atelsek and Irene Gamberg, *American Council on Education, Newly Qualified Elementary and Secondary School Teachers, 1977-78 and 1978-79*, Higher Education Panel Report, Number 45, Washington, D.C., 1980.

[3] A. Stafford Metz and Jane L. Crane, U.S. Department of Education, National Center for Education Statistics, *New Teachers in the Job Market*, forthcoming.

the job outlook for teachers continues to improve, it is unlikely that the percent of new teacher graduates to all bachelor's degrees will decrease to 13 percent. The age distribution of the teaching force and the general job outlook for college graduates also argue against a return to an 8 percent turnover rate. therefore, if the turnover rate remains at 6 percent, and if the percent of new teacher graduates to all bachelor's degrees slow its decline, (intermediate alternative projection) then the reserve pool of teachers (explained later) should be adequate to make up for the small deficits between new teacher graduates and the demand for additional teachers foreseen for the late 1980's.

Should the improved job market for teacher graduates have the effect of maintaining the percentage that new teacher graduates are of bachelor's degrees at about the level of 20 percent, and should the turnover rate drop to 4.8 percent, at which rate most attrition would be the result of retirement, sickness and death (high supply projection-low demand projection) then the supply of new teacher graduates would still exceed the demand for additional teachers throughout the projection period.

Proportion of New Teacher Graduates Seeking Teaching Positions

The two NCES studies of recent college graduates (1974-75 and 1977-78) indicate that about 75 percent of new teacher graduates in these two years actually sought full-time teaching positions. If this proportion remains applicable over the projection period, then the supply of new teacher graduates in table 32 should be reduced by about 40,000 each year through 1988.

The Reserve Pool of Teachers

As previously stated, the supply of new teacher graduates constitutes only part of the total supply of additional teachers. The remainder is referred to in *Projections* as the "reserve pool of teachers" and is defined as former teacher graduates who are currently not employed as teachers. Each of these persons falls into one of the following labor force categories: (1) unemployed, (2) not currently in the labor force, (3) employed in a nonteaching job, or (4) never actively sought employment. Very limited data exist on which to base rough estimates of the first two components, while no information is available for the last two.

In 1970 there were about 30,000 unemployed experienced teachers (this number does not include inexperienced former teacher graduates also unemployed). Considering the large surplus of teachers that has been produced since 1970, it seems reasonable to assume that the total number of unemployed former teachers is now substantially larger than 30,000, but a more concise estimate is not possible. Using Bureau of the Census data, the National Education Association[6] estimates that there were about 650,000 former teachers in the labor reserve in 1978 (excluding former teacher graduates who never taught). There is no information on the number of former teacher graduates who either are employed in nonteaching jobs or never sought employment.

An estimate of one million former teachers and former teacher graduates in the reserve pool is necessarily very rough. However, of this one million not all are actively seeking teaching jobs. The National Education Association estimates that in 1978 only about 120,000 of these former teacher graduates sought teaching positions. It is unlikely that the number of former teaching graduates seeking teaching positions will decline appreciably during the projection period because of the large teacher surplus of the 1970's.

Outlook for Teacher Supply and Demand Imbalances

It is possible to make some very rough adjustments to table 32 in order to better evaluate teacher supply and demand imbalances. The two previous sections estimated that: (1) about 40,000 new teacher graduates each year will not seek teaching positions, and (2) about 120,000 former teacher graduates in the reserve pool of teachers will seek teaching positions each year. Therefore, a rough estimate of the supply of additional teachers could be made by adding 80,000 teachers to the supply figures in table 32.

On the basis of these rough projections, the following outlook for teacher supply and demand seems to be evident: (1) under all assumptions shown in table 32, and under almost any other reasonable set of assumptions, there will continue to be a surplus of teachers through the mid 1980's; and (2) in the late 1980's, as enrollments begin climbing again, the job outlook for new teacher graduates, which has already begun improving, will vastly improve. As the job outlook for new teacher graduates improves, the percentage of bachelor's degree graduates prepared to

[6] William S. Graybeal, National Education Association, *Teacher Supply and Demand in Public Schools, 1978*, Washington, D.C., 1979

teach will stop declining and probably begin a gradual increase. If this occurs, the supply of new teacher graduates will continue to meet a large portion of the demand for additional teachers.

Institutions of Higher Education

Full-time and part-time instructional staff in institutions of higher education increased from 523,000 in 1968 to 809,000 in 1978. Faculty are expected to peak at 828,000 in 1981 and then drop to 759,000 in 1988 as full-time-equivalent-enrollment decreases, due to declines in the traditional college age population (figure 23).

Since only limited data on instructional staff are available, it was necessary to assume that for each type and control of institution, the ratios of full-time-equivalent-enrollment to full-time-equivalent instructional staff would remain constant at the 1976 level through 1988. The projections in table 33 and table 34 are based primarily on this assumption. In addition, it was assumed that for each type and control of institution the proportion of total instructional staff that is part-time would remain constant at 1976 levels through 1988. High and low alternative projections are based on the same assumptions, but 1976 student-staff ratios were applied to the low and high alternative full-time-equivalent-enrollment projections (tables 14-16).

Junior instructional staff increased by more than 70 percent from 95,000 in 1968 to 162,000 in 1978. Of these more than 80 percent (or 134,000) were employed as part-time junior instructors in 1978. About the same proportion as were employed on a part-time basis in 1968. In contrast, most senior instructional staff members (instructor or above) traditionally have been hired on a full-time basis. Senior staff increased about 50 percent from 428,000 in 1968 to 647,000 in 1978. There were 202,000 part-time senior instructional staff members in 1978, more than double the number in 1968. The 202,000 part-time senior staff members in 1978 make up 31 percent of total senior staff, compared to 22 percent in 1968.

The table below shows part-time senior staff as a percentage of total senior staff by type and control of institutions for 1970 and 1976[7].

Year	Public 4-year	Private 4-year	Public 2-year	Private 2-year
1970	13	29	32	33
1976	18	34	52	49

This table indicates that the practice of hiring part-time senior faculty has increased for each category of institution, and is especially prevalent at 2-year institutions, where more than half of the senior instructional staff is made up of part-time instructors or above. The projections of full-time and part-time senior staff in table 33 are based primarily on the assumption that for each type and control of institution, the proportion of part-time faculty will remain constant at 1976 levels. However, if institutions continue to hire part-time senior staff at increased rates, full-time and part-time senior instructional staff figures may turn out quite different from those shown in table 33. Projections of the full-time-equivalent senior instructional staff should not be greatly affected by continued increase in the proportion of part-time senior faculty.

Demand for Additional Instructional Staff

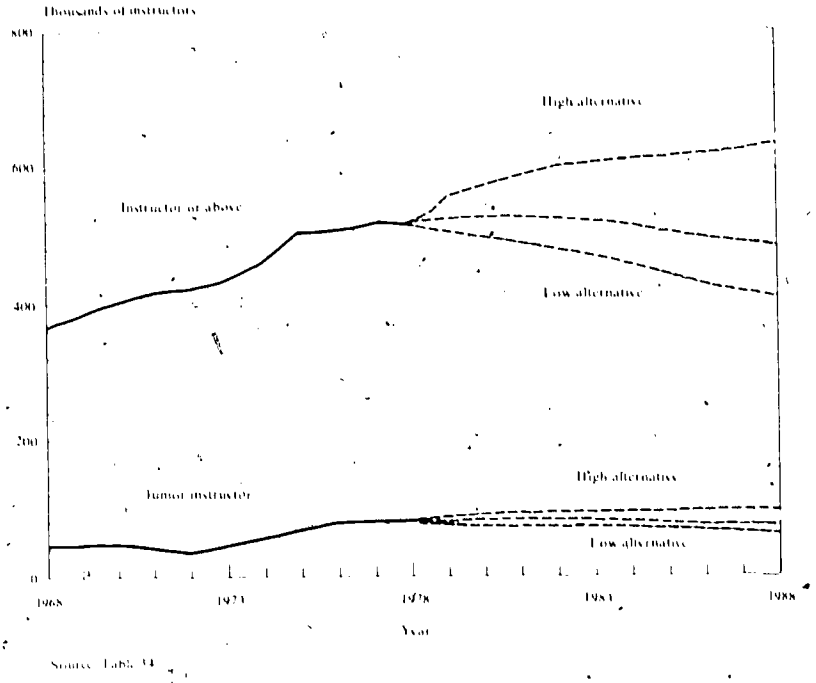
The demand for additional full-time-equivalent instructional staff in institutions of higher education was estimated at 240,000 in the 1974 to 1978 period (table 35). This demand is expected to decline for the next two 5-year periods, dropping to 138,000 in the 1979 to 1983 period and 88,000 in the 1984 to 1988 period. With student-staff ratios held constant and replacement levels projected to remain constant, the projected decreases in the demand for additional full-time-equivalent instructional staff can be attributed to the expected decreased in full-time-equivalent enrollment.

The demand for additional staff in response to enrollment changes is computed as the difference between the total number employed in successive years. Replacement requirements were estimated at 4.5 percent of previous year's number of faculty in the intermediate and low alternative and 6 percent in the high alternative.

The 6 percent replacement rate used in the high alternative is based on a 1963 U.S. Office of Education study which showed that about 5 percent of the full-time instructors or above in 4-year institutions intended to leave the profession during the following year. The 6 percent figure was arrived at by estimating an additional one percent for mortality. This is a

[7]Published and unpublished data from U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, "Employees in Institutions of Higher Education."

Figure 23.—Full-time-equivalent instructional staff in institutions of higher education, by professional rank, with alternative projections: United States, fall 1968 to 1988



high replacement level for a profession whose members typically have to be forced to retire at age 70. However, the 1960's was a period of great opportunity and flexibility for most professions, especially for those professions requiring a high level of education, such as the college instructional staff.

During the 1960's, college enrollment grew at phenominal rates, increasing from 3.8 million in 1960 to 8.6 million in 1970. This created a large demand for highly educated manpower, especially doctor's degree recipients. But other sectors of the economy were also in competition with colleges for this small manpower pool. As a result, instructional staff members during the 1960's had a great deal of flexibility to move from academia to government and private industry and then back to academia should they choose.

But in the 1970's conditions changed. Alternative opportunities for instructional staff members in government and private industry declined with the end of the Vietnam War and cutbacks int he Aerospace program. However, the pool of highly educated manpower had increased drastically during the 1960's. For example, the production of doctor's degrees increased from less than 11,000 in 1960-61 to more than 32,000 in 1970-71.

In the early 1970's, institutions of higher education began to foresee an end of the growth era in higher education in the late 1970's and early 1980's because of the declining birthrate, budget constraints imposed on public institutions by legislatures, and cutbacks in federal grants for research and development. They responded by reducing their hiring of instructional staff members. This occurred during a period when the supply of people seeking these jobs had increased dramatically and opportunities in other sectors of the economy were greatly reduced.

The estimated low and intermediate replacement rate projections might have been even lower than the 4.5 percent mentioned except for the following reasons: (1) with the end of the growth era in sight, institutions of higher education began denying tenure to young instructors at an increasing rate, thereby forcing them out of the profession and (2) the large number of instructional staff members hired after World War II, when enrollments in higher education began to increase rapidly, began reaching retirement age in the 1970's. Large numbers of instructional staff members who were hired in the 1950's and early 1960's also will be reaching retirement age in the 1980's.

Table 28.—Classroom teachers in regular elementary and secondary schools, with alternative projections, by control and level of institution: United States, fall 1968 to 1988

(In thousands)[1]

Year (fall)	Public and nonpublic			Public			Nonpublic		
	K-12	Elementary	Secondary	K-12	Elementary	Secondary	K-12	Elementary	Secondary
1968	2,161	1,223	938	1,936	1,076	860	225	147	78
1969	2,245	1,260	985	2,014	1,108	906	231[1]	152	79
1970	2,288	1,281	1,007	2,055[1]	1,128	927	233	153	80
1971	2,293	1,262	1,031	2,063	1,111[1]	952[1]	230[1]	151	79
1972	2,332	1,291	1,041	2,103	1,140[1]	963[1]	229[1]	151	78
1973	2,371	1,305	1,066	2,138	1,152[1]	986[1]	233[1]	153	80
1974	2,404	1,324	1,080	2,165	1,167[1]	998[1]	239[1]	157	82
1975	2,444	1,344	1,100	2,196	1,180[1]	1,016[1]	248[1]	164	84
1976	2,449	1,341	1,108	2,186	1,166[1]	1,020[1]	263	175	88
1977	2,470	1,359	1,111	2,209	1,185[1]	1,024[1]	264	174	87
1978	2,460	1,352	1,108	2,199	1,178[1]	1,024[1]	261	174	87
Intermediate alternative projections[2]									
1979	2,437	1,326	1,112	2,169	1,147	1,022	268	178	90
1980	2,413	1,324	1,089	2,141	1,144	998	271	180	91
1981	2,386	1,321	1,065	2,114	1,139	975	272	182	90
1982	2,357	1,311	1,046	2,091	1,135	955	266	175	91
1983	2,360	1,327	1,033	2,084	1,137	946	277	190	87
1984	2,370	1,347	1,023	2,090	1,150	940	280	197	83
1985	2,393	1,375	1,018	2,108	1,175	933	285	200	85
1986	2,426	1,418	1,009	2,135	1,216	919	292	202	90
1987	2,463	1,469	994	2,164	1,264	901	298	205	93
1988	2,501	1,529	971	2,194	1,318	876	306	211	95
Low alternative projections[2]									
1979	2,413	1,301	1,112	2,148	1,126	1,022	266	176	90
1980	2,368	1,286	1,082	2,101	1,110	991	267	176	91
1981	2,322	1,269	1,053	2,057	1,094	963	265	175	90
1982	2,276	1,246	1,030	2,017	1,078	939	259	168	91
1983	2,260	1,248	1,012	1,993	1,068	925	267	180	87
1984	2,252	1,253	998	1,983	1,068	915	268	185	83
1985	2,256	1,266	989	1,984	1,080	904	272	187	85
1986	2,269	1,292	977	1,991	1,104	887	277	187	90
1987	2,284	1,324	960	2,001	1,134	867	283	190	93
1988	2,300	1,363	936	2,011	1,169	841	289	194	95
High alternative projections[2]									
1979	2,462	1,351	1,111	2,191	1,170	1,021	271	181	90
1980	2,459	1,365	1,095	2,183	1,180	1,004	276	185	91
1981	2,454	1,377	1,077	2,175	1,189	987	278	188	90
1982	2,446	1,383	1,064	2,172	1,199	973	275	184	91
1983	2,472	1,416	1,056	2,184	1,216	969	287	200	87
1984	2,505	1,455	1,050	2,212	1,245	967	293	210	83
1985	2,552	1,504	1,048	2,253	1,290	963	299	214	85
1986	2,613	1,571	1,042	2,305	1,353	952	308	218	90
1987	2,680	1,650	1,030	2,363	1,426	937	317	224	93
1988	2,751	1,741	1,009	2,424	1,510	914	327	232	95

[1]Estimated.

[2]For methodological details, see appendix A, section A-3. For primary assumptions made, see appendix B, table B-3.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publications, (1) *Statistics of Public Elementary and Secondary Day Schools*, (2) Bulletin *Selected Public and Private Elementary and Secondary Education Statistics*, October 23, 1979, and (3) *Statistics of Nonpublic Elementary and Secondary Schools*.

Table 29.—Pupil-teacher ratios in regular elementary and secondary schools, with alternative projections, by control and level of institution: United States, fall 1968 to 1988[1]

Year (fall)	Public		Nonpublic	
	Elementary	Secondary	Elementary	Secondary
1968	25.4	20.4	29.8	17.3
1969	24.8	20.0	27.8[2]	16.9[2]
1970	24.4	19.8	26.5	16.4
1971	24.9	19.3	25.5[2]	16.4[2]
1972	24.0	19.1	24.6[2]	16.4[2]
1973	22.9	19.3	23.6[2]	16.4[2]
1974	22.6	18.7	22.7[2]	16.4[2]
1975	21.7	18.8	21.7[2]	16.4[2]
1976	21.8	18.5	20.8	16.4
1977	21.1	18.2	20.5	16.4
1978	21.3	17.2	20.4	16.5
Intermediate alternative projections[3]				
1979	20.9	17.2	20.1	16.4
1980	20.7	17.1	19.9	16.4
1981	20.5	17.0	19.7	16.4
1982	20.2	16.9	19.5	16.4
1983	20.0	16.8	19.4	16.4
1984	19.8	16.7	19.2	16.4
1985	19.6	16.7	19.1	16.4
1986	19.3	16.6	19.0	16.4
1987	19.1	16.6	18.9	16.4
1988	18.9	16.5	18.8	16.4
Low alternative projections[3]				
1979	20.5	17.2	19.8	16.4
1980	20.0	17.0	19.4	16.4
1981	19.6	16.8	19.0	16.4
1982	19.2	16.6	18.6	16.4
1983	18.7	16.4	18.3	16.4
1984	18.3	16.3	18.0	16.4
1985	17.8	16.1	17.8	16.4
1986	17.4	16.0	17.5	16.4
1987	16.9	15.9	17.3	16.4
1988	16.5	15.8	17.1	16.4
High alternative projections[3]				
1979	21.3	17.2	20.4	16.4
1980	21.3	17.2	20.4	16.4
1981	21.3	17.2	20.4	16.4
1982	21.3	17.2	20.4	16.4
1983	21.3	17.2	20.4	16.4
1984	21.3	17.2	20.4	16.4
1985	21.3	17.2	20.4	16.4
1986	21.3	17.2	20.4	16.4
1987	21.3	17.2	20.4	16.4
1988	21.3	17.2	20.4	16.4

[1]Decreasing pupil-teacher ratios do not imply decreasing class sizes, since many additional teachers have been hired to meet the special needs of students. The teaching of special students typically requires small pupil-teacher ratios, resulting in nominal decreases in overall class size.

[2]Estimated.

[3]For methodological details, see appendix A, section A.3. For primary assumptions made, see appendix B, table B-3.

NOTE: Data are for 50 States and the District of Columbia for all years.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publications: (1) *Statistics of Public Elementary and Secondary Day Schools*, (2) Bulletin *Selected Public and Private Elementary and Secondary Education Statistics*, October 21, 1979, and (3) *Statistics of Nonpublic Elementary and Secondary Schools*.

Table 30.—Estimated demand for classroom teachers in regular public elementary and secondary schools, with alternative projections: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total teacher demand	Demand for additional certificated teachers[1]			
		Total	For enrollment changes	For pupil-teacher ratio changes	For teacher turnover
1968	1,936	...	...	...	...
1969	2,014	233	35	43	155
1970	2,055	192	15	26	151
1971	2,063	152	9	-1	144
1972	2,103	174	-12	52	134
1973	2,138	161	-7	42	126
1969-1973	...	912	40	162	710
1974	2,165	155	-19	46	128
1975	2,196	162	-6	38	130
1976	2,186	122	-19	9	132
1977	2,209	154	-34	57	131
1978	2,199	123	-57	47	133
1974-1978	...	716	-135	197	654
Intermediate alternative projections					
1979	2,169	102	-51	21	132
1980	2,141	103	-47	20	130
1981	2,114	100	-48	20	128
1982	2,091	103	-44	20	127
1983	2,084	118	-22	15	125
1979-1983	...	526	-212	96	642
1984	2,090	132	-8	15	125
1985	2,108	143	1	17	125
1986	2,135	153	6	21	126
1987	2,164	158	16	14	128
1988	2,194	159	11	18	130
1984-1988	...	745	26	85	634
Low alternative projections					
1979	2,169	91	-51	21	121
1980	2,141	81	-47	20	108
1981	2,114	75	-48	20	103
1982	2,091	77	-44	20	101
1983	2,084	93	-22	15	100
1979-1983	...	417	-212	96	533
1984	2,090	107	-8	15	100
1985	2,108	118	1	17	100
1986	2,135	128	6	21	101
1987	2,164	132	16	14	102
1988	2,194	133	11	18	104
1984-1988	...	618	26	85	507
High alternative projections					
1979	2,169	113	-51	21	143
1980	2,141	125	-47	20	152
1981	2,114	133	-48	20	161
1982	2,091	145	-44	20	169
1983	2,084	160	-22	15	167
1979-1983	...	676	-212	96	792
1984	2,090	174	-8	15	167
1985	2,108	185	1	17	167
1986	2,135	196	6	21	169
1987	2,164	201	16	14	171
1988	2,194	202	11	18	173
1984-1988	...	958	26	85	847

[1]For methodological details, see appendix A, section A-3. For primary assumptions made, see appendix B, table B-3.

NOTE.—Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publication: *Statistics of Public Elementary and Secondary Day Schools.*

Table 31.—Estimated demand for classroom teachers in regular nonpublic elementary and secondary schools, with projections: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total teacher demand	Demand for additional teachers[1]			
		Total	For enrollment changes	For pupil-teacher ratio changes	For teacher turnover
1968	225	...	...	...	...
1969	231	20	-6	12	14
1970	233	16	-8	10	14
1971	230	11	-9	6	14
1972	229	13	-6	5	14
1973	233	18	-2	6	14
1969-1973	...	78	-31	39	70
1974	239	20	0	6	14
1975	248	23	2	7	14
1976	263	30	8	7	15
1977	261	14	-5	3	16
1978	261	16	0	0	16
1974-1978	...	103	5	23	75
		Projected			
1979	268	23	4	3	16
1980	271	19	1	2	16
1981	272	17	0	1	16
1982	266	10	-8	2	16
1983	277	27	9	2	16
1979-1983	...	96	6	10	80
1984	280	20	1	2	17
1985	285	22	4	1	17
1986	292	24	6	1	17
1987	298	24	5	1	18
1988	306	26	7	1	18
1984-1988	...	116	23	6	87

[1]For methodological details, see appendix A, section A-3. For primary assumptions made, see appendix B, table B-3.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publications: (1) Bulletin, *Selected Public and Private Elementary and Secondary Education Statistics*, October 23, 1979, and (2) *Statistics of Nonpublic Elementary and Secondary Schools*

Table 32.—Estimated supply of new teacher graduates compared to estimated total demand for additional teachers in regular elementary and secondary schools, with alternative projections: United States, fall 1969 to 1988[1]

(In thousands)

Year (fall)	Estimated supply of new teacher graduates	Estimated total demand for additional teachers	Supply of new teacher graduates as a percentage of the total demand for additional teachers
1969	264	253	104.3
1970	284	208	136.5
1971	314	163	192.6
1972	317	187	169.5
1973	313	179	174.9
1969-1973	1,492	990	150.7
1974	279	175	159.4
1975	238	185	128.6
1976	227	152	149.3
1977	198	168	117.9
1978	190	139	136.7
1974-1978	1,132	819	138.2
Intermediate alternative projections			
1979	184	125	147.2
1980	183	122	150.0
1981	178	117	152.1
1982	177	113	156.6
1983	171	145	117.9
1979-1983	893	622	143.6
1984	166	152	109.2
1985	159	165	96.4
1986	156	177	88.1
1987	150	182	82.4
1988	149	185	80.5
1984-1988	780	861	90.6
Low alternative supply projections-high alternative demand projections			
1979	184	136	135.3
1980	175	144	121.5
1981	166	150	110.7
1982	160	155	103.2
1983	151	187	80.8
1979-1983	836	772	108.3
1984	143	194	73.7
1985	134	207	64.7
1986	129	220	58.6
1987	122	225	54.2
1988	118	228	51.8
1984-1988	646	1,074	60.2
High alternative supply projections-low alternative demand projections			
1979	184	114	161.4
1980	190	100	190.0
1981	190	92	206.5
1982	193	87	221.8
1983	191	120	159.2
1979-1983	948	513	184.8
1984	188	127	148.0
1985	184	140	131.4
1986	184	152	121.0
1987	179	156	114.7
1988	180	159	113.2
1984-1988	915	734	124.7

[1]For methodological details, see appendix A, section A-3. For primary assumptions made, see appendix B, table B-3.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add totals to and numbers for past years may differ slightly from previously published numbers.

SOURCES: National Education Association publication *Teacher Supply and Demand in Public Schools* 1973, 1976, 1977, and 1978

Table 33—Full-time and part-time instructional staff in all institutions of higher education, with alternative projections, by professional rank: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Total	Instructor or above			Junior instructor		
		Total	Full-time	Part-time	Total	Full-time	Part-time
1968[1]	523	428	332	96	95	15	80
1969[1]	546	450	350	100	97	15	82
1970	573	474	369	104	101	14	87
1971[1]	590	492	379	113	97	10	88
1972	590	500	380	120	90	6	84
1973[1]	634	527	389	138	107	13	94
1974[1]	695	567	406	161	128	17	111
1975[1]	781	628	440	188	153	22	131
1976	793	633	434	199	160	28	132
1977[1]	812	650	447	203	162	29	134
1978[1]	809	647	445	202	162	29	134
Intermediate alternative projections[2]							
1979	822	659	451	207	163	29	134
1980	826	663	453	209	163	29	134
1981	828	665	454	211	163	29	134
1982	824	662	452	210	162	29	133
1983	816	656	447	209	160	28	132
1984	803	646	440	206	157	28	129
1985	789	635	432	203	154	27	127
1986	775	624	424	200	151	27	124
1987	765	616	419	198	148	26	122
1988	759	612	416	197	147	26	121
Low alternative projections[2]							
1979	792	635	435	200	157	28	129
1980	781	627	429	198	154	27	127
1981	770	619	422	196	151	27	124
1982	754	606	413	193	148	26	122
1983	735	592	403	189	144	25	118
1984	713	574	391	184	139	25	114
1985	692	557	379	178	134	24	111
1986	671	541	367	174	130	23	107
1987	654	528	358	170	126	22	104
1988	643	519	351	167	124	22	102
High alternative projections[2]							
1979	870	697	478	220	172	30	142
1980	894	717	491	227	176	31	145
1981	918	737	504	234	181	32	149
1982	935	752	513	239	183	32	151
1983	949	763	520	243	186	33	153
1984	957	770	524	246	187	33	154
1985	962	775	527	248	187	33	154
1986	967	779	530	250	188	33	154
1987	976	787	534	253	189	34	155
1988	990	798	542	257	191	34	157

[1]Estimated. See appendix C, "Estimation Methods."

[2]For methodological details, see appendix A, section A-3. For primary assumptions made, see appendix B, table B-3.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and details for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Employees in Institutions of Higher Education*.

Table 34.—Full-time-equivalent instructional staff in all institutions of higher education, with alternative projections, by professional rank: United States, fall 1968 to 1988

(In thousands)

Year (fall)	Estimated total full-time-equivalent	Instructor or above			Junior instructor		
		Total	Full-time	Full-time equivalent of part-time	Total	Full-time	Full-time equivalent of part-time
1968[1]	412	364	332	32	48	15	33
1969[1]	430	383	350	33	49	15	33
1970[1]	451	402	369	33	50	14	36
1971[1]	458	414	379	35	44	10	34
1972[1]	455	417	380	37	38	6	32
1973[1]	481	433	389	44	48	13	35
1974[1]	516	457	406	51	59	17	42
1975[1]	574	501	440	61	73	22	51
1976[1]	584	501	434	66	83	28	55
1977[1]	599	514	447	68	84	29	56
1978[1]	597	513	445	68	84	29	56
Intermediate alternative projections[2]							
1979	605	521	451	69	84	29	56
1980	608	523	453	70	85	29	56
1981	609	524	454	70	85	29	56
1982	606	522	452	70	84	29	55
1983	600	517	447	70	83	28	55
1984	590	509	440	69	82	28	54
1985	580	500	432	67	80	27	53
1986	569	491	424	66	78	27	52
1987	561	484	419	66	77	26	51
1988	557	481	416	65	76	26	50
Low alternative projections[2]							
1979	583	502	435	67	81	28	54
1980	575	495	429	66	80	27	53
1981	566	488	422	65	79	27	52
1982	554	478	413	64	77	26	51
1983	540	466	403	63	75	25	49
1984	524	452	391	61	72	25	48
1985	508	438	379	59	70	24	46
1986	492	425	367	58	68	23	44
1987	480	414	358	56	66	22	43
1988	471	407	351	56	64	22	42
High alternative projections[2]							
1979	640	551	478	73	89	30	59
1980	658	566	491	76	92	31	60
1981	675	582	504	78	94	32	62
1982	688	593	513	80	95	32	63
1983	698	601	520	81	96	33	64
1984	703	606	524	82	97	33	64
1985	707	610	527	82	97	33	64
1986	710	613	530	83	98	33	64
1987	716	618	534	84	98	34	65
1988	726	627	542	85	99	34	65

[1]Estimated. See appendix C, "Estimation Methods."
[2]For methodological details, see appendix A, section A-3. For primary assumptions made, see appendix B, table B-3.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Employees in Institutions of Higher Education.*

Table 35.—Estimated demand for full-time-equivalent instructional staff in institutions of higher education, with alternative projections: United States, fall 1973 to 1988

(In thousands)

Year (fall)	Full-time-equivalent instructional staff	Additional full-time-equivalent instructional staff needed[1]		
		Total	For enrollment and student-staff ratio changes	For replacement
1973	481	...	...	...
1974	516	57	35	22
1975	574	81	58	23
1976	584	36	10	26
1977	599	41	15	26
1978	597	25	-2	27
1974-1978	...	240	116	124
Intermediate alternative projections				
1979	605	35	8	27
1980	608	30	3	27
1981	609	28	1	27
1982	606	24	-3	27
1983	600	21	-6	27
1979-1983	...	138	3	135
1984	590	17	-10	27
1985	580	17	-10	27
1986	569	15	-11	26
1987	561	18	-8	26
1988	557	21	-4	25
1984-1988	...	88	-43	131
Low alternative projections				
1979	583	13	-14	27
1980	575	18	-8	26
1981	566	17	-9	26
1982	554	17	-8	25
1983	540	11	-14	25
1979-1983	...	76	-53	129
1984	524	8	-16	24
1985	508	8	-16	24
1986	492	7	-16	23
1987	480	10	-12	22
1988	471	13	-9	22
1984-1988	...	46	-69	115
High alternative projections				
1979	640	79	43	36
1980	658	56	18	38
1981	675	56	17	39
1982	688	54	13	41
1983	698	51	10	41
1979-1983	...	296	101	195
1984	703	47	5	42
1985	707	46	4	42
1986	710	45	3	42
1987	716	49	6	43
1988	726	53	10	43
1984-1988	...	240	28	212

[1]For methodological details, see appendix A, section A-3. For primary assumptions made, see appendix B, table B-3.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals and numbers for past years may differ slightly from previously published numbers.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Employees in Institutions of Higher Education.*

Chapter IV

EXPENDITURES OF EDUCATION INSTITUTIONS

Statistical Universe

The tables in this chapter pertain only to expenditures of regular public and nonpublic elementary and secondary schools and institutions of higher education in the 50 States and the District of Columbia. Data on "other" institutions are not included except for the reference to "other" schools in the following discussion and in table 36.

"Other" institutions include elementary and secondary residential schools for exceptional children (public and nonpublic), Federal schools for Indians (public), and federally operated elementary and secondary schools on military posts (public). In 1977-78, estimated expenditures were about $400 million for public and $100 million for nonpublic "other" schools. Almost all other schools, including the nonpublic, were non-profitmaking institutions.

Regular institutions include public and most nonprofit, nonpublic elementary and secondary schools (kindergarten through grade 12) plus the institutions of higher education offering degree-credit courses and a small number of technical and professional schools. Most of these schools and colleges are oriented toward regular academic programs, but some are primarily technical training institutions and some offer both academic and vocational courses.

Expenditures By Source of Funds

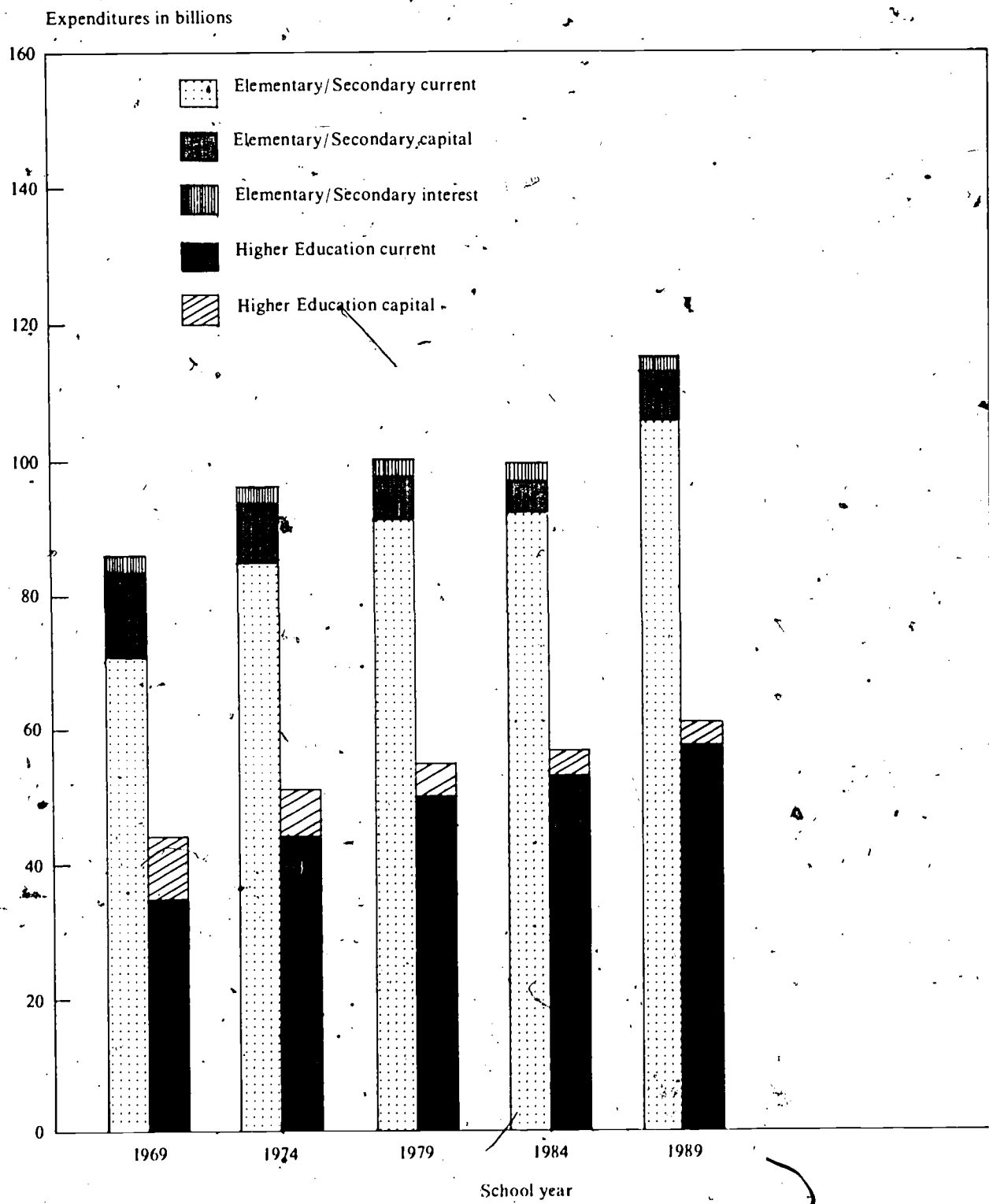
Total expenditures are defined as the expenditure of all money from both loans and grants for capital outlay, current expenditures and interest and exclude only the funds used for reducing debt and transfers that result in duplication. Expenditures from Federal, State, and local sources are defined as institutional expenditures of all grants (but not loans) received from these sources. Expenditures from all other sources include all funds received by the institutions that were not received as grants from Federal, State and local governments. Loans to institutions of higher education from any source are included under "all other."

Total Expenditures[1]

Total annual expenditures of regular educational institutions (in 1978-79 dollars) increased from $128.8 billion in 1968-69 to $152.4 billion in 1977-78 and are projected to reach $175.3 billion in 1988-89 (table 37 and figure 24). This increase in total expenditures reflects a trend of increasing expenditure per student resulting from an increase in resource use per student as well as an increase in the cost of these resources.

[1]Assistance in the estimation of the model for elementary and secondary school current, capital and interest expenditures was provided by Lawrence Olson of Data Resources, Inc.. Historical data and projections of all economic variables used in the expenditures model referred to in this publication were obtained from the U.S. Macroeconomic Model of Data Resources, Inc.

Figure 24.—Expenditures (in 1978-79 dollars) by regular educational institutions, by type: United States, 1969-1989



Source: Table 37.

Regular Public Elementary and Secondary Schools

Current Expenditures

For regular public elementary and secondary schools, projections of current expenditures are obtained by applying projections of current expenditures per pupil in average daily attendance (CE/ADA), in constant dollars, to projections of average daily attendance (92 percent of projected enrollment).

No attempt is made to project current expenditures in nonpublic elementary and secondary schools because expenditure data are not available. Instead, *Projections* presents estimates and projections of what the current expenditures in constant dollars would be to educate the nonpublic students at the CE/ADA for public schools and the pupil-teacher ratios of nonpublic schools.

Annual current expenditures for public elementary and secondary schools (in 1978-79 dollars) increased from $62.9 billion in 1968-69 to $80.0 billion in 1977-78, an increase of 27.2 percent (table 37), and are expected to increase by 15.6 percent to $92.5 billion by 1988-89.

Increases in current expenditures are due to past enrollment increases, together with increases in expenditures per pupil. CE/ADA is projected as a function of ADA and total State and local government expenditures per ADA. Total State and local government expenditures are projected to continue increasing throughout the 1980's, while ADA is expected to fall through 1984-85 and then increase through 1989-90. As a result, current expenditures are projected to decrease in 1979-80 through 1981-82 and then begin to increase in 1982-83.

The projected increase in CE/ADA reflects both the increase in costs of inputs used in the education process and the increase in resources used per student. A large portion of current expenditures goes to salaries of teachers. The pupil/teacher ratio has decreased from 25.4 and 20.4 in elementary and secondary schools, respectively, in 1968-69 to 21.1 and 18.2 in 1977-78 and is expected to reach 18.9 and 16.5 by 1988-89. At the same time, the average annual salary of classroom teachers, in constant 1978-79 dollars, has gone from $15,885 in 1968-69 to $16,441 in 1977-78 and is expected to decline to $15,160 in 1980-81 before beginning to increase again (table 40). The expected drop in salaries of teachers from 1978-79 through 1980-81 coincides with an expected continuing decrease in enrollment and a growing surplus of teachers, while the rise in salaries throughout the rest of the 1980's coincides with increasing enrollments and a decreasing teacher surplus. The combined effect of changes in pupil/teacher ratios and average classroom teacher salary has been one of increasing the per pupil teacher expenditures. In addition, it is expected that increases in energy costs will be greater than the general rise in prices in the 1980's and will result in higher per pupil expenditures on transportation and plant maintenance and operation. At the same time, various fixed charges such as retirement funding, Social Security and unemployment compensation have increased (and are expected to continue increasing) per pupil expenditures without changing in real resource input. The relatively low capital/labor ratio which exists in the education industry makes productivity increases difficult to achieve and, therefore, suggests a continuing increase in per pupil expenditure.

Capital Outlay

Capital outlay (in 1978-79 dollars) by regular public elementary and secondary schools, including the expenditures of State and local school building authorities, was $46.8 billion for the five year period 1968-69 through 1972-73, and $34.9 billion for the following 5-year period 1973-74 through 1977-78 (table 41). It is expected to decrease to $27.2 billion for 1978-79 through 1982-83 and to rise slightly to $27.4 billion for 1983-84 through 1987-88.

The decrease in capital outlay reflects the initial slowdown in the growth of ADA followed by the absolute decline in ADA. It should be noted that not all capital outlay represents contruction. It was estimated that in 1973-74, 16 percent of capital outlay was for equipment and 84 percent for land and buildings.

A sharp decrease is expected in the number of classrooms to be completed because of enrollment changes; however, school buildings will continue to be built for other reasons, including (1) replacement, (2) migration factors (including school district reorganization), and (3) reduction in the number of crowded and unsatisfactory rooms.

Capital outlay per student was projected as a function of ADA, directional changes in ADA and new public construction put-in-place by all levels of government. A decline in ADA between the current and previous year is estimated to reduce capital outlay by about 14 percent, while a decline one year earlier decreases spending by about 8 percent. The capital outlay projection equation derives from the

tendency of capital spending to occur in growth periods and decline during periods of declining growth.

Interest expenditures

Annual expenditures (in 1978-79 dollars) for interest by public elementary and secondary schools increased from $2.1 billion in 1968-69 to $2.5 billion in 1972-73 and then decreased to $2.1 billion in 1977-78. They are expected to continue decreasing to $2.0 billion in 1979-80 before leveling off at that figure throughout the projection range. While capital outlay is falling through a large part of this period, interest expenditures are projected to level off rather than fall because interest expenditures continue 20 years or more after construction resulting in debt being incurred at a greater rate than it is being eliminated. Total interest expenditure was projected as a function of ADA, State and local government obligations outstanding, and the yield on AAA State and local government bonds (general obligations).

Nonpublic Elementary and Secondary Schools

It is impossible to compare expentiture data for nonpublic elementary and secondary schools with that for public schools since nonpublic schools rely on donated services for a substantial portion of their resources. This is especially true in the elementary and secondary schools operated by religious groups. In 1976-77, over 62 percent of the almost 211,000 nonpublic school teachers worked in schools affiliated with the Roman Catholic Church, where many of the teachers belong to religious orders and donated part or all of their services.

Although it is difficult to arrive at national estimates of nonpublic school expenditures that everyone will accept, the substantial contribution of nonpublic elementary and secondary schools cannot be ignored when total expenditures for education are being considered. Therefore, illustrative estimates of nonpublic elementary and secondary school expenditures were developed and are shown in table 37. They are based on the assumption that the cost per teacher (including donated facilities and services) in nonpublic schools is the same as in the public schools. For specific methodology, see appendix A, section 4.

Institutions of Higher Education

Total expenditures

Annual total expenditures (excluding transfers and including current and capital expenditures) of institutions of higher education (in 1978-79 dollars) increased from $44.0 billion in 1968-69 to $54.2 billion in 1977-78 and are projected to reach $60.7 billion by 1988-89. From 1968-69 to 1977-78, full-time-equivalent-enrollment (FTE) increased by 41.3 percent, while the increase in total expenditures was 23.2 percent. FTE enrollment is expected to decrease by 5.3 percent from 1977-78 to 1988-89, while total expenditures are expected to continue to increase by 12.0 percent.

Current Expenditures

Annual current expenditures (excluding transfers) of institutions of higher education (in 1978-79 dollars) increased from $34.4 billion in 1968-69 to $49.1 billion in 1977-78 and are expected to increase to $57.6 billion by 1988-89 (tables 37 and 43).

The percent increase in current expenditures was 42.5 percent from 1968-69 to 1977-78 and 17.3 percent from 1977-78 to 1988-89. In general, current expenditures on education are a function of the level of enrollment and the type of student enrolled as well as a function of other variables. However, higher education institutions play a triple role in providing not only education but also research and public services for and to the community. Nonstudent education expenditures seem to bear only a casual relationship to the level of enrollment. It is misleading, therefore, to attribute the continuing rise in current expenditures to increases in the cost of education alone. For this reason, current expenditures projections are obtained by projecting the components of current expenditures and then summing these projected components to reach a projected figure for total current expenditures. Each component is projected as a function of enrollment variable(s) and/or a variable or variables reflecting the economic environment in which the institutions receive and spend money. Personal income per capita is the most frequently used economic variable.

Capital Outlay

Annual capital outlay of institutions of higher education (in 1978-79 dollars) declined from $9.6 billion in 1968-69 to $5.1 billion in 1977-78 and is expected to continue to decline to $3.1 billion in 1988-89 (table 45). This decline reflects the decline in the rate of increase of full-time-equivalent-enrollment (FTE) during the late 1960's and early 1970's as well as the projected absolute decline in FTE enrollment from 1976-77 through the 1980's.

Public Institutions of Higher Education

Total Expenditures

Annual total expenditures (excluding transfers and including current and capital expenditures) of public institutions of higher education (in 1978-79 dollars) increased from $28.2 billion in 1968-69 to $36.5 billion in 1977-78 and are expected to reach $41.7 billion in 1988-89. These figures represent a 40.2 percent increase from 1968-69 to 1977-78 and a 13.9 percent increase from 1977-78 to 1988-89. From 1968-69 to 1977-78, the increase in expenditures was in line with the increase in FTE. However, the expected increase in expenditures from 1977-78 to 1988-89 contrasts with an expected decline of 4.6 percent in FTE enrollment. This might appear anomalous at first, but this continued increase in expenditures reflects not only changes in FTE enrollment, but also increases in resources used to educate each student combined with increases in the relative cost of these resources. In addition, some categories of expenditures such as hospital expenditures are increasing, and are expected to continue increasing, yet these expenditures are only peripherally related to the level of enrollment.

Current Expenditures

Annual current expenditures (excluding transfers) of public institutions of higher education (in 1978-79 dollars) increased from $21.2 billion in 1968-69 to $32.8 billion in 1977-78 and are projected to reach $39.8 billion in 1988-89 (figure 25). The major component of current expenditures is expenditure on student education which went from $13.4 billion (63.2 percent of current expenditures) in 1968-69 to $22.0 billion (67.1 percent of current expenditures) in 1977-78 and is projected to reach $26.8 billion (67.3 percent of current expenditures in the intermediate alternative projections) in 1988-89. For the intermediate alternative projections, total current expenditures on student education were projected as a function of public FTE enrollment and personal income per capita lagged one year. For the low alternative projections, current expenditure per FTE student was projected as a function of public FTE enrollment and the average of the present and previous years' personal income per capita. The low alternative projection method for total current expenditures on student education gives a figure of $19.7 billion in 1988-89, about $7 billion less than the intermediate alternative. The large difference between the low alternative projection and the intermediate projection ($26.8 billion vs. $19.7 billion) occurs because public FTE enrollment is incorporated in the dependent variable in the low alternative equation and thus has a stronger total effect on student education expenditures. Since public FTE enrollment is decreasing, the effect is to hold down the increase in these expenditures due to personal income per capita increases.

Capital Outlay

Annual capital outlay of public institutions of higher education (in 1978-79 dollars) decreased from $7.0 billion in 1968-69 to $3.8 billion in 1977-78 and is expected to continue its decline to $1.9 billion in 1988-89 (figure 25). Capital outlay is projected as a function of public FTE enrollment and new public construction put-in-place by all levels of government. No account was taken of possible deferred maintenance which might lead to major expenditures on rennovation during the 1980's because the data are not available.

Private Institutions of Higher Education

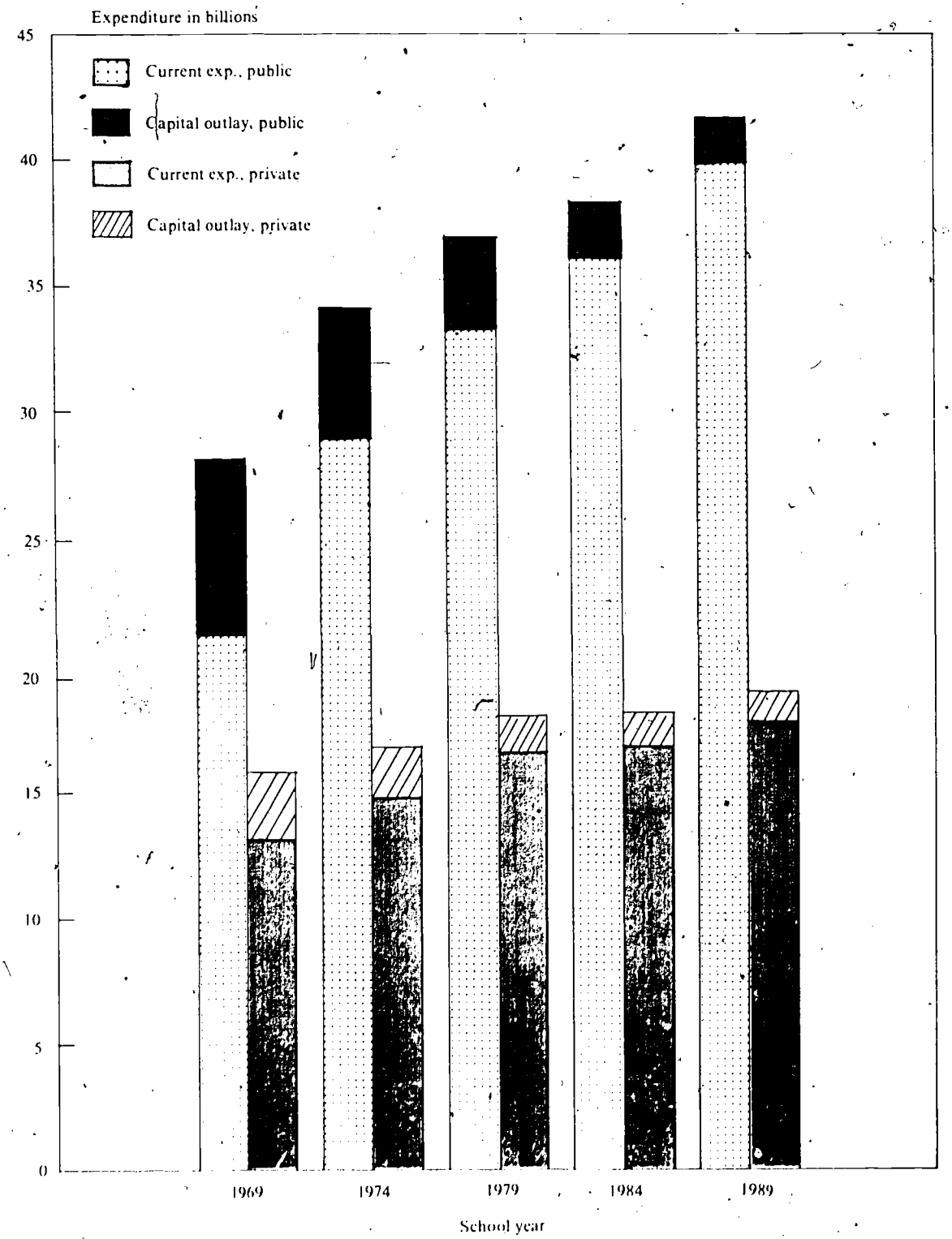
Total Expenditures

Annual total expenditures (excluding transfers) of private institutions of higher education (in 1978-79 dollars) increased from $15.8 billion in 1968-69 to $17.6 billion in 1977-78 and are projected to reach $19.0 billion in 1988-89. This represents an 11.4 percent increase from 1968-69 to 1977-78 and an 8.0 percent increase from 1977-78 to 1988-89. Private FTE enrollment, on the other hand, increased by 16.9 percent from 1968-69 to 1977-78 but is projected to decrease by 7.5 percent from 1977-78 to 1988-89. Although total expenditures increased throughout most of the time span from 1968-69 to 1977-78, they are expected to drop slightly from $18.0 billion in 1978-79 to $17.8 billion in 1980-81 before resuming their upward trend through 1988-89. This drop is due to the FTE drop in the 1980's reinforced by an expected drop in constant dollar personal income per capita for 1979-80 and 1980-81.

Current Expenditures

Annual current expenditures (excluding transfers) of private institutions of higher education (in 1978-79 dollars) increased from $13.2 billion in 1968-69 to $16.3 billion in 1977-78 and are expected to reach $17.8 billion in 1988-89 (figure 25). Falling FTE enrollment and declining constant dollar personal income per capita result in no growth years in

Figure 25.—Expenditures (in 1978-79 dollars) of public and private institutions of higher education, by type and control: United States, 1969-1989



Source: Table 37

1979-80 and 1980-81. Although projections show a generally low or no growth rate for this category of expenditure, it is not yet clear exactly what types of financial problems if any, private institutions of higher education will face in the 1980's. As low as these projections are, they may be too high if declining enrollment forces a significant number of institutions to retrench or to close their doors.

Capital Outlay

Annual capital outlay of private institutions of higher education (in 1978-79 dollars) was $2.5 billion in 1968-69, declined to $1.3 billion in 1977-78, and is projected to decline slightly to $1.2 billion in 1985-86 and remain at that level through 1988-89 (figure 25). Capital outlay of private institutions is projected as a function of only one variable, private FTE enrollment, which is projected to decline throughout the 1980's. Capital outlay seems to stabilize at the $1.2 billion level due to the continuing need for equipment replacement, building renovation, and the ability of some schools to attract more students even while the national FTE enrollment falls.

Table 36.—Estimated expenditures by regular and "other" educational institutions, by instructional level and control of institution and source of funds: United States, 1965-66 to 1977-78[1]

Level and control of institution and source of funds	1965-66	1967-68	1969-70	1971-72	1973-74	1975-76	1977-78
	Amount, billions of current, unadjusted dollars						
All levels:							
Total, public and nonpublic	$ 45.2	$ 57.2	$ 70.4	$ 83.0	$ 98.0	$121.8	$140.4
Federal	5.0	6.8	7.5	9.2	10.2	13.0	14.6
State	13.1	16.9	22.2	25.8	33.3	43.9	51.1
Local	15.1	18.6	22.6	26.7	29.8	35.1	39.1
All other	12.0	14.9	18.1	21.3	24.7	29.8	35.6
Total, public	35.3	45.5	56.8	67.4	80.1	100.2	114.6
Federal	3.6	5.1	5.8	7.4	8.3	10.5	11.7
State	13.0	16.8	22.1	25.6	33.0	43.6	50.8
Local	15.1	18.6	22.5	26.6	29.7	35.0	39.0
All other	3.6	5.0	6.4	7.8	9.1	11.1	13.2
Total, nonpublic	9.9	11.7	13.6	15.6	17.9	21.6	25.7
Federal	1.4	1.7	1.7	1.8	1.9	2.5	2.9
State	.1	.1	.1	.2	.3	.3	.3
Local	(2)	(2)	.1	.1	.1	.1	.1
All other	8.4	9.9	11.7	13.5	15.6	18.7	22.4
Elementary and secondary schools:							
Total, public and nonpublic	30.0	37.3	45.7	53.8	63.7	79.1	90.9
Federal	2.1	3.0	3.4	4.6	5.1	6.5	7.7
State	9.6	12.1	15.8	18.0	23.6	31.1	36.0
Local	14.7	18.0	21.7	25.6	28.4	33.4	37.3
All other	3.6	4.2	4.8	5.6	6.6	8.1	9.8
Total, public	26.5	33.2	41.0	48.3	57.2	71.1	81.2
Federal	2.1	3.0	3.4	4.6	5.1	6.5	7.7
State	9.6	12.1	15.8	18.0	23.6	31.1	36.0
Local	14.7	18.0	21.7	25.6	28.4	33.4	37.3
All other	.1	.1	.1	.1	.1	.1	.2
Total, nonpublic	3.5	4.1	4.7	5.5	6.5	8.0	9.6
Federal	...	...	...	...	...	...	...
State	...	...	...	...	...	...	...
Local	...	...	...	...	...	...	...
All other	3.5	4.1	4.7	5.5	6.5	8.0	...
Institutions of higher education:							
Total, public and nonpublic	15.2	19.9	24.7	29.2	34.3	42.7	49.5
Federal	2.9	3.8	4.1	4.6	5.1	6.5	6.8
State	3.5	4.8	6.4	7.8	9.7	12.8	15.1
Local	.4	.6	.9	1.1	1.4	1.7	1.8
All other	8.4	10.7	13.3	15.7	18.1	21.7	25.8
Total, public	8.8	12.3	15.8	19.1	22.9	29.1	33.4
Federal	1.5	2.1	2.4	2.8	3.2	4.0	4.0
State	3.4	4.7	6.3	7.6	9.4	12.5	14.8
Local	.4	.6	.8	1.0	1.3	1.6	1.7
All other	3.5	4.9	6.3	7.7	9.0	11.0	13.0
Total, nonpublic	6.4	7.6	8.9	10.1	11.4	13.6	16.1
Federal	1.4	1.7	1.7	1.8	1.9	2.5	2.9
State	.1	.1	.1	.2	.3	.3	.3
Local	(2)	(2)	.1	.1	.1	.1	.1
All other	4.9	5.8	7.0	8.0	9.1	10.7	12.8
	Percent						
All levels:							
Total, public and nonpublic	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Federal	11.1	11.9	10.7	11.1	10.4	10.7	10.4
State	29.0	29.5	31.5	31.1	33.9	36.0	36.4
Local	33.4	32.5	32.1	32.2	30.5	28.8	27.8
All other	26.5	26.1	25.7	25.6	25.2	24.5	25.4

See footnotes at end of table.

Table 36.—Estimated expenditures by regular and "other" educational institutions, by instructional level and control of institution and source of funds: United States, 1965-66 to 1977-78[1]—Cont.

Level and control of institution and source of funds	1965-66	1967-78	1969-70	1971-72	1973-74	1975-76	1977-78
				Percent—Cont.			
Total, public	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Federal	10.2	11.2	10.2	11.0	10.4	10.5	10.2
State	36.8	36.9	38.9	38.0	41.1	43.5	44.3
Local	42.8	40.9	39.6	39.4	37.2	34.9	34.0
All other	10.2	11.0	11.3	11.6	11.3	11.1	11.5
Total, nonpublic	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Federal	14.1	14.5	12.5	11.5	10.6	11.6	11.3
State	1.0	.9	.7	1.3	1.7	1.4	1.2
Local	(3)	(3)	.7	.7	.6	.4	.4
All other	84.9	84.6	86.1	86.5	87.1	86.6	87.2
Elementary and secondary schools:							
Total, public and nonpublic	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Federal	7.0	8.0	7.4	8.5	8.0	8.2	8.5
State	32.0	32.4	34.6	33.5	37.0	39.3	39.7
Local	49.0	48.3	47.5	47.6	44.7	42.2	41.0
All other	12.0	11.3	10.5	10.4	10.3	10.3	10.8
Total, public	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Federal	8.0	9.0	8.2	9.1	8.8	9.2	9.5
State	36.3	36.5	38.6	37.2	41.2	43.7	44.3
Local	55.3	54.2	52.9	53.5	49.8	47.0	45.9
All other	.4	.3	.3	.2	.2	.1	.3
Total, nonpublic	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Federal	...	...	...	...	...	...	...
State	...	...	...	...	...	...	...
Local	...	...	...	...	...	...	...
All other	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Institutions of higher education:							
Total, public and nonpublic	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Federal	19.1	19.1	16.6	15.7	14.9	15.2	13.8
State	23.0	24.1	25.9	26.7	28.3	30.0	30.5
Local	2.6	3.0	3.6	3.8	4.1	4.0	3.7
All other	55.3	53.8	53.9	53.8	52.7	50.8	52.0
Total, public	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Federal	17.6	17.3	14.9	14.7	14.1	13.8	11.9
State	38.4	38.2	39.7	39.7	41.1	43.0	44.2
Local	4.1	4.6	5.1	5.4	5.5	5.4	5.1
All other	39.9	39.9	40.3	40.2	39.3	37.8	38.8
Total, nonpublic	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Federal	22.1	22.1	18.8	18.3	17.1	18.1	17.8
State	1.5	1.3	1.6	2.0	2.5	2.3	2.0
Local	.1	.3	.7	.5	.6	.8	.7
All other	76.3	76.3	78.9	79.2	79.8	78.8	79.6

[1]The annual expenditures of "other" elementary and secondary schools were estimated as follows: Public, $200 million annually, 1965-66 to 1973-74, $300 million in 1975-76, and $400 million in 1977-78; nonpublic, $100 million annually, 1965-66 to 1977-78.

[2]Less than $50 million.

[3]Less than 0.05 percent.

NOTE: Data are for 50 States and the District of Columbia for all years. Details may not add to totals due to rounding.

SOURCES: Data for the table above were based on (1) statistics shown in U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publications: (a) *Statistics of State School Systems*, biennially, 1965-66 through 1973-74, (b) *Revenues and Expenditures for Public Elementary and Secondary Education*, 1975-76 through 1977-78, (c) *Financial Statistics of Institutions of Higher Education*, annually, 1965-66 through 1977-78 and (2) National Center for Education Statistics unpublished data.

Table 37.—Expenditures (1978-79 dollars) of regular educational institutions, with alternative projections, by instructional level and control of institution: United States, 1968-69 to 1988-89

(In billions of 1978-79 dollars)

Year and control	Total (all levels)	Elementary and secondary schools[1] (nonpublic school expenditures estimated on the basis of expenditures per teacher in public schools)				Institutions of higher education[2]		
		Total	Current expenditures[3]	Capital outlay[4]	Interest[5]	Total	Current expenditures[6]	Capital outlay[7]
1968-69:								
Total	128.8	84.8	70.2	12.3	2.3	44.0	34.4	9.6
Public	104.2	76.0	62.9	11.0	2.1	28.2	21.2	7.0
Nonpublic	24.6	8.8	7.3	1.3	.2	15.8	13.2	2.5
1969-70:								
Total	137.7	91.4	77.5	11.3	2.6	46.3	36.9	9.4
Public	111.6	81.9	69.5	10.1	2.3	29.7	23.0	6.6
Nonpublic	26.1	9.5	8.0	1.2	.3	16.6	13.9	2.7
1970-71:								
Total	143.4	95.4	81.4	11.3	2.7	48.0	39.3	8.7
Public	117.1	85.7	73.1	10.2	2.4	31.4	25.1	6.3
Nonpublic	26.3	9.7	8.3	1.1	.3	16.6	14.2	2.4
1971-72:								
Total	143.4	93.7	81.7	9.3	2.7	49.7	41.5	8.1
Public	116.9	84.3	73.5	8.4	2.4	32.6	26.7	5.9
Nonpublic	26.5	9.4	8.2	.9	.3	17.1	14.8	2.2
1972-73:								
Total	145.5	94.6	83.7	8.1	2.8	50.9	43.6	7.3
Public	119.0	85.3	75.5	7.3	2.5	33.7	28.3	5.4
Nonpublic	26.5	9.3	8.2	.8	.3	17.2	15.3	1.9
1973-74:								
Total	146.9	95.9	84.6	8.8	2.6	51.0	43.9	7.0
Public	120.7	86.5	76.3	7.9	2.3	34.2	29.0	5.2
Nonpublic	26.2	9.4	8.3	.9	.3	16.8	14.9	1.8
1974-75:								
Total	148.8	97.4	86.4	8.3	2.7	51.4	45.1	6.3
Public	122.4	87.7	77.8	7.5	2.4	34.7	30.2	4.6
Nonpublic	26.3	9.6	8.6	.8	.3	16.7	14.9	1.7
1975-76:								
Total	152.1	99.3	88.5	8.2	2.7	52.8	46.8	6.0
Public	125.3	89.3	79.5	7.4	2.4	36.0	31.5	4.5
Nonpublic	26.9	10.1	9.0	.8	.3	16.8	15.3	1.5
1976-77:								
Total	152.9	98.6	88.9	7.2	2.6	54.3	48.5	5.7
Public	124.8	88.0	79.4	6.4	2.3	36.8	32.6	4.2
Nonpublic	28.1	10.6	9.5	.8	.3	17.5	15.9	1.6
1977-78:								
Total	152.4	98.2	89.4	6.5	2.4	54.2	49.1	5.1
Public	124.4	87.9	80.0	5.8	2.1	36.5	32.8	3.8
Nonpublic	28.0	10.4	9.4	.7	.3	17.6	16.3	1.3
Intermediate alternative projections[8]								
1978-79:								
Total	155.0	100.0	91.0	6.7	2.4	55.0	49.9	5.0
Public	126.4	89.4	81.3	6.0	2.1	37.0	33.3	3.7
Nonpublic	28.6	10.6	9.7	.7	.3	18.0	16.6	1.3

See footnotes at end of table.

Table 37.—Expenditures (1978-79 dollars) of regular educational institutions, with alternative projections, by instructional level and control of institution: United States, 1968-69 to 1988-89—Cont.

(In billions of 1978-79 dollars)

Year and control	Total (all levels)	Elementary and secondary schools[1] (nonpublic school expenditures estimated on the basis of expenditures per teacher in public schools)				Institutions of higher education[2]		
		Total	Current expenditures[3]	Capital outlay[4]	Interest[5]	Total	Current expenditures[6]	Capital outlay[7]
1979-80:								
Total	154.4	99.3	90.6	6.4	2.3	55.1	50.1	5.0
Public	125.7	88.3	80.6	5.7	2.0	37.4	33.7	3.7
Nonpublic	28.7	11.0	10.0	.7	.3	17.7	16.4	1.3
1980-81:								
Total	153.0	98.2	89.9	6.1	2.3	54.8	50.4	4.4
Public	124.2	87.1	79.8	5.4	2.0	37.1	34.0	3.1
Nonpublic	28.8	11.1	10.1	.7	.3	17.7	16.4	1.3
1981-82:								
Total	152.9	97.9	89.9	5.9	2.3	55.0	51.0	4.0
Public	123.9	86.7	79.6	5.2	2.0	37.2	34.5	2.7
Nonpublic	29.0	11.2	10.3	.7	.3	17.8	16.5	1.3
1982-83:								
Total	153.8	98.0	90.2	5.6	2.3	55.8	52.1	3.8
Public	124.8	87.0	80.0	5.0	2.0	37.8	35.4	2.5
Nonpublic	29.0	11.0	10.2	.6	.3	18.0	16.7	1.3
1983-84:								
Total	156.1	99.5	91.8	5.6	2.3	56.6	53.0	3.6
Public	126.3	87.9	81.0	4.9	2.0	38.4	36.1	2.3
Nonpublic	29.9	11.7	10.8	.7	.3	18.2	16.9	1.3
1984-85:								
Total	158.3	101.2	93.4	5.6	2.3	57.1	53.7	3.4
Public	128.1	89.2	82.4	4.9	2.0	38.9	36.7	2.1
Nonpublic	30.2	12.0	11.0	.7	.3	18.2	17.0	1.3
1985-86:								
Total	162.2	104.5	95.9	6.4	2.3	57.7	54.4	3.3
Public	131.4	92.1	84.5	5.6	2.0	39.3	37.3	2.1
Nonpublic	30.7	12.4	11.4	.8	.3	18.3	17.1	1.2
1986-87:								
Total	166.7	108.1	99.0	6.8	2.3	58.6	55.3	3.2
Public	135.1	95.1	87.1	6.0	2.0	40.0	38.0	2.0
Nonpublic	31.5	13.0	11.9	.8	.3	18.5	17.3	1.2
1987-88:								
Total	171.2	111.5	102.4	6.8	2.3	59.7	56.5	3.2
Public	138.9	98.0	90.0	6.0	2.0	40.9	38.9	2.0
Nonpublic	32.3	13.5	12.4	.8	.3	18.8	17.6	1.2
1988-89:								
Total	175.3	114.6	105.4	6.8	2.3	60.7	57.6	3.1
Public	142.3	100.6	92.5	6.0	2.0	41.7	39.8	1.9
Nonpublic	33.0	14.0	12.9	.8	.3	19.0	17.8	1.2
Low alternative projections[8]								
1978-79:								
Total	154.1	100.0	91.0	6.7	2.4	54.1	48.8	5.4
Public	125.6	89.4	81.3	6.0	2.1	36.2	32.1	4.1
Nonpublic	28.5	10.6	9.7	.7	.3	17.9	16.6	1.3
1979-80:								
Total	152.6	99.2	90.6	6.4	2.2	53.4	48.4	5.0
Public	124.1	88.3	80.6	5.7	2.0	35.8	32.1	3.7
Nonpublic	28.5	10.9	10.0	.7	.2	17.6	16.3	1.3

See footnotes at end of table.

Table 37.—Expenditures (1978-79 dollars) of regular educational institutions, with alternative projections, by instructional level and control of institution: United States, 1968-69 to 1988-89—Cont.

(In billions of 1978-79 dollars)

Year and control	Total (all levels)	Elementary and secondary schools[1] (nonpublic school expenditures estimated on the basis of expenditures per teacher in public schools)				Institutions of higher education[2]		
		Total	Current expenditures[3]	Capital outlay[4]	Interest[5]	Total	Current expenditures[6]	Capital outlay[7]
1980-81:								
Total	150.0	98.2	89.9	6.1	2.2	51.8	47.6	4.3
Public	121.6	87.1	79.8	5.4	2.0	34.5	31.5	3.0
Nonpublic	28.4	11.1	10.1	.7	.2	17.3	16.1	1.3
1981-82:								
Total	149.6	97.8	89.8	5.9	2.1	51.8	47.9	3.9
Public	121.1	86.6	79.5	5.2	1.9	34.5	31.8	2.6
Nonpublic	28.5	11.2	10.3	.7	.2	17.3	16.1	1.3
1982-83:								
Total	149.9	97.6	89.8	5.6	2.1	52.3	48.6	3.7
Public	121.3	86.6	79.7	5.0	1.9	34.7	32.3	2.4
Nonpublic	28.6	11.0	10.1	.6	.2	17.6	16.3	1.3
1983-84:								
Total	151.5	98.8	91.1	5.6	2.2	52.7	49.2	3.5
Public	122.1	87.2	80.4	4.9	1.9	34.9	32.7	2.2
Nonpublic	29.4	11.6	10.7	.7	.3	17.8	16.5	1.3
1984-85:								
Total	152.8	100.1	92.5	5.4	2.2	52.7	49.3	3.4
Public	123.0	88.3	81.6	4.8	1.9	34.7	32.5	2.2
Nonpublic	29.8	11.8	10.9	.6	.3	18.0	16.8	1.2
1985-86:								
Total	155.6	103.3	94.9	6.2	2.2	52.3	49.1	3.3
Public	125.1	90.9	83.5	5.5	1.9	34.2	32.2	2.1
Nonpublic	30.5	12.4	11.4	.7	.3	18.1	16.9	1.2
1986-87:								
Total	158.4	106.4	97.4	6.8	2.2	52.0	49.0	3.1
Public	127.6	93.6	85.7	6.0	1.9	34.0	32.1	1.9
Nonpublic	30.8	12.8	11.7	.8	.3	18.0	16.9	1.2
1987-88:								
Total	161.6	109.4	100.4	6.8	2.2	52.2	49.3	3.0
Public	130.2	96.1	88.2	6.0	1.9	34.1	32.3	1.8
Nonpublic	31.4	13.3	12.2	.8	.3	18.1	17.0	1.2
1988-89:								
Total	164.6	112.1	103.0	6.8	2.3	52.5	49.5	3.0
Public	132.5	98.4	90.4	6.0	1.9	34.1	32.3	1.8
Nonpublic	32.1	13.7	12.6	.8	.3	18.4	17.2	1.2
High alternative projections[8]								
1978-79:								
Total	155.4	100.0	91.0	6.7	2.4	55.4	50.0	5.5
Public	126.8	89.4	81.3	6.0	2.1	37.4	33.4	4.1
Nonpublic	28.6	10.6	9.7	.7	.3	18.0	16.6	1.4
1979-80:								
Total	155.5	99.1	90.5	6.4	2.2	56.4	51.1	5.3
Public	126.3	88.2	80.5	5.7	2.0	38.1	34.3	3.9
Nonpublic	29.2	10.9	10.0	.7	.2	18.3	16.8	1.4
1980-81:								
Total	154.7	98.2	89.9	6.1	2.2	56.5	51.7	4.8
Public	125.2	87.1	79.8	5.4	2.0	38.1	34.7	3.3
Nonpublic	29.5	11.1	10.1	.7	.2	18.4	17.0	1.5

See footnotes at end of table.

Table 37.—Expenditures (1978-79 dollars) of regular educational institutions, with alternative projections, by instructional level and control of institution: United States, 1968-69 to 1988-89—Cont.

(In billions of 1978-79 dollars)

Year and control	Total (all levels)	Elementary and secondary schools[1] (nonpublic school expenditures estimated on the basis of expenditures per teacher in public schools)				Institutions of higher education[2]		
		Total	Current expenditures[3]	Capital outlay[4]	Interest[5]	Total	Current expenditures[6]	Capital outlay[7]
1981-82:								
Total	155.3	98.0	90.0	5.9	2.2	57.3	52.7	4.6
Public	125.4	86.8	79.7	5.2	1.9	38.6	35.5	3.1
Nonpublic	29.9	11.2	10.3	.7	.3	18.7	17.2	1.5
1982-83:								
Total	157.0	98.4	90.5	5.6	2.1	58.6	54.2	4.4
Public	126.8	87.3	80.3	5.0	1.9	39.5	36.6	2.9
Nonpublic	30.2	11.1	10.2	.6	.2	19.1	17.6	1.5
1983-84:								
Total	160.2	100.3	92.5	5.6	2.2	59.9	55.6	4.4
Public	129.0	88.5	81.6	4.9	1.9	40.5	37.7	2.8
Nonpublic	31.2	11.8	10.9	.7	.3	19.4	17.9	1.6
1984-85:								
Total	163.0	102.2	94.5	5.6	2.2	60.8	56.6	4.4
Public	131.3	90.1	83.3	4.9	1.9	41.2	38.5	2.8
Nonpublic	31.7	12.1	11.2	.7	.3	19.6	18.1	1.6
1985-86:								
Total	167.6	105.8	97.3	6.4	2.3	61.8	57.5	4.4
Public	135.2	93.2	85.7	5.6	2.0	42.0	39.2	2.8
Nonpublic	32.4	12.6	11.6	.8	.3	19.8	18.3	1.6
1986-87:								
Total	172.9	109.8	100.6	6.9	2.3	63.1	58.8	4.4
Public	139.6	96.6	88.5	6.1	2.0	43.0	40.2	2.8
Nonpublic	33.3	13.2	12.1	.8	.3	20.1	18.6	1.6
1987-88:								
Total	178.2	113.6	104.4	6.9	2.3	64.6	60.2	4.5
Public	143.9	99.8	91.7	6.1	2.0	44.1	41.3	2.9
Nonpublic	34.3	13.8	12.7	.8	.3	20.5	18.9	1.6
1988-89:								
Total	183.1	117.1	107.7	6.9	2.4	66.0	61.5	4.5
Public	148.0	102.8	94.6	6.1	2.1	45.2	42.3	2.9
Nonpublic	35.1	14.3	13.1	.8	.3	20.8	19.2	1.6

[1]Excludes expenditures for "other" schools. See table 36 on expenditures by source of funds (in current dollars) for data on these schools. All nonpublic elementary and secondary school expenditures shown here are estimated on the basis of expenditures per teacher in public elementary and secondary schools.

[2]Includes expenditures for subcollegiate departments of institutions of higher education, estimated at $95 million in 1975-76. Excludes expenditures for interest paid from plant funds. (An estimated $400 million was expended for total interest in 1975-76.)

[3]Includes current expenditures of public elementary and secondary school systems for community services, summer schools, community colleges, and adult education.

[4]Includes capital outlay of State and local school building authorities.

[5]Interest for nonpublic schools is based on interest for public schools.

[6]Includes expenditures for interest from current funds. Excludes transfers from current funds.

[7]The estimated annual capital outlay data shown here include estimated expenditures for replacement and rehabilitation.

[8]For methodological details see appendix A, section A-4. For primary assumptions made see appendix B.

NOTE.—Data are for 50 States and the District of Columbia. Because of rounding, details may not add to totals.

SOURCES: Data are a summary of tables 39 through 45, each of which indicates sources of data.

Table 38.—Expenditures (current dollars) of regular educational institutions, by instructional level and control of institution: United States, 1968-69 to 1977-78

(In billions of current, unadjusted dollars)

Year and control	Total (all levels)	Elementary and secondary schools[1] (nonpublic school expenditures estimated on the basis of expenditures per teacher in public schools)				Institutions of higher education[2]		
		Total	Current expenditures[3]	Capital outlay[4]	Interest[5]	Total	Current expenditures[6]	Capital outlay[7]
1968-69:								
Total	61.2	39.2	32.9	5.2	1.1	22.0	17.9	4.1
Public	49.2	35.2	29.5	4.7	1.0	14.0	11.0	3.0
Nonpublic	12.0	4.0	3.4	.5	.1	8.0	6.9	1.1
1969-70:								
Total	70.1	45.4	38.9	5.2	1.3	24.7	20.3	4.4
Public	56.6	40.8	34.9	4.7	1.2	15.8	12.7	3.1
Nonpublic	13.5	4.6	4.0	.5	.1	8.9	7.6	1.3
1970-71:								
Total	78.4	51.3	44.1	5.7	1.5	27.1	22.8	4.3
Public	63.7	46.0	39.6	5.1	1.3	17.7	14.6	3.1
Nonpublic	14.7	5.3	4.5	.6	.2	9.4	8.2	1.2
1971-72:								
Total	82.7	53.5	46.9	5.0	1.6	29.2	24.9	4.3
Public	67.2	48.1	42.2	4.5	1.4	19.1	16.0	3.1
Nonpublic	15.5	5.4	4.7	.5	.2	10.1	8.9	1.2
1972-73:								
Total	89.1	57.7	51.2	4.7	1.7	31.4	27.3	4.1
Public	72.6	51.9	46.2	4.1	1.5	20.7	17.7	3.0
Nonpublic	16.5	5.8	5.0	.6	.2	10.7	9.6	1.1
1973-74:								
Total	97.6	63.3	56.0	5.6	1.7	34.3	29.9	4.4
Public	79.9	57.0	50.5	5.0	1.5	22.9	19.7	3.2
Nonpublic	17.7	6.3	5.5	.6	.2	11.4	10.2	1.2
1974-75:								
Total	110.8	71.9	63.7	6.3	1.9	38.9	34.1	4.8
Public	91.1	64.8	57.4	5.7	1.7	26.3	22.8	3.5
Nonpublic	19.7	7.1	6.3	.6	.2	12.6	11.3	1.3
1975-76:								
Total	121.6	78.9	70.1	6.6	2.1	42.7	37.9	4.8
Public	100.0	70.9	63.0	5.9	1.9	29.1	25.5	3.6
Nonpublic	21.6	8.0	7.1	.7	.2	13.6	12.4	1.2
1976-77:								
Total	130.3	83.9	75.8	5.9	2.2	46.4	41.5	4.8
Public	106.4	75.0	67.7	5.3	2.0	31.4	27.9	3.5
Nonpublic	23.8	8.9	8.1	.6	.2	14.9	13.6	1.3
1977-78:								
Total	139.8	90.3	82.3	5.8	2.2	49.5	44.9	4.6
Public	114.2	80.8	73.6	5.2	2.0	33.4	30.0	3.4
Nonpublic	25.6	9.5	8.7	.6	.2	16.1	14.9	1.2

[1]Excludes expenditures for "other" schools. See table 36 on expenditures by source of funds for data on these schools. All nonpublic elementary and secondary school expenditures shown here are estimated on the basis of expenditures per teacher in public elementary and secondary schools.

[2]Includes expenditures for subcollegiate departments of institutions of higher education, estimated at $95 million in 1975-76. Excludes expenditures for interest paid from plant funds. (An estimated $400 million was expended for total interest in 1975-76.)

[3]Includes current expenditures of public elementary and secondary school systems for community services, summer schools, community colleges, and adult education.

[4]Includes capital outlay of State and local school building authorities.

[5]Interest for nonpublic schools is based on interest for public schools.

[6]Includes expenditures for interest from current funds. Excludes transfers from current funds.

[7]The estimated annual capital outlay data shown here include estimated expenditures for replacement and rehabilitation.

NOTE.—Data are for 50 States and the District of Columbia. Because of rounding, details may not add to totals.

SOURCES: Data are a summary of tables 39 through 45, each of which indicates sources of data.

Table 39.—Current expenditures of public school systems, with alternative projections: United States, 1968-69 to 1988-89

Year	Average daily attendance (000s)	Allocated to pupil costs[1]				All programs[2] total (in billions)	
		Per pupil in average daily attendance		Total (in billions)			
		Current dollars	1978-79 dollars	Current dollars	1978-79 dollars	Current dollars	1978-79 dollars
1968-69[3]	41,639	$ 696	$1,484	$29.0	$61.8	$29.5	$62.9
1969-70	41,934	816	1,625	34.2	68.2	34.9	69.5
1970-71[3]	42,428	911	1,681	38.7	71.3	39.6	73.1
1971-72	42,254	990	1,725	41.8	72.9	42.2	73.5
1972-73[4]	42,179	1,077	1,760	45.4	74.2	46.2	75.5
1973-74[3]	41,725	1,199	1,823	50.9	75.6	50.5	76.3
1974-75[4]	41,524	1,365	1,852	56.7	76.9	57.4	77.8
1975-76[4]	41,274	1,509	1,903	62.3	78.5	63.0	79.5
1976-77[4]	40,832	1,638	1,920	66.9	78.4	67.7	79.4
1977-78[4]	40,080	1,823	1,979	73.1	79.3	73.6	80.0
Intermediate alternative projections[5]							
1978-79	39,154	2,036	2,036	79.7	79.7	81.3	81.3
1979-80	38,232	...	2,066	...	79.0	...	80.6
1980-81	37,440	...	2,089	...	78.2	...	79.8
1981-82	36,669	...	2,128	...	78.0	...	79.6
1982-83	35,982	...	2,180	...	78.5	...	80.0
1983-84	35,573	...	2,232	...	79.4	...	81.0
1984-85	35,412	...	2,281	...	80.8	...	82.4
1985-86	35,464	...	2,337	...	82.9	...	84.5
1986-87	35,678	...	2,394	...	85.4	...	87.1
1987-88	35,947	...	2,452	...	88.1	...	90.0
1988-89	36,224	...	2,504	...	90.7	...	92.5
Low alternative projections[5]							
1978-79	39,154	2,036	2,036	79.7	79.7	81.3	81.3
1979-80	38,232	...	2,066	...	79.0	...	80.6
1980-81	37,440	...	2,089	...	78.2	...	79.8
1981-82	36,669	...	2,125	...	77.9	...	79.5
1982-83	35,982	...	2,172	...	78.2	...	79.7
1983-84	35,573	...	2,217	...	78.9	...	80.4
1984-85	35,412	...	2,259	...	80.0	...	81.6
1985-86	35,464	...	2,307	...	81.8	...	83.5
1986-87	35,678	...	2,356	...	84.1	...	85.7
1987-88	35,947	...	2,406	...	86.5	...	88.2
1988-89	36,224	...	2,448	...	88.7	...	90.4
High alternative projections[5]							
1978-79	39,154	2,036	2,036	79.7	79.7	81.3	81.3
1979-80	38,232	...	2,065	...	78.9	...	80.5
1980-81	37,440	...	2,089	...	78.2	...	79.8
1981-82	36,669	...	2,131	...	78.1	...	79.7
1982-83	35,982	...	2,189	...	78.8	...	80.3
1983-84	35,573	...	2,249	...	80.0	...	81.6
1984-85	35,412	...	2,305	...	81.6	...	83.3
1985-86	35,464	...	2,368	...	84.0	...	85.7
1986-87	35,678	...	2,433	...	86.8	...	88.5
1987-88	35,947	...	2,500	...	89.9	...	91.7
1988-89	36,224	...	2,560	...	92.7	...	94.6

[1]Includes only the current expenditures for public day schools allocated to pupil costs; excludes the other expenditures shown in footnote 2.

[2]Includes current expenditures for summer schools, adult education, and community colleges operated by school districts, in addition to expenditures allocable to pupil costs.

[3]Derived from estimates furnished by States.

[4]Derived from *Revenues and Expenditures for Public Elementary and Secondary Education.*

[5]1973-74 and prior biennial years from *Statistics of State School Systems.*

[6]For methodological details see appendix A, section A-4. For primary assumptions made, see appendix B.

NOTE—Data are for 50 States and the District of Columbia for all years. The expenditures shown in this table include current expenditures for administration of State boards of education and intermediate administrative units. Conversion to 1978-79 dollars was done on the basis of the PGSL index. See appendix F, table F-5.

SOURCES: Data are based on U.S. Department of Health, Education and Welfare, National Center for Education Statistics, publications: (1) *Statistics of State School Systems*, 1969-79 through 1973-74 biennial years), and (2) *Revenues and Expenditures for Public Elementary and Secondary Education*, 1972-73, 1974-75, through 1977-78.

Table 40.—Current expenditures for salaries of classroom teachers in regular public elementary and secondary schools, with alternative projections: United States, 1968-69 to 1988-89

Year	Number of classroom teachers (000s)	Salaries of classroom teachers: Average annual salary, Current dollars	Salaries of classroom teachers: Average annual salary, 1978-79 dollars	Salaries of classroom teachers: Total (in billions), Current dollars	Salaries of classroom teachers: Total (in billions), 1978-79 dollars
1968-69	1,936	$ 8,260	$15,885	$16.0	$30.8
1969-70[1]	2,014	8,944	16,232	18.0	32.7
1970-71	2,055	9,695	16,744	19.9	34.4
1971-72[1]	2,063	10,342	17,237	21.3	35.6
1972-73	2,103	10,530	16,848	22.1	35.4
1973-74[1]	2,138	11,223	16,504	24.0	35.3
1974-75	2,165	12,291	16,258	26.6	35.2
1975-76	2,196	13,177	16,268	28.9	35.7
1976-77	2,186	14,134	16,512	30.9	36.1
1977-78	2,209	15,027	16,441	33.2	36.3
1978-79	2,199	15,867	15,867	34.9	34.9
Intermediate alternative projections[3]					
1979-80	2,169		15,435		33.5
1980-81	2,141		15,160		32.5
1981-82	2,114		15,346		32.4
1982-83	2,091		15,488		32.4
1983-84	2,084		15,621		32.6
1984-85	2,090		15,791		33.0
1985-86	2,108		16,107		34.0
1986-87	2,135		16,497		35.2
1987-88	2,164		16,850		36.5
1988-89	2,194		17,115		37.6
Low alternative projections[3]					
1979-80	2,169		15,435		33.5
1980-81	2,141		15,160		32.5
1981-82	2,114		15,346		32.4
1982-83	2,091		15,406		32.2
1983-84	2,084		15,255		31.8
1984-85	2,090		15,105		31.6
1985-86	2,108		14,955		31.5
1986-87	2,135		14,804		32.1
1987-88	2,164		14,654		31.7
1988-89	2,194		14,504		31.8
High alternative projections[3]					
1979-80	2,169		15,866		34.4
1980-81	2,141		15,684		33.6
1981-82	2,114		15,951		33.7
1982-83	2,091		16,148		33.8
1983-84	2,084		16,295		34.0
1984-85	2,090		16,448		34.4
1985-86	2,108		16,728		35.3
1986-87	2,135		17,072		36.4
1987-88	2,164		17,378		37.6
1988-89	2,194		17,602		38.6

[1]Data on number of classroom teachers from table 28.
[2]Estimates of salaries derived from *Statistics of State School Systems*. For the other years, estimates are based on interpolations and extrapolations of the trend.
[3]For methodological details, see appendix A, section A-4.

NOTE.—Data are for 50 States and the District of Columbia for all years. Conversion to 1978-79 dollars was done on the basis of the Consumer Price Index. See appendix F, table F-5.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publication: *Statistics of State School Systems*.

Table 41.—Capital outlay of public elementary and secondary school systems, with projections: United States, 1968-69 to 1988-89

(In millions)

Year	Total capital outlay, including construction, equipment, etc.	
	Current dollars	1978-79 dollars
1968-69[1]	$ 4,654	$10,976
1969-70[2]	4,659	10,063
1970-71[1]	5,061	10,163
1971-72[2]	4,459	8,366
1972-73[1]	4,091	7,266
1968-69 to 1972-73	22,924	46,834
1973-74[2]	4,979	7,878
1974-75[1]	5,746	7,531
1975-76[1]	5,920	7,354
1976-77[1]	5,344	6,354
1977-78[1]	5,245	5,783
1973-74 to 1977-78	27,234	34,900
	Intermediate alternative projections[4]	
1978-79	5,963	5,963
1979-80	...	5,695
1980-81	...	5,361
1981-82	...	5,161
1982-83	...	5,008
1978-79 to 1982-83	...	27,188
1983-84	...	4,914
1984-85	...	4,859
1985-86	...	5,556
1986-87	...	6,010
1987-88	...	6,027
1983-84 to 1987-88	...	27,366
1988-89	...	6,032
	Low alternative projections[4]	
1978-79	...	5,963
1979-80	...	5,695
1980-81	...	5,361
1981-82	...	5,158
1982-83	...	4,998
1978-79 to 1982-83	...	27,175
1983-84	...	4,895
1984-85	...	4,831
1985-86	...	5,514
1986-87	...	5,953
1987-88	...	5,959
1983-84 to 1987-88	...	27,152
1988-89	...	5,953
	High alternative projections[4]	
1978-79	...	5,963
1979-80	...	5,695
1980-81	...	5,361
1981-82	...	5,165
1982-83	...	5,019
1978-79 to 1982-83	...	27,203

See footnotes at end of table.

Table 41.—Capital outlay of public elementary and secondary school systems, with projections: United States, 1968-69 to 1988-89—Cont.
(In millions)

Year	Total capital outlay, including construction, equipment, etc.	
	Current dollars	1978-79 dollars
1983-84	...	4,934
1984-85	...	4,888
1985-86	...	5,601
1986-87	...	6,066
1987-88	...	6,094
1983-84 to 1987-88	...	27,583
1988-89	...	6,111

[1]Estimates furnished by State education departments.
[2]From *Statistics of State School Systems*.
[3]From *Revenues and Expenditures for Public Elementary and Secondary Education*.
[4]For methodological details, see appendix A, section A-4. For primary assumptions made, see appendix B, section B-4.

NOTE.—Data are for 50 States and the District of Columbia for all years.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publications: (1) *Statistics of State School Systems*, 1963-64 through 1973-74; (2) *Statistics of Public Schools*, fall 1965 through fall 1975; and (3) *Revenues and Expenditures for Public Elementary and Secondary Education*, 1972-73 through 1975-76. Conversion to 1978-79 dollars was based on the PICNR Index (see appendix F, table F-5 for details).

Table 42.—Expenditures for interest by public elementary and secondary school systems, with projections: United States, 1968-69 to 1988-89

(In millions)

Year	Total interest including payments to school-housing authorities or similar agencies	
	Current dollars	1978-79 dollars
1968-69[1]	$1,000	$2,132
1969-70[2]	1,171	2,333
1970-71[1]	1,300	2,399
1971-72[2]	1,378	2,401
1972-73[3]	1,547	2,528
1973-74[2]	1,544	2,332
1974-75[3]	1,737	2,357
1975-76[1]	1,896	2,391
1976-77[3]	1,953	2,290
1977-78[3]	1,952	2,119
Intermediate alternative projections[4]		
1978-79	2,108	2,108
1979-80	...	2,048
1980-81	...	2,010
1981-82	...	1,987
1982-83	...	1,966
1983-84	...	1,956
1984-85	...	1,953
1985-86	...	1,960
1986-87	...	1,980
1987-88	...	2,005
1988-89	...	2,036
Low alternative projections[4]		
1978-79	2,108	2,108
1979-80	...	1,999
1980-81	...	1,954
1981-82	...	1,935
1982-83	...	1,915
1983-84	...	1,901
1984-85	...	1,897
1985-86	...	1,904
1986-87	...	1,925
1987-88	...	1,953
1988-89	...	1,986
High alternative projections[4]		
1978-79	2,108	2,108
1979-80	...	2,001
1980-81	...	1,959
1981-82	...	1,948
1983-83	...	1,942
1983-84	...	1,941
1984-85	...	1,950
1985-86	...	1,972
1986-87	...	2,006
1987-88	...	2,048
1988-89	...	2,095

[1]Estimates furnished by State education departments.
[2]From *Statistics of State School Systems.*
[3]From *Revenues and Expenditures for Public Elementary and Secondary Education.*
[4]For methodological details, see appendix A, section A-4. For primary assumptions made, see appendix B.

NOTE.—Data are for 50 States and the District of Columbia for all years.

SOURCES: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publications: (1) *Statistics of State School Systems;* (2) *Statistics of Public Schools;* (3) *Revenues and Expenditures for Public Elementary and Secondary Education.* Conversion to 1978-79 dollars was based on the Consumer Price Index (see appendix F, table F-5 for details).

Table 43.—Expenditures from current funds and total current expenditures (1978-79 dollars) by institutions of higher education, with alternative projections: United States, 1968-69 to 1988-89

(In billions of 1978-79 dollars)

Year and control (1)	Educational and general: Student education[1] (2)	Research[2] (3)	Scholarships and fellowships[3] (4)	Public service[4] (5)	Auxiliary enterprises[5] (6)	Hospitals and independent operations[6] (7)	Mandatory transfers[7] (8)	Total current expenditures (cols. 2 thru 7 less col. 8) (9)
1968-69:								
Total	$20.8	$3.9	$1.6	$1.9	$4.9	$2.5	$1.1	$34.4
Public	13.4	2.3	.7	1.4	2.8	1.3	.8	21.2
Nonpublic	7.4	1.6	.9	.5	2.1	1.2	.3	13.2
1969-70:								
Total	22.6	3.9	1.8	2.1	5.0	2.7	1.3	36.9
Public	14.9	2.3	.8	1.6	2.9	1.4	1.0	23.0
Nonpublic	7.7	1.6	1.0	.5	2.1	1.3	.3	13.9
1970-71:								
Total	24.3	3.8	1.9	2.2	5.2	2.9	1.1	39.3
Public	16.3	2.3	.9	1.6	3.1	1.6	.8	25.1
Nonpublic	8.0	1.5	1.0	.6	2.1	1.3	.3	14.2
1971-72:								
Total	25.9	3.7	2.0	2.3	5.3	3.2	1.1	41.5
Public	17.6	2.2	1.0	1.7	3.2	1.7	.8	26.7
Nonpublic	8.3	1.5	1.0	.6	2.1	1.5	.3	14.8
1972-73:								
Total	27.6	3.8	2.1	2.3	5.3	3.5	1.1	43.6
Public	18.9	2.4	1.0	1.7	3.2	1.8	.8	28.3
Nonpublic	8.7	1.4	1.1	.6	2.1	1.7	.3	15.3
1973-74:								
Total	28.2	3.6	2.0	2.3	5.3	3.6	1.1	43.9
Public	19.5	2.3	1.0	1.8	3.2	2.0	.8	29.0
Nonpublic	8.7	1.3	1.0	.5	2.1	1.6	.3	14.9
1974-75:								
Total	28.3	4.1	2.0	2.1	5.4	4.6	1.3	45.1
Public	19.9	2.7	1.0	1.7	3.4	2.5	.9	30.2
Nonpublic	8.4	1.4	1.0	.4	2.0	2.1	.4	14.9
1975-76:								
Total	29.5	4.1	2.0	2.2	5.5	4.8	1.2	46.8
Public	20.9	2.7	1.0	1.7	3.5	2.6	.8	31.5
Nonpublic	8.6	1.4	1.0	.5	2.0	2.2	.4	15.3
1976-77:								
Total	30.2	4.2	2.1	2.3	5.7	5.4	1.2	48.5
Public	21.3	2.7	1.0	1.8	3.6	3.0	.8	32.6
Nonpublic	8.9	1.5	1.1	.5	2.1	2.4	.4	15.9
1977-78:								
Total	31.1	4.3	2.0	2.3	5.8	4.8	1.2	49.1
Public	22.0	2.8	0.9	1.8	3.7	2.4	.8	32.8
Nonpublic	9.1	1.5	1.1	.5	2.1	2.4	.4	16.3
Intermediate alternative projections[8]								
1978-79:								
Total	31.7	4.3	2.0	2.2	5.8	5.2	1.2	49.9
Public	22.3	2.9	.9	1.7	3.7	2.6	.8	33.3
Nonpublic	9.4	1.4	1.1	.5	2.1	2.6	.4	16.6
1979-80:								
Total	31.9	4.2	1.9	2.3	5.6	5.6	1.2	50.1
Public	22.6	2.9	0.8	1.8	3.6	2.8	.8	33.7
Nonpublic	9.3	1.3	1.1	.5	2.0	2.8	.4	16.4

See footnotes at end of table.

Table 43.—Expenditures from current funds and total current expenditures (1978-79 dollars) by institutions of higher education, with alternative projections: United States, 1968-69 to 1988-89—Cont.

(In billions of 1978-79 dollars)

Year and control (1)	Educational and general: Student education[1] (2)	Research[2] (3)	Scholarships and fellowships[3] (4)	Public service[4] (5)	Auxiliary enterprises[5] (6)	Hospitals and independent operations[6] (7)	Mandatory transfers[7] (8)	Total current expenditures (cols. 2 thru 7 less col. 8) (9)
1980-81:								
Total	$31.9	$4.2	$1.8	$2.3	$5.5	$5.9	$1.2	$50.4
Public	22.7	2.9	.8	1.8	3.6	3.0	.8	34.0
Nonpublic	9.2	1.3	1.0	.5	1.9	2.9	.4	16.4
1981-82:								
Total	32.1	4.2	1.8	2.3	5.6	6.2	1.2	51.0
Public	22.9	2.9	.8	1.8	3.7	3.2	.8	34.5
Nonpublic	9.2	1.3	1.0	.5	1.9	3.0	.4	16.5
1982-83:								
Total	32.9	4.2	1.7	2.3	5.7	6.4	1.2	52.1
Public	23.1	3.0	.7	1.8	3.8	3.3	.8	35.4
Nonpublic	9.4	1.2	1.0	.5	1.9	3.1	.4	16.7
1983-84:								
Total	33.7	4.3	1.7	2.3	5.7	6.5	1.1	53.0
Public	24.1	3.1	.7	1.8	3.8	3.4	.7	36.1
Nonpublic	9.6	1.2	1.0	.5	1.9	3.1	.4	16.9
1984-85:								
Total	34.2	4.3	1.7	2.3	5.6	6.7	1.1	53.7
Public	24.5	3.1	.7	1.8	3.8	3.5	.7	36.7
Nonpublic	9.7	1.2	1.0	.5	1.8	3.2	.4	17.0
1985-86:								
Total	34.6	4.4	1.7	2.2	5.7	6.9	1.1	54.4
Public	24.9	3.2	.7	1.7	3.9	3.6	.7	37.3
Nonpublic	9.7	1.2	1.0	.5	1.8	3.3	.4	17.1
1986-87:								
Total	35.3	4.5	1.6	2.1	5.8	7.0	1.1	55.3
Public	25.4	3.3	.6	1.7	4.0	3.7	.7	38.0
Nonpublic	9.9	1.2	1.0	.4	1.8	3.3	.4	17.3
1987-88:								
Total	36.2	4.6	1.6	2.1	5.9	7.2	1.1	56.5
Public	26.1	3.4	.6	1.7	4.1	3.8	.7	38.9
Nonpublic	10.1	1.2	1.0	.4	1.8	3.4	.4	17.6
1988-89:								
Total	37.1	4.6	1.6	2.1	5.9	7.3	1.1	57.6
Public	26.8	3.4	.6	1.7	4.1	3.9	.7	39.8
Nonpublic	10.3	1.2	1.0	.4	1.8	3.4	.4	17.8
Lower alternative projections[8]								
1978-79:								
Total	30.6	4.3	2.0	2.1	5.8	5.2	1.2	48.7
Public	21.2	2.9	.9	1.6	3.7	2.6	.8	32.1
Nonpublic	9.4	1.4	1.1	.5	2.1	2.6	.4	16.6
1979-80:								
Total	30.3	4.1	1.9	2.2	5.6	5.7	1.2	48.4
Public	21.1	2.8	.8	1.7	3.6	2.9	.8	32.1
Nonpublic	9.2	1.3	1.1	.5	2.0	2.8	.4	16.3
1980-81:								
Total	29.5	4.0	1.8	2.2	5.4	6.0	1.1	47.6
Public	20.5	2.8	.8	1.7	3.5	3.1	.7	31.5
Nonpublic	9.0	1.2	1.0	.5	1.9	2.9	.4	16.1

See footnotes at end of table.

Table 43.—Expenditures from current funds and total current expenditures (1978-79 dollars) by institutions of higher education, with alternative projections: United States, 1968-69 to 1988-89—Cont.

(In billions of 1978-79 dollars)

Year and control (1)	Educational and general: Student education[1] (2)	Research[2] (3)	Scholarships and fellowships[3] (4)	Public service[4] (5)	Auxiliary enterprises[5] (6)	Hospitals and independent operations[6] (7)	Mandatory transfers[7] (8)	Total current expenditures (cols. 2 thru 7 less col. 8) (9)
1981-82:								
Total	$29.4	$4.0	$1.7	$2.2	$5.4	$6.2	$1.1	$47.9
Public	20.5	2.8	.7	1.7	3.6	3.2	.7	31.8
Nonpublic	8.9	1.2	1.0	.5	1.8	3.0	.4	16.1
1982-83:								
Total	29.7	4.1	1.7	2.2	5.5	6.4	1.1	48.6
Public	20.6	2.9	.7	1.7	3.7	3.3	.7	32.3
Nonpublic	9.1	1.2	1.0	.5	1.8	3.1	.4	16.3
1983-84:								
Total	29.9	4.3	1.7	2.2	5.6	6.7	1.1	49.2
Public	20.7	3.1	.7	1.7	3.8	3.5	.7	32.7
Nonpublic	9.2	1.2	1.0	.5	1.8	3.2	.4	16.5
1984-85:								
Total	30.0	4.3	1.7	2.2	5.6	6.9	1.1	49.3
Public	20.5	3.1	.7	1.7	3.8	3.6	.7	32.5
Nonpublic	9.5	1.2	1.0	.5	1.8	3.3	.4	16.8
1985-86:								
Total	29.7	4.3	1.5	2.0	5.6	7.0	1.1	49.1
Public	20.1	3.1	.6	1.6	3.8	3.7	.7	32.2
Nonpublic	9.6	1.2	.9	.4	1.8	3.3	.4	16.9
1986-87:								
Total	29.4	4.4	1.5	2.0	5.6	7.2	1.1	49.0
Public	19.8	3.2	.6	1.6	3.8	3.8	.7	32.1
Nonpublic	9.6	1.2	.9	.4	1.8	3.4	.4	16.9
1987-88:								
Total	29.4	4.5	1.5	2.0	5.8	7.2	1.1	49.3
Public	19.8	3.3	.6	1.6	4.0	3.8	.7	32.3
Nonpublic	9.6	1.2	.9	.4	1.8	3.4	.4	17.0
1988-89:								
Total	29.6	4.5	1.5	2.0	5.6	7.4	1.1	49.5
Public	19.7	3.3	.6	1.6	3.9	3.9	.7	32.3
Nonpublic	9.9	1.2	.9	.4	1.7	3.5	.4	17.2
High alternative projections[8]								
1978-79:								
Total	31.7	4.3	2.0	2.3	5.8	5.2	1.2	50.0
Public	22.3	2.9	.9	1.8	3.9	2.6	.8	33.4
Nonpublic	9.4	1.4	1.1	.5	2.1	2.6	.4	16.6
1979-80:								
Total	32.4	4.1	2.0	2.4	5.6	5.6	1.2	51.1
Public	22.9	2.8	.9	1.9	3.6	2.8	.8	34.3
Nonpublic	9.5	1.3	1.1	.5	2.0	2.8	.4	16.8
1980-81:								
Total	32.8	4.1	2.0	2.5	5.6	5.9	1.2	51.7
Public	23.2	2.8	.9	2.0	3.6	3.0	.8	34.7
Nonpublic	9.6	1.3	1.1	.5	2.0	2.9	.4	17.0
1981-82:								
Total	33.3	4.2	2.1	2.5	5.8	6.1	1.2	52.7
Public	23.6	2.9	.9	2.0	3.8	3.1	.8	35.5
Nonpublic	9.7	1.3	1.2	.5	2.0	3.0	.4	17.2

See footnotes at end of table.

Table 43.—Expenditures from current funds and total current expenditures (1978-79 dollars) by institutions of higher education, with alternative projections: United States, 1968-69 to 1988-89—Cont.

(In billions of 1978-79 dollars)

Year and control (1)	Educational and general: Student education[1] (2)	Research[2] (3)	Scholarships and fellowships[3] (4)	Public service[4] (5)	Auxiliary enterprises[5] (6)	Hospitals and independent operations[6] (7)	Mandatory transfers[7] (8)	Total current expenditures (cols. 2 thru 7 less col. 8) (9)
1982-83:								
Total	$34.3	$4.3	$2.0	$2.7	$5.8	$6.3	$1.2	$54.2
Public	24.4	3.0	.8	2.1	3.8	3.3	.8	36.6
Nonpublic	9.9	1.3	1.2	.6	2.0	3.0	.4	17.6
1983-84:								
Total	35.3	4.3	2.0	2.7	5.9	6.5	1.2	55.6
Public	25.1	3.1	.8	2.1	3.9	3.4	.8	37.7
Nonpublic	10.2	1.2	1.2	.6	2.0	3.1	.4	17.9
1984-85:								
Total	36.0	4.3	2.0	2.7	6.0	6.7	1.2	56.6
Public	25.7	3.1	.8	2.1	4.0	3.5	.8	38.5
Nonpublic	10.3	1.2	1.2	.6	2.0	3.2	.4	18.1
1985-86:								
Total	36.7	4.4	2.0	2.8	6.0	6.9	1.2	57.5
Public	26.2	3.2	.8	2.2	4.0	3.6	.8	39.2
Nonpublic	10.5	1.2	1.2	.6	2.0	3.3	.4	18.3
1986-87:								
Total	37.6	4.6	2.0	2.8	6.1	7.0	1.2	58.8
Public	26.9	3.3	.8	2.2	4.1	3.7	.8	40.2
Nonpublic	10.7	1.3	1.2	.6	2.0	3.3	.4	18.6
1987-88:								
Total	38.6	4.7	2.0	2.8	6.3	7.1	1.2	60.2
Public	27.7	3.4	.8	2.2	4.2	3.7	.8	41.3
Nonpublic	10.9	1.3	1.2	.6	2.1	3.4	.4	18.9
1988-89:								
Total	39.7	4.8	2.0	2.8	6.4	7.2	1.2	61.5
Public	28.5	3.5	.8	2.2	4.3	3.8	.8	42.3
Nonpublic	11.2	1.3	1.2	.6	2.1	3.4	.4	19.2

[1]Includes instruction, academic support, libraries, institutional support, student services, and operation and maintenance of the plant. These are the items most nearly comparable to "student education" expenditures reported prior to 1974-75.

[2]Includes all sponsored research and other separately budgeted research with exception of Federally funded research and development centers which are included under "independent operations."

[3]Moneys given in the form of outright grants and trainee stipends to individuals enrolled in formal coursework, either for credit or not. Includes aid in the form of tuition or fee remissions. Prior to 1974-75, this category was entitled "student aid" and was not an educational and general item.

[4]Includes all expenditures for public service, activities established primarily to provide noninstructional services benefial to groups external to the institution, such as seminars and projects provided to the community. Includes expenditures for cooperative extension services. Includes mandatory transfers from educational general items. Public service appears to be somewhat comparable to expenditures previously grouped under "related activities."

[5]Includes residence halls, food services, college stores, and intercollegiate athletics. Includes mandatory transfers from auxiliary enterprises.

[6]Includes expenditures for hospitals and for "independent operations" which are generally limited to expenditures of federally funded research and development centers. Includes mandatory transfers from hospitals and independent operations.

[7]Mandatory transfers from current funds are those that must be made to fulfill a binding legal obligation of the institution. Includes debt-service provisions relating to academic buildings, including amounts set aside for debt retirement and interest, and required provisions for renewal and replacement to the extent not financed from other sources.

[8]For methodological details, see appendix A, section A-4. For primary assumptions made, see appendix B, table B-5.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals. Conversion to 1978-79 dollars was based on the Consumer Price Index (see appendix F, table F-5 for details).

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publication: *Financial Statistics of Institutions of Higher Education.*

Table 44.—Expenditures from current funds and total current expenditures (current dollars) by institutions of higher education: United States, 1968-69 to 1978-79

(In billions of current, unadjusted dollars)

Year and control (1)	Educational and general					Hospitals and independent operations[4] (7)	Mandatory transfers[7] (8)	Total current expenditures (cols. 2 thru 7 less col. 8) (9)
	Student education[1] (2)	Research[2] (3)	Scholarships and fellowships[3] (4)	Public service[4] (5)	Auxiliary enterprises[5] (6)			
1968-69								
Total	$10.7	$2.1	$0.9	$1.0	$2.5	$1.3	$0.6	$17.9
Public	6.9	1.2	.4	.8	1.4	.7	.4	11.0
Nonpublic	3.8	.9	.5	.2	1.1	.6	.2	6.9
1969-70								
Total	12.4	2.2	1.0	1.2	2.8	1.5	.8	20.3
Public	8.2	1.3	.5	.9	1.6	.8	.6	12.7
Nonpublic	4.2	.9	.5	.3	1.2	.7	.2	7.6
1970-71								
Total	14.2	2.2	1.1	1.3	3.0	1.6	.6	22.8
Public	9.5	1.3	.5	1.0	1.8	.9	.4	14.6
Nonpublic	4.7	.9	.6	.3	1.2	.7	.2	8.2
1971-72								
Total	15.5	2.3	1.2	1.4	3.2	1.9	.6	24.9
Public	10.5	1.4	.6	1.0	1.9	1.0	.4	16.0
Nonpublic	5.0	.9	.6	.4	1.3	.9	.2	8.9
1972-73								
Total	17.2	2.4	1.4	1.5	3.3	2.2	.7	27.3
Public	11.8	1.5	.7	1.1	2.0	1.1	.5	17.7
Nonpublic	5.4	.9	.7	.4	1.3	1.1	.2	9.6
1973-74								
Total	19.2	2.5	1.4	1.6	3.6	2.4	.8	29.9
Public	13.3	1.6	.7	1.2	2.2	1.3	.6	19.7
Nonpublic	5.9	.9	.7	.4	1.4	1.1	.2	10.2
1974-75								
Total	21.4	3.1	1.5	1.6	4.1	3.4	1.0	34.1
Public	15.1	2.0	.7	1.3	2.6	1.8	.7	22.8
Nonpublic	6.3	1.1	.8	.3	1.5	1.6	.3	11.3
1975-76								
Total	23.9	3.3	1.6	1.8	4.5	3.8	1.0	37.9
Public	16.9	2.2	.8	1.4	2.8	2.1	.7	25.5
Nonpublic	7.0	1.1	.8	.4	1.7	1.7	.3	12.4
1976-77								
Total	25.9	3.6	1.8	1.9	4.9	4.6	1.1	41.5
Public	18.3	2.4	.9	1.5	3.1	2.6	.7	27.9
Nonpublic	7.6	1.2	.9	.4	1.8	2.0	.4	13.6
1977-78								
Total	28.4	3.9	1.8	2.1	5.3	4.5	1.1	44.9
Public	20.1	2.6	.8	1.6	3.3	2.2	.8	30.0
Nonpublic	8.3	1.3	1.0	.4	1.9	2.2	.4	14.9

[1]Includes instruction, academic support, libraries, institutional support, student services and operation and maintenance of the plant. These are the items most nearly comparable to "student education" expenditures reported prior to 1974-75.

[2]Includes all sponsored research and other separately budgeted research with exception of federally funded research and development centers which are included under "independent operations."

[3]Monies given in the form of outright grants and trainee stipends to individuals enrolled in formal coursework, either for credit or not. Includes aid in the form of tuition or fee remissions. Prior to 1974-75, this category was entitled "student aid" and was not an educational and general item.

[4]Includes all expenditures for public service, activities established primarily to provide noninstructional services beneficial to groups external to the institution, such as seminars and projects provided to the community. Includes expenditures for cooperative extension services. Includes mandatory transfers from educational general items. Public service appears to be somewhat comparable to expenditures previously grouped under "related activities."

[5]Includes residence halls, food services, college stores, and intercollegiate athletics. Includes mandatory transfers from auxiliary enterprises.

[6]Includes expenditures for hospitals and for "independent operations" which are generally limited to expenditures of federally funded research and development centers. Includes mandatory transfers from hospitals and independent operations.

[7]Mandatory transfers from current funds are those that must be made to fulfill a binding legal obligation of the institution. Includes debt-service provisions relating to academic buildings, including amounts set aside for debt retirement and interest, and required provisions for renewal and replacement to the extent not financed from other sources.

NOTE: Data are for 50 States and the District of Columbia for all years. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publication *Financial Statistics of Institutions of Higher Education*.

Table 45.—Capital outlay of institutions of higher education, with projections: United States, 1968-69 to 1988-89

(In millions)

Year	Total		Public		Nonpublic	
	Current dollars	1978-79 dollars	Current dollars	1978-79 dollars	Current dollars	1978-79 dollars
1968-69	$4,057	$9,568	$2,978	$7,023	$1,079	$2,545
1969-70	4,332	9,361	3,066	6,625	1,266	2,736
1970-71	4,344	8,715	3,147	6,314	1,197	2,401
1971-72	4,336	8,439	3,156	5,924	1,180	2,215
1972-73	4,092	7,270	3,045	5,410	1,047	1,860
1973-74	4,440	7,016	3,276	5,177	1,164	1,839
1974-75	4,798	6,285	3,474	4,551	1,324	1,734
1975-76	4,809	5,975	3,612	4,488	1,197	1,487
1976-77	4,819	5,734	3,502	4,166	1,318	1,568
1977-78	4,627	5,101	3,422	3,772	1,205	1,329
Intermediate alternative projections[1]						
1978-79	5,037	5,037	3,712	3,712	1,325	1,325
1979-80	...	5,005	...	3,692	...	1,313
1980-81	...	4,374	...	3,058	...	1,316
1981-82	...	4,043	...	2,727	...	1,316
1982-83	...	3,775	...	2,468	...	1,308
1983-84	...	3,582	...	2,289	...	1,293
1984-85	...	3,417	...	2,146	...	1,272
1985-86	...	3,308	...	2,060	...	1,248
1986-87	...	3,224	...	2,001	...	1,223
1987-88	...	3,168	...	1,964	...	1,204
1988-89	...	3,118	...	1,924	...	1,194
Low alternative projections[1]						
1978-79	5,378	5,378	4,095	4,095	1,283	1,283
1979-80	...	4,942	...	3,670	...	1,272
1980-81	...	4,242	...	2,967	...	1,275
1981-82	...	3,911	...	2,636	...	1,275
1982-83	...	3,633	...	2,366	...	1,267
1983-84	...	3,458	...	2,205	...	1,253
1984-85	...	3,384	...	2,152	...	1,232
1985-86	...	3,271	...	2,062	...	1,209
1986-87	...	3,086	...	1,901	...	1,185
1987-88	...	2,957	...	1,791	...	1,166
1988-89	...	2,929	...	1,772	...	1,157
High alternative projections[1]						
1978-79	5,461	5,461	4,095	4,095	1,366	1,366
1979-80	...	5,297	...	3,862	...	1,435
1980-81	...	4,778	...	3,305	...	1,473
1981-82	...	4,572	...	3,063	...	1,509
1982-83	...	4,435	...	2,899	...	1,536
1983-84	...	4,377	...	2,821	...	1,556
1984-85	...	4,342	...	2,775	...	1,567
1985-86	...	4,358	...	2,784	...	1,574
1986-87	...	4,393	...	2,814	...	1,579
1987-88	...	4,458	...	2,867	...	1,591
1988-89	...	4,529	...	2,919	...	1,610

[1] For methodological details, see appendix A, section A-4. For primary assumptions made, see appendix B.

SOURCE: Expenditure data from U.S. Department of Health, Education and Welfare, National Center for Education Statistics publication: *Financial Statistics of Institutions of Higher Education*. Conversion to 1978-79 dollars based on PICNR index (see appendix F, table F-5 for details).

Chapter V
AVERAGE STUDENT CHARGES

Receipts from student charges are an important source of revenue for both public and private colleges and universities. Private universities, other 4-year institutions and 2-year institutions received 28, 44, and 57 percent, respectively, of their total revenue from tuition receipts. Public universities and other 4-year institutions received 13 percent, and public 2-year institutions received 15 percent of total revenue from tuition. However, tuition has not kept pace with inflation. Average tuition decreased between 1974-75 and 1978-79 in public universities and 2-year institutions and in private 4-year and 2-year institutions, as expressed in constant 1978-79 dollars. Tuition at public 4-year institutions and private universities increased slightly when adjusted for inflation. The level of tuition is contingent upon a variety of factors which are difficult to predict, therefore, projections to 1988-89 are presented at three levels; low, intermediate, and high. A detailed explanation of the calculations used for projections is presented in appendix A, section A.5.

The estimated average charge per student for tuition, room and board (in constant 1978-79 dollars) in public institutions decreased from $2,056 in 1974-75 to $2,009 in 1978-79. Charges in 1988-89 are expected to increase to $2,024 at the low alternative, $2,063 at the intermediate alternative, and $2,132 at the high alternative levels (figure 26). Charges for tuition, room and board at private institutions fell from $4,488 (in 1978-79 dollars) in 1974-75 to $4,477 in 1978-79. The 1988-89 average charge per student is projected to be $4,375 at the low, $4,502 at the intermediate, and $4,879 at the high alternative levels (figure 26). Some average charges for room and board have not exhibited any discernible trends in recent years and thus charges have been projected to hold constant (in constant 1978-79 dollars) at the unweighted average of the last five observations, with no alternatives.

The amount charged for tuition depends on several factors. In the public sector, the amout of State support offered to the institution helps determine the amount of tuition charged. Tuition comprises between 2 and 30 percent of total revenue at public universities in the 50 States. This wide range is indicative of the varying dependence on tuition as a source of revenue in the public sector. Future changes in the amount of support to higher education will directly affect tuition costs.

The level of tuition at private institutions is similarly influenced by the amount of financial support available from other sources. But one factor that tends to hold down tuition at private schools is competition with the public sector. The "tuition gap" or difference between public and private tuition has been approximately $2,300 for the past five years when tuition is expressed in constant 1978-79 dollars. Projections of tuition at the high and intermediate alternative levels indicate the tuition gap will remain at similar levels through 1988-89.

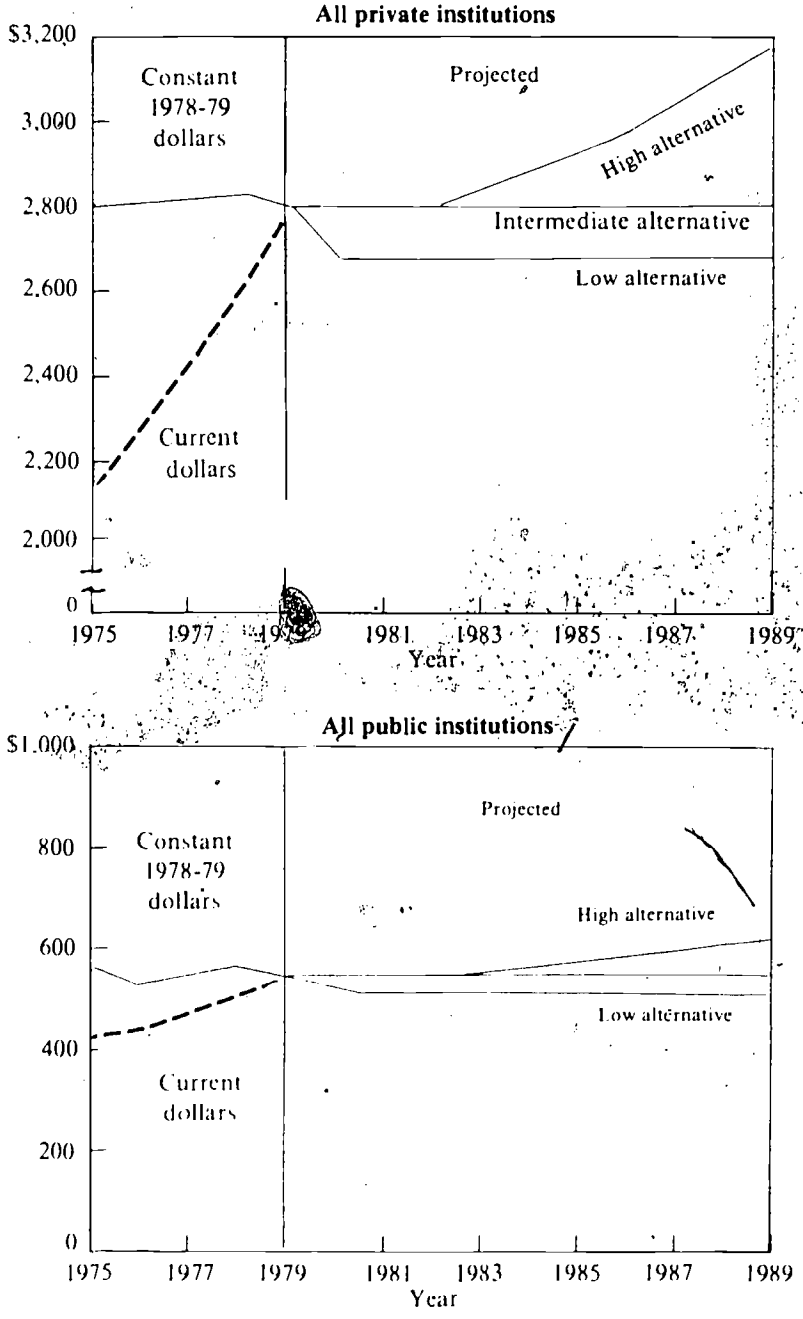
The average charges for tuition and required fees at public controlled universities decreased from $793 in 1974-75 to $770 in 1978-79. Only the high alternative projections anticipate an increase in the level by 1988-89. Tuition and fees at private universities increased from $3,459 in 1974-75 to $3,643 in 1978-79. By 1988-89, tuition is projected to decrease to $3,484 at the low alternative level, and increase to $4,145 at the high alternative level with the intermediate alternative remaining constant at the 1978-79 level.

Charges for dormitory rooms by publicly controlled institutions increased slightly from $655 in 1974-75 to $659 in 1978-79. Average charges for rooms at privately controlled institutions also showed an increase from $758 in 1974-75 to $780 in 1978-79. Projections of these charges for both public and pri-

vate higher education were held constant at the 1978-79 level.

Average charges for board at public colleges and universities fell from their 1974-75 level of $829 to $796 in 1978-79. Private institutions charged an average of $929 for board in 1974-75 and $904 in 1978-79. Projections of average board charges were held constant at the 1978-79 level.

Figure 26.—Estimated average charges for tuition and required fees per full-time-equivalent student in all institutions of higher education, with alternative projections[1], by control of institution: United States, 1974-75 to 1988-89



[1]Projections are in constant (1978-79 dollars).

Sources: Tables 46 and 47.

Table 46.—Estimated average charges (1978-79 dollars) per full-time-equivalent student in institutions of higher education with alternative projections, by type and control of institution: United States, 1974-75 to 1988-89

(Charges are for the academic year and in constant 1978-79 dollars)

Year and control	Total tuition, board and room				Tuition and required fees				Board (7-day basis)				Dormitory rooms			
	All	Uni-versity	Other 4-year	2-year	All	Uni-versity	Other 4-year	2-year	All	Uni-versity	Other 4-year	2-year	All	Uni-versity	Other 4-year	2-year
1974-75:																
Public	2,056	2,316	2,049	1,762	572	793	593	367	829	841	813	846	655	682	643	549
Nonpublic	4,488	5,376	4,164	3,415	2,801	3,459	2,586	1,809	929	1,023	884	876	758	894	694	730
1975-76:																
Public	2,056	2,388	2,044	1,712	535	793	579	303	859	897	816	871	662	698	649	538
Nonpublic	4,522	5,515	4,180	3,346	2,807	3,560	2,575	1,763	941	1,038	895	887	774	917	710	696
1976-77:																
Public	2,105	2,413	2,111	1,754	554	789	617	320	882	921	837	898	669	703	657	536
Nonpublic	4,552	5,674	4,173	3,407	2,812	3,669	2,556	1,772	970	1,079	916	931	770	926	701	704
1977-78:																
Public	2,079	2,372	2,105	1,744	568	801	637	329	845	879	805	888	666	692	663	527
Nonpublic	4,543	5,681	4,171	3,352	2,825	3,670	2,585	1,752	949	1,076	890	912	769	935	696	688
1978-79:																
Public	2,009	2,286	2,025	1,685	554	770	614	354	796	827	764	796	659	689	647	535
Nonpublic	4,477	5,604	4,123	3,344	2,793	3,643	2,562	1,764	904	1,021	851	866	780	940	710	714
Intermediate alternative projections[1]																
1979-80:																
Public	2,063	2,336	2,073	1,751	554	770	614	354	847	873	807	860	662	693	652	537
Nonpublic	4,502	5,612	4,151	3,364	2,793	3,643	2,562	1,764	939	1,047	887	894	770	922	702	706
1980-81:																
Public	2,063	2,336	2,073	1,751	554	770	614	354	847	873	807	860	662	693	652	537
Nonpublic	4,502	5,612	4,151	3,364	2,793	3,643	2,562	1,764	939	1,047	887	894	770	922	702	706
1981-82:																
Public	2,063	2,336	2,073	1,751	554	770	614	354	847	873	807	860	662	693	652	537
Nonpublic	4,502	5,612	4,151	3,364	2,793	3,643	2,562	1,764	939	1,047	887	894	770	922	702	706
1982-83:																
Public	2,063	2,336	2,073	1,751	554	770	614	354	847	873	807	860	662	693	652	537
Nonpublic	4,502	5,612	4,151	3,364	2,793	3,643	2,562	1,764	939	1,047	887	894	770	922	702	706
1983-84:																
Public	2,063	2,336	2,073	1,751	554	770	614	354	847	873	807	860	662	693	652	537
Nonpublic	4,502	5,612	4,151	3,364	2,793	3,643	2,562	1,764	939	1,047	887	894	770	922	702	706

Table 46.—Estimated average charges (1978-79 dollars) per full-time-equivalent student in institutions of higher education with alternative projections, by type and control of institution: United States, 1974-75 to 1988-89

(Charges are for the academic year and in constant 1978-79 dollars)—Cont.

Year and control	Total tuition, board and room				Tuition and required fees				Board (7-day basis)				Dormitory rooms			
	All	University	Other 4-year	2-year	All	University	Other 4-year	2-year	All	University	Other 4-year	2-year	All	University	Other 4-year	2-year
1984-85:																
Public	2,063	2,336	2,073	1,751	554	770	614	354	847	873	807	860	662	693	652	537
Nonpublic	4,502	5,612	4,151	3,364	2,793	3,643	2,562	1,764	939	1,047	887	894	770	922	702	706
1985-86:																
Public	2,063	2,336	2,073	1,751	554	770	614	354	847	873	807	860	662	693	652	537
Nonpublic	4,502	5,612	4,151	3,364	2,793	3,643	2,562	1,764	939	1,047	887	894	770	922	702	706
1986-87:																
Public	2,063	2,336	2,073	1,751	554	770	614	354	847	873	807	860	662	693	652	537
Nonpublic	4,502	5,612	4,151	3,364	2,793	3,643	2,562	1,764	939	1,047	887	894	770	922	702	706
1987-88:																
Public	2,063	2,336	2,073	1,751	554	770	614	354	847	873	807	860	662	693	652	537
Nonpublic	4,502	5,612	4,151	3,364	2,793	3,643	2,562	1,764	939	1,047	887	894	770	922	702	706
1988-89:																
Public	2,063	2,336	2,073	1,751	554	770	614	354	847	873	807	860	662	693	652	537
Nonpublic	4,502	5,612	4,151	3,364	2,793	3,643	2,562	1,764	939	1,047	887	894	770	922	702	706
Low alternative projections[1]																
1979-80:																
Public	2,031	2,292	2,049	1,712	522	726	590	315	847	873	807	860	662	693	652	537
Nonpublic	4,375	5,453	4,036	3,290	2,666	3,484	2,447	1,690	939	1,047	887	894	770	922	702	706
1980-81:																
Public	2,031	2,292	2,049	1,712	522	726	590	315	847	873	807	860	662	693	652	537
Nonpublic	4,375	5,453	4,036	3,290	2,666	3,484	2,447	1,690	939	1,047	887	894	770	922	702	706
1981-82:																
Public	2,028	2,292	2,049	1,712	519	726	590	315	847	873	807	860	662	693	652	537
Nonpublic	4,375	5,453	4,036	3,290	2,666	3,484	2,447	1,690	939	1,047	887	894	770	922	702	706
1982-83:																
Public	2,028	2,292	2,049	1,712	519	726	590	315	847	873	807	860	662	693	652	537
Nonpublic	4,375	5,453	4,036	3,290	2,666	3,484	2,447	1,690	939	1,047	887	894	770	922	702	706
1983-84:																
Public	2,028	2,292	2,049	1,712	519	726	590	315	847	873	807	860	662	693	652	537
Nonpublic	4,375	5,453	4,036	3,290	2,666	3,484	2,447	1,690	939	1,047	887	894	770	922	702	706

Table 46.—Estimated average charges (1978-79 dollars) per full-time-equivalent student in institutions of higher education with alternative projections, by type and control of institution: United States, 1974-75 to 1988-89

(Charges are for the academic year and in constant 1978-79 dollars)—Cont.

Year and control	Total tuition, board and room				Tuition and required fees				Board (7-day basis)				Dormitory rooms			
	All	University	Other 4-year	2-year	All	University	Other 4-year	2-year	All	University	Other 4-year	2-year	All	University	Other 4-year	2-year
1984-85:																
Public	2,028	2,292	2,049	1,712	519	726	590	315	847	873	807	860	662	693	652	537
Nonpublic	4,375	5,453	4,036	3,290	2,666	3,484	2,447	1,690	939	1,047	887	894	770	922	702	706
1985-86:																
Public	2,024	2,292	2,049	1,712	515	726	590	315	847	873	807	860	662	693	652	537
Nonpublic	4,375	5,453	4,036	3,290	2,666	3,484	2,447	1,690	939	1,047	887	894	770	922	702	706
1986-87:																
Public	2,024	2,292	2,049	1,712	515	726	590	315	847	873	807	860	662	693	652	537
Nonpublic	4,375	5,453	4,036	3,290	2,666	3,484	2,447	1,690	939	1,047	887	894	770	922	702	706
1987-88:																
Public	2,024	2,292	2,049	1,712	515	726	590	315	847	873	807	860	662	693	652	537
Nonpublic	4,375	5,453	4,036	3,290	2,666	3,484	2,447	1,690	939	1,047	887	894	770	922	702	706
1988-89:																
Public	2,020	2,292	2,049	1,712	511	726	590	315	847	873	807	860	662	693	652	537
Nonpublic	4,375	5,453	4,036	3,290	2,666	3,484	2,447	1,690	939	1,047	887	894	770	922	702	706
High alternative projections[1]																
1979-80:																
Public	2,066	2,336	2,073	1,751	557	770	614	354	847	873	807	860	662	693	652	537
Nonpublic	4,502	5,612	4,151	3,364	2,793	3,643	2,562	1,764	939	1,047	887	894	770	922	702	706
1980-81:																
Public	2,066	2,336	2,073	1,751	557	770	614	354	847	873	807	860	662	693	652	537
Nonpublic	4,502	5,612	4,151	3,364	2,793	3,643	2,562	1,764	939	1,047	887	894	770	922	702	706
1981-82:																
Public	2,066	2,337	2,072	1,753	557	771	613	356	847	873	807	860	662	693	652	537
Nonpublic	4,502	5,612	4,151	3,364	2,793	3,643	2,562	1,764	939	1,047	887	894	770	922	702	706
1982-83:																
Public	2,075	2,352	2,084	1,760	566	786	625	363	847	873	807	860	662	693	652	537
Nonpublic	4,546	5,679	4,192	3,392	2,837	3,710	2,603	1,792	939	1,047	887	894	770	922	702	706
1983-84:																
Public	2,084	2,363	2,093	1,766	575	797	634	369	847	873	807	860	662	693	652	537
Nonpublic	4,587	5,733	4,229	3,417	2,878	3,764	2,640	1,817	939	1,047	887	894	770	922	702	706

See footnotes at end of table.

Table 46.—Estimated average charges (1978-79 dollars) per full-time-equivalent student in institutions of higher education with alternative projections, by type and control of institution: United States, 1974-75 to 1988-89

(Charges are for the academic year and in constant 1978-79 dollars)—Cont.

Year and control	Total tuition, board and room				Tuition and required fees				Board (7-day basis)				Dormitory rooms			
	All	University	Other 4-year	2-year	All	University	Other 4-year	2-year	All	University	Other 4-year	2-year	All	University	Other 4-year	2-year
1984-85:																
Public	2,092	2,375	2,102	1,771	583	809	643	374	847	873	807	860	662	693	652	537
Nonpublic	4,628	5,786	4,267	3,443	2,919	3,817	2,678	1,843	939	1,047	887	894	770	922	702	706
1985-86:																
Public	2,100	2,392	2,116	1,779	591	826	657	382	847	873	807	860	662	693	652	537
Nonpublic	4,691	5,868	4,325	3,483	2,982	3,899	2,736	1,883	939	1,047	887	894	770	922	702	706
1986-87:																
Public	2,115	2,413	2,133	1,789	606	847	674	392	847	873	807	860	662	693	652	537
Nonpublic	4,767	5,969	4,395	3,532	3,058	4,000	2,806	1,932	939	1,047	887	894	770	922	702	706
1987-88:																
Public	2,128	2,432	2,148	1,797	619	866	689	400	847	873	807	860	662	693	652	537
Nonpublic	4,835	6,057	4,457	3,574	3,126	4,088	2,868	1,974	939	1,047	887	894	770	922	702	706
1988-89:																
Public	2,132	2,444	2,157	1,803	623	878	698	406	847	873	807	860	662	693	652	537
Nonpublic	4,879	6,114	4,497	3,602	3,170	4,145	2,908	2,002	939	1,047	887	894	770	922	702	706

For methodological details, see appendix A, section A-5. For primary assumptions made, see appendix B, table B-6.

NOTE.—Tuition conversion to 1978-79 dollars was based on the All Urban Consumer Price Index (see appendix A, section 5 and Appendix F, table F-5 for details. Conversion of room and board charges to 1978-79 dollars was based on components of the All Urban CPI (appendix F, table F-7).

SOURCE: U.S. Department of Health, Education, and Welfare, National Center f Education Statistics publications: *Fall Enrollment in Higher Education*, a *Education Directory, Colleges and Universities.*

Table 47.—Estimated average charges (current dollars) per full-time-equivalent student in institutions of higher education, by type and control of institution: United States, 1974-75 to 1978-79

(Charges are for the academic year and in current unadjusted dollars)

Year and control	Total tuition, board and room				Tuition and required fees				Board (7-day basis)				Dormitory rooms			
	All	University	Other 4-year	2-year	All	University	Other 4-year	2-year	All	University	Other 4-year	2-year	All	University	Other 4-year	2-year
1974-75:																
Public	1,552	1,750	1,549	1,332	432	599	448	277	625	636	614	639	495	515	486	415
Nonpublic	3,392	4,063	3,147	2,581	2,117	2,614	1,954	1,367	702	773	668	662	573	676	524	552
1975-76:																
Public	1,664	1,933	1,654	1,386	433	642	469	245	695	726	660	705	536	565	525	435
Nonpublic	3,660	4,463	3,383	2,708	2,272	2,881	2,084	1,427	762	840	724	718	626	742	575	563
1976-77:																
Public	1,803	2,066	1,808	1,502	474	676	528	274	755	789	717	769	573	602	563	459
Nonpublic	3,898	4,859	3,573	2,917	2,408	3,142	2,189	1,517	831	924	784	797	659	793	600	603
1977-78:																
Public	1,900	2,168	1,924	1,594	519	732	582	301	772	803	736	811	609	632	606	482
Nonpublic	4,152	5,191	3,812	3,063	2,582	3,354	2,362	1,601	867	983	813	833	703	854	636	629
1978-79:																
Public	2,009	2,286	2,025	1,685	554	770	614	354	796	827	764	796	659	689	647	535
Nonpublic	4,477	5,604	4,123	3,344	2,793	3,643	2,562	1,764	904	1,021	851	866	780	940	710	714

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics publications: *Fall Enrollment in Higher Education*, and *Education Directory, Colleges and Universities*.

Appendixes

Appendix A
METHODOLOGY

This appendix section along with appendix B describes the techniques and assumptions which underly, and greatly influence the projections shown in this publication.

This appendix section is divided into 4 major subdivisions: A-1—Enrollment, A-2—Graduates and Degrees, A-3—Teachers and Faculty, and A-4—Expenditures and Student Costs. In each of these sections, the basic methodology used was to calculate rates for recent years as a percentage of a "base" variable; for example enrollment for a given-age group as a percentage of the population in that age group for each of the last 10 years. The rate was then projected into the future and applied to projections of the "base" variable that were either previously projected by NCES or available from other sources, such as population projections from the Bureau of the Census. Projections of teachers and faculty, graduates and degrees, and expenditures are all dependent upon enrollment projections to a large extent.

The forecasting techniques primarily used are single exponential smoothing for the forecasts of constant rates and double exponential smoothing for the forecasting of linear trends. Exponential smoothing places more weight on recent observations than on earlier ones. The weights for observations decrease exponentially as one moves further into the past. As a result, the older the data, the less their influence on projections. The rate at which the weights of older observations decrease is determined by the smoothing constant selected.

For time series that can be decribed by a local constant model, single exponential smoothing was used. In single exponential smoothing, a single constant value is projected for the entire projection period in the following manner.

$$P=\alpha X_t+\alpha(1-\alpha)X_{t-1}+\alpha(1-\alpha)^2X_{t-2}+\alpha(1-\alpha)^3X_{t-3}+\ldots$$

Where

P=projected constant

α=smoothing constant $(0<\alpha<1)$

X_t=observation for time t

The above equation illustrates that the projection is a weighted average based on exponentially decreasing weights. For high smoothing constant, weights for earlier observations decrease very rapidly. For low smoothing constant, decreases are much more moderate.

For time series that can be described by a local linear model, double exponential smoothing was used. In this method, as the name implies, the smoothed values (single exponential smoothing) are themselves smoothed. This results in a forecast for the slope of the projected line that is based primarily on an exponentially decreasing weighted average of the increments of smoothed values.

In general, the projections in this publication are based on fairly high smoothing constants. The farther apart the observations are spaced in time the more likely are changes in the underlying social, political, and economic structure. Since the observations are on an annual basis, major shifts in the underlying process are more likely to occur within the time span of just a few observations than if the observations were available on a monthly or weekly basis. As a result, the underlying process tends to be unstable from one observation to the next. Another reason for using high smoothing constants is that most of the observations are fairly accurate since most observations are population values rather than sample estimates. Therefore, large shifts tend to indi-

cate changes in the process rather than noise in the data. For those cases in which the observations were considered to be less accurate, lower smoothing constants were used.

For cases in which linear projections of past trends would lead to unrealistic results, such as more than 100 percent of an age group enrolled, non-linear models were used. In the case above, a log-linear model was employed. Rather than project the enrollment rates y, a transformation was made, namely, Z=log (100 - y). The Z values were then projected, usually by means of exponential smoothing, and the antilogs of the resultant projections were subtracted from 100 percent to obtain enrollment rate projections.

For some projections, especially in the areas of degrees and expenditures, econometric projection models were used. Econometric projection models involve the use of other independent variables (such as per capita personal income, State and local governmental expenditures, college enrollment by year enrolled, etc.) besides time. As a result, projections of these independent economic variables are required in order to make projections of the dependent variable.

The econometric models used in chapter IV and described in appendix A, section A-4 rely primarily on projections of economic series from Data Resources, Inc. Micro-Economic Forecasting Model. Estimates of the causal relationships were calculated by means of multiple regression technique.

A-1 Enrollment

Enrollment projections were developed by means of NCES's computer program IFMOD which is an interactive forecasting model that currently has 5 components.

The first component of IFMOD is an age-specific enrollment model in which enrollment rates are projected and applied to age-specific population projections.[1] The model, which is used separately for each sex, includes the following enrollment categories: (1) nursery and kindergarten, (2) elementary grades 1-8, (3) secondary grades 9-12, (4) full-time college enrollment, and (5) part-time college enrollment. For each of these enrollment categories, enrollment rates were projected by individual ages 3 through 24 and for the age groups 25 to 29 and 30 to 34. For ages 35 and over, the enrollments themselves were projected, since the enrollments are very small compared to the population base.

Enrollments by age and age-groups from the Bureau of the Census[2] were adjusted to NCES totals in order to compute enrollment rates for 1968 through 1978. Different assumptions were made in order to produce low, intermediate, and high alternative projections of the past enrollment rates through 1988. For the assumptions upon which the alternative projections are based see appendix B.

Nursery and Kindergarten

Nursery and kindergarten enrollments are only collected for 3-to 6-year-olds. Table A-1 shows the 1978 enrollment rates and high, intermediate, and low alternative enrollment rates for 1983 and 1988. The low alternative enrollment projections are based on constant enrollment rates, therefore, the rates remain the same throughout the projected period.

Elementary Grades 1-8

Projections of elementary enrollment rates were only considered for ages 5 through 21. Elementary enrollments are negligible for the remaining ages. Since most elementary enrollment rates have been fluctuating at levels close to 100 percent throughout the 1968 to 1978 period, alternative enrollment rate projections were not computed. The only set of enrollment rate projections computed are based on the assumption that rates will remain constant through 1988 (table A-2). Several of the rates shown in table A-2 exceed 100 percent. This is probably due to several factors. The enrollment data by age were prorated to agree with NCES totals, and the Bureau of the Census does not revise enrollment estimates by age, but population estimates are revised regularly.

Secondary Grades 9-12

Projections of secondary enrollment rates were only considered for ages 12 through 34. Secondary enrollments are negligible for the remaining ages. Secondary enrollment rates have fluctuated around constant levels throughout the 1968 to 1978 period.

[1] U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *Population Estimates and Projections: Projections of the Population of the United States: 1977 to 2050*, Series P-25, No. 704, July 1977.

[2] U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *Population Characteristics, School Enrollment-Social and Economic Characteristics of Students*, 1967 through 1978, Series P-20.

Therefore, alternative enrollment rate projections were not calculated. The only set of projections computed are based on constant enrollment rates (table A-3).

College Full-time and Part-time Enrollment

Projections of full-time and part-time college enrollments were only considered for ages 16 and over. (College enrollment is negligible for earlier ages). Three alternative enrollment projections were made, the intermediate being based on constant enrollment rate projections. Table A-4 shows enrollment rates for 1978 and low, intermediate, and high alternative projected rates for 1983 and 1988. Since the intermediate rates are constant, rates are the same for all projected years.

For the 35 and over age group, the enrollments themselves were projected. As previously stated, enrollment rates were not used for this age group. Enrollment projections for the 35 and over age group are shown in table 6, 6a, and 6b.

Nursery and Kindergarten Enrollment by Age, Sex and Control

The second component of IFMOD projects enrollments in nursery schools and kindergarten by age and sex of student, and by control of school.

Enrollment rates by age, sex, and control were projected independently and then adjusted to agree with low, intermediate, and high nursery and kindergarten enrollment rate projections in the first component of IFMOD. Table A-5 shows actual rates for 1978 and the projected enrollment rates by age, sex, and control used to develop the projections in table 3.

Enrollment in Elementary and Secondary Schools by Grade Group, Organizational Level, and Control

The third component of IFMOD projects public and nonpublic enrollment in elementary and secondary schools by grade group and by organizational level.

Public enrollments by age are based on enrollment rate projections for nursery and kindergarten, grade 1, elementary ungraded and special, secondary ungraded and special, and post-graduate enrollment and grade retention rate projections for grades 2 through 12. Table A-6 shows the public enrollment rates and table A-7 the public grade-retention rates for 1978, and projections for 1983 and 1988. The projected rates in tables A-6 and A-7 were used to compute the projections of enrollments in elementary and secondary schools by grade shown in table 4.

The public grade retention rates for the 6th to 7th grade and from the 8th to 9th are over 100 percent because large numbers of nonpublic elementary students change to public secondary schools at these levels. Projections of public enrollment by organizational level (table 5) are based on projections of the percentage of 7th and 8th grade students in secondary schools. From 1971 to 1977, this percentage fluctuated around 63 percent. However, in 1978 the percentage dropped to 51.7 percent. Since it appears that this drop was due to inconsistent reporting, rather than a shift in the organizational structure of schools, a low smoothing constant was used with a local linear model to project a constant 61.8 percent for 1979 through 1988.

Projections of enrollments in nonpublic schools were obtained by subtracting public enrollment projections from the total projections in the first component of IFMOD.

College Enrollment by Sex, Attendance Status and Level Enrolled by Student and Type and Control of Institution

The fourth component of IFMOD projects enrollments in institutions of higher education by sex, attendance status, and level enrolled of student and by type and control of institution.

For each age group by attendance status and sex, the percentage that enrollment by level enrolled and type of institution was of total enrollment was projected. These projections are shown in tables A-8, and A-9, along with actual values for 1978. For all projections it was assumed that there was no enrollment in 2-year institutions at the post-baccalaureate level (graduate and first-professional).

The projected rates shown in tables A-8 and A-9 were then adjusted to agree with the projected age-specific enrollment rates in the first component of IFMOD. The adjusted rates were then applied to the projected enrollments by age-group, sex and attendance status from the first component to obtain projections by age-group, sex, attendance status, level enrolled, and type of institution.

For each enrollment category by sex, attendance status, level enrolled and type of institution, the percentage that public enrollment is of total enrollment

was projected. These projections are shown in table A-10 along with actual percentages for 1978. The projected rates shown were then applied to the projected enrollments in each enrollment category to obtain projections by control of institution.

For each enrollment category by sex and enrollment level and by type and control of institution, the percentage that graduate enrollment is of post-baccalaureate enrollment was projected. Actual graduate rates for 1978 and projections for 1983 and 1988 are shown in table A-11. The projected rates in table A-11 were then applied to projections of post-baccalaureate enrollment to obtain graduate and first-professional enrollment projections by sex and attendance status and by type and control of institution.

Full-time-equivalent Enrollment by Type and Control of Institution and by Level Enrolled

The fifth component of HEMOD projects full-time-equivalent enrollment by type and control of institution and by level enrolled.

For each enrollment category by level enrolled and by type and control of institution, the percentage that the full-time-equivalent of part-time enrollment is of part-time enrollment was projected. Actual percentages for 1978 and projections for 1983 and 1988 are shown in table A-12.

These projected percentages were applied to projections of enrollments by level enrolled and by type and control of institution from the fourth component. The resultant projection of the full-time-equivalent of part-time enrollment were added to projections of full-time enrollment (from the previous component) to obtain projections of full-time-equivalent enrollment.

Table A-1.—Nursery and kindergarten enrollments rates, by age and sex

Alternative projections	Boys				Girls			
	3 years old	4 years old	5 years old	6 years old	3 years old	4 years old	5 years old	6 years old
1978	25.2	42.8	81.8	8.4	24.6	44.4	81.2	5.6
Low alternative								
1979-1988	23.5	42.0	81.3	7.8	23.2	43.2	80.9	5.6
Intermediate alternative								
1983	28.2	46.8	83.2	7.8	27.2	48.5	82.8	5.6
1988	32.4	50.9	84.1	7.8	30.9	53.1	83.8	5.6
High alternative								
1983	32.9	51.5	85.1	7.8	31.3	53.8	84.7	5.6
1988	41.3	59.9	87.0	7.8	38.6	63.0	86.7	5.6

Table A-2.—Elementary enrollment rates, by age and sex

Age	Boys		Girls	
	1978	1979-1988	1978	1979-1988
5	8.7	8.8	10.6	10.9
6	90.8	91.6	93.3	94.0
7	98.4	99.8	99.2	100.4
8	101.7	101.8	101.8	101.8
9	101.4	101.3	101.9	101.7
10	97.7	97.3	97.1	97.4
11	102.5	103.0	104.2	103.9
12	98.6	98.7	98.2	99.1
13	92.5	92.7	90.2	90.5
14	23.3	23.4	14.7	15.0
15	4.7	4.7	3.0	2.7
16	1.1	1.1	0.6	0.5
17	0.3	0.3	0.1	0.1
18	0.1	0.1	0.1	0.1

Table A-3.—Secondary enrollment rates, by age and sex

Age	Male		Female	
	1978	1979-1988	1978	1979-1988
12	0.1	0.2	0.5	0.4
13	7.4	7.4	10.6	10.1
14	75.4	75.3	84.0	82.9
15	91.9	91.6	94.3	94.6
16	92.6	91.9	95.7	94.8
17	77.7	78.2	72.7	72.5
18	19.5	19.9	11.3	11.8
19	4.3	3.9	2.6	2.7
20	0.8	1.1	1.4	1.4
21	0.5	0.7	1.0	0.9
22	0.3	0.4	1.0	0.8
23	0.6	0.5	0.5	0.5
24	0.2	0.3	0.3	0.3
25-29	0.2	0.2	0.3	0.4

Table A-4.—College enrollment rates, by age, sex and attendance status

Age		Low alternative		Intermediate alternative	High alternative	
	1978	1983	1988	1979-1988	1983	1988
Men full-time						
16	0.2	0.2	0.2	0.2	0.2	0.2
17	4.2	3.6	3.5	4.1	5.2	6.2
18	26.3	22.6	21.2	26.7	29.8	33.3
19	28.2	26.8	25.4	28.3	30.9	33.5
20	23.1	20.6	19.0	23.5	26.5	29.8
21	21.7	19.1	17.6	22.7	23.1	24.5
22	14.8	14.2	14.1	14.4	14.8	14.8
23	10.6	9.7	9.3	11.0	11.6	12.8
24	9.6	8.9	8.4	9.9	10.6	11.7
25-29	4.2	3.8	3.4	4.6	6.6	7.7
30-34	1.7	1.5	1.3	1.8	2.4	2.9
Men part-time						
16	0.2	0.2	0.2	0.2	0.2	0.2
17	0.3	0.4	0.4	0.4	0.4	0.4
18	3.5	3.3	3.3	0.3	4.0	4.8
19	3.8	3.5	3.5	3.5	4.3	5.2
20	4.3	4.2	4.1	4.3	4.8	5.2
21	4.1	3.8	3.5	4.1	4.9	5.4
22	7.1	6.8	6.2	7.0	7.1	7.2
23	5.1	4.9	4.4	5.4	5.8	5.9
24	4.6	4.5	4.1	4.8	5.3	5.5
25-29	6.8	6.4	6.0	6.9	7.6	8.0
30-34	5.0	4.7	4.5	5.0	5.6	6.1
Women full-time						
16	0.6	0.6	0.6	0.6	0.6	0.6
17	6.3	5.4	5.3	6.1	6.1	6.1
18	30.9	26.6	25.0	30.7	31.4	32.0
19	28.5	27.1	25.6	28.1	32.5	33.7
20	21.6	19.3	17.8	22.2	23.5	24.3
21	18.1	15.9	14.7	18.7	21.7	23.6
22	9.6	8.9	8.9	8.9	12.1	13.1
23	6.5	6.0	5.7	6.3	7.9	9.3
24	6.0	5.6	5.3	5.8	7.8	9.5
25-29	2.5	2.2	2.0	2.5	3.7	4.7
30-34	1.7	1.5	1.3	1.5	1.8	2.1
Women part-time						
16	0.1	0.1	0.1	0.1	0.1	0.1
17	0.5	0.6	0.6	0.6	1.0	1.8
18	4.4	4.3	4.3	4.3	4.5	4.9
19	4.0	3.9	3.9	3.9	4.3	4.8
20	5.5	5.1	5.1	5.1	5.5	5.6
21	4.6	4.3	4.0	4.3	4.7	5.1
22	7.4	7.1	6.6	7.6	7.9	8.2
23	5.0	4.9	4.4	5.4	6.2	6.8
24	4.7	4.5	4.1	5.0	6.0	6.8
25-29	5.8	5.5	5.1	5.7	6.8	8.1
30-34	4.7	4.5	4.3	4.7	6.5	8.3

Table A-5.—Enrollment rates in nursery schools and kindergartens, by age and sex of student and by control of institution

Sex and Year	Public				Nonpublic			
	3-years old	4-years old	5-years old	6-years old	3-years old	4-years old	5-years old	6-years old
Males								
1978	7.7	49.6	69.5	7.1	17.4	23.2	12.3	1.3
1983	10.6	23.7	73.9	6.6	22.3	28.0	12.8	1.1
1988	13.7	27.7	77.9	6.6	27.6	32.5	13.4	1.1
Females								
1978	7.6	20.3	68.9	4.7	17.1	24.1	12.3	0.9
1983	10.2	24.6	74.1	4.7	21.3	28.9	12.0	0.8
1988	13.0	28.9	78.7	4.7	25.8	33.6	12.0	0.8

Table A-6.—Enrollment rates in public schools

Grade level	Population base age	1978	1983	1988
Regular nursery and kindergarten	5	86.3	85.4	85.4
Grade 1	6	93.2	94.2	94.2
Elementary ungraded and special	5-13	2.4	3.1	3.4
Secondary ungraded and special	14-17	2.6	2.1	2.1
Post-graduate	18	0.5	0.4	0.4

Table A-7.—Public grade retention rates

Grade	1978	1983	1988
2	94.2	95.2	95.2
3	97.6	98.7	98.7
4	98.4	99.3	99.3
5	98.7	99.5	99.5
6	99.2	99.9	99.9
7	102.2	102.8	102.8
8	97.7	98.8	98.8
9	104.2	104.8	104.8
10	95.2	96.6	96.6
11	89.6	91.0	91.0
12	89.1	90.1	90.1

Table A-8.—Percent that full-time enrollment by level enrolled and type of institution is of total enrollment, for each age and sex classification[1]

Age	Men			Women		
	1978	1983	1988	1978	1983	1988
			Undergraduate, 4-year institutions			
16-17-years old	81.5	77.1	77.1	64.7	68.3	68.3
18-19-years old	69.7	67.9	67.9	64.1	61.8	60.5
20-21-years old	84.7	84.3	84.3	84.6	78.8	77.0
22-24-years old	51.4	51.8	51.8	64.5	60.6	60.6
25-29-years old	42.8	41.8	41.8	46.5	40.0	40.0
30-34-years old	30.9	29.3	27.9	51.3	47.4	47.4
35-years old and over	31.4	29.9	29.6	50.9	47.2	47.2
			Undergraduate, 2-year institutions			
16-17-years old	18.4	22.8	22.8	35.1	31.5	31.5
18-19-years old	30.3	32.1	32.1	35.8	38.2	39.4
20-21-years old	15.3	15.6	15.6	15.4	21.7	23.3
22-24-years old	17.4	21.1	22.6	12.6	17.7	19.4
25-29-years old	23.5	27.0	28.3	19.1	24.7	24.7
30-34-years old	25.4	28.9	30.3	15.0	24.6	24.6
35-years old and over	24.8	28.4	29.6	15.5	24.9	24.9
			Post-baccalaureate, 4-year institutions			
16-17-years old	0.0	0.0	0.0	0.1	0.0	0.0
18-19-years old	0.0	0.0	0.0	0.0	0.0	0.0
20-21-years old	0.0	0.0	0.0	0.0	0.0	0.0
22-24-years old	31.1	27.1	25.6	22.9	23.1	23.1
25-29-years old	33.6	35.7	35.7	34.4	35.3	35.3
30-34-years old	43.7	41.7	41.7	33.7	28.0	28.0
35-years old and over	43.8	41.8	41.8	33.6	27.8	27.8

[1]Projections shown for 1983 and 1988 were adjusted to add to 100 percent before computing projections shown in chapter I.

Table A-9.—Percent that part-time enrollment by level enrolled and type of institution is of total enrollment for each age and sex classification[1]

Age	Men			Women		
	1978	1983	1988	1978	1983	1988
			Undergraduate, 4-year institutions			
16-17-years old	35.0	45.0	45.0	43.4	40.8	40.8
18-19-years old	18.2	19.8	19.8	31.6	27.7	27.7
20-21-years old	30.8	26.4	25.5	32.6	27.9	26.4
22-24-years old	26.1	25.2	25.0	29.2	29.5	29.5
25-29-years old	28.1	28.2	28.2	26.1	26.4	26.4
30-34-years old	31.0	31.3	31.3	24.0	21.3	20.4
35-years old and over	31.2	27.4	26.3	24.0	25.3	25.3
			Undergraduate, 2-year institutions			
16-17-years old	65.0	50.8	50.8	55.2	56.5	56.5
18-19-years old	73.4	73.5	73.5	64.7	67.6	67.6
20-21-years old	67.0	68.5	69.4	57.2	64.2	65.7
22-24-years old	60.8	63.4	64.8	49.3	54.9	57.6
25-29-years old	41.6	43.9	43.9	49.3	54.2	56.8
30-34-years old	44.2	48.1	49.1	56.9	62.2	64.0
35-years old and over	44.1	48.0	49.1	56.8	62.0	64.0
			Post-baccalaureate, 4-year institutions			
16-17-years old	0.0	0.0	0.0	1.4	0.0	0.0
18-19-years old	8.4	6.0	6.0	3.7	3.9	3.9
20-21-years old	2.2	5.1	5.1	10.2	8.0	8.0
22-24-years old	13.1	10.9	10.2	21.4	22.7	22.7
25-29-years old	30.1	27.8	27.8	24.4	25.3	26.3
30-34-years old	24.7	24.7	24.7	19.1	16.5	15.6
35-years old and over	24.6	24.6	24.6	19.1	19.8	19.8

[1]Projections shown for 1983 and 1988 were adjusted to add to 100 percent before computing projections shown in chapter 1.

Table A-10.—Public enrollment as a percent of total enrollment, by attendance status, sex and level enrolled and by type of institution

Enrollment category	Men			Women		
	1978	1983	1988	1978	1983	1988
Full-time, undergraduate, 4-year institutions	68.4	68.6	68.6	68.8	69.1	69.1
Part-time, undergraduate, 4-year institutions	71.7	71.5	71.5	70.2	70.4	70.4
Full-time, undergraduate 2-year institutions	93.9	94.2	94.2	90.7	91.3	91.3
Part-time, undergraduate, 2-year institutions	98.6	98.6	98.6	98.5	98.6	98.6
Full-time, post-baccalaureate, 4-year institutions	56.7	57.1	57.1	62.0	62.4	62.4
Part-time, post-baccalaureate, 4-year institutions	62.1	62.9	62.9	72.6	73.1	73.1

Table A-11.—Graduate enrollment as a percent of total post-baccalaureate enrollment, by sex and attendance status, and by type and control of institution

Enrollment category	Men			Women		
	1978	1983	1988	1978	1983	1988
Full-time, 4-year, public	70.9	70.7	70.3	83.6	80.3	78.4
Part-time, 4-year, public	98.8	98.6	98.6	99.7	99.5	99.5
Full-time, 4-year, private	49.2	49.0	48.9	65.6	62.2	60.9
Part-time, 4-year, private	91.1	91.0	91.0	95.1	95.4	95.4

Table A-12.—Percent that the full-time-equivalent of part-time enrollment is of part-time enrollment, by level enrolled and by type and control of institution

Enrollment category	1978	1983	1988
Public, 4-year, undergraduate	41.2	40.6	40.6
Public, 2-year, undergraduate	34.5	35.1	35.1
Private, 4-year, undergraduate	40.2	38.0	38.0
Private, 2-year, undergraduate	40.0	40.0	40.0
Public, 4-year, graduate	36.1	35.6	35.6
Public, 2-year, graduate	20.0	...	...
Private, 4-year, graduate	38.8	37.4	37.4
Private, 2-year, graduate	...	...	...
Public, 4-year, first-professional	50.0	45.3	45.3
Public, 2-year, first-professional	...	...	...
Private, 4-year, first-professional	70.0	54.1	54.1
Private, 2-year, first-professional	...	...	...

A-2—Graduates and Degrees

High School Graduates

Projections of high school graduates by sex were developed by expressing high school graduates as a percentage of the average of the 17- and 18-year old population (table A-13). The percentage was assumed to remain constant at levels consistent with the most recent rates throughout the projected period. The constant rate was applied to projections of the average of the 17- and 18-year old population to obtain projections of high school graduates.

Projections of public high school graduates were developed by using graduation rates (table A-14) based on projections of enrollment in grade 12 from the third component of IFMOD. Public graduation rates were calculated by dividing the number of public high school graduates by enrollment in grade 12. These graduation rates were then projected and applied to projected enrollment in grade 12 to obtain projections of public high school graduates. Projections of nonpublic high school graduates were obtained by subtracting public high school graduates from total high school graduates.

Degrees

The College Graduate Model (CGM) produces projections of the supply of new college graduates at the bachelor's, master's, doctor's and first-professional levels. The College Graduate Model maintains a data bank of historical series over time for each sex of earned degrees conferred by level and by field of study. The CGM is composed of three submodels—Level and Sex Submodel (LSS), Degrees by Field Submodel (DFS), and Degrees by Subfield Submodel (DSS). Projections of degrees by subfield are not included in this publication, but are produced for the Occupational Outlook program of the Bureau of Labor Statistics and the Manpower Assessment Project of the U.S. Department of Agriculture. In past editions, degree projections were based on a composite population that was representative of the ages of degree recipients. In this publication, the projections are developed by using regression models with explanatory variables that are based on age-specific enrollment projections.

At the doctor's level, the combined use of age data from the *Doctorate Record File*[1] and graduate enrollment beyond the first-year by age[2] identify the demographic state from which doctoral degree recipient are drawn.

Level and Sex Submodel (LSS)

Bachelor's Degrees

Bachelor's degree projections by sex are based jointly on undergraduate enrollment and fourth-year enrollment by attendance status. The percentage that fourth-year college enrollment is of undergraduate enrollment in 4-year institutions was projected using exponential smoothing as the principal forecasting technique (table A-15). Projections of fourth-year enrollment were developed by applying these projected percentages to projections of undergraduate enrollment by attendance status.

Results of the regression analysis used to project bachelor's degrees by sex are shown in equations (1) and (2) of table A-16. Full-time fourth-year enrollment was highly significant in determining bachelor's degree outcomes. In contrast, the part-time variable was not as significant in determining bachelor's degrees. Several factors could account for the lack of significance in the part-time variable. Fourth-year enrollment prior to 1976 was estimated since no data exist prior to that time. Attempts to find lag relationships for the part-time variable were not successful. As a result the part-time variable appears at the same time period as the full-time variable. These factors could partially explain the lack of significance of the part-time variable for both men and women.

Master's Degrees

The projections of master's degrees by sex are based jointly on total graduate enrollment and first-year graduate enrollment by attendance status. Projections of first-year graduate enrollment were obtained by forecasting the percentage that first-year graduate enrollment is of total graduate enrollment (table A-15) and applying these projected percentages to projected graduate enrollment by attendance

[1]National Research Council, *Summary Report Doctorate Recipients from United States Universities*, Washington, D.C., 1972-1978.

[2]See table A-15.

NOTE. Low and high alternative projections of bachelor's, master's, and doctor's degrees reflect the alternative projections of college enrollment by type of student (see appendix B, table B-1 for the assumption underlying the enrollment projection). The alternative projections for first-professional degrees reflect the alternatives for law and theology since no alternatives were available from the Bureau of Health Manpower for the projections of first-professional degrees in the health professions.

status. Equations (3) and (4) in table A-16 show the results of the regression analysis used to project master's degrees by sex. Although both variables are highly correlated with master's degrees, the full-time and part-time variables of first-year graduate enrollment are collinear. Thus, these equations should be used for prediction purposes only.

Doctor's Degrees

Projections of doctor's degrees by sex are based jointly on age-specific enrollment and graduate enrollment beyond the first-year. The percentage that graduate enrollment beyond the first-year by age is of total college enrollment by age was calculated from historical data and projected using exponential smoothing. (See table A-15.) Projected rates were then applied to projected college enrollment to obtain projected graduate enrollment beyond the first-year. The rates that doctor's degrees by age are of graduate enrollment beyond the first-year by age (table A-17) were projected and applied to the results of projections of graduate enrollment beyond the first-year. Total doctor's degrees were obtained by summing the age groups.

First-professional Degrees

Projections of first-professional degrees were determined by summing the individual field projections (see section on first-professional degrees by field). First-professional degrees in the health professions were obtained from the Bureau of Health Manpower. First-professional degrees in law, theology, pharmacy, chiropractic, and "other" fields were developed by NCES. Principal methods used were exponential smoothing and simple regression analysis.

Degrees by Field Submodel (DFS)

Bachelor's Degrees by field

At the bachelor's level, simple linear regression was the primary projection technique used with time as the independent variable and incorporating a dummy variable if the series was discontinuous between 1969-70 and 1970-71. Final field projections were compared to projected total bachelor's degrees to check for consistency. The two sets of projections were then adjusted iteratively until agreement was obtained. In cases where large discrepancies occurred, a reassesment of all projections involved took place in order to identify inconsistencies.

Master's Degrees by field

For master's degrees, more independent variables were available. First-year graduate enrollment by field was available for six of the 20 fields. However, regression analysis using first-year enrollment as an independent variable was used in only two fields (engineering and business & management). The results of these regression analyses are shown in table A-18. Regression analysis for the other fields[3] gave unsatisfactory results. Traditional extrapolative techniques such as simple linear regression and exponential smoothing were used for the other fields. Enrollment percentages by field were determined by dividing first-year graduate enrollment by total first-year graduate enrollment. These percentages were projected and applied to projected first-year graduate enrollment obtained from the first submodel (LSS). The sum of the individual master's degree fields projected by various methods was compared to total master's degrees and adjusted in the same manner already explained for bachelor's degrees.

Doctor's Degrees by field

For doctor's degrees, enrollment beyond the first-year was considered only in cases where sufficient lag structures could be identified. Regression analysis and exponential smoothing were the principal projection methods used. Adjustments were made between the sum of doctoral fields and total doctor's degrees in the same manner used for bachelor's and master's degrees.

First-professional Degrees by field

Projections of first-professional degrees in the health professions (medicine, dentistry, optometry, ostepathy, podiatry, and veterinary medicine) were obtained from the Bureau of Health Manpower, and are based on provisions of the new health manpower legislation, P.L. 94-484. NCES projected the distribution by sex. First-professional degrees in law, theology, pharmacy, chiropractic and "other" fields were projected by NCES.

For first-professional degrees in the health professions, the projections of degrees by sex are based on the assumption that the percentage of degrees conferred on women in each field of study will follow the 1968-69 to 1977-78 trend through 1988-89. For men, projections of first-professional degrees in the health professions will equal total degrees minus the degrees for women.

For each sex, the projections of first-professional

[3]The other fields were architecture and environmental design, physical sciences, agriculture and natural resources, and biological sciences.

degrees in law, theology, pharmacy, and chiropractic medicine are based on the assumption that the projections will follow the 1968-69 to 1977-78 trends through 1988-89. The "other" field was assumed to be constant at the 1977-78 value through 1988-89.

Table A-13.—High school graduates as a percent of the average of the 17-and 18-year old population, by sex

Year	Boys	Girls
1972	73.6	77.1
1974	71.9	76.5
1976	72.4	76.7
1978	71.5	76.9
1979-1989 (projected)	71.9	76.8

Table A-14.—High school graduates as a percent of enrollment in grade 12 in public schools

Year	Graduation rate (percent)
1972	94.5
1974	94.1
1976	95.2
1978	93.4
1979-1989 (projected)	94.0

Table A-15.—Enrollment percentages, by year enrolled, attendance status, and sex*

Year enrolled	Men			Women		
	1978	1983	1988	1978	1983	1988
Fourth-year undergraduate enrollment as a percent of total undergraduate enrollment in 4-year institutions						
Full-time	21.2	21.2	21.2	19.9	22.0	24.0
Part-time	23.6	24.2	26.1	29.7	30.2	30.8
First-year graduate enrollment as a percent of total graduate enrollment						
Full-time	46.1	47.0	45.5	50.5	51.4	48.2
Part-time	45.8	45.4	44.1	47.6	47.8	46.9
Graduate enrollment beyond first-year as a percent of total enrollment in all institutions						
Age						
Less than 25	1.6	1.6	1.6	1.0	1.0	1.0
25-29	10.1	10.1	10.1	7.5	7.5	7.5
30-34	10.7	10.7	10.7	6.8	6.8	6.8
35 and over	10.5	10.5	10.5	6.7	6.7	6.7

*Estimated.

Table A-16.—Equations for bachelor's and master's degrees

(N = 12)

Level	Regression equations	R^2[1]	Durbin-Watson statistics[2]	Regression technique
Bachelor's				
Men	(1) BAM=-79.09+0.82M4F+0.12M4P (4.14) (0.21)	.73	1.80	Ordinary least squares
Women	(2) BAW=-44.75+0.98W4F+0.61W4P (4.72) (1.03)	.81	2.24	Ordinary least squares
Master's				
Men	(3) MAM=-31.21+1.20M5F+0.12M5P (6.42) (0.79)	.93	1.78	Ordinary least squares
Women	(4) MAW=-18.93+1.37W5F+0.20W5P (2.56) (0.82)	.97	0.79	Ordinary least squares

WHERE:

BAM = The total number of bachelor's degrees awarded to men.
BAW = The total number of bachelor's degrees awarded to women.
M4F = Full-time fourth-year college enrollment for men.
M4P = Part-time fourth-year college enrollment for men.
W4F = Full-time fourth-year college enrollment for women.
W4P = Part-time fourth-year college enrollment for women.
MAM = The total number of master's degrees awarded to men.
MAW = The total number of master's degrees awarded to women.
M5F = Full-time first-year graduate enrollment for men.
M5P = Part-time first-year graduate enrollment for men.
W5F = Full-time first-year graduate enrollment for women.
W5P = Part-time first-year graduate enrollment for women.

[1] R^2 = Coefficient of determination.
[2] For an explanation of the Durbin-Watson Statistics, see J. Johnston, *Econometric Methods*, New York: McGraw Hill, 1972, pages 251-252.

NOTE: The numbers in parentheses refer to the value of the t-statistics

Table A-17.—Percent that doctor's degrees is of graduate enrollment beyond first-year, by age

Age	Men			Women		
	1977	1983	1988	1977	1983	1988
Less than 25	0.13	0.10	0.08	0.05	0.04	0.03
25-29	7.72	7.06	6.56	3.69	2.92	2.48
30-34	15.67	13.24	11.69	8.65	7.57	6.50
35 and over	12.10	9.27	5.96	6.85	6.00	5.44

Table A-18.—Equations for master's degrees, by selected field

(N=12)

Field	Regression equations	R^2[1]	Durbin-Watson statistics[2]	Regression technique
Engineering				
Men	EGM= 5301.25+611.12MEGF+97.42MEGP (3.53) (3.48)	.71	2.26	Ordinary least squares
Business and management				
Men	BMM=-6998.17+709.76MBMF+507.93MBMP (1.93) (2.68)	.96	1.64	Ordinary least squares
Women	BMW=-183.87+287.6WBMF+457.6WBMP (1.36) (3.82)	.99	2.62	Ordinary least squares

WHERE:

EGM = Master's degrees in engineering awarded to men.
MEGF = Full-time first-year graduate enrollment in engineering for men.
MEGP = Part-time first-year graduate enrollment in engineering for men.
BMM = Master's degrees in business and management awarded to men.
BMW = Master's degrees in business and management awarded to women.
MBMF = Full-time first-year graduate enrollment in business and management for men.
MBMP = Part-time first-year graduate enrollment in business and management for men.
WBMF = Full-time first-year graduate enrollment in business and management for women.
WBMP = Part-time first-year graduate enrollment in business and management for women.

[1] R^2 = Coefficient of determination.

[2] For an explanation of the Durbin-Watson Statistics, see J. Johnston, *Econometric Methods*, New York: McGraw Hill, 1972, pages 251-252.

NOTE: The numbers in parentheses refer to the value of the t-statistics.

Table A-19.—Percents to develop alternative projections of bachelor's degrees in the social sciences fields: 1978-79 to 1988-89

Year	Total	Social sciences	Psychology	Public affairs & services	Library sciences
			Total		
1978-79	21.03	11.99	4.87	4.09	0.07
1979-80	20.42	11.35	4.78	4.22	0.07
1980-81	19.88	10.72	4.66	4.45	0.06
1981-82	19.23	10.10	4.59	4.49	0.05
1982-83	19.02	9.91	4.47	4.59	0.05
1983-84	18.76	9.68	4.35	4.68	0.05
1984-85	18.50	9.47	4.22	4.76	0.05
1985-86	18.27	9.22	4.13	4.87	0.05
1986-87	18.03	9.02	4.02	4.95	0.05
1987-88	17.83	8.79	3.93	5.06	0.05
1988-89	17.62	8.60	3.82	5.15	0.05
			Men		
1978-79	20.79	13.16	3.81	3.81	0.02
1979-80	19.81	12.32	3.68	3.80	0.02
1980-81	18.89	11.51	3.55	3.81	0.02
1981-82	17.84	10.59	3.40	3.83	0.02
1982-83	17.67	10.53	3.25	3.87	0.02
1983-84	17.48	10.43	3.09	3.95	0.02
1984-85	17.30	10.31	2.93	4.04	0.02
1985-86	17.12	10.17	2.78	4.15	0.02
1986-87	16.98	10.06	2.63	4.28	0.01
1987-88	16.81	9.95	2.48	4.37	0.02
1988-89	16.63	9.85	2.33	4.43	0.02
			Women		
1978-79	21.29	10.66	6.07	4.42	0.13
1979-80	21.09	10.28	6.00	4.70	0.12
1980-81	20.99	9.83	5.90	5.16	0.10
1981-82	20.75	9.57	5.89	5.20	0.09
1982-83	20.52	9.22	5.83	5.39	0.09
1983-84	20.19	8.86	5.75	5.50	0.09
1984-85	19.85	8.51	5.67	5.58	0.09
1985-86	19.53	8.19	5.60	5.66	0.08
1986-87	19.19	7.88	5.53	5.70	0.08
1987-88	18.91	7.57	5.46	5.80	0.08
1988-89	18.67	7.28	5.40	5.90	0.08

Table A-20.—Percents to develop alternative projections of bachelor's degrees in the humanities fields: 1978-79 to 1988-89

Year	Total	Architecture & environmental design	Fine and applied arts	Foreign languages	Communications	Letters
			Total			
1978-79	13.83	1.00	4.29	1.23	2.86	4.45
1979-80	13.55	1.01	4.32	1.09	3.04	4.09
1980-81	13.21	1.02	4.32	0.94	3.21	3.72
1981-82	12.97	1.02	4.36	0.93	3.26	3.40
1982-83	12.94	1.03	4.34	0.81	3.39	3.37
1983-84	13.00	1.03	4.30	0.82	3.50	3.35
1984-85	13.04	1.04	4.26	0.84	3.59	3.32
1985-86	13.12	1.03	4.23	0.87	3.68	3.31
1986-87	13.20	1.05	4.20	0.89	3.77	3.29
1987-88	13.31	1.04	4.19	0.92	3.87	3.29
1988-89	13.33	1.04	4.16	0.96		3.21
			Men			
1978-79	11.58	1.45	3.11	0.57	2.79	3.66
1979-80	11.44	1.46	3.12	0.52	2.93	3.40
1980-81	11.30	1.46	3.14	0.46	3.08	3.16
1981-82	11.03	1.46	3.11	0.46	3.12	2.88
1982-83	10.97	1.43	3.06	0.40	3.21	2.87
1983-84	10.90	1.39	2.99	0.40	3.27	2.86
1984-85	10.79	1.34	2.91	0.40	3.31	2.84
1985-86	10.68	1.36	2.79	0.39	3.32	2.82
1986-87	10.61	1.34	2.71	0.39	3.37	2.80
1987-88	10.57	1.35	2.63	0.39	3.41	2.79
1988-89	10.53	1.34	2.57	0.39	3.47	2.77
			Women			
1978-79	16.36	0.50	5.62	1.97	2.93	5.34
1979-80	15.90	0.50	5.66	1.73	3.15	4.86
1980-81	15.35	0.53	5.64	1.47	3.35	4.36
1981-82	15.10	0.55	5.73	1.45	3.40	3.96
1982-83	15.12	0.59	5.76	1.25	3.59	3.93
1983-84	15.34	0.64	5.77	1.29	3.75	3.89
1984-85	15.58	0.69	5.78	1.34	3.90	3.86
1985-86	15.78	0.68	5.80	1.39	4.06	3.85
1986-87	16.02	0.72	5.82	1.45	4.20	3.83
1987-88	16.21	0.71	5.83	1.49	4.36	3.81
1988-89	16.29	0.73	5.85	1.56	4.48	3.68

Table A-21.—Percents to develop alternative projections of bachelor's degrees in engineering, mathematics, and physical sciences fields: 1978-79 to 1988-89

Year	Total	Mathematics & statistics	Computer & information sciences	Engineering	Engineering technologies	Physical sciences
			Total			
1978-79	11.62	1.16	0.80	6.21	0.96	2.50
1979-80	12.13	0.98	0.85	6.78	1.01	2.52
1980-81	12.59	0.85	0.92	7.19	1.06	2.59
1981-82	13.38	0.82	0.95	7.88	1.09	2.63
1982-83	13.60	0.83	1.01	7.86	1.14	2.76
1983-84	13.64	0.84	1.04	7.79	1.18	2.78
1984-85	13.69	0.86	1.07	7.76	1.23	2.78
1985-86	13.49	0.87	1.07	7.55	1.25	2.76
1986-87	13.51	0.89	1.09	7.48	1.29	2.76
1987-88	13.37	0.90	1.11	7.34	1.31	2.75
1988-89	13.38	0.92	1.13	7.21	1.34	2.77
			Men			
1978-79	18.65	1.28	1.07	10.89	1.77	3.65
1979-80	19.56	1.08	1.16	11.77	1.86	3.69
1980-81	20.33	1.00	1.26	12.38	1.95	3.75
1981-82	21.70	0.97	1.27	13.65	2.03	3.78
1982-83	21.95	0.96	1.36	13.58	2.10	3.94
1983-84	21.89	0.96	1.38	13.45	2.17	3.92
1984-85	21.80	0.96	1.39	13.32	2.24	3.89
1985-86	21.63	0.97	1.37	13.16	2.31	3.83
1986-87	21.56	0.97	1.38	13.03	2.38	3.80
1987-88	21.48	0.97	1.39	12.91	2.45	3.77
1988-89	21.43	0.97	1.41	12.79	2.51	3.75
			Women			
1978-79	3.71	1.01	0.48	0.96	0.06	1.19
1979-80	3.86	0.86	0.48	1.22	0.06	1.24
1980-81	3.94	0.69	0.49	1.38	0.07	1.30
1981-82	4.29	0.67	0.52	1.65	0.08	1.38
1982-83	4.38	0.69	0.54	1.63	0.08	1.45
1983-84	4.46	0.71	0.55	1.60	0.09	1.51
1984-85	4.54	0.74	0.61	1.57	0.09	1.53
1985-86	4.63	0.77	0.62	1.55	0.10	1.59
1986-87	4.71	0.81	0.66	1.52	0.10	1.63
1987-88	4.78	0.84	0.68	1.50	0.10	1.66
1988-89	4.87	0.86	0.68	1.48	0.11	1.74

Table A-22.—Percents to develop alternative projections of bachelor's degrees in life sciences and miscellaneous fields: 1978-79 to 1988-89

Year	Total life sciences	Biological sciences	Agriculture & natural resources	Health professions	Total miscellaneous fields	Business & Accounting	Business & management	Education	Other
					Total				
1978-79	14.60	5.69	2.49	6.42	38.92	4.65	13.24	14.32	6.72
1979-80	14.97	5.78	2.59	6.61	38.93	4.90	13.49	13.61	6.93
1980-81	15.58	5.87	2.70	7.01	38.74	5.09	13.78	12.76	7.10
1981-82	15.76	5.96	2.74	7.07	38.66	5.19	14.00	12.14	7.33
1982-83	16.08	6.02	2.83	7.23	38.36	5.24	14.33	11.31	7.48
1983-84	16.34	6.06	2.92	7.36	38.26	5.19	14.75	10.72	7.60
1984-85	16.59	6.09	3.02	7.48	38.18	5.14	15.20	10.14	7.71
1985-86	16.85	6.09	3.04	7.72	38.26	5.05	15.69	9.67	7.85
1986-87	17.10	6.12	3.12	7.85	38.16	5.00	16.06	9.14	7.97
1987-88	17.36	6.14	3.13	8.09	38.13	4.93	16.43	8.65	8.11
1988-89	17.61	6.17	3.20	8.24	38.05	4.88	16.69	8.25	8.24
					Men				
1978-79	12.51	6.56	3.54	2.41	36.46	6.12	18.11	7.04	5.20
1979-80	12.77	6.68	3.65	2.44	36.42	6.38	18.06	6.59	5.38
1980-81	13.06	6.82	3.77	2.47	36.43	6.59	18.08	6.17	5.58
1981-82	13.26	6.87	3.87	2.52	36.18	6.62	18.18	5.67	5.71
1982-83	13.45	6.91	3.96	2.58	35.96	6.58	18.39	5.16	5.82
1983-84	13.60	6.91	4.04	2.66	36.13	6.50	18.64	5.09	5.90
1984-85	13.76	6.89	4.12	2.75	36.34	6.41	18.96	5.01	5.97
1985-86	13.90	6.84	4.20	2.86	36.67	6.29	19.49	4.88	6.01
1986-87	14.07	6.81	4.28	2.98	36.77	6.20	19.71	4.78	6.08
1987-88	14.23	6.79	4.36	3.08	36.90	6.12	19.96	4.68	6.14
1988-89	14.37	6.78	4.43	3.16	37.04	6.04	20.10	4.67	6.22
					Women				
1978-79	16.95	4.70	1.30	10.96	41.69	3.00	7.74	22.53	8.43
1979-80	17.43	4.77	1.41	11.25	41.72	3.24	8.41	21.42	8.65
1980-81	18.40	4.81	1.51	12.08	41.32	3.42	8.97	20.13	8.80
1981-82	18.50	4.96	1.51	12.04	41.36	3.63	9.44	19.20	9.10
1982-83	18.98	5.04	1.59	12.35	41.01	3.76	9.84	18.09	9.31
1983-84	19.39	5.12	1.68	12.59	40.62	3.73	10.41	16.99	9.49
1984-85	19.77	5.20	1.77	12.80	40.25	3.71	10.95	15.92	9.67
1985-86	20.07	5.28	1.78	13.01	39.99	3.69	11.55	14.89	9.85
1986-87	20.40	5.37	1.86	13.18	39.68	3.68	12.07	13.90	10.03
1987-88	20.68	5.45	1.84	13.39	39.42	3.66	12.64	12.92	10.20
1988-89	21.04	5.53	1.90	13.61	39.13	3.65	13.08	12.02	10.38

Table A-23.—Percents to develop alternative projections of master's degrees in the social sciences fields: 1978-79 to 1988-89

Year	Total	Social sciences	Psychology	Public affairs & services	Library sciences
			Total		
1978-79	15.84	4.91	2.70	6.21	2.03
1979-80	15.83	4.75	2.75	6.39	1.93
1980-81	16.20	4.57	2.80	6.64	2.19
1981-82	16.10	4.46	2.87	6.96	1.81
1982-83	16.29	4.32	2.94	7.28	1.76
1983-84	16.56	4.21	3.02	7.65	1.68
1984-85	16.87	4.10	3.09	8.00	1.68
1985-86	17.08	3.95	3.15	8.31	1.67
1986-87	17.28	3.81	3.20	8.60	1.67
1987-88	17.54	3.69	3.29	8.93	1.64
1988-89	17.87	3.55	3.36	9.30	1.65
			Men		
1978-79	15.58	6.24	2.53	6.05	0.76
1979-80	15.94	6.16	2.61	6.50	0.68
1980-81	15.98	5.92	2.65	6.74	0.68
1981-82	16.17	5.72	2.66	7.11	0.68
1982-83	16.32	5.50	2.68	7.46	0.69
1983-84	16.61	5.32	2.70	7.89	0.69
1984-85	16.90	5.14	2.74	8.32	0.70
1985-86	16.98	4.89	2.75	8.64	0.70
1986-87	17.07	4.65	2.79	8.93	0.70
1987-88	17.15	4.42	2.76	9.27	0.70
1988-89	17.29	4.18	2.68	9.72	0.70
			Women		
1978-79	16.12	3.54	2.87	6.37	3.34
1979-80	15.73	3.39	2.89	6.29	3.15
1980-81	16.41	3.32	2.95	6.54	3.60
1981-82	16.03	3.26	3.07	6.82	2.88
1982-83	16.27	3.20	3.18	7.11	2.78
1983-84	16.51	3.16	3.32	7.41	2.61
1984-85	16.83	3.10	3.43	7.70	2.61
1985-86	17.17	3.06	3.53	7.99	2.59
1986-87	17.48	3.01	3.59	8.29	2.59
1987-88	17.93	2.98	3.80	8.59	2.56
1988-89	18.44	2.94	4.03	8.90	2.57

Table A-24.—Percents to develop alternative projections of master's degrees in the humanities fields: 1978-79 to 1988-89

Year	Total	Architecture & environmental design	Fine and applied arts	Foreign languages	Communications	Letters
			Total			
1978-79	9.04	0.98	3.01	0.83	1.10	3.12
1979-80	8.94	0.97	3.06	0.76	1.14	3.03
1980-81	8.84	0.95	3.13	0.67	1.17	2.92
1981-82	8.73	0.94	3.13	0.63	1.20	2.84
1982-83	8.72	0.93	3.14	0.63	1.20	2.83
1983-84	8.75	0.96	3.17	0.63	1.19	2.80
1984-85	8.72	0.97	3.19	0.63	1.18	2.76
1985-86	8.67	0.96	3.19	0.62	1.17	2.73
1986-87	8.64	0.96	3.20	0.62	1.17	2.69
1987-88	8.59	0.96	3.21	0.61	1.16	2.65
1988-89	8.56	0.96	3.23	0.62	1.15	2.61
			Men			
1978-79	7.94	1.39	2.71	0.44	1.06	2.33
1979-80	7.89	1.36	2.80	0.37	1.10	2.26
1980-81	7.65	1.30	2.82	0.29	1.12	2.12
1981-82	7.51	1.23	2.87	0.30	1.12	1.99
1982-83	7.50	1.17	2.90	0.30	1.13	2.00
1983-84	7.61	1.20	2.97	0.30	1.13	2.02
1984-85	7.70	1.21	3.02	0.31	1.12	2.04
1985-86	7.70	1.21	3.04	0.30	1.11	2.04
1986-87	7.73	1.21	3.08	0.30	1.10	2.04
1987-88	7.76	1.21	3.11	0.30	1.09	2.05
1988-89	7.81	1.20	3.15	0.31	1.09	2.05
			Women			
1978-79	10.16	0.56	3.31	1.22	1.14	3.92
1979-80	9.96	0.59	3.31	1.13	1.18	3.75
1980-81	9.95	0.62	3.41	1.03	1.22	3.67
1981-82	9.89	0.65	3.39	0.94	1.27	3.64
1982-83	9.88	0.70	3.37	0.94	1.26	3.62
1983-84	9.83	0.74	3.36	0.94	1.25	3.54
1984-85	9.70	0.74	3.34	0.93	1.24	3.45
1985-86	9.59	0.73	3.33	0.92	1.24	3.38
1986-87	9.51	0.73	3.32	0.92	1.23	3.30
1987-88	9.40	0.72	3.31	0.92	1.22	3.23
1988-89	9.30	0.72	3.30	0.92	1.21	3.16

Table A-25.—Percents to develop alternative projections of master's degrees in engineering, mathematics, and physical sciences fields: 1978-79 to 1988-89

Year	Total	Mathematics & statistics	Computer & information sciences	Engineering	Physical sciences
			Total		
1978-79	9.08	0.99	1.02	5.24	1.82
1979-80	9.10	0.90	1.09	5.27	1.83
1980-81	8.94	0.80	1.13	5.19	1.82
1981-82	9.04	0.81	1.22	5.17	1.84
1982-83	9.14	0.81	1.28	5.20	1.86
1983-84	9.24	0.81	1.33	5.21	1.88
1984-85	9.32	0.82	1.39	5.21	1.91
1985-86	9.31	0.81	1.38	5.19	1.92
1986-87	9.34	0.81	1.38	5.22	1.93
1987-88	9.51	0.82	1.40	5.33	1.96
1988-89	9.59	0.82	1.40	5.39	1.98
			Men		
1978-79	15.63	1.25	1.61	9.79	2.98
1979-80	15.97	1.17	1.73	10.01	3.06
1980-81	15.87	1.05	1.81	9.95	3.06
1981-82	15.93	1.05	1.91	9.88	3.09
1982-83	16.08	1.06	2.00	9.92	3.10
1983-84	16.27	1.07	2.11	9.94	3.14
1984-85	16.44	1.09	2.23	9.95	3.18
1985-86	16.44	1.08	2.23	9.95	3.18
1986-87	16.50	1.08	2.22	10.01	3.19
1987-88	16.59	1.08	2.23	10.07	3.20
1988-89	16.68	1.09	2.24	10.14	3.22
			Women		
1978-79	2.39	0.71	0.43	0.66	0.64
1979-80	2.43	0.64	0.46	0.68	0.64
1980-81	2.45	0.58	0.50	0.72	0.65
1981-82	2.49	0.57	0.56	0.70	0.66
1982-83	2.54	0.57	0.59	0.70	0.68
1983-84	2.54	0.57	0.59	0.69	0.69
1984-85	2.54	0.56	0.59	0.69	0.70
1985-86	2.55	0.56	0.59	0.69	
1986-87	2.57	0.56	0.58	0.69	
1987-88	2.61	0.56	0.58	0.72	
1988-89	2.64	0.56	0.58	0.74	

Table A-26.—Percents to develop alternative projections of master's degrees in life sciences and miscellaneous fields: 1978-79 to 1988-89

Year	Total life sciences	Biological sciences	Agriculture & natural resources	Health professions	Total miscellaneous fields	Business & Accounting	Business & management	Education	Other
					Total				
1978-79	8.21	2.18	1.29	4.74	57.83	1.08	14.82	37.87	4.07
1979-80	8.06	1.98	1.35	4.73	58.07	1.09	15.75	37.14	4.09
1980-81	8.51	2.18	1.38	4.95	57.51	1.19	16.05	36.06	4.21
1981-82	8.80	2.22	1.45	5.13	57.33	1.29	16.27	35.41	4.37
1982-83	9.08	2.25	1.50	5.33	56.76	1.36	16.47	34.40	4.52
1983-84	9.38	2.29	1.55	5.54	56.08	1.38	16.46	33.53	4.71
1984-85	9.64	2.29	1.59	5.76	55.45	1.38	16.58	32.60	4.88
1985-86	9.86	2.27	1.62	5.97	55.08	1.36	16.53	32.17	5.03
1986-87	10.07	2.25	1.64	6.17	54.67	1.33	16.47	31.69	5.18
1987-88	10.28	2.25	1.69	6.34	54.08	1.31	16.49	30.93	5.35
1988-89	10.50	2.22	1.73	6.54	53.47	1.28	16.39	30.28	5.52
					Men				
1978-79	7.33	2.66	1.97	2.70	53.54	1.57	24.08	23.49	4.39
1979-80	7.14	2.29	2.08	2.77	53.09	1.59	24.50	22.56	4.41
1980-81	7.62	2.66	2.15	2.82	52.87	1.74	25.28	21.28	4.58
1981-82	7.78	2.69	2.22	2.87	52.60	1.86	25.67	20.29	4.78
1982-83	7.91	2.70	2.29	2.92	52.19	1.94	26.07	19.21	4.97
1983-84	8.08	2.71	2.38	3.00	51.43	1.99	26.18	18.05	5.20
1984-85	8.27	2.72	2.47	3.08	50.68	1.99	26.48	16.78	5.43
1985-86	8.35	2.70	2.53	3.12	50.52	1.95	26.46	16.51	5.60
1986-87	8.42	2.66	2.59	3.16	50.29	1.90	26.44	16.18	5.78
1987-88	8.52	2.64	2.67	3.22	49.98	1.84	26.32	15.85	5.97
1988-89	8.62	2.60	2.74	3.28	49.60	1.78	26.14	15.51	6.17
					Women				
1978-79	9.12	1.69	0.60	6.84	62.21	0.57	5.36	52.55	3.74
1979-80	8.95	1.69	0.63	6.63	62.93	0.62	7.26	51.28	3.78
1980-81	9.34	1.73	0.67	6.94	61.85	0.68	7.40	49.90	3.87
1981-82	9.76	1.78	0.71	7.28	61.82	0.74	7.33	49.77	3.99
1982-83	10.20	1.83	0.76	7.61	61.10	0.81	7.32	48.87	4.10
1983-84	10.61	1.88	0.75	7.97	60.52	0.80	7.20	48.29	4.23
1984-85	10.94	1.88	0.75	8.31	59.98	0.80	7.16	47.66	4.36
1985-86	11.29	1.87	0.76	8.66	59.40	0.80	7.11	47.01	4.48
1986-87	11.63	1.86	0.75	9.02	58.81	0.80	7.04	46.36	4.61
1987-88	11.99	1.86	0.75	9.38	58.07	0.79	6.92	45.61	4.74
1988-89	12.35	1.86	0.74	9.75	57.27	0.80	6.82	44.77	4.88

Table A-27.—Percents to develop alternative projections of doctor's degrees in the social sciences fields: 1978-79 to 1988-89

Year	Total	Social sciences	Psychology	Public affairs & services	Library sciences
			Total		
1978-79	21.34	11.63	8.22	1.28	0.22
1979-80	21.28	11.54	8.15	1.37	0.21
1980-81	21.53	11.58	8.31	1.43	0.21
1981-82	21.65	11.49	8.39	1.56	0.21
1982-83	21.42	11.20	8.39	1.61	0.22
1983-84	21.28	10.93	8.41	1.71	0.23
1984-85	21.31	10.92	8.42	1.74	0.23
1985-86	21.35	10.90	8.41	1.81	0.23
1986-87	21.44	10.91	8.45	1.85	0.24
1987-88	21.48	10.93	8.42	1.89	0.24
1988-89	21.57	10.95	8.44	1.93	0.25
			Men		
1978-79	20.23	11.98	6.93	1.15	0.17
1979-80	20.04	11.86	6.78	1.23	0.17
1980-81	20.71	12.15	7.13	1.27	0.17
1981-82	21.03	12.12	7.34	1.41	0.17
1982-83	20.74	11.76	7.35	1.45	0.18
1983-84	20.42	11.36	7.39	1.49	0.18
1984-85	20.45	11.33	7.37	1.57	0.18
1985-86	20.55	11.33	7.38	1.65	0.19
1986-87	20.60	11.33	7.39	1.68	0.19
1987-88	20.67	11.34	7.36	1.77	0.20
1988-89	20.80	11.38	7.40	1.81	0.20
			Women		
1978-79	24.36	10.67	11.72	1.62	0.35
1979-80	24.48	10.71	11.69	1.75	0.33
1980-81	23.62	10.14	11.33	1.83	0.32
1981-82	23.24	9.88	11.07	1.95	0.33
1982-83	23.14	9.79	11.01	2.00	0.33
1983-84	23.42	9.84	10.97	2.26	0.34
1984-85	23.45	9.89	11.03	2.18	0.34
1985-86	23.36	9.81	10.98	2.22	0.35
1986-87	23.54	9.87	11.06	2.26	0.36
1987-88	23.49	9.93	11.02	2.18	0.36
1988-89	23.49	9.89	11.00	2.22	0.37

Table A-28.—Percents to develop alternative projections of doctor's degrees in the humanities fields: 1978-79 to 1988-89

Year	Total	Architecture & environmental design	Fine and applied arts	Foreign languages	Communications	Letters
			Total			
1978-79	11.47	0.25	2.22	2.00	0.63	6.38
1979-80	11.36	0.21	2.35	1.86	0.64	6.29
1980-81	10.86	0.21	2.37	1.70	0.64	5.94
1981-82	10.51	0.21	2.45	1.50	0.67	5.67
1982-83	10.32	0.22	2.52	1.48	0.69	5.39
1983-84	10.32	0.23	2.55	1.48	0.68	5.38
1984-85	10.23	0.23	2.53	1.48	0.69	5.29
1985-86	10.22	0.23	2.55	1.48	0.70	5.26
1986-87	10.19	0.24	2.53	1.50	0.68	5.23
1987-88	10.16	0.24	2.55	1.47	0.70	5.20
1988-89	10.23	0.25	2.58	1.50	0.72	5.19
			Men			
1978-79	9.32	0.26	1.92	1.24	0.60	5.30
1979-80	9.19	0.21	2.03	1.10	0.64	5.21
1980-81	8.81	0.21	2.02	1.01	0.63	4.93
1981-82	8.49	0.21	2.09	0.85	0.64	4.69
1982-83	8.23	0.22	2.11	0.84	0.66	4.40
1983-84	8.25	0.23	2.12	0.86	0.63	4.42
1984-85	8.25	0.23	2.12	0.83	0.69	4.38
1985-86	8.27	0.24	2.12	0.85	0.71	4.37
1986-87	8.26	0.24	2.11	0.86	0.67	4.37
1987-88	8.25	0.25	2.11	0.83	0.69	4.37
1988-89	8.31	0.25	2.11	0.86	0.70	4.38
			Women			
1978-79	17.29	0.23	3.02	4.06	0.70	9.28
1979-80	16.94	0.22	3.17	3.83	0.66	9.07
1980-81	16.07	0.22	3.24	3.45	0.65	8.52
1981-82	15.64	0.22	3.37	3.15	0.76	8.14
1982-83	15.57	0.22	3.56	3.11	0.78	7.90
1983-84	15.50	0.23	3.62	3.05	0.79	7.81
1984-85	15.17	0.23	3.56	3.10	0.69	7.59
1985-86	15.07	0.23	3.62	3.04	0.70	7.48
1986-87	14.98	0.24	3.57	3.09	0.71	7.37
1987-88	14.89	0.24	3.63	3.03	0.73	7.26
1988-89	14.96	0.25	3.71	3.09	0.74	7.17

Table A-29.—Percents to develop alternative projections of doctor's degrees in engineering, mathematics, and physical sciences fields: 1978-79 to 1988-89

Year	Total	Mathematics & statistics	Computer & information sciences	Engineering	Physical sciences
			Total		
1978-79	19.72	2.34	0.63	7.25	9.50
1979-80	19.36	2.32	0.61	6.99	9.44
1980-81	18.65	2.12	0.58	6.97	8.98
1981-82	18.41	1.99	0.55	7.14	8.73
1982-83	18.49	1.99	0.57	7.16	8.77
1983-84	18.57	2.00	0.58	7.19	8.80
1984-85	18.45	2.01	0.56	7.14	8.75
1985-86	18.47	2.01	0.57	7.14	8.75
1986-87	18.47	1.98	0.58	7.15	8.76
1987-88	18.48	1.99	0.56	7.16	8.77
1988-89	18.46	1.97	0.57	7.16	8.77
			Men		
1978-79	24.81	2.69	0.77	9.67	11.68
1979-80	24.58	2.67	0.76	9.45	11.69
1980-81	23.79	2.45	0.72	9.49	11.13
1981-82	23.51	2.26	0.68	9.73	10.84
1982-83	23.69	2.29	0.70	9.78	10.92
1983-84	23.81	2.30	0.72	9.83	10.96
1984-85	23.68	2.30	0.69	9.77	10.92
1985-86	23.70	2.30	0.71	9.78	10.91
1986-87	23.76	2.30	0.72	9.79	10.95
1987-88	23.76	2.31	0.69	9.82	10.95
1988-89	23.77	2.32	0.70	9.82	10.93
			Women		
1978-79	5.92	1.39	0.23	0.70	3.60
1979-80	5.90	1.42	0.22	0.66	3.61
1980-81	5.50	1.29	0.22	0.54	3.45
1981-82	5.43	1.30	0.22	0.54	3.37
1982-83	5.34	1.22	0.22	0.56	3.34
1983-84	5.43	1.24	0.23	0.57	3.39
1984-85	5.40	1.26	0.23	0.57	3.33
1985-86	5.49	1.29	0.23	0.58	3.39
1986-87	5.35	1.19	0.24	0.59	3.33
1987-88	5.45	1.21	0.24	0.61	3.39
1988-89	5.44	1.11	0.25	0.62	3.46

Table A-30.—Percents to develop alternative projections of doctor's degrees in life sciences and miscellaneous fields: 1978-79 to 1988-89

Year	Total life sciences	Biological sciences	Agriculture & natural resources	Health professions	Total miscellaneous fields	Business & Accounting	Business & management	Education	Other
					Total				
1978-79	15.66	10.47	3.13	2.06	31.81	0.16	2.69	23.41	5.56
1979-80	16.00	10.44	3.30	2.26	32.00	0.15	2.66	23.24	5.95
1980-81	16.28	10.64	3.34	2.30	32.69	0.15	2.82	23.53	6.19
1981-82	16.48	10.66	3.43	2.39	32.96	0.12	2.85	23.40	6.58
1982-83	16.53	10.57	3.50	2.46	33.25	0.13	2.84	23.41	6.88
1983-84	16.51	10.48	3.55	2.48	33.33	0.13	2.84	23.34	7.03
1984-85	16.34	10.33	3.55	2.47	33.67	0.13	2.83	23.48	7.23
1985-86	16.29	10.19	3.62	2.48	33.66	0.13	2.78	23.50	7.24
1986-87	16.21	10.09	3.66	2.46	33.69	0.14	2.80	23.53	7.22
1987-88	16.17	9.95	3.74	2.48	33.71	0.14	2.79	23.54	7.23
1988-89	16.14	9.87	3.79	2.47	33.60	0.14	2.79	23.43	7.23
					Men				
1978-79	16.60	10.82	4.02	1.75	29.04	0.17	3.34	19.29	6.24
1979-80	16.95	10.76	4.28	1.91	29.24	0.17	3.35	19.03	6.69
1980-81	17.38	11.09	4.34	1.94	29.31	0.17	3.54	18.56	7.04
1981-82	17.70	11.22	4.48	2.01	29.27	0.13	3.58	18.05	7.51
1982-83	17.70	11.10	4.58	2.03	29.63	0.13	3.61	18.10	7.79
1983-84	17.63	10.96	4.64	2.03	29.89	0.14	3.61	18.12	8.03
1984-85	17.46	10.78	4.65	2.03	30.17	0.14	3.59	18.15	8.29
1985-86	17.35	10.58	4.75	2.02	30.14	0.14	3.53	18.15	8.32
1986-87	17.23	10.42	4.80	2.02	30.15	0.14	3.55	18.15	8.31
1987-88	17.13	10.26	4.86	2.01	30.19	0.15	3.53	18.21	8.30
1988-89	17.07	10.12	4.93	2.01	30.06	0.15	3.52	18.08	8.31
					Women				
1978-79	13.11	9.51	0.70	2.90	39.33	0.12	0.93	34.57	3.71
1979-80	13.55	9.62	0.77	3.17	39.13	0.11	0.87	34.10	4.04
1980-81	13.48	9.49	0.76	3.24	41.32	0.11	0.97	36.25	3.99
1981-82	13.36	9.23	0.76	3.37	42.35	0.11	0.98	37.02	4.23
1982-83	13.57	9.23	0.78	3.56	42.38	0.11	0.89	36.82	4.56
1983-84	13.69	9.28	0.79	3.62	41.97	0.11	0.90	36.43	4.52
1984-85	13.56	9.20	0.80	3.56	42.41	0.11	0.92	36.78	4.60
1985-86	13.67	9.23	0.82	3.62	42.41	0.12	0.93	36.80	4.56
1986-87	13.67	9.27	0.83	3.57	42.45	0.12	0.95	36.86	4.52
1987-88	13.80	9.20	0.97	3.63	42.37	0.12	0.97	36.68	4.60
1988-89	13.84	9.27	0.99	3.58	42.27	0.12	0.99	36.59	4.57

A-3 Instructional Staff

Classroom Teachers

Projections of classroom teachers in regular elementary and secondary schools are based on intermediate projections of enrollment by organizational level (table 5) and the alternative sets of pupil-teacher ratio projections shown in table 29.

Estimates and projections of the demand for additional teachers in regular public elementary and secondary schools were computed as follows: (1) The number of additional teachers needed for pupil-teacher ratio changes was computed as the difference between the total teacher demand in a given year less the estimated total teacher demand in the same year had the pupil-teacher ratio in the previous year remained constant, (2) The number of additional teachers needed for enrollment changes was computed as the difference between the total teacher demand in a given year and the total teacher demand in the previous year less the computed number needed for pupil-teacher ratio changes in the given year; and (3) The number of additional teachers needed in a given year to replace those leaving public schools either temporarily or permanently was computed as a percentage of the total number of teachers employed in the previous year. The percentages used are shown in table A-31.

Estimates and projections of the demand for additional teachers in regular nonpublic elementary and secondary schools are projected in the same manner as for public schools except that a 6 percent turnover rate is used throughout.

Projections of the supply of new teacher graduates were computed as percentages of the intermediate alternative bachelor's degree projections in table 14. The percentages used are shown in table A-32.

The notation and equations below generally describe the model used to estimate and project the demand for additional teachers.

Let:

A_t = Total demand for additional teachers in year t

AE_t = Additional teachers needed in year t for enrollment changes

AP_t = Additional teachers needed in year t for pupil-teacher ratio changes.

AR_t = Additional teachers needed in year t for replacement (turnover) of teachers

E_t = Enrollment in year t

T_t = Teachers in year t

PT_t = Pupil-teacher ratio in year t

R_t = Replacement (turnover) rate in year t

Then:

$$A_t = AE_t + AP_t + AR_t$$

Where:

$$AE_t = T_t - T_{t-1} - AP_t$$

$$AP_t = T_t - E_t / PT_{t-1}$$

$$AR_t = R_t(T_{t-1})$$

Higher Education Instructional Staff

Projections of full-time instructional staff in institutions of higher education are based on alternative projections of full-time-equivalent-enrollment by type and control of institution (tables 15 and 16) and constant projections of student staff ratios (full-time-equivalent-enrollment to full-time-equivalent-instructional staff) by type and control of institution. Table A-33 shows the student-staff ratios for 1976, the last year for which faculty data is available. These ratios were used for projections for all years and for estimates for 1977 and 1978.

Also shown in table A-33 are 1976 percentages that were used to separate full-time-equivalent faculty projections by full-time or part-time status and by instructional rank (junior or senior). In addition table A-33 shows 1976 percentages that were used to convert the full-time-equivalent faculty projections in table 34 to the total faculty projections in table 33.

Projections of the demand for additional full-time-equivalent instructional staff were computed in the following manner: (1) The numbers needed for enrollment changes and student-staff ratio changes were computed as the difference between the total full-time-equivalent-professional staff in two successive years; and (2) The numbers needed for replacement of those leaving the profession either permanently or temporarily, was estimated at 4.5 percent of the total full-time-equivalent-instructional staff in the previous year. This percentage was used for the low and intermediate alternatives and 6.0 percent was used for the high alternative.

Table A-31.—Replacement (turnover) rates for classroom teachers in regular public elementary and secondary schools

Year	Low alternative	Intermediate alternative	High alternative
		Estimated	
1969	...	8.0	...
1970	...	7.5	...
1971	...	7.0	...
1972	...	6.5	...
1973	...	6.0	...
1974	...	6.0	...
1975	...	6.0	...
1976	...	6.0	...
1977	...	6.0	...
1978	...	6.0	...
		Projected	
1979	5.5	6.0	6.5
1980	5.0	6.0	7.0
1981	5.0	6.0	7.5
1982	4.8	6.0	8.0
1983	4.8	6.0	8.0
1984	4.8	6.0	8.0
1985	4.8	6.0	8.0
1986	4.8	6.0	8.0
1987	4.8	6.0	8.0
1988	4.8	6.0	8.0

Table A-32.—New teacher graduates as a percentage of bachelor's degrees

Year	Low alternative	Intermediate alternative	High alternative
1969	...	36.2	...
1970	...	35.8	...
1971	...	37.4	...
1972	...	35.7	...
1973	...	34.0	...
1974	...	29.5	...
1975	...	25.8	...
1976	...	24.5	...
1977	...	21.5	...
1978	...	20.6	...
1979	...	19.7	...
		Projected	
1980	18.5	19.2	20.0
1981	17.5	18.7	20.0
1982	16.6	18.3	20.0
1983	15.8	17.9	20.0
1984	15.2	17.6	20.0
1985	14.6	17.3	20.0
1986	14.0	17.0	20.0
1987	13.6	16.8	20.0
1988	13.1	16.6	20.0

Table A-33.—Ratios and percents used to project total and full-time-equivalent faculty

Type and control of institution	Student-staff ratio	Percentage of full-time-equivalent faculty that is senior	Percentage of senior full-time-equivalent faculty that is full-time	Percentage of junior full-time-equivalent faculty that is full-time	Full-time-equivalent percentage of senior part-time faculty	Full-time-equivalent percentage of junior part-time faculty
Public 4-year	12.4	81.2	92.2	28.2	37.8	41.0
Public 2-year	22.5	97.2	76.0	22.4	29.6	34.0
Private 4-year	11.8	87.7	85.1	46.2	34.4	44.5
Private 2-year	17.9	98.8	23.1	[1]	37.8	[1]

[1] Junior faculty is negligible in private 2-year institutions.

A.4 Expenditures

The projections of expenditure variables in this edition of *Projections* reflect NCES's first attempt at incorporating economic variables and econometric modeling into its projection methodology. The equations presented in this section should be viewed as forecasting rather than structural equations as the limitations of time and available data precluded the building of a large-scale, structural expenditure model. The particular equations shown were selected on the basis of their coefficients of determination (R^2's) and the significance of the t-statistics of variables added or deleted as well as their ability to produce reasonable projections of total expenditures and the components of total expenditures.

The multiple regression technique used in *Projections* yields good results only if the relationships which existed among the endogenous and exogenous variables in the past continue throughout the projection period.

Expenditures of Public and Nonpublic Elementary and Secondary Schools

All alternative projections of current, capital, and interest expenditures by public elementary and secondary schools use students in Average Daily Attendance (ADA) as an exogenous variable. Public ADA is estimated to be 92 percent of NCES's intermediate alternative projection of enrollment in public schools. The intermediate, low, and high alternative projections of all expenditures use values for the exogenous economic variables which come from Data Resources, Inc.'s intermediate, low, and high trend projections of the U.S. economy, respectively (see appendixes B-4 and F-4 for further details).

Nonpublic school intermediate, low, and high alternative expenditure projections are based on public school intermediate, low, and high alternative projections, respectively.

Values of the coefficients of the equations in this section and their related statistical measurements are shown in Table A-34.

Current Expenditures of Public Elementary and Secondary Schools[1]

The current expenditure equation for the Elementary and Secondary School Expenditure Model is

$$\ln[(CUED/PGSL)/ADA] = \beta_0 + \beta_1 \cdot ADA + \beta_2[((GSL \cdot 1{,}000{,}000)/ADA)PGSL79]$$

Where:

ln indicates the natural log;

CUED = current expenditures of public elementary and secondary schools;

PGSL = the implicit price deflator for state and local purchases of good and services;

ADA = average daily attendance of students at public elementary and secondary schools;

GSL = state and local government purchases of goods and services (in billions); and

PGSL79 = PGSL normalized to school year 1978-1979 dollars.

In the current expenditure equation, a 1.0 percent increase in real State and local spending per ADA on goods and services, holding ADA constant, will give rise to a 0.9 percent increase in current expenditures on education. Holding real total State and local expenditures per pupil constant, an increase of 1,000 pupils in ADA will give rise to approximately a 0.001 percent increase in real expenditures on education per ADA. Numerous other equations were estimated but this equation was chosen as the one giving the best fit and the most reasonable projections.

Current Expenditures on All Programs By Public Elementary and Secondary Schools

Total current expenditures include expenditures allocated to pupil costs as well as expenditures on summer schools, adult education, and community colleges operated by school districts. For all alternative projections, this series was projected as 102.0 percent of projected current expenditures allocated to pupil costs.

Capital Expenditures of Public Elementary and Secondary school[2]

The capital expenditure equation for the Elementary and Secondary School Expenditure Model is

[1] Taken from a report entitled "Econometric Forecasts of Elementary Secondary Education Expenditures to 1989-90", prepared for NCES by Lawrence Olson of Data Resources, Inc.

[2] Ibid.

$\ln[(CAED/PICNR)/ADA] =$

$\beta_0 + \beta_1 \cdot ADADOWN + \beta_2 \cdot ADADOWN\backslash 1$

$+ \beta_3 \cdot \ln[((GICV/1,000,000)/ADA)/PICNR79)]$

Where:

ln indicates the natural log;

CAED = capital expenditures of public elementary and secondary schools;

PICNR = the implicit price deflator for private nonresidential construction;

ADA = average daily attendance of students at public elementary and secondary schools;

ADADOWN = a dummy variable equal to unity if ADA fell between the current period and the previous period, zero otherwise;

ADADOWN\1 = a one-period lag in ADADOWN

GICV = new public construction put-in-place by all levels of government; and

PICNR79 = PICNR in school year 1979 dollars.

In this equation, a 1.0 percent increase in all real public new construction put-in-place per-pupil gives rise to a 0.6 percent increase in real capital expenditure per-pupil. A falling ADA between the current and previous periods, holding new public construction constant, decreases capital spending on education by about 14.0 percent, while a decline one period earlier decreases spending by about 8.0 percent. The projections were adjusted slightly to assure consistency between the last actual and first projected data.

Interest Expenditures of Public Elementary and Secondary Schools[3]

The Interest expenditure equation for the Elementary and Secondary School Expenditure Model is:

$\ln(INTED) = \beta_0 + \beta_1 \ln(BS\&L/1,000,000)$

$+ \beta_2 \ln(RMAAAGSLNS) + \beta_3 ADA$

Where:

ln indicates the natural log;

INTED = elementary and secondary school interest expenditure by state and local governments;

BS&L = state and local government obligations outstanding; and

RMAAAGSLNS = yield on AAA state and local government bonds (general obligations).

In this equation, an increase of 1.0 percent in the level of overall State and local debt increases interest expenditures by 0.97 percent while an increase of 1.0 percent in the current AAA rate on all State and local bonds is associated with a 0.07 percent increase in interest expenditures. The projections were adjusted slightly to assure consistency between the last actual and first projected data. Nominal expenditures on interest are used in this equation because no adequate deflator was available. Projections of interest expenditure were deflated by the All Urban Consumer Price Index to give expenditures on interest in constant dollars. The constant dollar interest expenditures should not be construed as reflecting the true cost of borrowing money.

Current, Capital and Interest Expenditures of Nonpublic Elementary and Secondary Schools

All categories of expenditures by nonpublic elementary and secondary schools were estimated based on the assumption that the cost per teacher (including donated facilities and services) in nonpublic schools is the same as in the public schools. The equation used is as follows: $Y = XP$

Where:

Y = expenditures of nonpublic elementary and secondary schools;

X = ratio of nonpublic to public school teachers; and

P = public school expenditures in 1978-79 dollars.

The ratio of nonpublic to public school teachers was around .12 during the last 10 years and is expected to rise gradually to about .14 by 1988-89. The numbers on which these ratios were computed are shown in table 28.

One alternative method of projecting expenditures by nonpublic elementary and secondary schools would be to assume that per-pupil costs in nonpuplic schools are the same as in public schools. Since the average pupil-teacher ratio is higher in nonpublic than in public schools this estimation method would yield larger estimates than those shown here.

Both types of estimates are, in a sense, hypothetical; one shows what it would cost to educate nonpublic elementary and secondary school children if they were enrolled in public schools and if the public school pupil-teacher ratio were maintained; the other

[3] Ibid

Table A-34.—Equations for expenditures in public elementary and secondary schools

(N = 12)

Dependent variables	Equations	$\bar{R}^2$[1]	Durbin-Watson statistics[2]	Estimation technique[3]
Current expenditures	ln((CUED/PGSL)/ADA) = -0.500691	.9924	.3076	OLS
	+ 1.04197E-05·ADA (4.1)			
	+ 0.863406·ln(((GSL·1,000,000)/ADA)/PGSL79) (18.9)			
Capital outlay	ln((CAED/PICNR)/ADA) = 1.33226	.9385	2.1697	OLS
	- 0.137103·ADADOWN (2.7)			
	- 0.767798·ADADOWN·D1 (1.6)			
	+ 0.565677·ln(((GICV·1,000,000)/ADA)/PICNR79) (3.4)			
Interest expenditures	ln(INTED) = -4.8417 + 0.966508·ln(BS&L·1,000,000) (21.0)	.9969	3.7358	OLS
	+ 0.0732694·ln(RMAAAGSLNS) (1.2)			
	+ 1.40608E-05·ADA (3.9)			

Values of t - statistics are in parentheses.

[1] $\bar{R}^2$ = coefficient of determination corrected for degrees of freedom.

[2] For an explanation of the Durbin-Watson Statistics, see J. Johnston, *Econometric Methods*, New York: McGraw Hill, 1972, pages 251-252.

[3] OLS = Ordinary Least Squares.

NOTE: E - 05 = 10^{-5}.

shows the cost if the pupil-teacher ratio were maintained at the nonpublic school level.

Salaries of Classroom Teachers in Public Elementary and Secondary Schools

The low alternative projection of the average salary of classroom teachers was made through the use of double exponential smoothing. The value of the smoothing constant used was .5.

For the intermediate and high alternative projections of the average salary of classroom teachers, regression was used.

The equation for the intermediate alternative projection is

$$SALC = \beta_0 + \beta_1 \cdot YPCAP + \beta_2 \cdot ADA$$

Where:

SALC = current dollar average classroom teacher salary;

YPCAP = current dollar personal income per capita; and

ADA = pupils in average daily attendance in public schools.

The equation of the high alternative projection is

$$SALC = \beta_0 + \beta_1 \cdot YPCAP.$$

The deflator used on average classroom teacher salaries was based on the All Urban Consumer Price Index. Values of the coefficients for this equation and related statistical measurements are shown in table A-35.

Expenditures of Public and Private Institutions of Higher Education

The three alternative projections of current and capital expenditures of public and private institutions of higher education use enrollment variables (part-time enrollment, full-time enrollment, full-time-equivalent enrollment, etc.) as exogenous variables. The low and intermediate alternative expenditure projections employ values for these enrollment variables which are consistent with NCES's intermediate alternative projections of enrollment to 1988-89. The high alternative expenditure projections employ values for these enrollment variables which are consistent with NCES's high alternative projections of enrollment to 1988-89.

In addition, the three alternative projections of current and capital expenditures also use various economic variables (such as personal income, price indexes, etc.) as exogenous variables. The low alternative expenditure projections employ values for these variables which come from a pessimistic, business cycle view of the growth path of the U.S. economy.[4] The intermediate alternative expenditure projections employ values for these variables which come from a stable trend projection of the U.S. economy. The high alternative expenditure projections employ values for these variables which come from a projection of the growth path of the U.S. economy which, when compared with the stable (intermediate) trend above, assumes higher productivity and a lower rate of inflation.

Current Expenditures of Public Institutions of Higher Education

Current expenditures are divided into six components with each component estimated separately: expenditures on student education, research, scholarships and fellowships, public service, auxiliary enterprises, and hospitals and independent operations. Expenditure on mandatory transfers, which is a subcomponent of the six components, was projected and then subtracted from the sum of the six projected components to arrive at a projection for current expenditures.

With the exception of expenditure on public service, all current expenditure components were projected in current dollars and then deflated to school year 1978-79 dollars using the All Urban Consumer Price Index (CPIU). Expenditures on public service were deflated, using the CPIU, before they were projected. Values for the coefficients of the equations in this section are shown in table A-36.

Expenditure on Student Education

For the low alternative projection, current expenditure per full-time-equivalent student (FTE) was estimated in current dollars, multiplied by FTE and then deflated by the Consumer Price Index to get total current expenditure on student education.

The equation used is

$$CUPSEC/PFTE = \beta_0 + \beta_1 \cdot PFTE + \beta_2 \cdot YPCAPAVG$$

Where:

CUPSEC = current dollar expenditures of public institutions on student education;

PFTE = public full-time-equivalent enrollment; and

[4] Projections of the growth path of the U.S. economy were supplied to NCES by Data Resources, Inc.

Table A-35.—Equations for average classroom teacher salaries in public elementary and secondary schools

(N = 10)

Dependent variables	Equations	$\bar{R}^2$[1]	Durbin-Watson statistics[2]	Estimation technique[3]
Average classroom teacher salaries:				
(low alternative)	Data was double exponentially smoothed			
(intermediate alternative)	SALC = -5859.162 + 1357.939·YPCAP (33.71) + 0.1800685·ADA (2.67)	.994	0.400	OLS
(high alternative)	SALC = 1319.144 + 1373.679·YPCAP (25.96)	.988	0.41	OLS

Values of t - statistics are in parentheses.

[1] $\bar{R}^2$ = coefficient of determination corrected for degrees of freedom.

[2] For an explanation of the Durbin-Watson Statistics, see J. Johnston, *Econometric Methods*, New York: McGraw Hill, 1972, pages 251-252.

[3] OLS = Ordinary Least Squares.

Table A-36.—Equations for expenditures by public institutions of higher education

(N = 15)

Dependent variables	Equations	R^2[1]	Durbin-Watson statistics[2]	Estimation technique[3]
Student education:				
(low alternative)	CUPSEC/PFTE = 0.2097448E-01 + 0.1040296E-03·PFTE (3.44) + 0.3424935·YPCAPAVG (11.78)	.994	1.702	OLS
(intermediate and high alternatives)	CUPSEC = -7679.201 + 1.032322·PFTE (10.25) + 3163.477·$YPCAP_{(t-1)}$ (30.78)	.999	0.711	OLS
Research	CUPRC = 590.4249 -0.5384256·PFT4 (-1.92) + 0.8361817·PPT4 + 352.4122·YPCAP (1.48) (6.46)	.983	2.434	OLS
Scholarships and fellowships	CUPSFC = -533.9086 + 0.2148171·PFT (5.89) + 42.74092·YPCAP (2.68)	.980	2.116	OLS
Public service:				
(low)	CUPPS9 = 0.260·PFTE			
(intermediate)	CUPPS9 = 0.275·PFTE			
(high)	CUPPS9 = 0.280·PFTE			
Auxiliary enterprises	CUPAEC = -355.8587 + 0.7556406E-01·PFTE (1.70) + 432.8769·YPCAP (10.69)	.991	1.177	OLS
Hospitals	CUPHC = -2256.043 + 2343.603·CHU (N = 10) (28.39)	.990	1.080	OLS
Independent operations	CUPI9 = 49			
Mandatory transfers	CUPMTC = 44.16884 + 0.3515670E-01·PFTE (1.16) + 66.20083·YPCAP (2.39)	.855	1.702	OLS
Current expenditures	CUPT09 = CUPSE9 + CUPR9 + CUPSF9 + CUPPS9 + CUPAE9 + CUPHI9 - CUPMT9			
Capital outlay	CAP9 = -6906.313 + 0.4641833·PFTE (3.71) + 171.6809·GICV79 (7.90)	.857	1.413	OLS

Values of t - statistics are in parentheses

[1] R^2 = coefficient of determination

[2] For an explanation of the Durbin-Watson Statistics, see J. Johnston, *Econometric Methods*, New York: McGraw Hill, 1972, pages 251-252

[3] OLS = Ordinary Least Squares

NOTE: E-01 = 10^{-1}

YPCAPAVG = the average of current dollar personal income per capita in time t and time t-1.

Attempts were made to estimate the equation in constant dollars using various deflators but the R^2 and $\bar{R}^2$ dropped significantly. The one alternative equation that seemed to give as good a fit and reasonable projections is used for the intermediate and high alternative projections of expenditures of public institutions on student education.

The estimated equation is

$$CUPSEC = \beta_0 + \beta_1 \cdot PFTE + \beta_2 \cdot YPCAP_{t-1}$$

Where:

CUPSEC = current dollar expenditures on student education;

PFTE = full-time-equivalent-enrollment in public institutions; and

$YPCAP_{t-1}$ = current dollar personal income per capita in time t-1.

Expenditure on Research

For all alternative projections of expenditure of public institutions on research, the equation used is

$$CUPRC = \beta_0 + \beta_1 \cdot PFT4 + \beta_2 \cdot PPT4 + \beta_3 \cdot YPCAP$$

Where:

CUPRC = current dollar expenditure on research;

PFT4 = full-time enrollment in public 4-year colleges and universities;

PPT4 = part-time enrollment in public 4-year colleges and universities; and

YPCAP = current dollar personal income per capita.

Expenditure on Scholarships and Fellowships

For all alternative projections of expenditure by public institutions on scholarships and fellowships, the equation used is

$$CUPSFC = \beta_0 + \beta_1 \cdot PFT + \beta_2 \cdot YPCAP$$

Where:

CUPSFC = current dollar expenditures on scholarships and fellowships;

PFT = public full-time enrollment; and

YPCAP = current dollar personal income per capita.

Expenditure on Public Service

Expenditure on public service by public institutions was projected at a constant level of expenditure per public full-time-equivalent student (PFTE) in constant dollars and then multiplied by projected PFTE to get total expenditures in this category.

For the low alternative projection, expenditure per PFTE was allowed to fall to $260 in 1978-79 dollars and remain there. For the intermediate alternative projection, expenditure per PFTE was allowed to drop slightly from its 1977-78 level of $279 to $275 and held constant, in constant dollars, at that level. For the high alternative projection, expenditure per PFTE was projected at $280 in 1978-79 dollars per PFTE.

Expenditure on Auxiliary Enterprises

For all alternative projections of expenditure of public institutions on auxiliary enterprises the equation used is

$$CUPAEC = \beta_0 + \beta_1 \cdot PFTE + \beta_2 \cdot YPCAP$$

Where:

CUPAEC = current dollar expenditures on auxiliary enterprises;

PFTE = public full-time equivalent enrollment; and

YPCAP = current dollar personal income per capita.

Expenditure on Hospitals and Independent Operations

The expenditure-on-hospitals component of this series, for all alternative projections, was regressed on the All Urban Consumer Price Index (CPI). The equation is

$$CUPHC = \beta_0 + \beta_1 \cdot CPIU$$

Where:

CUPHC = current dollar expenditures on hospitals; and

CPIU = All Urban Consumer Price Index.

The expenditure-on-independent operations portion of this series fell by 92.8 percent in 1977-78 due to a change in reporting procedures by some institutions. Therefore, expenditure on independent operations was projected to remain at its 1977-78 level of $49 million, in 1978-79 dollars, for all alternative projections. Projections of constant dollar expenditure on hospitals and independent operations were then added together to obtain projections for this series.

Expenditure on Mandatory Transfers

For all alternative projections of expenditure by

public institutions on mandatory transfers, the equation used is

$CUPMTC = \beta_0 + \beta_1 \cdot PFTE + \beta_2 \cdot YPCAP$

Where:

CUPMTC = current dollar expenditures on mandatory transfers;

PFTE = public full-time equivalent enrollment; and

YPCAP = current dollar personal income per capita.

Capital Outlay of Public Institutions of Higher Education

For all alternative projections of capital outlay by public institutions, the equation used is

$CAP9 = \beta_0 + \beta_1 \cdot PFTE + \beta_2 \cdot G1CV79$

Where:

CAP9 = constant dollar capital expenditures;

PFTE = public full-time equivalent enrollment; and

G1CV79 = constant dollar new public construction put-in-place.

Both CAP9 and G1CV79 were deflated to 1978-79 dollars using the implicit price deflator for investment in private, nonresidential structures (PICNR).

Current Expenditures of Private Institutions of Higher Education

Current expenditures are divided into six components with each component estimated separately: expenditures on student education, research, scholarships and fellowships, public service, auxiliary enterprises, and hospitals and independent operations. Expenditure on mandatory transfers, which is a subcomponent of the six components, was projected and then subtracted from the sum of the six projected components to arrive at a projection for current expenditures.

With the exception of expenditure on public service and mandatory transfers, all current expenditure components were projected in current dollars and then deflated to school year 1978-79 dollars using the All Urban Consumer Price Index (CPIU). Expenditures on public service and mandatory transfers were deflated, using the CPIU, before they were projected. Values for the coefficients of the equations in this section are shown in table A-3.

Expenditure on Student Education

For all alternative projections of expenditure of private institutions on student education, the equation used is

$CUNSEC = \beta_0 + \beta_1 \cdot NFTE + \beta_2 \cdot YPCAP$

Where:

CUNSEC = current dollar expenditures on student education;

NFTE = private full-time-equivalent enrollment; and

YPCAP = current dollar personal income per capita lagged one year.

Attempts were made to project expenditure on student education in constant dollars as well as expenditure per full-time-equivalent student (FTE) in both current and constant dollars. In all cases, the resulting projections were unrealistic and/or the coefficients of determination (R^2's) were very low.

Expenditure on Research

For all alternative projections of expenditure by private institutions on research, the equation used is

$CUNRC = \beta_0 + \beta_1 \cdot YPCAP$

Where:

CUNRC = current dollar expenditures on research; and

YPCAP = current dollar personal income per capita.

Expenditure on Scholarships and Fellowships

For all alternative projections of expenditure by private institutions on scholarships and fellowships, the equation used is

$CUNSFC = \beta_0 + \beta_1 \cdot NFT + \beta_2 \cdot YPCAP$

Where:

CUNSFC = current dollar expenditures on scholarships and fellowships;

NFT = private full-time enrollment; and

YPCAP = current dollar personal income per capita.

Expenditure on Public Service

Expenditure on public service by private institutions was projected at a constant level of expenditure per private full-time-equivalent student (NFTE) and then multiplied by projected NFTE to get total expenditures in this category.

The low alternative projection of expenditure per NFTE is $228 in 1978-79 dollars; the intermediate projection is $233 and the high alternative projection is $239.

Table A-37.—Equations for expenditures by private institutions of higher education

(N = 15)

Dependent variables	Equations	R^2[1]	Durbin-Watson statistics[2]	Estimation technique[3]
Student education	CUNSEC=-3705.877 + 2.100381·NFTE (3.87)	.994	0.567	OLS
	+ 1179.620·YPCAP$_{(t-1)}$ (16.07)			
Research	CUNRC = 470.7012 + 107.9834·YPCAP (9.91)	.883	0.901	OLS
Scholarships and fellowships	CUNSFC = -1099.985 + 0.7929363·NFT (1.75)	.983	0.568	OLS
	+ 96.19952·YPCAP (3.93)			
Public service:				
(low)	CUNPS9 = 0.228·NFTE			
(intermediate)	CUNPS9 = 0.233·NFTE			
(high)	CUNPS9 = 0.239·NFTE			
Auxiliary enterprises	CUNAEC = -593.4408 + 0.5146519·NFT (2.07)	.998	3.024	OLS
	+ 0.5795123·NPT + 163.6102·YPCAP (2.44) (11.36)			
Hospitals	CUNHC = -1559.587 + 1586.158·CPIU (25.82)	.988	2.518	OLS
Independent operations	CUNI9 = 886			
Mandatory transfers	CUNMT9 = 0.0238(CUNSE9 + CUNR9 + CUNSF9 + CUNPS9 + CUNAE9 + CUNHI9)			
Current expenditures	CUNT09 = CUNSE9 + CUNR9 + CUNSF9 + CUNPS9 + CUNAE9 + CUNHI9 - CUNMT9			
Capital outlay:				
(low)	CAN9 = 0.62·NFTE			
(intermediate)	CAN9 = 0.64·NFTE			
(high)	CAN9 = 0.66·NFTE			

[1] R^2 = coefficient of determination.

[2] For an explanation of the Durbin-Watson Statistics, see J. Johnston, *Econometric Methods*, New York: McGraw Hill, 1972, pages 251-252.

[3] OLS = Ordinary Least Squares.

NOTE: Values of t - statistics are in parentheses.

Expenditure on Auxiliary Enterprises

For all alternative projections of expenditure on auxiliary enterprises by private institutions, the equation used is

$$CUNAEC = \beta_0 + \beta_1 \cdot NFT + \beta_2 \cdot NPT + \beta_3 \cdot YPCAP$$

Where:

CUNAEC = current dollar expenditures on auxiliary enterprises;

NFT = private full-time enrollment;

NPT = private part-time enrollment; and

YPCAP = current dollar personal income per capita.

Expenditure on Hospitals and Independent Operations

For all alternative projections, expenditure on independent operations was held constant at $886 million in 1978-79 dollars. The equation used for expenditure on hospitals is

$$CUNHC = \beta_0 + \beta_1 \cdot CPIU$$

Where:

CUNHC = current dollar expenditures on hospitals; and

CPIU = the All Urban Consumer Price Index.

Current dollar projections of expenditure on hospitals were deflated using the CPIU and then added to the projection of expenditure on independent operations to obtain the projections for this series.

Expenditure on Mandatory Transfers

For all alternative projections of expenditure for mandatory transfers by private institutions, the equation used is

$$CUNMT9 = 0.0238 (CUNSE9 + CUNR9 + CUNSF9 + CUNPS9 + CUNAE9 + CUNHI9)$$

Where:

CUNMT9 = constant dollar expenditure on mandatory transfers;

CUNSE9 = constant dollar expenditure on student education;

CUNR9 = constant dollar expenditure on research;

CUNSF9 = constant dollar expenditure on scholarships and fellowships;

CUNPS9 = constant dollar expenditure on public service;

CUNAE9 = constant dollar expenditure on auxiliary enterprises; and

CUNHI9 = constant dollar expenditure on hospitals and independent operations.

Capital Outlay of Private Institutions of Higher Education

Capital outlay by private institutions was projected at a constant level of expenditure per private full-time-equivalent student (NFTE) and then multiplied by projected NFTE to get total private capital outlay.

The low alternative projection of capital outlay per NFTE is $620 in 1978-79 dollars, the intermediate projection is $640 and the high alternative projection is $660. The current dollar capital outlay data was deflated using the implicit price deflator for investment in private, nonresidential construction (PICNR).

A-5 Average Student Charges

Tuition and required fees

For each type and control of institution, average charges per student were calculated by summing the product of each individual institution's undergraduate charge multiplied by its full-time-equivalent undergraduate enrollment. This total was then divided by the sum of full-time-equivalent undergraduate enrollment for all institutions in the category, to obtain the average charge per student.

Average tuition calculations were based on undergradutate charges for private institutions and State resident undergraduate tuition for public institutions. Schools which reported a tuition of zero were included in the calculation in order to estimate a national average charge for tuition.

Room and Board

The same methodology used to calculate average tuition was employed to estimate average room and board charges with the following exceptions. Institutions that did not report a room or board charge were excluded from these calculations in order to reflect

the average charge paid by students for the ancilliary services. When necessary, board charges were prorated to reflect a seven-day charge period. This permitted uniform comparisons to be made between the various service periods employed by different institutions. It also facilitated the calculation of total average charges for tuition, room and board. Room charges were adjusted for inflation using a combination of the rent and fuel components of the All Urban Consumer Price Index (CPIU). This composite deflator was weighted 80 and 20 percent by the rent and fuel components, respectively. Board was adjusted to 1978-79 constant dollars using the food component of the CPI (see table F-7).

Charges for All Institutions

Total average charges for all institutions, by control, were estimated by multiplying the charge for university, 4-year, and 2-year institutions by the percentage of the full-time-equivalent enrollment they represented in the calculations of charges by type of institution. These products were then summed to produce a composite average charge for all institutions.

The notation below describes the variables and method of calculation used to derive average tuition levels. The same method was used to compute average charges for room and board.

Let:

E_{ij} = full-time-equivalent enrollment in institution i in type of institution j;
T_{ij} = tuition in institution i and type of institution j;
E_j = Average full-time-equivalent enrollment in type of institution j;
T_j = Average charge in type of institution j;
T = Average charge in all types of institutions.

Then:

$$\bar{T}_j = \frac{\Sigma (T_{ij} E_{ij})}{E_{ij}}$$

$$\bar{T} = \frac{\Sigma (\bar{T}_j E_j)}{E_j}$$

Projections

Room and Board charges are not characterized by a statistically reliable trend. For this reason, projections were held constant, at the unweighted average of the last five observations, through 1988-89.

Tuition by type and control of institution was projected at three alternative levels—high, intermediate, and low by means of the following methodology:

Public 2-year Institutions

High alternative - Tuition in 1978-79 was 4.3 percent of per capita personal income. This percentage was applied to projections of constant dollar personal income per capita to derive projected tuition through 1988-89. The years 1979 through 1981 were held constant at the 1978-79 level since a projected decrease in personal income per capita for these two years gave an unrealistically low projection of tuition levels.

Intermediate alternative - Projections were held constant at the 1978-79 level.

Low alternative - Tuition, expressed in current dollars was regressed against time yielding the following equation:

$T = 227.2 + 21.0t$
Where: t = time in years
T = tuition
Coefficient of determination (R^2) = .661

Tuition was then converted to 1978-79 dollars and held constant at the projected 1979-80 level through 1988-89.

Public, Other 4-Year Institutions

High alternative - Tuition in 1978-79 was 7.4 percent of per capita personal income. This percentage was applied to projections of constant dollar per capita personal income to derive projected tuition levels through 1988-89. Average tuition for the years 1979 through 1981 was held constant at the 1978-79 level since a projected decrease in personal income per capita for these two years gave an unrealistically low projection of tuition .

Intermediate alternative - Projections were held constant in 1978-79 dollars at the 1978-79 level.

Low alternative - Tuition, expressed in current dollars was regressed against time yielding the following equation:

$T = 394.7 + 44.5t$
Where: t = time in years
T = tuition
Coefficient of determination (R^2) = .981

Tuition was then converted to 1978-79 dollars and held constant at the projected 1979-80 level through 1988-89.

Public Universities

High alternative - Tuition in 1978-79 was 9.3 percent of personal income per capita. This percentage was applied to projections of constant dollar personal income per capita to calculate projected tuition through 1988-89. The years 1979 through 1981 were held constant at the 1978-79 level because a projected decrease in per capita personal income for these two years gave an unrealistically low projection of tuition.

Intermediate alternative - Projections were held constant in 1978-79 dollars at the 1978-79 level.

Low alternative - Double exponential smoothing was employed to project current dollar average tuition to 1979-80 after which it was deflated to 1978-79 dollars and held constant through 1988-89.

Private 2-Year Institutions

High alternative - Average tuition in 1978-79 was 21.2 percent of constant dollar personal income per capita. This percentage was applied to projections of constant dollar personal income per capita to derive projected tuition levels through 1988-89. The years 1979-80 through 1981-82 were held constant at the 1978-79 level since a projected decrease in income per capita for these three years gave an unrealistically low projection of tuition.

Intermediate alternative - Projections were held constant, in 1978-79 dollars, at the 1978-79 level.

Low alternative - Double exponential smoothing was used to project average tuition to 1979-80 after which it was deflated to 1978-79 dollars and held constant through 1988-89.

Private, Other 4-Year Institutions

High alternative - Average tuition was 30.8 percent of constant dollar personal income per capita in 1978-79. This percentage was applied to projections of constant dollar personal income per capita to derive projected average tuition through 1988-89. The years 1979 through 1981 were held constant at the 1978-79 level.

Intermediate alternative - Projections of average tuition were held constant, in 1978-79 dollars, at the 1978-79 level.

Low alternative - Double exponential smoothing was used to project average tuition to 1979-80 after which it was deflated to 1978-79 dollars and held constant through 1988-89.

Private Universities

High alternative - In 1978-79, average tuition at private universities was 43.9 percent of constant dollar personal income per capita. Projections of average tuition were calculated by applying this percentage to projections of personal income per capita through 1988-89. The years 1979-80 through 1981-82 were held constant at the 1978-79 level.

Intermediate alternative - Projections were held constant, in 1978-79 dollars, at the 1978-79 level.

Low alternative - Double exponential smoothing was used to project average tuition to 1979-80 after which it was held constant at this level through 1988-89.

The data on personal income per capita in constant 1978-79 dollars was obtained from the Macroeconomic Forecasting Model created by Data Resources, Inc.

Appendix B

ASSUMPTIONS

All projections are based on underlying asumptions, and these assumptions determine projection results to a large extent. It is important that users of *Projections* understand the assumptions in order to determine the acceptability of projected time series for their purposes.

The tables in appendix B describe the primary assumptions upon which the projections of time series are based. For each time series, the respective tables and the assumptions used for each alternative projection are shown.

For most projections, low, intermediate, and high alternatives are shown. These alternatives reveal the level of uncertainty involved in making projections, and they also point out the sensitivity of projections to the assumptions they are based on.

Many of the projections in *Projections* are demographically based. Bureau of the Census Series II projections of the sizes of various age populations were chosen for use. The future fertility rates assumption, which determines projections of the number of births, is the key assumption in making population projections. The Series II population projections assume an ultimate completed cohort fertility rate of 2.1 births per woman by year 2000. This assumption plays a major role in determining population projections for the age groups enrolled in nursery school and kindergarten and in elementary grades. The effects of the fertility rate assumptions are more pronounced toward the end of the projection period.

For enrollments in secondary grades and college, the fertility assumption is of no consequence, since all students enrolled at these levels were already born when the population projections were made.

For projections of enrollments in nursery schools and kindergartens and in elementary schools, only Series II population projections were considered. The fertility assumptions used in this series have tracked closely to the most recent birth data, whereas Series I and Series III fertility assumptions have been very wide of the mark. For the relatively short range (10 years) of the projections in *Projections*, Series II population projections should prove to be more accurate than either Series I or Series III.

Table B-1.—Enrollment

Variables	Assumptions	Alternatives	Tables
Nursery and kindergarten enrollment	Age-specific enrollment rates will remain constant at levels consistent with the most recent rates	low	3
	Age-specific enrollment rates will equal the average of the high and low alternative enrollment rates.	intermediate	3
	Age-specific enrollment rates will continue their past trends through 1988.	high	3
Elementary and secondary enrollment	Age-specific enrollment rates will remain constant at levels consistent with the most recent rates	intermediate (no alternatives)	4, 5
	Public enrollment rates and public grade retention rates will remain constant at levels consistent with the most recent rates.	intermediate (no alternative)	4, 5
	Nonpublic enrollments by grade group (K-8 and 9-12) will equal the difference between total enrollment projections and public enrollment projections	intermediate (no alternative)	4, 5
	The percentage of 7th and 8th grade public students enrolled in schools organized as secondary schools will remain constant at levels consistent with the most recent rates	intermediate (no alternative)	5
	Nonpublic enrollment by organizational level equals nonpublic enrollment by grade group	intermediate (no alternatives)	5
College full-time and part-time enrollment, by age			
Men	Age-specific enrollment rates will continue decreasing based on past trends.	low	6-12
	Age-specific enrollment rates will remain constant at levels consistent with the most recent rates	intermediate	6-12
	Enrollment rates will increase back to the high levels experienced during the Vietnam War. For those categories (older age groups and part-time students) in which the 1978 enrollment rates are higher than the corresponding 1970 rates, enrollment rates were assumed to increased based on past trends.	high	6-12
Women	For each age group, enrollment rates will decrease proportionately to decreases projected for men under the low alternative	low	6-12
	Age-specific enrollment rates will remain constant at levels consistent with the most recent rates	intermediate	6-12
	Enrollment rates will continue increasing based on past trends	high	6-12
College enrollment, by sex, attendance status, and level enrolled by student and type of institution	For each age group and for each attendance status separately, enrollment by sex and level enrolled by student and type of institution as a percentage of total enrollment will follow past trends through 1988. For each age group and attendance status category, the restriction that the sum of the percentages must equal 100 percent was applied	high, intermediate, and low	7-12
College enrollment, by control of institution	For each enrollment category by sex, attendance status, and level enrolled by student and type of institution, public enrollment as a percentage of total enrollment will remain constant at levels consistent with the most recent rates	high, intermediate, and low	7-12
Graduate enrollment	For each enrollment category by sex and attendance status of student and by type and control of institution, graduate enrollment as a percentage of post-baccalaureate enrollment will follow past trends through 1988	high, intermediate, and low	9-12
Full-time equivalent of part-time enrollment	For each enrollment category by type and control of institution and level enrolled by student, the percentage that full-time equivalent of part-time enrollment is of part-time enrollment will remain constant at levels consistent with the most recent rates.	high, intermediate, and low	12

Table B-2.—Graduates and degrees

Variables	Assumptions	Alternatives	Tables
High school graduates by sex	The percentage that high school graduates is of the average of the 17- and 18-year old population will remain constant at levels consistent with the most recent rates.	intermediate (no alternatives)	13
Public high school graduates	The percentage that public high school gradnates is of public enrollment in grade 12 will remain constant at levels consistent with the most recent observations.	intermediate (no alternatives)	13
Private high school gradnates	The number of private high school graduates will equal total high school gradnates minus public high school graduates.	intermediate (no alternatives)	13
Men			
Full-time, fourth-year college enrollment	The percentage that full-time fourth-year college enrollments is of full-time undergraduate college enrollment in 4-year institutions will remain constant at levels consistent with the most recent rates	high, intermediate, and low	14
Part-time, fourth-year college enrollment	The percentage that part-time fourth-year college enrollment is of part-time undergraduate enrollment in 4-year institutions will continue to increase based on past trends.	high, intermediate, and low	14
Women			
Full-time, fourth-year college enrollment	The percentage that full-time fourth-year college enrollment is of full-time undergraduate college enrollment in 4-year institutions will continue to increase based on past trends.	high, intermediate, and low	14
Part-time, fourth-year college enrollment	The percentage that part-time fourth-year college enrollment is of part-time undergraduate enrollment in 4-year institutions will continue to increase based on past trends	high, intermediate, and low	14
Men			
Full-time, first-year graduate enrollment	The percentage that full-time first-year graduate enrollment is of full-time graduate enrollment will continue to decreased based on past trends.	high, intermediate, and low	14
Part-time, first-year graduate enrollment	The percentage that part-time, first-year graduate enrollment is of part-time graduate enrollment will continue to decrease based on past trends	high, intermediate, and low	14
Women			
Full-time, first-year graduate enrollment	The percentage that full-time, first-year graduate enrollment is of full-time graduate enrollment will continue to decrease based on past trends	high, intermediate, and low	14
Part-time, first-year graduate enrollment	The percentage that part-time, first-year graduate enrollment is of part-time graduate enrollment will continue to decrease based on past trends	high, intermediate, and low	14
Men			
Graduate enrollment beyond the first-year, by age	For each age group, the percentage that graduate enrollment beyond the first-year is of total college enrollment will remain constant at levels consistent with the most recent rates	high, intermediate, and low	14
Women			
Graduate enrollment beyond the first-year, by age	For each age group, the percentage that graduate enrollment beyond the first-year is of total college enrollment will remain constant at levels consistent with the most recent rates.	high, intermediate, and low	14
Men			
Doctor's degrees, by age	For each age group, the percentage that doctor's degrees is of graduate enrollment beyond the first-year will continue to decrease based on past trends	high, intermediate, and low	14

Table B-2.—Graduates and degrees—Cont.

Variables	Assumptions	Alternatives	Tables
Women			
Doctor's degrees, by age	For each age group, the percentage that doctor's degrees is of graduate enrollment beyond the first-year will continue to decrease based on past trends.	high, intermediate, and low	14
Bachelor's degrees by field and sex (except engineering and accounting)	For each field, the number of degrees will continue their past trends through 1988-89.	intermediate	18, 19, 20
Engineering	For each sex, the percentage that engineering degrees is of total bachelor's degrees will remain constant at the 1981-82 projected level through 1988-89	intermediate	19c, 20c
Accounting	For women, the number of degrees will continue their past trend through 1988-89 For men, the number of degrees will equal total accounting degrees minus degrees for women.	intermediate	19d, 20d
Master's degrees by field and sex [except engineering (men) and business and management]	For all fields, the number of degrees will continue their past trends through 1988-89	intermediate	21, 22, 23
Engineering (men)	The percentage that first-year enrollment by attendance status in engineering is of first-year graduate enrollment by attendance status will continue to decrease based on past trends.	intermediate	22e
Business and management	For each sex, the percentage that first-year graduate enrollment in business and management by attendance status is of first-year graduate enrollment will continue its past trend through 1988-89.	intermediate	22d, 23d
Doctor's degrees by field and sex	For each field, the number of degrees will continue their past trends through 1988-89	intermediate	24, 25, 26
First-professional degrees by level and sex			
Medicine, Dentistry, Osteopathic, Optometry, Podiatry, and Veterinary medicine	For women, the number of degrees will continue their past trend through 1988-89 For men, the number of degrees will equal total degrees projected by the Bureau of Health Manpower minus the number of degrees projected for women.	intermediate	27
Law, Theology	The number of degrees will equal the average of the low and high alternative projections.	intermediate	27
Chiropractic, Pharmacy	The number of degrees will be constant at levels consistent with the most recent observations.	intermediate	27
Other	The number of degrees will equal zero through 1988-89	intermediate	27

Table B-3.—Instructional staff

Variables	Assumptions	Alternatives	Tables
Classroom teachers in regular elementary and secondary schools, by organizational level and control of school	Pupil-teacher ratios will remain constant at levels consistent with the most recent rates.	low	28, 29
	Pupil-teacher ratios will continue decreasing based on past trends with lower limits applied.	high	28, 29
	Pupil-teacher ratios will equal the average of the high and low alternative rates.	intermediate	28, 29
Demand for additional teachers in regular public schools due to replacement	Replacement (turnover) rates will return to the historic level of 8 percent.	high	30
	Replacement (turnover) rates will remain at the currently estimated level of 6 percent.	intermediate	30
	Replacement (turnover) rates will decrease to a theoretical floor of 4.8 percent.	low	30
Demand for additional teachers in regular nonpublic schools due to replacement	Replacement (turnover) rates will remain at the currently estimated level of 6 percent.	intermediate (no alternative)	31
Supply of new teacher graduates	The percentage that new teacher graduates is of bachelor's degrees will remain constant at levels consistent with the most recent rates.	high	32
	The percentage that new teacher graduates is of bachelor's degrees will continue decreasing based on past trends with lower limits applied.	low	32
	The percentage that new teacher graduates is of bachelor's degrees will equal the average of the high and low alternative rates.	intermediate	32
Full-time-equivalent instructional staff in institutions of higher education	For each type and control of institution, the ratio of full-time-equivalent enrollment to full-time-equivalent instructional staff will remain constant at 1976 levels.	high, intermediate, and low	33, 34
Full-time-equivalent senior instructional staff	For each type and control of institution, the percentage that senior full-time-equivalent instructional staff is of total full-time-equivalent instructional staff will remain constant at 1976 levels.	high, intermediate and low	34
Full-time senior instructional staff	For each type and control of institution, the percentage that full-time senior instructional staff is of full-time-equivalent senior instructional staff will remain constant at 1976 levels	high, intermediate, and low	33, 34
Part-time senior instructional staff	For each type and control of institution, the percentage that full-time-equivalent senior part-time instructional staff is of senior part-time instructional staff will remain constant at 1976 levels	high, intermediate, and low	33, 34
Full-time junior instructional staff	For each type and control of institution, the percentage that full-time junior instructional staff is of full-time-equivalent junior instructional staff will remain constant at 1976 levels	high, intermediate, and low	33, 34
Part-time junior instructional staff	For each type and control of institution, the percentage that full-time-equivalent junior part-time instructional staff is of junior part-time instructional staff will remain constant at 1976 levels	high, intermediate, and low	33, 34
Demand for additional full-time-equivalent instructional staff due to replacement	Replacement rates will remain at the currently estimated level of 4.5 percent	intermediate and low	35
	Replacement rates will increase back to the 1959-60 level of 6.0 percent	high	35

Current Interest and Capital Expenditures of Public Elementary and Secondary Schools

General Assumptions

1. All intermediate alternative expenditure projections employ values for deflators and independent economic variables which come from a view of the growth path of the U.S. economy over the next 25 years which assumes mild economic cycles and an economy operating somewhat below its balanced growth path. The projected average annual productivity growth is 1.9 percent, average annual potential output growth is 2.5 percent, and the average annual rise in the Consumer Price Index is 7.4 percent (inflation will moderate slowly).

2. All low alternative expenditure projections employ values for deflators and independent economic variables, which come from a view of the growth path of the U.S. economy over the next 25 years which assumes lower productivity and a higher inflation rate than was assumed for the intermediate projections (by the year 2004, the price level is projected to be 15.7 percent higher than in the intermediate trend model).

3. All high alternative expenditure projections employ values for deflators and independent economic variables which come from a view of the growth path of the U.S. economy over the next 25 years which assumes higher productivity and a lower inflation rate than was assumed for the intermediate expenditure projections (by the year 2004, the price level is projected to be 18.7 percent lower than in the intermediate trend model).

4. All alternative expenditure projections employ values for Average Daily Attendance (ADA) of students which are consistent with NCES's intermediate alternative projections of elementary/secondary school enrollment to 1988-89.

Current and Capital Expenditures of both Public and Private Institutions of Higher Education

General Assumptions

1. All low alternative expenditure projections in which economic variables are used (personal income per capita, deflators, etc.) employ values for these variables which come from a fairly pessimistic view of the growth path of the U.S. economy over the next 25 years. This view assumes typical business cycle behavior. The projected average annual productivity growth is 1.6 percent, average annual potential output growth is 2.2 percent, and the average annual rise in the Consumer Price Index is 7.9 percent.

2. All intermediate alternative expenditure projections in which economic variables are used (personal income, etc.) employ values for these variables which come from a view of the growth path of the U.S. economy over the next 25 years which is less pessimistic than that taken in assumption 1 above. This view assumes mild cycles with the economy operating somewhat below its balanced growth path and also assumes that inflation will moderate slowly. The projected average annual productivity growth is 1.9 percent, average annual potential output growth is 2.5 percent, and the average annual rise in the Consumer Price Index is 7.4 percent.

3. All high alternative expenditure projections in which economic variables are used employ values for these variables which come from a still less pessimistic view of the growth path of the U.S. economy over the next 25 years. In this view, the rate of inflation is eventually reduced by about 1.2 percentage points relative to the view taken in assumption 2 above.

4. All low and intermediate alternative expenditure projections in which enrollment variables are used (part-time enrollment, full-time enrollment, full-time-equivalent enrollment, etc.) employ values for these variables consistent with NCES's intermediate alternative projections of enrollment to 1988-89.

5. All high alternative expenditure projections in which enrollment variables are used employ values for these variables consistent with NCES's high alternative projections of enrollment to 1988-89.

6. The deflator used for all current expenditure variables was based on the All Urban Consumber Price Index.

7. The deflator used for all capital expenditures variables was the implicit price deflator for investment in private nonresidential structures.

Table B-4.—Expenditures, by elementary and secondary schools

Table B-4A.—Expenditures, by public elementary and secondary schools

Variables	Assumptions	Deflators	Alternatives	Tables
Current expenditures	Will continue its past relationship to students in average daily attendance in public schools and state and local government purchases of goods and services.	PGSL	high, intermediate, and low	37, 39
Interest expenditures	Will continue its past relationship to students in average daily attendance in public schools, state and local government obligations outstanding and the yield on AAA state and local government bonds (general obligations).	CPIU	high, intermediate and low	37, 42
Capital expenditures	Will continue its past relationship to students in average daily attendance in public schools and new public construction put-in-place by all levels of government.	PICNR	high, intermediate, and low	37, 41

Table B-4B.—Expenditures, by nonpublic elementary and secondary schools

Variables	Assumptions	Alternatives	Tables
Current expenditures	The cost per teacher (including donated facilities and services) in nonpublic schools is the same as in public schools for these expenditures.	high, intermediate, and low	37
Interest expenditures	The cost per teacher (including donated facilities and services) in nonpublic schools is the same as in public schools for these expenditures.	high, intermediate, and low	37
Capital expenditures	The cost per teacher (including donated facilities and services) in nonpublic schools is the same as in public schools for these expenditures.	high, intermediate, and low	37

WHERE

PGSL is the implicit price deflation for the gross National product;
CPIU is the All Urban Consumer Price Index;
PICNR is the implicit price deflator for investment in private, non-residential structures.

Table B-5.—Current and capital expenditures of institutions of higher education

Table B-5A.—Current expenditures of public institutions of higher education

Variables	Assumptions	Alternatives	Tables
Expenditures on student education	Expenditure per full-time-equivalent student will continue its past relationship with public full-time-equivalent enrollment and personal income per capita.	low	43
	Total expenditure will continue its past relationship with public full-time-equivalent enrollment and personal income per capita.	intermediate and high	
Expenditures on research	Will continue its past relationship to public full time enrollment in all 4-year institutions, public part-time enrollment in all 4-year institutions and personal income per capita.	low, intermediate, and high	43
Expenditures on scholarships and fellowships	Will continue its past relationship to public full-time enrollment and personal income per capita.	low, intermediate, and high	43
Expenditures on public service	Will drop to $260 per public full-time equivalent student and remain there (in 1978-79 dollars).	low	43
	Will remain at $275 per public full-time-equivalent student (in 1978-79 dollars).	intermediate	
	Will increase to $280 per public full-time-equivalent student and remain there (in 1978-79 dollars).	high	
Expenditures on auxiliary enterprises	Will continue its past relationship to public full-time-equivalent enrollment and personal income per capita.	low, intermediate, and high	43
Expenditures on hospitals	Will continue its past relationship with the Consumer Price Index.	low, intermediate, and high	43
Expenditures on independent operations	Will remain constant at $49 million (in 1978-79 dollars).	low, intermediate, and high	43
Mandatory transfers	Will continue its past relationship to public full-time-equivalent enrollment and personal income per capita.	low, intemediate, and low	43

Table B-5.—Current and capital expenditures of institutions of higher education—Cont.

Table B-5B.—Current expenditures of private institutions of higher education

Variables	Assumptions	Alternatives	Tables
Expenditures on student education	Will continue its past relationship to private full-time-equivalent enrollment and personal income per capita.	low, intermediate, and high	43
Expenditures on research	Will continue its past relationship to personal income per capita.	low, intermediate, and high	43
Expenditures on scholarships and fellowships	Will continue its past relationship with private full-time enrollment and personal income per capita.	low, intermediate, and high	43
Expenditures on public service	Will fall to $228 per private full-time-equivalent student and remain there (in 1978-79 dollars).	low	43
	Will remain at $233 per private full-time-equivalent student (in 1978-79 dollars).	intermediate	
	Will rise to $239 per private full-time-equivalent student and remain there (in 1978-79 dollars)	high	
Expenditures on auxiliary enterprises	Will continue its past relationship with private full-time enrollment, private part-time enrollment and personal income per capita	low, intermediate, and high	43
Expenditures on hospitals	Will continue its past relationship with the Consumer Price Index.	low, intermediate, and high	43
Expenditures on independent operations	Will remain at $886 million (in 1978-79 dollars).	low, intermediate, and high	43
Mandatory transfers	Will continue its past relationship with total current expenditures (nonpublic).	low, intermediate, and high	43

Table B-5.—Current and capital expenditures of institutions of higher education—Cont.

Table B-5C.—Capital expenditures of institutions of higher education

Variables	Assumptions	Alternatives	Tables
Public capital outlay	Will continue its past relationship will public full-time-equivalent enrollment and new public construction put-in-place by all levels of government	low, intermediate, and high	37, 45
Private capital outlay	Will fall to $620 per private full-time-equivalent student and remain there (in 1978-79 dollars)	low	37, 45
	Will remain at $640 per private full-time-equivalent student (in 1978-79 dollars).	intermediate	
	Will rise to $660 per private full-time-equivalent student and remain there (in 1978-79 dollars)	high	

Table B-6.—Average student charges

Variables	Assumptions	Alternatives	Tables
Room and board	Room and board charges will equal the unweighted average of the last five years(in constant dollars).	high, intermediate, and low	46
Tuition, by type and control of institution	Average tuition at all institutions will continue to equal the same percentage of constant dollar per capita personal income as in 1978-79.	high	46
	Tuition will remain at the 1978-79 level (in constant dollars).	intermediate	46
	Tuition in constant dollars will follow its trend line to 1979-80 after which it will remain constant.	low	46

Appendix C
ESTIMATION METHODS

The basic data used to project the time series listed in the following tables were wholly or partially estimated for the years indicated.

Table C-1.—Enrollment

Time series	Years	Estimation method	Tables
Enrollment in regular nonpublic elementary and secondary schools	1969, 1971-75	For elementary and secondary schools separately, the percentage that enrollment in Catholic schools was of enrollment in all nonpublic schools was interpolated. The interpolated percentages were applied to Catholic enrollment figures in each year.	4,5
Enrollment in institutions of higher education, by age and attendance states	1968, 1973, 1978	For each sex, enrollment date from the Bureau of the Census by individual ages and by attendance status for two-year age groups were combined by assuming that within the two-year age groups, age and attendance status were distributed independently. The resultant enrollment estimates by age and attendance status were then adjusted to NCES enrollment counts by attendance status.	6, 6a, 6b

Table C-2.—Teachers and instructional staff

Time series	Years	Estimation method	Tables
Classroom teachers in regular nonpublic elementary and secondary schools	1969, 1971-75	For elementary and secondary schools separately, pupil-teacher ratios were interpolated. The interpolated ratios were applied to estimates of nonpublic enrollment in each year	28
Classroom teachers in regular public elementary and secondary schools by organizational level	1971-78	The numbers of elementary and secondary teachers reported separately by the National Education Association were prorated to the NCES totals for each year	28
Full-time-equivalent instructional staff	1968, 1969, 1971, and 1973-75	For each type and control of institution, the ratio of full-time-equivalent enrollment to full-time-equivalent instructional staff was interpolated. The interpolated ratios were applied to counts of full-time-equivalent enrollment for each year	34
	1977, 1978	Same methodology as above, with 1976 ratios held constant	34
Full-time-equivalent senior instructional staff	1968, 1969, 1971, and 1973-75	For each type and control of institution, the percentage that full-time-equivalent senior instructional staff was of total full-time-equivalent instructional staff was interpolated. The interpolated percentages were applied to estimates of full-time-equivalent instructional staff for each year	34
	1977, 1978	Same methodology as above, with 1976 percentages held constant	34
Full-time senior instructional staff	1968, 1969, 1971, and 1973-75	For each type and control of institution, the percentage that full-time senior instructional staff was of full-time-equivalent senior instructional staff was interpolated. This percentage was applied to estimates of full-time-equivalent senior instructional staff for each year	33
	1977, 1978	Same methodology as above, with 1976 percentages held constant	33
Part-time senior instructional staff	1968, 1969, 1971, and 1973-75	For each type and control of institution, the percentage that the full-time-equivalent of part-time senior instructional staff was of part-time senior instructional staff was interpolated. This percentage was applied to estimates of part-time senior instructional staff for each year	33
	1977, 1978	Same methodology as above, with 1976 percentage held constant	33
Full-time junior instructional staff	1968, 1969, 1971, and 1973-75	For each type and control of institution, the percentage that full-time junior instructional staff was of full-time-equivalent junior instructional staff was interpolated. This percentage was applied to estimates of full-time-equivalent junior instructional staff	33
	1977, 1978	Same methodology as above, with 1976 percentages held constant	
Part-time junior instructional staff	1968, 1969, 1971, and 1973-75	For each type and control of institution, the percentage that the full-time-equivalent of part-time junior instructional staff was of part-time junior instructional staff was interpolated. These percentages were applied to estimates of part-time junior instructional staff for each year	33
	1977, 1978	Same methodology as above, with 1976 percentages held constant	33

Appendix D

CLASSIFICATION OF DEGREES BY FIELD OF STUDY

[Individual fields listed in *Taxonomy of Instructional Programs in Higher Education*[1]]

I. Social sciences

Social sciences
- Social sciences, general
- Anthropology
- Archaeology
- Economics
- History
- Geography
- Political science and government
- Sociology
- Criminology
- International relations
- Afro-American (black culture) studies
- American Indian cultural studies
- Mexican-American cultural studies
- Urban studies
- Demography
- Area studies
- Other

Psychology
- Psychology, general
- Experimental psychology (animal and human)
- Clinical psychology
- Psychology for counseling
- Social psychology
- Psychometrics
- Statistics in psychology
- Industrial psychology
- Developmental psychology
- Physiological psychology
- Other

Public affairs and services
- Community services, general
- Public administration
- Parks and recreation management
- Social work and helping services (other than clinical social work)
- Law enforcement and corrections (baccalaureate and higher programs)
- International public service (other than diplomatic service)
- Other

Library science
- Library science, general
- Other

II. Humanities

Architecture and environmental design
- Environmental design, general
- Architecture
- Interior design
- Landscape architecture
- Urban architecture
- City, community, and regional planning
- Other

Fine and applied arts
- Fine arts, general
- Art (painting, drawing, sculpture)
- Art history and appreciation
- Music (performing, composition, theory)
- Music (liberal arts program)
- Music history and appreciation (musicology)
- Dramatic arts
- Dance

[1]Robert A. Huff and Marjorie O. Chandler, U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *A Taxonomy of Instructional Programs in Higher Education* (Washington, D.C., U.S. Government Printing Office, 1970)

Applied design (ceramics, weaving, textile design, fashion design, jewelry, metalsmithing, interior decoration, commercial art)
Cinematography
Photography
Other

Foreign languages
Foreign languages, general (concentration on more than one foreign language without major emphasis on one)
French
German
Italian
Spanish
Russian
Chinese
Japanese
Latin
Greek, classical
Hebrew
Arabic
Indian (Asiatic)
Scandinavian languages
Slavic languages (other than Russian)
African languages (non-Semitic)
Other

Communications
Communications, general
Journalism (printed media)
Radio/television
Advertising
Communications media (use of videotape, films, etc., oriented specifically toward radio/television)
Other

Letters
English, general
Literature, English
Comparative literature
Classics
Linguistics (includes phonetics, semantics, and philology)
Speech, debate, and forensic science (rhetoric and public address)
Creative writing
Teaching of English as a foreign language
Philosophy
Religious studies (excludes theological professions)
Other

III. Natural Sciences and Miscellaneous Fields

Mathematics and statistics
Mathematics, general
Statistics, mathematical and theoretical
Applied mathematics
Other

Computer and information sciences
Computer and information sciences, general
Information sciences and systems
Data processing
Computer programming
Systems analysis
Other

Engineering
Engineering, general
Aerospace, aeronautical, and astronautical engineering
Agricultural engineering
Architectural engineering
Bioengineering and biomedical engineering
Chemical engineering (includes petroleum refining)
Petroleum engineering (excludes petroleum refining)
Civil, construction, and transportation engineering
Electrical, electronics, and communications engineering
Mechanical engineering
Geological engineering
Geophysical engineering
Industrial and management engineering
Metallurgical engineering
Materials engineering
Ceramic engineering
Textile engineering
Mining and mineral engineering
Engineering physics
Nuclear engineering
Engineering mechanics
Environmental and sanitary engineering
Naval architecture and marine engineering
Ocean engineering
Engineering technologies (baccalaureate and higher programs)
Other

Physical sciences
Physical sciences, general
Physics, general (excludes biophysics)

- Molecular physics
- Nuclear physics
- Chemistry, general (excludes biochemistry)
- Inorganic chemistry
- Organic chemistry
- Physical chemistry
- Analytical chemistry
- Pharmaceutical chemistry
- Astronomy
- Astrophysics
- Atmospheric sciences and meteorology
- Geology
- Geochemistry
- Geophysics and seismology
- Earth sciences, general
- Paleontology
- Oceanography
- Metallurgy
- Other

Biological sciences
- Biology, general
- Botany, general
- Bacteriology
- Plant pathology
- Plant pharmacology
- Plant physiology
- Zoology, general
- Pathology, human and animal
- Premedical, predental, and preveterinary science
- Pharmacology, human and animal
- Physiology, human and animal
- Microbiology
- Anatomy
- History
- Biochemistry
- Biophysics
- Molecular biology
- Cell biology (cytology, cell physiology)
- Marine biology
- Biometrics and biostatistics
- Ecology
- Entomology
- Genetics
- Radiology
- Nutrition, scientific (excludes nutrition in home economics and dietetics)
- Neurosciences
- Toxicology
- Embryology
- Other

Agriculture and natural resources
- Agriculture, general
- Agronomy (field crops and crop management)
- Soils science (management and conservation)
- Animal science (husbandry)
- Dairy science (husbandry)
- Poultry science
- Fish, game, and wildlife management
- Horticulture (fruit and vegetable production)
- Ornamental horticulture (floriculture, nursery science)
- Agricultural and farm management
- Agricultural economics
- Agricultural business
- Food science and technology
- Forestry
- Natural resources management
- Agriculture and forestry technologies (baccalaureate and higher programs)
- Range management
- Other

Health professions
- Health professions, general
- Hospital and health care administration
- Nursing (baccalaureate and higher programs)
- Dentistry (D.D.S. or D.M.D. degree)
- Dental specialties (work beyond first-professional degree, D.D.S. or D.M.D.)
- Medicine (M.D. degree)
- Medical specialties (work beyond first-professional degree, M.D.)
- Occupational therapy
- Optometry
- Osteopathic medicine (D.O. degree)
- Pharmacy
- Physical therapy
- Dental hygiene (baccalaureate and higher programs)
- Public health
- Medical record librarianship
- Podiatry (Pod.D. or D.P.) or podiatric medine (D.P.M.)
- Biomedical communication
- Veterinary medicine (D.V.M. degree)
- Veterinary medicine specialties (work beyond first-professional degree, D.V.M.)

- Speech pathology and audiology
- Chiropractic
- Clinical social work (medical and psychiatric and specialized rehabilitation services)
- Medical laboratory technologies (baccalaureate and higher programs)
- Dental technologies (baccalaureate and higher programs)
- Radiologic technologies (baccalaureate and higher programs)
- Other

Accounting

Business and management (excluding accounting)
- Business and commerce, general
- Business statistics
- Banking and finance
- Investments and securities
- Business management and administration
- Operations research
- Hotel and restaurant management
- Marketing and purchasing
- Transportation and public utilities
- Real estate
- Insurance
- International business
- Secretarial studies (baccalaureate and higher programs)
- Personnel management
- Labor and industrial relations
- Business economics
- Other

Education
- Education, general
- Elementary education, general
- Secondary education, general
- Junior high school education
- Higher education, general
- Junior and community college education
- Adult and continuing education
- Special education, general
- Administration of special education
- Education of the mentally retarded
- Education of the gifted
- Education of the deaf
- Education of the culturally disadvantaged
- Education of the visually handicapped
- Speech correction
- Education of the emotionally disturbed
- Remedial education
- Special learning disabilities
- Education of the physically handicapped
- Education of the multiply handicapped
- Social foundations (history and philosophy of education)
- Educational psychology (includes learning theory)
- Pre-elementary education (kindergarten)
- Educational statistics and research
- Education testing, evaluation, and measurement
- Student personnel (counseling and guidance)
- Educational administration
- Educational supervision
- Curriculum and instruction
- Reading education (methodology and theory)
- Art education (methodology and theory)
- Music education (methodology and theory)
- Mathematics education (methodology and theory)
- Science education (methodology and theory)
- Physical education
- Driver and safety education
- Health education (includes family life education)
- Business, commerce, and distributive education
- Industrial arts, vocational and technical education
- Agricultural education
- Home economics education
- Other

Other

Home economics
- Home economics, general
- Home decoration and home equipment
- Clothing and textiles
- Consumer economics and home management
- Family relations and child development
- Foods and nutrition (includes dietetics)
- Institutional management and cafeteria management
- Other

Law
- Law, general
- Other

Military sciences
- Military science (Army)
- Naval science (Navy, Marines)

Aerospace science (Air Force)
Other

Theology
Theological professions, general
Religious music
Biblical languages
Religious education
Other

Interdisciplinary studies
General liberal arts and sciences
Biological and physical sciences
Humanities and social sciences
Engineering and other disciplines
Other

Appendix E
GLOSSARY

COURSES

Degree-credit courses

Courses which carry credit toward a bachelor's or higher degree.

Individual lessons

Instruction provided on a one-instructor/one-student basis in music, art, speech, etc.

Non-credit courses

Courses in which students receive no credit. Many of these courses were referred to previously as adult education courses.

Non-degree-credit courses

Courses extending not more than 3 years beyond high school and designed to prepare students for immediate employment in an occupation or cluster of occupations at the technical and/or semiprofessional level or at the craftsman-clerical level.

Short courses

Courses that carry no credit toward a degree because of less-than-prescribed length.

DEGREES

Associate degrees

Degrees and awards based on less than 4 years of work beyond high school.

Bachelor's or first-level degree

Lowest degree conferred by a college, university, or professional school, requiring 4 or more years of academic work.

Doctor's degree (except first-professional)

Highest academic degree conferred by a university, including Ph.D. in any field, doctor of education, doctor of juridical science, and doctor of public health (preceded by professional degree in medicine or sanitary engineering).

First-professional degree

An academic degree which requires at least 2 academic years of previous college work for entrance and at least 6 academic years of college work for completion. This classification includes only degrees in the following fields of study: Law (LL.B. or J.D.); dentistry (D.D.S. or D.M.D.); medicine (M.D.); veterinary medicine (D.V.M.); chiropody or podiatry (D.S.C. or D.P.); optometry (O.D.); osteopathy (D.O.); theology (B.D.) chiropractic (D.C. or D.C.M.) and pharmacy (D.Phar.).

Master's or second-level degree

An academic degree higher than a bachelor's but lower than a doctor's. All degrees classified as first-professional are excluded.

ENROLLMENT

First-professional enrollment

The enrollment in programs leading to a first-professional degree.

First-year graduate enrollment

The enrollment of graduate students who have not received credit for completing a full year toward a master's or doctor's degree.

Full-time-equivalent enrollment

The enrollment of full-time students plus the enrollment of part-time students converted to the equivalent number of full-time students.

Full-time enrollment

The enrollment of students taking courses with credits equal to at least 75 percent of the normal full-time semester courses load.

Fourth year and beyond undergraduate enrollment

The enrollment of undergraduate students who

have completed 3 or more years toward a bachelor's degree.

Graduate enrollment

The enrollment of students who have attained at least one bachelor's or first-professional degree and who are enrolled in courses creditable toward a master's or doctor's degree.

Non-credit enrollment

The enrollment of students who receive no credit toward a formal degree or award. This enrollment is excluded from the enrollment in institutions of higher education shown in *Projections*.

Post-baccalaureate enrollment

Graduate enrollment plus first-professional enrollment.

Unclassified students

Students taking courses creditable toward a degree or other formal award but who are not enrolled in such programs.

Undergraduate enrollment

The enrollment of students taking courses creditable toward a bachelor's degree or other formal award below the bachelor's degree level.

EXPENDITURES, ELEMENTARY AND SECONDARY

Current expenditures allocated to pupil costs

Current expenditures for administration, instruction, plant operation and maintenance, fixed charges (retirement, social security, insurance, etc.) and other school services (pupil transportation, food services, health services, attendance services, and miscellaneous school services).

Current expenditures, all programs

Current expenditures for regular elementary and secondary school programs and current expenditures for other school programs including summer schools, adult education, community colleges, and community services.

Expenditures, total

Total current expenditures for all programs, capital outlay, and interest on school debt.

Interest expenditures

Any payment for the use of money borrowed in one fiscal year and payable in another. Interest on current loans (loans payable in the same fiscal year in which the money was borrowed) is included in current expenditures.

EXPENDITURES, GENERAL

Capital outlay

Expenditures for land or existing buildings, improvement of grounds, construction of buildings, additions to buildings, and initial or additional equipment. Includes replacement and rehabilitation, and installment or lease payments (excluding interest) which have a terminal date and result in the acquisition of property.

Constant dollars (1978-79)

Expenditures data which are adjusted by means of price and cost indexes to equal the purchasing power of 1978-79 dollars. This eliminates inflationary factors and allows direct comparison between years.

Current dollars

Expenditure data which are not adjusted to compensate for inflation. (Projections of unadjusted expenditures are not included in this report.)

Current expenditures

Any expenditure except for capital outlay and retirement of debt (and interest payments in the case of elementary and secondary schools). If accounts are kept on the accrual basis, current expense includes total charges incurred, whether paid or unpaid. If accounts are kept on the cash basis, it includeds only actual disbursements.

Debt service

Payment for retirement of debt and for use of long-term loans (not repaid in the year made).

Mandatory transfers

All transfers from "Current Funds" which must be made to other fund groups in order to fullfill a binding legal obligation of the institution.

EXPENDITURES, HIGHER EDUCATION

Auxiliary enterprises

Expenditures for services to students, faculty, or other staff for which a fee is charged that is directly related to, but not necessarily equal to, the cost of service (e.g., dormitories, food service, student stores).

Current expenditures, total

Total expenditures from current funds less expenditures from current funds which are used for capital

outlay.

Current fund expenditures, total

Expenditures for auxiliary enterprises, hospitals, independent operations, public services, organized research and related activities, student aid, and student education.

Expenditures, total

Expenditures for capital outlay, debt service including interest, and total current expenditures.

Hospitals

Expenditures associated with operation of the hospital. Expenditures for activities that take place within the hospital but that are more appropriately categorized as instruction or research are excluded from this category and accounted for in the appropriate categories.

Independent operations

Expenditures for operations that are independent of or unrelated to the primary missions of the institution (instruction, research, public service). This category is generally limited to expenditures for the operation of major federally funded research and development centers.

Organized research

Expenditures for all sponsored research and all separately budgeted research. Excludes expenditures for research carried on as part of regular instruction services (departmental research) which are included with expenditures for student education.

Public services

Expenditures for activities established primarily to provide noninstructional services beneficial to groups external to the institution.

Related activities

Expenditures for activities which exist to provide instructional or laboratory experience for students and which incidentally create goods or services that may be sold on the campus or to the general public. Expenditures made in addition to those necessary solely for the educational benefit of the students. Expenditures from current funds which cannot be reported under "student education" or "organized research" are included.

Student aid

Expenditures for assistance through scholarships, fellowships, and prizes. Recipients are not required to repay, either through services or monies.

Student charges

Charges for tuition, required fees, room and board. Required fees are those for matriculation, laboratory, library, health, etc. They do not include books. Student charges as reported under this heading are based on resident (in-State or in-district), undergraduate students.

Student education

Expenditures for those components of educational and general expenditures which are most closely related to instruction. Includes instruction and research which are part of regular instructional services (departmental research), libraries and other academic support, physical plant operation and maintenance, general administration, sponsored activities, and student services.

INSTRUCTIONAL STAFF

Instructor or above

A faculty member with the title of professor, associate professor, assistant professor, instructor, lecturer, visiting professor, adjunct professor, or interim professor (or its equivalent).

Junior instructor

A professional assistant to an instructor or above. Junior staff members are usually graduate students with titles such as graduate assistant or teaching fellow.

Full-time-equivalent instructional staff

All full-time instructional staff plus part-time instructional staff converted to the equivalent number of full-time instructional staff.

SCHOOLS

Elementary schools

Schools with teaching primarily organized by grades, composed of a span of grades not above grade eight.

Independent nursery and kindergarten schools

Schools that offer nursery and/or kindergarten instruction only.

Other schools

Residential schools for exceptional children (public and nonpublic), Federal schools for Indians, federally operated schools on Federal installations, and subcollegiate departments of public and private insti-

tutions of higher education.

Regular schools

Schools for normal children that satisfy the requirements of State education laws and offer at least one grade beyond kindergarten.

Residential schools for exceptional children

Schools outside the regular public and private school systems, including public and private residential schools for the deaf, blind, mentally deficient, epileptic, and delinquent.

Secondary schools

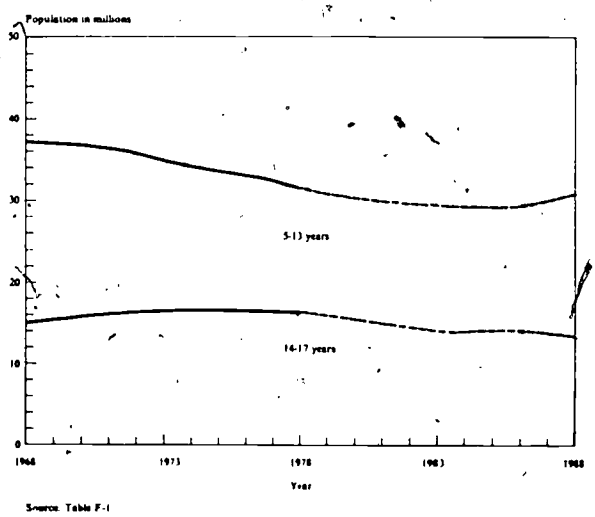
Schools with teaching organized by subject matter taught, composed of junior high and high schools.

Special schools

Schools, such as trade schools or business colleges, outside the regular school system.

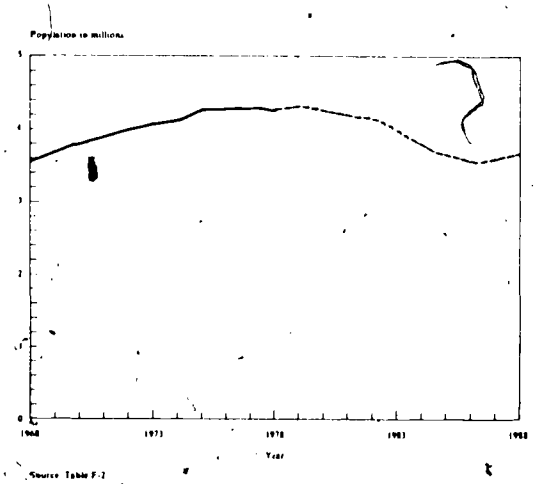
Appendix F
STATISTICAL TABLES

Figure F-1.—School-age population, with projections: United States, July 1968 to 1988



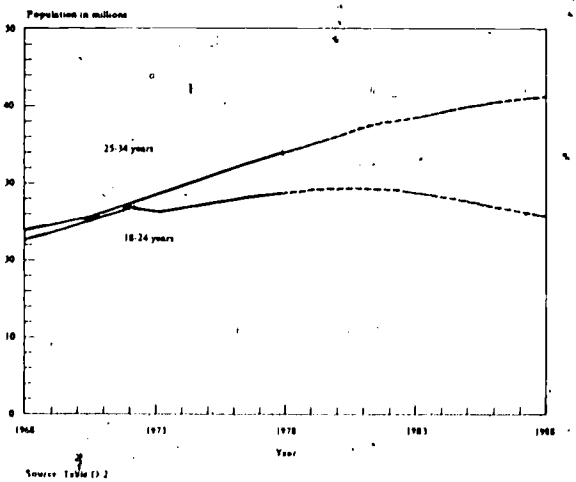
Source: Table F-1

Figure F-2.—Eighteen year old population, with projections: United States, July 1968 to 1988



Source: Table F-2

Figure F-3.—College-age population, with projections: United States, July 1968 to 1988



Source: Table F-3

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Table F-1.—School-age populations (U.S. Census projection series II), ages 5, 6, 5-13, and 14-17 years: United States, as of July 1, 1968 to 1989

(In thousands)

Year (fall)	5 years old	6 years old	5-13 years old	14-17 years old
1968	3,995	4,079	36,805	15,173
1969	3,923	4,007	36,837	15,560
1970	3,753	3,943	36,636	15,911
1971	3,543	3,776	36,104	16,281
1972	3,446	3,565	35,457	16,556
1973	3,364	3,466	34,737	16,747
1974	3,407	3,383	34,072	16,881
1975	3,491	3,428	33,439	16,933
1976	3,568	3,512	32,954	16,896
1977	3,264	3,589	32,225	16,791
1978	3,082	3,285	31,383	16,649
		Projected		
1979	3,012	3,103	30,641	16,273
1980	3,090	3,032	30,199	15,764
1981	3,044	3,110	29,803	15,219
1982	3,106	3,064	29,544	14,656
1983	3,202	3,126	29,335	14,308
1984	3,334	3,223	29,175	14,261
1985	3,493	3,355	29,098	14,392
1986	3,646	3,515	29,475	14,294
1987	3,750	3,668	30,142	13,964
1988	3,814	3,772	30,944	13,480
1989	3,860	3,837	31,715	12,997

SOURCE: U.S. Department of Commerce, Bureau of the Census. *Current Population Reports*, "Population Estimates and Projections," Series P-25.

Table F-2.—College-age populations, ages 18, 18-24, and 25-34 years: United States, as of July 1, 1968 to 1989
(In thousands)

Year (fall)	18 years old	18-24 years old	25-34 years old
1968	3,540	22,883	23,990
1969	3,676	23,724	24,681
1970	3,780	24,687	25,293
1971	3,874	25,779	25,841
1972	3,970	25,913	27,403
1973	4,045	26,397	28,609
1974	4,093	26,915	29,776
1975	4,242	27,603	30,918
1976	4,253	28,165	32,045
1977	4,244	28,623	33,162
1978	4,229	28,981	33,948
		Projected	
1979	4,292	29,299	35,009
1980	4,211	29,463	36,172
1981	4,146	29,513	37,462
1982	4,087	29,356	37,861
1983	3,917	29,022	38,540
1984	3,703	28,480	39,204
1985	3,604	27,852	39,859
1986	3,521	27,084	40,445
1987	3,567	26,445	40,861
1988	3,654	25,967	41,118
1989	3,733	25,630	41,222

SOURCE: U.S. Department of Commerce, Bureau of the Census: *Current Population Reports*, "Population Estimates and Projections," Series P-25.

Table F-3.—School-age populations, by sex and by individual ages 3-15 years: United States, as of July 1, 1968 to 1989

(In thousands)

Year (fall)	3 years old	4 years old	5 years old	6 years old	7 years old	8 years old	9 years old	10 years old	11 years old	12 years old	13 years old	14 years old	15 years old
Part A. Men													
1968	1,885	2,006	2,037	2,073	2,129	2,061	2,090	2,174	2,111	2,048	2,017	2,017	1,962
1969	1,781	1,911	2,002	2,038	2,084	2,101	2,085	2,170	2,113	2,124	2,044	2,061	2,015
1970	1,733	1,810	1,912	2,009	2,046	2,053	2,121	2,172	2,104	2,127	2,124	2,086	2,060
1971	1,695	1,758	1,808	1,918	2,018	2,022	2,080	2,206	2,099	2,120	2,127	2,164	2,085
1972	1,717	1,719	1,756	1,814	1,927	1,994	2,047	2,163	2,132	2,114	2,119	2,166	2,161
1973	1,759	1,741	1,717	1,762	1,823	1,904	2,020	2,130	2,090	2,147	2,113	2,159	2,164
1974	1,802	1,783	1,738	1,722	1,770	1,800	1,928	2,101	2,057	2,105	2,146	2,153	2,157
1975	1,645	1,827	1,782	1,744	1,731	1,749	1,824	2,007	2,031	2,073	2,106	2,188	2,153
1976	1,552	1,668	1,826	1,787	1,752	1,710	1,772	1,899	1,940	2,046	2,074	2,147	2,187
1977	1,518	1,574	1,668	1,831	1,796	1,731	1,732	1,844	1,834	1,954	2,045	2,113	2,145
1978	1,557	1,541	1,575	1,674	1,841	1,775	1,754	1,804	1,782	1,849	1,954	2,085	2,112
Projected													
1979	1,535	1,580	1,542	1,581	1,682	1,819	1,798	1,827	1,743	1,796	1,849	1,922	2,084
1980	1,567	1,559	1,581	1,548	1,590	1,663	1,843	1,873	1,766	1,757	1,797	1,886	1,992
1981	1,[illegible]	1,590	1,560	1,587	1,556	1,571	1,685	1,920	1,810	1,779	1,758	1,832	1,885
1982	1,682	1,639	1,591	1,566	1,595	1,539	1,592	1,756	1,855	1,854	1,780	1,793	1,832
1983	[illegible]	1,707	1,641	1,597	1,574	1,577	1,559	1,660	1,697	1,869	1,824	1,815	1,793
1984	1,842	1,789	1,708	1,647	1,606	1,556	1,598	1,626	1,604	1,710	1,870	1,860	1,816
1985	1,895	1,868	1,790	1,715	1,655	1,587	1,577	1,666	1,570	1,617	1,711	1,907	1,861
1986	1,928	1,922	1,869	1,797	1,723	1,636	1,608	1,644	1,609	1,584	1,616	1,745	1,907
1987	1,952	1,955	1,923	1,875	1,805	1,703	1,658	1,676	1,588	1,623	1,584	1,650	1,746
1988	1,969	1,979	1,956	1,929	1,884	1,784	1,725	1,727	1,619	1,601	1,623	1,616	1,652
1989	1,981	1,997	1,980	1,962	1,938	1,862	1,807	1,797	1,688	1,632	1,601	1,655	1,618

See footnotes at end of table.

Table F-3.—School-age populations, by sex and by individual ages 3-15 years: United States, as of July 1, 1968 to 1989—Cont.

(In thousands)

Year (fall)	3 years old	4 years old	5 years old	6 years old	7 years old	8 years old	9 years old	10 years old	11 years old	12 years old	13 years old	14 years old	15 years old
Part B. Women													
1968	1,824	1,929	1,959	2,005	2,005	1,988	2,018	2,091	2,030	1,972	1,947	1,950	1,889
1969	1,713	1,848	1,921	1,969	2,009	2,025	2,008	2,093	2,033	2,041	1,975	1,986	1,941
1970	1,670	1,741	1,841	1,934	1,968	1,976	2,030	2,089	2,030	2,045	2,047	2,011	1,980
1971	1,628	1,696	1,735	1,858	1,938	1,944	1,999	2,118	2,020	2,044	2,052	2,083	2,005
1972	1,651	1,653	1,689	1,751	1,861	1,913	1,966	2,078	2,048	2,034	2,051	2,088	2,076
1973	1,691	1,676	1,647	1,704	1,754	1,837	1,935	2,044	2,008	2,062	2,041	2,087	2,080
1974	1,722	1,716	1,669	1,661	1,707	1,731	1,858	2,012	1,975	2,022	2,069	2,076	2,079
1975	1,578	1,748	1,709	1,684	1,664	1,685	1,751	1,933	1,945	1,990	2,030	2,106	2,070
1976	1,488	1,602	1,742	1,724	1,687	1,643	1,705	1,822	1,868	1,959	1,997	2,066	2,099
1977	1,450	1,511	1,597	1,757	1,727	1,655	1,662	1,773	1,760	1,881	1,966	2,032	2,059
1978	1,489	1,473	1,507	1,612	1,761	1,705	1,685	1,729	1,714	1,774	1,889	2,001	2,026
Projected													
1979	1,464	1,512	1,469	1,522	1,615	1,738	1,725	1,753	1,672	1,727	1,780	1,922	1,995
1980	1,494	1,488	1,509	1,484	1,525	1,954	1,759	1,796	1,695	1,684	1,734	1,813	1,917
1981	1,540	1,518	1,484	1,523	1,487	1,505	1,614	1,831	1,736	1,708	1,691	1,765	1,808
1982	1,604	1,565	1,515	1,499	1,526	1,468	1,524	1,681	1,760	1,749	1,715	1,722	1,761
1983	1,681	1,629	1,561	1,529	1,502	1,507	1,486	1,588	1,624	1,782	1,756	1,746	1,718
1984	1,754	1,707	1,625	1,576	1,532	1,483	1,526	1,548	1,534	1,637	1,789	1,787	1,742
1985	1,804	1,782	1,702	1,640	1,579	1,513	1,501	1,589	1,496	1,546	1,643	1,822	1,783
1986	1,835	1,832	1,777	1,718	1,643	1,559	1,531	1,563	1,536	1,508	1,553	1,673	1,817
1987	1,858	1,864	1,827	1,793	1,721	1,622	1,578	1,594	1,511	1,547	1,514	1,581	1,670
1988	1,874	1,886	1,858	1,843	1,796	1,699	1,642	1,643	1,541	1,522	1,554	1,542	1,578
1989	1,884	1,902	1,881	1,875	1,846	1,772	1,719	1,709	1,587	1,552	1,529	1,582	1,539

SOURCE: U.S. Department of Commerce, Bureau of the Census: *Current Population Reports*, "Population Estimates and Projections," Series P-25.

Table F-4.—College-age populations, by sex and individual ages and age groups 16-34 years: United States, as of July 1, 1968 to 1989

(In thousands)

Year (fall)	16 years old	17 years old	18 years old	19 years old	20 years old	21 years old	22 years old	23 years old	24 years old	25-29 years old	30-34 years old	Total 18-24 years old	Total 25-34 years old
Part A. Men													
1968	1,892	1,849	1,791	1,795	1,835	1,934	1,378	1,369	1,422	6,345	5,531	11,523	11,876
1969	1,945	1,902	1,858	1,801	1,845	1,797	1,894	1,351	1,403	6,594	5,622	11,948	12,216
1970	1,999	1,956	1,913	1,879	1,847	1,799	1,755	1,858	1,387	6,811	5,710	12,431	12,521
1971	2,040	2,003	1,958	1,927	1,919	1,793	1,752	1,717	1,911	6,941	5,858	12,977	12,799
1972	2,063	2,043	2,005	2,973	1,969	1,865	1,748	1,715	1,767	7,512	6,075	13,041	13,587
1973	2,139	2,066	2,045	2,020	2,016	1,913	1,818	1,712	1,766	7,754	6,441	13,290	14,195
1974	2,142	2,143	2,069	2,060	2,064	1,958	1,864	1,779	1,761	8,083	6,694	13,555	14,777
1975	2,136	2,147	2,146	2,085	2,106	2,006	1,909	1,826	1,832	8,432	6,915	13,910	15,347
1976	2,132	2,141	2,151	2,163	2,132	2,046	1,955	1,869	1,879	8,868	7,045	14,195	15,913
1977	2,164	2,136	2,143	2,166	2,210	2,070	1,994	1,913	1,924	8,837	7,640	14,419	16,477
1978	2,123	2,169	2,138	2,159	2,214	2,146	2,017	1,952	1,970	8,993	7,881	14,596	16,874
Projected													
1979	2,091	2,128	2,171	2,154	2,206	2,150	2,092	1,975	2,009	9,195	8,214	14,757	17,409
1980	2,063	2,096	2,130	2,188	2,201	2,143	2,095	2,048	2,033	9,438	8,555	14,887	17,993
1981	1,972	2,068	2,098	2,146	2,236	2,138	2,088	2,051	2,107	9,633	8,999	14,864	18,632
1982	1,867	1,977	2,070	2,113	2,193	2,171	2,083	2,044	2,111	9,856	8,973	14,787	18,829
1983	1,815	1,873	1,979	2,086	2,161	2,130	2,116	2,040	2,103	10,036	9,131	14,615	19,167
1984	1,776	1,820	1,874	1,994	2,132	2,098	2,076	2,072	2,099	10,165	9,333	14,345	19,498
1985	1,798	1,781	1,822	1,889	2,039	2,071	2,044	2,032	2,131	10,250	9,575	14,028	19,825
1986	1,842	1,803	1,783	1,836	1,932	1,980	2,018	2,002	2,091	10,345	9,770	13,642	20,115
1987	1,888	1,848	1,805	1,797	1,878	1,876	1,929	1,975	2,059	10,326	9,992	13,320	20,318
1988	1,729	1,894	1,850	1,819	1,838	1,824	1,828	1,889	2,032	10,274	10,170	13,079	20,444
1989	1,636	1,735	1,895	1,864	1,860	1,785	1,777	1,790	1,943	10,202	10,295	12,914	20,497

See footnotes at end of table.

Table F-4.—College-age populations, by sex and individual ages and age groups 16-34 years: United States, as of July 1, 1968 to 1989—Cont.

(In thousands)

Year (fall)	16 years old	17 years old	18 years old	19 years old	20 years old	21 years old	22 years old	23 years old	24 years old	25-29 years old	30-34 years old	Total 18-24 years old	Total 25-34 years old
Part B. Women													
1968	1,823	1,791	1,749	1,763	1,785	1,877	1,369	1,378	1,439	6,455	5,659	11,360	12,114
1969	1,874	1,836	1,815	1,767	1,798	1,744	1,867	1,360	1,421	6,697	5,768	11,775	12,465
1970	1,929	1,888	1,8[illegible]	1,844	1,804	1,754	1,735	1,853	1,392	6,906	5,866	12,249	12,772
1971	1,964	1,938	1,916	1,889	1,869	1,748	1,743	1,721	1,916	7,027	6,015	12,802	13,042
1972	1,988	1,972	1,965	1,938	1,913	1,810	1,737	1,729	1,780	7,586	6,230	12,872	13,816
1973	2,058	1,996	2,000	1,987	1,962	1,853	1,798	1,722	1,787	7,820	6,594	13,109	14,414
1974	2,063	2,067	2,024	2,022	2,012	1,900	1,840	1,782	1,780	8,149	6,850	13,360	14,999
1975	2,062	2,072	2,096	2,047	2,048	1,949	1,887	1,824	1,842	8,500	7,071	13,693	15,571
1976	2,053	2,072	2,102	2,120	2,073	1,983	1,935	1,871	1,886	8,939	7,193	13,970	16,132
1977	2,081	2,062	2,101	2,125	2,146	2,008	1,970	1,919	1,934	8,909	7,776	14,203	16,685
1978	2,042	2,091	2,091	2,125	2,153	2,080	1,996	1,955	1,985	9,062	8,012	14,385	17,074
Projected													
1979	2,009	2,052	2,121	2,115	2,152	2,086	2,067	1,989	2,021	9,256	8,344	14,542	17,600
1980	1,978	2,019	2,081	2,145	2,143	2,086	2,073	2,050	2,047	9,492	8,687	14,625	18,179
1981	1,901	1,988	2,048	2,105	2,172	2,076	2,073	2,056	2,119	9,691	9,139	14,649	18,830
1982	1,794	1,911	2,017	2,072	2,132	2,105	2,063	2,056	2,126	9,919	9,113	14,571	19,032
1983	1,747	1,803	1,938	2,040	2,098	2,066	2,092	2,047	2,126	10,104	9,269	14,407	19,373
1984	1,704	1,756	1,829	1,961	2,066	2,033	2,054	2,075	2,116	10,240	9,466	14,135	19,706
1985	1,728	1,713	1,782	1,851	1,986	2,002	2,021	2,037	2,145	10,331	9,703	13,824	20,034
1986	1,769	1,737	1,738	1,803	1,875	1,925	1,990	2,005	2,106	10,426	9,904	13,443	20,330
1987	1,803	1,778	1,762	1,759	1,826	1,817	1,914	1,975	2,073	10,410	10,133	13,126	20,543
1988	1,657	1,812	1,804	1,783	1,782	1,770	1,807	1,899	2,042	10,357	10,317	12,887	20,674
1989	1,566	1,666	1,838	1,825	1,806	1,728	1,761	1,794	1,964	10,273	10,452	12,716	20,725

SOURCE: U.S. Department of Commerce, Bureau of the Census: *Current Population Reports*, "Population Estimates and Projections," Series P-25.

Table F-5.—Constant dollar indexes[1]

(1978-79 = 100)

School year	CPI[2]	PGSL[3]	PICNR[4]
1963-64	.451	.370	.349
1964-65	.456	.379	.355
1965-66	.466	.390	.368
1966-67	.480	.417	.384
1967-68	.496	.442	.402
1968-69	.520	.469	.424
1969-70	.551	.502	.463
1970-71	.579	.542	.498
1971-72	.600	.574	.533
1972-73	.625	.612	.563
1973-74	.680	.662	.632
1974-75	.756	.737	.763
1975-76	.810	.793	.805
1976-77	.856	.853	.841
1977-78	.914	.921	.907
1978-79	1.000	1.000	1.000
	From intermediate trend projection of U.S. Economy[5]		
1979-80	1.121	1.095	1.109
1980-81	1.223	1.190	1.218
1981-82	1.326	1.295	1.342
1982-83	1.440	1.412	1.487
1983-84	1.557	1.529	1.630
1984-85	1.679	1.653	1.769
1985-86	1.808	1.787	1.921
1986-87	1.947	1.932	2.094
1987-88	2.095	2.089	2.284
1988-89	2.249	2.255	2.476
	From cyclical projection of U.S. Economy[6]		
1979-80	1.130	...	1.116
1980-81	1.261	...	1.242
1981-82	1.374	...	1.362
1982-83	1.493	...	1.502
1983-84	1.633	...	1.702
1984-85	1.788	...	1.892
1985-86	1.917	...	2.025
1986-87	2.050	...	2.175
1987-88	2.226	...	2.426
1988-89	2.428	...	2.681
	From low trend projection of U.S. Economy[7]		
1979-80	1.122	1.096	1.109
1980-81	1.226	1.194	1.222
1981-82	1.334	1.304	1.352
1982-83	1.455	1.428	1.504
1983-84	1.581	1.554	1.655
1984-85	1.713	1.689	1.806
1985-86	1.855	1.836	1.972
1986-87	2.008	1.996	2.161
1987-88	2.172	2.172	2.370
1988-89	2.346	2.357	2.585

See footnotes at end of table.

Table F-5.—Constant dollar indexes[1]—Cont.

(1978-79 = 100)

School year	CPI[2]	PGSL[3]	PICNR[4]
		From high trend projection of U.S. Economy[5]	
1979-80	1.121	1.094	1.108
1980-81	1.219	1.185	1.213
1981-82	1.317	1.285	1.332
1982-83	1.424	1.394	1.471
1983-84	1.533	1.503	1.606
1984-85	1.645	1.616	1.734
1985-86	1.761	1.735	1.872
1986-87	1.885	1.863	2.030
1987-88	2.015	1.999	2.201
1988-89	2.149	2.140	2.368

[1]For each series, the monthly indexes were averaged on a July-to-June basis to correspond with the school year and converted to 1978-79=100.

[2]All Urban Consumer Price Index.

[3]Implicit Price Deflator for State and Local Government Purchases of Goods and Services.

[4]Implicit Price Deflator for Investment in Private Nonresidential Structures.

[5]These projections were used as deflators in the intermediate alternative projections of all categories of expenditures.

[6]These projections were used as deflators in the low alternative projections of Current and Capital Expenditures of Public and Nonpublic Institutions of Higher Education.

[7]These projections were used as deflators in the low alternative projections of Current, Interest and Capital Expenditures of Public and Nonpublic Elementary and Secondary Schools.

[8]These projections were used as deflators in the high alternative projections of all categories of expenditures.

SOURCE: Historical and projected data were obtained from Data Resources, Inc.'s, U.S. Macroeconomic Model.

Table F-6.—Constant dollar economic variables used to project expenditure series[1]

(1978-79 dollars)

School year	GSE9[2] (State & local expenditures, in billions)	GICV9[3] (Public construction, in billions)	BS&L[4] (State & local obligations, in billions)	RMAAAGSLNS9[5] (Yield on state and local bonds)	YPCAP9[6] (Personal income per capita, in thousands)
1963-64	167.343	59.792	194.368	3.115	5.566
1964-65	177.743	61.151	205.894	3.068	5.834
1965-66	191.469	66.267	216.839	3.386	6.154
1966-67	203.520	68.080	222.855	3.698	6.379
1967-68	214.333	69.547	230.569	4.037	6.581
1968-69	225.609	69.818	239.392	4.621	6.814
1969-70	230.745	61.303	244.443	6.124	6.900
1970-71	241.585	61.685	253.565	5.576	6.933
1971-72	250.536	58.706	272.368	5.103	7.170
1972-73	259.774	58.630	283.484	5.010	7.590
1973-74	269.359	58.459	281.066	5.219	7.667
1974-75	276.318	52.577	270.667	6.327	7.472
1975-76	283.777	52.019	270.978	6.247	7.600
1976-77	281.227	44.564	272.088	5.279	7.841
1977-78	289.191	43.922	277.339	5.296	8.117
1978-79	296.200	47.068	277.466	5.708	8.305
From intermediate trend projection of U.S. Economy					
1979-80	297.437	44.193	265.559	6.262	8.081
1980-81	297.952	40.360	263.875	6.086	8.075
1981-82	300.904	38.346	263.946	6.555	8.289
1982-83	306.237	36.888	264.242	6.954	8.453
1983-84	312.600	35.986	265.843	6.848	8.573
1984-85	319.760	35.402	268.015	6.640	8.692
1985-86	329.084	35.180	271.216	6.469	8.881
1986-87	339.550	35.113	275.132	6.443	9.112
1987-88	350.608	35.087	279.932	6.381	9.310
1988-89	360.752	34.938	285.854	6.225	9.443
From cyclical projection of U.S. Economy					
1979-80	...	44.064	...	...	8.046
1980-81	...	39.832	...	...	7.828
1981-82	...	37.816	...	...	8.023
1982-83	...	36.293	...	...	8.265
1983-84	...	35.498	...	...	8.589
1984-85	...	35.437	...	...	8.575
1985-86	...	35.189	...	...	8.552
1986-87	...	34.531	...	...	8.744
1987-88	...	34.081	...	...	9.050
1988-89	...	34.056	...	...	8.994
From low trend projection of U.S. Economy					
1979-80	297.482	44.195	265.355	6.271	8.078
1980-81	297.938	40.365	263.278	6.160	8.061
1981-82	300.454	38.312	262.496	6.714	8.249
1982-83	304.875	36.762	261.861	7.170	8.377
1983-84	310.119	35.744	262.492	7.091	8.469
1984-85	316.106	35.041	263.630	6.904	8.566
1985-86	324.209	34.707	265.784	6.769	8.728
1986-87	333.390	34.536	268.626	6.756	8.929
1987-88	343.008	34.399	272.411	6.756	9.098
1988-89	351.545	34.133	277.229	6.615	9.196

See footnotes at end of table.

Table F-6.—Constant dollar economic variables used to project expenditure series[1]—Cont.

(1978-79 dollars)

School year	GSL9[2] (State & local expenditures, in billions)	GICV9[3] (Public construction, in billions)	BS&L[4] (State & local obligations, in billions)	RMAAAGSLNS9[5] (Yield on State and local bonds)	YPCAP9[6] (Personal income per capita, in thousands)
			From high trend projection of U.S. Economy		
1979-80	192.467	44.191	265.649	6.252	8.081
1980-81	208.880	40.356	264.470	6.014	8.089
1981-82	229.013	38.389	265.410	6.393	8.329
1982-83	253.788	37.027	266.665	6.740	8.531
1983-84	280.290	36.244	269.270	6.614	8.681
1984-85	309.194	35.780	272.669	6.382	8.822
1985-86	342.875	35.671	276.947	6.160	9.036
1986-87	381.106	35.706	281.982	6.076	9.296
1987-88	423.928	35.786	288.010	5.981	9.523
1988-89	468.502	35.747	295.044	5.800	9.681

[1]For each series the monthly data were averaged on a July-to June basis to correspond with the school year.
[2]State and local government purchases of goods and services.
[3]New public construction put-in-place by all levels of government.
[4]State and local government obligations outstanding.
[5]Yield on AAA State and local government bonds (general obligations).
[6]Personal income per capita.

SOURCE: Historical and projected data were obtained from Data Resources, Inc.'s, U.S. Macroeconomic Model.

Table F-7.—Constant dollar weights[1]

School year	Rent	Fuel	Composite (80% rent, 20% fuel and utilities)	Food
1974-75	1.2668	1.4045	1.2943	1.3268
1975-76	1.2030	1.2748	1.2174	1.2462
1976-77	1.1383	1.1622	1.1431	1.2059
1977-78	1.0701	1.0673	1.0695	1.1152

[1]Based on components of the All Urban Consumer Price Index.

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